

Overview:

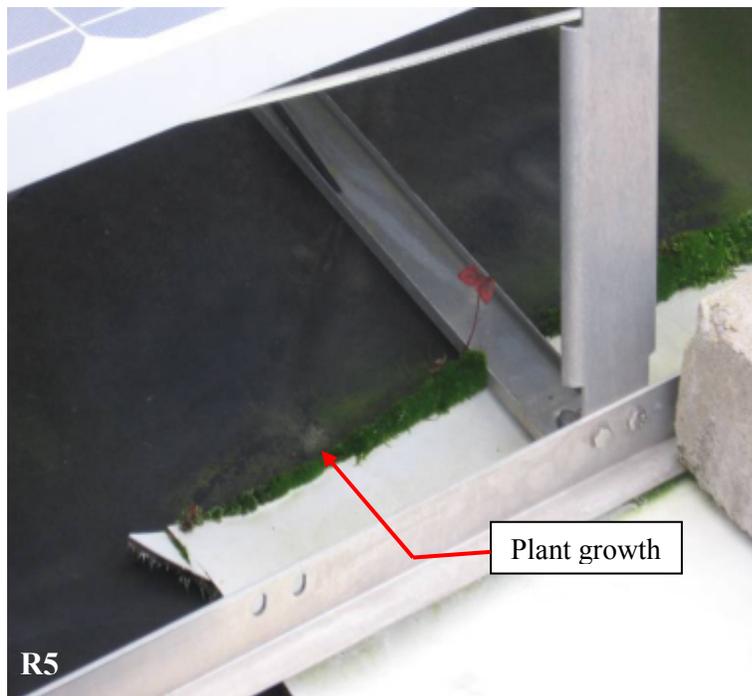
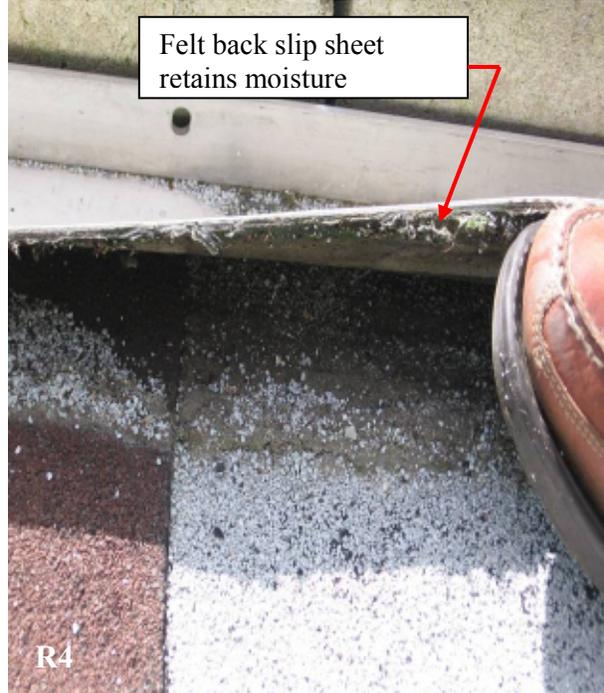
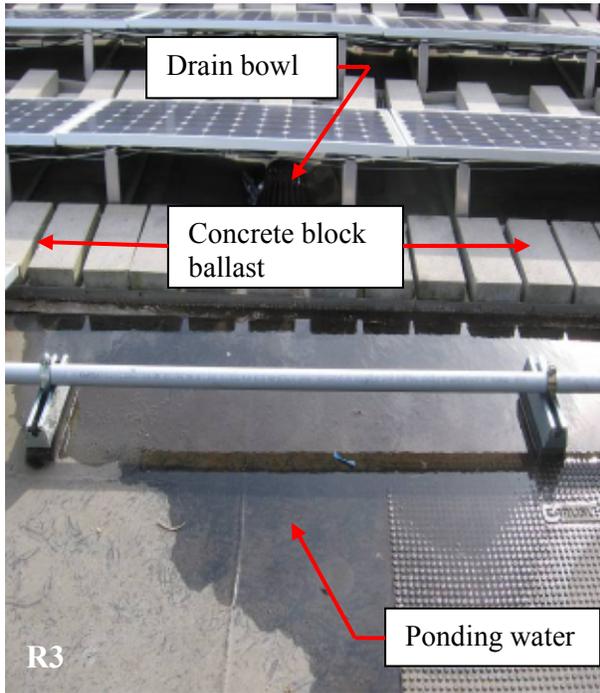
The East Lyme High School roofs contain two distinct types of membranes as well as areas with standing seam metal roofing. The majority of the school contains low slope roofing surfaces consisting of multi-ply built up asphalt systems with a granulated cap sheet installed less than 10 years ago. The roof on the latest addition, constructed in the 1990's, consists of a fully adhered EPDM rubber membrane. A majority of the membrane roofs have crystalline solar panel arrays which were installed in 2008. The roofing systems appear to be in good condition with a history of only a few leaks which have been addressed as they have occurred.

Standing seam metal roofs
Multi-ply built-up roof

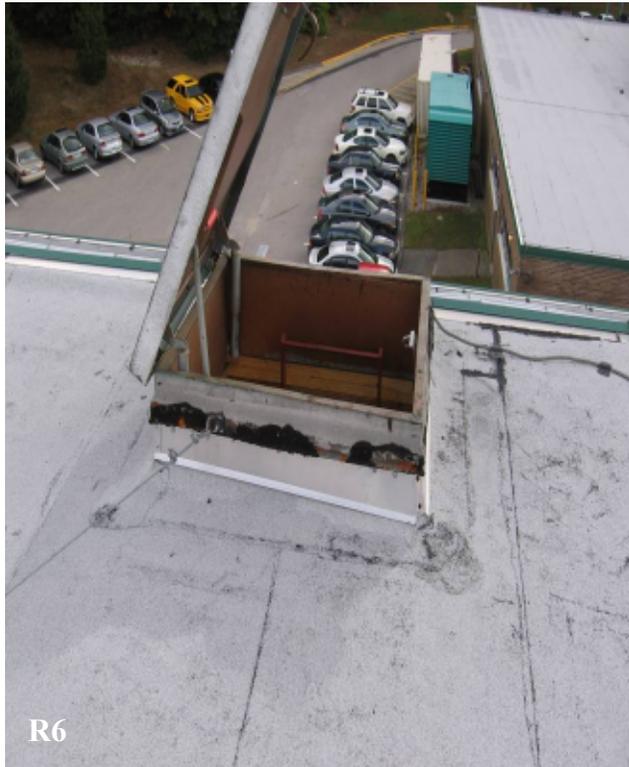


Observations:

The solar panel arrays are ballasted with concrete blocks in trays that are set onto a felt back slip sheet. The concrete blocks are acting as water dams obstructing the path for the water to the drains. Ponding water is evident, the felt back slip sheets are water saturated promoting mildew and plant growth due to the retention of moisture. The ponding water will over time deteriorate the lap seams, probably decreasing the life expectancy of the roof system.



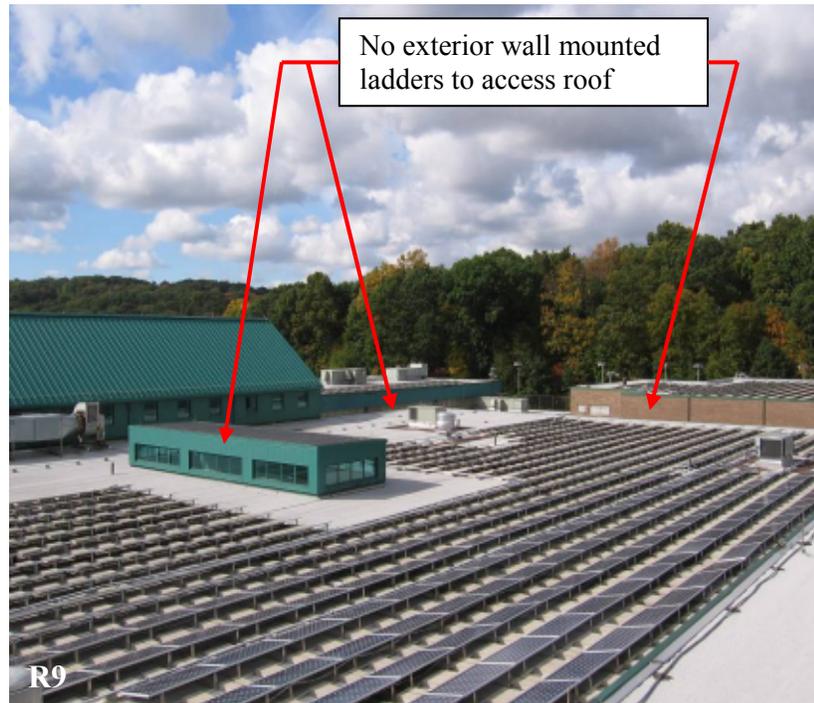
Access hatches are located in very close proximity to the edge of the roof at several locations creating a very dangerous condition.



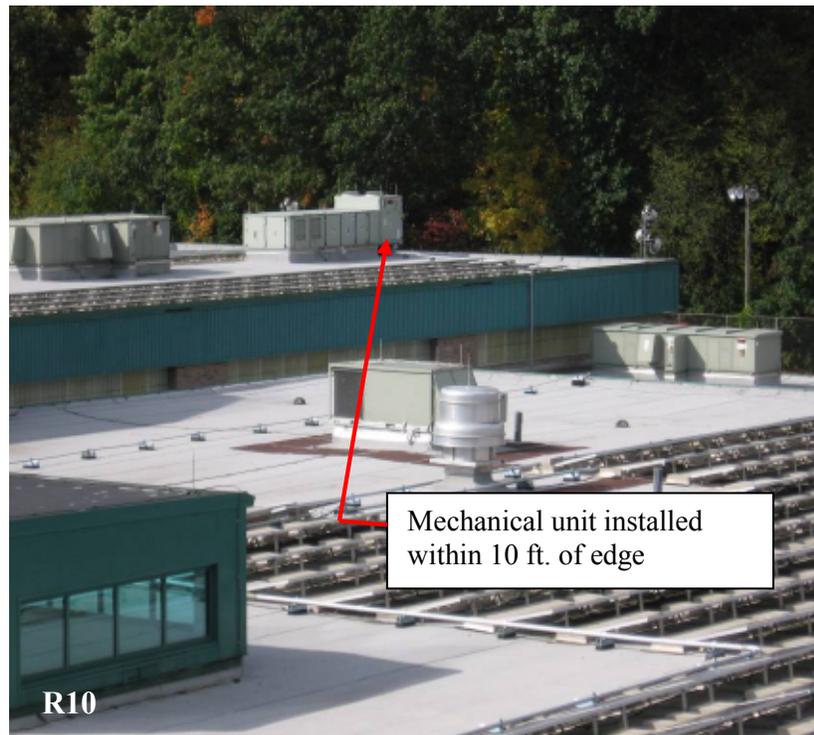
The ladder to access to the gymnasium roof is totally blocked by ductwork.



There are no exterior wall mounted ladders to access several roofs including the gymnasium due to the previously mentioned condition.



Guard rails were not provided where several mechanical units were install within 10 ft. of the roof edge which is a code violation.



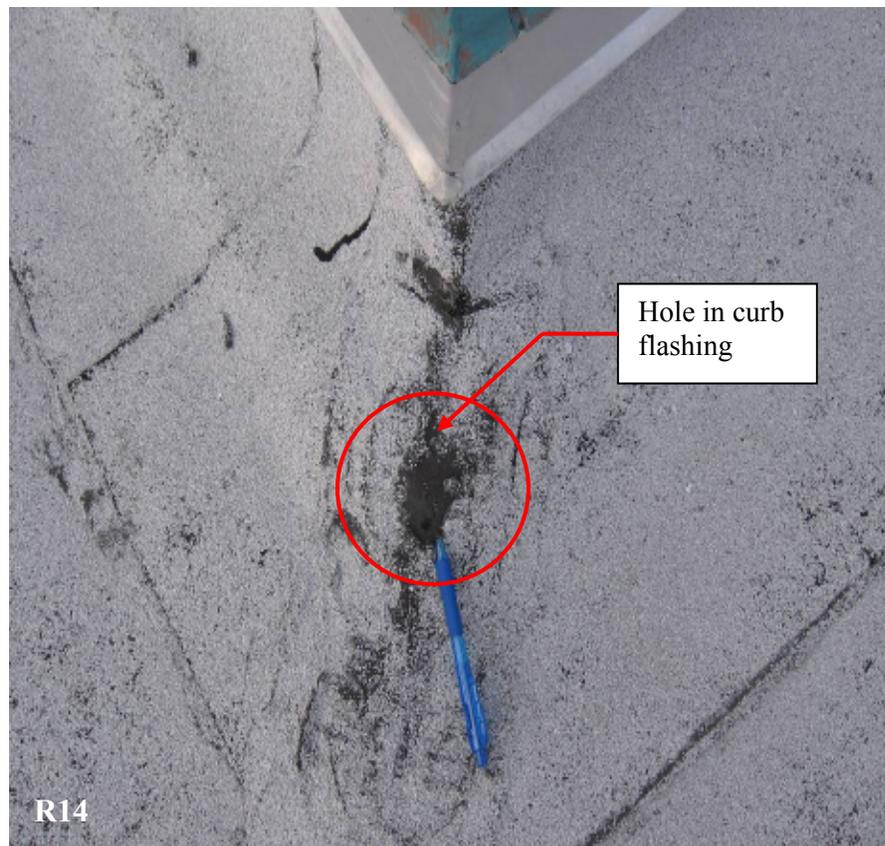
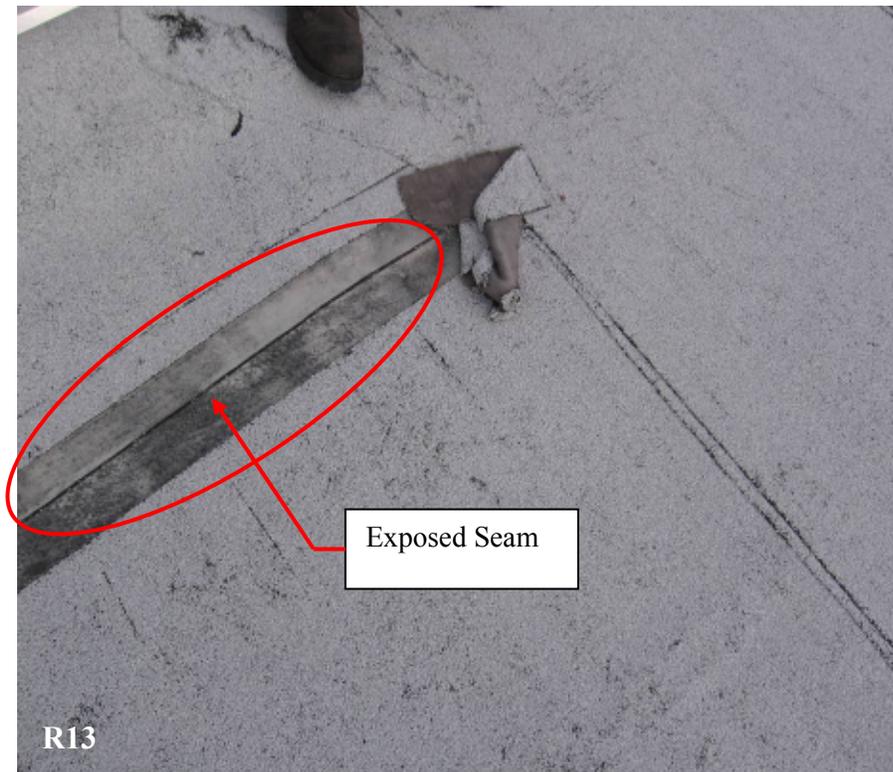
Several abandoned pitch pocket penetrations are a future source of leaks.



Above the boiler room 2 abandoned equipment supports act as dams impeding the flow of water to the drain.



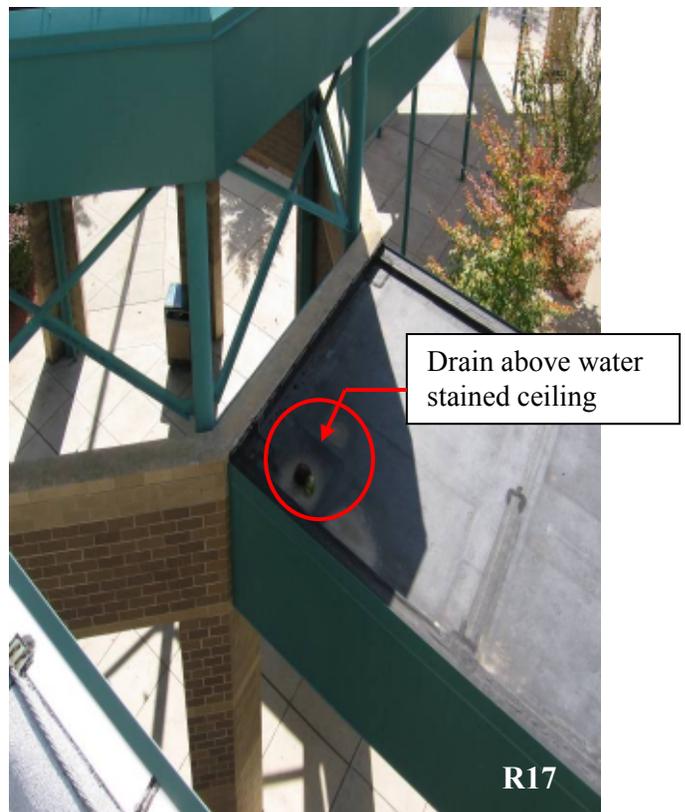
Damaged membrane flashing was observed on the auditorium roof.



Splash blocks which help prevent damage to the surface of the granulated cap sheet were missing at several locations.



Water stains were observed on the underside of the entry canopy directly below a roof drain.



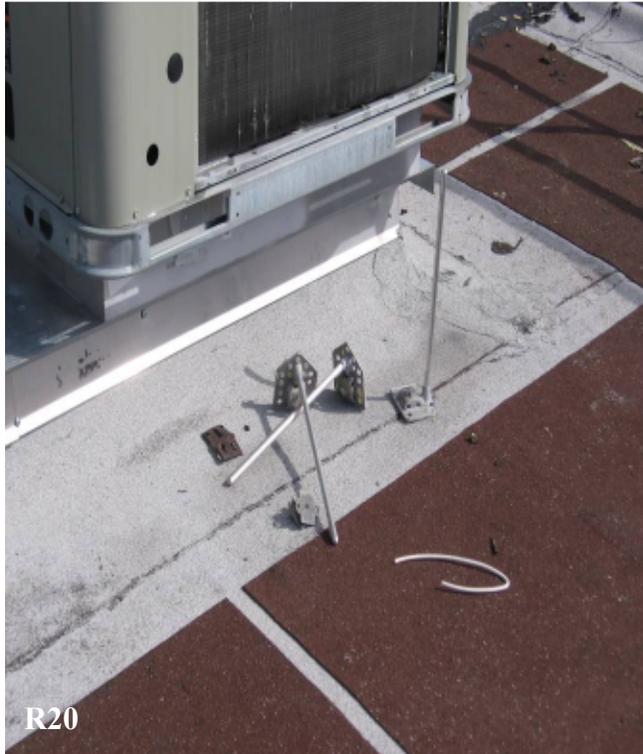
A section of membrane flashing at a transition onto a rising wall does not have the required 8" of flashing height which probably means that this area of roof is not under warranty.



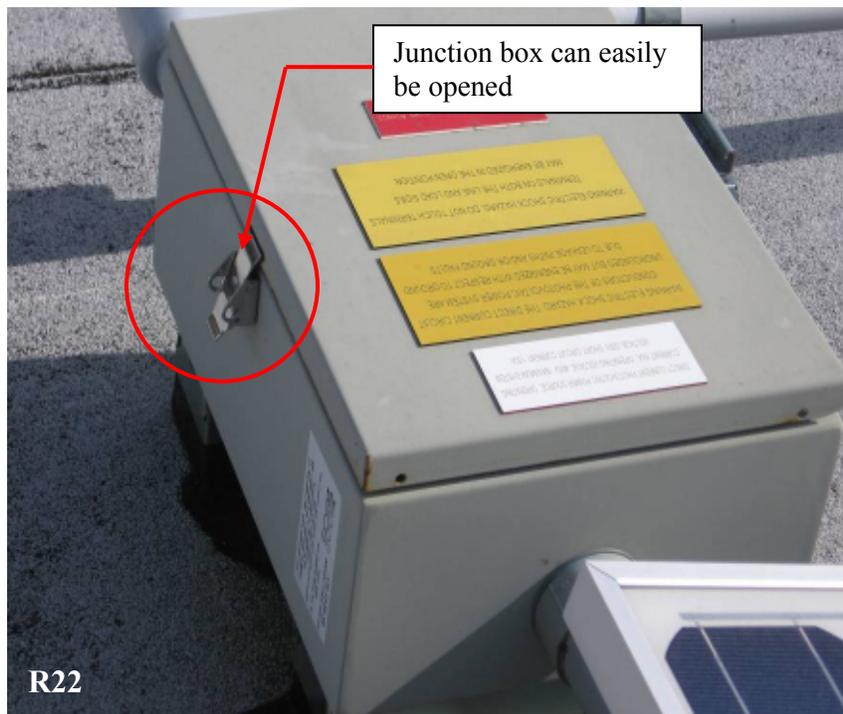
The guard rails recently installed on the mechanical room roof do not appear to be fastened to the structural steel. The railings easily move back and forth when touched and most likely would not be able to withstand the 200 lbs. of horizontal force required by code.



Construction debris remains on the mechanical room roof including a cable which could be a tripping hazard.



The junction boxes for the solar panel system do not have locks and can easily be tampered with which presents a danger to the system as well as the individual.



Emergency secondary drainage system (scuppers) were only observed on the EPDM rubber roof installation.



Rust was observed on the metal fascia panels around the standing seam roof and on RTU dunnage support.



Recommendations:

The roofs appear to be in good condition and most likely they will provide weather tight protection for at least another 5 years if attention is focused on bi-yearly inspections and periodic cleaning around the drains to avoid ponding water which is the principal cause of seam failure.

Install guard rails secured to the structural steel at access hatch and roof top mechanical equipment located within 10 ft. of the roof edge

Install wall mounted ladders to provide safe and easy access to the roofs.

Remove and patch all abandoned roof top penetrations to eliminate potential leaks.

Patch damaged membrane flashings on the auditorium roof.

Investigate and fix leak under drain at main entry canopy.

Install missing splash blocks at bottom of downspouts to protect granulated cap sheet.

Remove and re-install new guard rail in order to withstand horizontal force of 200 lbs.

Remove all construction debris and tripping hazard from the roof.

Provide locks to secure the solar panel electrical junction boxes.

Sand prime and paint all rusting metals to prevent further deterioration.

Items to be addressed in a future reroofing project:

Install new solar panel array with design that elevates the system to allow better water management and eliminate ponding water.

Remove the 2 large abandoned equipment supports above the boiler room to allow water to flow directly to the drain.

Raise the height of the thru wall flashing where it does not provide the required 8" of flashing height.

Provide emergency secondary drainage on all roofs per code requirements.