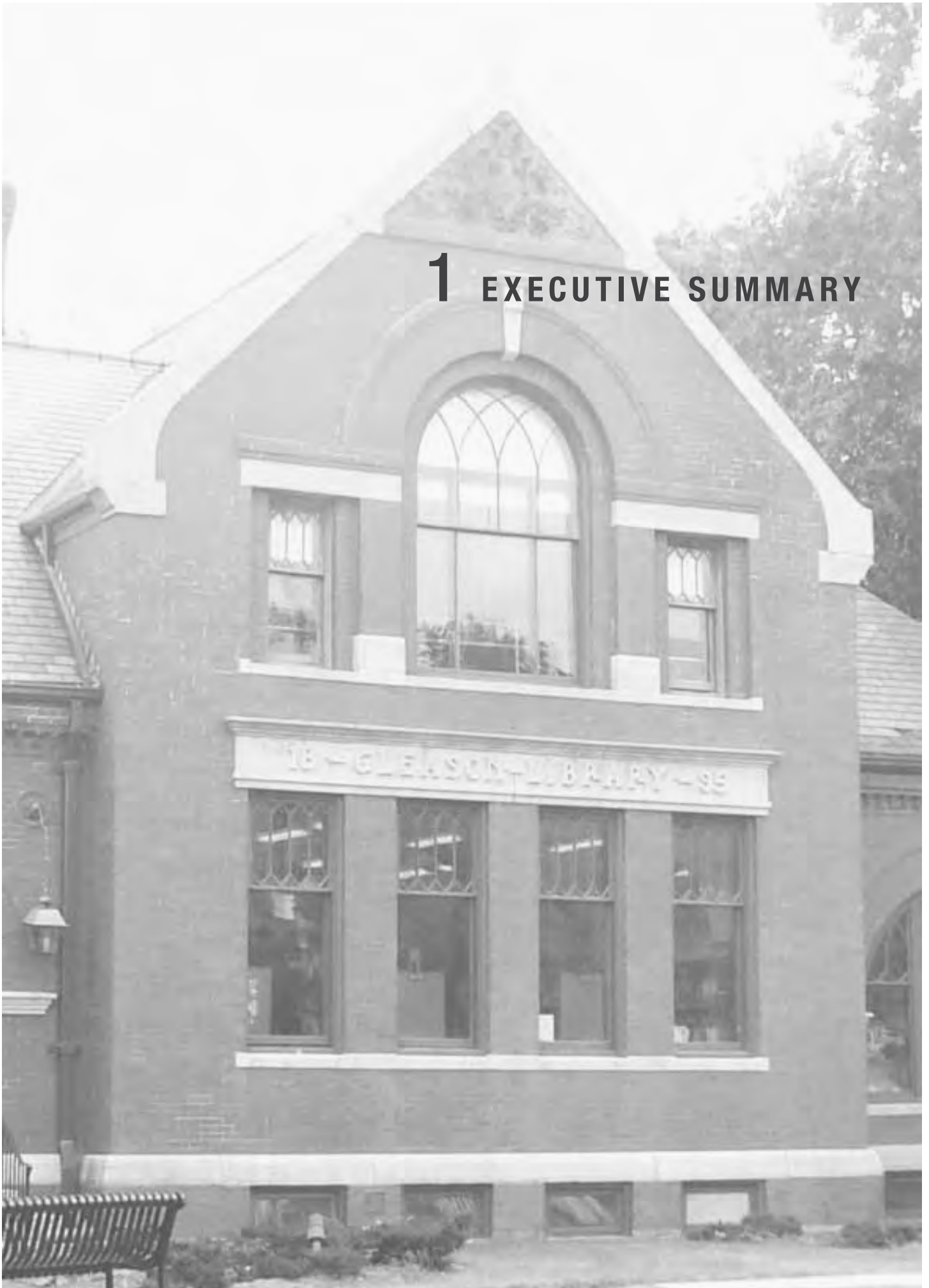


1 EXECUTIVE SUMMARY



Introduction

Architect Lerner | Ladds + Bartels and engineers Simpson Gumpertz & Heger were selected to provide services to investigate and determine the causes of deterioration and water damage to the historic building envelope of the Gleason Public Library as well as to make recommendations for repairs and renovations, assist in the development of schedules and priorities for the repairs and develop cost estimates for them. These recommendations are limited to the original building only and only address the new addition where it abuts the historic portions.

The Gleason Public Library has a long history. Preceded by the Carlisle Library Society, the Carlisle Agricultural Library, and the Carlisle Free Public Library, the current original building was donated by Joanna Gleason and designed by George G. Adams of Lawrence in 1894 and completed on May 13th, 1896. The latest addition was constructed in 2000, designed by Richmond French Design of Winchester, MA. This twice-expanded library has faithfully served its Town for over a century. Now, after over a century of service and various repairs, the original portion of the library has fallen victim to water penetration and infiltration. Finding a balance between repairing and preventing water damage and maintaining the historic integrity of the building is paramount; a fact that we respect and support. We at Lerner|Ladds+Bartels consider it a unique privilege to play a small part of the history of the Town of Carlisle and its deeply rooted appreciation for its history

LLB wishes to thank the Trustees, Director and Building Committee of the Gleason Public Library for their assistance and guidance.



Methodology

Lerner | Ladds + Bartels and its assembled group of industry professionals assessed the conditions of the Gleason Public Library Historic Building Envelope Restoration. Each consultant submitted a detailed report, identifying key aspects and deficiencies of the building, as well as design strategies and solutions.

Using the construction drawings of the 2000 Richmond French Design addition as a guide, SGH & LLB conducted extensive measuring and photo-documentation to verify and clarify the existing conditions of the structure. These updated plans were then distributed to the consultants. Copies of these reports, along with other pertinent supporting data, are included in this report for reference.

To better inform the review process, building, site, and occupants needs were assessed by LLB based on in-house and consultant observations. The design team also met with Library Staff and Building Committee members to investigate and verify existing systems, utilities, services, and performance of building components, so that their institutional knowledge could be incorporated into the recommendations.

A large part of the investigations involved water testing of various portions of the building including the masonry walls, windows and foundations. All of this information was then considered when making recommendations for renovation and repair.

Based on the final recommendations for repair, the cost estimator prepared an initial cost projection for the project, a copy of which is included in this report.

The following is a list of consultants by trade, and contacts at each firm:

Architectural

Lerner | Ladds + Bartels, Inc., Inc. (LLB)
R. Drayton Fair, AIA, LEED AP
Kathleen A. Bartels, AIA

Building Envelope

Simpson Gumpertz & Heger, Inc. (SGH)
Dean A. Rutila, PE
Mark K. LaBonte, PE

Cost Estimate

Daedalus Projects, Inc. (DPI)
Richard Marks

Results and Conclusions

The Gleason Public library is a beloved institution in the heart of Carlisle. Having served the community for over one hundred years and having undergone two significant addition projects, the 1895 original portion of the building has held up very well for the relatively little amount of maintenance it has required and received. Constructed solidly to last the ages, it is an exterior masonry bearing wall of pressed red face brick with granite and terra-cotta elements. The Munson slate roof is primarily original with copper gutters and downspouts. During the last few years, particularly during the last addition project, limited repairs were completed to the structure, including selected areas of masonry re-pointing, gutter replacement and the addition of some new downspouts.

Unfortunately, water infiltration into the historic structure has continued to be a problem, evident in a number of areas. The most obvious and probably most problematic is in the below grade area of the 1895 building, used for staff areas and mechanical spaces. In this area strong musty odors indicate potential mold growth and there is a history of relatively severe water leakage, particularly along the north wall. Various wall-venting concepts have been attempted in the past, but the problem persists. On the upper levels, areas of blistered plaster and dust indicate moisture penetrating through the masonry walls. Some of the wood trim at the windows is water damaged, indicating both infiltration through the windows themselves and through the wall above. Some water staining and damage is evident in the attic spaces, particularly surrounding the masonry chimneys.

Damage on the exterior also calls for restoration and repair. Only selected areas of masonry have been re-pointed in the past, and all areas appear to be in need of masonry pointing at this time. Some of the bricks and granite blocks have shifted slightly due to failed mortar and continued water damage and need to be re-affixed. Areas of the slate roof are obviously in need of repair; loose or missing slates, open slate miter joints at the roof hips and damaged copper trim, gutters and downspouts. New downspouts have been added on either side of the central gabled block, but these have not been connected to any storm water collection system and drain directly to grade. Unfortunately, over time it appears that the grade surrounding the historic front portion of the building has raised, trapping water against the existing foundation instead of sloping away.

CONCLUSIONS AND RECOMMENDATIONS

Based upon our observations, building insufficiencies and damages were divided into four distinct scopes: Basement & Foundation; Roof; Masonry Walls; and Windows. These scopes were prioritized based upon both their level of severity and the effect that their scope would have upon the other issues and the building as a whole. For example, window restoration and/or repair would be imprudent without addressing water infiltration of the roof and walls above.

BASEMENT & FOUNDATION

The interior occupied area of the lower level, also the first floor, of the historic building is of critical concern due the obvious amount of water infiltration on a regular basis, and also due to the potential effect of possible of mold growth due to the high levels of humidity. The construction of the exterior foundation walls of the existing building is typical of this building type of the late nineteenth century, a piled granite rubble stone foundation bound together with a cementitious mortar. Although obviously strong enough to support the structure with little settlement for many years, it is subject to water infiltration through the joints.

Due to the potential consequences of hidden mold growth, both interim and comprehensive repair recommendations call for the removal of the interior finished perimeter walls to expose the foundations so that the moisture is not trapped behind them, to allow for faster drying and to review exact locations of most severe leakage.

On the exterior over the years the grading around the historic portion of the building has raised, most likely due to build-up of mulch and landscaping. The grading should be modified to more accurately reflect the historic setting of the original building and, most importantly, to reinforce the slope away from the building.

The most effective waterproofing of any foundation is to stop the moisture from getting inside in the first place, that is, from the



exterior. The recommendation therefore is to excavate around the existing historic perimeter and add waterproofing, insulation and a drainage system to mitigate both surface water draining down and into the building and possibly a certain amount of ground water from coming through the foundation walls.

After measures are taken to more thoroughly waterproof the foundation perimeter, interior finishes can be replaced with materials that would be more resistant to both moisture and mold growth.

ROOF

The existing slate roof has served the building very well over the last 103 years. Although it has had repairs in the past, it is time for a complete roof restoration of the building. The original roofing felts, separating the slates from the roof planking, have deteriorated virtually to dust. A number of slates are missing, dislodged and cracked. Although following repairs made during the 2000 addition project there has been little leaking, now is the time, prior to active problems, to seize the opportunity to restore the roof to last many more years.

Due to the historic nature of the roof slates, they should be tested to determine their reasonable further life span. If feasible, they should be reused as much as possible.

Our recommendation therefore would be to completely re-roof the entire historic building, salvaging and reusing the existing slates as much as possible and supplementing them with new slates to match. Re-roofing will afford the opportunity to apply plywood to the existing planking to span any existing gaps and improve performance, install a modern waterproofing membrane over the entire roof and reinstall the flashings and slates with new fasteners.

MASONRY WALLS

The existing walls are multi-wythe brick bearing masonry, with granite and terra cotta features. It does not appear that there is any interior cavity, but that the walls are basically solid. Over the years, certain areas of mortar have been re-pointed, although it does not appear that the entire building has been for many years, if at all. Certain areas, such as at the gable roof granite parapet, at the spandrel granite lintel over the windows and some of the lower face brick, are in critical need of re-setting and re-pointing. Evidence of damage on the interior includes some relatively severe damage at window head trim and blistering of interior wall finishes, all direct indications of water penetrating through the masonry rather than flowing or drying back to the exterior.

Although a remedial interim course of action could be to re-point selected areas once again, the water infiltration on the interior indicates that this would be the best time to initiate comprehensive restoration of the exterior masonry walls. Our recommendations would be to re-point the entire historic exterior walls with special attention paid to the areas at the granite lintels, sills, and water table course. The addition of flashing at the granite spandrel will likely improve performance with little, if any, effect on the historic character of the facade.

WINDOWS

The historic windows are an integral part of defining the character of the building. At this time they are showing need of attention due to peeling paint and the possibility of deterioration due to water infiltration. Much of the exterior glazing putty at the individual panes has broken up and deteriorated allowing both air and water infiltration. Quite a bit of the damaged interior window trim is most likely attributable to leaking through the masonry walls above and would hopefully be mitigated by the restoration of the exterior walls.

The interior storm windows do contribute somewhat to the energy efficiency of the interior, and from an historic standpoint, are preferable to exterior storm windows that can alter the historic appearance of the building. Care must be taken, however, that their

application does not contribute to the deterioration of the wood window material by encouraging and trapping moisture between them and the historic windows.

The recommendation for the windows would be to first do as much as possible to mitigate water and moisture infiltration from the other portions of the building envelope (roof, masonry walls, foundation) prior to comprehensive restoration of the windows. That being said, the windows, particularly the deteriorated exterior glazing putty, are in critical need of repair. A comprehensive approach would be to remove the window sashes, strip current finishes, repair as required, re-glaze using as much of the original glass as possible, repaint and replace. At the same time repairs and restoration of the existing window frames using a combination of epoxy repair and / or replacement in kind should be completed along with repair and refinishing of the interior trim.

CONCLUSION

It is the conclusion of this report and the recommendation of the design team that the Town strongly consider a comprehensive approach to the repairs and restorations as described in the report, implemented as soon as possible. Although the original components of the historic building are generally sound and mostly intact, they have been in service for over a century. In order to protect these valuable materials, it is most important, efficient and economical that comprehensive restoration be considered.

From a simple cost standpoint, construction prices are tending not to decrease over time. Although interim repairs may be less expensive in the short term, they only cost money now (due to damage that must be addressed as soon as possible) and then cost even more at a later point.

There is also value in scope. The larger the project, the more effective and efficient the cost of construction will be. Mobilization, as well as general conditions will be less if all of the projects are let to one contractor. That being said, for these particular projects, there may also be value in proposing separate bid packages for distinct specialized scopes of work as long as they are prioritized to build upon each other and not undermine subsequent projects. For example, the roof restoration could be considered a complete and specialize project that could be bid to roofing contractors, the windows let out as a package to window restoration specialists. However, as mentioned earlier, the windows are effected by the walls of which they are a part and their comprehensive restoration should not be completed until moisture issues in the walls have been solved.

