

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: October 28, 2019

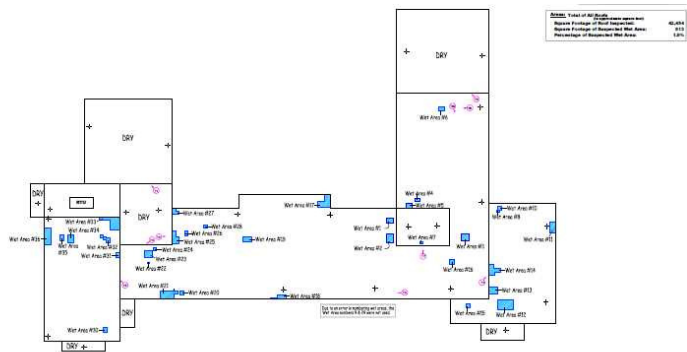
RE: Roof report and repair quotation
Dolan Middle School
51 Toms Road
Stamford, CT 06906

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 active roof warranties



Map from Infra-red scan showing wet areas

All of the roof levels at Dolan Middle School have active manufacturers warranties. The area outlined in red on the map is covered under a 20-year Firestone warranty that will expire in August of 2022. The areas outlined in green on the map are covered under a 20-year JM warranty that will expire in December of 2030. A new elevator penthouse (not shown on the map) was installed in 2017. It has a 20-year Firestone roof warranty that will remain in effect until 2037. Since this roof is new and has no issues, all of the discussion found in this report will deal with the main Firestone and JM roofs.

The roofs are all in good shape, however the moisture scan revealed 34 areas of wetness in the roofing systems. Many of these can be attributed to holes in the membrane. Most of these are near walls or parapets and have been patched. The main Firestone roof was installed in 2002 and the JM in 2010. It appears that subsequent to those years, masonry work was performed on the parapets and some rising walls. Coping and in some instances, EPDM membrane, was installed over the parapets. We can assume that this project was performed due to masonry and parapet leaks. It is possible that some of the moisture found in the scans originated from the problems that this project addressed. Some of the holes may also have occurred during the project.

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Wet areas

As noted above many of the wet areas were caused by holes in the roof membrane.



Wet areas #1, #3, #4, #5, #6, #7, #8, #12, #13, #14, #15, #16, #17, #20, #23, #26, #27, #28, #29, #30, #31, #32, #34 and #35 all are found around areas that had had holes that have been patched.

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Wet area #2



Wet area #2 lies outside of a penthouse door. The drain flashing, door flashing and nearby lap must be checked. The walkway pads should be lifted to make sure no holes are present underneath them.

Wet area # 11



Wet area #11 lies around a roof drain. It appears that water collects in the cricket area before the drain. Some of the membrane stripping around the drain is starting to lift. This entire area will be repaired and the drain reflashed when the wet area is removed and replaced.

Wet area #18



Wet area #18 as found against one of the walls that had received EPDM membrane and coping after the roof was installed. The moisture here may have come from the wall before that project occurred.

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Wet area #19



Wet area #19 lies at the base of a chimney. All the corners, membrane flashing, metal counterflashing, and caulking must be checked. If these are found to be “tight”, after the wet area is replaced, the masonry work will need to be inspected and repaired by others.

Wet area #21



Wet area #21 surrounds and area containing a patch and a drain. It is by a wall with new coping. Water could have gotten in from the hole, loose drain flashing, or even the wall prior to the coping project. All the membrane possibilities will be addressed when the marked area is removed and replaced.

Wet area #22



Wet area #22 may be from a small pin hole in the roof membrane. It also lies on a direct line from the penthouse door where other holes and wet areas were found. In addition to replacing the wet areas, the door flashing and door itself must be looked at as a possible point of water entry.

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Wet area #25



Wet area #25 lies in front of another penthouse door. Even though a hole has already been patched, it looks like the water infiltration starts at the door and flows out. The door and door flashing may have to be address at this area as well. All door frames, caulking, weather stripping, saddles, on doors leading out onto the roof should be examined, repaired and made watertight by others.

Wet area #33



Wet area #33 lies in a corner of a rising masonry wall. There are two patched holes on the down slope side of the marked area, but it appears that the water may have come form the wall or window. It looks like the masonry and reglet was redone during a previous project. It is possible that the water infiltrated the system prior to that project.

Suggested general roof maintenance

It is important that maintenance be performed on the roofing systems in order to ensure that the roofs not only meet there anticipated warranty life span but continue to perform many years past the end of their warranties. Maintenance will also correct issues that, if left unrepaired will lead to water infiltration and leaks.

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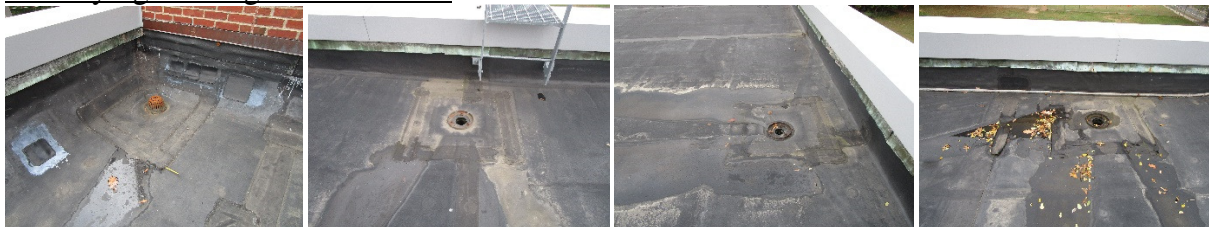
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Overlying flashing around drains.



As noted in the wet area section, many of the drains are flashed with a target patch, and then the target patch is flashed with a 5" strip of membrane. In many instances, where the flashing material is found in ponding water or low spots around the drain, it is starting to lift. All the flashing membrane around the drains should be cleaned and overlaid with new larger membrane to prevent the chance of water infiltration.

Overlying flashing in other areas that hold water



There are a few other areas on the roof that look like they tend to pond a little water. We found evidence of peeling on the flashing overlaying laps in these areas. To help protect the laps, they should be cleaned and overlaid with new wider membrane flashing.

Fishmouths and incomplete detailing in the membrane added in the masonry project



As part of the masonry/coping project, it appears that new membrane base flashing was installed over the original base flashing in some locations. We found fishmouths present in some the laps where the new membrane is seamed to the original roof. In addition, corners were not installed on the membrane nor was vertical termination. This left open gaps where water can get in. All the new base flashing must be checked, any fishmouths patched, missing corners installed, and vertical ends of membrane properly terminated.

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Metal terminations at new coping



The new coping from the masonry/coping project is not being terminated in many locations. The ends of the metal coping are only turned against the wall. Many are not fastened or caulked. This leaves open joints where the metal meets the wall. The coping turn-outs should be set in caulking and pinned where possible, and the exposed metal to masonry joint caulked.

Repairing corners



All corners on curbs, sleepers, wall flashing, etc., must be checked and properly patched if they are starting to open. On one curb, it appears that ropes were tied around the base. The remnants of the yellow line are cut into the corners on the base of the curb. These must be patched as well.

Penetration pockets



All penetration pockets must be checked. In some instances, the conduits or lines in the pockets are very close together or touching the edge of the pocket. When this occurs, the pourable sealer cannot flow

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between the penetrations or the penetration and the pocket. This leaves voids that water can enter. The penetration pockets where this is occurring should be removed and new larger pockets installed. All other pockets must be checked, and filler added if needed. One other item to point out is the flexible conduit found in some of these pockets is starting to rust through the coating. If the crack goes all the way through, water can enter the conduit and flow directly into the building. These types of conduits should be monitored and coated or replaced (by others) if their condition worsens.

Holes and fishmouths in the roof membrane



Some holes, fishmouths in patches, and open flashing laps were found in the roof. These must be patched to prevent water infiltration.

Open joints in roof top items



The caulking where the vent meets the roof curb is opening and can let water in. The old caulking should be cleaned out and new caulking installed. The curb metal below the caulk joint should be coated with a bituminous resin flashing material to keep it from deteriorating further.

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Low roof damaged by fire



Within the last couple of years (prior to the new elevator and metal roof project) an electrical line/tree came down on the above end roof and there was a small fire. The membrane was never properly repaired and the base flashing against the wall has fallen in the corner. Unfortunately, this roof is not shown on the infra-red scan map. By the condition of the membrane and the fallen base flashing, there is a strong possibility that there is water under the membrane from the fallen corner to the drain. This area should be cut out and replaced with new membrane and flashing.

Conclusion

Even though all the roof areas at Dolan school have active manufacturers warranties many wet areas and items in need of maintenance and repair work are needed. Replacement of wet areas is necessary to remove trapped wet insulation from the system and the repairs and maintenance is needed to close off and repair possible infiltration points of new moisture. If the work to replace/repair these items are performed, and the roofs maintained in the future, the roofing systems should last well beyond their manufacturer's warranty periods. It should also be noted, that since the roofs are under warranty, repairs and any future projects that involve roofing work must be performed by certified applicators of the warranting companies. It is not known what products were used for past projects, or if these projects have affected the current warranties in the area they were applied.

Please let us know if you have any questions or need additional pricing on the other items mentioned.

Respectfully,



David Lederman