

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

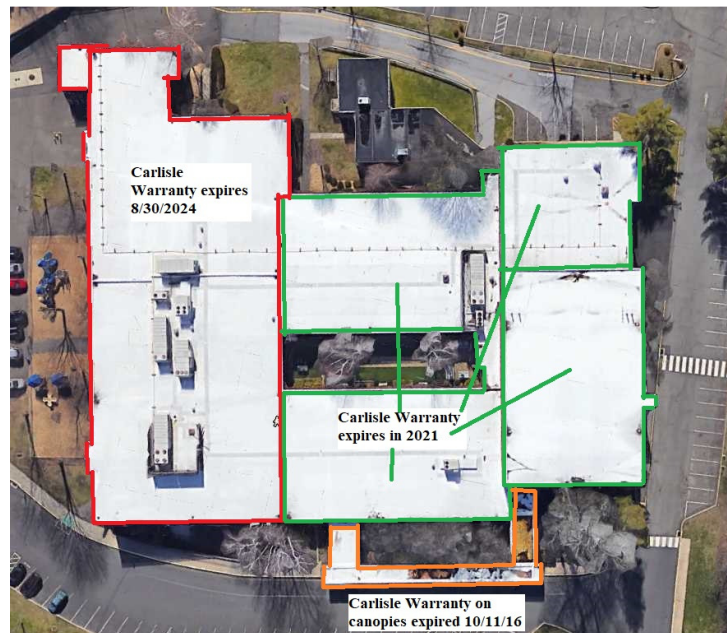
TO: Viking Construction, Inc.
1387 Seaview Avenue
Bridgeport, CT 06607
ATTN: JoAnn Michaels

DATE: July 2, 2019

RE: Roof report and repair quotation
Stillmeadow Elementary School
800 Stillwater Road
Stamford, CT 06902

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 to verify the wetness and determine the roof components in those areas. Finally, we were to provide a recommendation on repairing possible sources of water infiltration and/or removing/replacing areas that were wet in order to bring the roof back to a "dry" state.



Carlisle roof warranties were issued for all areas of the building except the portable classrooms. The canopies had a 15-year warranty that expired in 2016 and the left side (shown outlined in red above) has a 20-year warranty **in effect** that runs until 8/30/2024 and the center and right sides (shown outlined in green above) has a 20-year warranty in effect that runs until 2021 (actual warranty not forwarded from Viking but came up in discussions with Carlisle while obtaining the drawings for the other areas).

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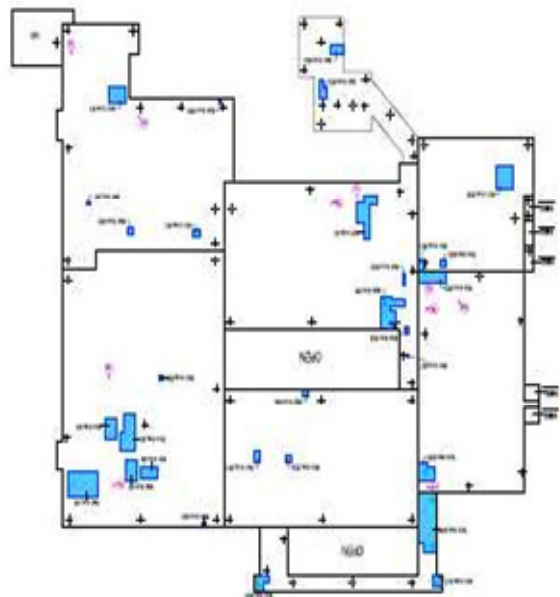
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To take advantage of a roof warranty, when a leak occurs, the manufacturer must be notified immediately. **If the leak is due to a material or installation issue, the manufacturer will repair the leak at no charge to the Owner. If the leak is due to damage or an act of nature it is the Owners responsibility to pay for the repair.** If leaks are not called in as soon as they happen, coverboards and insulation could get wet and damaged and eventually need to be replaced. The manufacturer will not pay for any of these supplemental costs because they resulted from leaks not being called in. Warranties do not cover preventative maintenance either. It is therefore important to periodically inspect the roofs for damage and issues to keep small cuts and nicks from turning into large problem areas. In my discussion regarding Stillmeadow school with our Carlisle representative, and he says the warranties are “technically” in effect but for the above reasons, repairing damage and replacing the wet areas are not covered and are the schools responsibility. He did then say that since active warranties are currently present, should a leak develop in new areas, Carlisle will respond to leak notices as per the warranty conditions. He went on to say that after the repairs/replacements are made (as long as they are performed using Carlisle materials and by a Carlisle applicator, – which we are), all warrantied areas will be covered under the terms of the warranty.

The infrared tests revealed **30 areas** of suspected wet areas of roof. The below picture shows the wet areas marked out in the infrared report on an aerial view of the school.



Wet areas superimposed on roof map



Clearer view of wet areas

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We performed test cuts at a few of the noted wet areas. The roof construction found is: steel deck, 2" polyisocyanurate insulation, tapered polyisocyanurate insulation, followed by 5/8" OSB board followed by the adhered white TPO roofing system. When we cut open the roofs to obtain this information, we found that the OSB board was soaked and delaminating. The polyisocyanurate insulation and facers were also wet.



Test cuts at the areas marked "wet" revealed a soaked and delaminating OSB board over polyisocyanurate insulation.

The following are pictures of the marked wet areas as well as what we suspect are the causes of the water infiltration and our suggestions to their repair.

Wet areas 1, 2 and 20

Wet areas 1 and 2 stretch from the courtyard edge, along the unit and screen wall down toward the outside edge facing the portable classrooms. Area 20 lies on the opposite side of the large HVAC unit.



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This area has penetration pockets at the screen wall, equipment rails below the end of the large unit and the large curb that the unit sits on. We found holes, cuts, possible opening fishmouths in the laps, penetration pockets where the sealer has shrunk and left voids, and areas with the top of the membrane has been scuffed or worn off exposing the scrim reinforcing. All these items have let water into the roofing system. The membrane in this whole area should be removed, wet OSB any wet insulation removed, and new Carlisle materials installed in its place. When installing new materials, the Carlisle representative recommended install Carlisle ½" SecurShield HD in lieu of the OSB board. The SecurShield is a high density (100 PSI) coverboard that will withstand traffic but will not turn to mush or come apart if it gets wet. In addition, the facers are fiberglass and are not conducive to mold growth. In addition, since this area appears to get a lot of activity, he recommended to use an .080 reinforced membrane rather than the standard .060. We have made these material changes for all of the replacements noted below as well. Sleepers, the HVAC curb, pail posts and supports, vents, etc., that fall within this area would also receive new flashings.

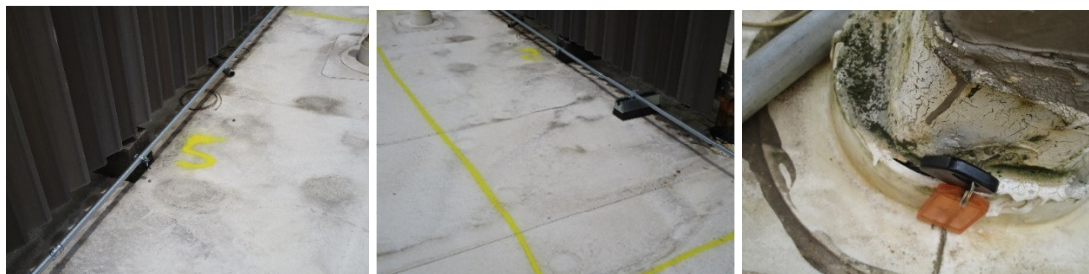
Wet areas 3,4 and 30



Areas 3, 4 and 30 are relatively small areas. We found some holes and punctures in these areas. These areas should be opened, and any wet material removed, then new materials installed.

Wet areas 5,6, 7,8 and 9

Wet areas 5 through 9 surround the other area with a screen wall. This area contains rail posts, a hatch, vent, etc.,



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In this area we found holes, opening laps, shrinking filler in penetration pockets, parts of the screen wall that have fallen and made holes, etc., The membrane and any wet materials underneath need to be removed, new insulation, HD coverboard and .080 membrane installed. New penetration flashings need to be installed as well.

Wet areas 10, 11, 12, 13, 14, 15 and 30

Wet areas 10, 11, 12, 14, 15 and 30 are all small areas in the field or along an edge.



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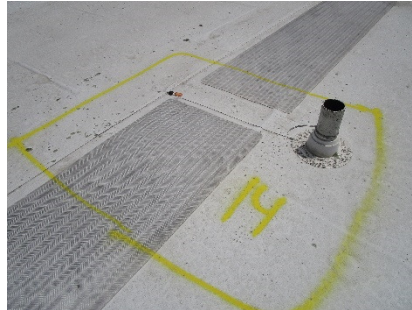
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In these areas we were able to find some holes, and some laps and flashing that may need attention. Some of the marked areas fall around walkway pads. We cannot tell if the water is only under the pad and above the roof, or if there is a hole under the pad. For these areas we need to lift the pads and inspect/do a test to see if the OSB board is wet. If the areas under the membrane is dry the test cut will be patched, the area checked. A new pad will be installed if the existing is not salvageable. All other areas will be probed in the same fashion, if wet material is found it will be replaced and removed.

Wet areas 16, 17 and 18

Wet areas 16, 17 and 18 are small areas. 16 is by a drain, 17 and 18 are along the narrow section of roof along the higher gym wall going to the large unit and area 20.



Holes were found at each of these areas. They will be opened, wet material changed, and new membrane installed.

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Wet areas 19,21 and 22

Wet areas 19, 21 and 22 are on the raised roof below the gym.



At area 19, we found a few cuts around the drain. The area should be cut out and the drain reflashed. We did not find anything obvious at area 21. This area spot requires further investigation. Area 22 is a larger area that the other areas marked on this level. It Contains a fan curb, vent and gas line. We did a test cut and the OSB board is wet. The area needs to be replaced and new materials installed. The curbs and penetrations will all need to be reflashed.

Wet area 23 and 24

Wet areas 23 and 24 lit on opposite corners of the gym roof. Both are occurring at crickets on the roof.



Holes were found in area 23 and 24 in addition the membrane on the edge of the cricket of 24 is worn.

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Both these areas need to be removed and replaced.

Wet areas 27, 28 and 29

Areas 27, 28 and 29 are on the canopy roof. The canopy roof is divided into distinct sections with raised dividers. The three roof sections containing the wet areas are in poor shape and should be replaced. In addition, maintenance is needed on the other sections.



We think a lot of the problems on the canopy roofs is due to the drains. The drains are just tubes that extend into the drainpipe. We do not think there is any gasket ring or means to prevent backup of water if the drain line is clogged or if rains exceed the capacity of the pipes. This would lead to water coming up and getting under the membrane. In addition, to the marked areas, we found open laps and patches and edge striping on the other canopy roof segments. We feel the wet areas should be replaced, and new proper roof drains installed. If new drains are not feasible proper roofing retrofit drains (if they fit) should be installed in all the sections of the canopy roof. The sections not reroofed should be properly patched and repaired.

Wet areas 25 and 26

The final wet areas, 25 and 26, are on the portable classroom's EPDM roof. As instructed, the portable classrooms will not be addressed in this report.

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In conclusion, the roofs at Stillmeadow school are still in acceptable shape, except where damage and excessive traffic or wear and tear has been left unchecked and caused leaks which have cause areas of wet coverboard and insulation. These wet areas should be replaced in order to bring the facility back up to a watertight condition. In addition, to the work associated with replacement of wet areas, and maintenance inspection followed by maintenance repairs should be performed on all areas of the roof. The School should also realize that the all of the main roofs are covered by warranties, one expiring in 2 years, the other in 6 years. If any new leaks develop the first line of defense to call the warranty company, in this case Carlisle. They will assess the leak, see if it is covered under the terms of the warranty and repair it at no cost, of if it is not covered the School would be responsible to pay for the repair. Having the repair work performed quickly will keep the cost down as only a simple patch, not removing and replacing areas would most likely be all that is needed.

As always, we advised and strongly recommend that you submit our report to the school's design consultant to see if they feel any supplemental or different procedures should be performed or added to our interpretation of the necessary scope.