

M. Gottfried, Inc.

Roofing and Sheet Metal Contractors

89 Research Drive, P.O. Box 2218, Stamford, Connecticut 06906-0218
PHONE: (203) 323 8173 Website: mgottfried.com FAX: (203) 359 2498

TO: Viking Construction, Inc.
1387 Seaview Avenue
Bridgeport, CT 06607
ATTN: JoAnn Michaels

DATE: August 26, 2019

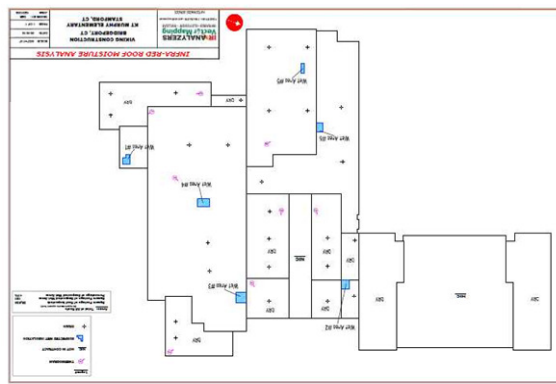
RE: Roof report and repair quotation
K. T. Murphy Elementary School
19 Horton Street
Stamford, CT 06906

Dear Ms. Michaels,

As per your request we went to the above school to perform an inspection of the roofs, and, using the Infrared Thermographic Roof Moisture Analysis Report as a guide, look for possible sources of water leaks in the noted “wet areas”. We also were to perform test cuts, if necessary, to verify the wetness and determine the roof components in those areas. We were also asked to provide pricing on replacing the wet areas, and to provide a recommendation and pricing for roof maintenance.



Map showing roof areas and roof warranties



Roof moisture scan showing wet areas

The roofing at K.T. Murphy School can be broken out into a few distinct areas. The sloped shingle roof, the Carlisle roofs on either side of the shingle roof, The JM roof which covers the bulk of the school, the skylight and metal roofs, and the higher rear flat roof that does not have a warranty. The roof moisture analysis showed 6 small wet areas on the JM and non-warranted roof. At most of the “wet” areas we found holes or possible skylight issues.

Two upper roofs with the Carlisle warranty

The Carlisle roofs warranty are only a few years old and in excellent condition. We did notice a few maintenance items that should be performed on these roofs.

Scuppers



There is minor debris collecting at the scuppers. This should be cleaned and removed. We also found that

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when you put your hand inside the scupper the rubber flashing material does not go in very far and is lifting a little. An additional piece of membrane flashing should be installed around the inside of the scupper to make sure this detail remains tight. Finally, the scuppers lead to built-in gutters under the shingle sections. It looks like patches have been made on the membrane in the gutter. We could not get out to inspect these areas, but should they become problematic, further investigation may be needed. The difficulty in inspecting and working in these gutters will be the lack of access and difficulty getting to them.

Corner flashing detail



Another interesting detail on the Carlisle roofs occurs at the junction of the hips where the shingles and EPDM meet. It looks like the flashing of the parapet wall extends out and onto the bottom shingle. This should be monitored to make sure the membrane doesn't lift up and leave a void.

The Johns Manville warranted roof

The Johns Manville roof is on many different roof levels and covers a large part of the school. Five of the wet areas are found on these roofs. All of the wet areas on the JM roof are small and can be attributed to damage.

Wet area #1



Holes were found in the area marked #1.

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Wet area #2



A slice in the membrane was found at wet area #2

Wet area #3



A hole was found at wet area #3

Wet area #4



Wet area number 4 may be due to an issue with a lap that was made on the roof when a rooftop item was removed. The membrane over the area where the item was removed is the cleaner white. It extends up and onto the JM roof. The lap area over the JM roof is suspect and needs to be further checked and repaired.

Wet area #6



Wet area #6 is caused by a hole in the roof membrane.

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Roof maintenance on the JM roofs

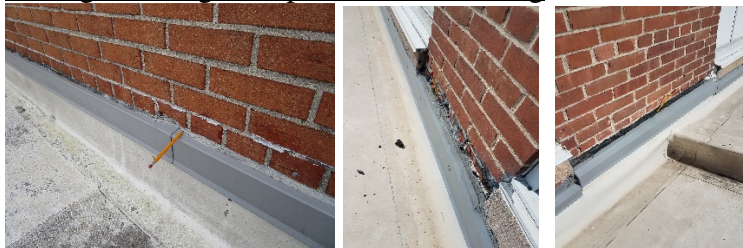
In addition to removing above noted wet areas, there are a number of maintenance items needed on the JM roofs.

Vertical terminations



There are many areas that do not have a termination bar at the ends of the base flashing. These unfastened ends can pull away from the wall and create a direct path for water to get in. All ends should be properly caulked and fastened.

Failing caulking on top of counterflashing



The caulking at the reglet joint at the top of the metal counterflashing is shrinking and cracking. All instances of this condition should be checked and recaulked as needed.

Wall with loose flashing



The base flashing on the noted wall is loose. The area needs to be inspected and the membrane secured with an intermediate batten bar.

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Fishmouths at flashing or laps



Some fishmouths or openings at the base flashing and field laps were noted. These need to be cleaned and properly sealed before they get larger and let water into the roofing system. In addition, as noted with leak area #4 units or curbs have been removed from the roof and patches installed. The laps on all the patches should be checked to make sure they are tight. If they are not, the laps should be overlaid.

Holes



Holes and slices were seen in the membrane in area not shown as “wet”. These need to be patched before the insulation underneath gets soaked and becomes “wet”.

Curb flashing and penetration flashing



All curb, penetration and drain flashing should be checked and repaired as necessary. All penetration pockets should be “topped off” with additional pourable sealer if needed.

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Cracking or splitting in the membrane flashing on the perimeter metal edge



The membrane that seals the flange of the perimeter edging needs to be checked where it goes over the joints in the metal. We found instances where the membrane has split or been torn. These need to be patched before the splits worsen and water can get into the roofing system.

Voids in flashing



There are a few areas where voids are found where the membrane base flashing meets metal corner flashing. These should be sealed to prevent water infiltration.

Loosening membrane at expansion joint



The membrane over the expansion joint has either loosened or the backer rod in the joint has shifted over time. This detail needs further investigation to see if a batten bar is needed to secure the membrane and put the backer rod back into place.

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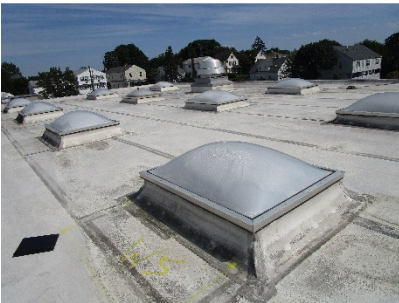
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Upper non-warranted roof



The upper roof appears to be an older roof. It has many skylights. One wet area was noted on this roof level.

Wet area #5



Wet area #5 is marked at the base of a skylight. We did not see any failed or open laps or corners, or, find any holes in the roof in this area. This leak may be coming from the skylight. We found a number of skylights that had water between the two domes. There is also a skylight with a broken outer dome with water held by the inner dome.



We are not sure if the moisture found in the infra-red scan was coming in between the domes, or at the

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gaskets between the domes and then going behind the curb flashing at wet are #5, or if some other cause is to blame for the wetness found. More investigation needs to occur when the wet area is replaced.

In any case, judging by the broken dome, and finding trapped water in other skylights, the school should start planning to replace the skylights on this roof.

Other roof maintenance

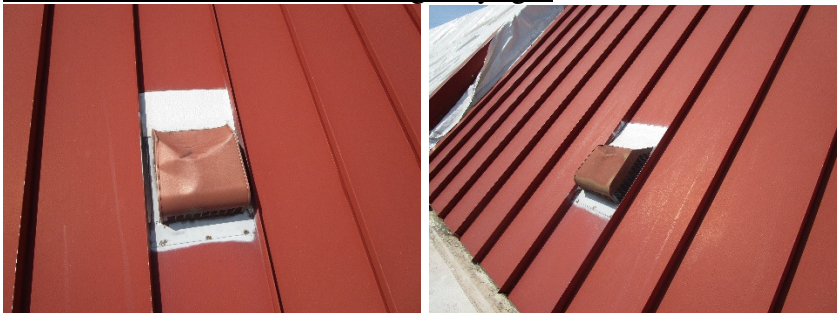
General maintenance on this roof level should consist of; checking laps, curb corners and flashing for fishmouths or openings, then patching any found. Drains, perimeter edging, etc., should also be checked and repaired as needed. No work on the skylights outside of minor caulking would be undertaken at this time. A price can be provided for replacing the skylights (either in mass or individually (i.e. just the broken one), can be provided upon request.

Large skylight and metal roofs



No work is included on the large skylight or lower metal roofs

Metal roof at the front of the large skylight



The flanges of the vents on the metal roof have been coated. We are not sure if they have previously leaked or if they were added to the roof at a later date. The coating looks to be thin, and no reinforcing fleece is

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seen in the overlap of the vent and roof on the bottom side of the vent. These vents should be reflashed using a PMMA membrane and reinforcing fleece as a precaution.

Summary

In summation the roofs at K.T. Murphy school are in good shape and the majority of the roof areas are still under warranty. Maintenance work is needed to not only remove/replace the wet areas, but patch the holes, cuts, open flashings, etc., that are either letting water in or could potentially let water into the roofing system. Skylight replacement on the upper non-warranted roof should be budgeted, with replacing broken domes and failing domes a priority.

Please let us know if you have any questions or need additional pricing.

Respectfully,



David Lederman