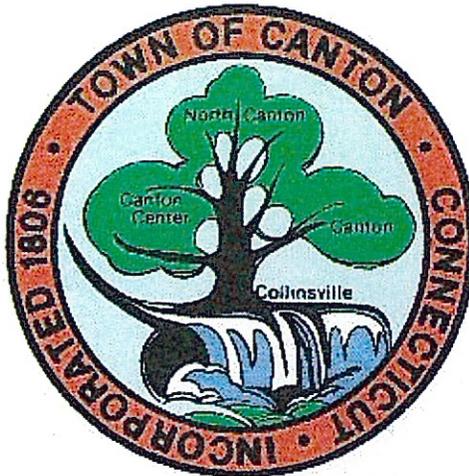


Cherry Brook Primary School

Roof Evaluation and Replacement Recommendations

4 Barbourtown Road,
Canton, Connecticut 06019

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Executive Summary

This report is the result of a study commissioned by the Town of Canton, Connecticut to assess the current condition of the remainder of Shingled & flat roof areas at the Cherry Brook School and to seek professional recommendations for roof replacements including, but not limited to; opinions of probable cost for roof replacement, analysis of costs including the sloped shingle and flat roof areas.

In addition, the architects have developed a roof key plan and inventory for the entire school, based upon to State's Office of School Construction Grants (SCG) guidelines for school roof projects. These documents are intended to serve as record documents for the town and state, and to assist the town during future roof replacement projects.



Birdseye View of the Cherry Brook School

This report was prepared by Silver Petrucelli & Associates, Inc. (S/P+A) of Hamden, Connecticut, an architecture and engineering firm specializing in municipal and school programming, planning and design, feasibility analyses and building condition investigations. This report was developed with the frequent and insightful input from the officials of the School District and the Municipal Government.

Process

The information contained in this report was gathered by S/P+A via interviews and meetings with George Wallace, the Town of Canton's Project Administrator, observations of the existing roof condition and materials, examination of the most recent construction drawings and historical data of previously completed school roof replacement project at the Cherry Brook School during the summer of 2015. The collected data was organized and appears in sections of this report.

Findings

The remainder of roof areas yet to be completed at the Cherry Brook School roof consist of one large area of ballasted Built up Roofing (BUR) as well as a large portion of sloped asphalt shingles, all roof areas are adhered to a wood decking system.

The Asphalt Shingle Roofs at the Cherry Brook School are generally in poor condition and showing signs of accelerated wear, while the shingle roof areas appear to be vented properly, with soffit vents located at the eave of the roofs & with a continuous ridge vent located at the top of the roofs. The existing three tab shingles appear to be reaching the end of their useful life & will need to be replaced soon. This is evident by the shingles discoloration in areas that have received the most sun exposure as well as have become brittle indicating that the asphalt shingle roofs have reached the end of their useful life. There are a few areas, where patching has occurred in order to prevent water penetration into the building. These are signs that the ability of the Asphalt Shingle Roofing system to consistently stop water infiltration into the building's interior has been compromised.



The ballasted (BUR) roof areas are of similar condition, these areas appear to be of similar if not worse condition than the shingled roof areas. We have observed within the flat areas that the asphalt based roofing material has begun to blister. This reaction is a result of prolonged exposure from the elements, the age of the roof, the constant expansion and contraction that happens naturally with the change of the seasons. The BUR roof will continue to deteriorate rapidly in direct sunlight and in the presence of standing water. There does not appear to be areas of direct failure which would be indicated by a noticeable repair work, however we feel that the flat areas have also reached the end of their useful life and are in need of replacement.



The Cherry Brook School was originally constructed in 1941, with a renovation and addition project completed in 1994. The one-story facility's construction consists of wood and metal super structures and of wood metal roof decking. The wood roof decks were observed at random locations from below and did not show any signs of significant staining that would indicate prolonged exposure to water. Without extensive demolition, it would not be possible to perform a full inspection of the existing decks, but due to the age of the roof, it is possible that small sections of the wood roof decking may need to be replaced at the time of the roof replacement. The most conservative and recommended approach would be to provide an allowance for a percentage of wood decking replacement as part of the overall roof replacement project.



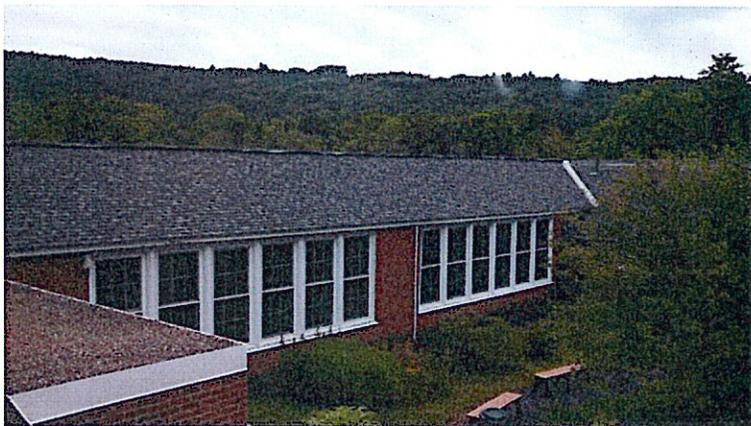
The existing sloped asphalt shingle roof areas do not contain any rooftop mechanical equipment or exhaust fans, and the existing ballasted roofs also do not contain any rooftop mechanical equipment or exhaust fans, however there are multiple vent stack locations throughout the roof area. The roofs at the Cherry Brook School consist of one large sloped asphalt shingle roof area totaling 22,753 SF., and one large area of BUR roof area totaling 11,587 SF., The existing drainage system consists of two variations of drainage, all of the flat roof area has been constructed with an existing slope within the structure that empty's on to the sloped roof areas. The sloped asphalt shingle roofs have had a metal gutter system installed that also has been piped to an external underground drainage system.



Recommendations

ROOF CONSTRUCTION & MATERIALS

Based upon the current age and condition of the **Sloped Roof Areas**, it is recommended that a full roof replacement the aging sloped Asphalt shingle roofs will be replaced with new asphalt shingles over the existing wood deck. Upon observation of the internal attic space SP&A discovered blown-in insulation within the attic space, we feel that the observed 1'-0" of existing blown in insulation has achieved the required R-24 value per code. The remaining sloped roof areas currently contain a positive air ventilation system, with an existing ridge vent located at the peak of the roof that allows air to vent out of the attic space, as well as an existing air vent channel located at the lowest portion of the slope of the roof. Therefore SP&A recommends that only the existing shingles be removed and new Architectural shingles installed in their place in order to match the recently installed shingles that were a part of the 2015 roof replacement project.



It is recommended that a complete removal of all existing **Flat BUR** roof down to the existing roof deck, as well as the removal of all existing perimeter metal flashings. We also recommend that the town consider using the same white EPDM product constructed on top of a polyiso roof insulation system as previously specified during the 2015 roof replacement project. This system can be installed while the building is occupied and is less offensive to the nearby neighbors with regards to smell as opposed to a hot applied systems. We recommend a roofing system with a minimum 20 year warranty, non-pro-rated for labor and materials. The warranty will cover leaks caused by the manufacture's materials and contractor's workmanship failures as long as proper maintenance and good roofing practices are performed. A one or two warranty from the installing contractor will cover any issues created by construction operations.



Opinion of Probable Cost

We have reviewed the costs of our most recently completed shingle roof and flat roof projects, including the shingle and flat portions of the Cherry Brook School project completed in 2015, we have compiled a conservative average estimated value of roughly \$6 per square foot for an asphalt shingle replacement only project. The total square footage for the remainder of sloped asphalt shingle roofs is approximately 22,753 +/-, this would equal roughly \$136,518. We have also compiled an average cost per square foot for the flat roof consisting of 11,587 square feet. We determined that as a result of the minimal roof penetrations that the conservative average estimated value of roughly \$15 per square foot for the flat roof areas resulting in an estimated cost of \$173,805.

