ROOF ASSESSMENT REPORT

CARNEGIE LIBRARY
201 AVENUE A
TURNER FALLS, MA 01376

Prepared For:

Mr. Steven Ellis
Town Administrator
Town of Montague, Massachusetts

Prepared By:

Northeast Roof Consultants, LLC
2 Peggy Drive
Southborough, MA 01772
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Date: March 29, 2022
NRC Project No. 22-001

March 29, 2022

Mr. Steven Ellis
Town Administrator
Town of Montague
One Avenue A
Turners Falls, MA 01376
(Email: townadmin@montague-ma.gov)

RE: Roofing Consulting Services
Roof Assessment and Report
Carnegie Library Roof
Turners Falls, MA

I. INTRODUCTION

On Tuesday, March 15, 2022, Northeast Roof Consultants (NRC) was on site to perform a visual assessment of the existing roofing systems at the Carnegie Library. The visual assessment was complimented by an aerial drone survey of all roof areas. Access to the upper roof was provided by Highway Department personnel who assisted by having a 40' aluminum extension ladder available for use. The weather on the day of the inspection was mostly cloudy with temperatures in the high 40's. Following are the results of our assessment. As exploratory test cuts were not taken as part of this assessment, the number of shingle layers on the main roof and underlying components under the flat EPDM valley around the outside of the upper roof could not be verified. The report includes a general overview of the building construction, verified roof sizes and areas, general roof observations, existing issues, conclusions and recommendations with cost estimates for the recommended scope of work. Photo documentation of the assessment and a roof sketch showing the locations of the problem areas is also included.

II. GENERAL DESCRIPTION

The historic Carnegie Library, which was completed in 1905, is a multi-story, brick, wood and steel building with steep-slope roofs at the upper main roof, lower first floor side roofs and shed roof over the rear entrance. The main roof slopes to a three foot wide flat area located at the perimeter of the upper roof. Drainage occurs at two internal roof drains located along the rear perimeter. RAC inserts were installed at both internal roof drains. The inserts have a smaller diameter than the existing vertical leaders and therefore decreases the drainage capacity. Due to the inadequate pitch of the valleys in conjunction with the location of the drains, the drainage in the valley areas is poor. Although we were unable to access the attic space, we suspect that the structural roof deck is wood plank, which is typical for buildings of this type and age. A rain shelf is located below the outside edge of the upper roof level and is continuous around the perimeter of the Library.

The upper steep-slope roof areas are covered with architectural grade asphalt shingles installed approximately 13-15 years ago. The low-slope roof area at the base of the upper shingle roof is an adhered EPDM membrane, which appears to have been installed at the same time as the architectural shingles. The two first story steep-slope roofs located on both sides of the library are also covered with adhered EPDM membrane, which is a non-typical steep-slope roof covering. A shed style roof over the rear entrance is covered with aged three-tab asphalt shingles estimated to be 25-30 years old. The perimeter rain shelf is covered with adhered EPDM membrane, similar to the other areas. The steep-slope roofs have a pitch of 6:12. The EPDM covering the two lower roof sections and the rain shelf is in generally good condition and appears to be functioning as intended.

Roof Measurements/Areas

- Roof Height - 30'-35'.
- Roof Area –Main Upper Steep-Slope Shingle Roof: 2,315 sq. ft.
- Roof Area – Upper Low-Slope EPDM Outer Roof: 610 sq. ft.
- Roof Area – Two Low EPDM Covered Steep-Slope Roofs: 110 sq. ft. each = 220 sq. ft.
- Roof Area – Rear First Floor Shed Roof: Approximately 8' x10' = 80 sq. ft.
- Total all areas: **3,225 sq. ft.**

III. ROOFING/FLASHING ISSUES

Our observations of the various roof areas at the Carnegie Library revealed the following issues and concerns:

- The architectural shingles on the upper main roof are in fair to good condition at this time. The ridge and hip cap shingles are experiencing loss of the protective granules and as a result, are drying and splitting.
- Shingle damage (holes/splits) was evident along the southwest outside corner of the roof.
- Shingles on the rear upper dormer area are covered with moss and lichens, which retains moisture and leads to rot and mold growth. This will reduce the life of the roof.
- The EPDM covered valleys at the base of the upper shingle roof are ponding water along the side and rear of the upper roof. The roof pitch to the two internal drains is inadequate and one drain is positioned at a high point, forcing water to accumulate before it reaches the drain. In addition, leaves and debris have clogged the two drain baskets further inhibiting drainage.
- The EPDM valley flashing extends under the bottom rows of shingles and is unadhered at the end of a rear roof valley.
- The existing lead flashing at the base of the chimneys is loose, torn and in poor condition. A piece of the lead flashing was observed in the EPDM valley adjacent to the chimney.
- The vent stack flange on the rear ridge line has no securement clips and is lifting above the underlying shingles. This opening can allow wind driven rain under the

shingles and into the interior space below. If the vent is not functional, it should be removed and properly covered over.
- Branches overhanging the rear of the upper roof are contributing to vegetative growth on the shingles and clogging of the two rear roof drains.
- The asphalt shingles on the rear entrance shed roof are badly deteriorated and in need of complete removal and replacement. This should also include new metal flashing at the top of the roof and new step and counterflashing along the one side area.

IV. CONCLUSIONS/RECOMMENDATIONS

The existing upper architectural shingle roof is in acceptable condition, but requires targeted repairs to reach its' useful service life. The EPDM valleys at the base of the upper shingle roof appear to drain properly at the front and east side perimeters, as no standing water was evident in these areas. The rear and west perimeter valleys were holding a significant amount of water during our site visit and also on the day of the drone survey. It is evident that the standing water results from a number of issues. These include drain baskets clogged with leaves and other debris, inadequate sumps directly around the drains and poor slope in the valleys. Both the roof and drain baskets should be periodically cleaned of debris. Depending on the thickness of the underlying insulation in the valleys, sumping of the drains may be possible. Repositioning of the drain openings should be explored to assist in installation of tapered drain sumps. Due to the width and length of the EPDM valleys, increasing the pitch of the flat roof valley to the drains may not be feasible.

We also noted that the lead flashing at the base of the two chimneys appears aged and damaged and should be removed and replaced with new materials to ensure that the base of the chimneys remains watertight for the long term. The metal vent stack flange on the rear dormer ridge should be secured with blind clips on both sides to prevent wind driven rain from infiltrating under the flange. If the vent is no longer in service, consider removal and infilling of the structural decking. The rear overhang roof should be stripped of all shingles and underlayment and replaced with an alternate, more durable roof system, such as thicker architectural grade shingles or modified bitumen membrane. New metal step and counter flashing would also be recommended. Damage to the existing shed roof decking, if any, should be repaired/replaced prior to reroofing.

(Recommendations – Roof Repairs and Replacement - 2022)
(Proposed Scope of Work)
- Remove existing ridge and hip cap shingles and install new ridge and hip cap shingles manufactured for that specific use.
- Remove and replace any split or damaged shingles with shingles of matching size and color.
- Remove and replace the rear entrance shed roof with a more durable roof covering.
- Remove and replace the lead chimney flashing at both upper roof chimneys.

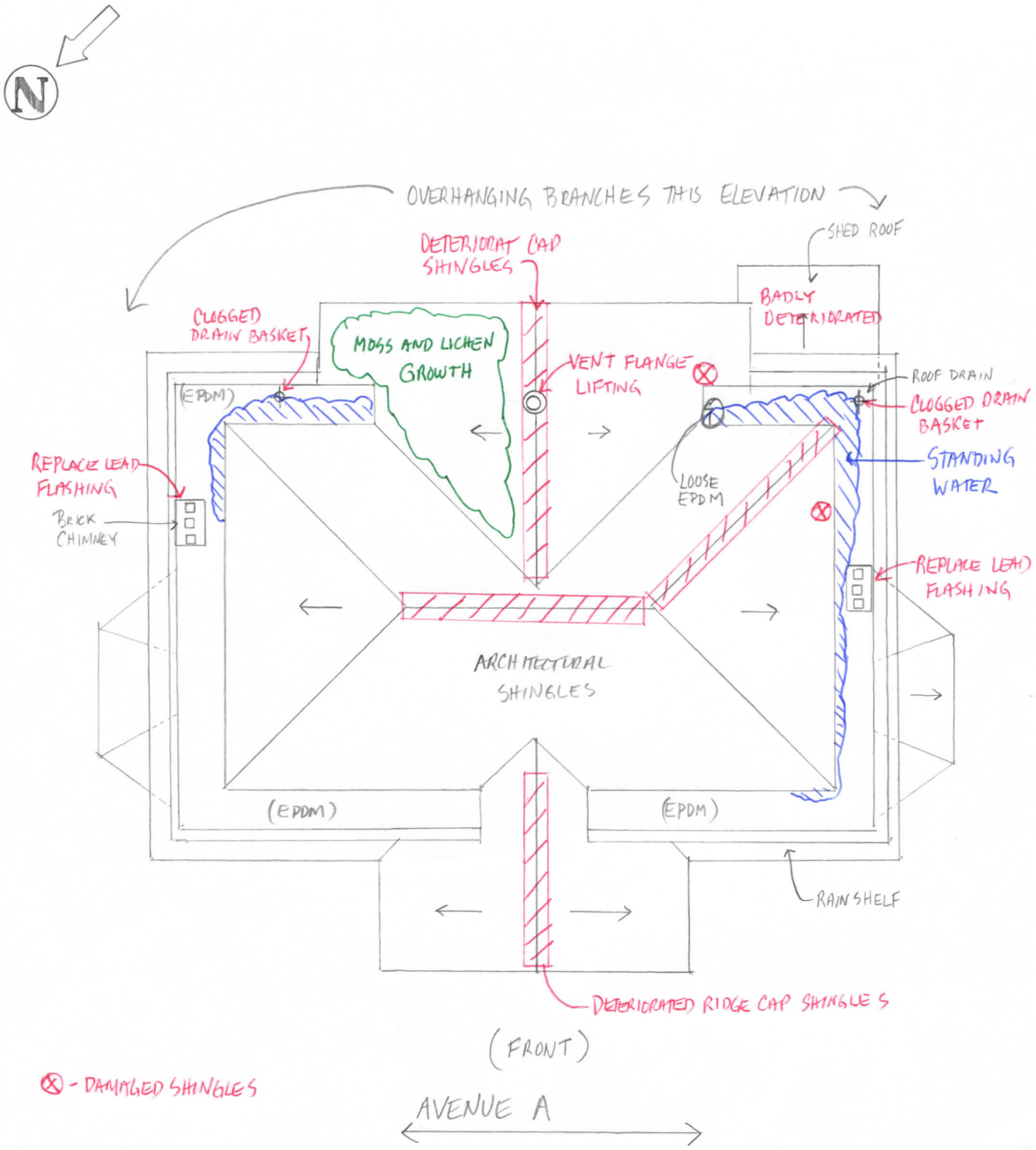
- Secure upper roof vent flange with blind nailing strips.
- Re-adhere loose EPDM membrane at the base of the dormer valley on the southwest corner.
- Remove all debris from around the roof drains. Reposition drain in the southwest corner from the underside (if possible) to the center of the EPDM valley. Install tapered insulation sumps around both drains to promote positive drainage. Size of tapered sump limited to width of EPDM valley and thickness of underlying insulation. Clearing of drain baskets should be done at least twice a year and after major weather events.
- Physical removal of moss and lichens from shingles often does more harm than good. The introduction of zinc strips along the top of the moss covered areas will gradually remove moss and lichen growth without damage to the shingles.
- Cut back overhanging branches and tree limbs in the rear of the library. (To be done by the Town.)
- **Cost Estimate - $4,950.00 (Based on 2022 Costs, Includes labor, material and lift cost).**

These above referenced cost estimates do not include the cost for review of existing underlying conditions, permitting, insurance, or hidden conditions. We hope this provides you with the information you require. After your review of this report, feel free to call with any questions, comments or concerns. Please see the following photo pages to view the existing conditions and areas of concern at each location.

Sincerely,

John R. Skypeck, RRC
President
Northeast Roof Consultants, LLC

Reliance: This report is for exclusive use and may be relied upon by the Town of Montague officials. No parties or persons other than those identified as authorized users may use or rely on the information or opinions in this report without the express written consent of Town of Montague officials and Northeast Roof Consultants, LLC.



ROOF PLAN

NORTHEAST ROOF CONSULTANTS, LLC **2 PEGGY DRIVE** **SOUTHBOROUGH, MA 01772** **508-277-0284**	**2022 ROOF ASSESSMENT** CARNEGIE LIBRARY 201 AVENUE A TURNERS FALLS, MA 01376 MAIN ROOF	DRAWN BY: JRS	SCALE: NTS	DRAWING NUMBER: **SK-1**
		DATE: *1/6/2022*	REV. DATE:	
		DESCRIPTION: ROOF AREA PLAN		

Photo R1
03/15/22

Photo Location:
Overview of Carnegie Library Roof from above.

Description:
View of main steep-slope roof and EPDM outer valley areas.

Photo R2
03/15/22

Photo Location:
Overview of Carnegie Library Roof from above.

Description:
View of northeast Corner of the upper main roof from above. Note: Slight discoloration of shingles due to environmental issues.

Photo R3
03/15/22

Photo Location:
Low side roof, west elevation.

Description:
View of lower steep-slope roof covered with adhered EPDM membrane.

Photo R4
03/15/22

Photo Location:
Steep-Slope Overhang at rear entrance.

Description:
View of badly deteriorated three-tab shingle roof at rear overhang.

Photo R5
03/15/22

Photo Location:
Steep-Slope Front Roof.

Description:
Deteriorated ridge cap shingles showing loss of protective granular coating.

Photo R6
03/15/22

Photo Location:
Steep-Slope Shingle Roof in Rear of Library.

Description:
Deteriorated ridge cap shingles showing loss of protective granular coating.

Photo R7
03/15/22

Photo Location:
East Elevation
Upper Main Roof.

Description:
View of architectural grade shingles on steep-slope roof and EPDM membrane on low-slope roof area. Note: roof drain in rear of roof with standing water and debris collecting round drain basket.

Photo R8
03/15/22

Photo Location:
Southwest Corner of upper roof at base of shingle roof.

Description:
Existing roof drain with RAC Insert at outside corner of roof. Note: drain is not at low point which inhibits the flow of water into the drain. Drain basket is also clogged with leaves.

Photo R9
03/15/22

Photo Location:
Rear (South) Edge of Main Roof.

Description:
Accumulation of standing water along the rear edge due to insufficient drainage.

Photo R10
03/15/22

Photo Location:
West Elevation of Upper Main Roof at base of shingle roof.

Description:
Standing water due to poor drainage. A piece of lead chimney flashing laying on the roof.

Photo R11
03/15/22

Photo Location:
Chimney Base along West Elevation of Main Roof.

Description:
Existing lead counterflashing is deteriorated, loose and torn.

Photo R12
03/15/22

Photo Location:
Base of Hip Roof at Southwest corner.

Description:
Close-up of damaged hip cap shingles missing protective granular coating.

Photo R13
03/15/22

Photo Location:
Rear Roof Ridge Line.

Description:
Flange of vent stack is not clipped to substrate. The wind has lifted the flange, which may allow wind driven rain under the shingles.

Photo R14
03/15/22

Photo Location:
Upper Main Roof at Southeast corner of the library.

Description:
A layer of moss is covering the architectural roof shingles, which may reduce the useful service life of the roof.

Photo R15
03/15/22

Photo Location:
Rear Overhang Roof.

Description:
Existing deteriorated three tab shingles in need of replacement.

Photo R16
03/15/22

Photo Location:
Rear Overhang Roof.

Description:
Badly deteriorated shingle exposing underlying layer.