

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

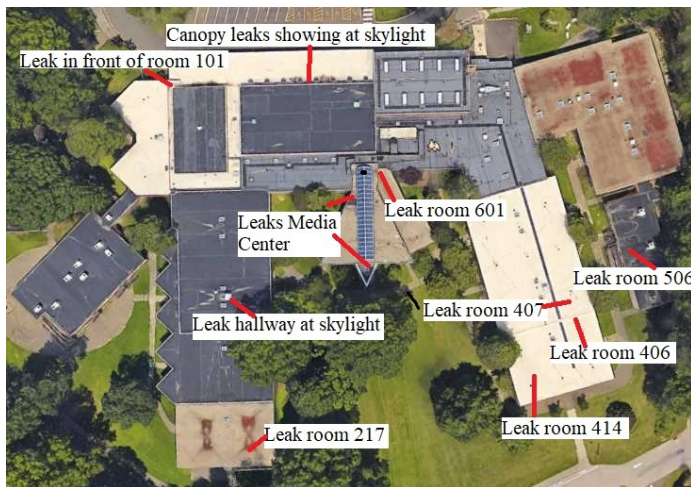
TO: Viking Construction, Inc.
1387 Seaview Avenue
Bridgeport, CT 06607
ATTN: JoAnn Michaels.

DATE: February 28, 2019

RE: Roof Report and Repair and Maintenance Proposal
Roxbury School
Stamford, CT

Dear Ms. Michaels,

As per your request, we went to the above referenced school to perform a visual inspection of the roofs, look for possible sources of the current water leaks, provide a price to repair the current leaks and provide recommendations and a price for comprehensive roof maintenance to extend the useful life of the existing roof systems.



Locations of existing leaks



Roof areas with active warranties

Roof warranties and roof types


There are a number of different types of roof present at Roxbury School. A few of the areas have the older built-up-roofs with gravel, some have Adhered EPDM roofs, and some are Adhered TPO. We were told of three manufacturer's warranties that are currently active for the school. Two are from Firestone and one is from Versico. The conditions of the roofs vary from good to poor. Unfortunately, the quality of the roof cannot be judged by age, with some of the newer roofs having more issues than older ones. As we can see from the above leak and warranty layouts, some of the leaks fall within roof areas that have warranties. Roofing manufacturers will pay for the leak repairs if it is labor or material problem that is causing the leak. They will not cover repair costs for damage. They will also not cover roof maintenance or repairing items that are opening and may cause leaks in the future but are not leaking now. This will be discussed in a later section regarding one of the above warranted areas. As a note, when repairing leaks or installing new items or performing maintenance on a warranted roof it is important to use the products of that manufacturer and to have the work performed by an applicator certified by the manufacturer.

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Accepted _____ Date _____

By _____

Yours truly,
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By David Lederman, Pres.

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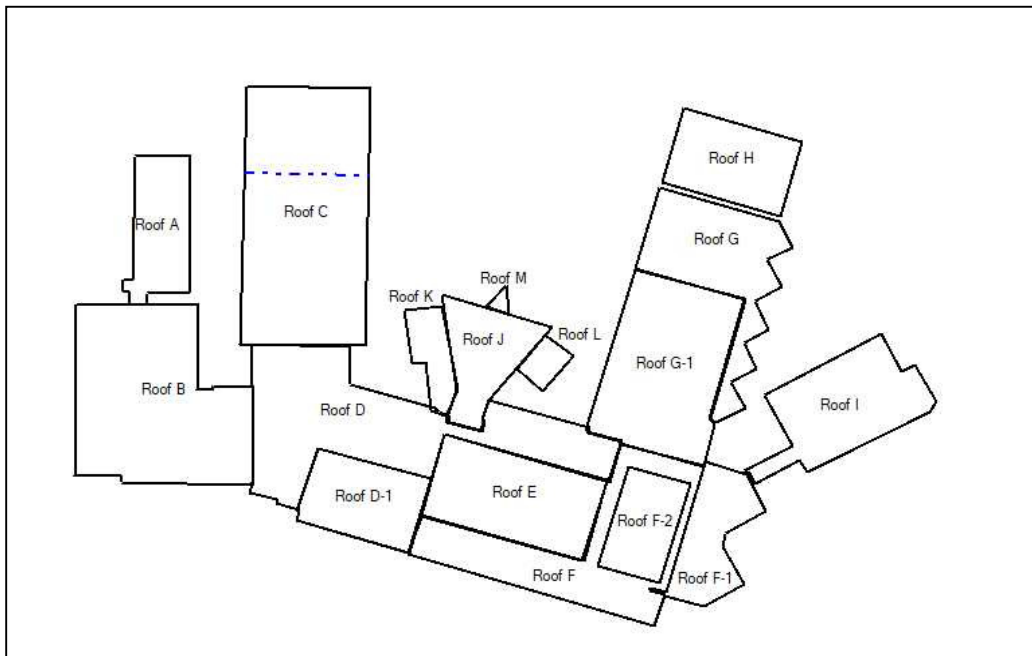
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Roof plan with letter designation to assist with referencing areas

Active Roof leaks

Hallway in front of room 101




The leak in front of room 101 falls near the base of a wall Where roof F meets roof F-1. The membrane is dirty, wrinkled. It also looks like a field lap may be open. This area needs to be thoroughly cleaned, inspected and all holes, open laps and corners properly repaired.

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Leak at skylight in hallway



The leak at the hallway skylight is in roof section G. This roof has an active Firestone warranty. We need to repair some of the corners on the curb and do some caulking to stop this roof leak. This repair is covered by the warranty.

Leak in room 217



The leak in room 217 is located in the gravel BUR of roof section H. The leak could be from open joints in the perimeter edging or in a crack or hole under the ponded water. We would need to scrape back the gravel, patch the open joints in the edging near the leak and check for then patch any holes or cracks over the leak area.

Leak in Media Center




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One of the leaks in the media center (roof J) is at the drain on the roof L side. It looks like the area around the drain drain has been coated numerous times with roofing cement in an attempt to stop the lead. Through the coating, we can see some of the lead flashing from the drain. It looks worn out. We would recommend removing the old lead and completely reflashing the drain.

Leak at triangle roof end of Media Center



The small triangle roof at the end of the Media Center, (roof M) is having leaks under the expansion joint where this roof meets the main roof. The expansion joint needs to be reflashed.

Leak over room 601




The leak at room 601 (roof section K) lies under the joint of the gravel roof and the membrane roof next to the vent pipe. The gravel must be swept back from the vent and the vent and tie-in flashing inspected and repaired.

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Leak in room 406, 407 and 414



The leak in the above rooms fall in roof section C. This roof is covered by a Firestone warranty. The leaks in this area fall near a drain and the expansion joint. There is also a leak more to the end of the roof. When looking at this roof we found many open laps and corners. We also found areas that appeared to “feel wet”. We have spoken to the Firestone service coordinator who issued the repair purchase order for this roof and they said they are only responsible to repair the 3 active leaks. I told them about the other issues and stated that it is the owner’s responsibility to maintain the roof, including patching holes, overlaying laps that are starting to open, etc., Accordingly the repair of the three active leaks; around the drain, expansion joint and field of the roof will be covered by Firestone unless a hole or damage is causing them. The other issues found on the roof will be described and shown in the maintenance and repair section of this report.

Leak in room 506




Room 506 lies in roof section A. There are numerous items that can be causing leaks on this roof from open edging, open laps falling flashing, open curb corners, etc., We were asked not to include repairs on this roof in our report/proposal.

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Front Canopy leaks



The Front canopy (part of roof section F), is having water issues. Stains are evident at the skylights and there are soft areas in the roof. It is reported that this moisture from the canopy roof may be traveling on the underlying concrete slab and migrating into the building. Repairs, recommendations, and observations of possible non-roof related entry points for water will be discussed in the maintenance and repair section of the report. There are a couple of slices in the membrane in front of the above puddle that will be patched as part of the active leak repairs, however no other “active leak repair” work to the membrane will be included in this section.

Active leaks repair needed immediate work

As shown and described above repairs are needed to stop current roof leaks on many of the roofing systems. A couple of the repairs are covered by manufacturers warranties, but most are the Owners responsibility. Repairs involve cleaning areas over leaks and patching holes, laps and flashing, scraping gravel and patching cracks, edge joints, drains, vents and tie-ins, etc., Repairs for warranty leaks will be charged to the manufacturer and are not included in the below price.

Our price to perform the active leak repair work is \$ 14,800.00.

Roof Maintenance and repair


A lot of roof maintenance and repair work is needed at Roxbury School. Some of the work is a continuation of the same type of work suggested to repair the leaks, but, over non-leaking areas. This preventative maintenance is performed in an attempt to stave off leaks and refresh areas before they let water in. Since there are numerous types of roof, that each form their own distinct area, we are going to show the repair and maintenance pricing with each section.

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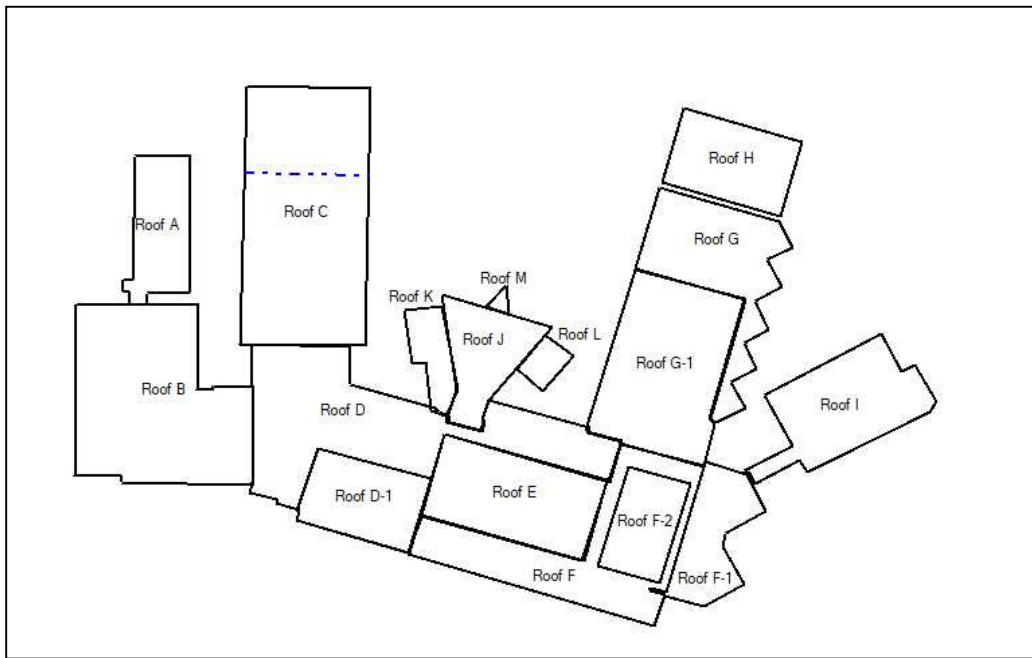
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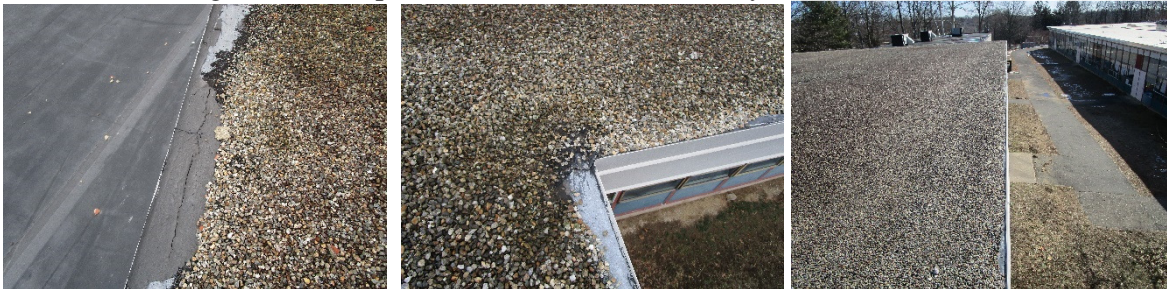
Roof plan with letter designation to assist with referencing areas

Roof Area A

As stated above, roof area A is in poor shape but as instructed, to maintenance and repair work is included in this report.

Roof Area B

Roof area B is a gravel built-up-roof. We were not told of any active roof leaks in this roof area.




The perimeter edge flashing is showing its age. The flashing paper is cracking, splitting and breaking.

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As the membrane cracks and splits, water can work its way into the structure. The deterioration increases after freeze thaw cycles, and the condition worsens at an accelerating rate. To guard against the water infiltration the ballast along the perimeter needs to be scraped back and the edge flashing overlaid with two plies of roofing cement and reinforcing fabric (one 6" reinforcing fabric set in roofing cement followed by a 12" reinforcing fabric set in roofing cement, then a coating of roofing cement over the completed repair. The ballast would then be redistributed in the topping of roofing cement.

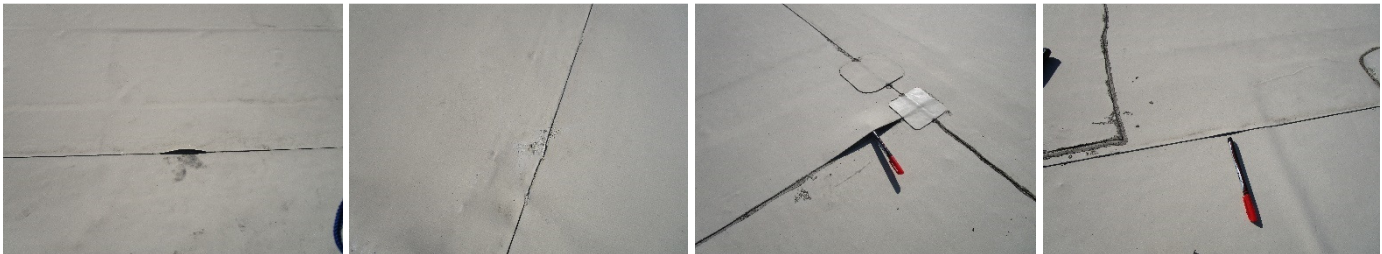


Ballast should be scraped back from all skylights, curbs, drains and penetrations. The flashing should be cleaned and overlaid with the two plies repair described above. Where needed, a layer of modified bitumen, Alsan bituminous resin flashing and fleece, etc., may be used to reflash certain items.

Our repair and maintenance price for Roof Area B is: \$ 16,800.00

Roof Area C

Roof area C is a "warranted" Firestone fully adhered TPO roofing system. In addition to the active leaks, there is quite a bit of maintenance work needed. Suspected wet areas were also pointed out to us on our site inspection.




We found many fishmouths, lifting or unadhered field laps and patches on this roof section. These can let water into the roofing system. Some may be causing leaks, others are leaks waiting to happen. Some of the "soft areas" or suspected wet areas may be water entering at these openings and collecting on the deck below the insulation. This may also account for some of the bowed insulation. All laps need to be probed on this roof. As a precaution, all laps, both open and as well as those that may appear "tight" should be overlaid to ensure no water can enter any field laps.

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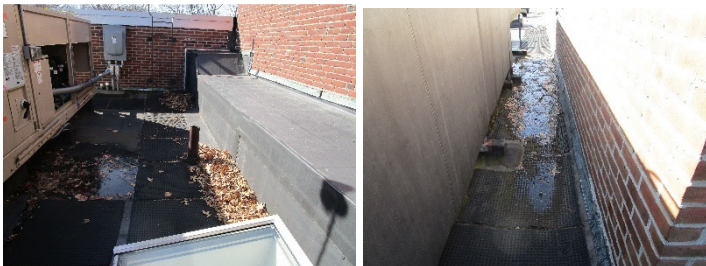


We found that some of the laps have been caulked in an attempt to seal them as have patches on the membrane and curb flashings. All of these items need to be checked and overlaid with new flashing membrane.

Our price to clean, prime and overlay the laps and flashings on Roof Area C is: \$ 29,875.00

Roof Area D

Roof area D is a fully adhered EPDM roof. No leaks were reported in this roof area.



Debris needs to be removed from this roof area. There are a lot of nooks and areas where leaves and debris can collect. The alley way shown above gets a lot of roof traffic and the insulation has crushed. The area (approx. 20' x 3') should be cut out, new insulation with a high density coverboard, and new EPDM membrane installed.




The filler on some of the penetration pockets has shrunk and pulled away from some of the penetrations. All penetrations pockets need to be checked, topped off with new sealer, and restripped to the roof if necessary.

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Flashing on some of the curbs is slipping down and leaving a gap water can enter. All curbs need to be checked and any flashing problems repaired. There is also a fan that looks like it was "fitted" to go on an existing curb. The top has been coated and caulked. This needs to be inspected and reflashed if necessary.



All termination flashings must be checked. We found corners where the membrane has torn free of the termination bar or pulled away from termination under doors. Open perimeter termination is an access point for rain or water running down walls to enter the structure. All perimeter flashing needs to be checked and repaired if necessary.

Our price to perform the repair and maintenance work on Roof Area D is: \$ 10,900.00

Roof Area D-1


Roof area D-1 is in very good shape. We saw no items in need of attention during our walk-thru. If we are performing the other maintenance and repair work on the surrounding roofs, we will walk this roof again and perform any minor repairs we see at no additional cost.

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Media Center Roof J and adjacent roofs L, M and K



The media center and adjacent roofs are all older gravel surfaced built-up-roofs. There are a few leaks on these roofs that are addressed in the active leak section. This area deals with the preventative maintenance needed to keep these roofs performing as best as they can.



Similar to what was discussed for roof area B, the roof perimeter, drain and penetration flashings are showing age. The stripping on the edging is wearing thin and cracking. The joints between the pieces of edging are cracking and open. These areas should be scraped and overlaid with new 2-ply membrane in a similar fashion to area B.



Base flashing between the roofs is also showing wear and tear with holes, worn through areas and open joints. The base flashing needs to be cleaned and overlaid with the 2-ply repair.


Our price to perform the perimeter, base and penetration flashing repair and general maintenance works for Roof Areas J,K,L and M is: \$ 19,750.00

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Roof Area E

Roof area E is an adhered Firestone EPDM roof with an active warranty. The roof is in very good condition. There is only one condition that needs attention on this roof.



Roof area E has a large slope in its insulation. At the high points, the insulation come even or very close to the top of the parapet wall. There is a coping on the parapet wall. Additional blocking was not installed to keep the coping above the insulation high points. At these areas the membrane was flashed to the back of the coping, or the coping flange turned out and stripped. The problem is the joints in the coping at these areas are taking in water. Water coming in the joints gets behind the base flashing. We could see water come out from the membrane stripping. To stop water from getting in the joints of the coping in these areas need to be flashed in with EPDM flashing membrane. The open vertical flashing at the transition between “edge stripping” also needs to be caulked closed. In addition, we found the same conditions where the coping meets the higher wall of section D-1. This corner also needs to be properly repaired.

Our price to perform the maintenance and repair work on Roof Area E is: \$ 2,275.00

Roof Area F

Roof area F is an adhered Firestone TPO similar to area C, but no warranty was given to us for this area. The roof can almost be separated into two areas; the canopy with the skylights in front of roof E, and the area that surrounds roof F-2.




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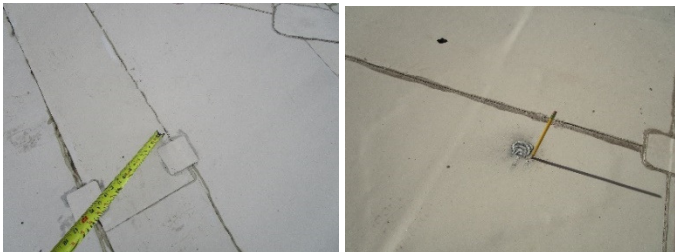
The portion of roof F that goes around F-2 is in OK shape. Debris needs to be cleaned, perimeter termination needs to be checked and repaired.



We did see open corner flashing, corners with multiple pieces rather than a proper wrap, some open laps and patches that have been caulked. Curbs, laps, flashing and patches need to be probed and overlaid with new material if open or starting to lift and separate.



The portion of roof area F with the skylights is in poor shape. The roof is very dirty around the skylights and the flashing on many of the skylights is opening, Soft area were also noticed on this area of roof.



In addition to the problems by the skylights, open laps and holes were found. It appears that attempts to "fix" these with caulking have been tried. This entire area needs to be cleaned. All laps and flashings need to be probed and overlaid where necessary. The skylights should be reflashed. All holes must be properly flashed.


Our price to perform the repair and maintenance work on roof F is: \$ 22,575.00

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One other observation on roof F needs to be discussed. We were told that there may be a moisture problem on the on the inside areas of the walls of roof E and F-2. These walls are masonry and have old corrugate panels in a metal frame on top of the masonry. It may be possible that water is entering the brickwork and soaking through or getting in the masonry from the panels and metal frame. It is possible that this water travels down to the concrete deck where it finds its way inside. This issue should be investigated by the school's architect.

Roof Area F-2

Roof area F-2 is a fully adhered EPDM roof.




Roof area F-2 is in very good shape. We saw no items in need of attention during our walk-thru. If we are performing the other maintenance and repair work on the surrounding roofs, we will walk this roof again and perform any minor repairs we see at no additional cost.

Continued on page 15

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Roof Area F-1

Roof area F-1 is a fully adhered Firestone TPO roof.



Similar to the other roofs of this type we found some open laps, corners and flashing. In addition to the hole shown at the corner of the walkway pad at the ladder, the insulation under the pad is crushed. We recommend cutting out the pad, removing crushed insulation, installing new insulation with a high density coverboard and installing new membrane and a new walkway. For the balance of the roof, the laps and flashing on this roof need to be probed and overlaid if found to be opening, lifting or bridging.

Our price for the repair and maintenance on roof area F-1 is: \$ 7,100.00

Roof Area I

Roof area I is a warranted adhered EPDM roof. We were not asked to include this roof area.

Roof G and G-1

Roof G and G-1 are warranted adhered Firestone EPDM roofs. Outside of the one leaking skylight (noted in the active leak area), the roof is in good condition.




The roof should be walked, the minor amount of debris should be removed, and all laps and flashings checked and patched if cracking or bridging.

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We did notice some cracking at vent pipes as well as some corners and patchwork that should be cleaned and overlaid with new membrane.

Our price to perform the repair and maintenance work on Roof Area G is: \$ 5,825.00

Roof Area H

Roof area H is an older built-up-roof with gravel. As per the conditions on the other roofs of this type, the roof is showing its age at the perimeter edging, especially the joints, curb flashings and base flashings.



These are examples of open edging, worn base flashing, holes in flashing and open flashing that we found on this roof area. Gravel should be scraped back from these items and the flashing repaired with 2-ply repair procedure previously discussed.


Our price to perform the roof maintenance and repairs on Roof Area H is: \$ 7,525.00

In conclusion, there are many types of roofs in varying conditions on Roxbury School. Each type of roof has their own problem, with some being more severe than other sections. One unknown aspect of the project is the soft spots on some of the roof areas. These may be due to wet insulation or water getting in and being trapped by the deck. The Owner may want to do an infra-red scan to determine if areas are wet. If wet areas are present, they should be removed and replaced. Pricing for that repair work can be determined after the results of the scan are known. The other item needing further investigation is the masonry walls and panels in frame sections of some of the walls to see if they are a source of water infiltration.

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