

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

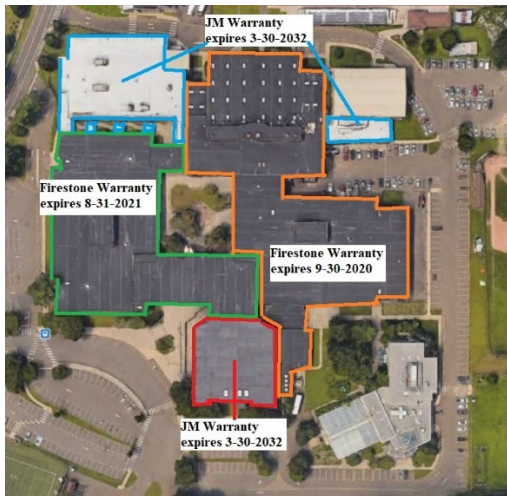
TO: Viking Construction, Inc.
1387 Seaview Avenue
Bridgeport, CT 06607
ATTN: JoAnn Michaels

DATE: February 25, 2020

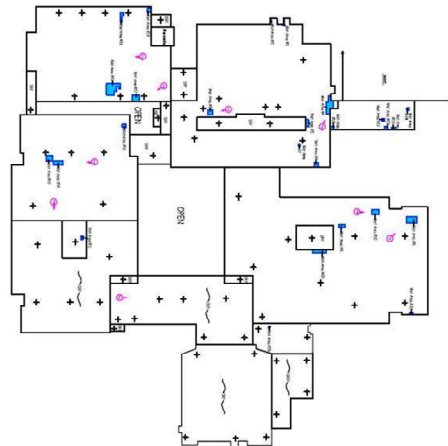
RE: Roof report and repair quotation
Westhill High School
125 Roxbury Road
Stamford, CT 06902

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 area". 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 area, and to provide a recommendation and pricing for roof maintenance.



Westhill High School Roof Warranty Map



Area of moisture shown on Roof Scan

The Westhill High School complex is composed of one main school building, a VO-AG building and a storage building. This report shall deal with the main school building. The roofs at Westhill High School range in age from 8 years old to almost 20 years. All roofs are still covered under manufacturer's warranties, though some warranties will expire this year. Four separate warranties cover the school. A JM 20-year warranty covers the EPDM roof that was installed over the auditorium in 2012. A JM 20-year warranty that was installed over the Freshman Building addition and flat roof behind the small gym in 2007. A 20-year Firestone EPDM roof was installed over the Raynor Building in 2001 and a 20-year Firestone EPDM roof was installed over the Finch Building in 2000. Even though the infra-red scan report notes that 26 suspected wet areas were found, there were actually 27 marked on the roof. Number 26 was repeated twice. Most of the wet areas were relatively small and they total less than 1% of the total roof area. The wet areas were found on all of the roofs except the 2012 JM roof over the auditorium. In addition to the wet areas, numerous items were identified in our visual site inspection that need roof maintenance in order to prevent moisture from getting into the roofing system.

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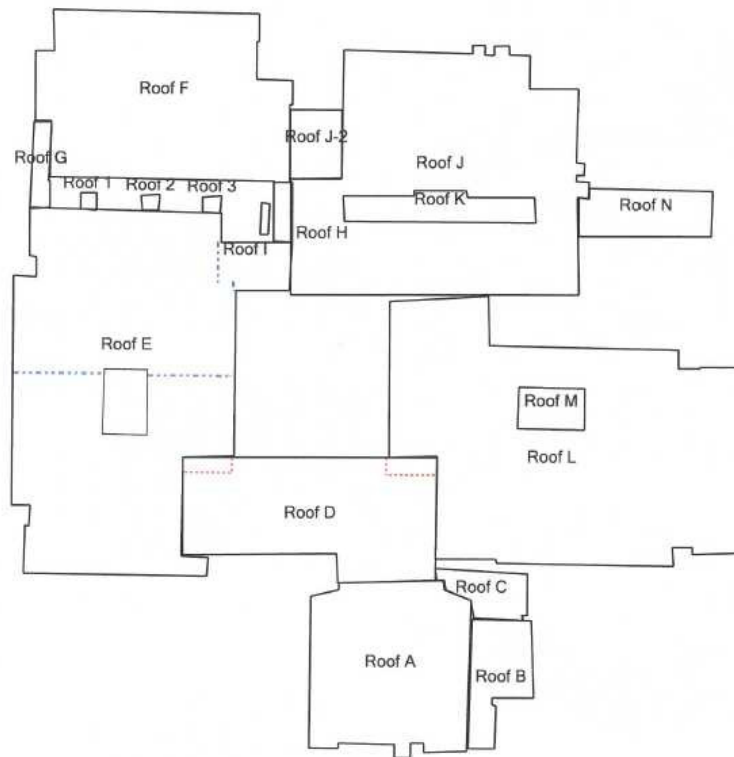
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Map of labeled roof areas

Wet areas

Wet area #1 through #7 lie on roof area J

Wet area #1



Holes were found in wet area #1.

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Wet area #2



We did not see any holes in this area. There is a T-patch over the intersection of 2 field laps that may be causing the problem. The other cause could be water migrating back from the edging

Wet area #3



Moisture at wet area #3 may be coming in from the patches at the corner or on the perimeter curb. We can also see that membrane is coming loose from the curb in this area.

Wet area #4



It is difficult to pinpoint the source of wet area #4. There is a skylight, flashing corners and the same edge detail found at other perimeter wet areas. An open cut is also present on the perimeter curb. Some of the insulation appears to be lifting in this area as well. All these conditions would be addressed when the wet area is removed and replaced except the perimeter edging condition. The edge condition will be discussed in the maintenance portion of the report.

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Wet area #5



Holes were found in area #5. These are marked in the picture with the white screws.

Wet area #6 and #7



Holes were found in this area.

Wet areas #8, #9, #10, #20 and #21 are found on roof L



Areas 8, 9 and 10 all have holes in them. These like all holes should be patched before the wet areas spread.

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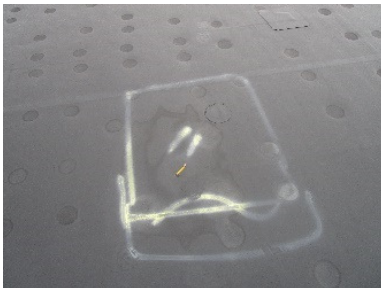
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Areas 20 & 21 have a combination of holes that have been patched and holes that are not patched.

Wet areas # 11, #12, #13, #14 and #15 lie on roof E

Wet area #11



Wet area #11 lies on the penthouse of roof area E. A hole is present within the wet area.

Areas #12, #13, #14 and #15



Holes are present in all of these marked areas.

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Wet areas #16, #17, #18 and #19 are found on roof area F

Wet area #16



A hole is present in this area.

Wet area #17



Leak area #17 is by a drain against the parapet wall. The roof area must be cleaned to see if there are holes in this area. We also noticed that the blocking under the top of the parapet wall on this roof appears to be soft when you press on it. Moisture may be getting in from the edge system. This item needs further investigation.

Wet area #18



Area #18 is a large area that goes from one unit and stretches to another. There are many patches in this area. It is possible that additional holes are present or that the moisture came from the holes before they were patched.

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Wet area #19



Wet area #19 has holes present in the membrane

Wet area #26 is found on roof C at the side of the auditorium



A hole in the roof membrane is causing this wet area

Wet areas #22, #23, #24, #25 and #26A are found on roof N behind the small gym

Wet area #22, #23 and #24



Wet areas #22, #23 and #24 are found where many holes are present in the membrane. Black caulking has been placed over many of the holes.

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Wet area #25



Area #25 is found in the corner by a roof drain and scupper. It also lies below the window and parapet wall flashing. It is quite possible that water is getting into this area from the windows or any of the mentioned items. When the wet area is removed and replaced, it may be easier to track the path of the water and address any non-roofing items that may be contributing to the water infiltration.

Wet area #26A



It is difficult to visually locate the source of water infiltration at area #26A. It falls at the base of a unit and along side a walkway pad. When this area is replaced, if the unit still remains suspect, a mechanical contractor may be needed to look at the unit.

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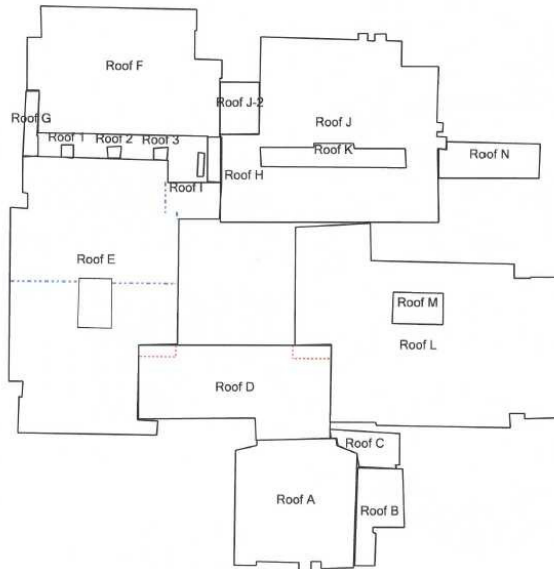
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Roof Maintenance

Roof maintenance is needed on all the roof sections to prevent water infiltration through holes and repair items that may allow water infiltration in the future.



Map of labeled roof areas

Roof A

Open corners and flashing



We found corners in the flashing of roof curbs and the perimeter edge curb are starting to bridge or open. These should be properly patched before the breach goes all the way through and water can get into the roofing system.

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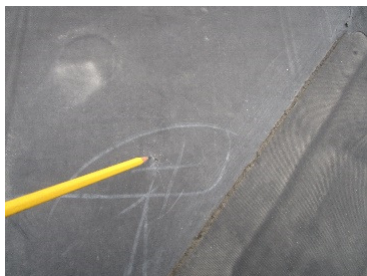
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Holes



Holes were found in Roof A. These must be repaired to prevent water infiltration and possibly leaks.

Open joints at the perimeter edging



The vertical roof side joints in the perimeter edging should be checked to see if they are open and water can get in. Installing a patch over the joint would prevent water from entering the gap.

Roof D

Debris on roof



Debris should be cleaned from all roofs. Debris can clog drains and items in debris may cause holes when blown around in wind.

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Ponding at base flashing



The corners at areas that hold water should be cleaned and another layer of membrane installed over the existing corner. This will help protect the detail from the accelerated aging effects of water longer.

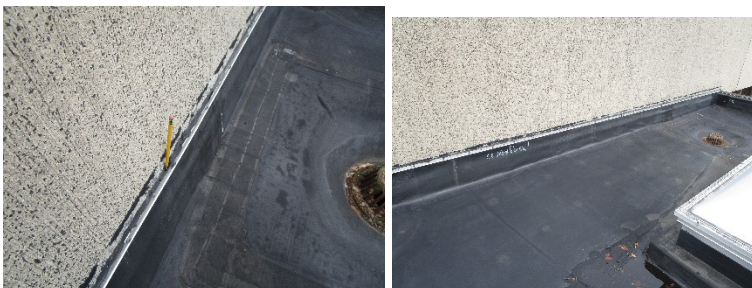
Holes by edging



The perimeter of the roof should be inspected and any holes at the edging properly repaired.

Roof E

Gaps forming at top of the termination bar



The caulking at the top of the termination bar is wearing out and water may run down the wall and get behind the flashing. This detail should be recaulked.

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Vertical caulk joints in wall above termination bar



All caulk joints should be inspected and repaired by the appropriate trade. Open joints above roof flashing can allow water to enter the wall system and bypass the roofing termination.

Holes and patches with cuts and holes



Holes and cuts in the roof system will allow water to enter and need to be properly sealed.

Flashing starting to lift



Some patches are starting to peel and lift. If the peeling goes all the way back to the penetration water can enter the roofing system. All corners and patches should be inspected and repaired as needed.

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Low vents



There are a number of vents that are very low to the roof. In addition to making flashing difficult, it also puts the top of the pipe well below any snow accumulation. This can let water in the pipes. In addition, the height of pipes may affect their efficiency. A mechanical contractor should evaluate this condition to see if extensions should be added to the pipes. If so, the pipes would then need to be reflashed.

Missing edge coverstrip



The coverstrip of the edge system has blown off. This should be replaced.

Roof F

Roof edge detail



As mentioned in the wet area section, the blocking at the top of the parapet wall of this roof area feels soft. In addition, we can see water stains on the outside of the wall below the edging. It is possible that water is getting under the edging from the roof side, then running down the wall and possible getting under the membrane. This condition needs further investigation to see if nothing is wrong, sealing the back edge of the metal fascia system is all that is needed, or if a much bigger repair of the condition is needed.

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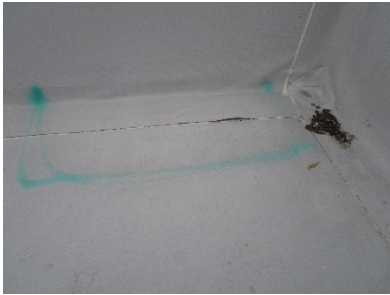
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Open laps



This area of open lap at the base flashing has been marked on the roof. It needs to be repaired before water enters the roofing system.

Roofs 1,2,3 and the canopy between roofs E and F



The low entry and canopy roofs between roofs E and F were not inspected.

Roof J-2

No vertical termination



There does not appear to be any vertical termination where the roof membrane turns onto the brick. This detail should be investigated further to see if additional metal work is needed.

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Open flashing in corners



Opening fishmouths are found in the corners on this roof. The debris should be removed, all the corners and flashing inspected, and repairs made if any open flashing is found.

Fishmouth in lap



The lap is starting to open and should be patched before the passage for water gets all the way to the back of the lap.

Termination bar caulking



We found some gaps in the caulking above the termination bar. These areas should be recaulked to prevent water from getting behind the base flashing.

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Roof J

Holes



The roof must be inspected, and all holes need to be patched. In addition to holes on the parapet curb, the edging should be inspected to see if a bead of sealant is needed at the back edge.

Lifting patches and loose flashing



All patches and flashings need to be inspected on this roof. Where patches and flashings are loose or lifting, they need to be properly repaired before they peel back enough for water to enter the roofing system.

Crushed insulation at doors to the penthouse



When walking on the roof in front of the penthouse the insulation feels soft. We believe it has been crushed from roof traffic. The damaged insulation should be removed and replaced with new insulation that has a coverboard. The high density coverboard will allow the roof to stand up better to roof traffic.

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Loose area of roof



A corner of this roof on the field side next to the small gym has come loose. It start near wet area #2, goes to the end of the building down the side facing the small gym and ends at wet area #4. The area is currently being held down by bags of cement mix. This acts as a temporary securement of the membrane, but the area should be properly repaired before the delamination spreads. This is a serious issue and it should be addressed. The loose membrane should be removed, and the underlying insulation inspected to see if it is also loose. If loose or wet, it should be removed and replaced. If the insulation is dry and secure, a coverboard should be installed over the area and new membrane installed.

Roof L

Holes



Just as we have seen on the other roofs, holes are present on roof L as well. The roof needs to be inspected and all holes repaired.

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Caulking at reglet



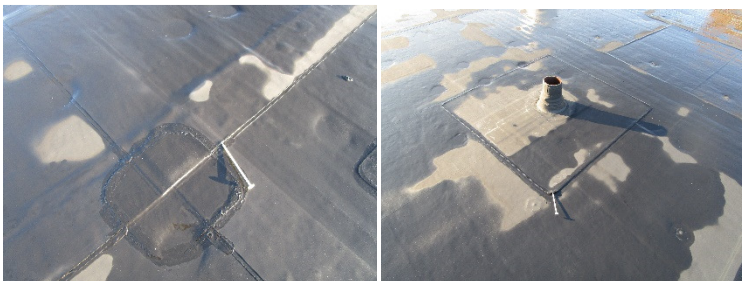
All reglet caulking should be inspected and recaulked as needed.

Open flashing and patches



Open and bridged corners, patches, penetration flashings, etc., need to be properly patched before water can find its way into the roofing system.

Fishmouth near patches and loose membrane patches



Loose membrane patches and fishmouths in laps need to be sealed.

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Roof N

Holes in roof



As noted in the wet area section, there are many holes in this roof. It appears that black caulking has been put over many of them, a proper repair should be made.

Roofs B & C

Holes in Roof



These roofs have holes in them too. They need to be inspected and holes need to be prepared to prevent water infiltration.

Open corners and membrane patches



Holes in flashing and open membrane flashing need to be repaired. In addition, the broken pipe may need to be repaired (by others).

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Area of lifting roofing



A section of this roof approximately 25'x5' is lifting. Test cuts should be made to determine the condition of the underlying insulation. If it is dry and the insulation intact, the roofing should be secured, either by installing fasteners and plates or mechanically fastening a coverboard then installing new membrane. If the insulation is no longer sound, it should be replaced, and then new membrane installed.

Summary

The roofing systems at Westhill all have active manufacturer's warranties with widely varying amounts of time left under coverage. That being said, maintenance work, something not covered by a manufacturer's warranty is needed to patch holes, open flashings, etc., that can add water into the roofing systems and add to the amount of wet areas found in the moisture scans. Comprehensive maintenance should be performed to get the roofing systems "dry" again and to prevent more moisture from getting into system. There are a few areas that need further investigation and the involvement of other trades and/or possibly consultants that have mentioned in the report.

Repair and maintenance work at Westhill High School would consist of:

- Removing and replacing the marked wet areas. Any penetration, curb or vent within the marked wet area would be reflashed.
- Resecure/replace the areas of lifting or delaminated membrane on roof J and B, and address the crushed insulation in front of the penthouse doors on roof J.
- Inspect the entire roof. Clean, prime and patch any hole, puncture or cut in the roofing membrane.
- Inspect all curb flashings. Clean prime and patch any open joint or lap.
- Inspect field laps. Clean prime and patch any open area of lap.
- Add additional membrane flashing over corners in areas of ponded water
- Repair and overlay laps on lifting membrane or flashing.
- Reflash vent pipes if raised by others.
- Inspect all penetration pockets. Dig out (if necessary), prime and top off as needed.

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-
- Check all roof drains and clear any debris from roof.
 - Caulk reglets and termination bar as needed.
 - Replace missing edge cover plat on roof E.
 - Caulk/patch vertical joints in edging as needed on roof A.

Our price to perform wet area removal, repair and maintenance work discussed is: \$337,000.00

As discussed, some items require further investigation before they can be quoted, should be performed by other trades, or should be evaluated by others. these items are:

- Caulking vertical joints between building wall panels.
- Investigating/raising/repairing low or broken vent pipes.
- Investigating the condition of the blocking on the parapet walls of the roof area F, as well as determining the cause of staining on outside of the walls.
- Investigating/repairing any leaks determined to be coming from mechanical equipment.

No work is included on the Vo-Ag building or storage building next to the football field. These buildings can be inspected upon request.

Please let us know if you have any questions.

Respectfully,



David Lederman