Conditions Assessment & Treatment Plan

Lynch Park Carriage house

Beverly, Massachusetts

February 2018

SPENCER & VOGT GROUP
architecture preservation

Spencer & Vogt Group
1 Thompson Square, Ste. 504
Charlestown, MA 02129
617.227.2675
www.spencervogt.com

TABLE OF CONTENTS

ACKNOWLEDGMENTS

EXECUTIVE SUMMARY & METHODOLOGY

PART 1: HISTORY & SIGNIFICANCE

A) Building History & Architectural Significance Page 13
B) Character Defining Features Page 17
C) Preservation Guidelines Page 23

PART 2: EXISTING CONDITIONS & TREATMENT RECOMMENDATIONS

A) Conditions & Recommendations Page 35
– Exterior
– Interior
B) Structural Assessment Page 53
C) Mechanical, Electrical, & Plumbing Assessment Page 57
D) Hazardous Materials Assessment Page 59
E) Basic Building Code Analysis Page 61

PART 3: CONCEPTUAL DESIGN, COST ESTIMATES & PLANNING

A) Conceptual Design Page 69
– Exterior Restoration Plan
– Design for Interior Spaces
– Regulatory Analysis for Conceptual Design
B) Phased Scope & Cost Estimates Page 75

APPENDIX

A) Historic Preservation Resources
– Massachusetts Historical Commission Inventory Area Form
B) Bradley Stable Drawings, Historic New England Collection, 1896
C) Structures North Consulting Engineers: Structural Report (2009)
Plans and Specifications (2010)
D) Flood Plain Projections
E) Aerial Survey

ACKNOWLEDGMENTS

Prepared for: Aaron Clausen
Director of Planning & Community Development, City of Beverly
191 Cabot Street
Beverly, MA 01915
978.605.2341

Prepared by: Spencer & Vogt Group
1 Thompson Square, Suite 504
Boston, MA 02129
617.227.2765
www.spencervogt.com

Lynne Spencer Principal, Historic Preservation
John Hecker Project Architect
Nicholas Curtis Architectural Designer
Lynn Smiledge Preservationist, Report Coordinator

Affiliated Consultants:

Structural Engineer:
Structures North Consulting Engineers
John Wathne
60 Washington Street, Suite 401
Salem, MA 01971
978.745.6817

Mechanical, Electrical & Plumbing Engineers:
CSI Engineering
Jim O'Brien
999 Broadway, #206
Saugus, MA 01906
781.233.4808

Cost Estimator:
Essex Restoration
Walter Beebe-Center
780 Woburn Street
Wilmington, MA 01887
978.658.6300

Hazardous Materials:
Fuss & O'Neill EnviroScience
John Hand
45A Main Street
Lakeville, MA 02347
508.946.1747

With special thanks to the following individuals for their invaluable assistance:

Aaron Clausen, Director of Planning & Community Development
Michael Collins, Commissioner of Public Services & Engineering
Emily Hutchings, Associate Planner
Bruce Doig, Director of Parks and Recreation
Steve Frederickson, Building Commissioner, Municipal Inspections
Susan LaMont, Vice Chair, Beverly Historic District Commission
Suzanne Lanzikos, Wedding/Event Coordinator
Jocelyn Ruelle-Kersker, Assistant Director of Parks & Reccreation

EXECUTIVE SUMMARY & METHODOLOGY

Spencer & Vogt Group (SVG) was engaged by the City of Beverly in 2016 to prepare a comprehensive assessment of physical conditions at the building and to provide recommendations for exterior restoration, interior renovation, code compliance and the introduction of handicapped access. The intent of the study was to establish a baseline for existing conditions and establish a plan for future preservation and renovation, expanding the building's use within the existing footprint. SVG was guided by a building committee consisting of representatives from the City of Beverly's Planning and Community Development, Public Services and Engineering, Municipal Inspections, and Historic District Commission, and staff involved with the Lynch Park and the Carriage House function rental operation.

The building use has evolved from the original function as carriage house and servant quarters to a limited event space for weddings and events, and storage for the town's recreational equipment. In its current state the Carriage House has finished spaces on the first floor for event use; the second floor has storage areas but is otherwise essentially unused; the basement is used for storage largely related to the recreational activities at Lynch Park. A seasonal refreshment operation is located in a modern addition. The City hopes to expand use of the Carriage House for rental events by enhancing its visual appeal, adding year-round climate control, and expanding functionality.

As a result of the feasibility study meeting and discussion process, the Beverly Department of Public Works (DPW) made a strategic decision to stop using the current first floor garage area for the storage of maintenance vehicles. DPW also decided to relinquish all future access to this space for storage, essentially freeing up this portion of the building for redevelopment as program space in support of the first floor as a rental venue. Most of the stored maintenance equipment from the basement area will be gradually relocated to other off-site equipment storage areas.

These decisions were critical for the exploration of expanded uses related to public access and enjoyment of this community asset. The resulting conceptual designs include mandated building code requirements. Space is now available to provide code-compliant rest rooms for both sexes in addition to a dedicated family rest room. In the former garage area, a meeting space for approximately 30 to 35 persons can be created. A full-size elevator can be located to provide vertical access to all three floors. A new code-compliant egress stair then connects all three floors and offers exterior egress at grade level.

At the second floor level, decisions were made during progress discussions that expanded the scope of proposed improvements with the goal of maximizing usage of all available space. We were directed to locate a large meeting space capable of holding approximately 20 to 25 occupants. Additional new rooms are shown that could be used as offices or activity areas. The two former apartments have been left spatially intact, with the intent of future reuse as office or administrative space. Fortunately, this configuration works well for this purpose.

It is in the best interests of the building and the City to confirm the historic significance of Lynch Park by establishing its eligibility for and eventual listing on the National Register of Historic Places. This designation would recognize the importance of the site to the community and more importantly, would confer significant code-related advantages regarding proposed structural, flood hazard and architectural space improvements. National Register status alone does not confer any limiting restrictions or requirements on the property. We cannot emphasize strongly enough how important the designation could be for the overall success of the long-term project.

Current situation

The exterior of the building envelope was reviewed both architecturally and structurally. Considering its age and location, the Carriage House is a remarkable survivor of the Gilded Age of oceanfront "cottages." It has survived major hurricanes, blizzards, fires and years of deferred maintenance. Luckily, it has almost always had intact roof surfaces and enclosed window and door openings. The building's prominent location on an oceanfront site is one of its chief assets.

After almost 125 years of continuous use, however, the architectural and structural integrity of the exterior envelope is now at risk. A recent fire has revealed major structural weaknesses in the garage portion of the building. Decades of patchwork repairs in the exterior walls and floors have reached the point where the same walls and floors are now in danger of failure under normal loading conditions. Original roof cornices are poised to fall off of the building into the ocean. Wood corner posts have deteriorated significantly at several visible locations. Wood window sashes that were removed after the fire need to be repaired and restored to their rightful locations in the building. Deteriorated wood window trim needs to be removed and replicated for reinstallation. Corner quoins have reached the point where they are also at risk; currently, they channel water into the building and expose the structural corner posts to accelerated deterioration.

Fortunately, identification of the physical maladies of the building is coinciding with the realization by the City that the Carriage House has great historic value and redevelopment potential. The unique features that lend the Carriage House its historic architectural character now threaten its integrity and stability, and must be stabilized and restored.

Need for clarity of purpose
Chronic neglect has been exacerbated by lack of clarity about the use of this building since its acquisition by the City. As the largest building on the Lynch Park site, its white elephant status has resulted in an odd assortment of functions: DPW garage and storage, snack bar, and miscellaneous storage.

In recent years, the impetus begun by a volunteer committee to use the building as an art gallery has evolved into renting a portion of the first floor for functions. Under the energetic administration of the part-time functions manager, event rentals have demonstrated the public appreciation of the building and its spectacular site. This offers the prospect of an expanded business under certain conditions, namely improvements in the facility including air conditioning and a truly functional heating system, improved restrooms and back of house facilities related to a high level functions operation, and general tuning up of lighting, interior finishes, and exterior appearance.

With the decision to relocate the DPW garage function, the current space is now available for additional meeting space for smaller gatherings and classroom usage by the Recreation Department.

Located in a 1960s addition of marginal character and construction, the seasonal snack bar in its present location is facing the need for serious health and building code improvements. We recommend demolition of this addition and relocation of the snack bar facility to a seasonal food truck.

The second floor offers future space use opportunities as office and meeting space. Whether occupied by the City of Beverly or leased to a third party, it is a nascent resource waiting to be developed.

Decisive action
The Carriage House is at a tipping point. The recent history of small projects addressing emergency needs, both fire and water related, and spot improvements designed to enhance the functions rental operation, are band-aids – they provide a temporary lift but largely push off the myriad of physical needs. Postponing badly-needed repairs essentially means increased costs, oftentimes on an exponential scale. Investing in studies is all well and good, but not a solution: decisive action is needed. Either invest serious monies in the building or face its inevitable decline, structurally and aesthetically, and eventual motivation for demolition. The appearance of neglect undermines community confidence in the City of Beverly's care of its assets.

The challenge is how best to address deferred maintenance and modern day building code requirements and make the best use of this dramatically sited and architecturally significant historic asset.

Deficiencies, opportunities, commitment
In order to activate the building and make the best use of its already established functions rental operation, the following rehabilitation work is urgently required:

- Building envelope and structural repairs
- Heating, air conditioning, and ventilation system for the first floor
- Expanded restrooms and back of house space supporting functions operations,
- Improved ambiance in the form of lighting, finishes, and amenities
- Additional space for meetings and classroom activities
- Improved life safety devices including fire detection system with annunciator horns and strobes

While initially conceived of as a multi-phased effort, the building committee viewed this as a "more of a same" approach, inevitably costing more and draining enthusiasm. Hence the committee encouraged a more comprehensive approach to include the entire building envelope and structural work along with the first floor renovations. The second floor is seen as a future phase and one driven by the need for space by the City of Beverly or the potential renovation by a private entity in exchange for a long term lease.

Cost estimates for a two-phase project
The building envelope and first floor renovation, Phase I, is valued at a cost of **$2,828,034** including contingency and soft costs. This will include the installation of the elevator shaft for the second floor, which is considered part of the structural stabilization. Phase II, the second floor work, includes the actual elevator along with the renovation for offices and meeting space and is estimated at **$1,647,469**. The second floor work scope would also include money for roof replacement, skylight restoration, and roof balustrade restoration.

Schedule
To the casual observer, the deteriorating wood, peeling paint and spot repairs on the exterior indicate neglect. These surface issues cover inner problems of significance: structural defects, aging and inadequate electrical and heating systems, and building code deficiencies. Continued delay in addressing these issues is no longer an option.

The work described in Phase I should be addressed within the next two years, 2018-2019. Phase II then becomes elective improvements based on the City's needs for office and meeting space, or its interest and ability to lease the space in exhange for its renovation, an approach that other municipalities have adapted.

If the City is unable to fund the Phase I work in its entirety, then the alternative approach laid out in the five-phase schedule that appears in Part Three of this report can be considered.

The report
The report is organized as follows:

Part One of the report, **History & Significance**, begins with a brief history and stylistic description of the building. Next is a list of character defining features, the physical elements that define the building's architectural significance and should be retained in any restoration scheme. The Preservation Guidelines section describes how alterations to the Carriage House should be approached in order to retain and celebrate the building's architectural significance and maintain its eligibility for preservation-related funding.

Part Two, **Existing Conditions & Treatment Recommendations**, includes an examination of conditions at the building, both exterior and interior, from the skylights to framing to the foundation, and recommendations for repair. Structural, mechanical, and hazardous materials assessments and a building code analysis are provided for the existing structure.

Part Three, **Conceptual Design, Cost Estimates & Planning**, includes conceptual design for preservation of the exterior and interior renovations, plus associated building code improvements and cost estimates.

The **Appendix** includes photographic documentation of the building and resources used in preparation of the report. The original drawings for an almost identical stable at Prides Crossing, Beverly (no longer extant) were found in the collection of Historic New England; these proved invaluable in understanding the structure and details of the Lynch Park Carriage House.

It has been a privilege to study and provide recommendations for the preservation and rehabilitation of the Lynch Park Carriage House, a vibrant community resource and historic cultural asset.

METHODOLOGY

The Feasibility report represents a collaborative effort between Spencer & Vogt Group (SVG) and the stewards of the Lynch Park Carriage House. The client was represented by Aaron Clausen, Director of Planning and Community Development for the City of Beverly.

The project team was assembled and coordinated by Lynne Spencer, partner and preservation principal at Spencer & Vogt Group. Lynne directed on site investigations with the assistance of preservation architect John Hecker. Architectural designer Nicholas Curtis prepared the plans and elevations. Lynn Smiledge, preservation planner, developed the historic research components of the report and coordinated its final assembly.

SVG assessed the building envelope and interior conditions, and documented them with narrative and photographs. Structures North Consulting Engineers performed an update to the 2009 structural engineering assessment of the building, CSI Engineering surveyed the mechanical, electrical and plumbing systems, and Fuss & O'Neill EnviroSciences performed the hazardous material assessment. Essex Restoration assisted with the building investigation and provided cost estimates.

John Hecker provided the building code analysis and, with architectural designer Nick Curtis, developed treatment recommendations and conceptual design for the interior renovations.

All photographs were taken by Spencer & Vogt Group unless otherwise indicated. The final report was issued both as a printed document and in electronic format as a portable document format (pdf).

Undated images of the Carriage House. Photographs courtesy of Beverly Historical Society.

BUILDING HISTORY & ARCHITECTURAL SIGNIFICANCE

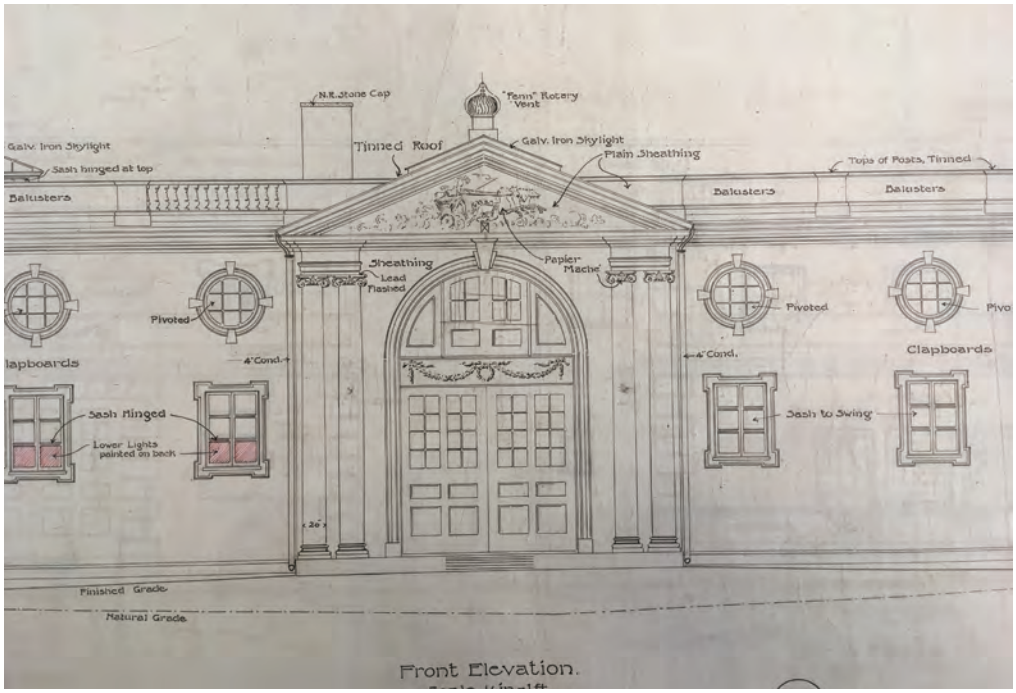
The Carriage House was built ca. 1900 on a summer estate on Woodbury Point purchased in 1890 by business entrepreneur Robert Evans. A self-made man, Evans earned two fortunes: the first as president of the American Rubber Company and the second in a post-retirement career in copper mining. Evans and his wife, Marie Antoinette Hunt Evans, were avid horticulturalists and philanthropists. They made significant contributions to both the Museum of Fine Arts in Boston (the museum wing overlooking the Back Bay Fens is named the Evans Memorial Wing) and Boston University.

Evans expanded his holdings by purchasing the neighboring Stetson property in 1896. He enlarged the existing Shingle Style house and built the carriage house sometime between 1897 and 1907. The house, known as the "Stetson Cottage," gained fame when it became the summer home for President Howard Taft in 1909 and 1910. Shortly after Taft arrived for the summer in 1909, Evans died tragically from injuries sustained in a horseback riding accident. Mrs. Evans moved the Stetson Cottage to Marblehead the following year and installed an Italian villa-inspired rose garden on the house site. She made alterations to the carriage house in 1912 but details of the changes are not known; the building was used historically as a carriage house and horse barn with living quarters on the second floor for estate employees. In 1915 Mrs. Evans purchased the abutting W. O. Grover Estate.

Records maintained by Historic New England (formerly the Society for the Preservation of New England Antiquities) include original drawings for a stable built in 1896 on the property of R. S. Bradley in nearby Prides Crossing, Beverly. Virtually identical to the Evans Carriage House at Lynch Park, the building at Prides Crossing was designed by Boston architects Little & Browne. The drawings provide invaluable clues to the structural and stylistic features of the Evans structure.

The entire Evans property was willed to Beverly Hospital in 1936 and used as a convalescent home until acquired by the City of Beverly in 1943. It was developed as a municipal park and recreation area in the 1950s.

The Carriage House is not seen on the 1897 Sanborn map (top) but appears on the 1907 map (above).



Carriage house of R. S. Bradley, Prides Crossing, Beverly. Little & Brown architects. 1896

Existing Building Description

The following physical description of the building exterior was adapted from the Massachusetts Historical Commission inventory form.

> The east-facing Evans Carriage House (ca. 1900) is an imposing, two-story Classical Revival building. The tripartite main block is composed of a projecting gable-roofed central entry pavilion flanked by three-bay, flat-roofed wings. The building is extended further by secondary, one-story, single-bay wings on either side of the main block. A one-story trapezoidal addition occupies the northwest corner. While the front of the building sits at grade, the land slopes steeply down along the side elevations to a partially-exposed basement level. The rear of the building sits at the water's edge atop a granite seawall that extends along most of the perimeter of the peninsula. On the east elevation, the entrance bay is sheathed in flush board and is dominated by a two-part entry. Carriage doors have been replaced by a modern double-door entry flanked by sidelights and topped by a transom. Above this, paired, six-light loft doors are set in a half-round arch with keystone. The entry pavilion is flanked by paired, two-story pilasters; a clock is centered in the gable above.
>
> The main block wings are clad in wood shingles and have altered openings. Four of six original round oculus windows with keystones survive in the second story. The first story retains four original six-light windows with distinctive eared surrounds; another of these casings survives on the south secondary wing. The northernmost bay holds a modern service

East (facade) and south elevations.

opening with wooden overhead door; the adjacent north secondary wing has a similar service opening. Pilasters decorate the outer ends of the main block wings; the outer comers of the secondary wings are trimmed with quoins. The water-facing rear (west) elevation retains paired and single sash windows. The handicapped accessible ramp with the covered entry was added in the last decade. "French" doors were installed at the first story at the south and west elevations in 2015.

South elevation.

North and west elevations.

CHARACTER DEFINING FEATURES

Every old building has a distinctive identity and character. Character-defining features are the significant observable and experiential aspects of a building that define its architectural power and personality. These are the features that should be retained in any restoration or rehabilitation scheme in order to protect the building's integrity and to maintain eligibility for preservation grant funding and rehabilitation tax credits.

Character-defining elements include the overall shape of the building and its materials, craftsmanship, decorative details and interior spaces and features, as well as the various aspects of its site and environment. They are critically important considerations whenever building work is contemplated. Inappropriate changes to historic features can undermine the historical and architectural significance of the building, sometimes irreparably.

This survey of the Lynch Park Carriage House identifies the elements that contribute to the unique character of the original building and its site. The bulleted items listed in this section should be considered important aspects of the historic nature of the building and changes to them should be made only after careful consideration.

EXTERIOR

Setting: *The topography, population density and other influences that are noteworthy to the property.*

- Located at the waterside on Mackerel Cove in an 18-acre former estate, now a park and recreation area.

Shape: *The form of the building. The massing that gives the initial visual impression of the structure.*

- Rectangular plan with central two-story block flanked by one-story wings.
- NOTE: Trapezoidal addition at northwest corner and covered entry at south elevation are not character defining.

Roof and Roof Features: *Typically the most dominant element of a building. Often the element that most informs the shape of the building.*

- Flat roofed with a centered, one-bay gabled entry pavilion.
- Three skylights: 1) flush skylight spanning gable peak, centered on entrance hall (currently covered), 2) hipped skylight opening at north main block (currently covered), and 3) hipped skylight at south main block.

Openings: *Windows and doors. These often reflect the hallmark features of specific architectural styles.*

- Generally symmetrical window and door placement.
- 8-, 6- and 4-light rectangular sash. Assortment of casement, fixed and double-hung configurations.
- Oculus windows at the facade (east elevation).
- Monumental arched opening at main entrance with 6-light loft doors at second story.
- Paneled door at facade (now covered with plywood on exterior).
- NOTE: First story "French" doors on the south elevation and southerly portion of the west elevation and modern double entry with transom and sidelights are not character defining.

Trim and Secondary Features: *Casings at windows and doors, moldings, cornices, watertables and other additive features.*

- Paired two-story pilasters, arched opening trim with keystone, hoisting arm and clock at entry pavilion.
- Corner pilasters at main block and quoins at outer blocks.
- Oculus trim with keystones.
- Eared window surrounds at facade and south secondary wing.

Arched entrance flanked by paired pilasters. Oculus windows left and right of central bay at second level.

Elaborate eared window surrounds with stepped heads.

- Flush board siding at gabled entrance bay.
- Heavy, highly ornamented cornice and cornice returns (extant at west elevation).
- Balustrade pier bases on roof.
- Original roof balustrade consisting of turned balusters set in molded railings (not extant).
- NOTE: reworked sections of cornice are not character defining as they do not match existing original cornice.
- NOTE: Recent shed roofed porch on south elevation is not character defining.

Original heavy cornice and cornice returns at west elevation.

Materials: *The visible kit of parts that comprise the exterior envelope of the buildings.*

- Wood (clapboards, shingles, windows, doors and trim).
- Glass lights.
- Ashlar Weymouth seam face granite foundation (north and south elevations).
- Random rubble seawall foundation (west elevation).

Oculus window, pilaster at corner board.

Right: Wood quoins at southeast corner.

Left: Rubble foundation/seawall at west elevation. Right: Ashlar foundation at south elevation.

INTERIOR

Individual Spaces: *Individual spaces that are character-defining.*

- First Floor: Lynch Room, Carriage Room, space defined by columns marking former horse stalls, two-story space under gable roof.
- Second Floor: entire plan.
- Enclosed service stair from exterior to second floor.

Features & Details

- Beadboard ceilings and walls.
- Tongue and groove wood floors.
- Natural finish woodwork including flat trim, service stair, ceiling brackets, paneled doors.

Lynch Room. Note sliding barn door at right. French doors were recently installed and are neither historically correct or character defining features.

First Floor:

- Carriage Hall: transom window, storage cupboard (for horsebrushes?), cast iron columns, grain cleaner.
- Sliding barn doors.
- Exterior pocket doors (still extant in exterior west wall of kitchen.)

Second Floor:

- Built-in drawers and cupboards.
- Exposed framing and sheathing.
- Hardwood flooring.
- Paneled doors and casings.

Iron colums mark original horse stalls.

Second floor. Paneled doors and simple flat trim. Hardwood floors.

Unfinished storage area on second floor with exposed framing. Note hooks for horse tack at upper right.

Pantry with built-in cabinetry on second floor. Note open skylight above.

Top: Hipped skylight at south block with partial laylight below.
Bottom: Covered two-panel skylight at gable peak.

PRESERVATION GUIDELINES

The consideration of repairs, renovations, and maintenance at the Lynch Park Carriage House should be guided by the significance of the building and site as framed by the National Register of Historic Places and the character defining features identified in this report. *The Secretary of the Interior's Standards for the Treatment of Historic Properties* should be used to inform all work at the building. The Standards provide advice on the preservation and protection of cultural resources and recognize four treatments: Preservation, Rehabilitation, Restoration and Reconstruction. The first three are relevant to this project.

PRESERVATION is defined "as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project."

REHABILITATION is defined "as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural or architectural values."

RESTORATION is defined "as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project."

GENERAL APPLICATION OF THE STANDARDS

Additions

Additions to a historic structure should be respectful and subordinate to the original building. Although the addition should possess similar mass, proportions and materials and can feature complementary stylistic details, it should not replicate the original building and should be readily distinguished as new construction.

Materials

When repairs are required, original building materials should be replaced in kind – brick for brick, wood for wood, slate for slate. When traditional replacement materials are not available or are economically unfeasible, substitute materials that mimic the look, feel, and workability of original materials may be considered. Care should be taken when deciding to use a synthetic material, however, since modern products may interface poorly with traditional building materials, offer limited longevity versus traditional materials, and experience color shifts and other deteriorative changes.

Siding

Substitute siding materials cannot rival the distinctive, historic appearance of wood clapboards or shingles. Although substitute materials such as vinyl or cement board siding may offer short-term benefits in terms of maintenance and durability of color finish, they have inherent disadvantages. Vinyl siding severely compromises the historic integrity of a building and its application often obscures character defining trim elements or necessitates their removal. Cement board siding lacks the distinctive tapered profile of wood siding, is difficult to install (it requires screws instead of nails), and degrades over time. It performs poorly and takes on water during freeze-thaw cycles and where butt ends have not been properly prepared.

Wood Windows and Doors

Wood windows and doors are character defining features and essential elements in a historic building's distinctive architectural design. Repairing and weatherizing existing wood doors and windows is always the preferred approach for historic buildings and provides energy efficiency comparable to new elements. When windows have exceeded their useful lives and retention is not practical or economically feasible, an approach that combines repairing old windows where possible and introducing new windows where necessary is recommended.

Paint Finishes

Original paint formulations and colors are character-defining elements that are often lost over time because the paint materials themselves are relatively short-lived. When repainting is necessary to preserve the integrity of the envelope, the colors chosen should be appropriate to the style and setting of the building. If the intent is to reproduce the original colors or those from a significant period in the building's history, they should be based on the results of a scientific paint analysis.

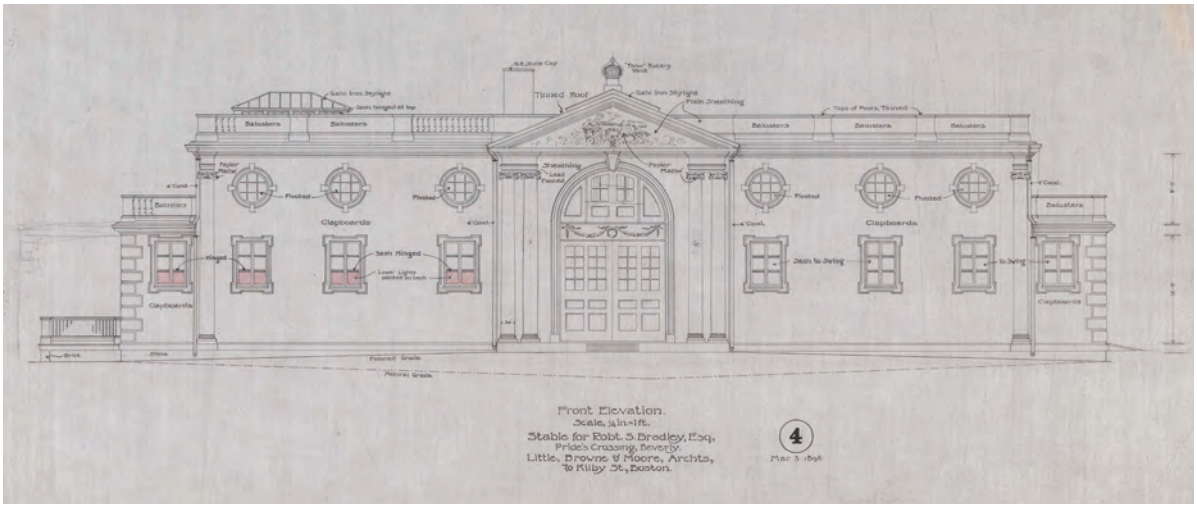
Traditional lead-based paints, which offer excellent longevity, durability and color stability, are no longer available in the United States. The highest quality latex-based paints available should be employed instead, after thorough surface preparation and priming. The application of a permanent vinyl or ceramic liquid coating system is damaging to wood, irreversible, and historically inappropriate.

APPLICATION OF THE STANDARDS AT THE LYNCH PARK CARRIAGE HOUSE

Preservation of the character defining features and architectural integrity of the building should be of paramount concern for the building's stewards. The historic images and plans that follow illustrate many of the building's original details and help elucidate how the carriage house was altered over time. These references should be used to inform the restoration and preservation of the building.

The original 1896 Bradley Stable drawings are compared with 2017 plans and elevations of the Lynch Park Carriage House on the following pages. We assume that the original design features of the buildings were quite similar. Note that in general the Bradley Stable floor plans are a mirror image of the Lynch Park Carriage House plans.

Front (East) Elevation



Bradley Stable drawing, 1896. Courtesy of Historic New England.

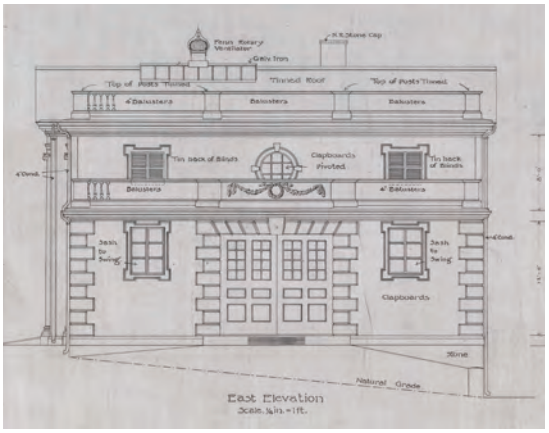
Spencer & Vogt Group drawing, 2017.

Rear (West) Elevation

Bradley Stable drawing, 1896. Courtesy of Historic New England.

Spencer & Vogt Group drawing, 2017.

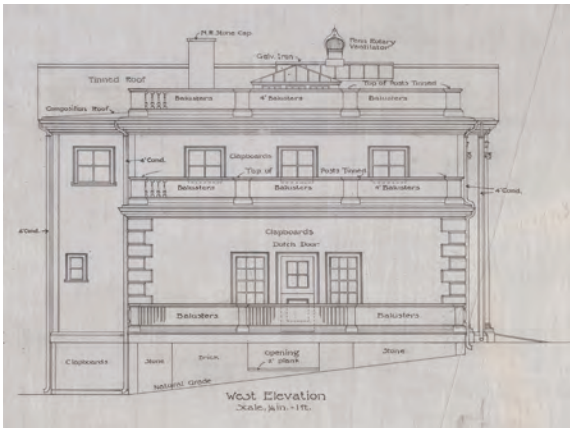
North Elevation



Bradley Stable drawing, 1896. Courtesy of Historic New England.

Spencer & Vogt Group drawing, 2017.

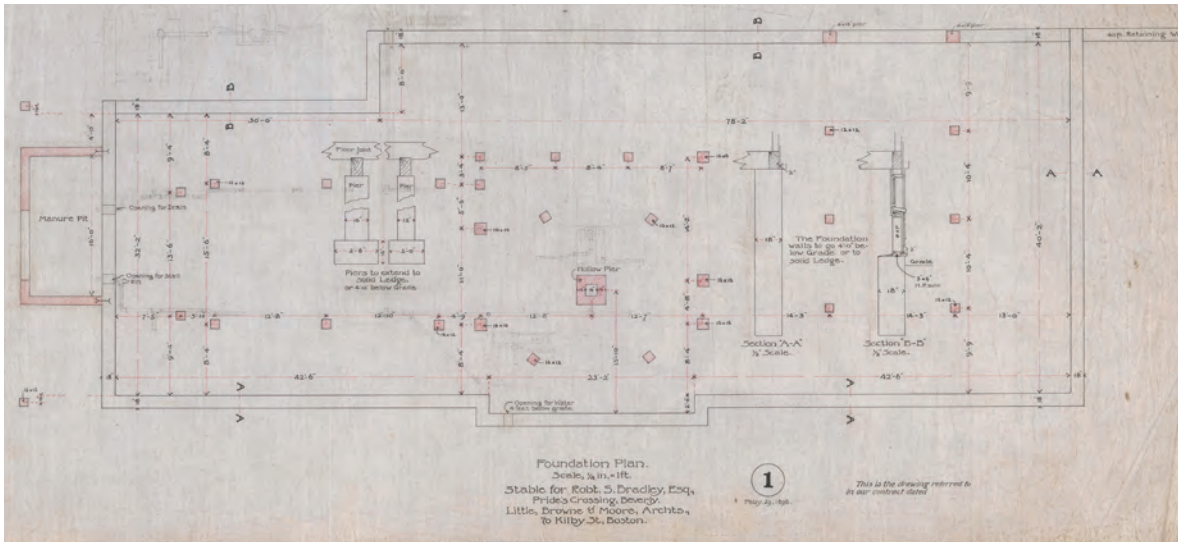
South Elevation



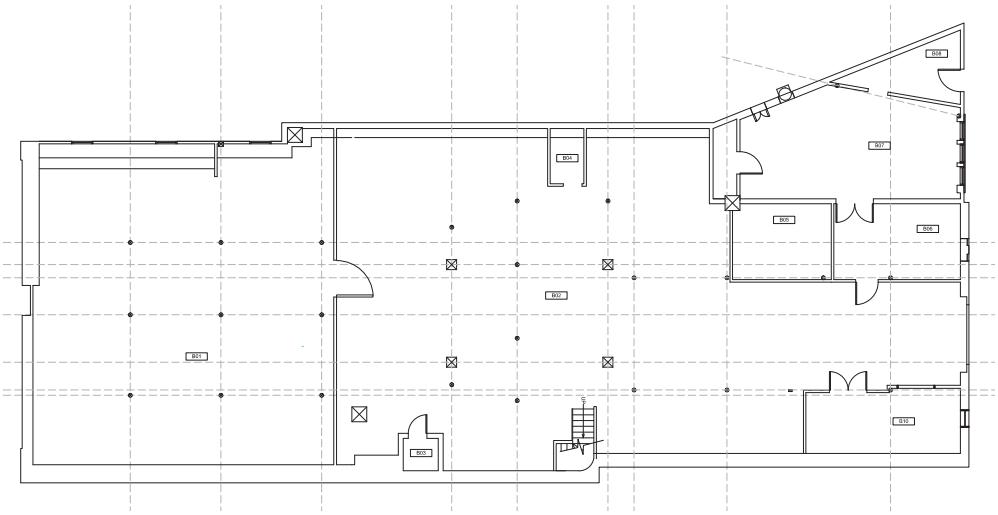
Bradley Stable drawing, 1896. Courtesy of Historic New England.

Spencer & Vogt Group drawing, 2017.

Foundation Plan/Basement

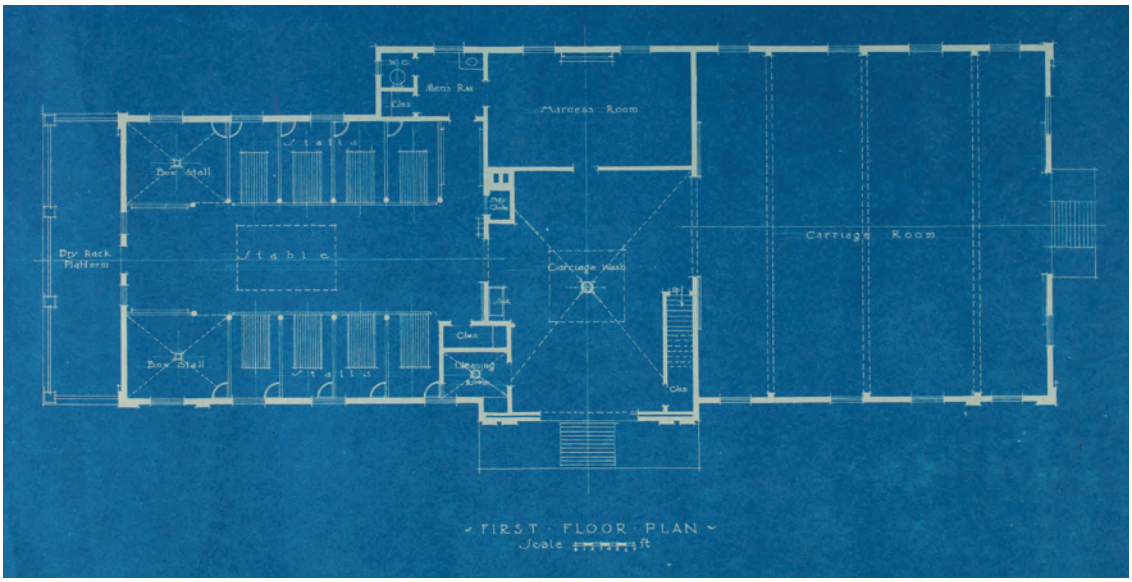


Bradley Stable drawing, 1896. Courtesy of Historic New England.

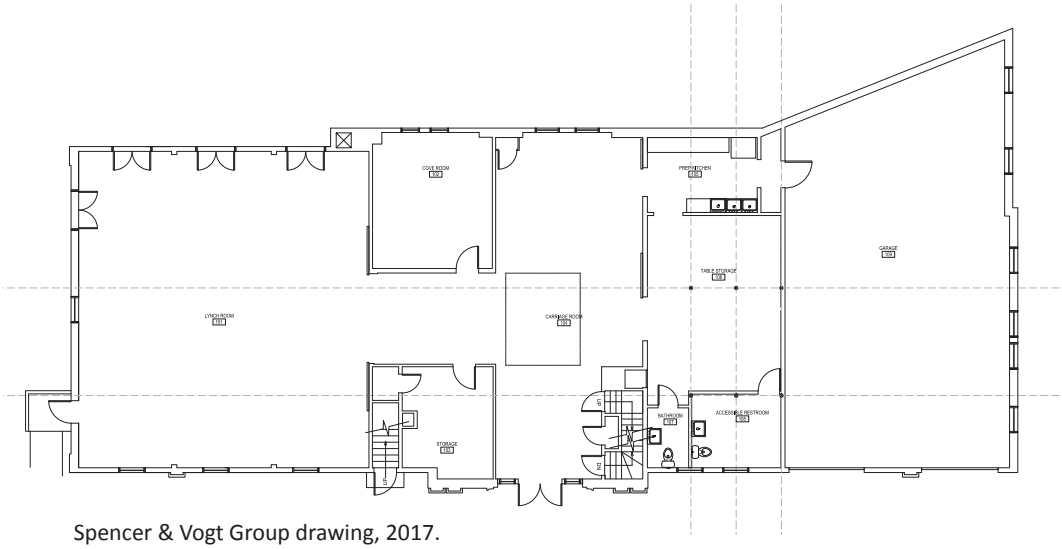


Spencer & Vogt Group drawing, 2017.

First Floor Plan

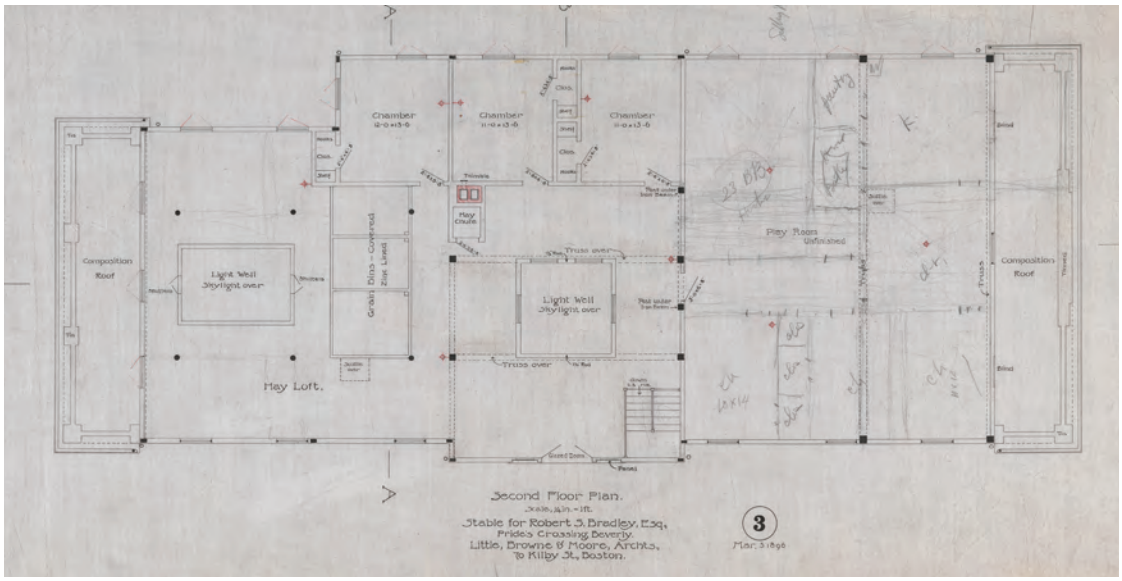


Bradley Stable drawing, 1896. Courtesy of Historic New England.

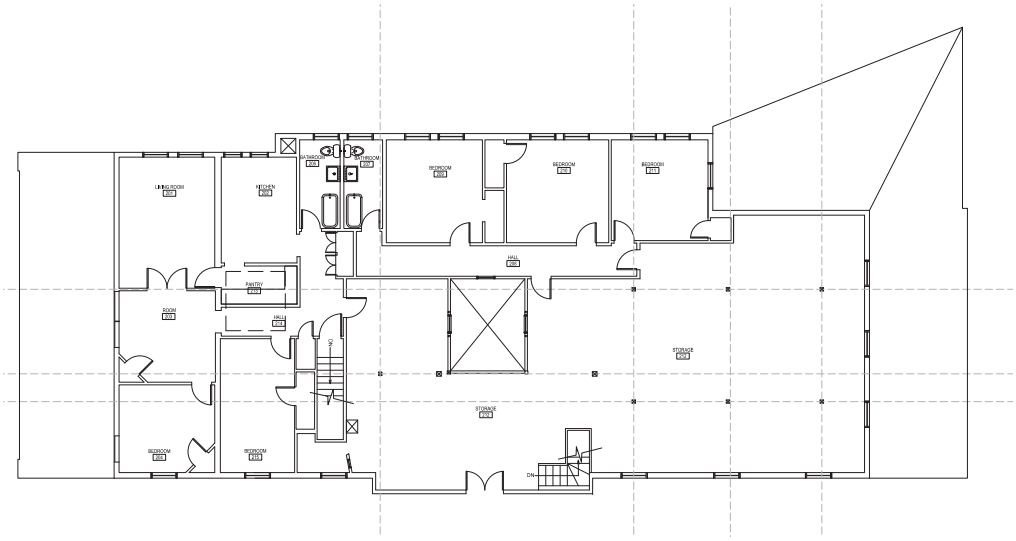


Spencer & Vogt Group drawing, 2017.

Second Floor Plan



Bradley Stable drawing, 1896. Courtesy of Historic New England.



Spencer & Vogt Group drawing, 2017.

Preservation of the Setting and Landscape

The building is sited specifically for its historic function. Its spatial relationship with the shoreline and the other structures on the property should be retained in any rehabilitation scheme.

Preservation of Exterior Character Defining Features

Roofing

The roofing material is currently a built-up roofing system consisting of alternating layers of felt and tar, similar to "composition" roofs popular in the late 19th century that consisted of rolled felts saturated with coal tar pitch and topped with fine gravel. The original roofing material specified on the the drawings for the Bradley Stable was "tinned" on the gable roof and composition on the flat roofs. It may be assumed that the same materials were employed at the Lynch Park Carriage House. When the gable roofing is due for replacement, sheet metal such as copper, preferably lead-coated, would be the desired material. Grey colored EDPM membrane roofing, installed with raised accent strips, would be another reasonable solution. The same grey membrane (EDPM) sheet roofing would also be appropriate for the flat roofs.

The original double-pitched flat skylight over the central light well was a unique character defining feature of the Carriage House and served as a practical light source. It should be reinstated.

Wood Siding, Windows, Doors and Trim

All wood materials should be retained, repaired and maintained. If the replacement of damaged elements is unavoidable, the original wood profiles should be replicated. Some original wood elements seen in historic images of the Lynch Park Carriage House or on the Bradley Stable drawings, but no longer extant, include the main entry doors, numerous original windows (including several round windows), portions of the main roof cornice, and the roof balustrade. These can be replicated if historic images and/or discovered remnants provide sufficient evidence for the recreation of the original forms.

Sections of original cornice remaining at the west elevation should serve as a guide for the restoration of the building cornice. Photographic evidence as well as the Bradley Stable drawings provide ample guidance for recreation of the balustrade; its original base piers are extant at both the upper and lower roofs. While wood is the preferred material in any restoration project, we recommend fabrication with a synthetic polyurethane material in this instance because of the extreme weather exposure.

If the reinstatement of missing original windows and doors is not practical, they can be recalled as "blind" openings. With the modern French door openings in place on the first floor at the south and west elevations, consideration should be given to reconstruction of new exterior decks that would emulate the deck and floating dock seen in early images of the building.

Early photographs appear to show that clapboard siding was used at the primary east elevation (facade); the siding at the secondary elevations cannot be definitively determined. The original Bradley Stable drawings specify clapboards at all elevations. Because the Lynch Park Carriage house has an ocean-facing side, it would be practical and historically appropriate to install wood shingles, which fare better than clapboards in wet locations, at the rear elevation. Combinations of siding materials were frequently seen on buildings of the time, especially those with seaside exposure.

We recommend identification of the original color palette through paint analysis. Lacking a scientific determination, an historically appropriate scheme can be devised with the assistance of an historic paint specialist. The current treatment with the entry bay painted in a contrasting color is not appropriate, nor is the paint application at the quoins as described in the conditions narrative on page 38.

Preservation of Interior Character Defining Features

The original configurations of the assembly space and hall on the first floor should be retained. All of the room plan configurations and trim on the second floor are preferably retained. Architectural features that should be preserved and/or restored include the
beadboard walls, wood moldings, barn doors, interior transoms, skylights, and cast iron columns. The restoration of windows and doors should be guided by extant remnants or salvaged elements.

EXISTING CONDITIONS & TREATMENT RECOMMENDATIONS

EXTERIOR CONDITIONS

Roof and Water Management System

Conditions

The roofing material over both the flat and gabled surfaces dates from approximately 2005 and consists of a built-up roof system (BUR) consisting of alternating layers of roofing felts and tar. The original perimeter roof balustrade is missing except for the bases for the individual piers, most of which appear to remain. The bases for the missing roof balustrade were flashed with copper when the new BUR was installed in anticipation of an eventual reconstruction of the balustrade.

Ornamental wood roof balustrades are exposed to severe weathering and are very difficult to maintain. Their many joints and connections make them very susceptible to deterioration. (See historic images on page 12 showing original roof balustrade.) It is not unusual for balustrades to deteriorate to the point where they must be removed to ensure public safety.

The skylight at the south end of the roof may have been replaced at the time the roof was replaced. This skylight, which brings light into the former kitchen and corridor of the second floor living quarters, is visible in the single historic photograph of the ocean side of the building currently available (see page 12). It has a circular ventilator at its ridge.

The original double pitched flat skylight over the central light well was removed at an unknown date and the opening covered over with wood sheathing. This skylight, which also had a circular ventilator at the ridge, is also clearly visible in the historic image of the building.

All roof surfaces are covered with a single-sheet membrane system.

Balustrade pier bases shown at arrows. Note damaged cornice at main building block.

Skylight at south end of roof with circular ventilator at ridge.

East elevation showing missing downspout, lack of continuity in the gutter, and grade level covering the building sills.

Severely deteriorated wood sill of exterior wall is visible in stairs to basement.

The original hipped skylight at the north end of the building, formerly above the hayloft opening in the second floor, was also removed and the opening in-filled with wood sheathing.

The gutters were originally built into the crown molding of the roof cornice, directly above the soffit. Without direct access to the roof, it is difficult to know whether the gutters were covered over during the BUR work or are still exposed. We assume that they may still be exposed to the elements.

Only one of the original roof downspouts, many of which can be seen in the historic images, remain. Currently, all roof rainwater spills over the sides of the building. Without downspouts in place, water is directed toward the base of each wall, especially along the east elevation. With water-saturated soil directly contacting the building, deterioration of the wood sills at the base of the exterior walls is usually assured, and has been noted in several locations.

Recommendations

- Rebuild the missing roof balustrade using a synthetic polyurethane material such as AZEK or GFRP (glass-fiber reinforced plastic) castings. All connections should be made using stainless steel fasteners.
- Modify the perimeter of the existing roof system to accept a restoration of the original gutter and downspout system.
- Remove the existing framing and sheathing in-fill at both former skylight openings and reconstruct the missing skylights.
- Modify the existing grade along the east side of the building to expose the top of the masonry foundation wall. Create a swale to collect rainwater from the new downspouts and direct it away from the building.

Siding and Trim

Conditions

The main wooden cornice at the main building is in a state of severe deterioration in many locations. Applied moldings are hanging loosely and are in danger of being lost.

The original cornices on the one-story wings at the north and south ends have been removed and replaced with 1x (3/4 inch thick) trim boards. The only surviving section of the original cornice can be seen on the west side of the south wing. This portion of the original cornice should be stabilized and preserved in place; alternatively, it could be removed, preserved and used as a template for future replication of the original cornice. One original downspout leader from the gutter is still visible on the west elevation.

Improper and/or incorrect replacement of missing cornice elements has occurred in several locations around the main building, primarily along the east and north elevations. The original crown molding has been replaced with flat 1x trim boards.

After the fire occurred at the northeast corner in 2016, repairs to the main cornice were undertaken. New sections of the cornice have been simplified and do not match or align with original, adjacent sections of cornice.

Severely deteriorated wood gutter and main roof cornice. Pier base former roof balustrade visible at upper right.

South elevation at second floor. Trim boards replaced the original cornice at the one-story addtion. A door and several windows were covered at this wall.

Right: Northeast corner. Missing cornerboard and simple replacement cornice after fire repair.

Far right: Original crown molding, seen at left, meets replacement flat 1x trim board at the arrow.

West elevation. Cornice at gable showing well preserved bed and crown moldings.

Severely deteriorated corner quoins. The outlined wood panels should be painted white to match the original paint application.

The inaccessibility of the west elevation of the building has allowed most of the original roof cornice to survive intact. The trim on this portion of the building should be used as a template for the reproduction of missing sections of crown and bed moldings, and for general cornice dimensions.

The quoins at the outside corners of the north and south wings are in an advanced state of decay. With open horizontal joints, water has an easy entry into the corner post area and decay of the corner posts and sills below is possible.

The current white paint application used for the corner quoins does not match the scheme seen in the historic photograph of the east elevation. The recessed flat panel adjacent to each shorter quoin section appeared to have been designed to be painted white, not the siding color.

At the central entry of the east elevation, and at the corners of the main body of the building, the double-height pilasters exhibit vertical cracking near their bases. In some locations, large portions of the pilaster panels have been patched with new material. The doorframe trim for the main entry doors exhibits similar problems. The flush weatherboards appear to be in serviceable condition.

East elevation. Pilasters are splitting and bases are deteriorated.

The existing wood shingles appear to date from several periods in time and may not be original in any location. The drawings for the Bradley Stable (see appendix) clearly indicate that clapboards were specified for exterior cladding, not shingles. This issue needs to be further explored to determine if shingles were used on the ocean side and clapboards elsewhere, or in some other arrangement.

Recommendations

- Document the dimensions and profiles of the original surviving sections of the roof cornice. Restore deteriorated sections of the roof cornice with in-kind materials that are durable and back-primed before installation.
- Remove incorrect cornice repair materials along the south, east and north elevations and replace with historically accurate moldings and trim. Match adjoining, surviving original sections of building cornice.
- Remove all corner quoins and repair and restore using in-kind materials. Paint all quoins to match appearance in historic photograph (see above).

Undated photograph provides clues for paint scheme, balustrades, and other details. Image: Beverly Historical Society.

- Remove all pilaster elements and repair, restore and reinstall using in-kind materials.
- Remove all flush weatherboard elements and repair, restore and reinstall using in-kind materials.
- Remove all existing wood shingles from all wall surfaces. Inspect existing wood wall sheathing, wall studs, sills and wind bracing for deterioration. Replace with in-kind materials.
- Perform structural inspection of all exterior framing and connections. Perform structural improvements within walls and at structural connections as recommended by structural engineer.
- Insulate wall cavities from outside using blown-in, dense-pack cellulose insulation. Cover all existing wood wall sheathing with new ZIP System OSB

wall sheathing, taping all joints. This system will meet Building Code requirements for thermal, air and water vapor resistance.

- Install rain screen vertical drainage system to new wall sheathing to create channels for escape of water from wall system. Install new back-primed wall cladding using stainless steel nails. Paint using historic paint colors determined through paint analysis.
- Restore the missing watertable/belt course that originally ran the length of the ocean side of the building, just above the window heads of the basement windows.

Windows and Doors

Conditions

The windows in the building consist of original casement, double-hung and round pivoting windows. At some point in time, double-hung windows at the second floor level replaced two round pivoting windows at the south end of the east elevation.

At the north end of the same elevation, two modern overhead garage doors were installed to accommodate a variety of maintenance equipment. These replaced two original first floor windows on the main block and necessitated shifting the central window to the south.

A fire at the northeast corner on July 4th, 2016 caused significant damage to the windows in that location, as well as to the second floor windows along the ocean side (west elevation). One of the round windows and three of the second floor double-hung windows had to be replaced.

East elevation, southerly bays. Two rectangular windows at second level replaced original round windows. The door at the first level is non-historic.

East elevation, northerly bays. Overhead garage doors replaced two windows.

Most of the double-hung windows along the second floor of the west elevation had to be broken out or removed by firefighters to allow for smoke exhaust during the fire. Most of the damaged or removed sashes were saved; they should be restored and reinstalled in their original locations. After the fire, exterior storm windows were installed to cover the unprotected window openings.

The basement windows originally in the ocean side of the building (west elevation) have been covered over with plywood or have disappeared behind sheathing and wood shingles. Most of the original window openings remain visible from the inside of the basement.

At the second floor of the south elevation, a short door and several windows are not visible on the exterior but are present on the inside face of this wall. They were apparently covered over during the replacement of the roof, probably because of water leakage below the door threshold.

All of the original window sashes and frames are in need of various levels of restoration. Water penetration and general weathering have caused wood deterioration, loss of hardware, and difficulty with operation. The window frames and casement sashes of the current garage area are interesting because they consist of wood covered with galvanized metal sheathing. This may have been an attempt at either enhanced protection from weathering or fire protection.

The exterior detailing of the first and second floor window frames of the east elevation is particularly complex with many individual pieces and joints, all potential avenues for water penetration. These windows are in poor condition.

West elevation. Storm windows installed to replace windows broken during firefighting operations.

West elevation. Basement windows have all been filled in or covered with siding. Poor condition of shingle siding is evident.

Right: East elevation. Complex windows are at risk of losing integrity of moldings, trim and glazing due to lack of periodic maintenance.

New French doors inserted at southwest corner of first floor.

East elevation. There is no historic precedent for the double entry doors with sidelights and transom.

The first floor door and window serving the stairs to the second floor along the east elevation have both been covered over with plywood, probably for security reasons.

The French doors at the first floor level of the south and west elevations are recent insertions to improve air circulation on hot days and to improve views to the ocean from the prime rental space. These doors have no historical basis and are solely a response to the functional adaptive re-use of the first floor as a rental venue. With these doors in place, consideration should be given to reconstruction of the original exterior decks, which would enhance the visual and functional appeal of this rental venue.

The main entry double doors are also a recent intervention and are not based upon any historical evidence or historic photographs. They are in good condition.

The large sliding doors visible in the historic view of the west elevation (ocean side) of the building are still extant in their wall pockets. This information was gained when the adjacent prep kitchen was rehabilitated and the doors were glimpsed within the exterior wall.

The doors at the north and south elevations leading into the basement space are in fair condition.

Recommendations

- Remove, restore and reinstall all original round, double-hung and casement window sashes and frames using in-kind materials.
- Remove the two garage doors and replace with one new window and one relocated window at the east elevation of the first floor.
- Open up the original basement windows along the west elevation and provide new window sashes to match existing original sashes. If this is impractical due to rising sea level concerns, treat these as blind window openings.
- Restore or replace the surviving damaged window sashes at the second floor along the west elevation.

- Open up the window openings and door opening at the south end of the second floor.
- Remove the plywood sheathing from the stair door and window along the east elevation of the building and restore the existing window and door elements.
- Provide exterior or interior storm windows where original single-glazed windows are being restored and reinstalled, for better thermal insulation.
- Open-up the west wall where the original exterior, sliding pocket doors still reside. Restore the doors and recreate the missing doorframe and casings. Consideration should be given to reconstruction of the original exterior deck fronting on this doorway, which would enhance the visual and functional appeal of this rental venue.
- The doors leading into the basement space at the north and south elevations need to be restored or rebuilt and reinstalled using in-kind materials including new hardware and security locks.

South elevation. Note modern, inappropriate shed entry addition.

North elevation. Foundation wall consisting of Weymouth seam-faced granite requires cutting and repointing.

Coursed rubble foundation at base of west wall.

Foundations and Structural Systems

Conditions

The stone foundations along the south and north elevations consist of seam-faced Weymouth granite laid in coursed ashlar with full mortar beds. The color and composition of the mortar needs to be determined; it is not clear if there are separate bedding and pointing mortar mixes/colors.

The stone foundation along the ocean side (west elevation) appears to consist of larger stones laid in a loose pattern of coursed rubble. A thick layer of gray Portland cement mortar appears to have been applied as a parging coat over most of the stone surface.

Recommendations

- Cut and repoint all mortar joints at all locations at the south and north foundation walls.
- Remove the mortar parging from the west foundation wall. Cut and repoint all mortar joints at all locations.

For a more detailed structural conditions assessment and recommendations, see the structural assessment update by Structures North Consulting Engineers dated November 13, 2017 on page 53 of this report.

Roof and Wall Thermal Insulation

Conditions

The building has never been used by the City during the winter months and there is no thermal insulation in any roof, wall or floor cavity.

Recommendations

- Insulate exterior wall cavities from the outside using blown-in, dense-pack cellulose insulation to achieve at least an R-16 value. Use this procedure at the entire first floor except at the current garage, which could be insulated from the inside. At the second floor, insulate the two finished apartments in the same manner. The open storage space could be insulated from the inside. Cover existing wood sheathing with Huber ZIP-System R-sheathing for an additional R-value of 3.6 (nominal 1" thickness).
- Insulate roof cavities above flat ceiling areas from the inside using blown-in cellulose insulation to achieve at least an R-49 value. If a new membrane roof is to be installed, consider installing several inches of rigid insulation board over the existing roof board sheathing prior to the installation of the new membrane roof system.
- Insulate first floor framing cavities above the basement using rock wool batt insulation (ROXUL) to achieve at least an R-30 value. Rock wool insulation also functions as an effective fire barrier, especially if used in conjunction with a layer of fire-rated gypsum board.

INTERIOR CONDITIONS

Basement

Conditions

The basement is currently used as storage space for maintenance and recreational equipment by the Beverly Parks & Recreation Department. Some of the vehicles stored there have been recently removed to other locations.

The floor of the basement is cast-in-place concrete. The areas that are visible appear to be in generally good condition.

The wood floor framing for the first floor above is mostly visible throughout. The floor framing was originally supported by brick piers, cast-iron or steel columns, and wood posts. Supplemental steel tube columns have been installed to reduce spans and increase load capacities and as replacements for some deteriorated wood posts. Some supplemental LVL wood beams were also installed as part of these structural improvements supervised by Structures North Consulting Engineers in 2009/2010. The underside of the first floor lacks any thermal insulation.

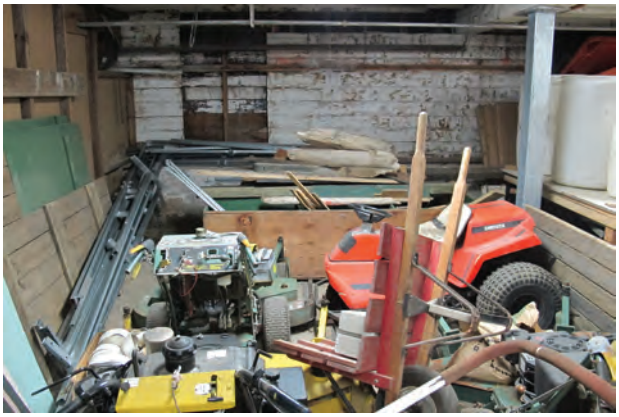
The original exterior walls are a combination of wood stud walls on the west wall and rubble stone masonry on the south, east and north walls. The wood stud walls are covered with horizontal wood sheathing on the west wall, except where original window openings are still visible.

Along the west wall, the rubble stone foundation rises approximately two feet above the concrete floor slab. Large wood timber posts rest on this wall and support the ends of wood floor girders above.

Deterioration of the wood sill at the top of the stone foundation wall is visible at the top of the basement stairs along the east wall. This is probably caused by water-saturated soil directly abutting

Basement. Supplemental steel columns installed to reduce spans and increase load capacities.

Basement. Relatively new water heater left of stairs to the first floor.



Basement. Horizontal wood sheathing along west wall, where an original window opening can be seen.

Basement. Deteriorated wood sill above east foundation wall.

Basement. Electrical equipment.

the outside of the building at grade level. This sill deterioration may exist at other locations along the east wall, which are not currently visible.

Lighting is provided by linear fluorescent lighting fixtures placed at widely-spaced intervals.

A small forced-air furnace exists at the south end and is used to provide partial heat to the Lynch Room above. A relatively new hot water heater sits near the stairs to the first floor. Water supply and waste lines are relatively new and probably mostly date from the accessible restroom improvements made on the first floor.

A variety of electrical panels, fuse boxes, meters and switches exist at several locations. Please see the CSI Engineering report on page 57 for a detailed description of conditions.

Recommendations

- Remove as much of the maintenance equipment from the basement as is possible. Gasoline and other combustible liquids should not be stored anywhere in the basement.
- Remove all obsolete mechanical, electrical, plumbing, lighting, fire alarm and fire protection systems and replace with new code compliant systems.
- Provide passive ventilation air via louvered openings along the perimeter of the exterior walls. This is recommended for removal of moisture and water from recreational and maintenance equipment.
- Insulate the underside of the first floor with 5-1/2" of rock-wool batt insulation with an R-value of at least 23.
- Expose all wood building sills along the east wall. Remove and replace deteriorated sections with in-kind replacement materials.
- Modify the existing grade along the east side of the building to expose the top of the masonry foundation wall. Create a swale to collect rainwater from the new downspouts and direct it away from the building.

First Floor

Conditions

The interior has been completely sheathed in clear finished, matched beaded boards, a typical treatment for a late 19th century carriage house and stable. Wall and ceiling surfaces are very plain. Simple, flat wood trim is used at door and window openings. The wall and ceiling intersections have molded trim.

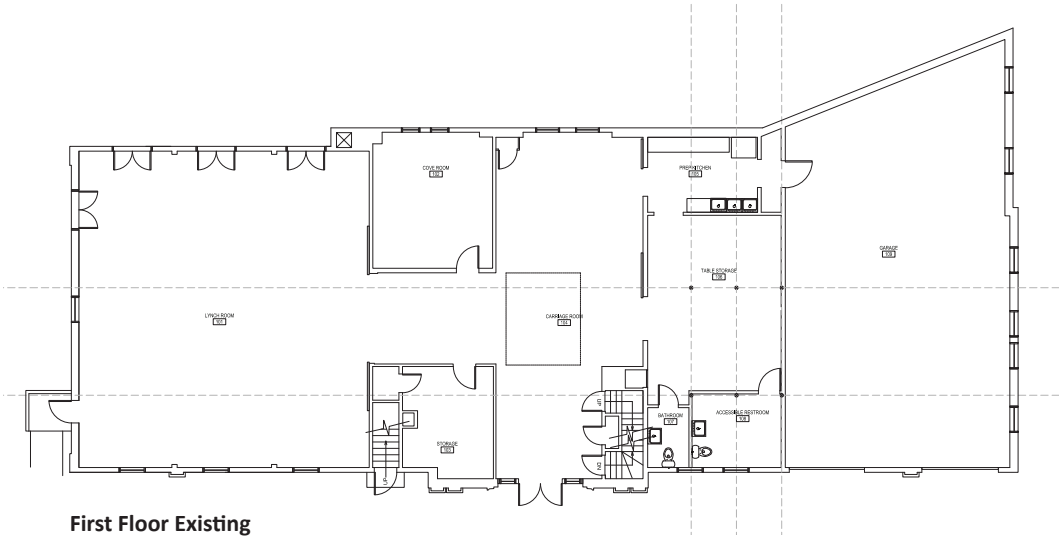
Exit signs, exit lighting and fire alarm pull stations have all been surface mounted to the walls with exposed metal conduit or wire mold enclosures. Track lighting has also been surface mounted to the ceiling in most rooms.

The original clay tile flooring has been removed from the former horse stalls and carriage wash areas and has been replaced with wood strip flooring. This work was done in an effort to reduce the dead load of the floor and to make the flooring more functional and comfortable as a rental venue. The work was undertaken at the same time that structural improvements were made in 2009-2010.

The current kitchen facility and handicapped accessible rest room are improvements that have been accomplished within the last ten years. However, two toilets and two lavatories are not adequate to serve 130 occupants in an assembly rental venue.

First floor. Entry lobby.

First floor. Table storage in old horse stalls (note original cast iron columns).



First Floor Existing

First floor. Light well for original skylight.

First floor. Catering kitchen.

First floor. Accessible restroom entry and transom.

First floor. Garage interior.

The forced hot air heating system in the basement serves only the Lynch Room. This is a rather basic system that is used primarily during fall and winter art exhibitions.

A single enclosed stair leads to the basement from the main entry area. An adjoining enclosed stair leads to the second floor. Both stairways are sheathed in matched beaded boards. Each stair has narrow wood winders.

Recommendations

- Reconstruct rest rooms to provide fixture counts mandated by the Plumbing Code. See the Code Analysis on page 61 for more information.
- Provide new heating and cooling system.
- Insulate exterior walls.
- Remove all obsolete mechanical, electrical, plumbing, lighting, fire alarm and fire protection systems and replace with new code compliant systems.
- Add thermal insulation and dry wall to walls in garage space.

Second Floor

Conditions

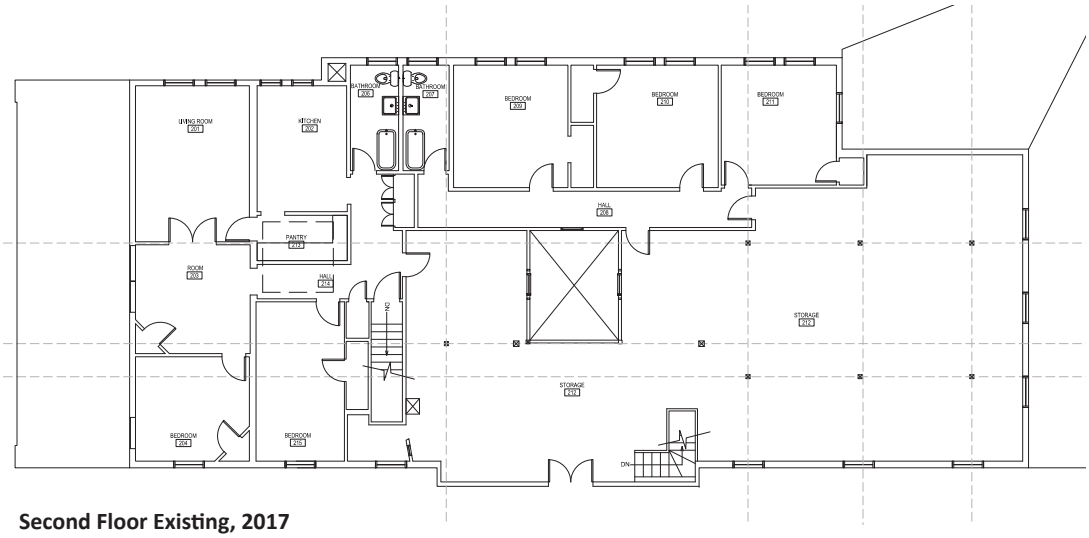
The second floor is divided into two areas. The former staff quarters occupy the south and west sides end of the building. The space was essentially divided into two apartments with separate living, dining and kitchen facilities and dedicated bedrooms. Wall and ceiling finishes are typically three-coat plaster on wood lath. Wood strip floors are typical throughout.

Two trusses are embedded in the east-west walls of the southernmost apartment. Small observation holes made in the plaster by structural engineers confirmed the location and design of the two trusses.

Original stair to second floor

Second floor storage with restored oculus windows.

Window into light-well.



Second Floor Existing, 2017

Second floor. Historic staff quarters.

Second floor. Historic staff pantry.

Almost all of the original wood double-hung wood windows survive in place in the south apartment. Many of the window sashes in the west apartment were removed during the recent fire. The sashes survive in most instances and could be restored and reinstalled.

Water infiltration through leaks in the old roof system has caused portions of some plaster ceilings to fail. All of this damage is repairable. The old kitchens contain outdated cabinets and non-functioning appliances. The existing bathrooms are similar. All bathrooms and kitchens would need to be completely gutted and renovated.

The northeast end of the building consists of various open storage spaces. Wall and ceiling surfaces are mostly unfinished, revealing interior and exterior wood wall studs and horizontal sheathing. Wood subflooring is mostly exposed and reveals the ghost outlines of framing originally in place around roof skylight and floor openings. A steel truss is visible in the north wall of the storage area. This truss carries the north exterior wall above the middle of the existing garage below.

Recommendations

- Renovate both existing rest rooms to meet occupancy requirements.
- Provide new heating and cooling systems.
- Insulate exterior walls and roofs.
- Remove all obsolete mechanical, electrical, plumbing, lighting, fire alarm and fire protection systems and replace with new code compliant systems.
- Add thermal insulation and gypsum drywall to interior and exterior walls in former storage space.
- Repair damaged or missing wall and ceiling plaster in both former apartments.
- Enclose existing open stair to main entry lobby in former storage space.
- Provide new finished wood strip floors in former storage space.
- Provide acoustical batts in floors and wall partitions separating most rooms for privacy.

Second floor. Staff quarters.

Second floor. Staircase from first floor exterior to staff quarters on second.

STRUCTURAL ASSESSMENT

Structures North Consulting Engineers

Structures North
CONSULTING ENGINEERS, INC.

60 Washington St, Suite 401
Salem, Massachusetts 01970-3517
www.structures-north.com
T 978.745.6817 | F 978.745.6067

November 13, 2017

Lynne Spencer
Spencer & Vogt Group
1 Thompson Square, Ste. 504
Charlestown, MA 02129

Reference: Conditions Survey
Lynch Park Carriage House, Beverly, MA

Dear Lynne:

Structures North Consulting Engineers, Inc. was retained to perform a conditions assessment at the 1800's carriage house at Lynch Park in Beverly. The Town of Beverly is interested in renovating the carriage house for assembly and business uses, and is interested in the structural implications of the proposed renovations and changes of use, and the general condition of the building overall.

General Description

The building is a 2 story, wood framed structure with an exposed basement on the west (Harbor) side, built in the late 1800's. The building was originally used for horses and carriages, with some worker living quarters on the 2nd floor. Currently the 1st floor has a general-purpose meeting and art exhibition room, with wood finishes throughout the room, at the south end of the building. The north end of the 1st floor has tractor and equipment storage rooms / garages for the city of Beverly. The 2nd floor at the south and west sides had living apartments, and the north and east sides were uninhabited "attic" space. The basement is all unfinished storage space. Superstructure framing is typically wood, with a few steel members mixed in. Foundations are stone masonry. At high tide the sea rises up the side of the west foundation wall. On a day that we were on site around the time of high tide the ocean water was approximately 35 inches below the basement floor.

Conditions Survey

Preface-

On November 11, 2008 we visited the building to perform an existing conditions survey and issued a report on January 28, 2009 describing our findings. At that time, many of the rooms had finishes intact, and the structure in those rooms could not be observed. Very little of the roof framing could be observed in the 2nd floor residential apartment spaces, and virtually none of the 2nd floor framing could be observed. We could not find access to the roof. The northwest corner of the basement (Beachcomber Café area) was inaccessible due to locked doors. Footings could not be observed. The conditions assessments made in this report are limited only to what could be observed. Assessments were limited to visual inspection only, with the exception of taking 3 selective wood

samples to determine the typical wood species used for the framing. We did not test any wood for rot damage.

In 2009-10 we designed and performed construction administration services for a repair project to replace severely damaged brick basement piers and to address overstresses in some of the first floor framing in the center of the building.

On November 3, 2017 we re-visited the site to review changes to existing conditions, and to see some additional framing that had been exposed since our 2008-9 visits. Again, assessments were limited to visual inspection only, and not much more could be observed than in 2008. We did take representative wood samples from some of the older wood beams, trusses, and joists, and determined that it was a Southern Pine species.

Noted Conditions and Recommendations-

Visually, the observable exterior framing frequently had rot damage, while the interior framing looked to be in generally sound condition, with a few exceptions:

1. (2008) In the smaller west-side 2nd floor apartments the roof had leaked. *The areas where water leaked in should be further investigated for rot damage.*
2. (2008) In the smaller west-side 2nd floor apartments, small areas of 2nd floor floor-boards had been removed exposing the 2nd floor joists. Please refer to keynote "2-2" on the attached "Exist. 2nd Floor Plan". Significant notches had been made in several of the joists to accommodate plumbing/sewer pipes. *These notches would likely not meet notch criteria for modern day buildings, and these joists should be strengthened, and the plumbing relocated to a more suitable location for the framing*.
3. (2008) In a few areas, it appeared the exterior wall shingles had failed. *These areas, along with the sheathing and framing below them, should be further investigated for rot damage. This would involve temporarily removing finishes to expose hidden conditions.*
4. (2008) The stone foundation/basement walls appeared to have some locations where the mortar has eroded away. *Further investigation should be performed to evaluate the extent of mortar repointing required to address failed mortar joints, especially given the potential for sea water to wash through the wall*.
5. (2017) The quoins and sheathing are severely rotted at the lower portion of the southeast corner, starting at the ground. This rot is of sufficient extent that one would assume that the sill and lower portion of the corner post are also rotted. *These timbers should be exposed from the exterior and examined. Any rotted portions should be replaced with new white oak dutchmen. White oak is naturally rot resistant and a longer lasting replacement of the original southern pine*.
6. (2017) The southern trimmed pilaster of the two paired pilasters at the south side of the center entrance is severely rotted and deformed. *All of the rotted trim and sheathing should be removed to expose the structural sill and stud or post framing at the interior, which should be repaired with white oak dutchmen as needed*.
7. (2017) The northeast post, which is at the north side of the garage door opening has completely rotted away, leaving an open hole in the exterior. *This timber should be*

replaced with new white oak and the rotted sheathing, siding and trim should be replaced.

8. (2017) The sill below the east wall is rotted and compressed into a curved shape where it is exposed at the top of the basement stairway. *This rotted section of sill should be replaced with new white oak.* It is concerning that this condition may be indicative of other sections of sill that are presently hidden. *Consideration should be given to exposing most or all of the remaining sill to determine if it too is in need of replacement.*

9. (2017) The first floor framing at the entry to the active garage bay is severely rotted and partially supported by temporary bolster framing. The rot has presumably been caused by water dripping off of vehicles and seeping into the floor. *The affected area will need to be reconstructed in its entirety. NO VEHICLES SHOULD BE DRIVEN INTO THE GARAGE ABOVE UNTIL THIS WORK HAS BEEN DONE.*

10. (2017) The steel column at the south side of the first floor garage bay runs down into the wall, invisibly below the garage floor. This column supports a steel beam that spans toward the west, over the garage bay. P/T timber supports have been added in front of the column support the west running beam, presumably due of hidden damage that was detected at the column's base. Unfortunately the timber supports land on the area of floor that is rotted below, and with no corresponding support added underneath. *The base of the column should be exposed and permanently repaired, so that the timber shoring can be removed*.

11. (2017) The stone retaining wall running eastward from the northeast corner is leaning outward. While this is a sign of lateral instability, the relatively small amount of outward lean, the lack of recent cracks, and the relatively low differential height of the retained grade means that this is a very slow, non-hazardous condition. *The most cost-effective method of stopping this movement is to excavate the soil from the high side of the wall and replace it with flowable fill, which would solidify and no longer put lateral pressure on the wall. The wall itself can remain safely in place, in its rotated form*.

12. (2017) A significant portion of the north (garage) wall has been reframed following a fire. This re-framing was done is a way that creates a hinge at about mid-height, and the wall can be moved in and out by hand. *Continuous studs or posts should be added and let into the wall in order to provide the proper stability. It may end up being more cost effective to rebuid the wall entirely*.

13. (2017) There are scattered rotted studs and blocks in the north as well as the east wall, some of which has been hidden behind brick nogging, which has fallen out. *All of the rotted framing should be replaced.*

Existing Framing Analysis

Where existing framing could be observed, and the framing measured, selected framing members were analyzed to determine their performance under anticipated loads, using loads specified in the Massachusetts State Building Code. For our analysis, we assumed that the 9th edition of the Massachusetts building code would be in effect at the time of design and permit, however it should be noted that currently the State has only made a draft version of their amendments for this code available, and it is subject to change. Our

analysis is based on representative framing members, not all members were evaluated, in order to quickly and economically determine the approximate load carrying capacity of floors and roofs. For the analysis, the framing is presumed to be in sound structural condition, with any repairs due to rot, notches, rising damp, etc. already made. The sizes of mortise and tenon type connections could not be determined, and were not evaluated. The attached "Framing Analysis Results Table" describes the results of our analysis.

Summary of Results-

- Joists and rafters typically have sufficient capacities for proposed loads.
- Beams frequently do not have sufficient capacities and would need reinforcing. At first floor beams this is especially true of beams supporting more than just 1st floor loads, and beams towards the north and south ends of the building.
- Wood trusses do not have sufficient capacities and would need reinforcing.
- Reinforcing of beams and trusses with sistered members would often be complicated by flush framing conditions where joists would interfere with sistering, and would require temporarily shoring the joists, cutting them to fit a new connection, installing the beam/truss reinforcing, then reconnecting the joists to the beam/truss with new hangers. For beams, if an alternate load path is feasible, it may be advantageous to look for opportunities to add new posts to shorten beam spans. The higher up in elevation the beam is though, the trickier this is, as the load path needs to continue down through the building to foundations.
- Mortise and tenon, notched, or nailed joist to beam connections need further investigation, and may need metal joist hangers to supplement connections found to be inadequate

Structural Ramifications of Proposed Renovations

The building code outlines what types of structural analysis to use for different renovation conditions when renovating an existing building. The amount of analysis required, and the severity of the building code's rules used in the analysis are dependant on the decisions made about things such as: how much space you renovate, how much space is classified as a "change of use" and how those changes of use affect live loads prescribed, whether you are adding weight (dead load) to the building, or whether any framing (including walls) is being removed, added, or altered. Below are some of the major structural implications of the proposed renovations:

Building Code Alteration Level-

During the design process, the code-defined Work Area will need to be established and compared with the total Building Area to determine whether the Work Area exceeds 50% of the Building Area. This will determine whether the work is defined as Alteration Level 2 or Alteration Level 3 in the building code. Our rough estimate is that the Work Area slightly exceeds the 50% threshold and will result in this project being considered Alteration Level 3.

- New structural elements are required to comply with the modern building code for new buildings regardless of Alteration Level.
- Roof diaphragm connections and roof connections to walls will likely need to be evaluated and reinforced.
- Existing structural elements carrying gravity loads that either experience a change of occupancy that results in higher loads based on the building code, or that are altered, are required to meet the requirements of the modern building code for new buildings (unless the increase in loads is less than 5%) regardless of Alteration Level. This means, for example, that framing in 2nd floor areas changing from residential sleeping (30psf live load) rooms to offices (50 psf live load), will need to be reinforced where found to be overstressed for modern load conditions. The change of occupancy may also increase the various risk categories associated with the building, which may require evaluation of framing for increased snow, wind, and seismic loads. It is unclear what occupancy category the original structure would have been classified as. We suspect a mix of storage at the first floor and residential at the 2nd floor. If the proposed use is assembly at the first floor and business at the 2nd floor, and if the primary occupancy of the building is considered public assembly and has an occupancy load of 300 people or more, then the building will need to be retrofit as needed to meet modern snow, wind, and seismic requirements.
- Existing structural elements resisting lateral loads will at a bare minimum require evaluation:
  - If Alteration Level 2, whether they need to be reinforced depends on whether their ratio of lateral loads to capacity is changed by 10% or more, and if so, whether they meet building code requirements for lateral loads. For wind this means full wind loads from the modern building code for new buildings. For seismic this means reduced seismic loads from the modern building code for new buildings.
  - If Alteration Level 3, the evaluation will depend on whether more than 30% of the total floor and roof areas of the building are involved in structural alteration. If so, then the building is required to resist full modern wind loads and reduced modern seismic loads regardless of the ratio of loads to capacities. If not, then the same standard of evaluation noted in Alteration Level 2 is required.
  - We suspect that the most severe standard of Alteration Level 3 will be triggered on this project, and that, regardless of change of occupancy requirements noted above, the building will be required to conform to modern wind load and reduced modern seismic load requirements. Wind loads for a coastal property such as this will be relatively large. We would consider the existing lateral load resisting system to be board-sheathing exterior wood stud walls, which do not typically have tremendous lateral load capacities. In the long direction of the building we suspect lateral load resistance might be satisfactory, but in the short direction of the building we are likely to find deficiencies. You have noted that, in order to insulate exterior walls, you are considering removing the exterior cladding and board sheathing. This would be an opportunity to replace board sheathing with plywood sheathing, which could triple or even possibly quadruple the lateral load resistance of these walls. In the short direction of the building, this is still likely to not be sufficient though, and we would need to add plywood sheathing to interior east-west walls, especially walls near the center of the building. The removal of any

east-west walls could prove problematic unless a sufficient amount of new plywood-sheathed east-west walls is added to make up for it. The new elevator walls, if CMU masonry used as shear walls, could potentially be tremendously beneficial for lateral load resistance at the north-central portion of the building. Adding a new CMU wall inboard of the 1st floor Janitorial Room and 2nd floor Mechanical Room, that stacks from roof down to basement, may be a way to add significant lateral load resistance needed at the south-central part of the building without damaging beadboard finishes in public areas. With wood floors (flexible diaphragm), the location of the shear walls is critical to their performance.

Flood Resistant Upgrade Requirements-

- Our understanding is that the building is in a flood zone. We assume, given the location and that high tide rises several feet up the base of the building's foundation walls, that it is in the more severe flood "V" zone that sees wave impacts, rather than the less severe flood "A" zone, and that the base flood elevation is above the basement floor. A consultant will need to be hired to determine which flood zone it is in, and where the base flood elevation is relative to the basement and first floors.
- The building code trigger for flood resistance upgrades happens when the value of the proposed work exceeds 50% of the market value of the structure. It remains to be seen whether this threshold will be exceeded, however given the scope of renovations being proposed, and the amount of structural work alone that we think will be required, we suspect that it will be.
- We do not think upgrading the flood resistance of this building will be feasible. Buildings in these conditions need to be raised up above the flood elevation and crashing waves. We do not think the stone masonry walls would be suitable for countering wave impacts, and the wood stud walls would definitely not be suitable either. If somehow it were just an A-zone, not a V-zone, this would still be extremely difficult, and likely unfeasible, to dry-proof and counter buoyancy forces given the existing structural systems in place.
- There is an exemption in the building code for historic buildings. To be considered "historic" it must be on the state or national register of historic places. Our understanding is that the local building inspector gets final say in whether the flood resistant upgrades can be waived or not for a historic building. Our understanding is also that the building is not currently listed on historic registers, but that the Town has put significant work into researching and documenting the historic nature of the building. We will leave it to the architects to advise on whether getting the building listed on the historic register is feasible, but our suspicion is that it could be done.
- Given the above, we recommend the following:
  - Discussing with the building inspector whether he/she would grant an exemption for flood resistant upgrades for this building if it were to be listed on a historic register.
  - If the building inspector indicates a willingness to grant the exemption, then pursue getting the building listed on a historic register in order to obtain that exemption.
  - If the historic exemption could not be obtained, then we would advise scaling back the scope of the project to avoid having the cost of renovations exceed the 50% of

the market value of the building so that the flood resistant upgrade requirements are not triggered.

Change in Live Load at Second Floor-

- The south end of the second floor is supported over the former drive bays by two east-west running full-story, three panel trusses. One of these is within the wall that separates four of the interior spaces and the other is within the south exterior wall of the second floor. The chords of both trusses would be overstressed with the proposed office occupancy and will need to be reinforced in both bending and compression. This can be done by adding steel straps or rods and gussets, along with additional struts within the existing planes of the trusses. All of the reinforcing should be done from within the second floor, so as not to damage the unadulterated bead board finishes below.

- The wooden timber posts that support the reinforced trusses will need to be analyzed to determine whether they have sufficient capacity for the additional loads. In order to best preserve the interior bead board finishes, any reinforcement that is required should consist of inserted or nested steel plates or angles installed from the exterior.

- Based upon the limited joist measurements we were able to make, the floor framing appears to be sufficient to the new occupancy loads. A more thorough, and unfortunately destructive, investigation should be made of the floor framing and joist end connections to confirm this understanding.

Architectural Impacts-

- We have not fully reviewed the existing conditions behind the northwest corner of the building at the basement level (former Captain Dusty's Ice Cream Shop area) that is proposed to be removed to see if it is appropriate for exterior exposure and wind loads. It appears that a new foundation wall may be required here. Given the flood concerns, it would not be feasible to make this one area flood resistant, while the rest of the building is not, so as a part of the historic exemption mentioned in the flood resistance section of this report we would be seeking an exemption for this area as well. The exterior elevation drawings appear to show this foundation as stone, which can be problematic. Typically in modern construction this involves a stone veneer with a structural concrete wall behind it. In order to avoid the superstructure above from bearing on stone veneer, a watercourse detail is needed to align the superstructure with the concrete foundation, pushing the stone veneer outboard of the plane of wall above.
- The balustrade being proposed around the roof may block snow from blowing off the roof, creating new snow drift loads or increasing snow load requirements. Increases in snow loads on the roof will have a trickle-down effect adding load to framing below that is in the load path of the roof framing.
- The proposed rear exterior stairs and deck will need to be structurally isolated from the building and If they are in the flood V-zone they may need to be steel to try to resist wave impacts.
- The south low roof framing is proposed to be used as walkable roof. Framing in this area is unknown and difficult to access due to wood ceiling finishes below and roofing

on top. It may be different from the next bay of framing to the north because of the change from low roof to 2nd floor, and as a result may be overstressed.

- New windows and doors in existing exterior walls, where there is currently board or plywood sheathing, will decrease the lateral load resisting capacity of the building.
- The proposed new stairwell at the northwest is alongside the west exterior wall. The walls will lose their bracing from floor levels, and will need to be re-built as balloon-framed or with girts at floor levels. CMU masonry for this wall may be desirable, both for structural reasons and for preventing rot damage to wood framing that seems to be a problem with the existing structure.
- The proposed elevator appears to require the demolition of an existing iron column at the first floor, and will cause multiple column/footing interferences at the basement level. These areas will need to be re-framed. It may be advantageous to adjust the location of the elevator to serve as replacement for these columns and footings.

Concluding Summary

No vehicles should be driven into the garage due to the rot damage observed in that floor framing. Given the evidence of rot damage we found in exterior wall framing, we would recommend removing exterior finishes to expose the structure for determination of the extent of rot damaged framing.

Significant structural challenges will likely arise from the proposed renovation. Of particular concern is triggering flood resistance upgrades. We would recommend pursuing listing the building on historic registers and obtaining an exemption from flood resistant upgrades from the building department. Given the proximity to (contact with) the ocean, and the type of existing building construction present, we do not think performing flood resistant upgrades would be feasible. The next most significant challenges will be providing adequate lateral load resistance, especially in the east-west direction, and reinforcing overstressed beams and trusses that support flush-framed joists.

Changes to the architectural layout, such as removing the proposed roof balustrades or adjusting the location of elevator or stairs, may have big impacts on structural scope of work.

We trust that the preceding information will be useful in understanding the condition of the carriage house at Lynch Park and in establishing the scope of work required to renovate and change uses in the building. Please contact us if you have any questions or comments.

Respectfully Yours,
Structures North Consulting Engineers, Inc.

John M. Wathne, PE, President

Jefferey J. Reese, PE

Attachments:

- "Framing Analysis Results Table"
- Sketches:
  - "Exist. Basement Plan"
  - "Exist. 1st Floor Plan"
  - "Exist. 2nd Floor Plan"

Framing Analysis Results Table

framing level	general location	framing type	engineer's calculation ID	proposed use	part of roof load path?	analysis results
1st floor	center of building	joist	1J-1	1st floor corridor/ egress	no	OK, capacity exceeds 100psf assembly/1st floor corridor/egress live load.
"	"	beam	1B-1	1st floor corridor/ egress	no	OK, 2009-10 renovations/repairs reduced the dead load on this framing and shortened its spans to allow it to have sufficient capacity for 100psf live load needed
"	"	beam	1B-2	1st floor corridor/ egress	no	OK, capacity exceeds 100psf assembly/1st floor corridor/egress live load (after removal of heavy tile floor in 2009-10).
"	"	beam	1B-5	1st floor assembly/ corridor/ egress & bathrooms served by these areas	YES	**The beam will be significantly overstressed in thr proposed condition and will require strengthening either by A) additional columns and column footings to reduce its span or B) sistering of beam with new framing, involving shoring all joist ends, cutting the joists, installing the beam sisters, and reconnecting the joists to the beams with new hangers.**
"	"	beam	1B-6	1st floor corridor/ egress	YES	**Similar to 1B-5, 2008 Analysis was complicated by the beam supporting both 1st and 2nd floor loads.** Beam was OK if a 20psf 2nd floor "attic" live load was used in combination with replacing the 1st floor tile with a 20psf wood sleeper floor system, however **proposed changes of use at the 2nd floor, and possible increases in roof snow loads mean this beam will be overstressed in the proposed condition.**
"	"	beam	1B-7	mixed: meeting/event space (assembly) 1st floor corridor/ egress	YES	2009-10 renovations/repairs shortened this framing's spans to allow it to have sufficient capacity for 100psf live load needed, however if roof snow loads are increased due to the addition of the balustrade, the beam, although unlikely, may become overstressed again (T.B.D.).
"	south end of building	beam	1B-11	mixed: meeting/event space (assembly)	no	**Overstressed for assembly use. 80psf live load capacity less than 100psf live load.**
"	center of building	column/post/pier	1P-1		no	In 2008 analysis the column was OK in all cases, and appears it will not be affected by proposed renovations
"	"	column/post/pier	1P-2		no	In 2008 analysis the column was OK in all cases, and appears it will not be affected by proposed renovations
"	"	column/post/pier	1P-3		no	In 2008 analysis the column was OK in all cases, and appears it will not be affected by proposed renovations
"	"	column/post/pier	1P-4		no	In 2008 analysis the column was OK in all cases, **but it has not yet been determined how proposed increases in live loads will impact this analysis, as this will require a more in-depth analysis of the entire building since multiple floors/levels affect this post.**
"	"	column/post/pier	1P-5		YES	In 2008 analysis the column was OK in all cases, **but it has not yet been determined how proposed increases in live loads will impact this analysis, as this will require a more in-depth analysis of the entire building since multiple floors/levels affect this post.**
"	north end of building	joist	1J-3	1st floor assembly/ corridor/ egress & bathrooms served by these areas	no	OK, capacity exceeds 100psf assembly/1st floor corridor/egress live load
"	"	beam	1B-8	1st floor assembly/ corridor/ egress & bathrooms served by these areas	no	2009-10 renovations/repairs shortened this framing's spans to allow it to have sufficient capacity for 100psf live load needed, **however there may be similar beams further to the north, outside of the scope of the 2009-10 repairs,that will need similar strengthening as in 2009-10. Prior to 2009-10 renovations this beam was overstressed by more than 80% in all cases.**
"	"	beam	1B-9	1st floor assembly/ corridor/ egress & bathrooms served by these areas or meeting/ event space	no	**2008 analysis showed that in its existing condition with tile floor it is approximately 8% overstressed when a 100psf live load is applied. This could be corrected by replacing the tile flooring with something lighter. Existing LL capacity is approx. 88 psf.**
"	"	beam	1B-10	meeting/ event space	no	**2008 analysis showed that with 100psf assembly live load, beam is only OK if a wood sleeper floor replaces the existing tile flooring. With the existing tile flooring, the beam is overstressed by approx. 29%, and with a lightweight concrete leveling slab it would still be overstressed by approx. 21%**
"	south end of building	joist	1J-4	assembly / 1st floor corridor/ egress	no	OK for 100psf assembly live loads and existing wood floor
2nd floor	center of building	joist	2J-1	Offices	no	2008 analysis showed OK for 50psf business offices (exceed deflection limits for 100psf assembly live loads)
"	"	joist	2J-2	Offices	no	2008 analysis showed OK for 50psf business offices (exceed deflection limits for 100psf assembly live loads)
	north end of building	joist	G2J-2	meeting room	no	OK, 105psf live load capacity exceeds 100 psf assembly load
	"	joist	G2J-5	low roof	YES	50psf live load capacity **likely to be exceeded at areas of snow drift on low roof**
	"	beam	G2B-3	meeting room	YES	**Overstressed: Accounting for point load from roof post, beam has only 66psf live load capacity, well short of the 100psf required for an assembly use.**
	"	beam	G2B-4	low roof	YES	**Overstressed: 30 psf snow load capacity will likely be exceeded at all areas, drift or no drift**
	"	beam	G2B-5	meeting room and low roof	YES	**Not reviewed since proposed layout shows a wall at this location**
"	"	multi-floor truss	TRUSS-2	roof (top chord) and offices bottom chord)	YES	**2008 analysis showed 16% overstressed for 50psf business offices (and 99% overstressed for 100psf assembly loads)**
"	south end of building	multi-floor truss	TRUSS-3	roof (top chord) and offices bottom chord)	YES	**The truss is overstressed and will require reinforcing**
roof	north end of building	joist	RJ-1	roof	YES	2008 analysis showed OK for anticipated loads, and likely with sufficient capacity even if roof balustrade causes an increase in snow loads.
"	"	beam	RB-1	roof	YES	2008 analysis showed OK for anticipated loads, but if roof balustrade increases snow loads the beam will be very close to overstressed, or possibly overstressed, depending on what the exact snow load ends up being.
"	"	multi-floor metal truss	TRUSS-1	low roof, 2nd floor meeting room	YES	OK (at 65%+/- capacity) for anticipated loads (100psf live load at 2nd floor, average 60psf snow load on low roof, 35psf snow load on high roof). Should add diagonal kicker braces from top chord to roof framing to brace top chord (in compression) which will intrude into ceiling space
"	center of building	rafter	RR-1	roof	YES	2008 analysis showed OK for anticipated loads, and likely with sufficient capacity even if roof balustrade causes an increase in snow loads.
"	"	beam	RB-2	roof	YES	**2008 analysis showed 110% overstressed. Will need reinforcing or additional supports to shorten span. If the balustrade causes increased snow loads then the beam will be further overstressed.**

Photographs: Structural Conditions

Leaning retaining wall due to pressure of adjacent soil and paving.

Temporary bracing along north wall of garage.

Fire damaged wall studs at north wall of garage.

Lack of structural continuity in wall studs at north wall of garage.

Galvanized steel covered wood window sash in garage.

Severely deteriorated floor framing below garage.

Severely deteriorated corner post at northeast corner of garage (interior).

Severely deteriorated corner post at northeast corner (exterior).

Salvaged sashes from first and second floor window openings.

Severely deteriorated bottom rail of window sash in garage.

Second floor. Exposed wall and roof framing near stairs.

MECHANICAL, ELECTRICAL & PLUMBING SYSTEM ASSESSMENT

CSI Engineering

HVAC
ELECTRICAL
CSI ENGINEERING
PLUMBING
FIRE PROTECTION

125 Aviation Ave Suite 4
Portsmouth, NH 03801
P : 6 0 3 - 3 1 9 - 8 2 4 4
F : 6 0 3 - 3 1 9 - 8 5 6 1

999 Broadway Suite 206
Saugus, MA 01906-4510
P : 7 8 1 - 2 3 3 - 4 8 0 8
F : 7 8 1 - 2 3 3 - 4 8 4 8
www.csi-engineers.com

Lynch Park Carriage House
Existing Conditions Report
Beverly, MA

February 22, 2017

Introduction

CSI Engineering LLC performed an existing conditions survey of the Lynch Park Carriage House in Beverly, MA. The scope of the survey was to describe and document the existing condition of the HVAC system in the Carriage House. This report shall provide an overview of the existing system and recommendations on necessary repairs and replacement of the HVAC, Electrical, Plumbing & Fire Protection systems. CSI will provide our observations of the existing systems and our recommendations for remediation, or upgrades required to meet current codes and/or owners desired improvements. With this information the owner will be able to make an informed decision on the future systems for the Carriage House.

Survey Conditions

Date:	January 10, 2017
Time:	1:00 PM
Weather:	Partly cloudy
Temperature:	31^0 F

Building Information

The building is a 2 story, wood framed structure with an exposed basement on the west (harbor) side, built at the end of the 1800's. Originally used to house horses and carriages, with some worker's quarters on the 2nd floor. Currently the 1st floor is a general purpose meeting space and some garage space. The 2nd floor has unused living apartments and an uninhabited attic space. The basement is an unfinished storage area.

Existing Systems Observations

Mechanical

This report is an overview of the existing mechanical systems installed in the building, including the equipment, distribution, and system capabilities. The purpose of this site assessment and report is to provide a detailed description of current physical condition of existing equipment currently installed.

Oil Fired Furnace

The southernmost meeting room on the 1st floor is heated with an oil fired central furnace located in the basement. The furnace is a Thermoflo HBO-12A rated at 140,000 Btu/h input. This unit is at least 25 years old, since it adheres to 1991 ANSI oil fired furnace standards. This unit was serviced in January 2016. The unit shows its age with a fair amount of corrosion on its outer case. The unit is in poor-fair condition. Unit did not have any outdoor air connection to it. The 2nd floor is not heated by this furnace.

Ductwork Insulation

On the ductwork associated with the oil-fired furnace, there is no installed insulation. The ductwork runs through an unconditioned space,

Exhaust fans

In the northern part of the basement, in the ice cream/food shop area there is a centrifugal exhaust fan of unknown capacity. The age of the fan was not available on the nameplate. The fan is in fair condition.

In the same food shop area in a separate room there is a small kitchen hood. The exhaust fan serving this hood was not inspected, due to it being located on the harbor side (West) exterior wall, which was inaccessible.

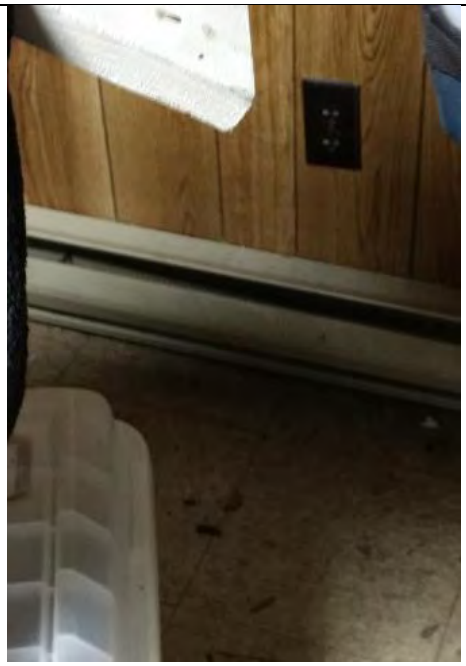
Electric Baseboard

There were two unit of electric baseboard located in a storage room south of the main entrance on the 1st floor. The units are functioning but do show some cosmetic signs of aging.

Deactivated Hydronic System

There is a deactivated hydronic heating system in the building. In the basement there is an old unused oil fired hot water boiler with associated expansion tank, pump, pressure relief valve, etc. The piping is uninsulated and severed at various locations. There are hot water radiators located on the basement and 2nd floor, with associated piping and risers.

Oil Fired Furnace		**Deactivated Hot Water Boiler**

		
Electric Baseboard		**Kitchen Exhaust Fan**
Kitchen Hood		

Electrical

Overview

Overall the electrical systems in the building are in fair to poor condition. It appears as some renovations to the electrical systems have been done in the past, but sections of the electrical have not been renovated in a long time.

Electrical Service and Distribution Equipment

The existing electrical service is fed via an underground conduit and wire from a utility pole. The service disconnect is located in the main electric area located on the basement level. The service is 120/240V, 1 phase, 3 wire and the service disconnect is a 400A enclosed circuit breaker. The enclosed circuit breaker feeds (5) meters. All services and panels listed below are of the same voltage characteristics.

a. The first service feeds a CL200 utility meter ahead of a 100A/2P enclosed circuit breaker. The enclosed circuit breaker feeds an unlabeled 20 pole panelboard with a 60A/2P main breaker located in the ground floor office:
    i. Ground floor panelboard
        1. The panel is in poor condition
        2. The panel does not have proper labeling.
b. The second service feeds a CL200 utility meter ahead of a 60A/2P fuse box with (8) fuses that is labeled for the barn.
    i. Barn Fuse Box
        1. The fuse box is in poor condition.
c. The third service feeds a CL200 utility meter ahead of a 60A/2P fuse box with (8) fuses. The labeling on the fuse box is worn and is unreadable.
    i. Fuse Box
        1. The fuse box is in poor condition.
d. The fourth service feeds a CL200 utility meter ahead of a 100A/2P fused disconnect. From the 100A/2P disconnect, the service feeds a 125A bus rated 20 pole panelboard.
    i. The unlabeled panelboard is located by the electrical distribution equipment.
        1. The panel is in good condition.
        2. The panel does not have proper labeling.
e. The fifth service feeds a 200A fused disconnect ahead of a CL200 utility meter. From the utility meter, the service feeds a junction box. The junction box feeds a refreshment panelboard and a 70A/2P circuit breaker that feeds a garage panelboard.
    i. The garage panelboard is located by the garage door in the basement. The panelboard has (8) poles.
        1. The panel is in poor condition.
        2. The panel does not have proper labeling.
    ii. The refreshment panelboard is located in a side room by the garage door. The panelboard has 30 poles and feeds a refreshment/ice cream shop.
        1. The panel is in poor condition.
        2. The panel does not have proper labeling.
f. Proper clearances about electric equipment has not been maintained.

Branch Circuit Wiring

The branch circuit wiring for the entire facility is a combination of conduit and conductors, NM, MC cable and knob and tube wiring. The electrical system ground established at the service could not be confirmed.
Several code issues were observed during the electrical survey;

a. It was noted in several locations that junction boxes are missing covers.
b. Unused Conduit/cable termination openings in boxes and panelboards were not properly sealed.
c. Existing spare sockets in fuse boxes exposed live parts.
d. Not all conduit penetrations through walls have been sealed.
e. Exposed knob and tube wiring was visible throughout the building.
f. Wiring is installed in areas that could pose a tripping hazard.

General Lighting and controls

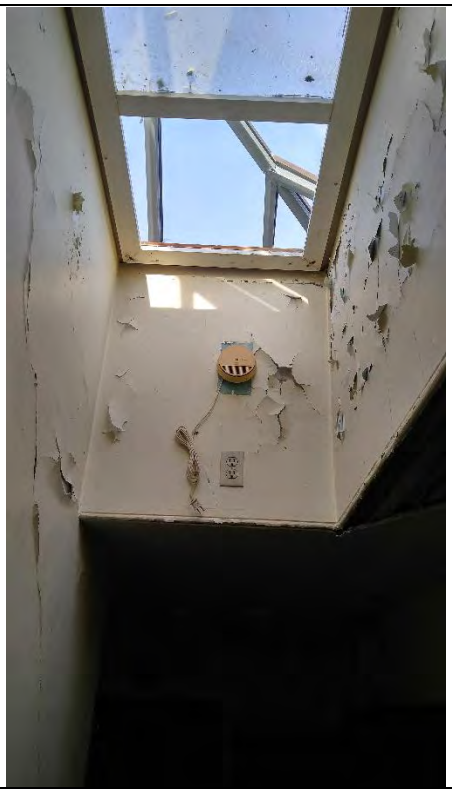
Main level lighting generally is LED retrofit lamps, incandescent and compact florescent T5 lamps. Either recessed, surface mounted or decorative pendant. Condition of the general lighting is good. Lighting control is, for the most part, by way of local switches. Occupancy sensors are present in some spaces, and a time clock is present for exterior lighting control.

Emergency & Exit Lighting

Emergency lighting is provided by ceiling and wall mounted self-contained battery style fixtures. The egress and exit signage coverage appears to be in accordance with code requirements on the ground floor. Exit signs and emergency lighting were not observed on the basement level or the second floor.

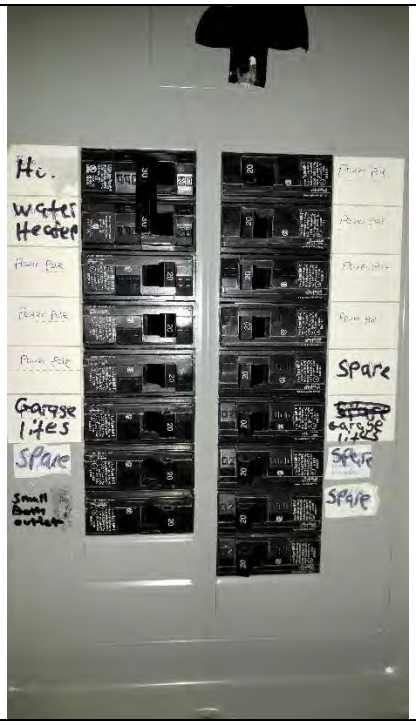
Fire Alarm

A Firelite MS-4 conventional fire alarm control panel is installed in the building. The panel has (4) zones. The building does not have sprinkler protection so all over detection in the building is required. Smoke detectors were observed throughout the building, however there is not full coverage in all areas. Some smoke detectors appear to be old and may not be in working condition. Pull stations are provided in accordance with code at each exit to the building and at each floor landing. horn/strobe units are provided in some areas but not in accordance with code. The units that are in place are all older units.

		
Older Panelboard		**Older Smoke Detection**

Fuse Box

Retrofit LED



Newer Panelboard

Conventional Fire Alarm Control Panel

NM Cable and newer smoke detector		**General & Emergency Lighting**

Plumbing

Domestic Cold Water Distribution

The domestic water system consists of a 1” incoming service that enters the building inside the basement located on the south side of the building. At the time of the walk through the water meter was not connected and there was no water in the building. The domestic cold water is routed through the basement and serves all fixtures requiring cold water. Cold water service appears to be sized properly. All existing piping appears to be in good working order.

Incoming Water Service

Domestic Hot Water Distribution

The domestic hot water system consists of two electric water heaters that serve dedicated areas. Water Heater #1 serves the existing 2-bay sink in the basement concession area. Water Heater #2 serves the kitchen space and toilet rooms.

Water Heater#1:

- 40 gal./4.5kw 208V single phase
- Located in the basement towards the north side of the building
- Serves a 2 bay sink

Water Heater #1

2-Bay Sink in Concession Area

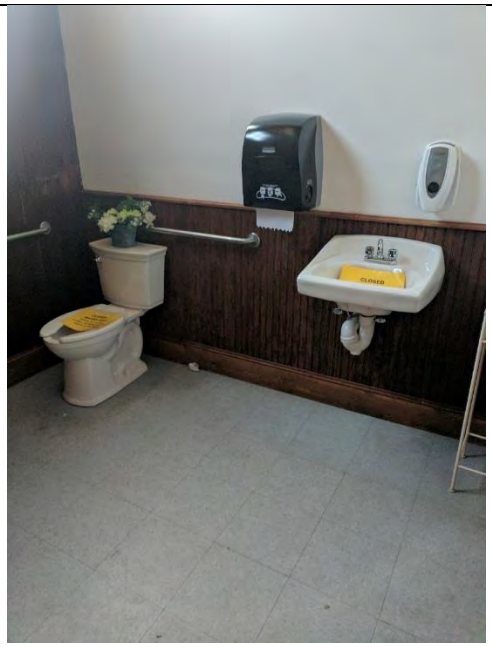
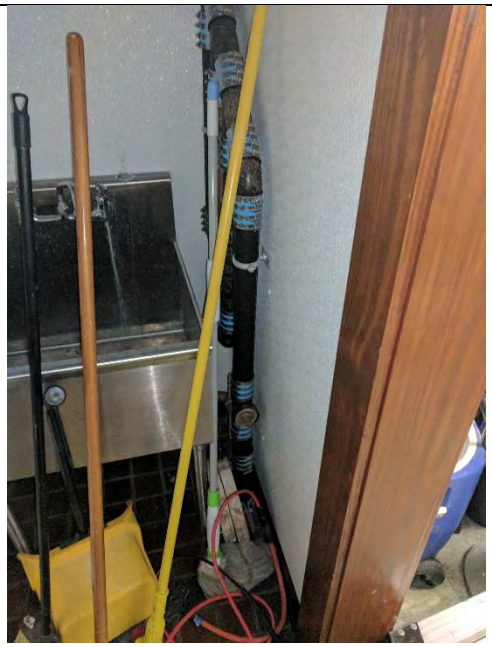
Water Heater #2:

- 55 gal./4.5kw 208V single phase
- Located adjacent to the stairwell in the basement
- Serves 2 lavatories, 2 toilets, a mop sink and a 3 bay sink all located on the first floor
- There is a mixing valve providing 110°F temp to the bathroom fixtures.

Water Heater #2 & Waste Line Exiting the Bldg.

Sanitary

The sanitary waste and vent system collects all of the waste from fixtures on the first floor which include 2 toilet rooms, mop sink and 3-Bay sink in the kitchen area. A 4” waste line exits the building at the wall adjacent to water heater #2 out the front of the building into the parking lot. The waste from the 3-Bay sink in the kitchen on the first floor was routed to a grease trap on the floor beneath the sink and ties directly into the main building drain. The piping that was visible was all cast iron piping and appeared to be in good condition. There are 2 toilet rooms and 2 kitchens that have been disconnected/abandoned located on the second floor of the carriage house.

		
Toilet Room #1		**Toilet Room #2**
		
Mop Sink		**3-Bay Sink**

Vent Stack

Waste Exiting Bldg.

Fire Protection System

There was no fire protection system observed within the building.

Conclusions & Recommendations

It is important to note the following code excerpt before discussing CSI's recommendations:

IEBC (International Existing Building Code) 101.4.2 Buildings Previously Occupied:

"The legal occupancy of any building existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically covered in this code, the International Fire Code, or the International Property Maintenance Code, or as is deemed necessary by the code official for the general safety and welfare of the occupants and the public."

While there are violations of current code requirements, it is the option of the town hall to take no action, unless directed otherwise by a local code officials

Mechanical Recommendations

The recommendations by CSI Engineering, LLC are based upon information obtained through our field investigations, provided as-built drawings, information provided by facility staff as well as our engineering experience.

Oil Fired Furnace

- The oil-fired furnace is beyond its useful life and replacement with a new furnace should be considered during any future renovations

Ductwork Insulation

- The existing ductwork, if reused and/or reconfigured, shall be cleaned and new insulation should be provided to meet today's code and provide energy savings.

Exhaust fans

- Based upon the fair condition of the kitchen exhaust fan, it iss recommended that it be replaced during any planned renovations.
- Kitchen hood fan should be assessed, when accessible.

Electric Baseboard

- The EBB's in the storage room are in fair condition and should be considered for replacement during any planned renovation.

Deactivated Hydronic System

- Due to the age of the system and the incompleteness of its components, it is recommended that this system be removed and replaced during any planned renovations.

General Recommendations

- To make this building occupiable all year long, it is recommended to consider installing a heating system that will cover the entirety of the building space to meet the intended for use.

- To improve occupant comfort, it is recommended to consider installing an air conditioning system to cover the entirety of the building space to meet the intended for use.

Electrical Summary of Observations & Recommendations

Electrical Service and Distribution Equipment

a. The existing electrical service is currently insufficient for supporting any new loads to the building. If any new loads are going to be added onto the buildings service, such as heating or air conditioning, elevators etc.… the existing service will have to be increased. The estimated service size for the building if air conditioning is to be added is 600A-800A, 120/208V three phase four wire.

b. Panelboards and fuse boxes labeled above are in poor condition or have outlived their useful life and are recommended to be replaced during any planned renovations.

c. Given that the grounding system is most likely original. The existing grounding system should be modified to meet current codes requirements.

d. Source of supply; panelboards supplied by a feeder are required to be marked to indicate where the power originates. (NEC Article 408.4 A) if panels are to remain, they should have feeders traced and panel relabeled.

e. Working clearances; 3'-0" clear in front of all panels per (NEC Article 110.26(A) (1) shall be maintained in front of all electrical equipment. Remove debris storage currently in the clearance area for panelboards.

f. Unused openings in panels and junction boxes are required to be closed using identified closures, or other approved means. (NEC Article 408.7) provide seals for all unused openings.

g. Live terminal and bussing must be protected from inadvertent contact. Provide breaker blanks for circuit breaker panels and fuse blanks or spare fuses for fuse panels if panels are to remain.

Branch Circuit Wiring

a) Our interpretation of the code suggests that type NMC (Romex) wiring is not allowed within assembly type occupancies. Therefore, if this building is used for assembly purposes, all NMC cable should be replaced. In addition, NMC cable can't be utilized in a plenum and if suspended ceilings are planned during future renovations and that space is utilized as a plenum return, type NMS will not be allowed.

b) Knob and tube wiring is an antiquated means of wiring that is no longer utilized or installed. This wiring method does not allow for an equipment ground and all receptacles attached to the system have to be 2-wire ungrounded type receptacles. If the wiring method remains, replacement of receptacles can only be made with another 2-wire receptacle or a GFI receptacle that is properly labeled that there is no ground.

c) We would recommend the replacement of all wiring to type MC (metal clad) with full green grounding conductor during any planned renovations.

d) The 2015 International Energy Code, adopted by Massachusetts, may have to be considered to control any new receptacle loads during any planned renovations.

e) The Massachusetts Electrical Code Rule 3 states:

   Additions or modifications to an existing installation shall be made in accordance with this code without bringing the remaining part of the installation into compliance with the requirements of this code. The installation shall not create a violation of this code, nor shall it increase the magnitude of an existing violation.

   While not all the violations listed in the summary section above are required by code to be fixed, it is CSI's recommendation that these violations be remediated for the general safety of the building.

General Lighting and Controls

a) General purpose lighting fixture condition is good. Some areas, such as part of the basement and the second floor, do not have good light levels and require additional lighting fixtures. New lighting and controls should be made part of any planned renovations

Exit & Emergency Lighting

a) All Emergency lighting should be tested to ensure all units are working properly. Additional emergency fixtures should be added to the basement and second floor to provide proper coverage as required by code. If an overall renovation is planned, all new fixtures should be provided and coordinated with new architectural layouts.

b) All exit signage should be tested to ensure proper operation. Additional exit signs should be added to the basement level and second floor to provide proper coverage as required by code. If an overall renovation is planned, new exit signs should be provided and should be coordinated with new architectural layouts

Fire Alarm

a) A new addressable system is recommended for any planned renovations to the space. Location and mounting heights of all initiating and notification devices should be coordinated with new architectural layouts and NFPA 72 requirements.

b) If the existing system is to remain, additional horn/strobe devices should be provided throughout the space to provide proper coverage.
c) If a sprinkler system is not installed and the existing system is to remain, additional smoke detection devices should be provided to provide proper coverage throughout the space. All old devices should be replaced with new devices to ensure devices are working

properly. If a sprinkler system is installed in the building, then all over detection will not be required.

Plumbing

The recommendations by CSI Engineering, LLC are based upon information obtained through our field investigations, provided as-built drawings, information provided by facility staff as well as our engineering experience. In summary, all existing plumbing systems appear to be in good working condition. Recommendations from CSI on the existing plumbing systems would be to insulate all existing water pipes for energy conservation. Any further renovations would require sizing of existing piping and equipment to handle new layouts. Existing piping located in areas with electrical equipment should be re-worked to provide clearances for equipment and future electrical work.

The existing fixtures for the facility would require code review to assure they meet the minimum requirements based on intended use and occupancy of the carriage house.

Fire protection System

CSI Engineering recommends that a new fire protection system be installed throughout the building. A building of over 7500 sq.ft. would require the system installation. In all likelihood, a historic structure may be exempt from having to provide a fire protection system, however, whether or not required, the system would provide protection of the historic structure in the event of a fire.

HAZARDOUS MATERIALS ASSESSMENT

Fuss & O'Neill EnviroScience

Limited Hazardous Building Materials Inspection Report

Lynch Park Carriage House
55 Ober Street
Beverly, Massachusetts

Spencer & Vogt Group

Charlestown, Massachusetts

February 2017

FUSS & O'NEILL
EnviroScience, LLC

Fuss & O'Neill EnviroScience, LLC
50 Redfield Street, Suite 100
Boston, MA 02122

Project No. 20161125.A1E

FUSS & O'NEILL
EnviroScience, LLC

February 21, 2017

Ms. Lynne Spencer
Principal, Preservation
Spencer & Vogt Group
1 Thompson Square, Suite 504
Charlestown, MA 02129

RE: Limited Hazardous Building Materials Inspection
Lynch Park Carriage House
55 Ober Street, Beverly, Massachusetts
Fuss & O'Neill EnviroScience, LLC No. 20161125.A1E

Dear Ms. Spencer:

Enclosed is the limited hazardous building materials inspection summary report for the inspection conducted at the Lynch Park Carriage House located at 55 Ober Street in Beverly, Massachusetts.

On January 10, 2017, Fuss & O'Neill EnviroScience, LLC representatives performed a limited asbestos inspection, a lead-based paint screening, and a fluorescent light ballast and mercury-containing equipment inventory prior to renovation activities.

The information summarized in this report is solely for the abovementioned materials only. The work was performed in accordance with our written scope of services dated December 8, 2016.

If you should have any questions regarding the contents of the enclosed report, please do not hesitate to contact me at 617-282-4675, extension 4703. Thank you for this opportunity to have served your environmental needs.

Sincerely,

Dustin A. Diedricksen
Senior Project Manager

DD/so

Enclosure

50 Redfield Street
Suite 100
Boston, MA
02122
t 617.282.4675
800.286.2469
f 617.282.8253

www.fando.com

Connecticut
Massachusetts
Rhode Island
South Carolina

Table of Contents

Limited Hazardous Building Materials Inspection Report
Lynch Park Carriage House
Spencer & Vogt Group

1 Introduction 1
- 1.1 Scope of Work 1
- 1.2 Building Description 1

2 Limited Asbestos Inspection 2
- 2.1 Methodology 2
- 2.2 Results 3
- 2.3 Conclusions and Recommendations 4

3 Lead-Based Paint 5
- 3.1 Methodology 5
- 3.2 XRF Screening Results 5
- 3.3 Discussion 6
- 3.4 Conclusions and Recommendations 6

4 Fluorescent Light Ballasts and Mercury-Containing Equipment 7
- 4.1 Fluorescent Light Ballasts 7
- 4.2 Mercury-Containing Equipment 7
- 4.3 Results 7
- 4.4 Conclusions and Recommendations 7

Tables **End of Report**

1. Suspect Asbestos-Containing Materials Laboratory Analytical Data Summary
2. Asbestos-Containing Materials Inventory Summary

Appendices **End of Report**

APPENDIX A LIMITATIONS
APPENDIX B ENVIROSCIENCE ASBESTOS INSPECTOR STATE CERTIFICATION AND EPA ACCREDITATIONS
APPENDIX C ASBESTOS LABORATORY ANALYTICAL REPORT AND CHAIN-OF-CUSTODY FORMS
APPENDIX D SITE BUILDING DIAGRAMS

1 Introduction

On January 10, 2017, Fuss & O'Neill EnviroScience, LLC (EnviroScience) representatives, Mr. Jonathan Hand and Ms. Heidi Keller, performed a limited hazardous building materials inspection prior to proposed renovation activities to occur at the Lynch Park Carriage House located at 55 Ober Street in Beverly, Massachusetts (the "Site").

1.1 Scope of Work

The work was performed for Spencer & Vogt Group (the "Client") in accordance with our written scope of services dated December 8, 2016. This report is subject to the limitations presented in *Appendix A*. The scope of work included the following:

- Limited Asbestos-Containing Materials (ACM) Inspection;
- Lead-Based Paint (LBP) Screening; and
- Fluorescent Light Ballast and Mercury-Containing Equipment Inventory.

Intrusive or destructive investigative techniques were not performed at the Site to access and to observe inaccessible or concealed areas that may contain suspect ACM that were hidden or obstructed from normal view at the Client's request.

EnviroScience did not conduct subsurface investigations to identify concealed suspect materials throughout the subject property.

We excluded collection and analysis of suspect materials for polychlorinated biphenyls (PCBs) during this inspection. Sampling for PCBs is presently not mandated by the United States Environmental Protection Agency (EPA); however, significant liability risk for disposing PCB-containing wastes exists. Recent knowledge of PCBs within these matrices has become more prevalent, especially with remediation contractors, waste haulers, and disposal facilities. Many property owners have become subject to large changes in schedule, scope, and costs as a result of failure to identify this possible contaminant prior to renovation or demolition activities.

1.2 Building Description

The Site building includes two stories with a basement, and was reportedly constructed between 1897 and 1903. The most recent renovation date is unknown. The building footprint is approximately 6,250 square feet. The building consists of wood framing, a wood roof deck with torch-on roofing system, and a poured concrete slab.

2 Limited Asbestos Inspection

A property owner must ensure that a thorough asbestos inspection is performed prior to possible disturbance of suspect ACM during renovation or demolition activities. This is a requirement of the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation located at Title 40 CFR, Part 61, Subpart M.

On January 10, 2017, Mr. Hand of EnviroScience conducted the limited inspection of visible, accessible areas. Mr. Hand is a Commonwealth of Massachusetts Department of Labor Standards (MADLS)-certified Asbestos Inspector. Refer to *Appendix B* for copies of the Asbestos Inspector's state certification and EPA accreditation.

2.1 Methodology

The inspection was conducted by visually inspecting for suspect ACM and touching each of the suspect materials. The suspect materials were categorized into three EPA NESHAP groups: friable and non-friable Category I and Category II type ACM.

- A Friable Material is defined as material that contains greater than one percent (> 1%) asbestos that, when dry, **can** be crumbled, pulverized, or reduced to powder by hand pressure.
- A Category I Non-Friable Material refers to material that contains > 1% asbestos (i.e., packings, gaskets, resilient floor coverings, and asphalt roofing products) that when dry **cannot** be crumbled, pulverized, or reduced to powder by hand pressure.
- A Category II Non-Friable Material refers to any non-friable material excluding Category I materials that contain > 1% asbestos that when dry **cannot** be crumbled, pulverized, or reduced to powder by hand pressure.

The suspect ACM were also categorized into their applications including, Thermal System Insulation (TSI), Surfacing ACM, and Miscellaneous ACM. TSI includes those materials used to prevent heat loss/gain or water condensation on mechanical systems. Examples of TSI include, but are not limited to, pipe insulation, boiler insulation, duct insulation, mudded pipe fitting insulation, etc. Surfacing ACM includes those ACM that are applied by spray, trowel, or otherwise applied to an existing surface. Surfacing ACM is commonly used for fireproofing, decorative, and acoustical applications. Miscellaneous ACM include those ACM not listed as thermal or surfacing, such as sheet flooring, floor tiles, ceiling tiles, caulking, mastics, construction adhesives, etc.

The EPA recommends collecting suspect ACM samples in a manner sufficient to determine asbestos content and to segregate each suspect type of homogenous (similar in color, texture, and date of application) materials. The EPA NESHAP regulation does not specifically identify a minimum number of samples to be collected for each homogeneous material, but the NESHAP regulation does recommend the use of sampling protocols included in EPA Title 40 CFR, Part 763, Subpart E: Asbestos Hazard Emergency Response Act (AHERA).

The EPA AHERA regulation requires a specific number of samples be collected based on the type of material and quantity present. This regulation includes the following protocol:

1. Surfacing Materials (i.e., plaster, spray-applied fireproofing, etc.) must be collected in a randomly distributed manner representing each homogenous area based on the overall quantity represented by the sampling as follows:

    a. Three samples collected from each homogenous area that is less than or equal to 1,000 square feet.
    b. Five samples collected from each homogenous area that is greater than 1,000 square feet but less than or equal to 5,000 square feet.
    c. Seven samples collected from each homogenous area that is greater than 5,000 square feet.

2. Thermal System Insulation (i.e., pipe insulations, tank insulations, etc.) must be collected in a randomly distributed manner representing each homogenous area. Three samples must be collected from each material. Also, a minimum of one sample of any patching materials applied to TSI, presuming the patched area is less than six linear or square feet, should be collected.

3. Miscellaneous Materials (i.e., floor tile, gaskets, construction mastics, etc.) should have a minimum of two samples collected for each type of homogenous material. Sample collection was conducted in a manner sufficient to determine asbestos content of the homogenous material as determined by the inspector.

Suspect ACM samples were collected and proper chain-of-custody forms were prepared for transmission of collected samples to EMSL Analytical, Inc. (EMSL) for analysis. EMSL is a Commonwealth of Massachusetts-licensed and American Industrial Hygiene Association (AIHA)-accredited Asbestos Analytical Laboratory. Initial asbestos sample analysis was conducted using the EPA Interim Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116) via Polarized Light Microscopy with Dispersion Staining (PLM/DS).

The EPA recommends that non-friable, organically-bound (NOB) materials (e.g., asphaltic-based materials, adhesives, caulking, etc.) undergo further confirmatory analysis utilizing Transmission Electron Microscopy (TEM). Two (2) of the collected NOB samples were analyzed by TEM.

2.2 Results

The EPA, the Occupational Safety and Health Administration (OSHA), and the MADLS, define a material that contains > 1% asbestos utilizing PLM/DS, as an ACM. The Massachusetts Department of Environmental Protection (MassDEP) further defines ACM as materials containing greater than or equal to (≥) 1% asbestos. MassDEP also defines an asbestos-containing waste material (ACWM) as:

- ACM removed during renovation or demolition activities;
- Materials contaminated by an ACM during renovation or demolition activities; or
- ACM on and/or in facility components that are inoperable or have been taken out of service.

The MassDEP further defines waste material containing any amount of asbestos as an ACWM, which must be managed and disposed as such. Materials that are identified as "none detected" are specified as not containing asbestos.

Utilizing the EPA, OSHA, MADLS, and MassDEP protocol and criteria, the following materials were determined to be either **ACM** or **ACWM**:

- White Electrical Panel Insulation;
- 1st Floor Wall Plaster;
- Basement Wall Plaster on Masonry Units;
- Tan Exterior Window Glazing Compound Associated with 6-Pane Windows;
- Brown Wall Panel Adhesive;
- Green Stone-Pattern Sheet Flooring; and
- 12" x 12" Tan Mottled Tile.

Refer to **Table 1**, attached hereto, for the complete list of ACM, ACWM, and non-ACM identified by sample identification, material type, sample location, and asbestos content as part of this inspection. Refer to **Table 2**, attached hereto, for the identified ACM inventory.

Refer to *Appendix C* for the asbestos laboratory analytical report and chain-of-custody forms.

2.3 Conclusions and Recommendations

Based on visual observations, sample collection, and laboratory analysis, ACM/ACWM were identified at the Site.

Prior to disturbance, ACM/ACWM that would likely be impacted by the proposed renovation activities must first be abated by a MADLS-licensed Asbestos Abatement Contractor. This is a requirement of MADLS, MassDEP, and EPA NESHAP regulations governing asbestos abatement.

Due to the inability to effectively separate some types of multi-layered ACM (e.g., floor tile/mastic, gypsum board/joint compound, mastic/plywood, plaster/lathe, etc.) from non-ACM, these materials are considered asbestos-contaminated and must be managed as ACWM for removal and disposal purposes.

Based on the results of the plaster samples, additional plaster testing should be performed at the basement and second floor levels to verify asbestos content.

At the Client's request, hidden or inaccessible areas were not inspected as part of this inspection. Prior to renovation activities that may disturb hidden or inaccessible areas, we recommend conducting a supplemental asbestos inspection of these areas and spaces. These spaces include, but are not limited to, the following:

- Wall Cavities;
- Underneath Wooden or Raised Flooring;
- Behind Mirrors and Signage;
- Areas behind and within Mechanical Equipment;
- Vapor/Moisture Barrier under Floors or on Concrete Foundations;
- Roof Areas; and
- Behind Wooden Planked Walls.

If suspect materials should be encountered during renovation activities that are not identified in this report as being non-ACM, they should be assumed to be ACM until sample collection and laboratory analysis indicate otherwise.

EnviroScience recommends that if any ACM are to remain in the building following renovation/demolition activities, the ACM should be managed in-place under a written Operations and Maintenance Program in accordance with OSHA regulations.

This report is not intended to be utilized as a bidding document or as a project specification document. The report is designed to aid the building owner, architect, construction manager, general contractors, and asbestos abatement contractors in locating ACM and ACWM.

3 Lead-Based Paint

On January 10, 2017, Mr. Hand and Ms. Keller of EnviroScience performed a LBP visual assessment associated with painted building components at the Site that may be disturbed during renovation activities.

3.1 Methodology

For the purpose of this LBP visual assessment, representative, coated building components were presumed to be coated with LBP due to the age of the building. Individual repainting efforts are not discoverable in such a limited assessment. LBP issues involving properties that are not residential are only regulated to a limited degree for worker protection relating to LBP-disturbing work activities and waste disposal.

Worker protection is regulated by OSHA regulations, as well as MADLS regulations. These regulations include air monitoring of workers to determine exposure levels when disturbing lead-containing paint. A LBP visual assessment cannot determine a safe level of lead, but is intended to provide guidance for implementing industry standards for lead in paint.

The EPA Resource Conservation and Recovery Act (RCRA) and MassDEP regulate lead-containing waste disposal. If lead is determined to be present, representative composite samples of the anticipated waste stream must be collected and analyzed using the Toxicity Characteristic Leaching Procedure (TCLP). The results are compared to a threshold value of 5.0 milligrams per liter (mg/L). If TCLP sample analytical results exceed this value, the waste is characterized as hazardous lead waste. If the result is below the threshold value, the waste material is not considered hazardous and may be disposed as construction and demolition debris.

A level of paint exceeding 1.0 milligram of lead per square centimeter (mg/cm^2) of surface area is considered toxic or dangerous by EPA and the Massachusetts Department of Public Health (MADPH) child-occupied residential standards. Coated building components observed at the Site building are presumed to contain lead concentrations greater than 1.0 mg/cm^2 and should be segregated from general demolition debris for disposal purposes, as appropriate.

3.2 XRF Screening Results

Due to the age of the building, hazardous levels of LBP (> 1.0 mg/cm^2) are presumed to be present on coated building components located at the Site.

3.3 Discussion

OSHA published a Lead in Construction Standard (OSHA Lead Standard) Title 29 CFR, Part 1926.62 in May of 1993. This Standard sets no limit for the content of lead in paint below which the OSHA standards do not apply. The OSHA Lead Standards are task-based and are also based on airborne exposures and blood lead levels.

The results of this LBP visual assessment are intended to provide guidance to contractors for occupational lead exposure controls. Building components coated with lead levels above industry standards may cause exposures to lead above OSHA standards during proposed demolition/renovation activities. The results of this LBP visual assessment are also intended to provide insight into waste disposal requirements, in accordance with EPA RCRA regulations. At the Client's request, a TCLP sample to characterize the expected waste that may result from possible selective demolition/renovation activities was not collected as part of this inspection.

3.4 Conclusions and Recommendations

Hazardous levels of LBP (> 1.0 mg/cm^2) are presumed to be present on coated building components located at the Site.

Contractors must be made aware that OSHA has not established a level of lead in a material below which OSHA Title 29 CFR, Part 1926.62 does not apply. Contractors shall comply with exposure assessment criteria, interim worker protection, and other requirements of the regulation as necessary to protect workers during any renovation and/or demolition activities that will impact LBP.

If disturbed by renovation activities, LBP-coated building components should be segregated from the general demolition waste stream for sample collection and analysis by TCLP to determine proper off-site waste disposal. If disturbed and managed off-site, non-porous LBP-coated building materials (i.e., metals) may be segregated and recycled as scrap metal. Metal LBP-coated building components cannot be subject to grinding, sawing, drilling, sanding, or torch cutting.

The building is presently characterized as a commercial property, which is not subject to the MADPH Childhood Lead Poisoning Prevention Program (CLPPP) Regulation 105 CMR 460.000. The Site may be renovated using procedures required in accordance with OSHA Title 29 CFR, Part 1926.62 and MADLS Regulation 454 CMR 22.11. In addition, the building is not considered a "child-occupied facility" and therefore, is not subject to MADPH CLPPP regulations.

Note that the information contained in this report concerning the presence or absence of lead in paint, does not constitute a comprehensive lead inspection in accordance with MADPH CLPPP regulations. Painted surfaces would need to be appropriately tested to determine whether the Site building is in compliance with the aforementioned regulations, which are specific to a child-occupied residence only, and not applicable to buildings of this type and current use.

4 Fluorescent Light Ballasts and Mercury-Containing Equipment

4.1 Fluorescent Light Ballasts

Fluorescent light ballasts manufactured prior to 1979 may contain capacitors that contain PCBs. Light ballasts installed as late as 1985 may contain PCB capacitors. Fluorescent light ballasts that are not labeled as "No PCBs" must be assumed to contain PCBs unless proven otherwise by quantitative analysis. Capacitors in fluorescent light ballasts labeled as non-PCB-containing may contain diethylhexl phthalate (DEHP). DEHP was the primary substitute to replace PCBs for small capacitors in fluorescent lighting ballasts in use until 1991. DEHP is a toxic substance, a suspected carcinogen, and is listed under RCRA and the Superfund Law as a hazardous waste. Therefore, Superfund liability exists for landfilling both PCB- and DEHP-containing light ballasts. These listed materials are considered hazardous waste under RCRA and require special handling and disposal considerations.

4.2 Mercury-Containing Equipment

Fluorescent lamps/tubes are presumed to contain mercury vapor, which is a hazardous substance to both human health and the environment. Thermostatic controls and electrical switch gear may contain a vial or bulb of liquid mercury associated with the control. Mercury-containing equipment is regulated for proper disposal by EPA RCRA regulations.

4.3 Results

On January 10, 2017, Mr. Hand and Ms. Keller of EnviroScience performed a visual inspection of representative fluorescent light fixtures in-place to identify possible PCB-containing ballasts in the building. The inspection involved visually inspecting labels on representative light ballasts to identify manufacture dates and labels indicating "No PCBs". Ballasts manufactured after 1991 were not listed as PCB- or DEHP-containing ballasts and were not quantified for disposal. An in-place inventory of the fluorescent lamps/tubes and other mercury-containing equipment was completed concurrently.

During this inspection, forty (40) DEHP-containing fluorescent light ballasts, five (5) compact fluorescent light (CFL) bulbs, and eighty (80) four-foot, mercury-containing light tubes were identified at the Site building.

4.4 Conclusions and Recommendations

DEHP-containing fluorescent light ballasts and mercury-containing equipment were identified at the Site building during this inspection.

Fluorescent light ballasts marked as "No PCBs" with date labels indicating manufacture prior to 1991 are presumed to contain DEHP. DEHP-containing ballasts must be segregated for proper packaging, transporting, and disposal as non-PCB hazardous waste. Note that disposal requirements for DEHP-containing ballasts are slightly varied, and disposal costs are slightly less, when compared to PCB-containing light ballasts.

According to the EPA, mercury-containing equipment is characterized as a hazardous waste and mercury lamps/tubes are characterized as a Universal Waste. The mercury-containing equipment and fluorescent lamps/tubes identified in the proposed renovation areas must be recycled, reclaimed, or disposed as hazardous waste or Universal Waste prior to disturbance.

Report prepared by Environmental Analyst, Jonathan Hand.

Reviewed by:

Dustin A. Diedricksen
Senior Project Manager

Tables

FUSS & O'NEILL
EnviroScience, LLC

Table 1
Suspect Asbestos-Containing Materials Laboratory Analytical Data Summary

Lynch Park Carriage House
Beverly, Massachusetts

Spencer & Vogt Group
February 2017
Fuss & O'Neill EnviroScience, LLC No. 20161125.A1E

Sample Number	Material Type	NESHAP Category	Sample Location	Result	Comments
0116JH-001A	Brown Mottled 12" x 12" Floor Tile	Non-ACM	Level 1 Room 103	ND	
0116JH-001B	Brown Mottled 12" x 12" Floor Tile	Non-ACM	Level 1 Room 103	ND	
0116JH-002A	Black Floor Tile Mastic/Adhesive	Non-ACM	Level 1 Room 103	ND	TEM
0116JH-002B	Black Floor Tile Mastic/Adhesive	Non-ACM	Level 1 Room 103	ND	
0116JH-003A	Beige Fissure & Dot Suspended 2' x 4' Ceiling Tile	Non-ACM	Level 1 Room 103	ND	
0116JH-003B	Beige Fissure & Dot Suspended 2' x 4' Ceiling Tile	Non-ACM	Level 1 Room 103	ND	
0116JH-004A	**White Electrical Panel Insulation**	**Friable**	**Level 1 Room 103**	**45% Chrysotile**	
0116JH-004B	**White Electrical Panel Insulation**	**Friable**	**Level 1 Room 103**	**Pos Stop**	
0116JH-004C	**White Electrical Panel Insulation**	**Friable**	**Level 1 Room 103**	**Pos Stop**	
0116JH-005A	Black Mottled 12" x 12" Floor Tile	Non-ACM	Level 1 Room 107	ND	
0116JH-005B	Black Mottled 12" x 12" Floor Tile	Non-ACM	Level 1 Room 107	ND	
0116JH-006A	White Line Pattern Spline-Set 12" x 12" Ceiling Tile	Non-ACM	Level 1 Room 107	ND	
0116JH-006B	White Line Pattern Spline-Set 12" x 12" Ceiling Tile	Non-ACM	Level 2 Room 204	ND	
0116JH-007A	Gray Mottled 12" x 12" Floor Tile	Non-ACM	Level 1 Room 108	ND	
0116JH-007B	Gray Mottled 12" x 12" Floor Tile	Non-ACM	Level 1 Room 108	ND	
0116JH-008A	Yellow Floor Tile Mastic/Adhesive	Non-ACM	Level 1 Room 108	ND	
0116JH-008B	Yellow Floor Tile Mastic/Adhesive	Non-ACM	Level 1 Room 108	ND	
0116JH-009A	Gray Stone-Pattern Vinyl Sheet Flooring	Non-ACM	Level 1 Room 105	ND	
0116JH-009B	Gray Stone-Pattern Vinyl Sheet Flooring	Non-ACM	Level 1 Room 105	ND	
0116JH-010A	Clear Vinyl Sheet Flooring Mastic	Non-ACM	Level 1 Room 105	ND	
0116JH-010B	Clear Vinyl Sheet Flooring Mastic	Non-ACM	Level 1 Room 105	ND	
0116JH-011A	Gray Rough 4" Quarry Tile Grout	Non-ACM	Level 1 Room 105	ND	
0116JH-011B	Gray Rough 4" Quarry Tile Grout	Non-ACM	Level 1 Room 105	ND	
0116JH-012A	White Top Coat Wall Plaster	Non-ACM	Level 1 Room 105	ND	
0116JH-012B	White Top Coat Wall Plaster	Non-ACM	Level 1 Room 109	ND	
0116JH-012C	White Top Coat Wall Plaster	Non-ACM	Level 2 Room 201	ND	
012D-JH-0110	White Skim Coat Plaster	Non-ACM	Room 202	ND	
012E-JH-0110	White Skim Coat Plaster	Non-ACM	Room 203	ND	
012F-JH-0110	White Skim Coat Plaster	Non-ACM	Room 207	ND	

FUSS & O'NEILL
EnviroScience, LLC

Table 1
Suspect Asbestos-Containing Materials Laboratory Analytical Data Summary

Sample Number	Material Type	NESHAP Category	Sample Location	Result	Comments
012G-JH-0110	White Skim Coat Plaster	Non-ACM	Room 211	ND	
0116JH-013A	**Gray Base Coat Wall Plaster**	**Friable**	**Level 1 Room 105**	**2% Chrysotile**	
0116JH-013B	**Gray Base Coat Wall Plaster**	**Friable**	**Level 1 Room 109**	**<1% Chrysotile**	
0116JH-013C	Gray Base Coat Wall Plaster	Non-ACM	Level 2 Room 201	ND	Additional Testing Recommended
013D-JH-0110	Gray Plaster Rough Coat	Non-ACM	Room 202	ND	Additional Testing Recommended
013E-JH-0110	Gray Plaster Rough Coat	Non-ACM	Room 203	ND	Additional Testing Recommended
013F-JH-0110	Gray Plaster Rough Coat	Non-ACM	Room 207	ND	Additional Testing Recommended
013G-JH-0110	Gray Plaster Rough Coat	Non-ACM	Room 211	ND	Additional Testing Recommended
0116JH-014A	Gray Rough Boiler Cement	Non-ACM	Basement B01	ND	
0116JH-014B	Gray Rough Boiler Cement	Non-ACM	Basement B01	ND	
0116JH-015A	Gray Flue Cement	Non-ACM	Basement B01	ND	
0116JH-015B	Gray Flue Cement	Non-ACM	Basement B01	ND	
0116JH-016A	Gray Rough Cement Brick Mortar	Non-ACM	Basement B02	ND	
0116JH-016B	Gray Rough Cement Brick Mortar	Non-ACM	Basement B02	ND	
0116JH-017A	**Gray Base Coat Wall Plaster on Masonry Units**	**Friable**	**Basement B02**	**2% Chrysotile**	
0116JH-017B	**Gray Base Coat Wall Plaster on Masonry Units**	**Friable**	**Basement B02**	**Pos Stop**	
0116JH-017C	**Gray Base Coat Wall Plaster on Masonry Units**	**Friable**	**Basement B02**	**Pos Stop**	
0116JH-018A	White Top Coat Wall Plaster	Non-ACM	Basement B02	ND	
0116JH-018B	White Top Coat Wall Plaster	Non-ACM	Basement B02	ND	
0116JH-018C	White Top Coat Wall Plaster	Non-ACM	Basement B02	ND	
0116JH-019A	Gray Rough Textured Ceiling Plaster	Non-ACM	Basement B02	ND	
0116JH-019B	Gray Rough Textured Ceiling Plaster	Non-ACM	Basement B02	ND	
0116JH-019C	Gray Rough Textured Ceiling Plaster	Non-ACM	Basement B02	ND	
0116JH-020A	Black Exterior Siding/Shingle Felt	Non-ACM	Exterior	ND	
0116JH-020B	Black Exterior Siding/Shingle Felt	Non-ACM	Exterior	ND	
0116JH-021A	**Tan Exterior Window Glazing Compound Associated with 6-Pane Windows**	**Cat 2 NF**	**Exterior**	**ND**	**ACM Per Homogenous Sample 021B**
0116JH-021B	**Tan Exterior Window Glazing Compound Associated with Large 6-Pane Windows**	**Cat 2 NF**	**Exterior**	**3% Chrysotile**	
0116JH-022A	White Exterior Window Glazing Compound Associated with Large 4-Pane Windows	Non-ACM	Exterior	ND	
0116JH-022B	White Exterior Window Glazing Compound Associated with Large 4-Pane Windows	Non-ACM	Exterior	ND	
0116JH-023A	**Brown Wall Panel Adhesive**	**Cat 2 NF**	**Level 2 Room 204**	**8% Chrysotile**	
0116JH-023B	**Brown Wall Panel Adhesive**	**Cat 2 NF**	**Level 2 Room 204**	**Pos Stop**	
0116JH-024A	Tan Rough Exterior Window Glazing Compound Associated with Small 4-Pane Windows	Non-ACM	Exterior	ND	
0116JH-024B	Tan Rough Exterior Window Glazing Compound Associated with Small 4-Pane Windows	Non-ACM	Exterior	ND	

FUSS & O'NEILL EnviroScience, LLC

Table 1
Suspect Asbestos-Containing Materials Laboratory Analytical Data Summary

Sample Number	Material Type	NESHAP Category	Sample Location	Result	Comments
025A-JH-0110	White Circular Window Glazing Compound	Non-ACM	Exterior	ND	
025B-JH-0110	White Circular Window Glazing Compound	Non-ACM	Exterior	ND	
026A-JH-0110	Tan Interior Partition Window Glazing Compound	Non-ACM	Room 104	ND	
026B-JH-0110	Tan Interior Partition Window Glazing Compound	Non-ACM	Room 104	ND	
027A-JH-0110	**Green Stone-Pattern Sheet Flooring**	**Cat 1 NF**	**Room 202**	**10% Chrysotile**	
027B-JH-0110	**Green Stone-Pattern Sheet Flooring**	**Cat 1 NF**	**Room 202**	**Pos Stop**	
028A-JH-0110	**12" x 12" Tan Mottled Tile on Counter**	**Cat 1 NF**	**Room 202**	**5% Chrysotile**	
028B-JH-0110	**12" x 12" Tan Mottled Tile on Counter**	**Cat 1 NF**	**Room 202**	**Pos Stop**	
029A-JH-0110	Black Mastic Associated with 12" x 12" Tan Mottled Tile on Counter	Non-ACM	Room 202	ND	
029B-JH-0110	Black Mastic Associated with 12" x 12" Tan Mottled Tile on Counter	Non-ACM	Room 202	ND	
030A-JH-0110	Residual Black Floor Mastic	Non-ACM	Room 203	ND	TEM
030B-JH-0110	Residual Black Floor Mastic	Non-ACM	Room 203	ND	
031A-JH-0110	Tan Chimney Parging Cement	Non-ACM	Room 212	ND	
031B-JH-0110	Tan Chimney Parging Cement	Non-ACM	Room 212	ND	
031C-JH-0110	Tan Chimney Parging Cement	Non-ACM	Room 212	ND	

Cat 1 NF = Category I Non-Friable Material
Cat 2 NF = Category II Non-Friable Material
Pos Stop = Positive Stop
ND = None Detected
ACM = Asbestos-Containing Material
ACWM = Asbestos-Containing Waste Material
TEM = Transmission Electron Microscopy

FUSS & O'NEILL
EnviroScience, LLC

Table 2
Asbestos-Containing Materials Summary

Lynch Park Carriage House
Beverly, Massachusetts

Spencer & Vogt Group
February 2017
Fuss & O'Neill EnviroScience, LLC No. 20161125.A1E

Material Type	Locations(s)	Asbestos Content	Estimated Total Quantity	Comments
White Electrical Panel Insulation	Room 103	45% Chrysotile	6 SF	
Wall Plaster	Room 105 & 109	2% Chrysotile	1,250 SF	
Wall Plaster on Masonry Units	Basement B01 & B04	2% Chrysotile	500 SF	
Tan Exterior Window Glazing Compound Associated with 6-Pane Windows	Exterior	3% Chrysotile	13 EA	
Brown Wall Panel Adhesive	Rooms 103 & 204	8% Chrysotile	1,000 SF	
Green Stone-Pattern Sheet Flooring	Room 202	10% Chrysotile	450 SF	
12" x 12" Tan Mottled Tile	Room 202 & 206	5% Chrysotile	200 SF	
Fiber-Reinforced Cement Board Ceiling	Basement B10	Assume ACM	200 SF	
Wall & Ceiling Plaster	2nd Floor	Assume ACM	10,750 SF	Additional Plaster Testing Recommended to Potentially Remove from Abatement Scope

EA = Each, SF = Square Feet

Appendix A

Limitations

FUSS & O'NEILL
EnviroScience, LLC

APPENDIX A

Lynch Park Carriage House
Beverly, Massachusetts

1. This environmental report has been prepared for the exclusive use of the Client, and is subject to, and is issued in connection with, the general terms and conditions of the original Agreement (December 8, 2016) and all of its provisions. Any use or reliance upon information provided in this report, without the specific written authorization of the Client and EnviroScience, shall be at the User's individual risk. This report should not be used as an abatement specification. All quantities of materials identified during this inspection are approximate.
2. EnviroScience has obtained and relied upon laboratory analytical results in conducting the inspection. This information was used to form conclusions regarding the types and quantities of ACM that must be managed prior to renovation or demolition activities that may disturb these materials at the subject property(ies). EnviroScience has not performed an independent review of the reliability of this laboratory data.
3. Unless otherwise noted, only suspect hazardous materials associated within or located on the building (aboveground) were included in this inspection. Suspect hazardous materials may exist below the ground surfaces that were not included in the scope of work of this inspection. EnviroScience cannot guarantee all asbestos or suspect hazardous materials were identified within the areas included in the scope of work. Only visible and accessible areas were included in the scope of work for this inspection.
4. The findings, observations, and conclusions presented in this report are limited by the scope of services outlined in our original Agreement, which reflects schedule and budgetary constraints imposed by the Client. Furthermore, the assessment has been conducted in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made.
5. The conclusions presented in this report are based solely upon information gathered by EnviroScience to date. Should further environmental or other relevant information be discovered at a later date, the Client should immediately bring the information to EnviroScience's attention. Based upon an evaluation and assessment of relevant information, EnviroScience may modify the report and its conclusions.

Appendix B

EnviroScience Asbestos Inspector State Certification and EPA Accreditations

Commonwealth of Massachusetts

Department of Labor Standards

William D. McKinney, Director

Asbestos Inspector

JONATHAN L. HAND

Eff. Date 02/29/16

Exp. Date 02/28/17

AI041945

Member of C.O.N.E.S.

BOSR BOS-RENEW

17

Certificate of Training

This program was presented at
Fuss & O'Neill Enviro Science in.
Manchester, CT with the prior
approval of the CTDPH.

Awarded to

JONATHAN HAND

For successful completion of a 4 Hour, 1/2 Day

Asbestos Building Inspector
Annual Refresher Training

January 12, 2016

This training was approved and given in accordance with the Regulations for Connecticut State Agencies RCSA 20 - 440 - 1-9 and RCSA 20 - 441 and meets the requirements of the EPA Revised MAP under TSCA Title II of 4/4/94.

Presented by

Mystic Air Quality Consultants, Inc.
1204 North Road, Groton, CT 06340 (800) 247-7746

Certificate Number: ABIRF24672 **Exam Grade: 100** **Expiration Date: 01/12/2017**

Exam Date: 01/12/2016

Christopher J. Eident, CIH, CSP, RS

George Williamson, Training Director

Richard Haffey, Training Director

Appendix C

Asbestos Laboratory Analytical Report and Chain-of-Custody Forms

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041701514
Customer ID:	ENVI54
Customer PO:	20161125.A1E
Project ID:	

Attn:	Dustin Diedricksen Fuss & O'Neill EnviroScience, LLC 146 Hartford Road Manchester, CT 06040	Phone: Fax: Collected: Received: Analyzed:	(860) 646-2469 (888) 838-1160 1/16/2017 1/19/2017 2/10/2017
Proj:	Lynch Park Carriage House - 55 Ober Street		

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 0116JH-001A ***Lab Sample ID:*** **041701514-0001**

Sample Description: Level 1 Room 103/Brown Mottled 12"x12" Floor Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Brown	0%	100%	None Detected	

Client Sample ID: 0116JH-001B ***Lab Sample ID:*** **041701514-0002**

Sample Description: Level 1 Room 103/Brown Mottled 12"x12" Floor Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Brown	0%	100%	None Detected	

Client Sample ID: 0116JH-002A ***Lab Sample ID:*** **041701514-0003**

Sample Description: Level 1 Room 103/Black Floor Tile Mastic/Adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Black	0%	100%	None Detected	
TEM Grav. Reduction	1/27/2017	Black	0.0%	100%	None Detected	

Client Sample ID: 0116JH-002B ***Lab Sample ID:*** **041701514-0004**

Sample Description: Level 1 Room 103/Black Floor Tile Mastic/Adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Black	0%	100%	None Detected	

Client Sample ID: 0116JH-003A ***Lab Sample ID:*** **041701514-0005**

Sample Description: Level 1 Room 103/Beige Fissure and Dot Suspended 2'x4' Ceiling Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray/White	85%	15%	None Detected	

Client Sample ID: 0116JH-003B ***Lab Sample ID:*** **041701514-0006**

Sample Description: Level 1 Room 103/Beige Fissure and Dot Suspended 2'x4' Ceiling Tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray/White/Beige	65%	35%	None Detected	

Client Sample ID: 0116JH-004A ***Lab Sample ID:*** **041701514-0007**

Sample Description: Level 1 Room 103/White Electrical Panel Insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	55%	**45% Chrysotile**	

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041701514
Customer ID:	ENVI54
Customer PO:	20161125.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 0116JH-004B ***Lab Sample ID:*** **041701514-0008**

Sample Description: Level 1 Room 103/White Electrical Panel Insulation

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017			Positive Stop (Not Analyzed)		

Client Sample ID: 0116JH-004C ***Lab Sample ID:*** **041701514-0009**

Sample Description: Level 1 Room 103/White Electrical Panel Insulation

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017			Positive Stop (Not Analyzed)		

Client Sample ID: 0116JH-005A ***Lab Sample ID:*** **041701514-0010**

Sample Description: Level 1 Room 107/Black Mottled 12"x12" Floor Tile

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Black	0%	100%	None Detected	

Client Sample ID: 0116JH-005B ***Lab Sample ID:*** **041701514-0011**

Sample Description: Level 1 Room 107/Black Mottled 12"x12" Floor Tile

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Black	0%	100%	None Detected	

Client Sample ID: 0116JH-006A ***Lab Sample ID:*** **041701514-0012**

Sample Description: Level 1 Room 107/White Lines Glue-Set 12"x12" Ceiling Tile

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Brown/White	95%	5%	None Detected	

Client Sample ID: 0116JH-006B ***Lab Sample ID:*** **041701514-0013**

Sample Description: Level 2 Room 204/White Lines Glue-Set 12"x12" Ceiling Tile

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Brown/White	100%	0%	None Detected	

Client Sample ID: 0116JH-007A ***Lab Sample ID:*** **041701514-0014**

Sample Description: Level 1 Room 108/Gray Mottled 12"x12" Floor Tile

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	0%	100%	None Detected	

Client Sample ID: 0116JH-007B ***Lab Sample ID:*** **041701514-0015**

Sample Description: Level 1 Room 108/Gray Mottled 12"x12" Floor Tile

TEST	Analyzed Date	Color	Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	0%	100%	None Detected	

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041701514
Customer ID:	ENVI54
Customer PO:	20161125.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 0116JH-008A ***Lab Sample ID:*** **041701514-0016**

Sample Description: Level 1 Room 108/Yellow Floor Tile Mastic/Adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Yellow	0%	100%	None Detected	

Client Sample ID: 0116JH-008B ***Lab Sample ID:*** **041701514-0017**

Sample Description: Level 1 Room 108/Yellow Floor Tile Mastic/Adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Yellow	0%	100%	None Detected	

Client Sample ID: 0116JH-009A ***Lab Sample ID:*** **041701514-0018**

Sample Description: Level 1 Room 105/Gray Stone Vinyl Sheet Flooring

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	0%	100%	None Detected	

Client Sample ID: 0116JH-009B ***Lab Sample ID:*** **041701514-0019**

Sample Description: Level 1 Room 105/Gray Stone Vinyl Sheet Flooring

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray/White	0%	100%	None Detected	

Client Sample ID: 0116JH-010A ***Lab Sample ID:*** **041701514-0020**

Sample Description: Level 1 Room 105/Clear Vinyl Sheet Flooring Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Clear	0%	100%	None Detected	

Client Sample ID: 0116JH-010B ***Lab Sample ID:*** **041701514-0021**

Sample Description: Level 1 Room 105/Clear Vinyl Sheet Flooring Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Clear	0%	100%	None Detected	

Client Sample ID: 0116JH-011A ***Lab Sample ID:*** **041701514-0022**

Sample Description: Level 1 Room 105/Gray Rough 4" Quarry Tile Grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	0%	100%	None Detected	

Client Sample ID: 0116JH-011B ***Lab Sample ID:*** **041701514-0023**

Sample Description: Level 1 Room 105/Gray Rough 4" Quarry Tile Grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	0%	100%	None Detected	

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041701514
Customer ID:	ENVI54
Customer PO:	20161125.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 0116JH-012A ***Lab Sample ID:*** **041701514-0024**

Sample Description: Level 1 Room 105/White Top Coat Wall Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

Client Sample ID: 0116JH-012B ***Lab Sample ID:*** **041701514-0025**

Sample Description: Level 1 Room 109/White Top Coat Wall Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

Client Sample ID: 0116JH-012C ***Lab Sample ID:*** **041701514-0026**

Sample Description: Level 2 Room 201/White Top Coat Wall Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

Client Sample ID: 0116JH-013A ***Lab Sample ID:*** **041701514-0027**

Sample Description: Level 1 Room 105/Gray Base Coat Wall Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	5%	93%	**2% Chrysotile**	

Client Sample ID: 0116JH-013B ***Lab Sample ID:*** **041701514-0028**

Sample Description: Level 1 Room 109/Gray Base Coat Wall Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/10/2017	Gray	3%	97%	**<1% Chrysotile**	

Client Sample ID: 0116JH-013C ***Lab Sample ID:*** **041701514-0029**

Sample Description: Level 2 Room 201/Gray Base Coat Wall Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	2/10/2017	White	5%	95%	None Detected	

Client Sample ID: 0116JH-014A ***Lab Sample ID:*** **041701514-0030**

Sample Description: Basement B01/Gray Rough Boiler Cement

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	0%	100%	None Detected	

Client Sample ID: 0116JH-014B ***Lab Sample ID:*** **041701514-0031**

Sample Description: Basement B01/Gray Rough Boiler Cement

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	0%	100%	None Detected	

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041701514
Customer ID:	ENVI54
Customer PO:	20161125.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 0116JH-015A ***Lab Sample ID:*** **041701514-0032**

Sample Description: Basement B01/Glay Flu Cement

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	0%	100%	None Detected	

Client Sample ID: 0116JH-015B ***Lab Sample ID:*** **041701514-0033**

Sample Description: Basement B01/Glay Flu Cement

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	0%	100%	None Detected	

Client Sample ID: 0116JH-016A ***Lab Sample ID:*** **041701514-0034**

Sample Description: Basement B01/Gray Rough Cement Brick Mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	0%	100%	None Detected	

Client Sample ID: 0116JH-016B ***Lab Sample ID:*** **041701514-0035**

Sample Description: Basement B01/Gray Rough Cement Brick Mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	0%	100%	None Detected	

Client Sample ID: 0116JH-017A ***Lab Sample ID:*** **041701514-0036**

Sample Description: Basement B01/Gray Base Coat Wall Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	3%	95%	**2% Chrysotile**	

Client Sample ID: 0116JH-017B ***Lab Sample ID:*** **041701514-0037**

Sample Description: Basement B01/Gray Base Coat Wall Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017				Positive Stop (Not Analyzed)	

Client Sample ID: 0116JH-017C ***Lab Sample ID:*** **041701514-0038**

Sample Description: Basement B01/Gray Base Coat Wall Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017				Positive Stop (Not Analyzed)	

Client Sample ID: 0116JH-018A ***Lab Sample ID:*** **041701514-0039**

Sample Description: Basement B01/White Top Coat Wall Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041701514
Customer ID:	ENVI54
Customer PO:	20161125.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 0116JH-018B ***Lab Sample ID:*** **041701514-0040**

Sample Description: Basement B01/White Top Coat Wall Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

Client Sample ID: 0116JH-018C ***Lab Sample ID:*** **041701514-0041**

Sample Description: Basement B01/White Top Coat Wall Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

Client Sample ID: 0116JH-019A ***Lab Sample ID:*** **041701514-0042**

Sample Description: Basement B01/Gray Rough Textured Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	4%	96%	None Detected	

Client Sample ID: 0116JH-019B ***Lab Sample ID:*** **041701514-0043**

Sample Description: Basement B01/Gray Rough Textured Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	5%	95%	None Detected	

Client Sample ID: 0116JH-019C ***Lab Sample ID:*** **041701514-0044**

Sample Description: Basement B01/Gray Rough Textured Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	5%	95%	None Detected	

Client Sample ID: 0116JH-020A ***Lab Sample ID:*** **041701514-0045**

Sample Description: Exterior None/Black Exterior Siding/Shingle Felt

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Black	65%	35%	None Detected	

Client Sample ID: 0116JH-020B ***Lab Sample ID:*** **041701514-0046**

Sample Description: Exterior None/Black Exterior Siding/Shingle Felt

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Black	15%	85%	None Detected	

Client Sample ID: 0116JH-021A ***Lab Sample ID:*** **041701514-0047**

Sample Description: Exterior None/Tan Exterior Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Tan	0%	100%	None Detected	

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041701514
Customer ID:	ENVI54
Customer PO:	20161125.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 0116JH-021B ***Lab Sample ID:*** **041701514-0048**

Sample Description: Exterior None/Tan Exterior Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Tan	0%	97%	**3% Chrysotile**	The sample group is not homogeneous

Client Sample ID: 0116JH-022A ***Lab Sample ID:*** **041701514-0049**

Sample Description: Exterior None/White Exterior Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

Client Sample ID: 0116JH-022B ***Lab Sample ID:*** **041701514-0050**

Sample Description: Exterior None/White Exterior Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

Client Sample ID: 0116JH-023A ***Lab Sample ID:*** **041701514-0051**

Sample Description: Level 2 Room 204/Brown Wall Panel Adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Brown	0%	92%	**8% Chrysotile**	

Client Sample ID: 0116JH-023B ***Lab Sample ID:*** **041701514-0052**

Sample Description: Level 2 Room 204/Brown Wall Panel Adhesive

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017				Positive Stop (Not Analyzed)	

Client Sample ID: 0116JH-024A ***Lab Sample ID:*** **041701514-0053**

Sample Description: Exterior None/Tan Rough Exterior Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Tan	0%	100%	None Detected	

Client Sample ID: 0116JH-024B ***Lab Sample ID:*** **041701514-0054**

Sample Description: Exterior None/Tan Rough Exterior Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Tan	0%	100%	None Detected	

Client Sample ID: 012D-JH-0110 ***Lab Sample ID:*** **041701514-0055**

Sample Description: Room 202/White Skim Coat Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041701514
Customer ID:	ENVI54
Customer PO:	20161125.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 012E-JH-0110 ***Lab Sample ID:*** **041701514-0056**

Sample Description: Room 203/White Skim Coat Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

Client Sample ID: 012F-JH-0110 ***Lab Sample ID:*** **041701514-0057**

Sample Description: Room 207/White Skim Coat Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

Client Sample ID: 012G-JH-0110 ***Lab Sample ID:*** **041701514-0058**

Sample Description: Room 211/White Skim Coat Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

Client Sample ID: 013D-JH-0110 ***Lab Sample ID:*** **041701514-0059**

Sample Description: Room 202/Gray Plaster Rough Coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	8%	92%	None Detected	

Client Sample ID: 013E-JH-0110 ***Lab Sample ID:*** **041701514-0060**

Sample Description: Room 203/Gray Plaster Rough Coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	8%	92%	None Detected	

Client Sample ID: 013F-JH-0110 ***Lab Sample ID:*** **041701514-0061**

Sample Description: Room 207/Gray Plaster Rough Coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	8%	92%	None Detected	

Client Sample ID: 013G-JH-0110 ***Lab Sample ID:*** **041701514-0062**

Sample Description: Room 211/Gray Plaster Rough Coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	5%	95%	None Detected	

Client Sample ID: 025A-JH-0110 ***Lab Sample ID:*** **041701514-0063**

Sample Description: Exterior/White Circular Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041701514
Customer ID:	ENVI54
Customer PO:	20161125.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 025B-JH-0110 ***Lab Sample ID:*** **041701514-0064**

Sample Description: Exterior/White Circular Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	White	0%	100%	None Detected	

Client Sample ID: 026A-JH-0110 ***Lab Sample ID:*** **041701514-0065**

Sample Description: Room 104/Tan Interior Partition Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Tan	0%	100%	None Detected	

Client Sample ID: 026B-JH-0110 ***Lab Sample ID:*** **041701514-0066**

Sample Description: Room 104/Tan Interior Partition Window Glazing Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Tan	0%	100%	None Detected	

Client Sample ID: 027A-JH-0110 ***Lab Sample ID:*** **041701514-0067**

Sample Description: Room 202/Green Stone Pattern Sheet Flooring

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Green	0%	90%	**10% Chrysotile**	

Client Sample ID: 027B-JH-0110 ***Lab Sample ID:*** **041701514-0068**

Sample Description: Room 202/Green Stone Pattern Sheet Flooring

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017				Positive Stop (Not Analyzed)	

Client Sample ID: 028A-JH-0110 ***Lab Sample ID:*** **041701514-0069**

Sample Description: Room 202/12"x12" Tan Mottled Tile on Counter

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Gray	0%	95%	**5% Chrysotile**	

Client Sample ID: 028B-JH-0110 ***Lab Sample ID:*** **041701514-0070**

Sample Description: Room 202/12"x12" Tan Mottled Tile on Counter

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017				Positive Stop (Not Analyzed)	

Client Sample ID: 029A-JH-0110 ***Lab Sample ID:*** **041701514-0071**

Sample Description: Room 202/Black Mastic a/w 28

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Black	0%	100%	None Detected	

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041701514
Customer ID:	ENVI54
Customer PO:	20161125.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 029B-JH-0110 ***Lab Sample ID:*** **041701514-0072**

Sample Description: Room 202/Black Mastic a/w 28

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Black	0%	100%	None Detected	

Client Sample ID: 030A-JH-0110 ***Lab Sample ID:*** **041701514-0073**

Sample Description: Room 203/Residual Black Floor Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Black	0%	100%	None Detected	
TEM Grav. Reduction	1/27/2017	Black	0.0%	100%	None Detected	

Client Sample ID: 030B-JH-0110 ***Lab Sample ID:*** **041701514-0074**

Sample Description: Room 203/Residual Black Floor Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Black	0%	100%	None Detected	

Client Sample ID: 031A-JH-0110 ***Lab Sample ID:*** **041701514-0075**

Sample Description: Room 212/Tan Chimney Parging Cement

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Tan	0%	100%	None Detected	

Client Sample ID: 031B-JH-0110 ***Lab Sample ID:*** **041701514-0076**

Sample Description: Room 212/Tan Chimney Parging Cement

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Tan	0%	100%	None Detected	

Client Sample ID: 031C-JH-0110 ***Lab Sample ID:*** **041701514-0077**

Sample Description: Room 212/Tan Chimney Parging Cement

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/26/2017	Tan	0%	100%	None Detected	

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041701514
Customer ID:	ENVI54
Customer PO:	20161125.A1E
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Analyst(s):

Amy Johnson	PLM (34)
Daniel Fricker	PLM (2)
Sandy Burany, Ph.D	TEM Grav. Reduction (2)
William Nguyen	PLM (34)

Reviewed and approved by:

Benjamin Ellis, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. This test report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. EMSL bears no responsibility for sample collection activities or analytical method limitations. The laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. PLM alone is not consistently reliable in detecting asbestos in floor coverings and similar NOBs

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036

Report amended: 02/10/201715:04:04 Replaces initial report from: 01/26/201714:16:27 Reason Code: Client-Additional Analysis

OrderID: 041701514

Fuss ONeill EnviroScience EMSL Customer No. ENVI54

FUSS & O'NEILL
EnviroScience, LLC

041701514

www.fando.com

50 Redfield Street, Suite 100, Boston, MA 02122

Phone (617) 282-4675 Fax (617) 282-8253

ASBESTOS BULK SAMPLE CHAIN OF CUSTODY FORM

1484066711819

Project Name:	Lynch Park Carriage House	Project No.	20161125.A1E
Site Address:	Lynch Park Carriage House, 55 Ober Street	Project Manager:	Dustin Diedricksen
Building Name/Number:	Not Applicable	Total # of Samples:	~~54~~ 77

	Sample ID	Material Type	Sample Location	Comments
☆4	0116JH-001A	Brown Mottled 12" x 12" Floor Tile	Level 1 Room 103	
	0116JH-001B	Brown Mottled 12" x 12" Floor Tile	Level 1 Room 103	
☆2	0116JH-002A	Black Floor Tile Mastic/Adhesive	Level 1 Room 103	
	0116JH-002B	Black Floor Tile Mastic/Adhesive	Level 1 Room 103	
	0116JH-003A	Beige Fissure and dot Suspended 2' x 4' Ceiling Tile	Level 1 Room 103	
	0116JH-003B	Beige Fissure and dot Suspended 2' x 4' Ceiling Tile	Level 1 Room 103	
	0116JH-004A	White Electrical Panel Insulation	Level 1 Room 103	
	0116JH-004B	White	Level 1 Room 103	
	0116JH-004C	White	Level 1 Room 103	
☆3	0116JH-005A	Black Mottled 12" x 12" Floor Tile	Level 1 Room 107	
	0116JH-005B	Black Mottled 12" x 12" Floor Tile	Level 1 Room 107	
	0116JH-006A	White Lines Glue-Set 12" x 12" Ceiling Tile	Level 1 Room 107	
	0116JH-006B	White Lines Spline-Set 12" x 12" Ceiling Tile	Level 2 Room 204	
☆5	0116JH-007A	Gray Mottled 12" x 12" Floor Tile	Level 1 Room 108	
	0116JH-007B	Gray Mottled 12" x 12" Floor Tile	Level 1 Room 108	
	0116JH-008A	Yellow Floor Tile Mastic/Adhesive	Level 1 Room 108	
	0116JH-008B	Yellow Floor Tile Mastic/Adhesive	Level 1 Room 108	
	0116JH-009A	Gray Stone Vinyl Sheet Flooring	Level 1 Room 105	
	0116JH-009B	Gray Stone Vinyl Sheet Flooring	Level 1 Room 105	
	0116JH-010A	Clear Vinyl Sheet Flooring Mastic	Level 1 Room 105	
	0116JH-010B	Clear Vinyl Sheet Flooring Mastic	Level 1 Room 105	
	0116JH-011A	Gray Rough 4" ~~buery~~ quarry tile grout	Level 1 Room 105	
	0116JH-011B	Gray Rough 4" ~~buery~~ quarry tile grout	Level 1 Room 105	
	0116JH-012A	White Top Coat Wall Plaster	Level 1 Room 105	
	0116JH-012B	White Top Coat Wall Plaster	Level 1 Room 109	
	0116JH-012C	White Top Coat Wall Plaster	Level 2 Room 201	
	0116JH-013A	Gray Base Coat Wall Plaster	Level 1 Room 105	
	0116JH-013B	Gray Base Coat Wall Plaster	Level 1 Room 109	
	0116JH-013C	Gray Base Coat Wall Plaster	Level 2 Room 201	

CINNAMINSON, N.J.
2017 JAN 19 A 10:42

77

Rec'd Beb email 930

041701514

0116JH-014A	Gray Rough Boiler cement	Basement B01	
0116JH-014B	Gray Rough Boiler cement	Basement B01	
0116JH-015A	Gray Flu cement	Basement B01	
0116JH-015B	Gray Flu cement	Basement B01	
0116JH-016A	Gray Rough Cement brick mortar	Basement B01	
0116JH-016B	Gray Rough Cement brick mortar	Basement B01	
0116JH-017A	Gray Base Coat Wall Plaster	Basement B01	
0116JH-017B	Gray Base Coat Wall Plaster	Basement B01	
0116JH-017C	Gray Base Coat Wall Plaster	Basement B01	
0116JH-018A	White Top Coat Wall Plaster	Basement B01	
0116JH-018B	White Top Coat Wall Plaster	Basement B01	
0116JH-018C	White Top Coat Wall Plaster	Basement B01	
0116JH-019A	Gray Rough Textured Ceiling Plaster	Basement B01	
0116JH-019B	Gray Rough Textured Ceiling Plaster	Basement B01	
0116JH-019C	Gray Rough Textured Ceiling Plaster	Basement B01	
0116JH-020A	Black Exterior Siding/Shingle Felt	Exterior None	
0116JH-020B	Black Exterior Siding/Shingle Felt	Exterior None	
0116JH-021A	Tan Exterior Window Glazing Compound	Exterior None	
0116JH-021B	Tan Exterior Window Glazing Compound	Exterior None	
0116JH-022A	White Exterior Window Glazing Compound	Exterior None	
0116JH-022B	White Exterior Window Glazing Compound	Exterior None	
0116JH-023A	Brown Wall Panel Adhesive	Level 2 Room 204	
0116JH-023B	Brown Wall Panel Adhesive	Level 2 Room 204	
0116JH-024A	Tan Rough Exterior Window Glazing Compound	Exterior None	
0116JH-024B	Tan Rough Exterior Window Glazing Compound	Exterior None	

Analysis Method. PLM EPA 600

Turnaround Time - 1 WEEK

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: _____. Please call EnviroScience if analyses will not be completed for requested t/a/t at (617) 282-4675.

Email results to: ddiedricksen@fando.com

Do Not Mail Hard Copy Report

FAX Results to 888-83[illegible]1160

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated Do not point count. If NOB group samples are all negative by PLM, analyze only the 'A' sample by TEM NOB unless you are told otherwise.

Samples Collected by:

Jon Hand

Date: 2017-01-10

Samples Sent by: Jon Hand Date: 1/16/17 Time: PM

Samples Received by: _____ Date: _____ Time: _____

Shipped to: EMSL Boston

Method of Shipment: Fed Ex Lab Drop Off Other _____

2017 JAN 19 A 10:42 CINNAMINSON, N.J.

OrderID: 041701514

FUSS & O'NEILL
EnviroScience, LLC
50 Redfield Street, Suite 100, Boston, MA 02122
Phone (617) 282-4675 Fax (617) 282-8253
www.fando.com

EMSL Customer No. ENVI54

041701514

Asbestos Bulk Sample Chain-of-Custody Form

Sheet 3 of 4

Project Name: Lynch Park Carriage House **Project No.:** 20161125.A1E **Task:** 15

Building Name/Number: Lynch Park Carriage House **Project Manager:** Dustin Diedricksen

Site Address: 55 Ober Street, Beverly, MA **Total # of Samples:** 77

Sample ID (#-Initials-Date)	Material Type (Size, Color, Description, Material)	Sample Location	Comments/ Quantities
012D-JH-0110	white Skim Coat Plaster	Room 202	
012E	↓	203	
012F	↓	207	
012G	↓	211	
013D	Gray Plaster Rough Coat	202	
013E	↓	203	
013F	↓	207	
013G	↓	211	
~~013~~ 025A	white Circular Window Glazing Compound	Exterior	
025B	↓	↓	
026A	Tan Interior Partition Window Glazing Compound	Room 104	
026B	↓	↓	
027A	Green Stone-Pattern Sheet Flooring	Room 202	120 sf
027B	↓	↓	5 sf
★7 028A	12"x12" Tan Mottled ~~Floor~~ Tile on Counter	↓	

Analysis Method: ☒ PLM ☐ TEM ☐ Other _____ Turnaround Time: 1-week

Please call EnviroScience at (617) 282-4675 if analyses will not be completed for requested turnaround time listed above.

Email Results to: jhand & ddiedricksen @fando.com **Do Not Mail Hard Copy Report** **FAX Results to:** 888-838-1160.

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. If NOB group samples are **ALL** negative by PLM, analyze the sample denoted with a star (★) by **TEM NOB** on a **1-week** turnaround time. Analyze a **MAXIMUM** of **2** samples by **TEM in noted order.**

Samples Collected by: Jon Hand **Date:** 1/10/17

Samples Sent by: Jon Hand **Date:** 1/16/17 **Time:** PM

Shipped To: ☒ EMSL ☐ Other _____

Method of Shipment: ☒ Fed Ex ☐ Lab Drop Off ☐ Other _____

2017 JAN 19 A 10:
CONNECTICUT

OrderID: 041701514

FUSS & O'NEILL
EnviroScience, LLC
50 Redfield Street, Suite 100, Boston, MA 02122
Phone (617) 282-4675 Fax (617) 282-8253
www.fando.com

EMSL Customer No. ENVI54

041701514

Asbestos Bulk Sample Chain-of-Custody Form

Sheet 4 of 4

Project Name: Lynch Park Carriage House **Project No.:** 20161125.A1E **Task:** 15

Building Name/Number: Lynch Park Carriage House **Project Manager:** Dustin Diedricksen

Site Address: 55 Ober Street, Beverly, MA **Total # of Samples:** 77

Sample ID (#-Initials-Date)	Material Type (Size, Color, Description, Material)	Sample Location	Comments/ Quantities
28B-JH-0110	↓	↓	
★6 29A-	Black Mastic A/W 28	Room 202	
29B-	↓	↓	
★1 30A-	Residual Black Floor Mastic	Room 203	
30B-	↓	↓	
31A-	Tan Chimney Parging Cement	Room 212	
31B-	↓	↓	
31C-	↓	↓	

Analysis Method: ☒ PLM ☐ TEM ☐ Other _____ Turnaround Time: 1-week

Please call EnviroScience at (617) 282-4675 if analyses will not be completed for requested turnaround time listed above.

Email Results to: jhand & ddiedricksen @fando.com **Do Not Mail Hard Copy Report** **FAX Results to:** 888-838-1160.

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. If NOB group samples are **ALL** negative by PLM, analyze the sample denoted with a star (★) by **TEM NOB** on a **1-week** turnaround time. Analyze a **MAXIMUM** of **2** samples by **TEM in noted order.**

Samples Collected by: Jon Hand **Date:** 1/10/17

Samples Sent by: Jon Hand **Date:** 1/16/17 **Time:** PM

Shipped To: ☒ EMSL ☐ Other _____

Method of Shipment: ☒ Fed Ex ☐ Lab Drop Off ☐ Other _____

2017 JAN 19 A 10:63 CINNAMINSON, NJ

Christy, Sherry 041701514

From: Cinnaminson-Asbestos
Sent: Friday, February 03, 2017 3:04 PM
To: Corporate - Asbestos Login
Subject: FW: Order 041701514

From: Jonathan Hand
Sent: Friday, 03 February 2017 15:03:41 (UTC-05:00) Eastern Time (US & Canada)
To: EMSL Lab - Cinnaminson Asbestos
Subject: Order 041701514

Please analyze sample 013B and 013C from the above referenced order on a 1-week turnaround.

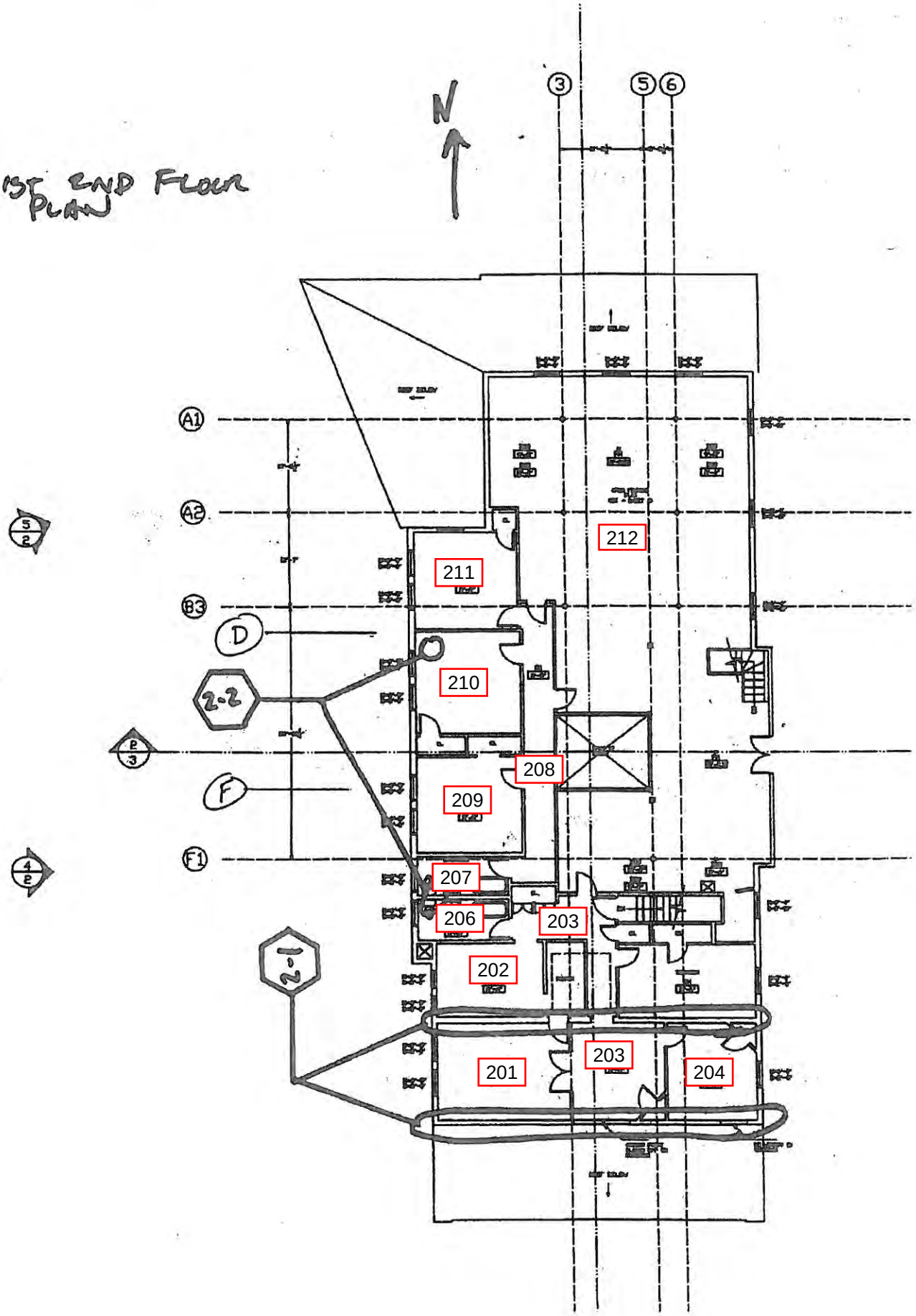
Thanks

Jonathan Hand
Environmental Analyst
Fuss & O'Neill EnviroScience, LLC | 317 Iron Horse Way, Suite 204 | Providence, RI 02908
401.861.3070 x4547 | jhand@fando.com | cell: 401.595.8270
www.fando.com | twitter | facebook | linkedin
This e-mail message and any files transmitted with it are the exclusive intellectual property of Fuss & O'Neill. This message and any attachments ... be privileged and confidential. If you have received this message in error, please delete this e-mail and attached files and immediately notify ... O'Neill by sending a reply e-mail to the sender of this message. Thank you.

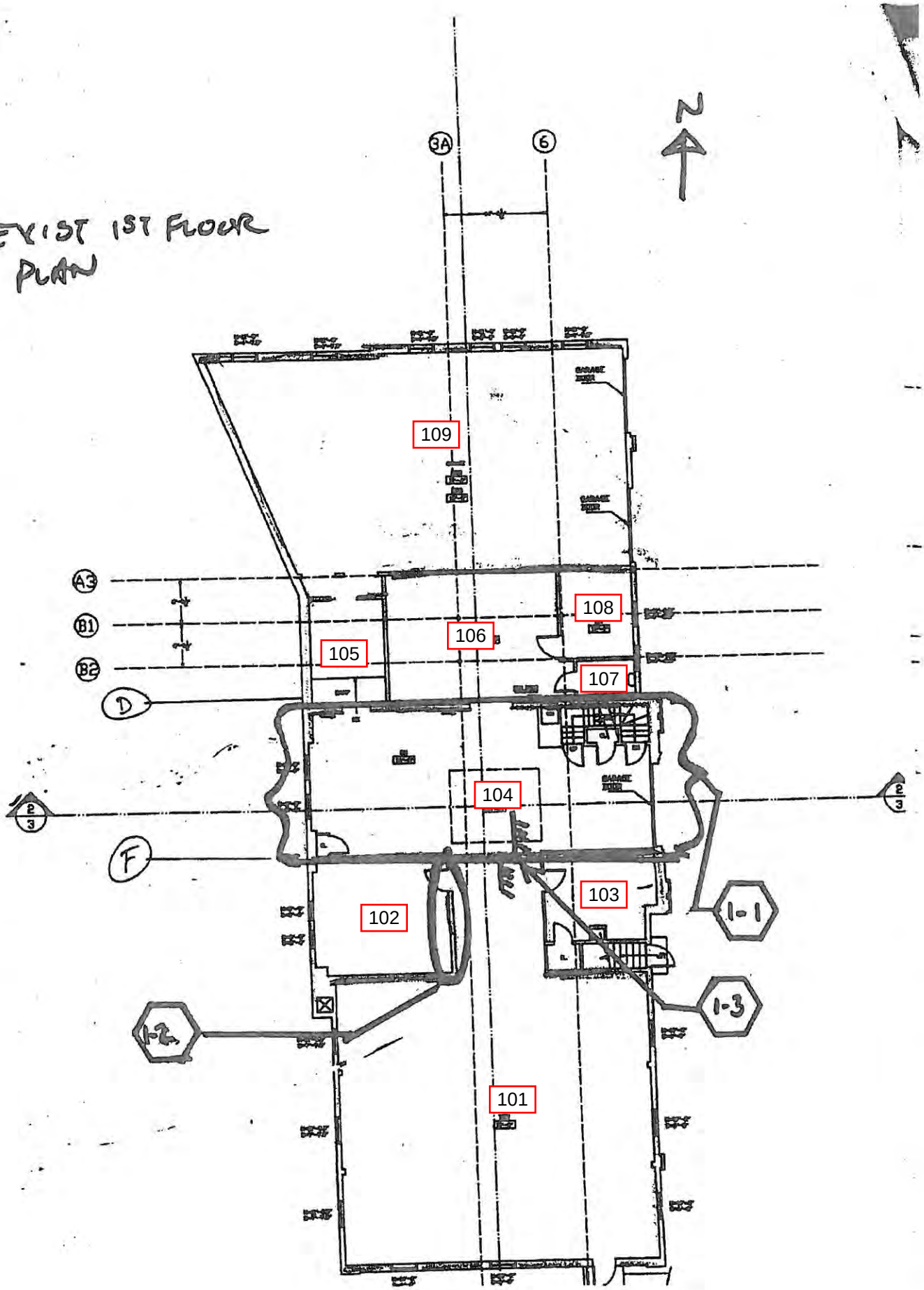
Appendix D

Site Building Diagrams

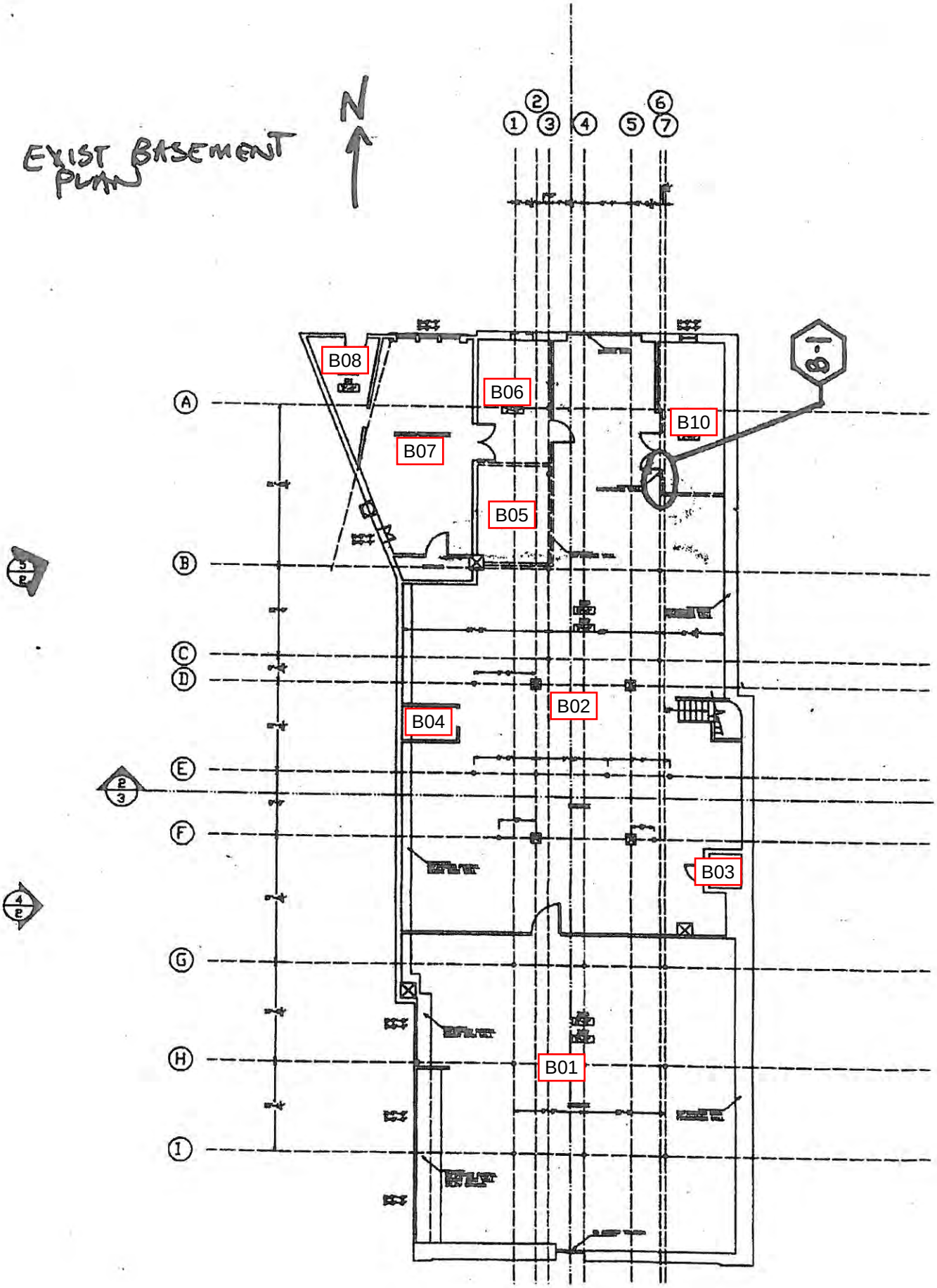
EXIST 2ND FLOOR PLAN



EXIST 1ST FLOOR PLAN



EXIST BASEMENT PLAN



FUSS & O'NEILL
EnviroScience, LLC

February 21, 2017

Ms. Lynne Spencer
Principal, Preservation
Spencer & Vogt Group
1 Thompson Square, Suite 504
Charlestown, MA 02129

RE: Hazardous Building Materials Opinion of Abatement Costs
Lynch Park Carriage House
Beverly, Massachusetts
Fuss & O'Neill EnviroScience, LLC No. 20161125.A1E

Dear Ms. Spencer:

Fuss & O'Neill EnviroScience, LLC has prepared the hazardous building materials opinion of abatement cost provided below (for the abovementioned site). These cost opinions are based on our Limited Hazardous Building Materials Inspection report prepared for the Site, dated February 2017. Unit costs are based on current industry rates and are inclusive of typical contractor costs for a normal work schedule (1 shift/day), Monday to Friday. They do not include costs for an expedited work schedule (double shifts/ weekends/ holidays), project design, construction monitoring, air sampling, and other consultant-based fees. Estimated unit costs are based on assumption that listed materials will be removed, disposed, and transported by the abatement contractor during one phase.

Material Type	Estimated Quantity	Estimated Unit Cost	Total Estimated Cost
White Electrical Panel Insulation	6 SF	Lump Sum	$250.00
Wall Plaster	1,250 SF	$7/SF	$8,750.00
Wall Plaster on Masonry Units	500 SF	$7/SF	$3,500.00
Tan Exterior Window Glazing Compound Associated with 6-Pane Windows	13 EA	$300/EA	$3,900.00
Brown Wall Panel Adhesive	1,000 SF	$7/SF	$7,000.00
Green Stone-Pattern Sheet Flooring	450 SF	$4/SF	$1,800.00
12" x 12" Tan Mottled Tile	200 SF	$4/SF	$800.00
Fiber-Reinforced Cement Board Ceiling	200 SF	$7/SF	$1,400.00
Wall & Ceiling Plaster*	10,750 SF	$7/SF	$75,250.00

50 Redfield Street
Suite 100
Boston, MA
02122
t 617.282.4675
800.286.2469
f 617.282.8253

www.fando.com

Connecticut
Massachusetts
Rhode Island
South Carolina

Material Type	Estimated Quantity	Estimated Unit Cost	Total Estimated Cost
Lighting Ballast, Fluorescent Lamp, and Mercury-Containing Equipment Disposal		Lump Sum	$750.00
Lead-Based Paint Work Practices & Limited Disposal		Lump Sum	$5,000.00
		Subtotal	$108,400.00
		(~10%) Contingency	$10,800.00
		Total**	$119,200.00

EA = Each, SF = Square Feet

ACM = Asbestos-Containing Material

* Denotes additional plaster testing recommended to potentially remove from abatement scope

** Does not include consultant fees

Sincerely,

Dustin A. Diedricksen
Senior Project Manager

DD/so

BASIC BUILDING CODE ANALYSIS

This section of the report briefly describes the applicability of the 9th edition of the Massachusetts State Building Code (2015 International Existing Building Code – with Massachusetts Amendments) and architectural access regulations (Massachusetts Architectural Access Board, or MAAB).

The State has adopted the 9th Edition of the Massachusetts State Building Code (2015 International Existing Building Code – with Massachusetts Amendments), as of October 20, 2017. The new code went into effect, and superseded the existing edition, on January 1, 2018. The concurrency phase lasted from October 20, 2017, through December 31, 2017. Building permit applications filed on or after January 1, 2018, will need to be designed according to the 9th Edition of the State Building Code.

The purpose of the building code is to:

- establish minimum requirements to safeguard public health, safety and welfare
- provide life safety from fire and other hazards to building occupants
- protect the building from loss or damage due to fire or other environmental events
- provide safety to fire fighters and emergency responders during emergency operations

In general, existing buildings are not required to retroactively conform to the current building code, except where existing health and safety conditions are considered hazardous by the local building official.

The International Building Code for new construction (2015 IBC) would be referenced for any substantial renovation of the existing building, or if a new addition was contemplated. Existing buildings are governed by the International Existing Building Code (2015 IBCEC).

The IBCEC divides work on existing buildings into "Repairs" and "Alterations." "Repairs" are considered in-kind replacements of existing materials and systems, and would be considered as guidelines for building maintenance. "Alterations" are categorized into three (3) levels depending upon the amount and scale of work involved.

Most recommendations for work to be undertaken at the Lynch Park Carriage House would be considered a blend of **Repairs and Alterations**. Generally speaking, the Code requires any **Repair** work to maintain or improve the life safety of the building. Basically, no condition should be made less code compliant than before work started. An example of a Repair item would be the patching or partial replacement of a damaged wood cornice and gutter assembly.

The recommended exterior **Repair** work scope at Lynch Park would include the restoration of existing window sashes and doors, and the partial replacement of designated sections of wood trim. It would also include the removal and replacement of exterior finish materials such as exterior shingles, clapboards and corner quoins; new exterior trim at windows, doors and roof cornices; and the removal and replacement of existing gutters and downspouts.

The remainder of the recommended work scope would largely fall under the category **Alterations – Level 1** and **Alterations Level 2**. See Part Three of this report, "Conceptual Design, Cost Estimates and Planning," for further information.

Applicable Codes & Standards (Model Code Basis)

International Existing Building Code (IEBC)

- Massachusetts State Building code (780 CMR), Ninth Edition, Base Volume (2015 International Building Code with Massachusetts amendments)
- International Energy Conservation Code, 2012 Edition (IECC)
- Massachusetts Board of State Examiners of Plumbers and Gas Fitters Regulations (248 CMR)
- Massachusetts Comprehensive Fire Safety Code (527 CMR 1.00 – 2012 NFPA 1: Fire Code with amendments)
- Massachusetts Electrical Code (527 CMR 12.00 – 2014 NFPA 70: National Electrical Code with amendments)
- Massachusetts Architectural Access Board Regulations – MAAB - (521 CMR)
- Americans with Disabilities Act (ADA)

Rules and Regulations of the Massachusetts Architectural Access Board (MAAB)

Architectural access regulation in Massachusetts (521 CMR) are written to encourage making buildings and spaces barrier free to persons with physical or mental disabilities.

Note that the Lynch Park Carriage House is not required to retroactively outfit its facility for Universal Access. However, there are several "triggers" where work done will need to in-orporate accessibility. Note that the guidelines below describe a minimum standard. Exceeding these requirements is at the discretion of the City.

Generally speaking, all new work including construction, reconstruction, alterations, re-modeling, additions, and changes in use should conform to the access regulations. This means all additions, reconstruction, remodeling, and alterations or repairs to existing public buildings or facilities which require a building permit.

If the building permit value of the work being performed amounts to less than 30% of the assessed building value and less than $100,000, only new work or renovated spaces would be required to comply. The City of Beverly tax assessment for fiscal year 2017 is $929,300 (building only), so the 30% threshold would be $278,790.

If the work value is under 30% of the assessed building value, but over $100,000, the work must be made accessible and both an accessible entrance and rest room are required.

If the value of the work to be done is determined to be greater than 30% of the "full and fair cash value" of the building, which is $278,790, then the entire facility would have to be made fully accessible. If spaces cannot be made accessible, a variance may be sought to allow their continued use by the public, or for exemption for certain uses.

Whether performed alone or in combination with each other, the following types of alterations are not subject to 521 CMR 3.3.1 and do not count towards the 30% trigger. When performing exempted work, a memo stating the exempted work and its costs must be filed with the permit application or a separate building permit must be obtained. Exceptions not counting towards the 30% trigger are:

- Alteration work which is limited solely to electrical, mechanical, or plumbing systems, to abatement of hazardous materials, or to retrofit of automatic sprinklers, and does not involve the alteration of any elements or spaces required to be accessible under 521 CMR.
- Roof replacement or repair, window repair or replacement, repointing and masonry repair work.
- Work relating to septic system repairs, site utilities and landscaping.

However, if the above work alone or in concert with additional work exceeds the 30% trigger, then it is as if the work is not exempted. Note that the cost of work is tracked over a three year span, so phased projects may be cumulative.

The scope of the proposed work would trigger full compliance with the applicable MAAB regulations. The 2nd floor area is not currently accessible. The proposed rehabilitation would include a new elevator that would provide access to the 2nd floor.

The summary below identifies some basic information about the Lynch Park Carriage House and how it relates to current building code requirements. The review should be used as a guide when contemplating building renovations.

Code Summary

A. Work Area and Classification of Work

1. Existing building to be repaired or altered: 3 stories (2 stories + basement):

a. Basement Storage = 5,040 NSF +/- (Proposed work area = 225 NSF)
b. 1st Floor = 5,040 NSF +/- (Proposed work area = 1,655 NSF)
c. 2nd Floor = 4,090 NSF +/- (Proposed work area = 4,090 NSF)
d. TOTAL SF = 14,170 NSF +/-

2. It is important to note that the Lynch Park Carriage House is not listed on the National Register of Historic Places or the Massachusetts Historic Register. **As such, exceptions to the building code, described in IEBC, 2015 Edition, Chapter 12, "Historic Buildings," do not apply to the present uses and characteristics of the building.**

B. Occupancy Classification

1. Present Occupancy - Mixed Use: Assembly, Storage, Mercantile and Residential

a. Basement Level Summer Ice Cream and Café Area (Existing): This part of the building is accessible to the public only from the exterior. It is a Mercantile use, and is an accessory use to the A-2 primary use of the building.
b. Basement Level Storage & Mechanical Space (Existing): – No present occupancy is in place in these areas, used primarily for boat and kayak storage. Primary use of these areas most closely resembles Storage, S-1, Moderate-Hazard (Section 311.2).
c. First Floor Assembly Use (Existing): – Present social function rental hall use most closely resembles a Group A-2 use. (Section 303 - Assembly Group A; Banquet Hall).
d. Second Floor Residential Use (Existing): – Past use of approximately one-half of the 2nd floor was for two separate apartments containing sleeping rooms. These apartments were occupied when the building had live-in staff. This former use most closely resembles a Group R-2 use (IBC Section 310 - Residential Group R).
– Past use of approximately one-half of the 2nd floor was for light storage.

No present occupancy is in place in this area, other than light storage. Use of this area most closely resembles Storage, S-1, Moderate-Hazard (IBC Section 311.2).
f. Second Floor Office Space (Proposed): –The south end is being proposed for Office use. This area would most closely resemble a Business, B use (IBC Section 304). The occupancy of this area would be approximately 8 occupants. The south end is being proposed for a Group A-2 use (Section 303 - Assembly Group A; Banquet Hall).

C. Minimum Construction Type- Classification 5B

1. The Lynch Park Carriage House most closely resembles Construction Classification 5B, with exterior and interior wood stud bearing walls, dimension lumber floor framing and some internal supporting columns of cast iron.

2. Wood wall studs and floor framing on the 1st floor are covered with wood bead board.

3. Wood wall studs and floor framing at the south and west sides of the 2nd floor are covered with 3-coat plaster over wood lath.

4. Along the north and east portions of the 2nd floor, the wood wall studs and roof framing are unprotected.

D. Fire Resistance Ratings:

1. The building is not currently protected throughout with an automatic fire suppression (sprinkler) system.

E. Means of Egress:

1. The first floor level is provided with three remote exits, and the capacity of these exits will be adequate for the current use groups and occupant loads. On the first floor, the current egress exits are adequate to support a maximum of 130 occupants when used for Assembly uses.

2. The second floor level is served by two exit stairways. One stairway is accessed from the first floor via the main entry lobby. It has a door at the first floor, but is unenclosed at the second floor. The other existing stair serves the two former apartments at the south end of the second floor. It exits directly to the exterior and has doors at both ends of the stair enclosure.

F. Massachusetts Plumbing Code (248 CMR)

1. Proposed Occupancy Count (Table 1004.1.1 Max. Floor Area Allowances):
   a. Basement, Storage Use:
      1) Boiler Room and Storage, 5,040 nsf / 0 persons
   b. First Floor, Assembly Use:
      1) Rental Venue, 5,040 NSF / 15 nsf / person = 336 persons
      2) Assembly occupancy limited to 130 by City of Beverly
   c. Second Floor, Assembly and Business Uses:
      1) Business Offices, 2,040 nsf / 100 gsf / person = 20 persons
      2) Assembly Use, 2,020 nsf / 15 nsf / person = 135 persons
      3) Three (3) Assembly Use meeting rooms limited to 50 occupants
      4) Combined designated occupancy for 2nd floor = 70 persons

2. Plumbing Fixture Counts

Proposed Occupants (Assembly, 1st & 2nd floors):	**180 persons**
(130 on 1st floor + 50 on 2nd floor)	
@ 50%F / 50%M:	**90** Female
	90 Male
Fixture Calculations based on Assembly Use:	
Toilets Required, Female @ 1 per 50:	**2** required
• Toilets Provided, Female:	***4*** *provided*
Toilets Required, Male @ 1 per 100:	**1** required
• Toilets/Urinals Provided, Male:	1 **toilet/*2*** *urinals provided*
Lavatories Required, M / F @ 1 per 50:	**2** required per gender
• Lavatories Provided, Female:	***2*** *provided*
• Lavatories Provided, Male:	***2*** *provided*
Family Restroom includes:	**1** toilet + 1 lavatory
Proposed Population (Business, 2nd floor):	**22 persons**
@ 50%F / 50%M:	
	11 Female
	11 Male
Proposed Population (Assembly, 2nd floor):	**50 persons**
@ 50%F / 50%M:	**25** Female
	25 Male
Fixture Calculations based on Business Use:	
Toilets Required, Female @ 1 per 20:	1 required
Toilets Provided, Female:	***2*** *provided*
Toilets Required, Male @ 1 per 25:	1 required
Toilets Provided, Male:	***2*** *provided*
Lavatories Required, M / F @ 1 per 50:	1 required per gender
Lavatories Provided, Female:	***1*** *provided*
Lavatories Provided, Male:	***2*** *provided*

Historic District Review

As a building 50 years old or older, the Carriage House is subject to the City of Beverly's Demolition Delay Ordinance. If the building is deemed historically significant by the Historic District Commission, up to a one-year delay may be imposed on its proposed "total or substantial destruction."

Buildings in Beverly that have received funding from the Community Preservation Act are subject to design review by the Commission. Proposed changes must meet *The Secretary of the Interior's Standards for the Treatment of Historic Properties*.

CONCEPTUAL DESIGN

The intent of the Lynch Park Carriage House project is to restore and rehabilitate the building for expanded use. The overall goal is to achieve a fully accessible, four season building that can utilized for various municipal and community needs and activities.

Exterior Restoration Plan

The exterior work would focus on stabilization and returning the envelope as closely as possible to the original building design. This would include restoration of the roof balustrade, window placement at the facade, and removal and infill of the garage doors. The oculus windows at the second story would be restored. The shingle siding would be replaced with clapboard siding on the east, north and south elevations.

We propose removal of the trapezoidal addition containing the ice cream and snack operation and its storage area. On the ocean-facing elevation, the large pocket doors would be reintroduced and would provide direct access to a new exterior wood door that would run the length of the west elevation. The existing French doors in the Lynch Room would also allow direct access to the new deck. Foundation masonry repointing would be completed on all elevations. All wood windows and trim would be evaluated and repaired as required.

We are recommending that the entire exterior envelope be carefully stripped of its cladding. Flush weather boards and their adjoining pilasters along the east elevation should be removed, catalogued, and evaluated for restoration and reinstallation. Individual windows and doors would receive a very similar treatment. The roof cornices need to be carefully removed, catalogued and salvaged. The remaining complete sections of roof cornice along the west elevation would serve as a template for reconstruction of the cornice around the entire building perimeter. Careful investigation of the board sheathing on the exterior walls could reveal which walls were originally covered in clapboards and which walls were originally covered with shingles.

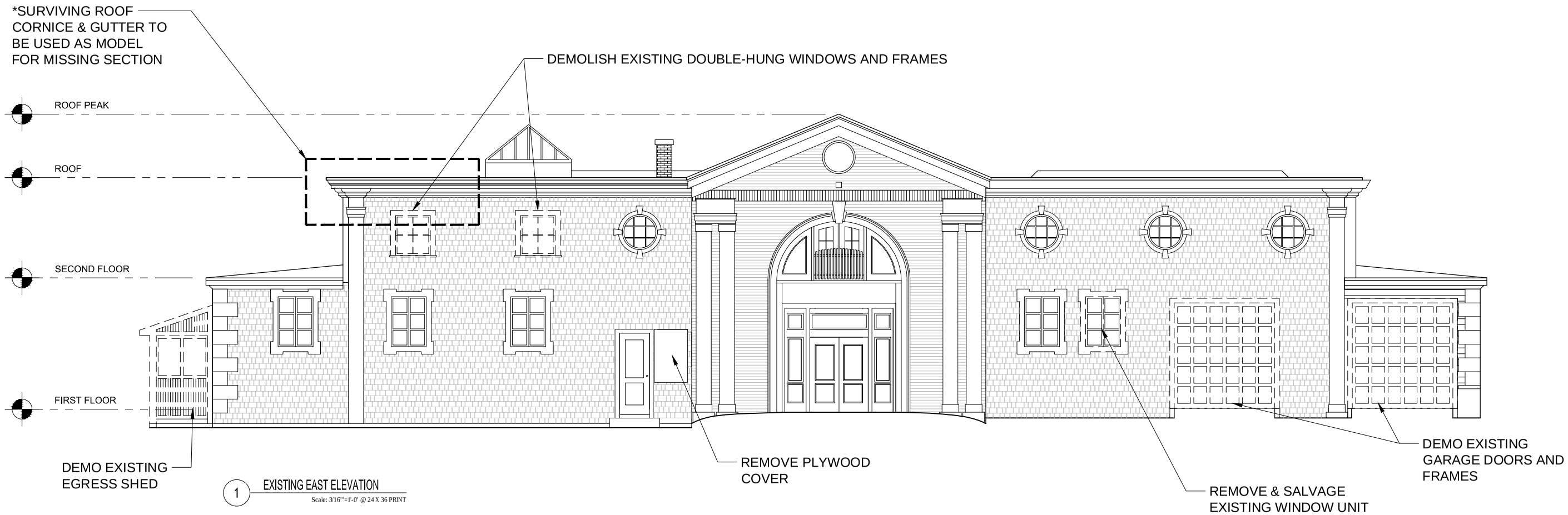
The entire frame of the building would then need to undergo a thorough structural conditions assessment by our structural engineers. Fortunately, the interior walls of matched beaded boards dictate that the exterior surfaces of the same walls be removed for evaluation and examination.

Once the exterior envelope has been stripped, examined, evaluated, structurally reinforced and/or repaired, then decisions about the insertion of new electrical conduit and services can be made. Following that, decisions about the insertion of appropriate wall insulation could be made. Installation of new plywood wall sheathing over the existing wood board sheathing would greatly increase the resistance of the building to lateral loads.

After the exterior envelope has been structurally stabilized and improved, architectural elements such as corner quoins, pilasters, roof cornices, windows, doors, clapboards and wall shingles would be reinstalled in a logical sequence. The goal would be to reuse and reinstall as much of the surviving architectural elements as possible. However, elements along the west elevation (ocean side) that are difficult to reach, such as roof cornices, may be rebuilt with more decay-resistant synthetic building materials.

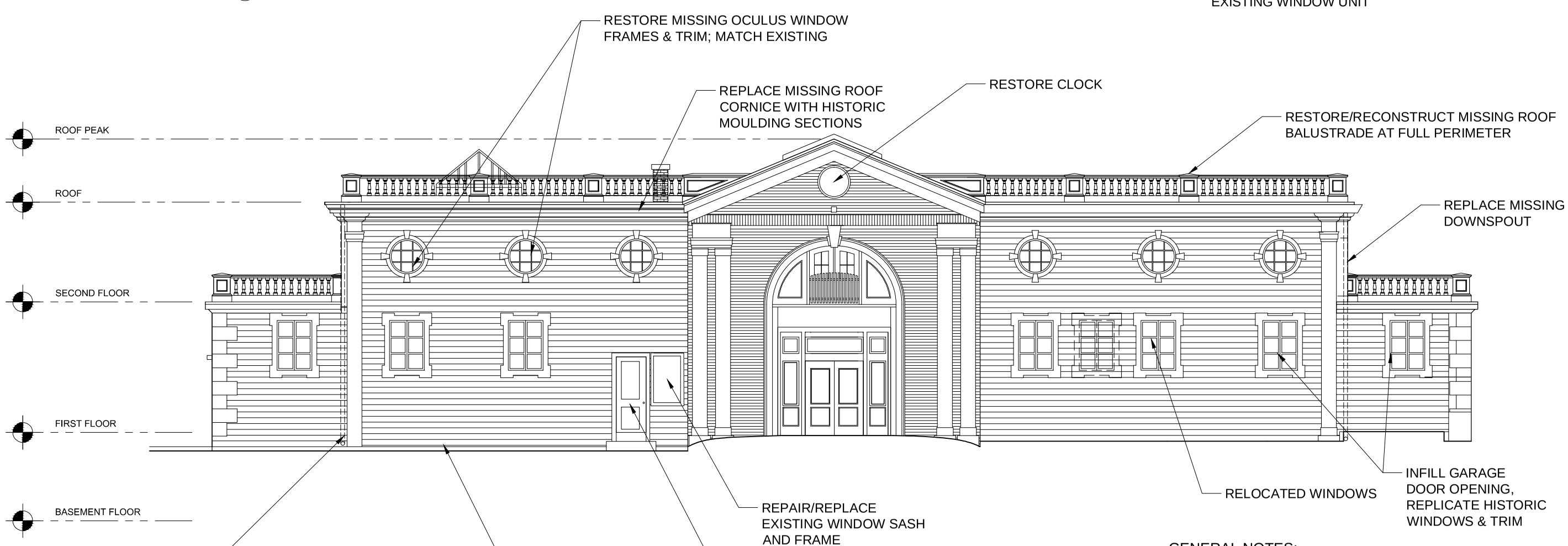
As directed by the building commitee, we have shown a continuous wood deck that runs the length of the west elevation and returns along the south elevation. Stairs would provide access at the north end of the deck, as well as from the south deck. The south stairs would also do double duty as egress stairs from the south end of the Lynch Room. Structural support for the new deck would be provided by cantilevered wood or steel beams that would be embedded in the structure of the basement ceiling below. Our intent is to avoid placing any vertical structural elements into the water below, which would trigger complex regulatory review.

The drawings that follow describe the scope of exterior work.



1 EXISTING EAST ELEVATION

Scale: 3/16"=1'-0" @ 24 X 36 PRINT



1 PROPOSED EAST ELEVATION

Scale: 3/16"=1'-0" @ 24 X 36 PRINT

GENERAL NOTES:

1. REPLACE ALL EXTERIOR SIDING WITH NEW CLAPBOARD SIDING TO MATCH HISTORIC
2. RESTORE ROOF BALUSTRADE AT ALL ELEVATIONS
3. REPLACE MISSING AND ROTTED TRIM AT ALL WINDOWS, DOORS, CORNER QUOINS, PILASTERS AND WEATHERBOARDS

Architect:
SPENCER & VOGT GROUP
architecture preservation
1 Thompson Square, Suite 504
Charlestown, MA 02129
617.227.2675
www.spencervogt.com

Seal:

Consultant:

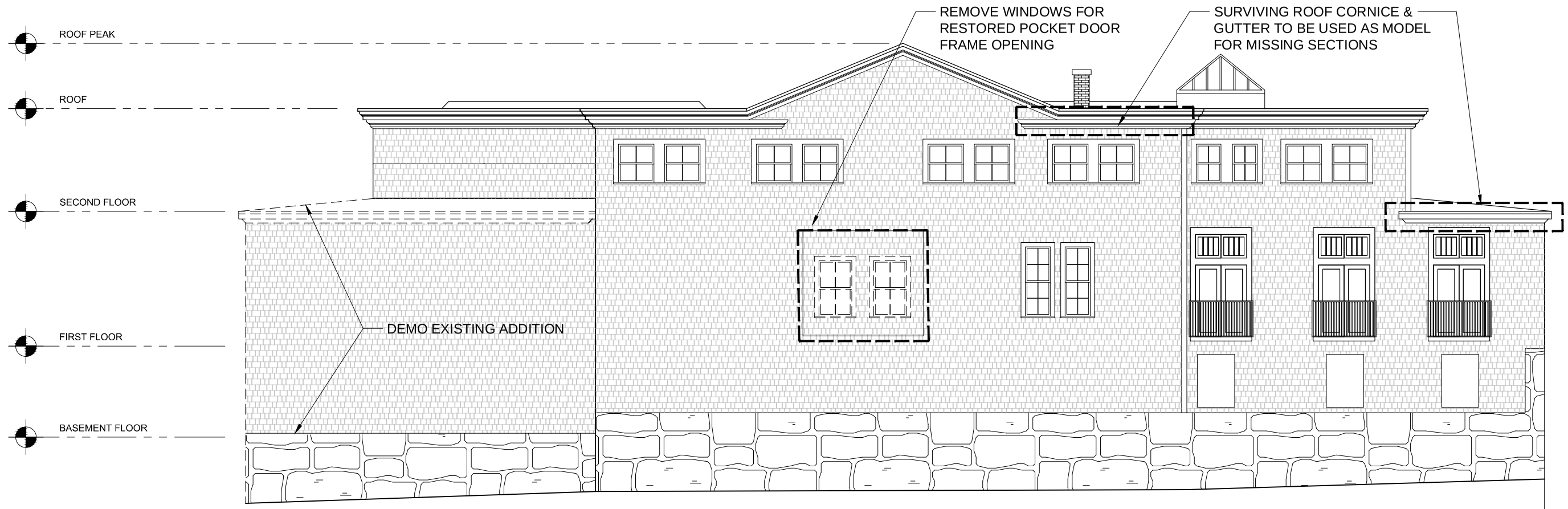
ISSUE / REVISIONS:

Date: 2017
Drawn by: XX
Checked by: XX
Project Number: XXXX.XX

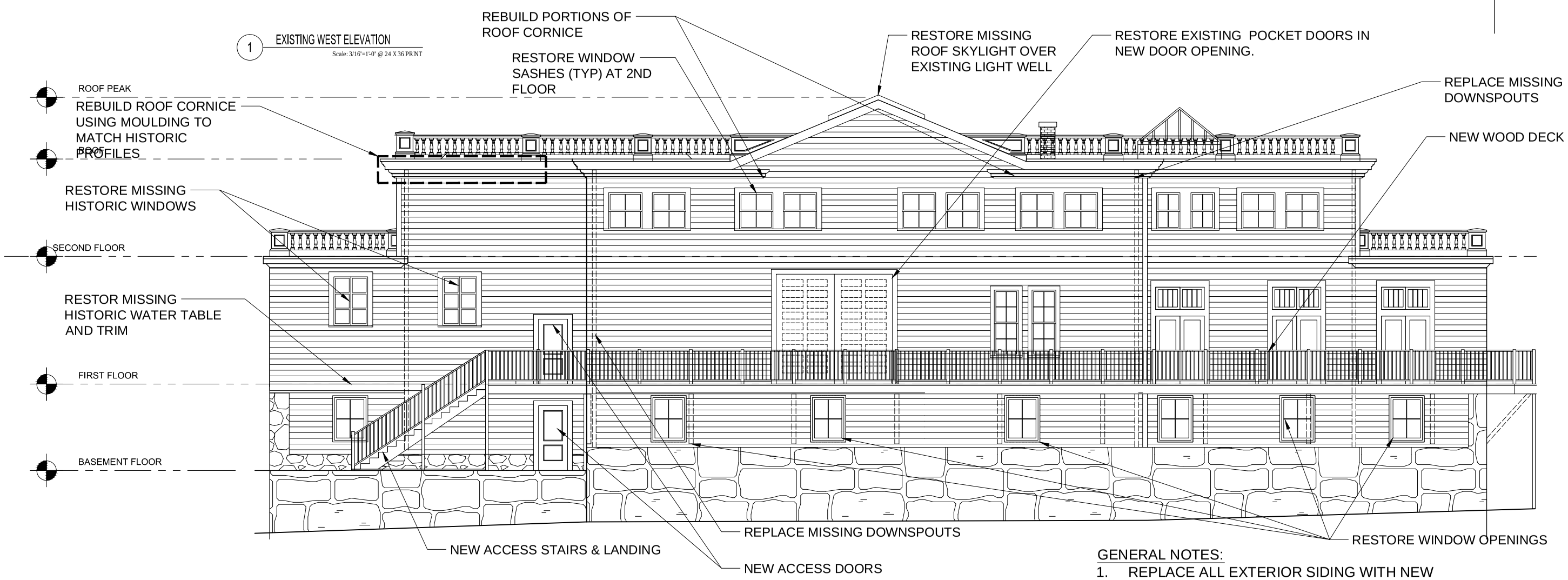
LYNCH PARK CARRIAGE HOUSE
55 Ober Street
Beverly, MA

PROPOSED ELEVATIONS

SD200



1 EXISTING WEST ELEVATION
Scale: 3/16"=1'-0" @ 24 X 36 PRINT



1 PROPOSED WEST ELEVATION
Scale: 3/16"=1'-0" @ 24 X 36 PRINT

GENERAL NOTES:

1. REPLACE ALL EXTERIOR SIDING WITH NEW CLAPBOARD SIDING TO MATCH HISTORIC
2. RESTORE ROOF BALUSTRADE AT ALL ELEVATIONS
3. REPLACE MISSING AND ROTTED TRIM AT ALL WINDOWS, DOORS, CORNER QUOINS, PILASTERS AND WEATHERBOARDS

Architect:
SPENCER & VOGT GROUP
architecture preservation
1 Thompson Square, Suite 504
Charlestown, MA 02129
617.227.2675
www.spencervogt.com

Seal:

Consultant:

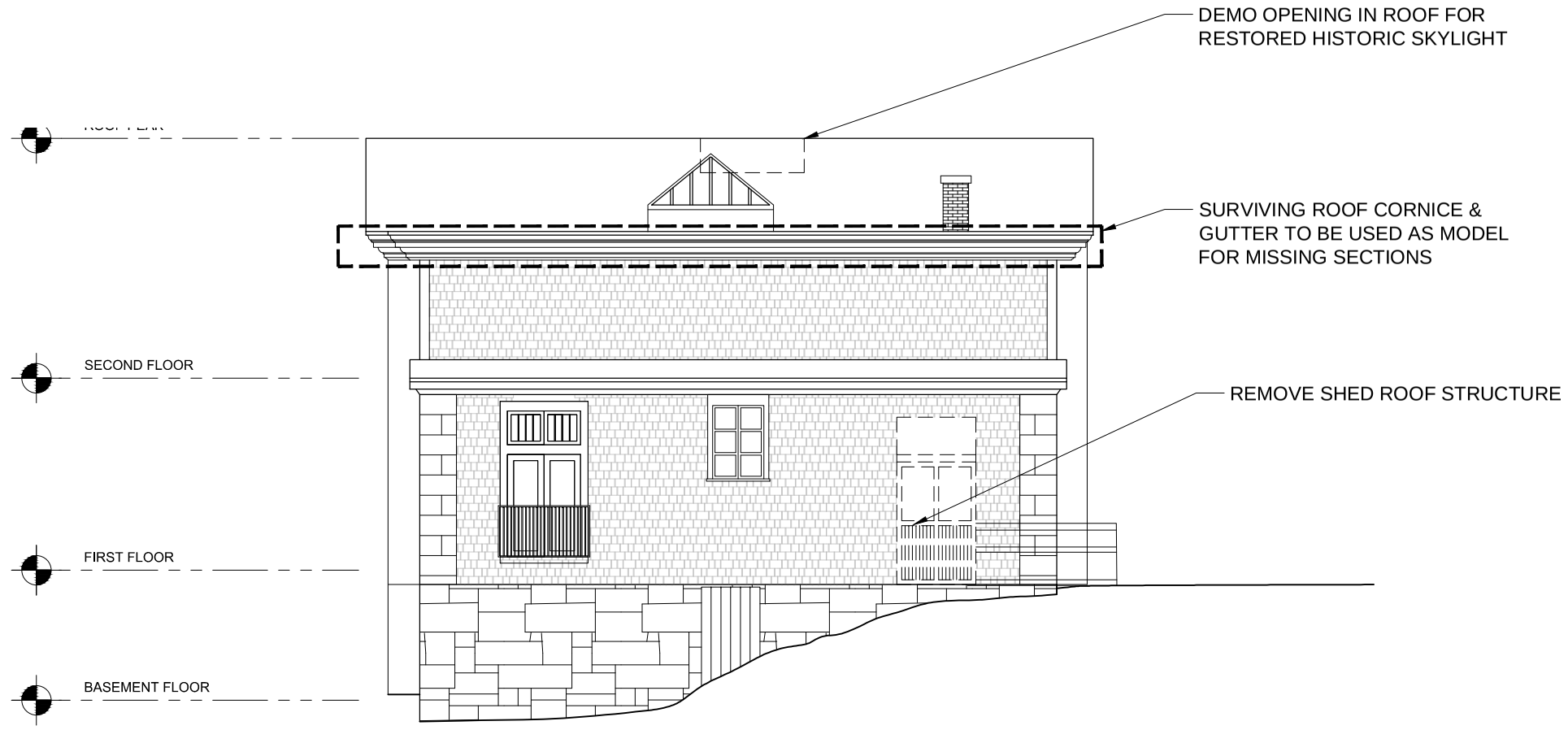
ISSUE / REVISIONS:

Date: 2017
Drawn by: XX
Checked by: XX
Project Number: XXXX.XX

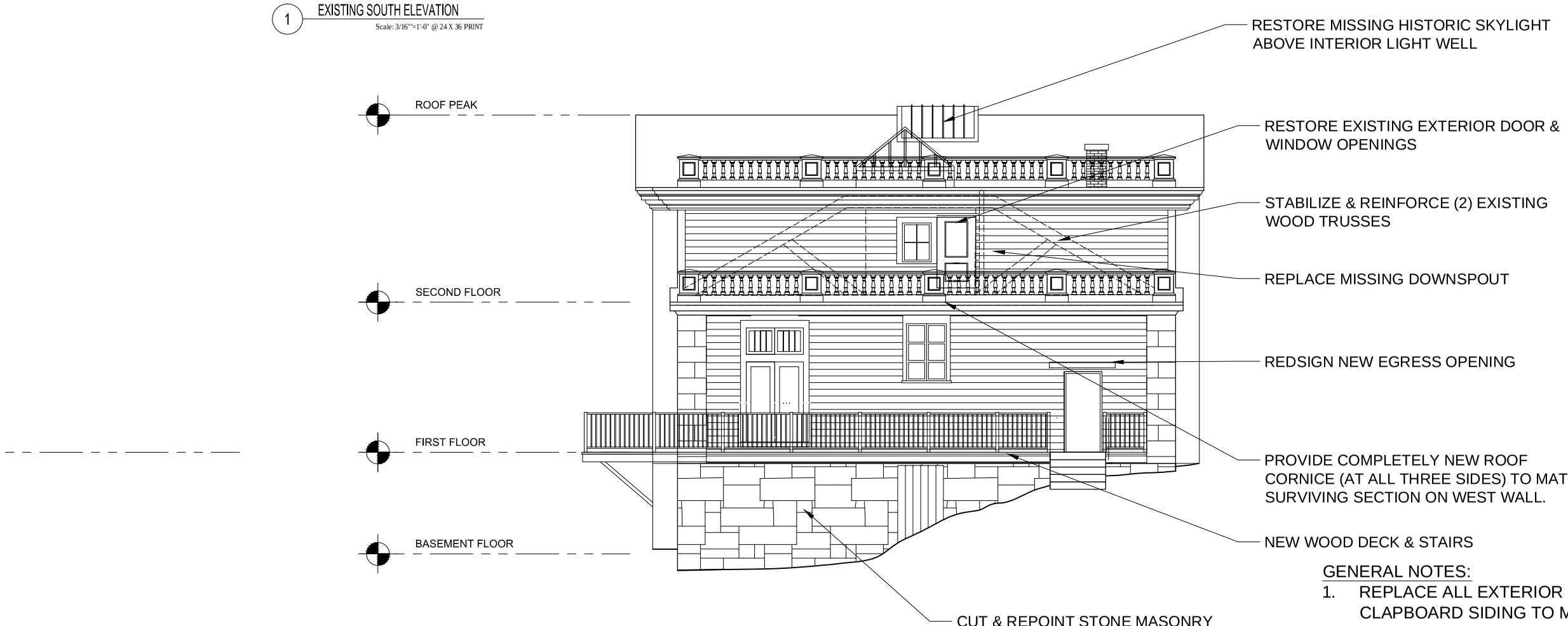
LYNCH PARK CARRIAGE HOUSE
55 Ober Street
Beverly, MA

PROPOSED ELEVATIONS

SD201



1 EXISTING SOUTH ELEVATION
Scale: 3/16"=1'-0" @ 24 X 36 PRINT



2 PROPOSED SOUTH ELEVATION
Scale: 3/16"=1'-0" @ 24 X 36 PRINT

GENERAL NOTES:

1. REPLACE ALL EXTERIOR SIDING WITH NEW CLAPBOARD SIDING TO MATCH HISTORIC
2. RESTORE ROOF BALUSTRADE AT ALL ELEVATIONS
3. REPLACE MISSING AND ROTTED TRIM AT ALL WINDOWS, DOORS, CORNER QUOINS, PILASTERS AND WEATHERBOARDS

Architect:
SPENCER & VOGT GROUP
architecture preservation
1 Thompson Square, Suite 504
Charlestown, MA 02129
617.227.2675
www.spencervogt.com

Seal:

Consultant:

ISSUE / REVISIONS:

Date: 2017
Drawn by: XX
Checked by: XX
Project Number: XXXX.XX

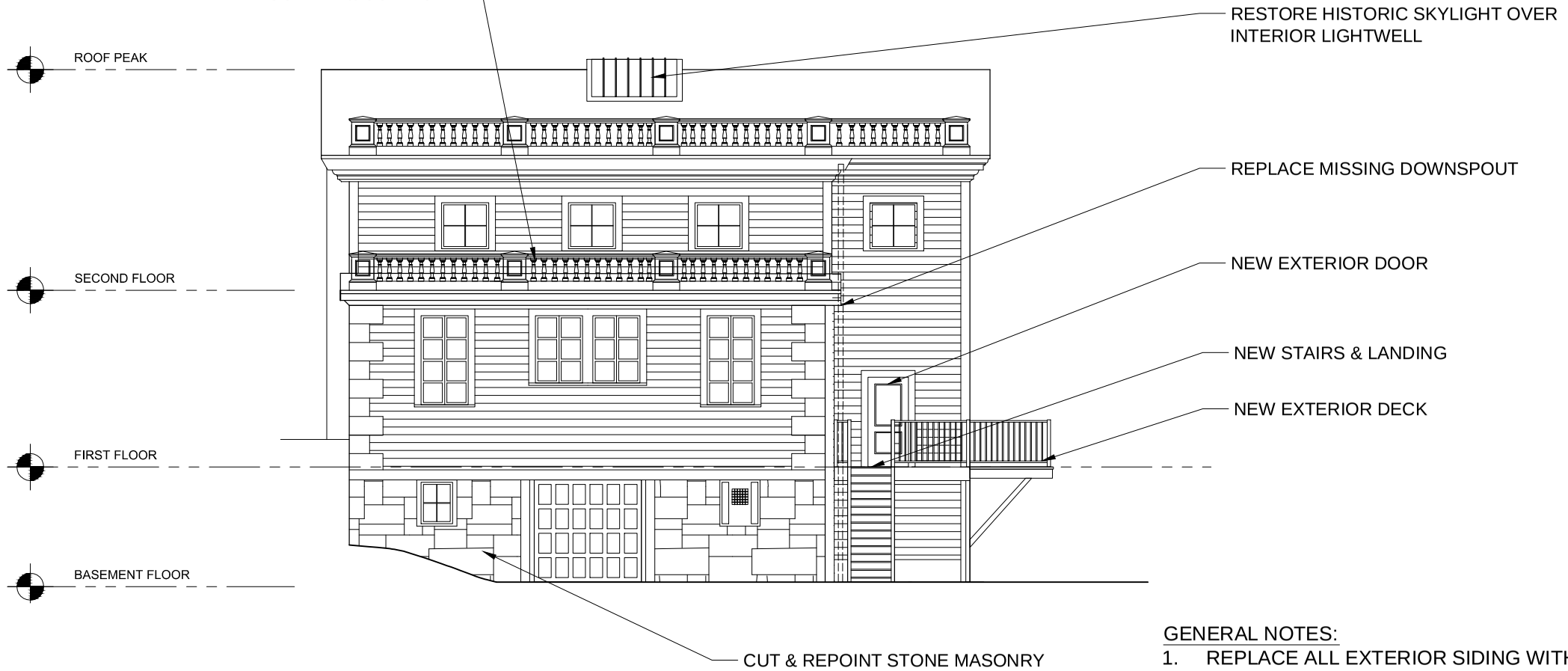
LYNCH PARK CARRIAGE HOUSE
55 Ober Street
Beverly, MA

EXISTING CONDITIONS ELEVATIONS

SD202

1 EXISTING NORTH ELEVATION

Scale: 3/16"=1'-0" @ 24 X 36 PRINT



2 PROPOSED NORTH ELEVATION

Scale: 3/16"=1'-0" @ 24 X 36 PRINT

GENERAL NOTES:

1. REPLACE ALL EXTERIOR SIDING WITH NEW CLAPBOARD SIDING TO MATCH HISTORIC
2. RESTORE ROOF BALUSTRADE AT ALL ELEVATIONS
3. REPLACE MISSING AND ROTTED TRIM AT ALL WINDOWS, DOORS, CORNER QUOINS, PILASTERS AND WEATHERBOARDS

Architect:
SPENCER & VOGT GROUP
architecture preservation
1 Thompson Square, Suite 504
Charlestown, MA 02129
617.227.2675
www.spencervogt.com

Seal:

Consultant:

ISSUE / REVISIONS:

Date: 2017
Drawn by: XX
Checked by: XX
Project Number: XXXX.XX

LYNCH PARK CARRIAGE HOUSE
55 Ober Street
Beverly, MA

EXISTING CONDITIONS ELEVATIONS

SD203

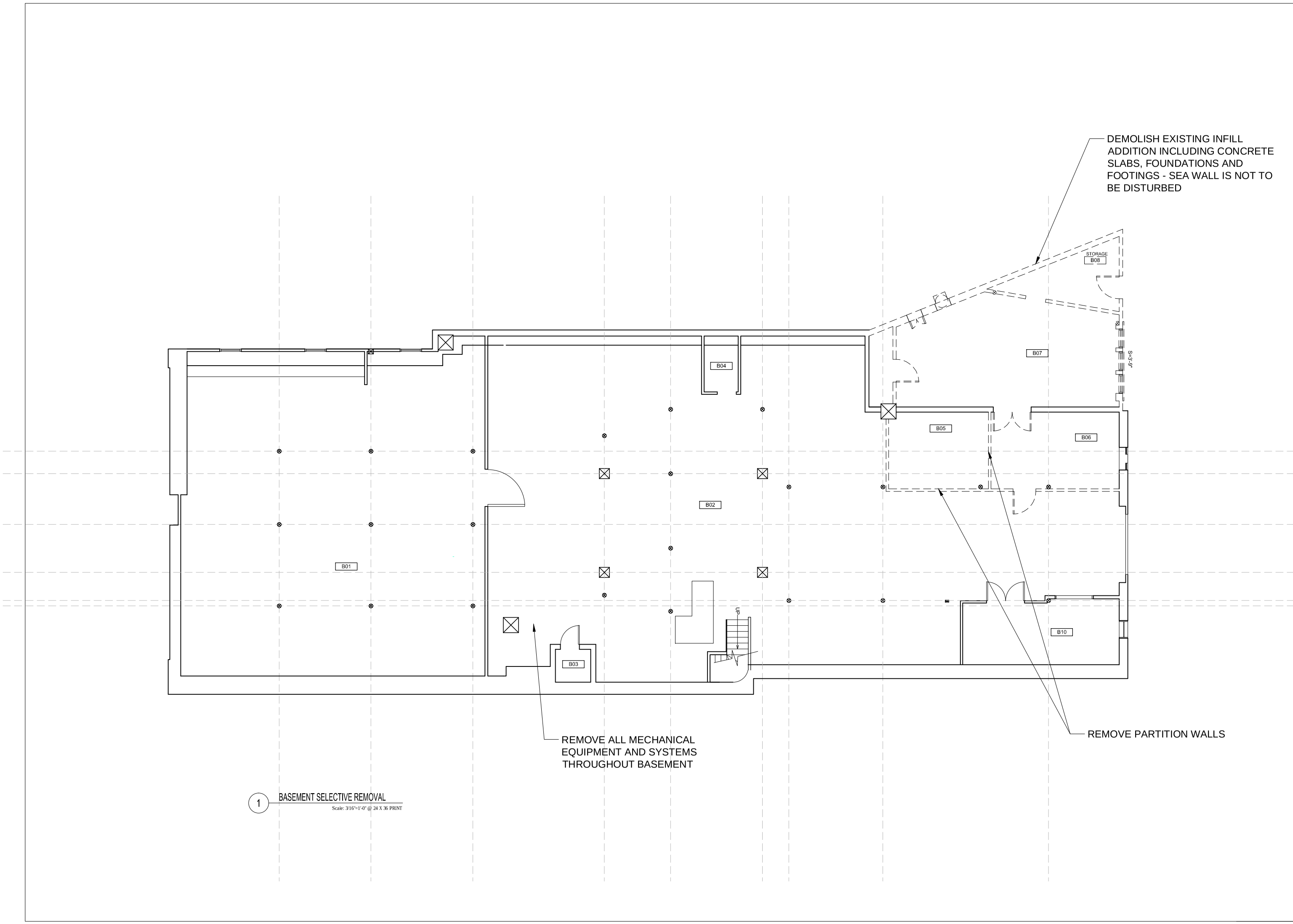
Design for Interior Spaces

The interior work would focus initially on updating all mechanical, electrical, plumbing and fire protection systems. Structural reinforcement will be introduced as recommended in the structural analysis report. Concurrent with updating the building systems, the interior will be reconfigured to meet future programming needs and become fully accessible. This will be accomplished by introducing a new elevator and egress stairs connecting all three levels.

The basement will continue to be used for storage. To address the concern of rising sea levels, all the existing mechanical equipment will be moved to upper floors. Special consideration should be taken regarding proper drainage and structural reinforcement options in the basement to address potential flooding conditions.

The intent for the first floor is continued and expanded use for rental functions and events and community activities. We propose that the doors into the Cove Room be expanded to a sliding "barn" door to accommodate its use as a serving area. Expanded accessible rest rooms that better meet event capacity are also proposed for the first floor. There will be accessible men's and women's rooms along with a separate accessible family rest room. A portion of the former garage space will be transformed into a community meeting space and an adjoining storage closet, with the remaining portion incorporating the expanded rest rooms. New mechanical spaces are proposed for an elevator machine room adjacent to the new elevator and a new electrical closet within the current storage closet.

Conceptual design for the second floor provides dedicated offices for the Recreation Department, community meeting space, auxiliary town office space, accessible renovated and new rest rooms, and a new mechanical room. The intent is to maintain the majority of existing wall partitions, with only the north end of the building being reconfigured to accommodate the new elevator, egress stairs, offices, and meeting space.



1 BASEMENT SELECTIVE REMOVAL

Scale: 3/16"=1'-0" @ 24 X 36 PRINT

Architect:

Seal:

Consultant:

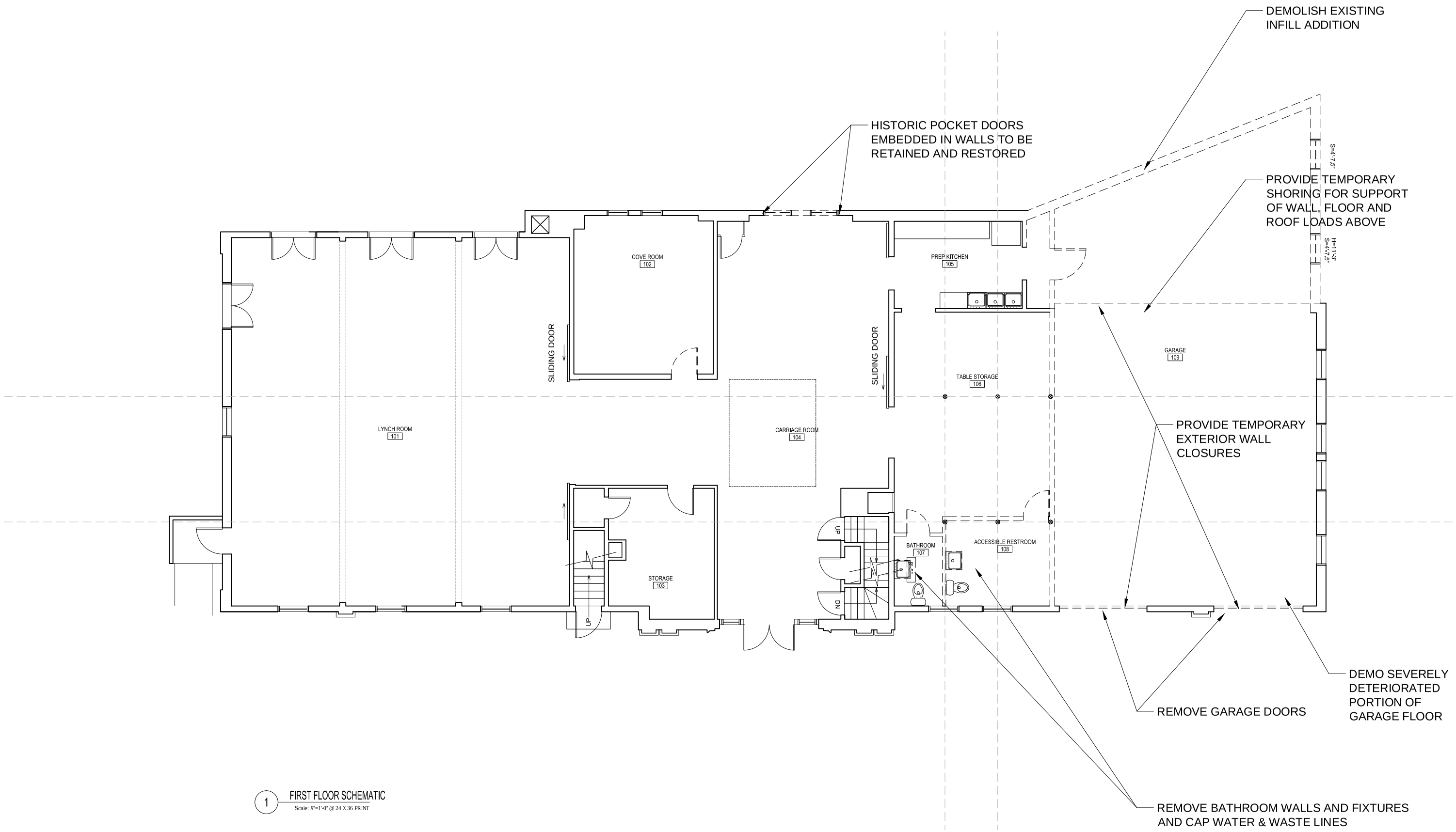
ISSUE / REVISIONS:

Date: 7.10.2017
Drawn by: NC
Checked by: JH
Project Number: 1631.00

LYNCH PARK CARRIAGE HOUSE
55 Ober Street
Beverly, MA

SELECTIVE REMOVAL

D100



1 FIRST FLOOR SCHEMATIC

Scale: X"=1'-0" @ 24 X 36 PRINT

Architect:

Seal:

Consultant:

ISSUE / REVISIONS:

Date: 7.10.2017

Drawn by: NC

Checked by: JH

Project Number: 1631.00

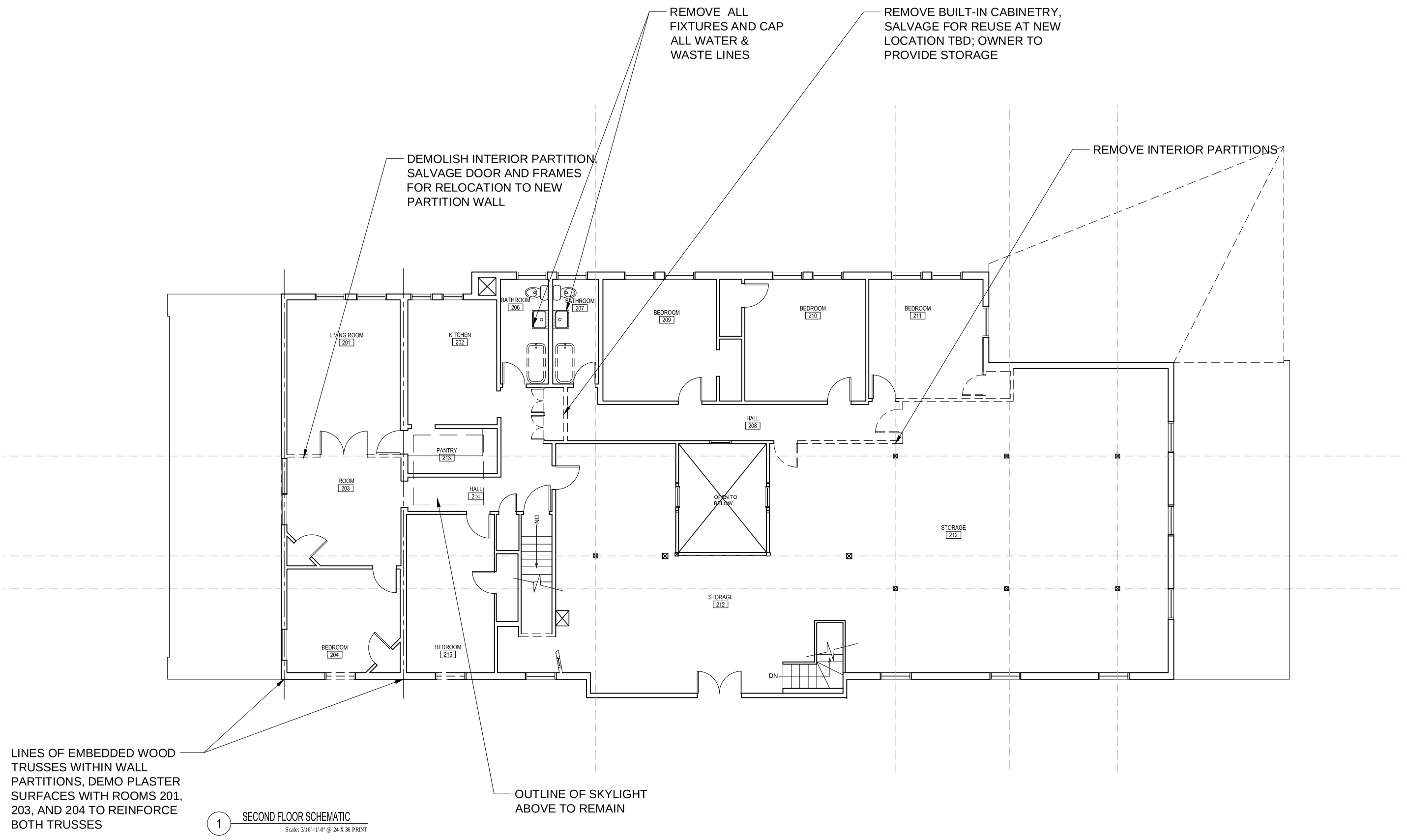
LYNCH PARK CARRIAGE HOUSE

55 Ober Street

Beverly, MA

SELECTIVE REMOVAL

D101



1 SECOND FLOOR SCHEMATIC
Scale: 3/16"=1'-0" @ 24 X 36 PRINT

Architect:

Seal:

Consultant:

ISSUE / REVISIONS:

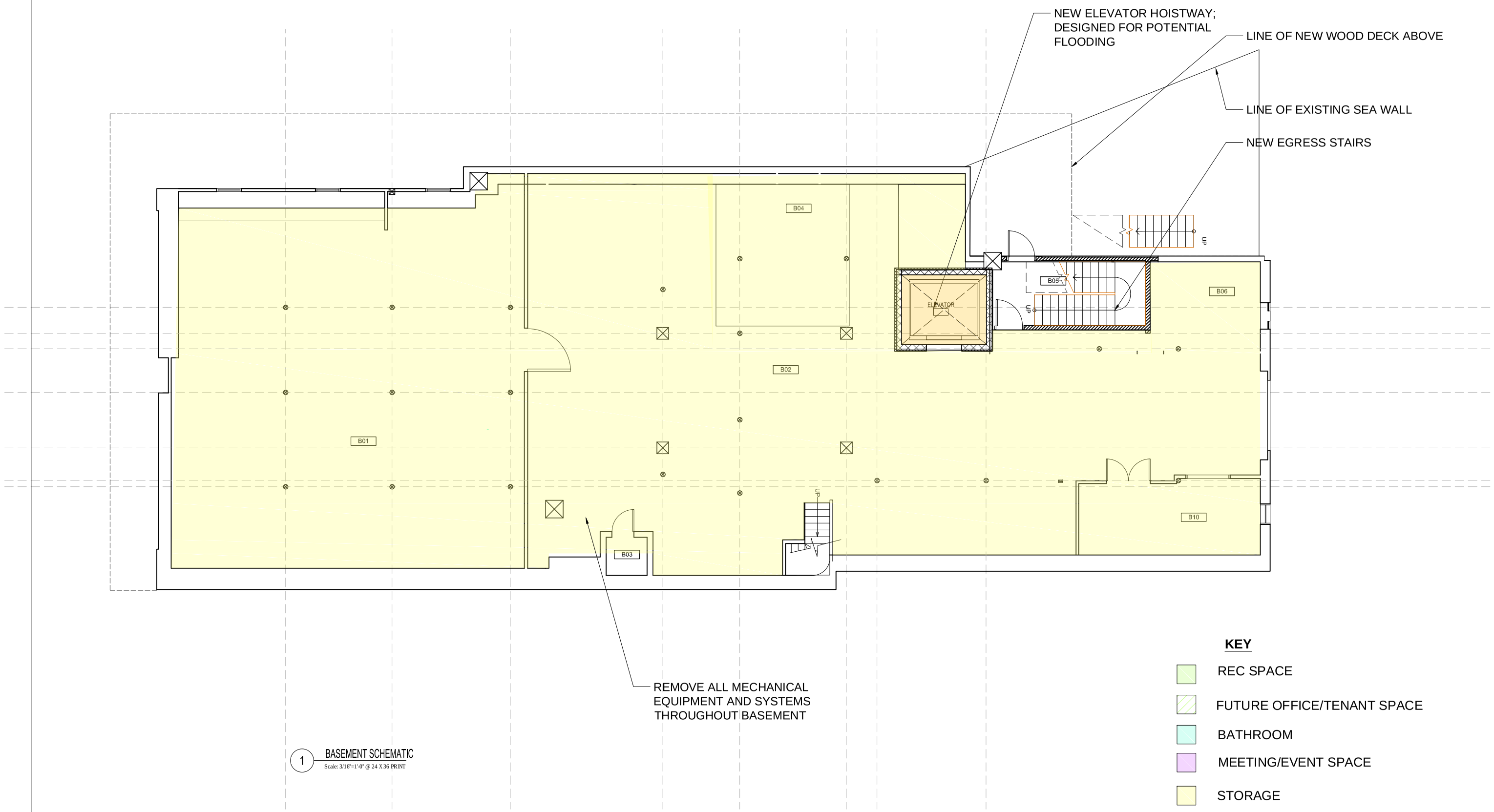
Date: 7.10.2017
Drawn by: NC
Checked by: JH
Project Number: 1631.00

LYNCH PARK CARRIAGE HOUSE
55 Ober Street
Beverly, MA

SELECTIVE REMOVAL

D102

NOTE: ALL FUTURE WORK IN BASEMENT SHOULD TAKE INTO ACCOUNT PROJECTED FLOOD ZONE LEVELS.



1 BASEMENT SCHEMATIC
Scale: 3/16"=1'-0" @ 24 X 36 PRINT

Architect:

Seal:

Consultant:

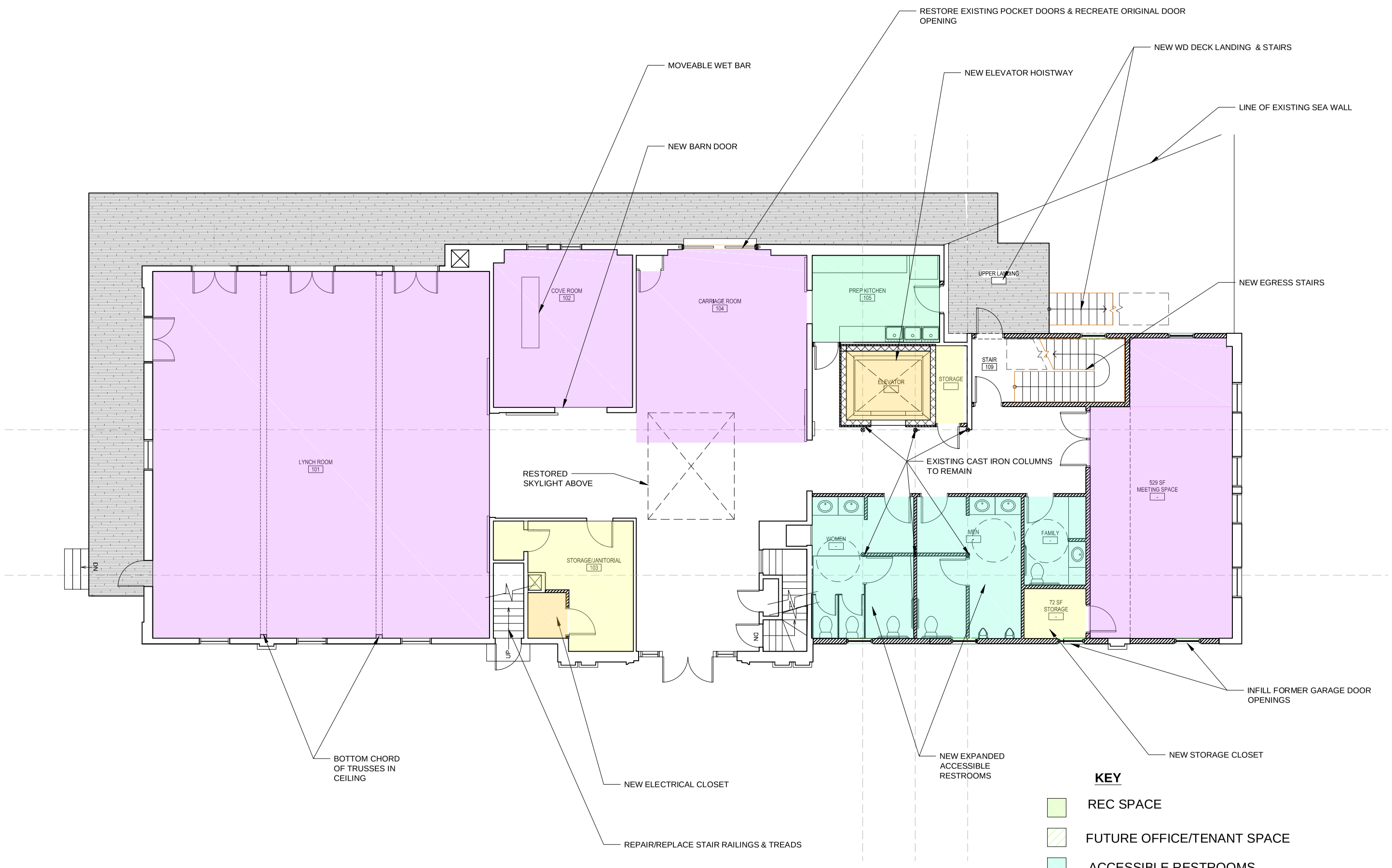
ISSUE / REVISIONS:

Date: 7.10.2017
Drawn by: NC
Checked by: JH
Project Number: 1631.00

LYNCH PARK CARRIAGE HOUSE
55 Ober Street
Beverly, MA

SCHEMATIC

SD-100



1 FIRST FLOOR SCHEMATIC

Scale: X"=1'-0" @ 24 X 36 PRINT

Architect:

Seal:

Consultant:

ISSUE / REVISIONS:

Date: 7.10.2017

Drawn by: NC

Checked by: JH

Project Number: 1631.00

LYNCH PARK CARRIAGE HOUSE

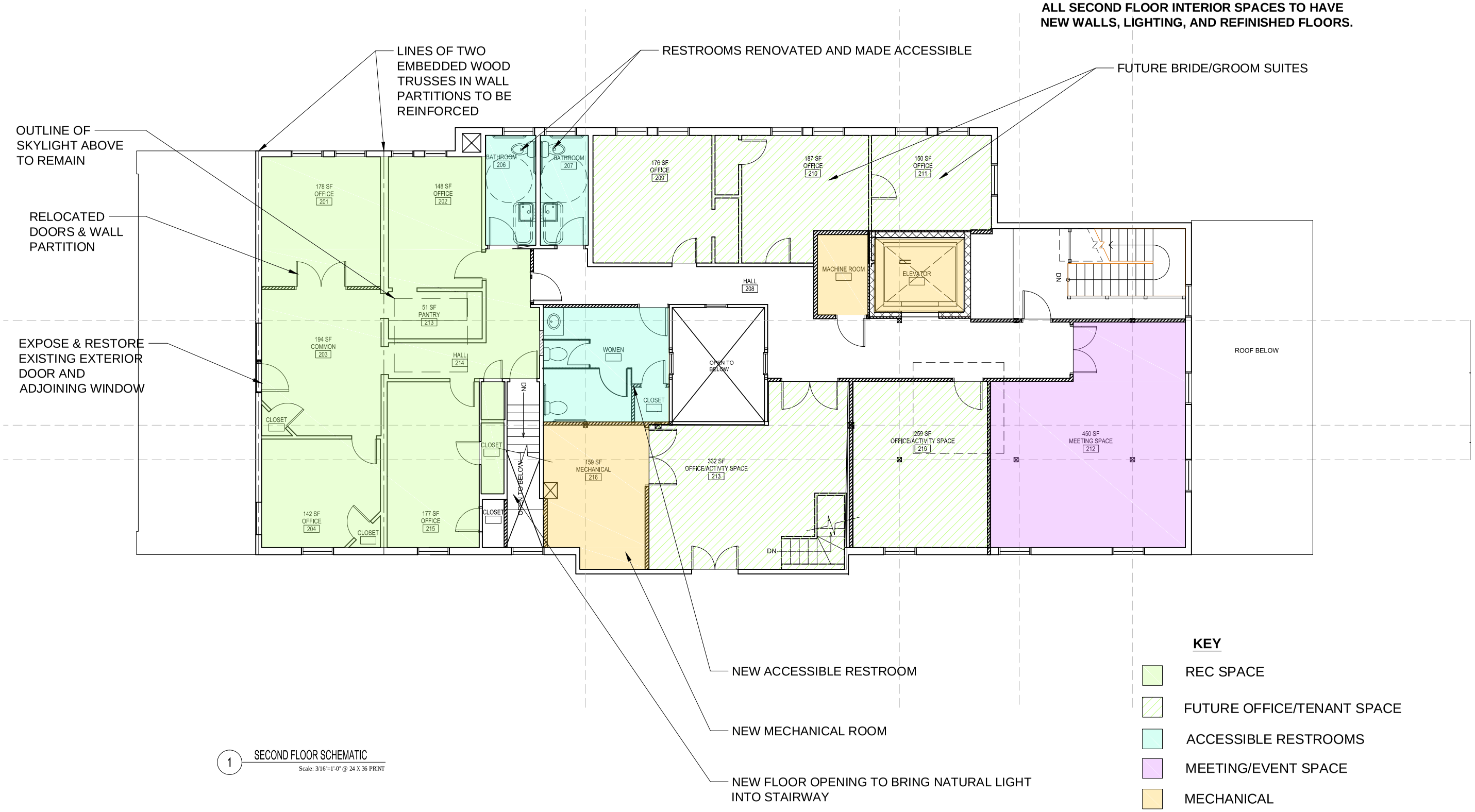
55 Ober Street

Beverly, MA

SCHEMATIC

SD-101

NOTE:
ALL SECOND FLOOR INTERIOR SPACES TO HAVE NEW WALLS, LIGHTING, AND REFINISHED FLOORS.



1 SECOND FLOOR SCHEMATIC
Scale: 3/16"=1'-0" @ 24 X 36 PRINT

KEY

- REC SPACE
- FUTURE OFFICE/TENANT SPACE
- ACCESSIBLE RESTROOMS
- MEETING/EVENT SPACE
- MECHANICAL
- STORAGE
- KITCHEN
- NEW PARTITION

Architect:

Seal:

Consultant:

ISSUE / REVISIONS:

Date: 7.10.2017
Drawn by: NC
Checked by: JH
Project Number: 1631.00

LYNCH PARK CARRIAGE HOUSE
55 Ober Street
Beverly, MA

SCHEMATIC

SD-102

Regulatory Analysis for Conceptual Design

Most of the recommended scope of work in this report would largely fall under the category **Alterations - Level 1** and **Alterations - Level 2**. The paragraphs that follow describe the pertinent sections of the Building Code as they relate to the proposed scope of work at the Lynch Park Carriage House.

Level 1 Alterations cover the replacement of existing materials and systems with new ones. An example would be the replacement of an existing roof with a new roof. Work on historic buildings generally conform to the requirements for **Level 1 Alterations**. The recommended interior **Level 1** work scope at Lynch Park would include the removal of any plaster wall or ceilings and the installation of new gypsum drywall finishes.

The proposed **Level 2 Alterations** at the north end of the 1st floor would not require an automatic sprinkler system. This is because the proposed work area does not exceed 50% of the total first floor area (IEBC Section 804.2.1.1). The proposed Level 1 Alterations at the south end of the first floor would also not require an automatic sprinkler system. However, one of the design goals of this project has been to protect the building and its occupants with an automatic fire suppression system. The July 4th fire of 2016 was a recent reminder of the building's vulnerability to an internal fire. The Lynch Park Carriage House is a valued historic resource for the residents of Beverly that should not be maintained at risk.

A very important aspect of any proposed **Level 1 Alteration** work occurs if the building is located in a flood hazard area. If the scope of the proposed work constitutes ***substantial improvements*** (construction costs exceeding 50% or more of the market value of the building), then the building must be brought into compliance with the flood-resistant provisions of the IBC Code for new construction (IEBC Section 701.3).

The Lynch Park property definitely falls within a **Special Flood Hazard Area (SFHA)**. The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Lynch Park Carriage House sits within a **VE Zone**, which is defined as a coastal flood zone with velocity hazard (wave action). The maximum base flood elevation has been determined to be 19 feet.

The market value of the Lynch Park Carriage house property is listed as $6,460,100 for 2017. This value includes $959,600 for the building and $5,500,500 for the land. If total construction costs were to exceed $3,230,050, the building would have to be brought into compliance with the flood-resistant provisions of the IBC code for new construction. The costs of such improvements would be substantial, as would be the engineering design costs for code conformance.

However, it is important to note that if the building was eligible for inclusion on the State or National Register of Historic Places, it would be exempt from the Flood Control requirements of the 2015 Existing Building Code (IEBC Section 1201.4). "If an historic building will continue to be an historic building after the proposed work is completed, then the proposed work is not considered a substantial improvement." It is strongly recommended that a determination of eligibility for the State and National Registers of Historic Places be sought from the Massachusetts Historical Commission.

Level 2 Alterations include the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any building system, and the installation of any additional equipment. The recommended exterior **Level 2** work scope at Lynch Park would include the removal and replacement of a number of windows and doors. The recommended interior work scope would include the partial reconfiguration of space on both the 1st floor and 2nd floor. The removal and replacement of the existing mechanical and electrical systems would also fall under this category.

The proposed **Level 2 Alterations** on the 2nd floor would require an automatic sprinkler system. This is due to the requirement that Use Groups A (Assembly) and B (Business) on the 2nd floor would share corridors and exits, have a combined occupancy greater than 30, and have a work area that exceeds 50% of the floor area. (2015 IEBC Section 804.2.2).

Level 3 Alterations would apply when the proposed work area exceeds 50 percent of the aggregate area of the building. The goal of the proposed work at the Lynch Park Carriage House would be to keep the proposed work areas under 50% so as to avoid triggering the requirements of **Level 3 Alterations**.

New building systems (electrical, plumbing, fire alarm, etc.) will need to conform to the building code for new construction (2015 IBC) in effect at the time of their installation.

Broadly speaking, buildings that are not being changed in use or occupancy may continue to be occupied and used in the manner they have been used historically. The assumption being that whatever building code under which they were constructed had concerns of life safety in mind. Even though most of the Lynch Park Carriage House structure was constructed before formal building codes were enacted, except for blatant life safety issues, there is no building code requirement for retroactive improvements to conform to current codes.

If additions or significant reconfigurations of spaces are contemplated, the requirements for work in affected areas would be required to conform largely to the building code for new construction, although there is some latitude for existing or historic buildings.

PHASED SCOPE & COST ESTIMATES

Two Work Phases

We have provided cost estimates formatted in two phases of work, as well has a five-phase work program. If substantial funding could be obtained, the two-phase work scope would consist of the following:

Two-Phase I: $2,828,034

- Restoration of the entire exterior envelope, including new decks along the water side
- Interior space improvements to the entire first floor area
- All major structural improvements
- Replacement or upgrades to all existing mechanical, electrical, plumbing and fire protection systems for the first floor and basement
- Construction of the elevator hoistway*

Two-Phase II: $1,647,459

- Interior space improvements to the entire second floor area
- Replacement of the entire roof system, including new insulation
- Restoration of missing skylights
- Restoration of original roof balustrade
- New mechanical, electrical, plumbing and fire protection systems on the entire second floor.
- Installation of an elevator cab and all control systems.

*The elevator hoistway would be built with solid core-filled concrete masonry units (CMU), which achieves the necessary fire proofing and serves as an important element in structural improvements to provide increased resistance to lateral loads (as required by the Building Code.)

Lynch Park Carriage House Cost Estimates: 2 Phase			
	Description: Scope of Work	COST	COST
		Phase I	Phase II
02 0000 Existing Conditions and Selective Removal			
Skylight	Remove existing framing and sheathing at skylight opening.		$2,000
Cornice	Remove incorrect cornice repair materials. This situation occurs along south, east and north elevations of building.	$2,000	
Corner quoins	Remove all corner quoins. Identify location of each section in sequential order.	$2,000	
Pilasters	Remove all pilaster elements on east elevation. Identify location of each element in sequential order.	$2,000	
Weatherboard	Remove all flush weatherboard elements. Identify location of each component in sequential order.	$3,000	
Garage doors	Remove two garage doors and frames at east elevation of 1st floor.	$2,000	
Basement windows	Open up original basement window openings along west elevation.	$4,000	
Demolish rear addition	Remove in-fill addition at northwest corner, currently occupied by concession vendor. Remove west and north exterior walls, including all foundation walls and footings (below north wall only). Seawall below west wall to remain in its entirety. Remove all interior partitions, floor framing, roofs, concrete slabs and mechanical systems. Cap all electrical and utility service lines. Protect open walls with temporary plywood enclosures.	$15,000	
Remove existing mechanical & electrical	Remove all existing mechanical system components and electrical panel boards on all floors. Cap all electrical and utility service lines. Plumbing water supply lines and waste lines to remain in the basement and may be reused.	$5,000	
Demolish 2nd floor partitions & existing restrooms	Remove all wall partitions and restroom fixtures designated to be demolished. Salvage designated built-in cabinets for future reuse.		$15,000
02 0000 Existing Conditions Subtotal		$35,000	$17,000
04 0000 Masonry			
Mortar joints	Cut and repoint all mortar joints at all locations at south, north west elevations of building.	$40,000	
Remove Parging	Remove mortar parging from stone foundation along west elevation.	$6,000	
04 0000 Masonry Subtotal		$46,000	$0
06 0000 Wood & Plastics			
Roof balustrade	Rebuild missing roof balustrade using synthetic PVC/vinyl materials such as AZEK or GFRP (glass-fiber reinforced plastic) castings. All connections should be made using stainless steel fasteners.	$0	$100,000

Lynch Park Carriage House Cost Estimates: 2 Phase				
		Description: Scope of Work	COST	COST
			Phase I	Phase II
	Cornice -- replacement	Remove incorrect cornice repair materials and replace with historically accurate mouldings and trim. Match adjoining, surviving original sections of building cornice. This situation occurs along the south, east and north elevations of the building.	$45,000	
	Roof cornice	Document the dimensions and profiles of the original surviving sections of the roof cornice. Restore deteriorated sections of the roof cornice with in-kind materials that are durable and back-primed before installation.	$24,000	
	Corner quoins	Remove all corner quoins and repair and restore using in-kind materials. Paint all quoins to match appearance in historic photograph.	$12,500	
	Repair pilasters	Remove all pilaster elements and repair, restore and reinstall using in-kind materials.	$40,000	
	Weatherboard	Remove all flush weatherboard elements and repair, restore and reinstall using in-kind materials.	$10,000	
	Wood clapboards	Remove all existing wood shingles from all wall surfaces. Inspect existing wood wall sheathing, wall studs, sills and wind bracing for deterioration. Replace with wood clapboards.	$130,000	
	Vertical drainage system	Install vertical drainage system (rain screen) over new wall sheathing to create channels for escape of water. Install new back-primed wall cladding using stainless steel nails.	$70,000	
	Watertable	Restore missing watertable/belt course that used to run length of ocean side of building (west elevation), just above window heads of basement windows.	$15,000	
	Structural	Replace northeast post, north side of garage door opening, with white oak post matching dimensions. Tie into existing girts and braces.	$12,000	
	Structural	Replace damaged sill, east elevation, vicinity of basement stair to the north of the center entrance, with white oak. Probe the entire sill for defects and replace if required.	$16,000	
	Structural	Replace floor framing for the entire northerly portion of the building, now the garage section. NOTE: NO VEHICLES SHOULD BE ALLOWED IN THIS AREA UNTIL THE WORK IS COMPLETED.	$8,000	
	Structural	Reinforce the north wall which now acts as a hinge point at midsection.	$8,000	
	Structural	Repairs related to the steel column, south side of northerly portion currently garage bay), now resting on unsupported flooring. Remove temporary timber shoring, rebuild floor framing and provide adequate support for steel column.	$30,000	
	Structural	Reinforce stone retaining wall running eastward from northeast corner by excavating soils and replace with flowable fill.	$10,000	
	Structural	Replace selective studs and blocks, north and east walls.	$25,000	

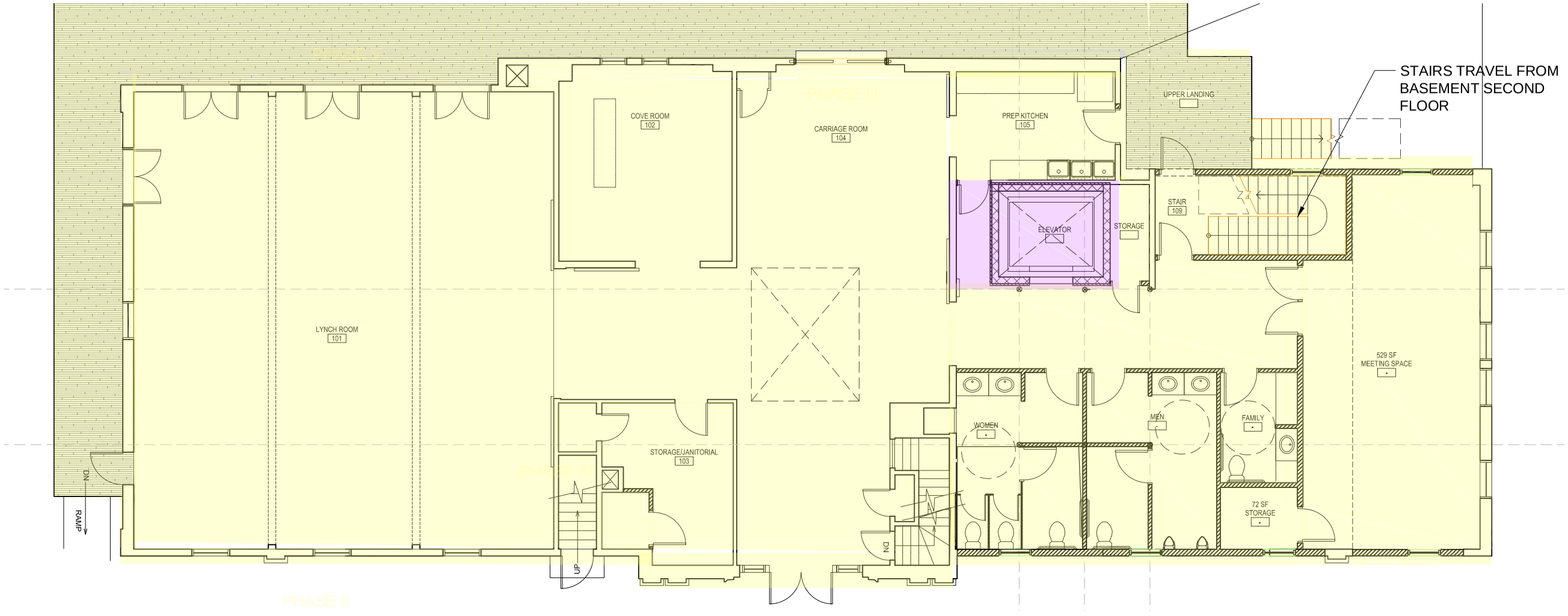
Lynch Park Carriage House Cost Estimates: 2 Phase				
		Description: Scope of Work	COST	COST
			Phase I	Phase II
	Structural	South side of center entrance bay: remove paired pilasters, repair posts, sill and studs with white oak.	$15,000	
	Structural	Southeast portion of the building: replace rotted cornerpost, sills and studs in conjunction with cladding replacement.	$20,000	
	Structural	Reinforce trusses over the first floor drive bays with steel straps and gussets to provide sufficient load capacity for office (business per code) occupancy of the second floor.	$0	$60,000
	Structural	Reinforce the timber posts supporting the reinforced trusses by installing steel plates from the exterior in order to preserve the bead board finishes at the southerly carriage room.	$0	$30,000
	Structural	After removal of the trapezoidal addition, rebuild wall to receive the new staircase with CMU block.	$25,000	
	New egress stair – basement, 1st floor and 2nd floor	Cut existing floor framing systems, provide new footings and foundations as per structural drawings, and provide new 2-hour rated stairway enclosure walls with rated doors, door frames and hardware.	$40,000	
	New wood deck landing & stairs	Provide new exterior wood stairs and deck landing as part of egress exit of new interior stair. Include all required pressure-treated wood framing, connectors, footings, guard rails and handrails.	$15,000	
	Expanded wood deck – west elevation along Lynch Room, Cove Room and Carriage Room	Provide new exterior wood deck supported by new cantilevered wood framing system embedded in basement below. Extend deck via new stairs to south lawn. Include all required pressure-treated wood framing, connectors, guard rails, handrails and footing.	$90,000	
	1st floor – new meeting room & storage	Provide all new wall partition framing and all floor, wall and ceiling finishes.	$20,000	
	2nd floor – provide new meeting room 212, office 210 and office/activity space 213	Provide all new wall partition framing and all floor, wall and ceiling finishes, and all designated doors, door frames and door hardware for each space.	$0	$30,000
	2nd floor – renovate rooms 201, 202, 203,204, 208, 209, 210, 211, 213, 214, and 215	Patch or replace damaged plaster wall and ceiling finishes, refinish wood floors, and restore existing doors and door hardware for each room.	$0	$50,000
	06 0000 Wood & Plastics Subtotal		**$680,500**	**$270,000**
	07 0000 Thermal and Moisture Protection			
	Roofing	Remove existing built-up roof system and replace with new EPDM roof membrane system, including all required flashing and underlayment materials.		$130,000
	Gutter & downspout	Modify perimeter of existing roof system to accept a restoration of original gutter and downspout system.		$10,000

Lynch Park Carriage House Cost Estimates: 2 Phase			
	Description: Scope of Work	COST	COST
		Phase I	Phase II
Skylights	Reconstruct missing skylights at both former skylight openings in roof.	$12,500	$12,500
Exterior wall insulation	Insulate exterior wall cavities from exterior using blown-in, dense-pack cellulose insulation to achieve at least an R-16 value. Cover existing wood sheathing with Huber ZIP-System R-sheathing for an additional R-value of 3.6 (nominal 1" thickness).	$45,000	
Roof insulation (from exterior)	Provide 3" of rigid insulation board on top of existing wood roof sheathing. R-value to be minimum of 6 per inch.		$15,000
Roof insulation (from interior)	Insulate roof cavities above flat ceiling areas from inside using blown-in cellulose insulation to achieve at least an R-49 value.		$20,000
Basement insulation	Insulate 1st floor framing cavities above basement using rock wool batt insulation (ROXUL), to achieve at least an R-30 value.	$10,000	
07 0000 Thermal & Moisture Subtotal		**$67,500**	**$187,500**
08 0000 Windows & Doors			
Windows	Remove, restore and reinstall all original round, double-hung and casement window sashes and frames using in-kind materials.	$16,000	
Garage doors infill windows	Replace two garage doors with one new window and one relocated window at east elevation of 1st floor.	$6,000	
New window sash	Provide new window sashes to match existing original sashes in all original basement window openings along west elevation.	$6,000	
Repair window sash	Restore or replace damaged or missing window sashes at 2nd floor along west elevation.	$10,000	
Concealed door	Restore concealed door and window openings at south end of 2nd floor.	$6,000	
New exterior windows	Restore stair door and adjacent window along east elevation of building at 1st floor.	$5,000	
Storm windows	Provide exterior or interior storm windows where original single-glazed windows are being restored and reinstalled, for better thermal insulation.	$30,000	
Exterior pocket doors	Restore original exterior, sliding pocket doors and recreate missing doorframe and casings.	$24,000	
Basement doors	Remove and rebuild existing doors leading into the basement space at the north and south elevations, using in-kind materials including new hardware and security locks.	$12,000	
1st floor new double doors - Cove Room 102	Provide all new door frame, sliding wood doors and all required hardware.	$4,000	
1st floor rest rooms at meeting room		$24,000	
08 0000 Windows & Doors Subtotal		**$143,000**	**$0**

Lynch Park Carriage House Cost Estimates: 2 Phase			
	Description: Scope of Work	COST	COST
		Phase I	Phase II
09 0000 Finishes			
Exterior painting	Prepare and paint all exterior wood cladding, window sashes, doors, cornices, pilasters and related trim using historic paint colors determined through paint analysis.	$100,000	
First floor	North bay and restrooms zone: walls, ceiling, trim, floors	$20,000	
Second floor	Entire office zone: walls, ceiling, trim, floors		$40,000
09 0000 Finishes Subtotal		**$120,000**	**$40,000**
14 0000 Elevator			
New elevator	Cut existing floor framing systems and provide new footings and foundations as per structural drawings. Provide new 2-hour rated hoistway enclosure walls, elevator machine room, and roof-top venting. Protect and retain all existing cast-iron columns. Conform to MAAB regulations for full accessibility. Provide new 3-stop accessible elevator.	$60,000	$100,000
14 0000 Elevator Subtotal		**$60,000**	**$100,000**
23 0000 Mechanical			
First floor	Install zoned HVAC system.		$120,000
Second floor	Install zoned HVAC system.	$150,000	
23 0000 Mechanical Subtotal		**$150,000**	**$120,000**
26 0000 Electrical			
1st floor – new restrooms & meeting room	Distribution and fixtures for accessible men, women and family restrooms and north meeting room.	$20,000	
1st & 2nd floors – renovated offices, etc.	Distribution and fixtures.	$100,000	$80,000
Entire building	Fire detection system linked to fire suppression system.	$25,000	$20,000
26 0000 Electrical Subtotal		**$145,000**	**$100,000**
22 0000 Plumbing			
1st floor – new restrooms	New accessible men's, women's and family restrooms. Demolish existing restrooms, including all partitions and finishes. Protect and retain all existing cast-iron columns. Provide all new fixtures, floor and wall finishes, and toilet stall partitions. Conform to MAAB regulations for accessibility.	$70,000	
1st floor – provide new moveable wet bar in Cove Room (Room 102)	Provide new moveable wet bar approximately 8 feet long, incorporating ice storage, sinks and under-counter storage for glasses and liquor and beer.	$10,000	
2nd floor – provide two unisex restrooms	Demolish existing restrooms, including all finishes and fixtures. Provide all new fixtures, and all new floor, wall and ceiling finishes. Conform to MAAB regulations for accessibility.		$50,000
Entire building	Fire suppression system including new dedicated water service.	$50,000	$40,000
22 0000 Plumbing Subtotal		**$130,000**	**$90,000**

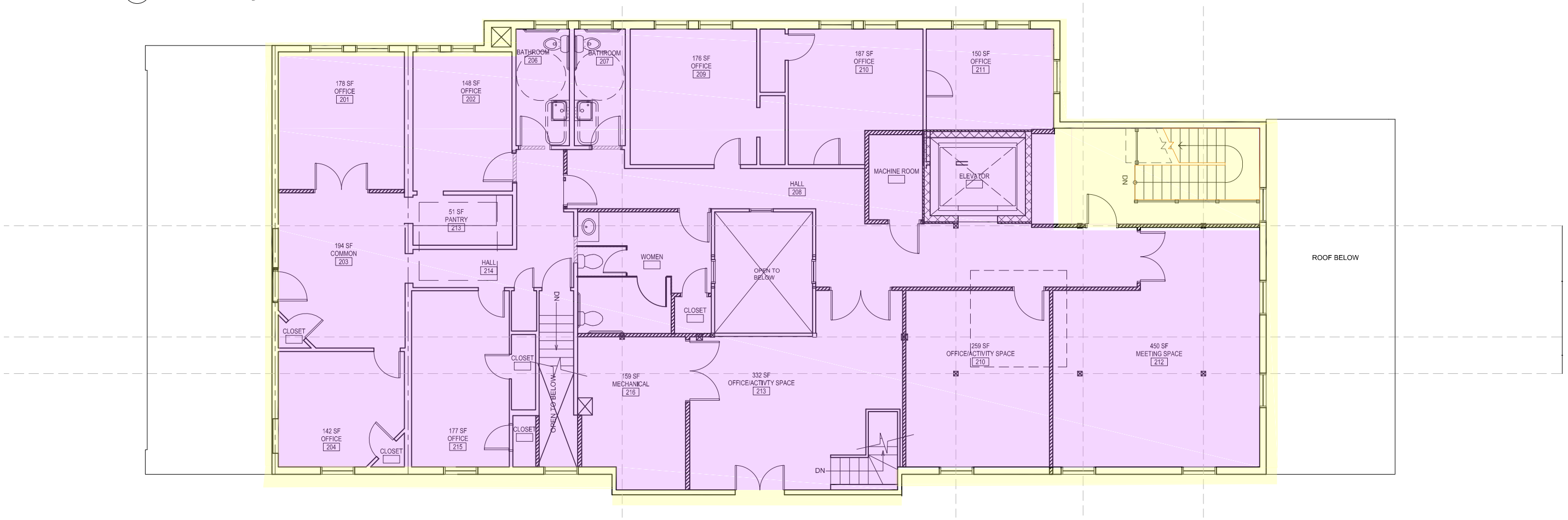
Lynch Park Carriage House Cost Estimates: 2 Phase			
	Description: Scope of Work	COST	COST
		Phase I	Phase II
32 0000 Exterior Improvements			
32.1 Grading	Modify existing grade along east side of building to expose top of masonry foundation wall. Create a new sloped swale to collect rainwater from new downspouts and direct it away from building.	$10,000	
32 0000 Exterior improvements Subtotal		$10,000	
Subtotal Construction:		$1,587,000	$924,500
General Conditions	10% of construction budget	$158,700	$92,450
General Requirements	10 % of subtotal for scaffolding, shoring, dumpsters	$158,700	$92,450
Subtotal Construction and General Conditions/Requirements		$1,904,400	$1,109,400
Overhead & Profit	10% of Construction Cost	$190,440	$110,940
Combined Construction Cost		$2,094,840	$1,220,340
Contingency	20%	$418,968	$244,068
Architectural/Engineering Expenses	15% of Combined Construction Cost	$314,226	$183,051
TOTAL CONSTRUCTION BUDGET		$2,828,034	$1,647,459
TOTAL COMBINED CONSTRUCTION BUDGET			$4,475,493

LYNCH PARK CARRIAGE HOUSE - TWO PHASED WORK



1 FIRST FLOOR PLAN - PHASING

Scale: 3/16"=1'-0" @ 24 X 36 PRINT



2 SECOND FLOOR PLAN - PHASING

Scale: 3/16"=1'-0" @ 24 X 36 PRINT

KEY

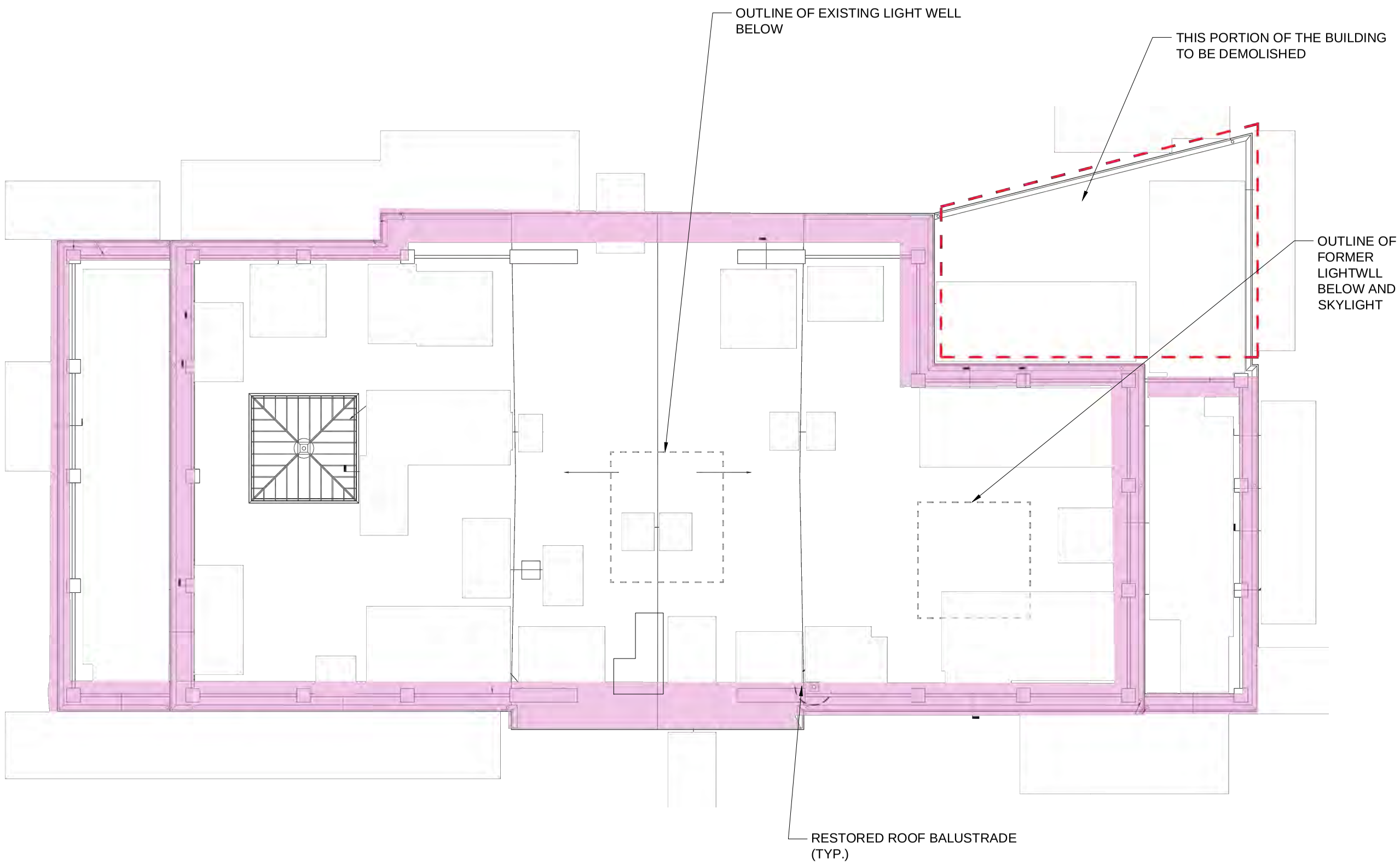
PHASE I

PHASE II

KEY

PHASE I

PHASE II



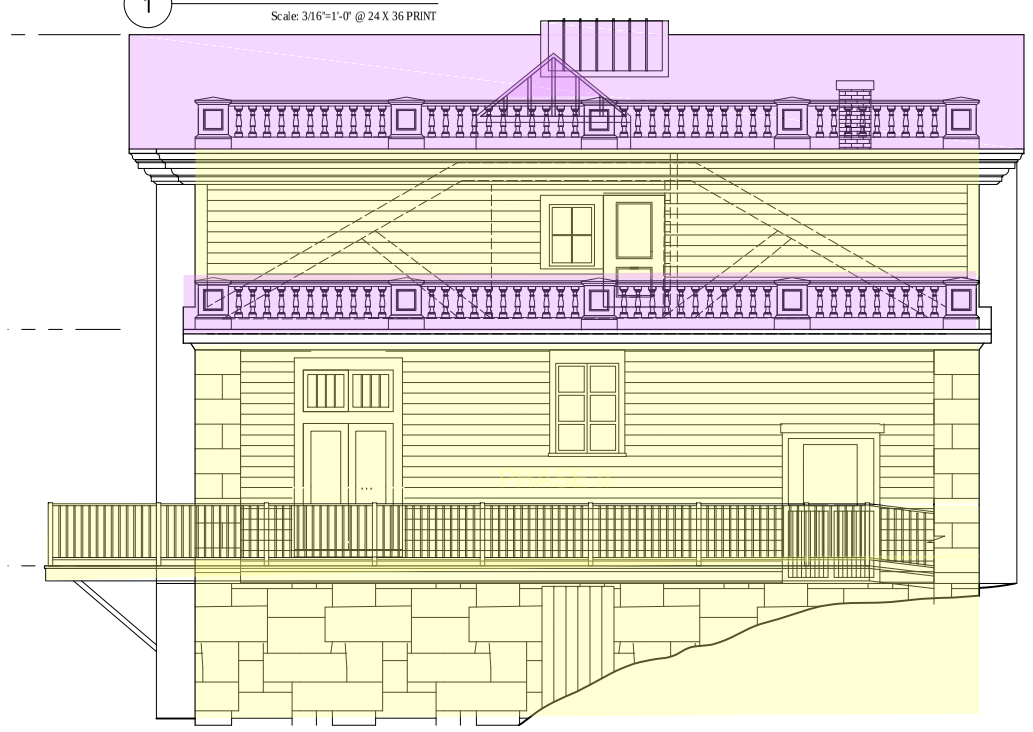
1 TWO-PHASED ROOF PLAN

Scale: 3/16"=1'-0" @ 24 X 36 PRINT

LYNCH PARK CARRIAGE HOUSE : TWO - PHASED WORK SCOPE

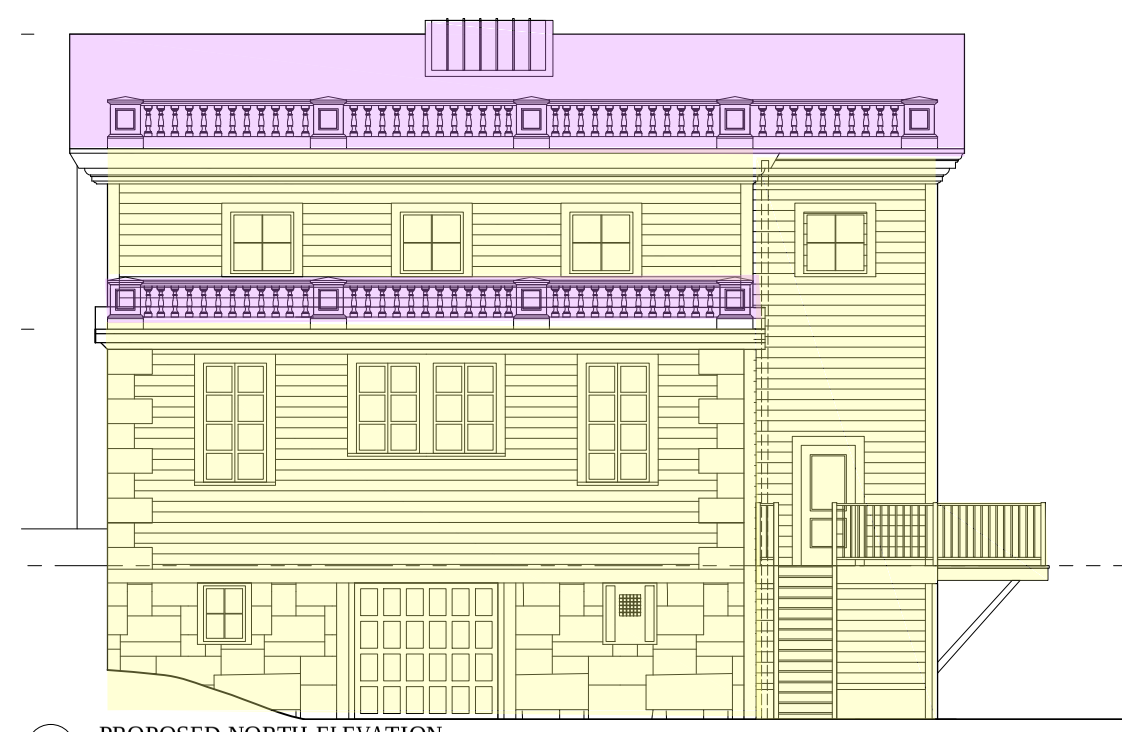
1 PROPOSED EAST ELEVATION

Scale: 3/16"=1'-0" @ 24 X 36 PRINT



2 PROPOSED SOUTH ELEVATION

Scale: 3/16"= 1'-0" @ 24 X 36 PRINT



3 PROPOSED NORTH ELEVATION

Scale: 3/16"=1'-0" @ 24 X 36 PRINT

4 PROPOSED WEST ELEVATION

Scale: 3/16"= 1'-0" @ 24 X 36 PRINT

KEY

PHASE I

PHASE II

PHASED SCOPE & COST ESTIMATES

Five Work Phases

We have provided cost estimates formatted in two phases of work, as well has a five-phase work program. The five-phase work program, described below, would assume a staggered availability of funding. The phases are based upon the visibility of the individual building elevations from the various park and ocean approaches.

We recommend the replacement of most building systems to take place concurrently during Phase III. This work would include new mechanical and electrical systems, upgrades to the current plumbing system, and the design and installation of an automatic fire suppression system (sprinklers) throughout the building.

NOTE: An inflation factor of 4% plus 6% for continuing deterioration should be added for each year of deferred maintenance.

Five-Phase I: $491,832 *10% per year
The east elevation is the primary "face" of the building as it is seen first by visitors to the park. The northerly end of the east elevation is in the most need of immediate attention and has been designated as the recommended Phase I work.

Five-Phase II: $457,083 *10% per year
The southerly end of the east elevation is also in need of immediate attention and has been designated as recommended Phase II work. When all of the proposed Phase I and Phase II work has been completed, the entire east elevation of the building, as well as both abutting north and south ends, will present a coherent, restored appearance to the public.

Five-Phase III: $1,274,130 *10% per year
This phase includes the demolition of the infill portion of the west elevation along the ocean. It also includes structural improvements and the construction of new spaces within the first floor level, including a new stairway, elevator hoistway, exterior deck, and meeting room

Five-Phase IV: $1,238,490 *10% per year
Work would include the renovation of the second floor for new offices, rest rooms and one new meeting space. It would also include structural improvements to the existing steel trusses above the former garage area.

Five-Phase V: $1,013,958

The final phase of work is primarily focused on the restoration of the west elevation finish materials. Phase V is also the primary phase for the replacement of the main roofing system, currently a traditional built-up roof, with a new membrane roofing system. The roofing work would include installation of new roofing insulation and the restoration of several missing skylights.

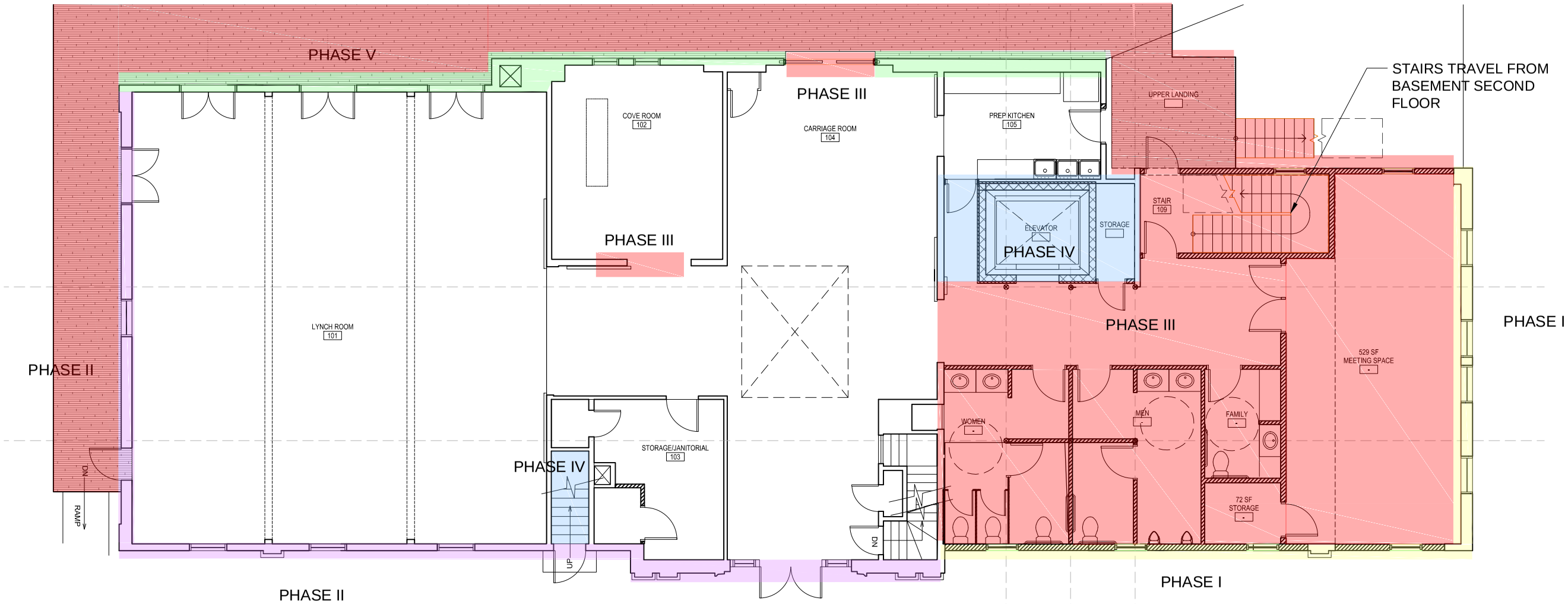
Lynch Park Carriage House Cost Estimates: 5 Phases						
	Description: Scope of Work	COST	COST	COST	COST	COST
		Phase I	Phase II	Phase III	Phase IV	Phase V
02 0000 Existing Conditions and Selective Removal						
Skylight	Remove existing framing and sheathing at skylight opening.					$2,000
Cornice	Remove incorrect cornice repair materials. This situation occurs along south, east and north elevations of building.	$1,000	$1,000			
Corner quoins	Remove all corner quoins. Identify location of each section in sequential order.	$1,000	$1,000			
Pilasters	Remove all pilaster elements on east elevation. Identify location of each element in sequential order.		$2,000			
Weatherboard	Remove all flush weatherboard elements. Identify location of each component in sequential order.		$3,000			
Garage doors	Remove two garage doors and frames at east elevation of 1st floor.	$2,000				
Basement windows	Open up original basement window openings along west elevation.					$4,000
Demolish rear addition	Remove in-fill addition at northwest corner, currently occupied by concession vendor. Remove west and north exterior walls, including all foundation walls and footings (below north wall only). Seawall below west wall to remain in its entirety. Remove all interior partitions, floor framing, roofs, concrete slabs and mechanical systems. Cap all electrical and utility service lines. Protect open walls with temporary plywood enclosures.			$15,000		
Remove existing mechanical & electrical	Remove all existing mechanical system components and electrical panel boards on all floors. Cap all electrical and utility service lines. Plumbing water supply lines and waste lines to remain in the basement and may be reused.			$5,000		
Demolish 2nd floor partitions & existing restrooms	Remove all wall partitions and restroom fixtures designated to be demolished. Salvage designated built-in cabinets for future reuse.				$15,000	
02 0000 Existing Conditions Subtotal		**$4,000**	**$7,000**	**$20,000**	**$15,000**	**$6,000**
04 0000 Masonry						
Mortar joints	Cut and repoint all mortar joints at all locations at south and north elevations of building.	$10,000	$10,000			
Mortar joints	Cut and repoint all mortar joints at all locations at west elevation of building.					$20,000
Remove Parging	Remove mortar parging from stone foundation along west elevation.					$6,000
04 0000 Masonry Subtotal		**$10,000**	**$10,000**	**$0**	**$0**	**$26,000**
06 0000 Wood & Plastics						
Roof balustrade	Rebuild missing roof balustrade using synthetic PVC/vinyl materials such as AZEK or GFRP (glass-fiber reinforced plastic) castings. All connections should be made using stainless steel fasteners. NOTE: THIS IS OPTIONAL AND NOT INCLUDED IN THE COST ESTIMATE. BUDGET $100,000.					$100,000
Cornice -- replacement	Remove incorrect cornice repair materials and replace with historically accurate mouldings and trim. Match adjoining, surviving original sections of building cornice. This situation occurs along the south, east and north elevations of the building.	$15,000	$10,000			$20,000
Roof cornice	Document the dimensions and profiles of the original surviving sections of the roof cornice. Restore deteriorated sections of the roof cornice with in-kind materials that are durable and back-primed before installation.	$12,000	$12,000			
Corner quoins	Remove all corner quoins and repair and restore using in-kind materials. Paint all quoins to match appearance in historic photograph (see Photograph #3).	$6,500	$6,000			
Repair pilasters	Remove all pilaster elements and repair, restore and reinstall using in-kind materials.		$40,000			
Weatherboard	Remove all flush weatherboard elements and repair, restore and reinstall using in-kind materials.	$5,000	$5,000			

Lynch Park Carriage House Cost Estimates: 5 Phases						
	Description: Scope of Work	COST	COST	COST	COST	COST
		Phase I	Phase II	Phase III	Phase IV	Phase V
Wood clapboards	Remove all existing wood shingles from all wall surfaces. Inspect existing wood wall sheathing, wall studs, sills and wind bracing for deterioration. Replace with wood clapboards.	$10,000	$30,000			$90,000
Vertical drainage system	Install vertical drainage system (rain screen) over new wall sheathing to create channels for escape of water. Install new back-primed wall cladding using stainless steel nails.	$20,000	$20,000			$30,000
Watertable	Restore missing watertable/belt course that used to run length of ocean side of building (west elevation), just above window heads of basement windows.					$15,000
Structural	Replace northeast post, north side of garage door opening, with white oak post matching dimensions. Tie into existing girts and braces.	$12,000				
Structural	Replace damaged sill, east elevation, vicinity of basement stair to the north of the center entrance, with white oak. Probe the entire sill for defects and replace if required. Line item cost includes allowance $8,000 for same.	$16,000				
Structural	Replace floor framing for the entire northerly portion of the building, now the garage section. NOTE: NO VEHICLES SHOULD BE ALLOWED IN THIS AREA UNTIL THE WORK IS COMPLETED.	$8,000				
Structural	Reinforce the north wall which now acts as a hinge point at midsection.	$8,000				
Structural	Repairs related to the steel column, south side of northerly portion currently garage bay), now resting on unsupported flooring. Remove temporary timber shoring, rebuild floor framing and provide adequate support for steel column.	$30,000				
Structural	Reinforce stone retaining wall running eastward from northeast corner by excavating soils and replace with flowable fill.	$10,000				
Structural	Replace selective studs and blocks, north and east walls.	$25,000				
Structural	South side of center entrance bay: remove paired pilasters, repair posts, sill and studs with white oak.		$15,000			
Structural	Southeast portion of the building: replace rotted cornerpost, sills and studs in conjunction with cladding replacement.		$20,000			
Structural	Reinforce trusses over the first floor drive bays with steel straps and gussets to provide sufficient load capacity for office (business per code) occupancy of the second floor.				$60,000	
Structural	Reinforce the timber posts supporting the reinforced trusses by installing steel plates from the exterior in order to preserve the bead board finishes at the southerly carriage room.	$10,000	$20,000			
Structural	After removal of the trapezoidal addition, rebuild wall to receive the new staircase with CMU block.			$25,000		
New egress stair – basement, 1st floor and 2nd floor	Cut existing floor framing systems, provide new footings and foundations as per structural drawings, and provide new 2-hour rated stairway enclosure walls with rated doors, door frames and hardware.			$40,000		
New wood deck landing & stairs	Provide new exterior wood stairs and deck landing as part of egress exit of new interior stair. Include all required pressure-treated wood framing, connectors, footings, guard rails and handrails.			$15,000		
Expanded wood deck – west elevation along Lynch Room, Cove Room and Carriage Room	Provide new exterior wood deck supported by new cantilevered wood framing system embedded in basement below. Extend deck via new stairs to south lawn. Include all required pressure-treated wood framing, connectors, guard rails, handrails and footing.			$90,000		
1st floor – new meeting room & storage	Provide all new wall partition framing and all floor, wall and ceiling finishes.			$20,000		
2nd floor – provide new meeting room 212, office 210 and office/activity space 213	Provide all new wall partition framing and all floor, wall and ceiling finishes, and all designated doors, door frames and door hardware for each space.				$30,000	

Lynch Park Carriage House Cost Estimates: 5 Phases						
	Description: Scope of Work	COST	COST	COST	COST	COST
		Phase I	Phase II	Phase III	Phase IV	Phase V
2nd floor – renovate rooms 201, 202, 203,204, 208, 209, 210, 211, 213, 214, and 215	Patch or replace damaged plaster wall and ceiling finishes, refinish wood floors, and restore existing doors and door hardware for each room.				$50,000	
06 0000 Wood & Plastics Subtotal		**$187,500**	**$178,000**	**$190,000**	**$140,000**	**$255,000**
07 0000 Thermal and Moisture Protection						
Roofing	Remove existing built-up roof system and replace with new EPDM roof membrane system, including all required flashing and underlayment materials.					$130,000
Gutter & downspout	Modify perimeter of existing roof system to accept a restoration of original gutter and downspout system.	$2,500	$2,500			$5,000
Skylights	Reconstruct missing skylights at both former skylight openings in roof.					$25,000
Exterior wall insulation	Insulate exterior wall cavities from exterior using blown-in, dense-pack cellulose insulation to achieve at least an R-16 value. Cover existing wood sheathing with Huber ZIP-System R-sheathing for an additional R-value of 3.6 (nominal 1" thickness).	$15,000	$15,000			$15,000
Roof insulation (from exterior)	Provide 3" of rigid insulation board on top of existing wood roof sheathing. R-value to be minimum of 6 per inch.					$15,000
Roof insulation (from interior)	Insulate roof cavities above flat ceiling areas from inside using blown-in cellulose insulation to achieve at least an R-49 value.			$20,000		
Basement insulation	Insulate 1st floor framing cavities above basement using rock wool batt insulation (ROXUL), to achieve at least an R-30 value.			$10,000		
07 0000 Thermal & Moisture Subtotal		**$17,500**	**$17,500**	**$30,000**	**$0**	**$190,000**
08 0000 Windows & Doors						
Windows	Remove, restore and reinstall all original round, double-hung and casement window sashes and frames using in-kind materials.	$2,000				$14,000
Garage doors infill windows	Replace two garage doors with one new window and one relocated window at east elevation of 1st floor.	$6,000				
New window sash	Provide new window sashes to match existing original sashes in all original basement window openings along west elevation.					$6,000
Repair window sash	Restore or replace damaged or missing window sashes at 2nd floor along west elevation.					$10,000
Concealed door	Restore concealed door and window openings at south end of 2nd floor.	$3,000	$3,000			
New exterior windows	Restore stair door and adjacent window along east elevation of building at 1st floor.		$5,000			
Storm windows	Provide exterior or interior storm windows where original single-glazed windows are being restored and reinstalled, for better thermal insulation.			$20,000		$10,000
Exterior pocket doors	Restore original exterior, sliding pocket doors and recreate missing doorframe and casings.			$12,000		$12,000
Basement doors	Remove and rebuild existing doors leading into the basement space at the north and south elevations, using in-kind materials including new hardware and security locks.	$6,000	$6,000			
1st floor rest rooms at meeting room	Provide all new door frame, wood doors and all required hardware.			$24,000		
1st floor new double doors – Cove Room 102	Provide all new door frame, sliding wood doors and all required hardware.			$4,000		
08 0000 Windows & Doors Subtotal		**$17,000**	**$14,000**	**$60,000**	**$0**	**$52,000**
09 0000 Finishes						
Exterior painting	Prepare and paint all exterior wood cladding, window sashes, doors, cornices, pilasters and related trim using historic paint colors determined through paint analysis.	$30,000	$30,000			$40,000
First floor	North bay and restrooms zone: walls, ceiling, trim, floors			$20,000		
Second floor	Entire office zone: walls, ceiling, trim, floors				$40,000	

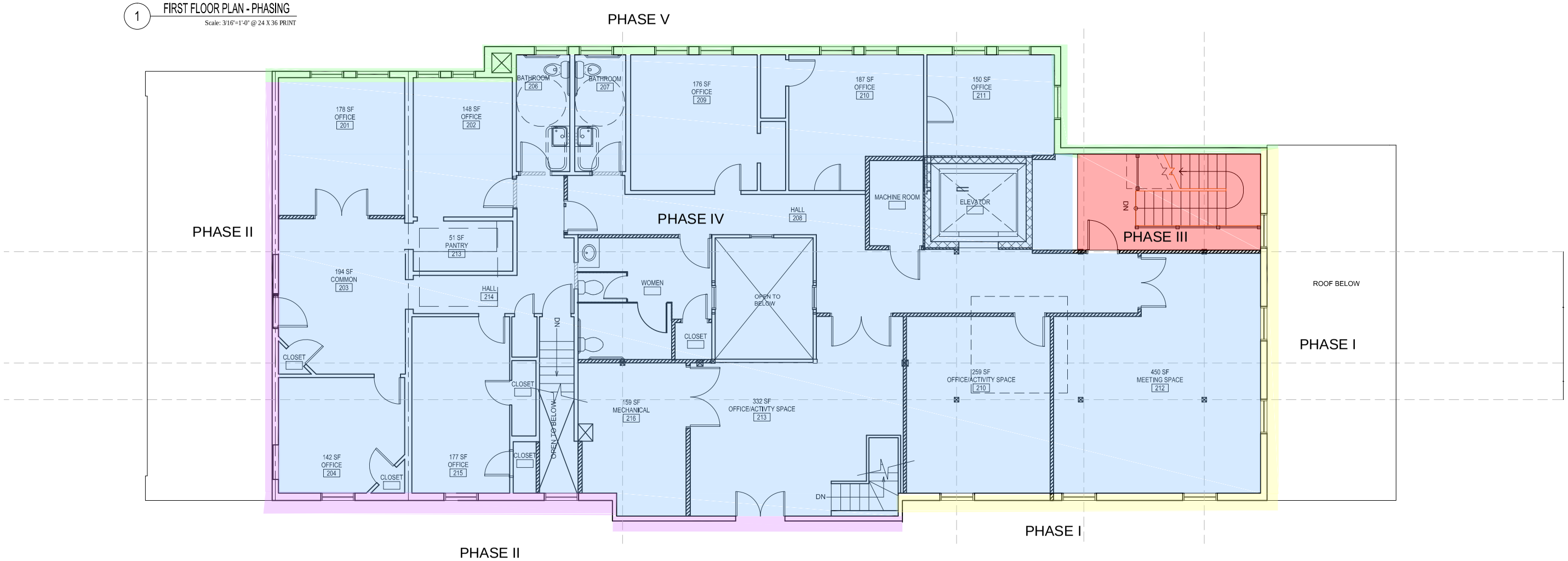
Lynch Park Carriage House Cost Estimates: 5 Phases						
	Description: Scope of Work	COST	COST	COST	COST	COST
		Phase I	Phase II	Phase III	Phase IV	Phase V
09 0000 Finishes Subtotal		**$30,000**	**$30,000**	**$20,000**	**$40,000**	**$40,000**
14 0000 Elevator						
New elevator	Provide new 3-stop accessible elevator. Cut existing floor framing systems and provide new footings and foundations as per structural drawings. Provide new 2-hour rated hoistway enclosure walls, elevator machine room, and roof-top venting. Protect and retain all existing cast-iron columns. Conform to MAAB regulations for full accessibility.				$160,000	
14 0000 Elevator Subtotal		**$0**	**$0**	**$0**	**$160,000**	**$0**
23 0000 Mechanical						
First floor	Install zoned HVAC system.			$120,000		
Second floor	Install zoned HVAC system.				$150,000	
23 0000 Mechanical Subtotal		**$0**	**$0**	**$120,000**	**$150,000**	**$0**
26 0000 Electrical						
1st floor – new restrooms & meeting room	Distribution and fixtures for accessible men, women and family restrooms and north meeting room.			$20,000		
1st & 2nd floors – renovated office, etc.	Distribution and fixtures.			$100,000	$80,000	
Entire building	Fire detection system linked to fire suppression system.			$25,000	$20,000	
26 0000 Electrical Subtotal		**$0**	**$0**	**$145,000**	**$100,000**	**$0**
22 0000 Plumbing						
1st floor – new restrooms	New accessible men's, women's and family restrooms. Demolish existing restrooms, including all partitions and finishes. Protect and retain all existing cast-iron columns. Provide all new fixtures, floor and wall finishes, and toilet stall partitions. Conform to MAAB regulations for accessibility.			$70,000		
1st floor – provide new moveable wet bar in Cove Room (Room 102)	Provide new moveable wet bar approximately 8 feet long, incorporating ice storage, sinks and under-counter storage for glasses and liquor and beer.			$10,000		
2nd floor – provide two unisex restrooms	Demolish existing restrooms, including all finishes and fixtures. Provide all new fixtures, and all new floor, wall and ceiling finishes. Conform to MAAB regulations for accessibility.				$50,000	
Entire building	Fire suppression system including new dedicated water service.			$50,000	$40,000	
22 0000 Plumbing Subtotal		**$0**	**$0**	**$130,000**	**$90,000**	**$0**
32 0000 Exterior Improvements						
32.1 Grading	Modify existing grade along east side of building to expose top of masonry foundation wall. Create a new sloped swale to collect rainwater from new downspouts and direct it away from building.	$10,000				
32 0000 Exterior improvements Subtotal		**$10,000**				
Subtotal Construction:		**$276,000**	**$256,500**	**$715,000**	**$695,000**	**$569,000**
General Conditions	10% of construction budget	$27,600	$25,650	$71,500	$69,500	$56,900
General Requirements	10 % of subtotal for scaffolding, shoring, dumpsters	$27,600	$25,650	$71,500	$69,500	$56,900
Subtotal Construction and General Conditions/Requirements		**$331,200**	**$307,800**	**$858,000**	**$834,000**	**$682,800**
Overhead & Profit	10% of Construction Cost	$33,120	$30,780	$85,800	$83,400	$68,280
Combined Construction Cost		**$364,320**	**$338,580**	**$943,800**	**$917,400**	**$751,080**
Contingency	20%	$72,864	$67,716	$188,760	$183,480	$150,216
Architectural/Engineering Expenses	15% of Combined Construction Cost	$54,648	$50,787	$141,570	$137,610	$112,662
TOTAL CONSTRUCTION BUDGET		**$491,832**	**$457,083**	**$1,274,130**	**$1,238,490**	**$1,013,958**
TOTAL COMBINED CONSTRUCTION BUDGET						**$4,475,493**

LYNCH PARK CARRIAGE HOUSE - FIVE PHASED WORK



1 FIRST FLOOR PLAN - PHASING

Scale: 3/16"=1'-0" @ 24 X 36 PRINT

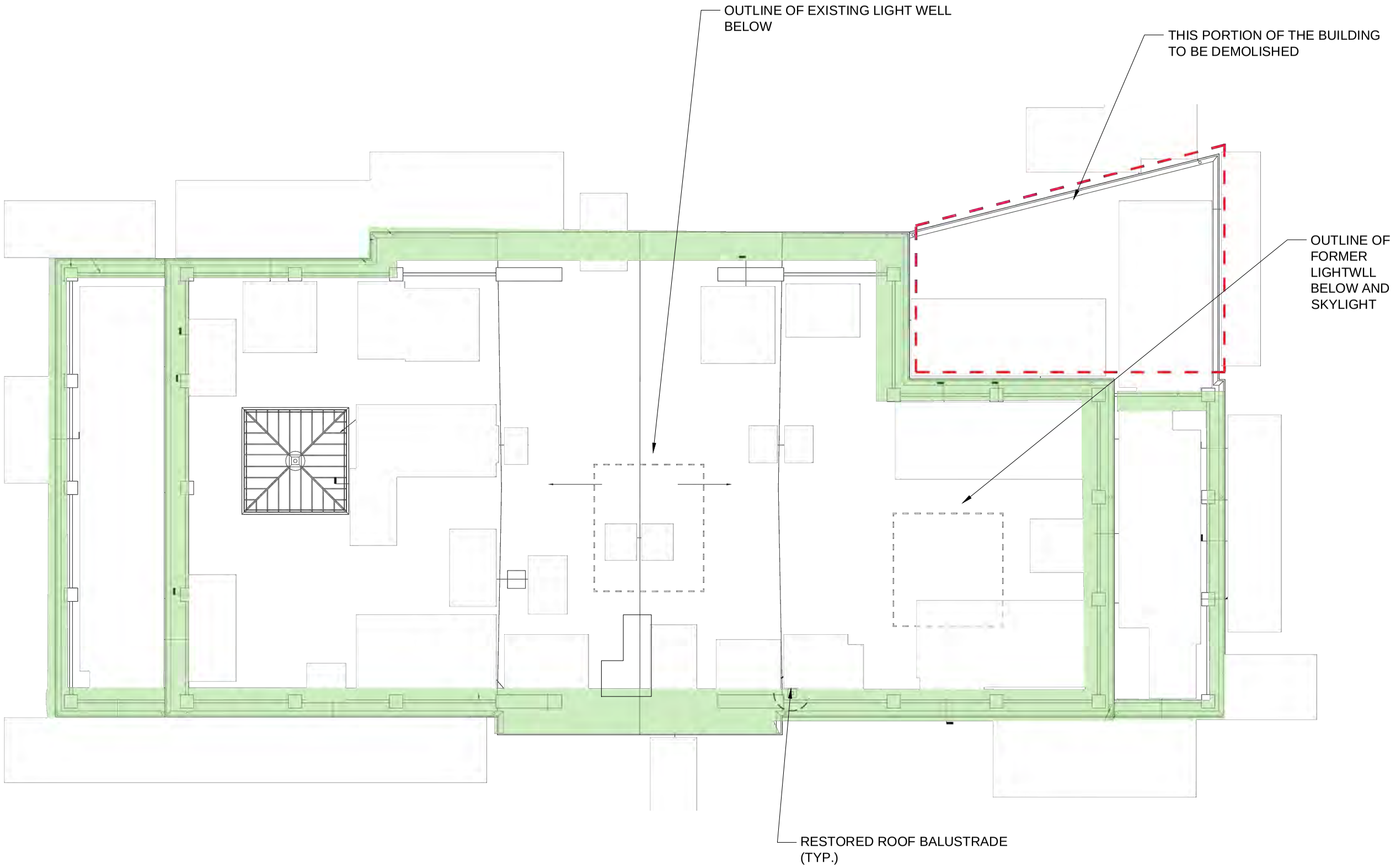


2 SECOND FLOOR PLAN - PHASING

Scale: 3/16"=1'-0" @ 24 X 36 PRINT

KEY

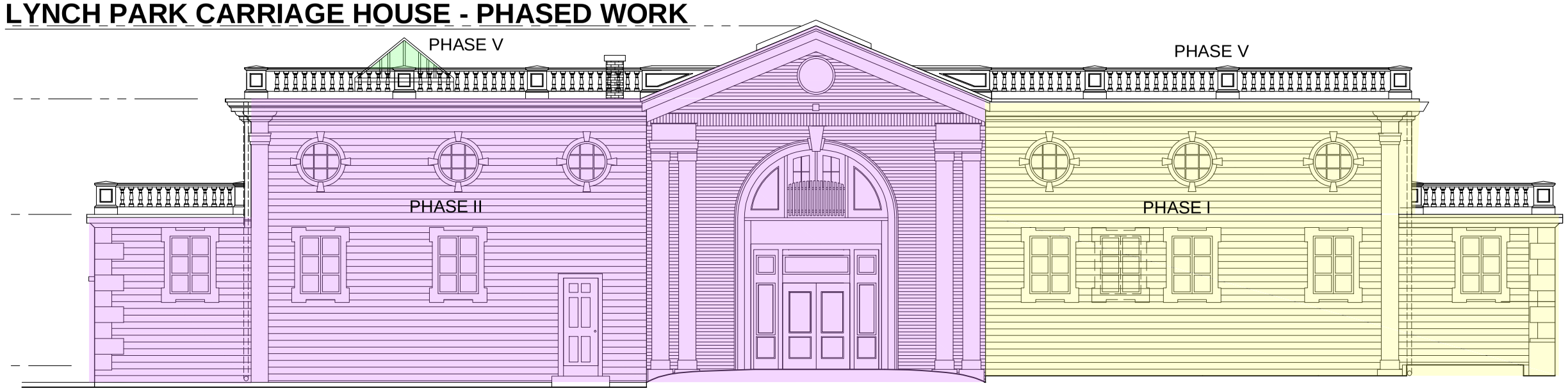
- PHASE I
- PHASE II
- PHASE III
- PHASE IV
- PHASE V



1 FIVE-PHASED ROOF PLAN

Scale: 3/16"=1'-0" @ 24 X 36 PRINT

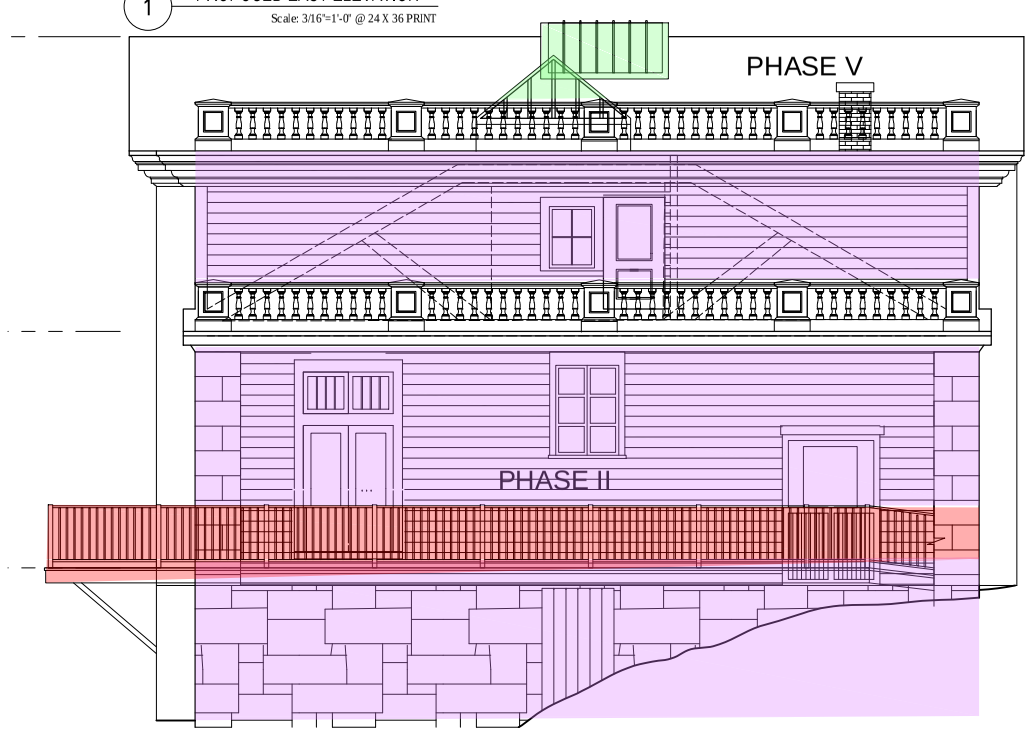
LYNCH PARK CARRIAGE HOUSE - PHASED WORK



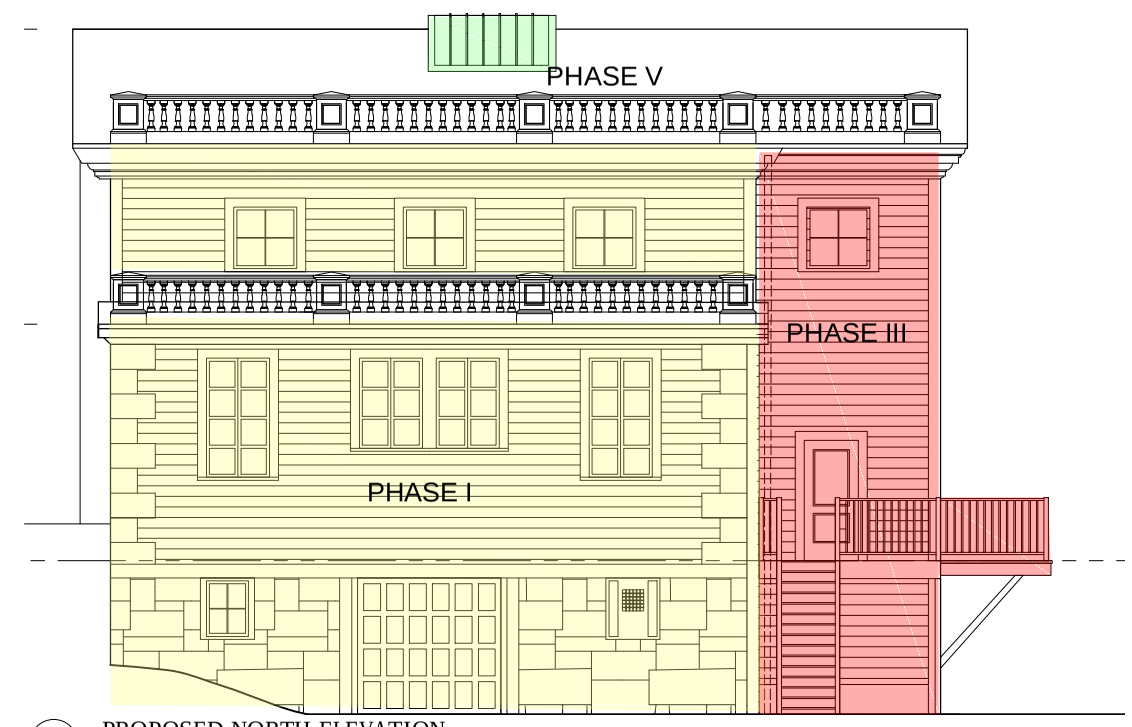
1 PROPOSED EAST ELEVATION
Scale: 3/16"=1'-0" @ 24 X 36 PRINT

KEY

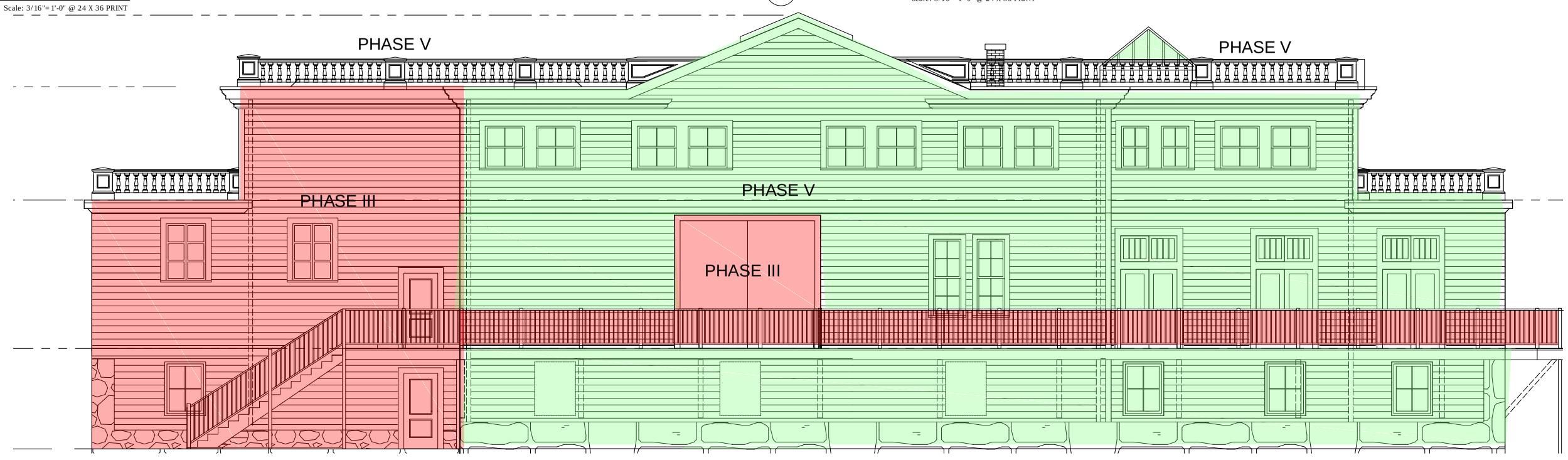
- PHASE I
- PHASE II
- PHASE III
- PHASE IV
- PHASE V



2 PROPOSED SOUTH ELEVATION
Scale: 3/16"= 1'-0" @ 24 X 36 PRINT



3 PROPOSED NORTH ELEVATION
Scale: 3/16"=1'-0" @ 24 X 36 PRINT



4 PROPOSED WEST ELEVATION
Scale: 3/16"= 1'-0" @ 24 X 36 PRINT

APPENDIX

A) Historic Preservation Resources
– Massachusetts Historical Commission Inventory Area Form

B) Bradley Stable Drawings, Historic New England Collection, 1896

C) Structures North Consulting Engineers: Structural Report (2009)
Plans and Specifications (2010)

D) Flood Plain Projections

E) Aerial Survey

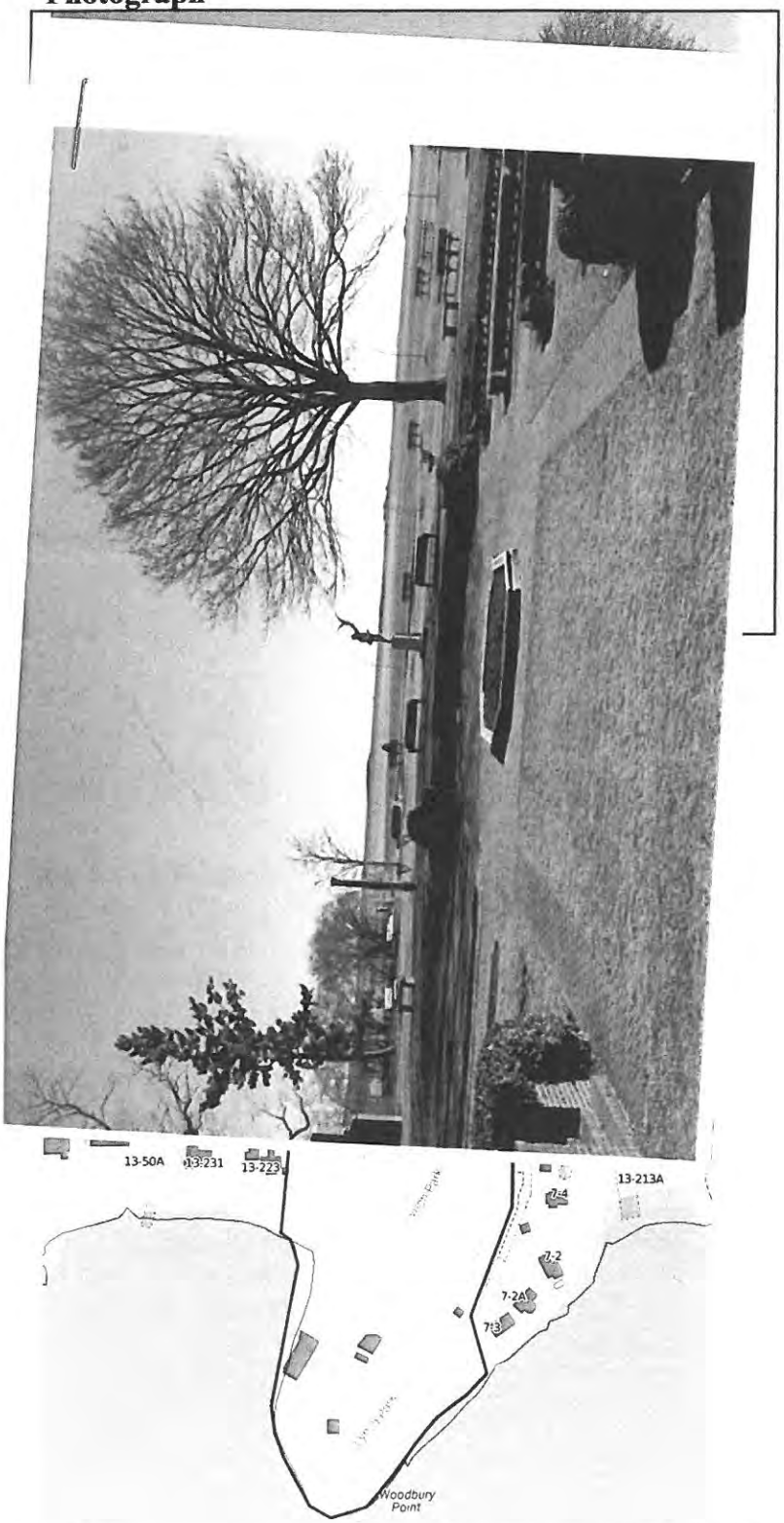
Historic Preservation Resources

FORM A - AREA

Assessor's Sheets	USGS Quad	Area Letter	Form Numbers in Area
13-219	Marble-Head N	BEV.AU	see data sheet

MASSACHUSETTS HISTORICAL COMMISSION
MASSACHUSETTS ARCHIVES BUILDING
220 MORRISSEY BOULEVARD
BOSTON, MASSACHUSETTS 02125

Photograph



Town/City: Beverly

Place: Beverly Cove

Name of Area: David. S Lynch Memorial Park

Present Use: Municipal Park

Construction Dates or Period: ca.1886 - 2016

Overall Condition: Fair

Major Intrusions and Alterations:
Late 20th c bath house
21st century playground equipment
Asphalt parking lot
Attrition of Rose Garden features and plantings
Evans Estate House demolished 1943
Sohier House ("Monastery") burned 1966

Acreage: 15 acres

Recorded by: Pamela Hartford and Wendy Frontiero

Organization: Beverly Historic District Commission

Date: September 2016

Follow Massachusetts Historical Commission Survey Manual instructions for completing this form.

☒ Recommended for listing in the National Register of Historic Places.
If checked, you must attach a completed National Register Criteria Statement form.

Use as much space as necessary to complete the following entries, allowing text to flow onto additional continuation sheets.

ARCHITECTURAL DESCRIPTION

Describe architectural, structural and landscape features and evaluate in terms of other areas within the community.

The area comprising David S Lynch Memorial Park, 55 Ober Street (1943) was the site of several estates with separate owners from 1845 through 1917. The last owners, Robert and Marie Evans, shaped the 15-acre parcel into a designed landscape at the turn of the 20th century. A number of architectural and landscape features remain, including a long estate drive terminating in a loop, an impressive carriage house, a formal walled rose garden, a small laundry building, and numerous mature specimen trees. The city purchased the land for a municipal park in 1943.

Located on the south side of Ober Street in the Beverly Cove neighborhood, Lynch Park occupies most of a small peninsula that forms the northeast edge of Mackerel Cove and frames Beverly Harbor. The peninsula affords expansive views south across Beverly Harbor to Salem and Marblehead, west along the shoreline of Mackerel Cove, and east to Hospital Point and the Atlantic Ocean. The Park's present circulation system was shaped by the owners of several nineteenth century estates in this location. The City of Beverly purchased the site in 1943 with funds from a bequest by resident philanthropist David. S. Lynch (1859 -1942). At the time of purchase, there were two estate houses (no longer extant), but the historic structures and features that remain – including the Evans Carriage House (ca 1900), the Marie Evans Rose Garden (1911), and the Evans Laundry Building (1911) – as well as a variety of mature trees and the long curving drive, evoke an elegant nineteenth century setting.

These structures congregate in the southern third of the site, which extends into Beverly Harbor. The rest of the Park is essentially open land, with a 200-car asphalt parking lot, an open grassy area for informal athletics, and access to the Mackerel Cove beach, all on the west side of the main, north-south drive (Photo 3). East of the drive is a rolling, open, grassy landscape with several groups of trees, including remains of an orchard and a group of weeping beeches. Another group of mature beeches is located in the northwest corner of the park. (Photo 4)

Ober Street, which follows the coastline of the northeast end of Mackerel Cove, includes some eighteenth century dwellings and nineteenth century summer houses, but is characterized largely by early to mid 20th century residential infill. Along Ober Street, Lynch Park's northern boundary is marked by a three-foot high, cut granite stone wall with heavy granite capstones. Entrance to the Park is made through the Burgess Stone Wall Entrance (1886), comprised of two curved granite walls that terminate in four-foot high square piers topped with a granite cap. (Photo 2)

The David S. Lynch Bandshell (1968) and a Bathhouse (late 20th c) have been placed at the south end of the athletic field, which doubles as a gathering space for concerts. Immediately south of the Shell, the drive splits in front of a circular planter, diverging to the Carriage House on the west, and continuing east where it resolves in a loop around the peninsula. A brick pedestrian walkway surrounds a granite-edged planter, which contains the Venetian Wellhead (1911, BEV.906). (Photo 11)

South of the Carriage House is a raised area shared by the Play Structure/Splash Park (late 20th c.) and the Evans Laundry Building (ca. 1910). On the west of the drive leading to the Laundry Building is a ten-foot section of Evans Stable Entry Walls (ca. 1900), which is built of small mortared fieldstones in a rustic style with round posts; both the posts and the wall are crenellated. On the opposite side of the drive, the Burgess Stone Wall Entrance (1886) begins with a similar crenellated post, extends ten feet, then makes a turn to the left and extends along the edge of a small parking area south of the Laundry Building. (Photo 8)

The peninsula area features a broad, even plateau, the site of the former Evans Estate house. (Photo 6) An asphalt-paved walking path traverses the perimeter of the plateau, with evenly spaced benches facing out to the views. (Photo 7) Benches line the perimeter adjacent to the walk. A brick path, which meets the drive where it splits in a loop, leads to Marie Evans Rose Garden (1911). (Photo 12)

Architecture and Features

The east-facing Evans Carriage House (ca. 1900) is an imposing, two-story Classical Revival building. The tripartite main block is composed of a projecting gable-roofed central entry pavilion, flanked by three-bay, flat-roofed wings. The building is extended further by secondary, one-story, single-bay wings on either side of the main block. (Photos 9 & 10) While the front of the building sits at grade, the land slopes steeply down along the side elevations to a partially-exposed basement level. The rear of the building sits at the water's edge atop a granite seawall that extends along most of the perimeter of the peninsula. On the east elevation, the entrance bay is sheathed in flush board and is dominated by a two-part entry. Carriage doors have been replaced by a modern double-door entry flanked by sidelights and topped by a transom. Above this, paired, six-light loft doors are set in a half-round arch with keystone. The entry pavilion is flanked by paired, two-story pilasters; a clock is centered in the gable above. The main block wings are clad in wood shingles and appear to have altered openings. Four of six original round oculus windows with keystones survive in the second story. The first story retains original six light windows with distinctive eared surrounds; another of these casings survives on the south secondary wing. The northern-most bay holds a modern service opening with wooden overhead door; the adjacent north secondary wing has a similar service opening. Pilasters decorate the outer ends of the main block wings; the outer corners of the secondary wings are trimmed with quoins. The water-facing rear elevation retains paired and single sash windows.

The Evans Laundry Building (ca. 1910) is a 1 ½ story, wood-frame building sheathed in clapboards that sits on a raised brick foundation. Its steeply-pitched, side-gable roof is pierced by three gabled dormers on each slope; a single, off-center brick chimney rises just behind the ridge line. The east (façade) elevation contains a central entry with a modern door, accessed by modern wooden stairs and flanked by two modern single windows on one side and a paired modern window on the other. The south elevation has a central secondary door sheltered under a small projecting gabled entry hood supported by decorative brackets. Larger decorative brackets support the returns on the projecting gable overhangs. Paired double-hung sash and triple single-sash windows are modern replacements. (Photo 8)

The Marie Evans Rose Garden (1911) is a 50 foot by 100 foot rectangular space designed by the architecture firm Allen and Collens. Brick walls frame the northwest, south and southeast sides, with the west side open to views of the ocean. A brick walk bordered with clipped evergreen shrubs and occasional benches surrounds a sunken space that is divided into quadrants and bisected by a wide cross axis of turf panels. (Photo 15) Within the sunken garden are flower beds divided by narrow strips of turf, bordered with low boxwood hedging. (Photo 12) At the north end of the garden, a raised terrace features a cinquefoil shaped concrete pool planted with flowers, set against a brick retaining wall supporting an upper terrace. (Photo 17) On the upper terrace is a columned Rose Garden Pavilion (1911) with a slate-covered hipped roof. (Photo 13) The architecture of the garden displays a high degree of craftsmanship throughout, with extensive detailing. The brick wall is a complex structure with a variety of forms, shapes, and patterns integrated into the brick wall. Numerous sculpted forms in cast concrete range from decorative scrollwork to coping on top of walls. A decorative bench and Marble Lions (BEV.911) suggest that a rich program of sculpture once prevailed throughout the garden. (Photo 15).

The *Falconer* (1911, BEV.946), a bronze statue on a white marble base, is a slightly smaller copy of the original statue set in Central Park near 72nd Street, New York, which the Evans family could see from their apartment on Central Park West. Designed in 1872 by sculptor George Blackall Simonds (1844-1929), who was Master of the English Art Workers Guild from 1884 – 1885, the *Falconer* is referred to as his best work. Mrs. Marie Evans commissioned the copy and erected it in her husband's memory as a focal point of the Rose Garden. The statue depicts an Elizabethan-costumed youth striding forward with his right leg while releasing a falcon from his outstretched left hand.

The David S. Lynch Bandshell (1968) is a simple geometric form consisting of two angled walls of concrete block supporting a cantilevered flying wedge roof, set on a fifty square foot scored concrete pad. The walls are slightly battered on either end. The asphalt-shingled roof has aluminum fascia and a painted wood interior ceiling with a combination of fixed can lights and adjustable spotlights. (Photo 16)

HISTORICAL NARRATIVE

Explain historical development of the area. Discuss how this relates to the historical development of the community.

In 1845, John Amory Lowell (1798-1881), scion of the Boston Lowell family and first trustee of the Lowell Institute, bought the western half of Woodbury Point, totaling 23 acres, from Cornelius Woodbury, a member of one of Beverly's oldest families. Lowell built a large comfortable gable-end block with a center chimney, set on the center of the southern tip of the peninsula. In 1865 he sold the property to Benjamin F. Burgess. Burgess (1819-1901) lived in Boston and operated Benjamin Burgess & Sons in the Merchant Exchange building with the oldest of his six sons. Burgess was considered one of the most extensive traders in the West Indies in New England. He made improvements to Lowell's earlier house, laid out the extant Burgess Estate Drive to it, and created the curving Burgess Stone Wall Entrance (1886), as depicted on an 1886 survey (Ellis,1886). On this 1886 survey, the entire parcel, which extended east to Woodbury Street, was surrounded by a low stone wall all the way down to the water, becoming a seawall that frames the peninsula. The survey records existing openings in the wall, its gracious wide entry, and the graded, curving Estate Drive that Burgess designed. Sections of the wall surrounding the original parcel are still extant beyond the Lynch Park property line, extending westward along Ober Street to Woodbury Avenue, where it turns south and continues along the east side of Woodbury Avenue.

Burgess suffered significant losses in the financial crash of 1873, after which he began to divide up the estate, first selling parcels in the north and west areas of the site. In 1888, Burgess sold a parcel straddling the drive north of his house, allowing access to both coasts of the peninsula, to Albion B. Turner, a Boston banker. Turner built a large shingle style house as well as a barn, in close proximity to Burgess's barn. Turner sold the house and barn to John Stetson, Jr. (1834-1896) in 1893. Turner, a New York theatrical producer who came to Boston to manage the Globe Theatre, built a dock, a gazebo and an enormous boathouse (none extant) on the east side of the peninsula before he died in 1896. Although his tenure on the peninsula was short, and none of the structures remain, his house became known as the "Stetson Cottage" and achieved fame when it became the summer White House for President Taft in 1909 and 1910. (Figure 1)

By 1897, the land that now forms Lynch Park was divided into the estates of W. O. Grover and E. P. Sohier at the north, along Ober Street; John Stetson and William D. Sohier in the middle; and R. D. Evans at the southern tip. (Figure 1)

In 1890, Burgess sold his house and outbuildings to Robert Dawson Evans (1845 -1909) and his wife, Marie Antoinette Hunt Evans (1845-1917). Evans was self-made man who came from New Brunswick, Canada, first working at Eagle Rubber Company. He eventually owned his own company, Clapp, Evans and Co., which became the American Rubber Company (now Uniroyal). After retirement his interests turned to mining, where he made an additional fortune. Evans's substantial contribution to Boston was the building of the Museum of Fine Arts, which he oversaw as Director from 1907 to his death in 1909. The columned, classical wing of the museum that overlooks the Back Bay Fens was completed with the substantial support of Evans's wife in 1916, and named the Evans Memorial Wing.

The Evanses purchased the Stetson property in 1896, enlarged the house, and built the Evans Carriage House between 1897 and 1907. In 1909, while President Taft was in residence at the Stetson Cottage, Robert Evans died of injuries sustained from a horseback riding accident. After President Taft ended his summer residence in 1910, Mrs. Evans had the Stetson Cottage moved across the Harbor to Peaches Point in Marblehead and hired the architectural firm of Allen and Collens to design the Marie Evans Rose Garden (1911) on the site of the Stetson Cottage.

Francis R. Allen (1844-1931) was in partnership with Herbert P. Kenway when they designed a house at 324 Beacon Street in Back Bay (not extant) for Mr. and Mrs. Evans in 1888. Allen graduated from MIT and attended the Ecole de Beaux Arts in Paris. After Kenway died in 1890, Allen worked as a sole practitioner until 1896, when he joined with J. McArthur Vance, practicing in Pittsfield. In 1902 Allen formed a partnership with Charles W. Collens (1873-1976) that lasted until Allen's death in 1931. Known especially for their Gothic style churches and hospitals, the firm also had a strong background in the classical vocabulary, producing such work as the Back Bay branch of State Street Bank, 1902 (BOS.2629), a one-story neoclassical building on the corner of Boylston and Massachusetts Ave, now owned by Berklee School of Music.

The Marie Evans Rose Garden includes many of the elements that were employed in the creation of Italian villa gardens of the Renaissance. The sketches and photographs in Charles Platt's (1861-1933) *Italian Gardens* (1894), and descriptions of their spatial arrangements and details in Edith Wharton's (1862-1937) book, *Italian Villas and Their Gardens* (1904), were highly influential and contributed substantially to the resurgence of formal garden design in the United States. Platt's Faulkner Farm (1901) designed for Mary and Charles Sprague in Brookline, Edith Wharton's own 'giardano segrato' at her estate in Lenox, The Mount (1901), which was designed by Beatrix Farrand, were early and influential examples of the formal garden fitted into a larger estate. Mrs. Evans's 'giardano segreto' exists as a separate entity from the house and the larger landscape, but also served to mediate the enormous open view of the peninsula, creating intimacy and human scale through framing devices such as columns, trellises, and openings in walls. The planting of many types of trees also serve to break up the open panorama into many different pictures seen from a great variety of vantage points. (Photo 21, Figure 2). Within the garden, the incorporation of many finely crafted details, the change in levels, and the variety of plantings and water provide an intimate scale to what would otherwise be a vast space. (Figure 3)

In 1912, Mrs. Evans made alterations to the Carriage House, and in 1915 she purchased the W. O. Grover Estate abutting Ober Street and the long drive to the east. (Figure 1) When Mrs. Evans died in 1917, the estate was inherited by her two unmarried sisters, Abby White Hunt (1849-1933) and Frances Emily ("Belle") Hunt (1864-1936), who spent summers there until their deaths. Belle Hunt purchased Mrs. E. Sohier's estate in the northeast corner of the present park in 1927 (Figure 1) and began a series of additions and modifications to its existing house using imported and found artifacts. The Sohier house (not extant) was subsequently nicknamed the "Monastery", due to the front doors, which allegedly were taken from a monastery. After years of a variety of uses, including a tea room, artists guild, and youth center, the Sohier house burned in 1966.

At Belle Hunt's death in 1936, the entire Evans property was willed to Beverly Hospital, which used it for a convalescent home until the City acquired it in 1943. The Evans house was demolished in the same year. The City acquired the property using a bequest from local businessman and philanthropist David S. Lynch (1859-1942) to purhase what is now Lynch Park.

Born in Beverly, David Lynch and his brothers Patrick and William established the Welch Morocco Manufacturing Company on River Street in Salem, developing a new process in tanning leather. After retiring from manufacturing, David became vice president of the Beverly Savings Bank. He willed $400,000 to the City of Beverly to be used for the purchase and maintenance of municipal parks. After acquiring the land, the City formed an advisory group, the Lynch Park Overseers, to work in tandem with the Beverly Improvement Society, which continues to use interest generated by the David S. Lynch Fund to support annual plantings in the Rose Garden.

In 1946, Miss Mary Bell, long a member of the Tree Committee of the Beverly Improvement Society, together with committees from the Beverly Garden Club and the Friendly Garden Club, took on the project of identifying and marking all the trees in the park, hiring Robert Williams from the Arnold Arboretum to conduct a survey.

In 1950 the firm of George B. Cabot and Associates in Boston was hired to do a park plan. The plan has not been located, and it is unknown at this point what, if any, improvements were made based on the plan, but several recommendations, such as creating a bandshell, an improved parking lot and a bathhouse, were implemented.

In the 1968, the David S. Lynch Shell was designed by John P. Frates (b. 1926), a Beverly resident who practiced with Maginnis, Walsh and Kennedy in Boston. The flying wedge design of the bandshell was a popular mid-century modern approach to such utilitarian structures as filling stations.

BIBLIOGRAPHY and/or REFERENCES

Municipal records & Reports

Department of Building Inspection. Building permits
Ellis, C. Survey of grading of private way to Burgess point. Jan 8, 1886.

Maps & Atlases

G. M. Hopkins. Map of Beverly Town. Philadelphia: 1880
George H. Walker & Company. *Atlas of City of Beverly*. Boston: 1897.
George H. Walker & Company. *Atlas of City of Beverly*. Boston: 1907
Yeager & Klinge Co. *Atlas of the North Shore, Beverly to Magnolia*. Boston: 1919.

Archives and Repositories

Ancestry.com http://home.ancestry.com/
Avery Index to Architectural Periodicals.
Beverly Historical Society Photograph and map collections.
Lynch Park photos; T. E. Marr collection 1913
Beverly Public Library
Essex County Registry of Deed http://salemdeeds.com/salemdeeds/Default2.aspx
Find A Grave http://www.findagrave.com/
Society of Architectural Historians http://www.sah.org/docs/misc-resources/brief-biographies-of-american-architects-who-died-between-1897-and-1947.pdf accessed June 6, 2016.
Wikipedia https://en.wikipedia.org/wiki/Allen_%26_Collens accessed June 16, 2016.

Secondary Sources

Beverly Citizen. "Summer White House built by A B Turner, Boston Banker." March 4, 1910
McVey, A. G. "Edward Burgess and his Work." New England Magazine, September 1891.
"The Parks of Beverly: A Survey of the Parks of Beverly and the Work of the Beverly Improvement Society." 1973.
"Garden City of the North Shore." Reprint, Beverly Evening Times. 1918

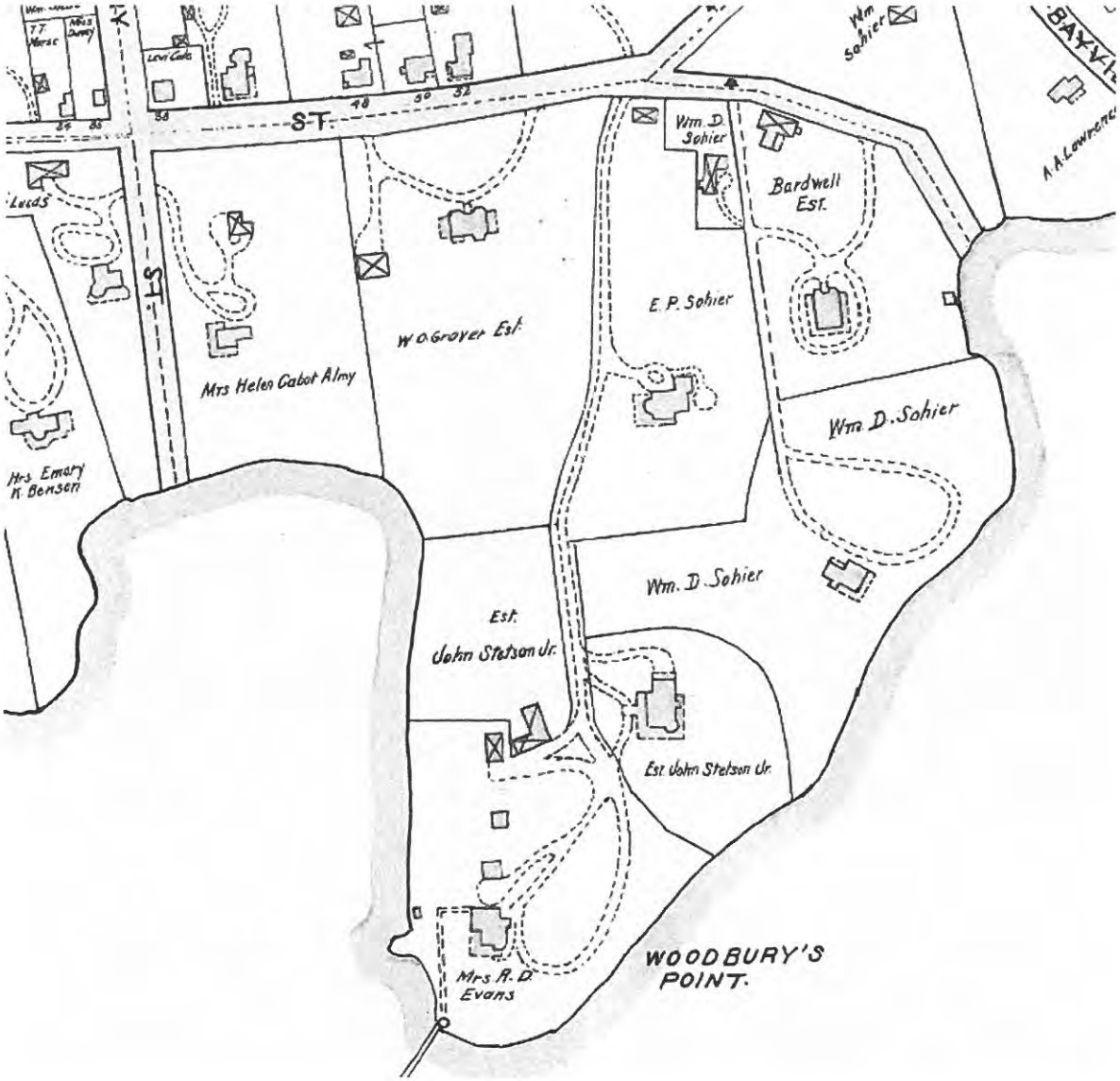
Hill-Nevins. *The North Shore of Massachusetts Bay: An Illustrated Guide*. 1881
Loring, K. P. "The Earliest Summer Residents of the North Shore and their Houses." Essex Institute Historical Collections, Vol 68:3, 1932.
Pinkham, Harold, A Jr." A Reference Guide to the Residential Development of the Eastern Shore of Beverly, Massachusetts, 1844-1919". Self-published, 1997
- "An Inquiry Into the Lots of the Haskell Atlas 1880 Plates reflected in the Lots of the Haskell Deed Books." Unpublished ms, Beverly Historical Society.
Prince, Warren. "The Pioneers of the Seashore." Serialized in Beverly Citizen (Sept. 1884 - Jan. 1885).
Rantoul, Robert. "The Beverly Shore." Essex Institute Historical Collections, 19:7 1882.
Williams, Robert G. "Tree Identification Map of Lynch Park Plan." Arnold Arboretum, July 1946. Commissioned by Beverly Improvement Society.

AREA DATA SHEET

MHC #	Parcel ID	Street Address	Historic Name	Date	Style
BEV.AU	13-219	55 Ober Street	David S. Lynch Memorial Park	1943	N/A
BEV.9002			Burgess Stone Wall Entrance	1886	N/A
BEV.9003			Burgess Estate Drive	1886	N/A
BEV.1213			Evans Carriage House	ca.1900	Colonial Revival
BEV.9004			Evans Stable Entry Walls	ca. 1900	N/A
BEV.1214			Evans Laundry Building	ca. 1910	Victorian Eclectic
BEV.9005			Marie Evans Rose Garden	1911	Renaissance Revival
BEV.9006			Rose Garden Pavilion	1911	Renaissance Revival
BEV.911			Marble Lions	1911	Classical Revival*
BEV.946			*The Falconer*	1911	Classical Revival*
BEV.906			Venetian Wellhead (Grecian Urn)	1911	N/A*
BEV.907			Figure of Woman Carved on Tree Trunk		Not extant*
BEV.1215			David S. Lynch Bandshell	1968	Mid-century Modern
BEV.1216			Bathhouse	late 20th c	Utilitarian
BEV.9007			Play structure/ Splash park	late 20th c	N/A

* Four sculptures in Lynch Park were identified through the Save Our Sculpture program and previously assigned MACRIS numbers. BEV.907 is no longer extant. BEV.906 was called a "Grecian Urn". Upon examination, however, a more accurate title for this sculpture would be "Venetian Wellhead". The dates given for these sculptures represent the earliest date when they would have been placed in the Evans landscape. Dates of creation for the Marble Lions and the Venetian Wellhead are not currently known.

Figure 1. 1897 map of site (north at top) (*Source:* Walker, *Atlas of City of Beverly*.)



SUPPLEMENTAL IMAGES

Photo 2. Burgess Stone Wall Entrance to Lynch Park, looking south.

Photo 3. Looking west from Burgess Estate Drive to remains of orchard, beech trees in upper left.

Photo 4. Parking lot, looking south; Bandshell at center, Carriage House at right.

Photo 5. Drive looking south toward Evans Laundry Building and high point of peninsula.

Photo 6. View north from site of Evans Estate on high point of peninsula, with Hospital Point in the distance.

Photo 7. View at southern tip of peninsula; Marblehead in distance on right; stand of locust trees in center.

Photo 8. View west towards Evans Stable Entry Walls and Evans Laundry Building.

Photo 9. Evans Carriage House, looking southwest.

Photo 10. East (façade) elevation of Carriage House.

Photo 11. Circular planter with Venetian Wellhead, looking east; Marie Evans Rose Garden entrance at left.

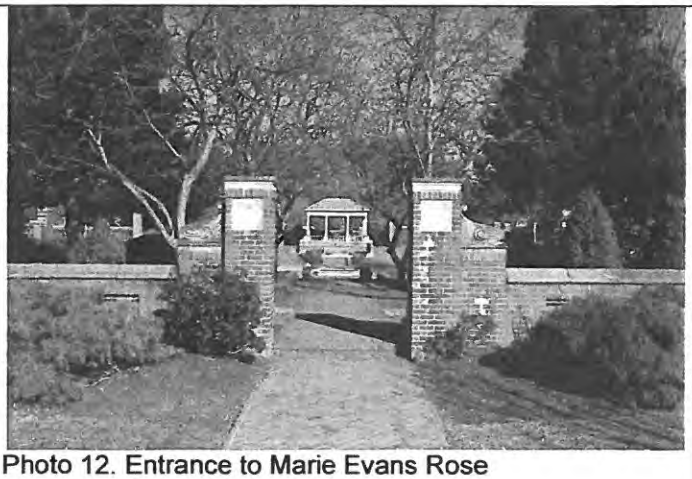


Photo 12. Entrance to Marie Evans Rose Garden, looking northwest. Rose Garden Pavilion in background at center.

Photo 13. Rose Garden Pavilion, looking north

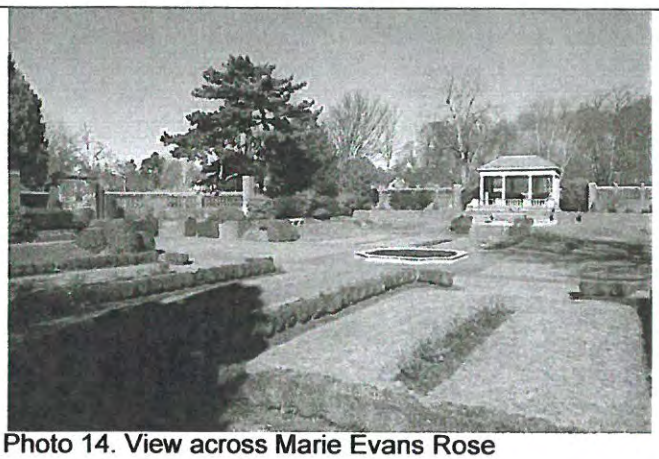


Photo 14. View across Marie Evans Rose Garden, looking north.

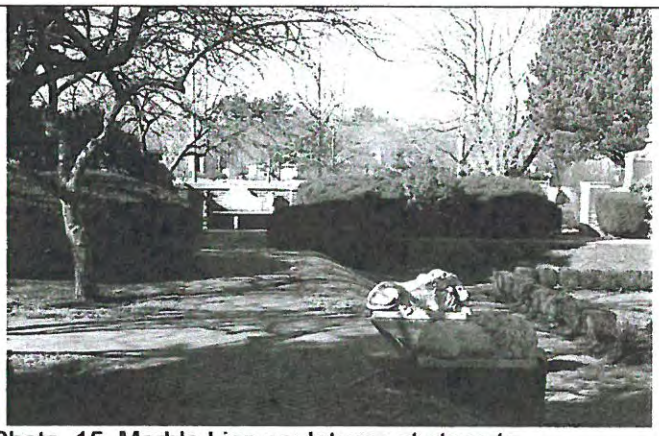


Photo 15 .Marble Lion sculptures at steps to sunken level of Marie Evans Rose Garden.

Photo 16. Contemporary aerial view of Marie Evans Rose Garden

Photo 17. Cinquefoil pool in Marie Evans Rose Garden, looking southeast.

Photo 18. Bandshell, looking west

Photo 19. Bathhouse, looking northwest

Photo 20. *Falconer* sculpture.

Photo 21. View looking southwest from Rose Garden Pavilion.

Figure 2. 1913 view east from Marie Evans Rose Garden. Photo by T. E. Marr, courtesy Beverly Historical Society.

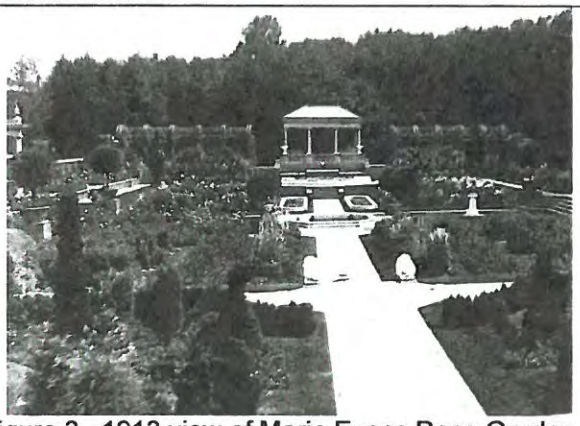


Figure 3. 1913 view of Marie Evans Rose Garden. Photo by T. E. Marr; Courtesy Beverly Historical Society

National Register of Historic Places Criteria Statement Form

Check all that apply:

☒ Individually eligible ☐ Eligible **only** in a historic district

☐ Contributing to a potential historic district ☐ Potential historic district

Criteria: ☒ **A** ☐ **B** ☒ **C** ☐ **D**

Criteria Considerations: ☐ **A** ☐ **B** ☐ **C** ☐ **D** ☐ **E** ☐ **F** ☐ **G**

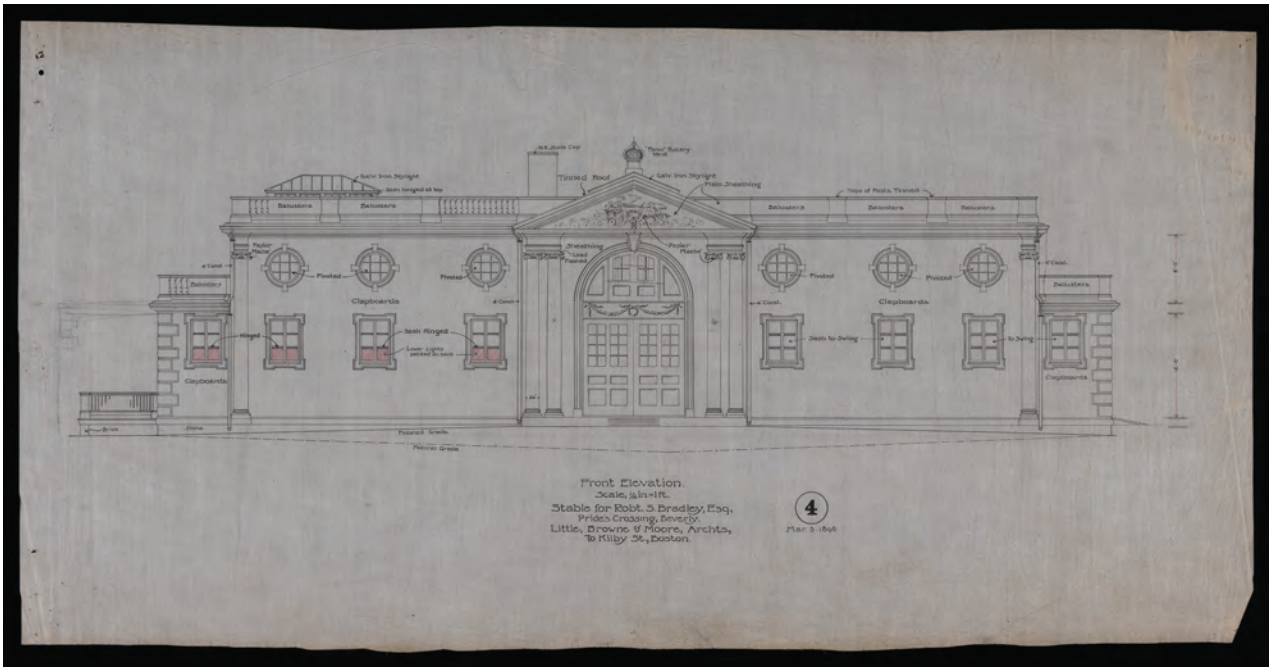
Statement of Significance by Wendy Frontiero

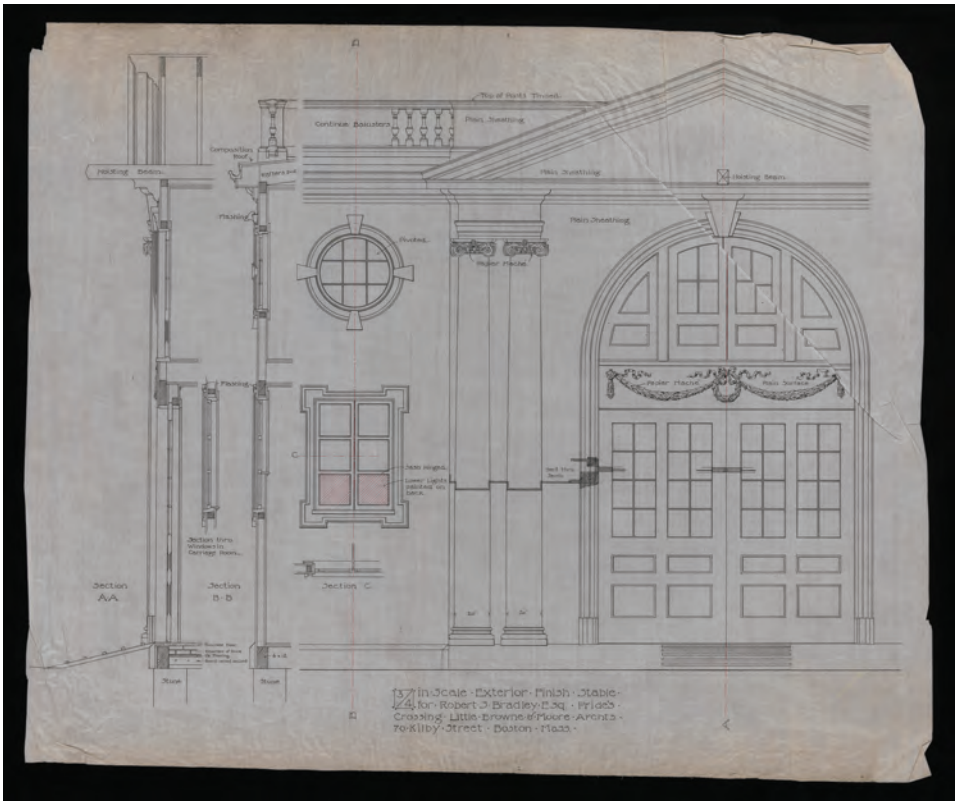
The criteria that are checked in the above sections must be justified here.

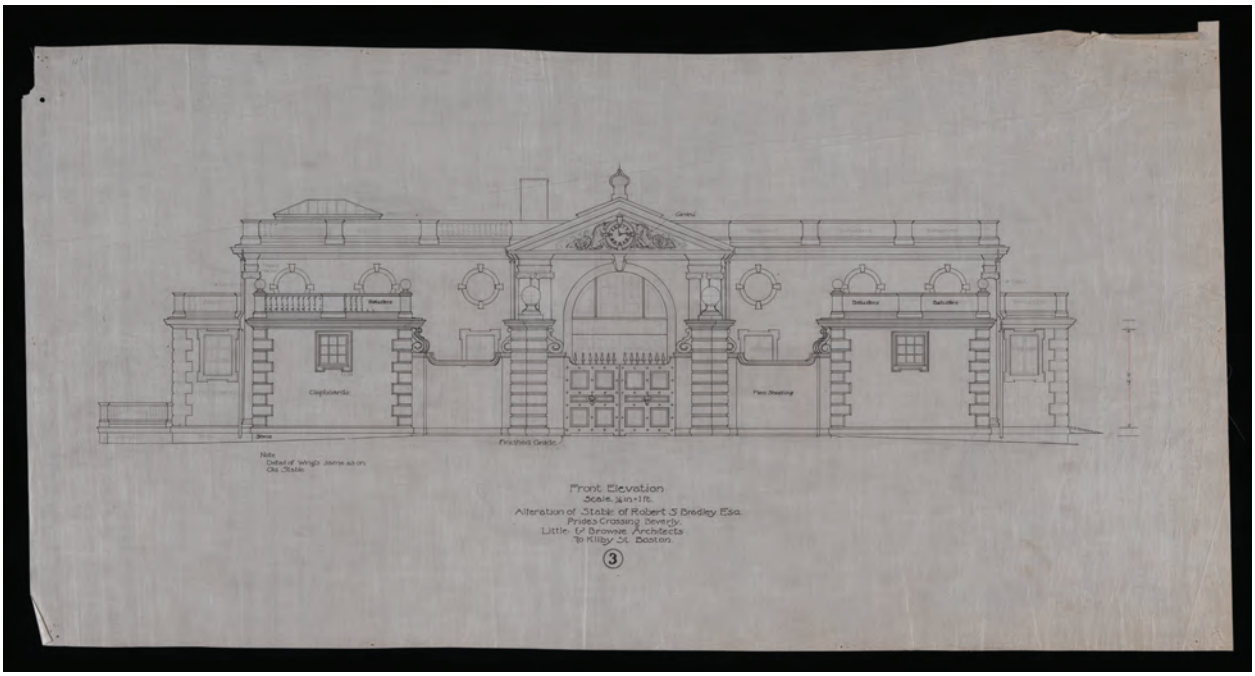
Lynch Park is an iconic symbol of Beverly, representing its status as a premier public park and its role in the history of summer estates in Beverly from the mid 19th through mid 20th centuries. The property was notably associated with President William Howard Taft, who summered here for two years during his presidency (although the house he occupied is no longer extant on this site), and with the prominent Boston businessman and philanthropist, Robert Dawson Evans, and his wife Marie Evans. Although the primary residences that existed on this property in the late 19th and early 20th century have not survived, the property retains significant historic design features in its long estate drive, stone boundary walls, large carriage house, small ancillary structure (a laundry building), formal walled rose garden, expansive lawns, and numerous mature specimen trees.

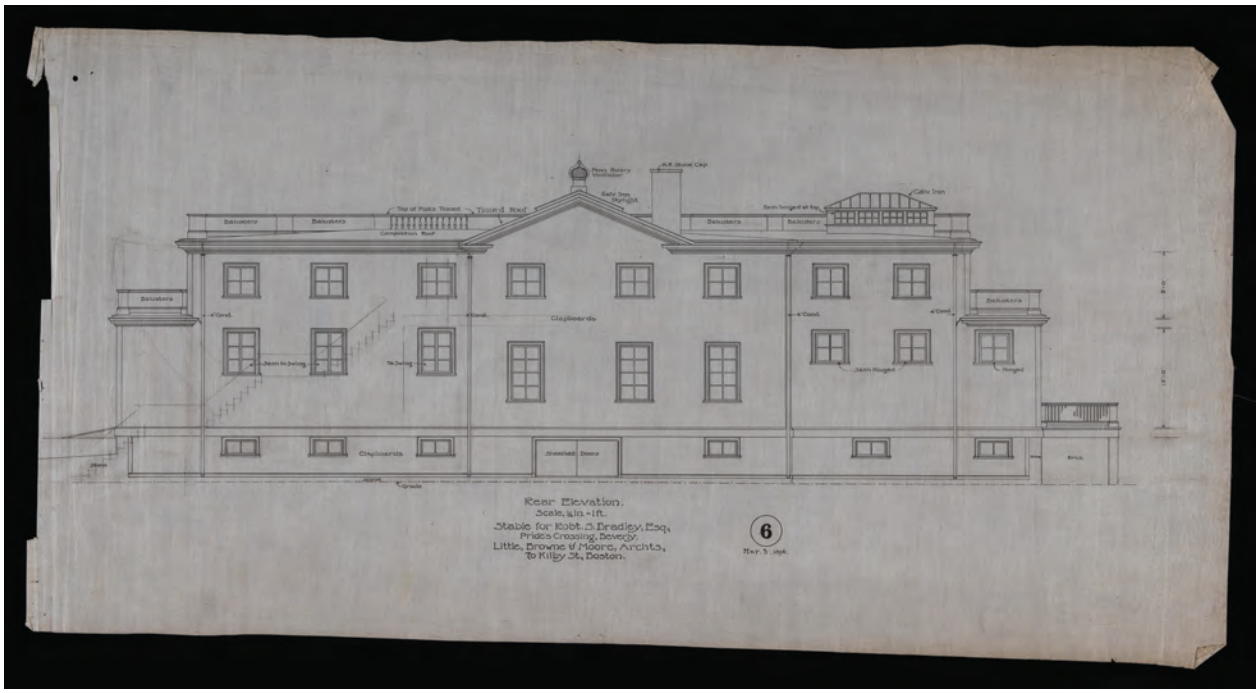
Retaining integrity of location, design, setting, materials, workmanship, feeling, and association, Lynch Park is recommended for listing in the National Register with significance at the local level under Criteria A and C.

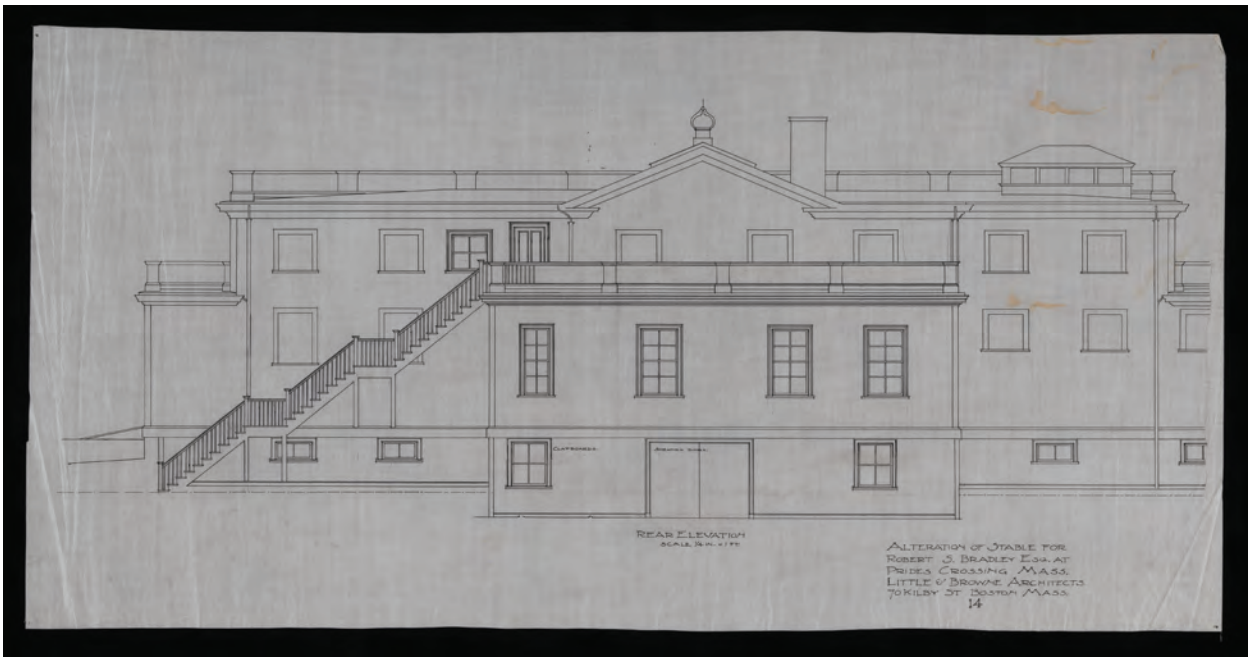
Bradley Stable Drawings, Historic New England Collection, 1896

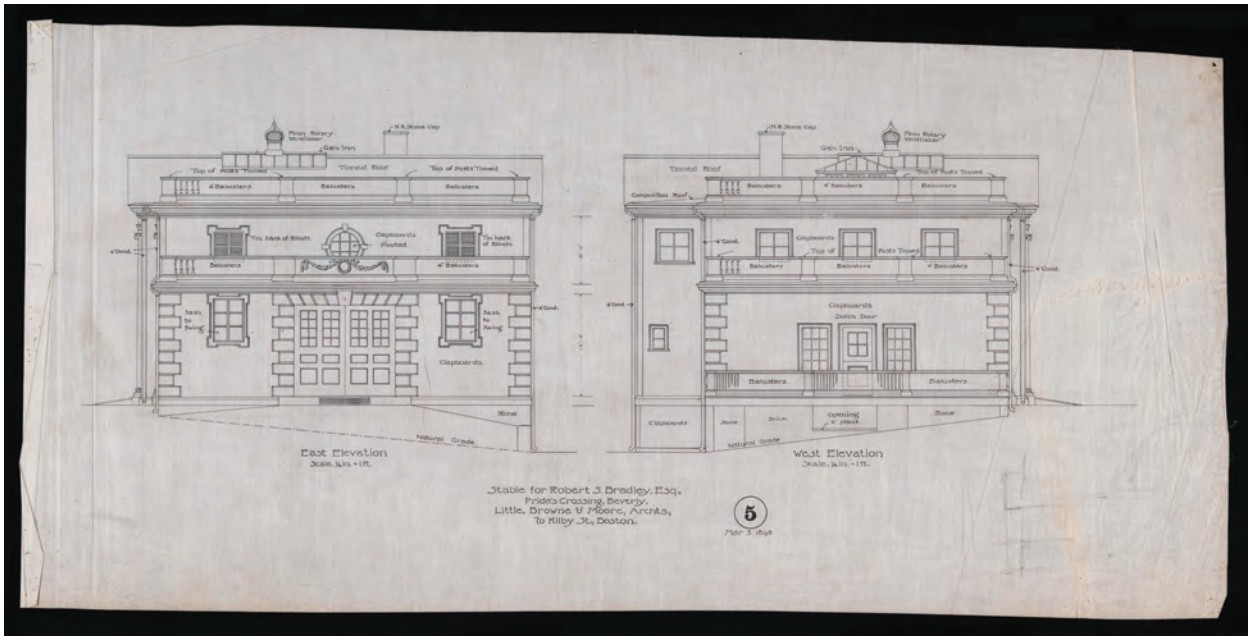

Tinned Roof
Balusters
Clayboards
Pivoted
Hinged
Sash Hinged
Sash to Swing
Main Sheathing
Pedestal Grade
Finished Grade
Front Elevation.
Scale, 1/4 in = 1 ft.
Stable for Robt. J. Bradley, Esq.
Pride's Crossing, Beverly.
Little, Browne & Moore, Archts,
70 Kilby St., Boston.
4
Mar 3 1898


Cornice Balusters
Main Sheathing
Molding Beam
Composition Roof
Flashing
Pivoted
Pedestal Moulding
Sash Hinged
Section AA
Section B-B
Section C
Stone
1/4 in. Scale · Exterior · Finish · Stable ·
for · Robert J. Bradley · Esq. · Pride's ·
Crossing · Little · Browne & Moore · Archts ·
70 Kilby · Street · Boston · Mass ·

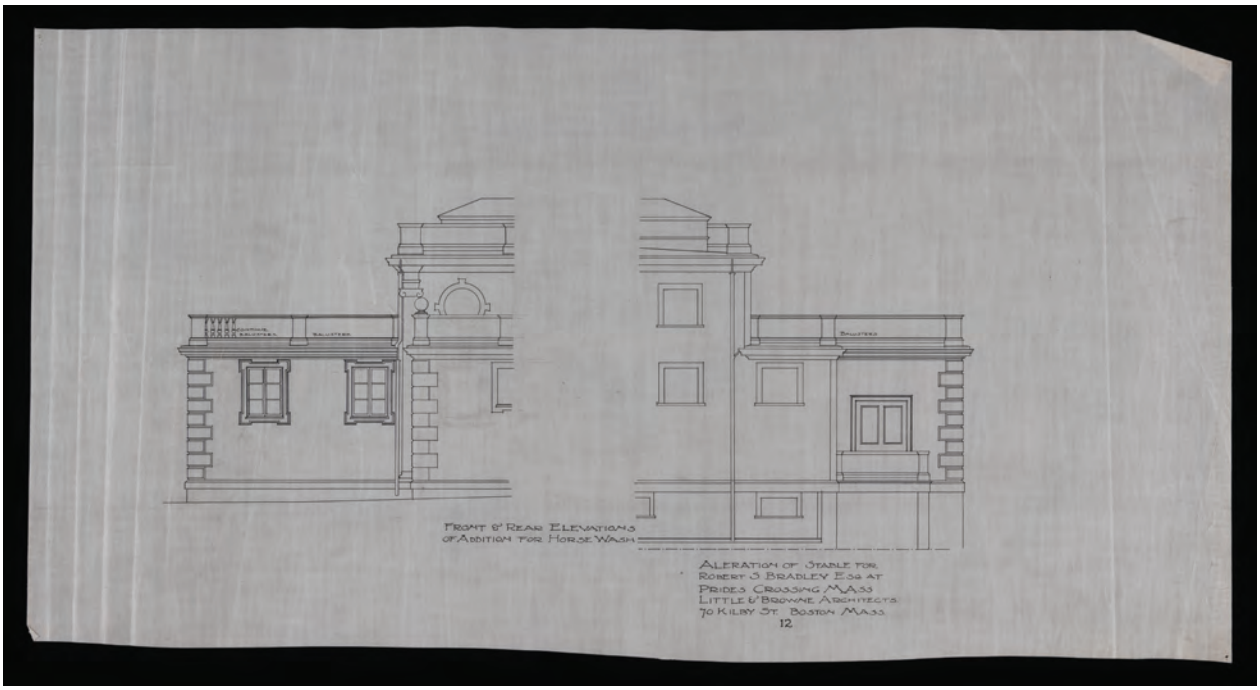

Balustrade
Clapboards
Flat Sheeting
Stone
Finished Grade
Note
Detail of Wing's Same as on
Old Stable
Front Elevation
Scale ¼ in = 1 ft.
Alteration of Stable of Robert S Bradley Esq.
Prides Crossing Beverly.
Little, Browne & Moore Architects
70 Kilby St. Boston.
3

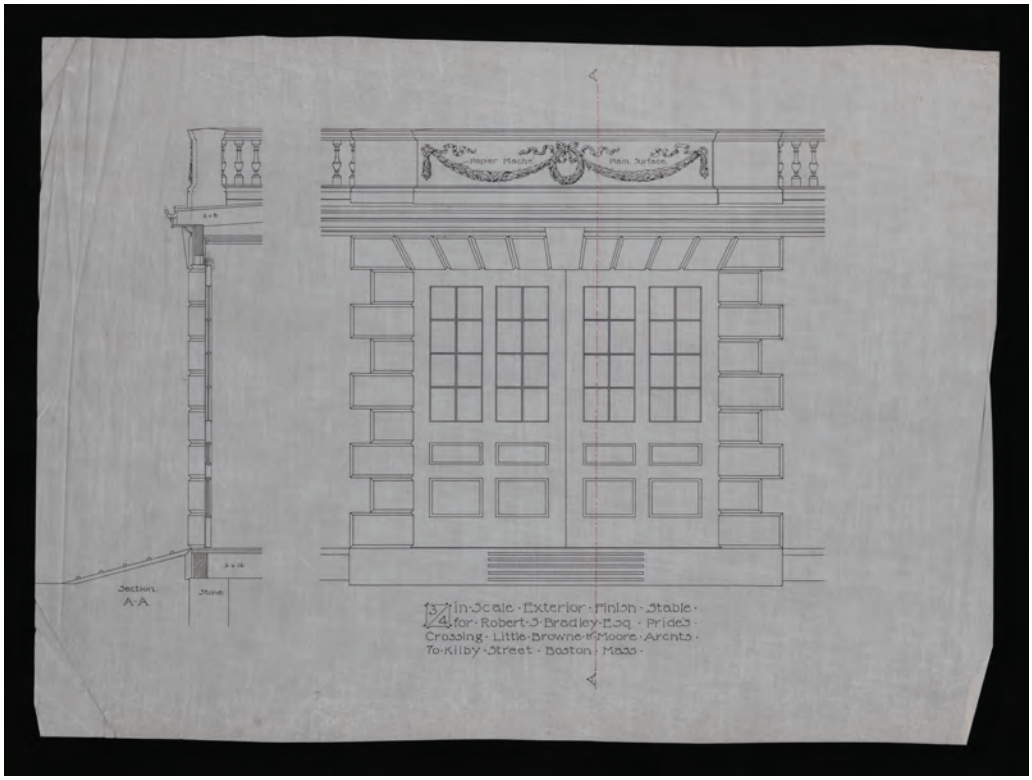

Balusters
Top of Posts Traced
Tinned Roof
Composition Roof
Cast Iron
Clapboards
Sheathed Doors
Brick
Grade
Rear Elevation.
Scale ¼ in = 1 ft.
Stable for Robt. S. Bradley, Esq.
Prides Crossing, Beverly.
Little, Browne & Moore, Archts.
70 Kilby St., Boston.
6
Nov. 5 1896.

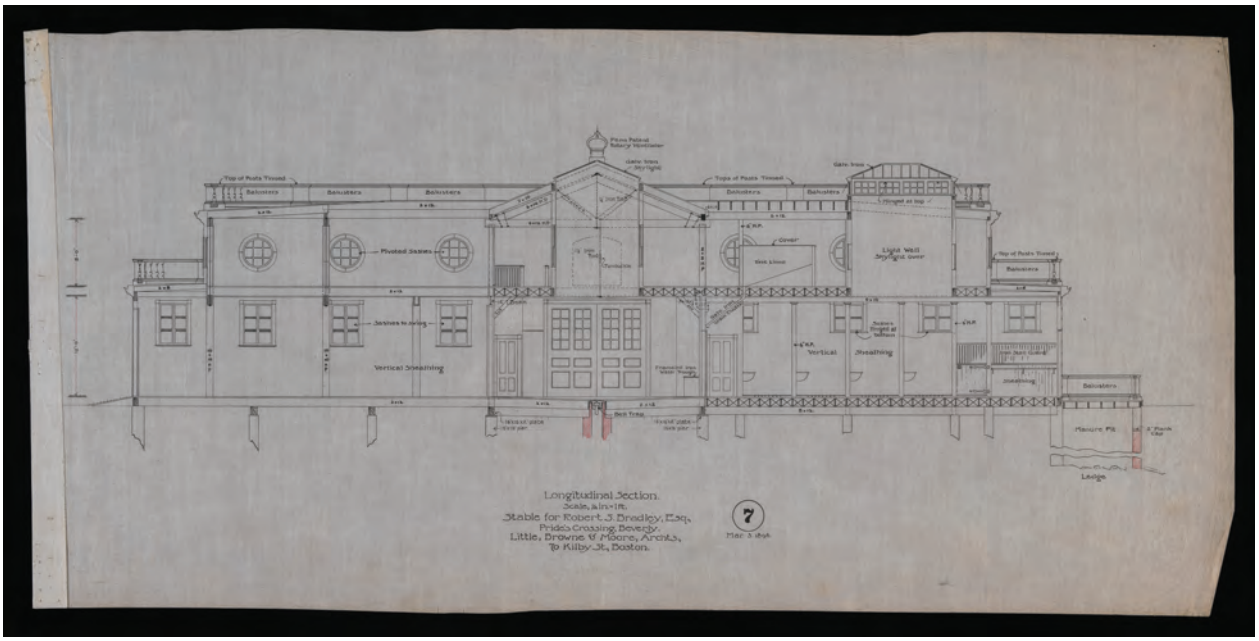

Clapboards
Rear Elevation
Scale 1/8 in. = 1 ft.
Alteration of Stable for
Robert J. Bradley Esq. at
Prides Crossing Mass.
Little & Browne Architects
70 Kilby St. Boston Mass.
14

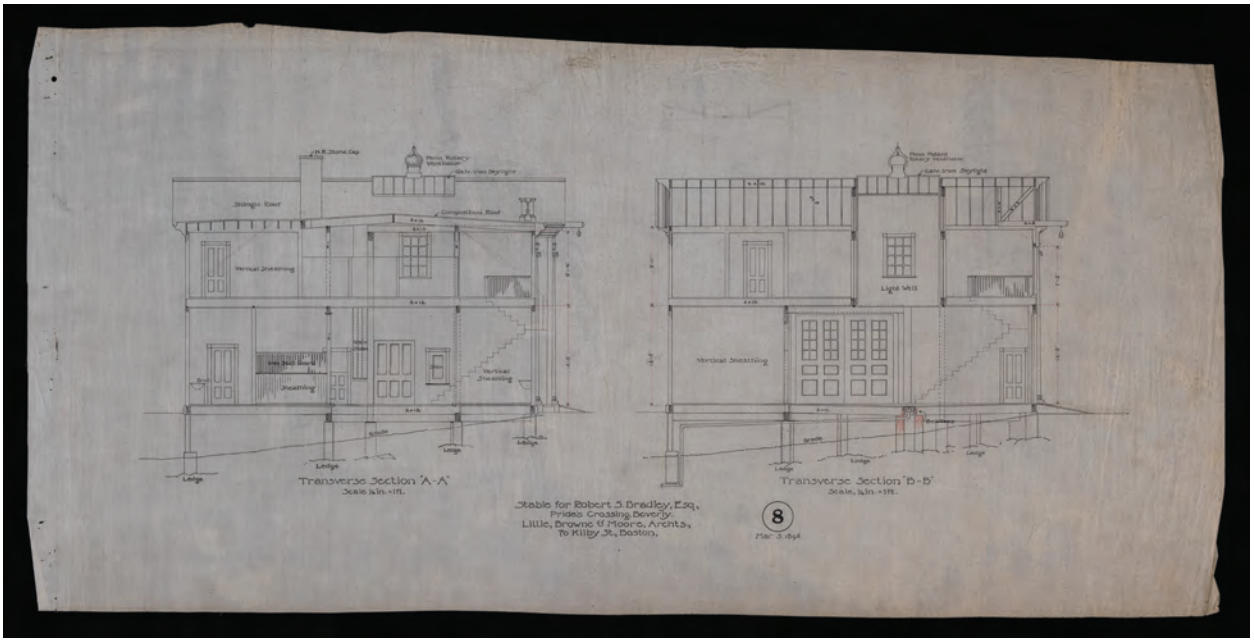

Plain Rotary Ventilator
N.E. Stone Cap
Galv. Iron
Top of Posts Tenons
Tinned Roof
4" Balusters
Balusters
Tin back of Blinds
Clapboards Jointed
4" Cond.
Sash to Swing
Clapboards
Stone
Natural Grade
East Elevation
Scale 1/8 in. = 1 ft.
Composition Roof
Top of Posts Tenons
Dutch Door
Brick
Opening 2" Block
West Elevation
Scale 1/8 in. = 1 ft.
Stable for Robert J. Bradley, Esq.
Pride's Crossing, Beverly.
Little, Browne & Moore, Archts.
70 Kilby St. Boston.
5
Mar 3 1898

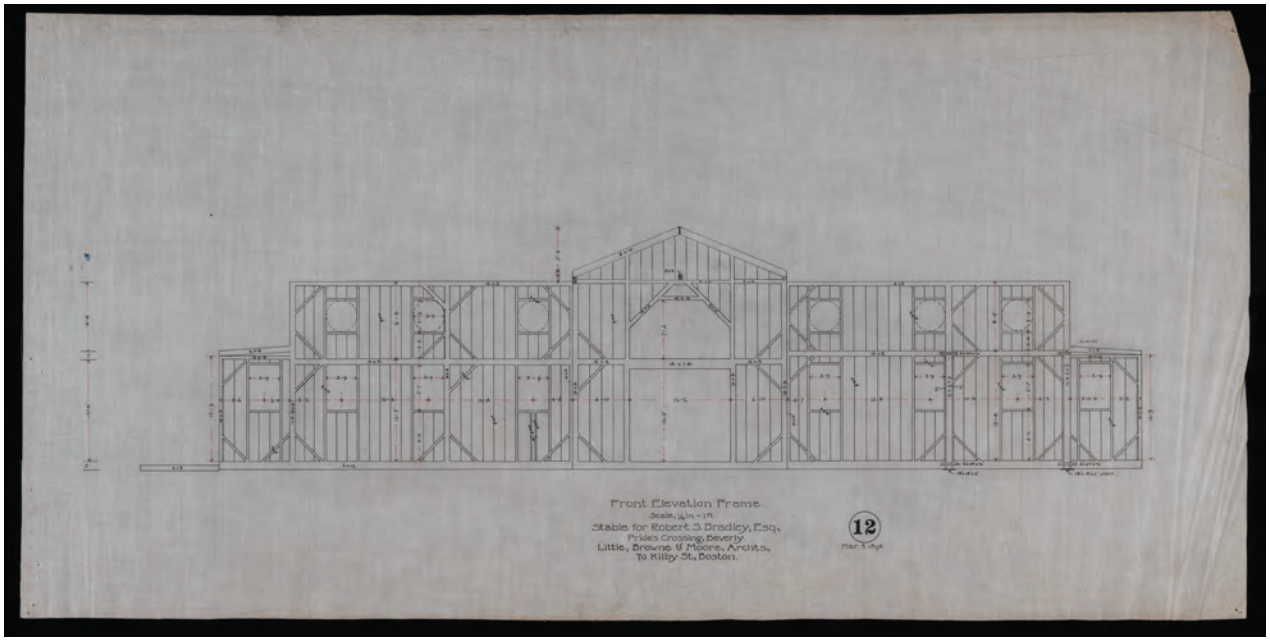
West Elevation
Scale 1/4" = 1'-0"
Alteration of Stable for
Robert S. Bradley Esq. at
Prides Crossing Mass
Little & Browne Architects
70 Kilby St Boston Mass
March 1906
13


Balusters
Balusters
Balusters
Front & Rear Elevations
of Addition for Horse Wash
Aleration of Stable for
Robert S Bradley Esq at
Prides Crossing Mass
Little & Browne Architects
70 Kilby St. Boston Mass.
12


Papier Mache
Main Surface
Section
A-A
Stone
3/4 in. Scale · Exterior · Finish · Stable ·
for · Robert · J · Bradley · Esq · Pride's
Crossing · Little · Browne & Moore · Archts ·
70 · Kilby · Street · Boston · Mass ·


Top of Posts Tinned
Balusters
Pivoted Sashes
Sashes to slide
Vertical Sheathing
Cover
Light Well
Skylight over
Gate Trap
Manure Pit
Lodge
Longitudinal Section.
Scale, 1 in = 1 ft.
Stable for Robert J. Bradley, Esq.
Pride's Crossing, Beverly.
Little, Browne & Moore, Archts,
70 Kilby St., Boston.
7
Mar 5 1894

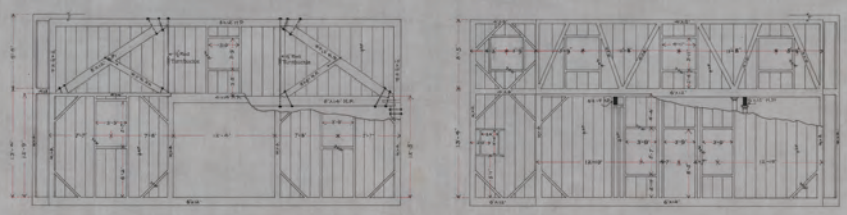

Stringer Floor
Vertical Sheathing
Sheathing
Vertical Sheathing
Ledge
Transverse Section 'A-A'
Scale ¼in.=1ft.
Light Well
Vertical Sheathing
Ledge
Transverse Section 'B-B'
Scale ¼in.=1ft.
Stable for Robert S. Bradley, Esq.
Prides Crossing, Beverly.
Little, Browne & Moore, Archts.
70 Kilby St., Boston.
8
Mar 3 1894


Front Elevation Frame.
Scale ¼in.=1ft.
Stable for Robert S. Bradley, Esq.
Prides Crossing, Beverly.
Little, Browne & Moore, Archts.
70 Kilby St., Boston.
12
Mar 3 1894

Rear Elevation Frame.
Scale, ¼ in = 1 ft.
Stable for Robert S. Bradley, Esq.,
Prides Crossing, Beverly.
Little, Browne & Moore, Archts.,
70 Kilby St., Boston.

14

Mar 3 1896



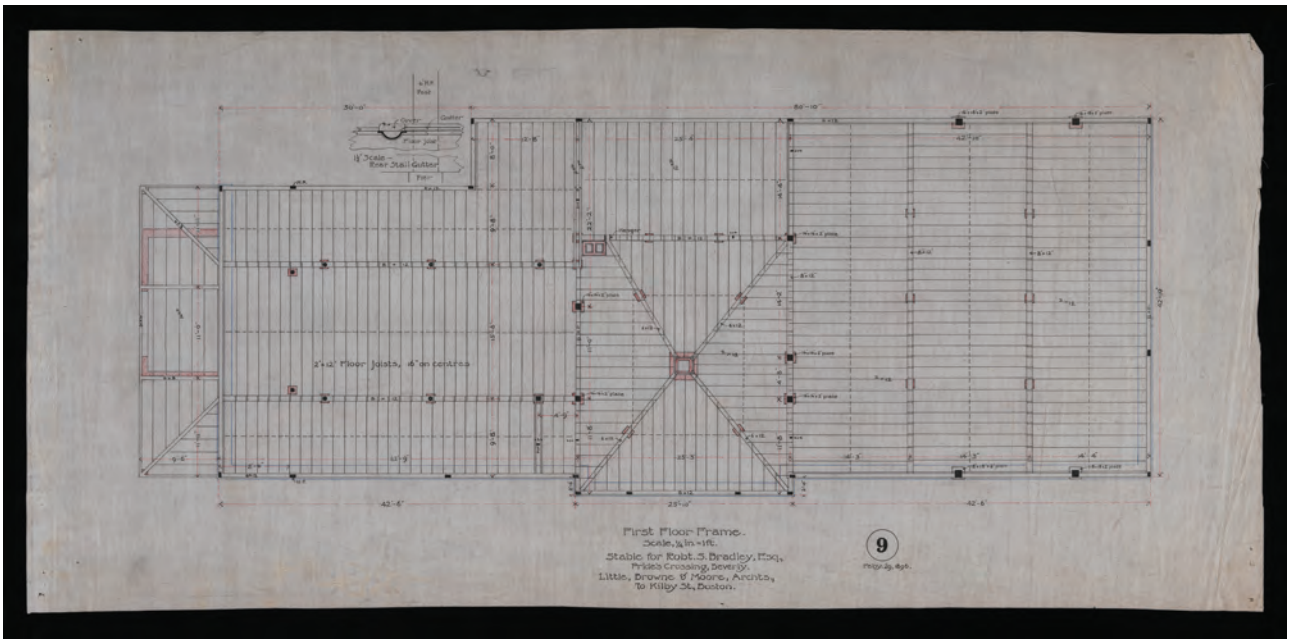
East Elevation Frame.
Scale ¼ in = 1 ft.

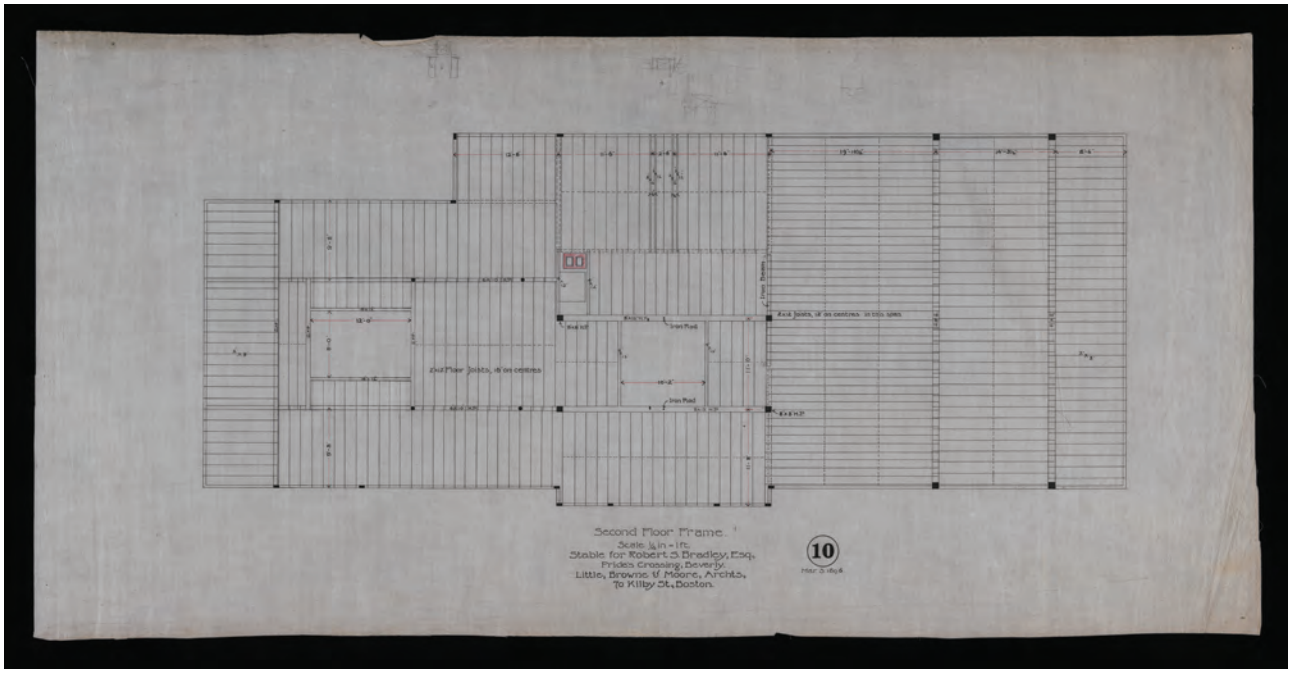
West Elevation Frame.
Scale, ¼ in = 1 ft.

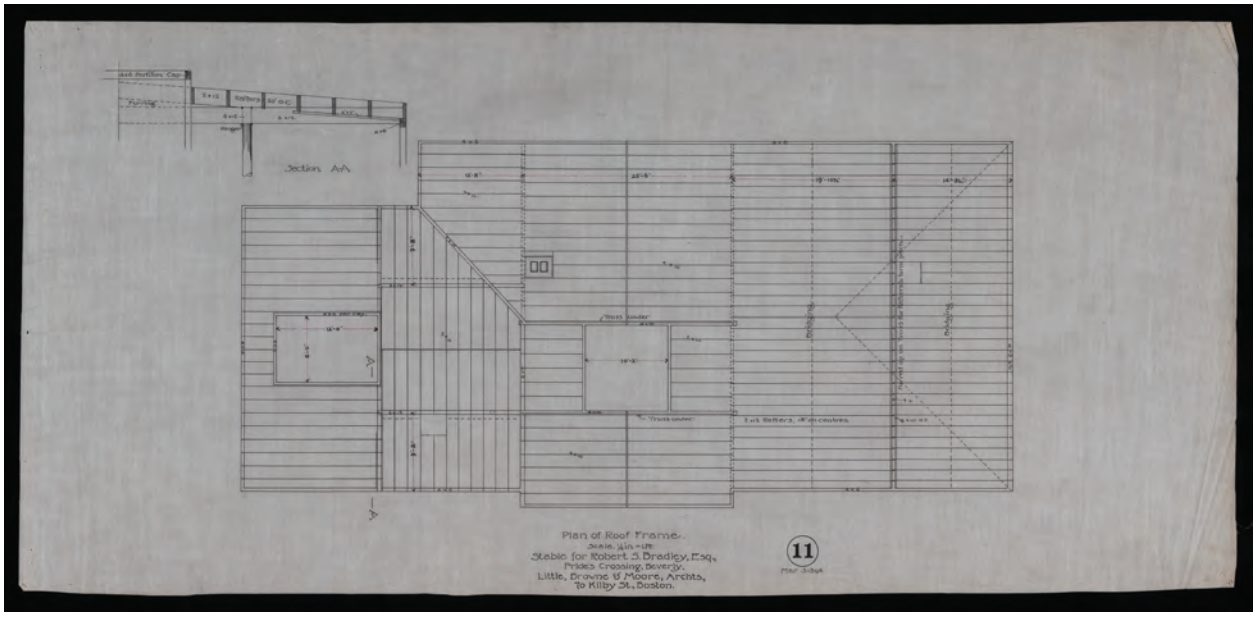
Stable for Robt. S. Bradley, Esq.,
Prides Crossing, Beverly.
Little, Browne & Moore, Archts.,
70 Kilby St., Boston.

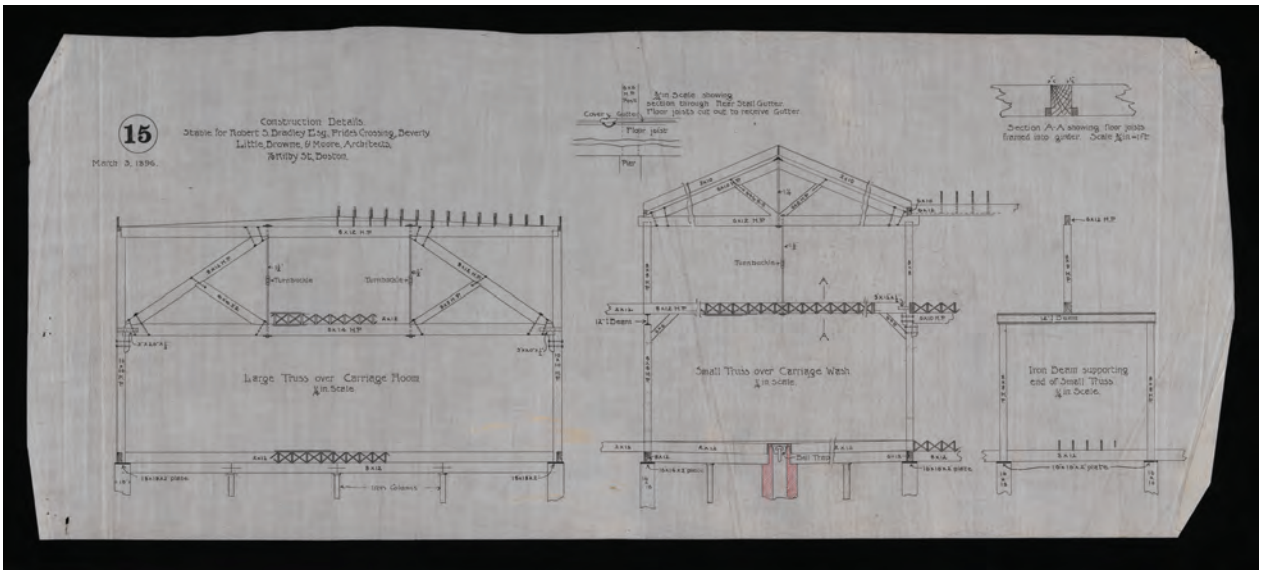
13

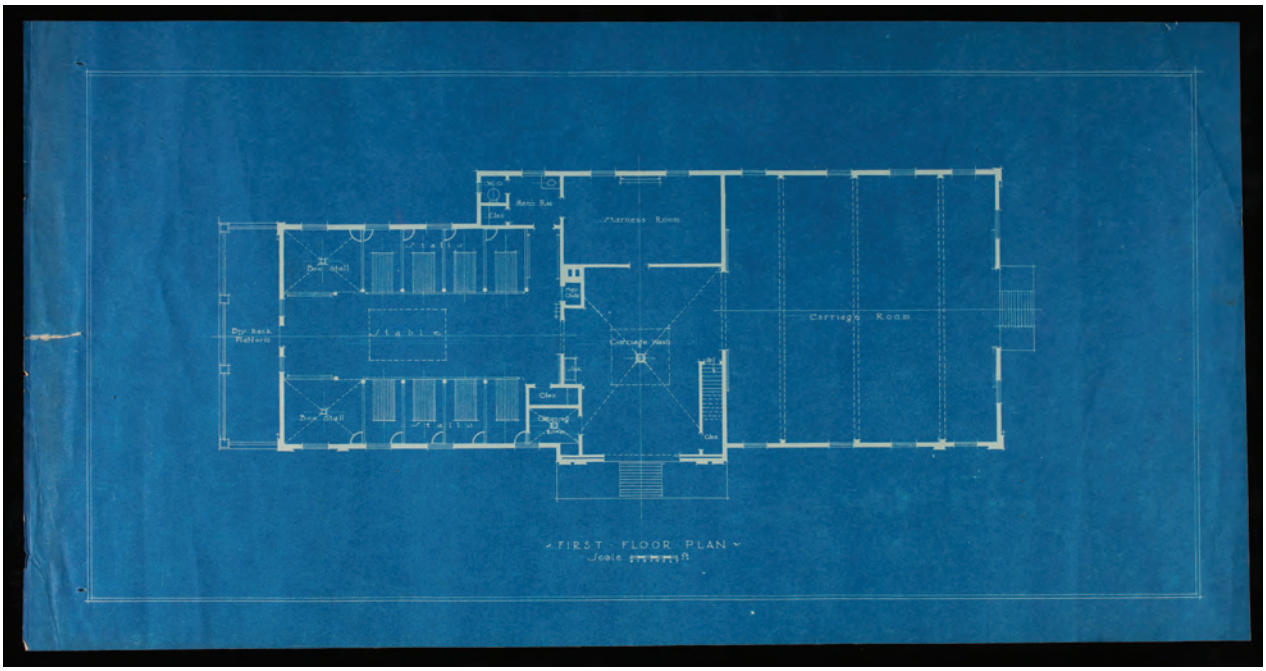
Mar 3 1896

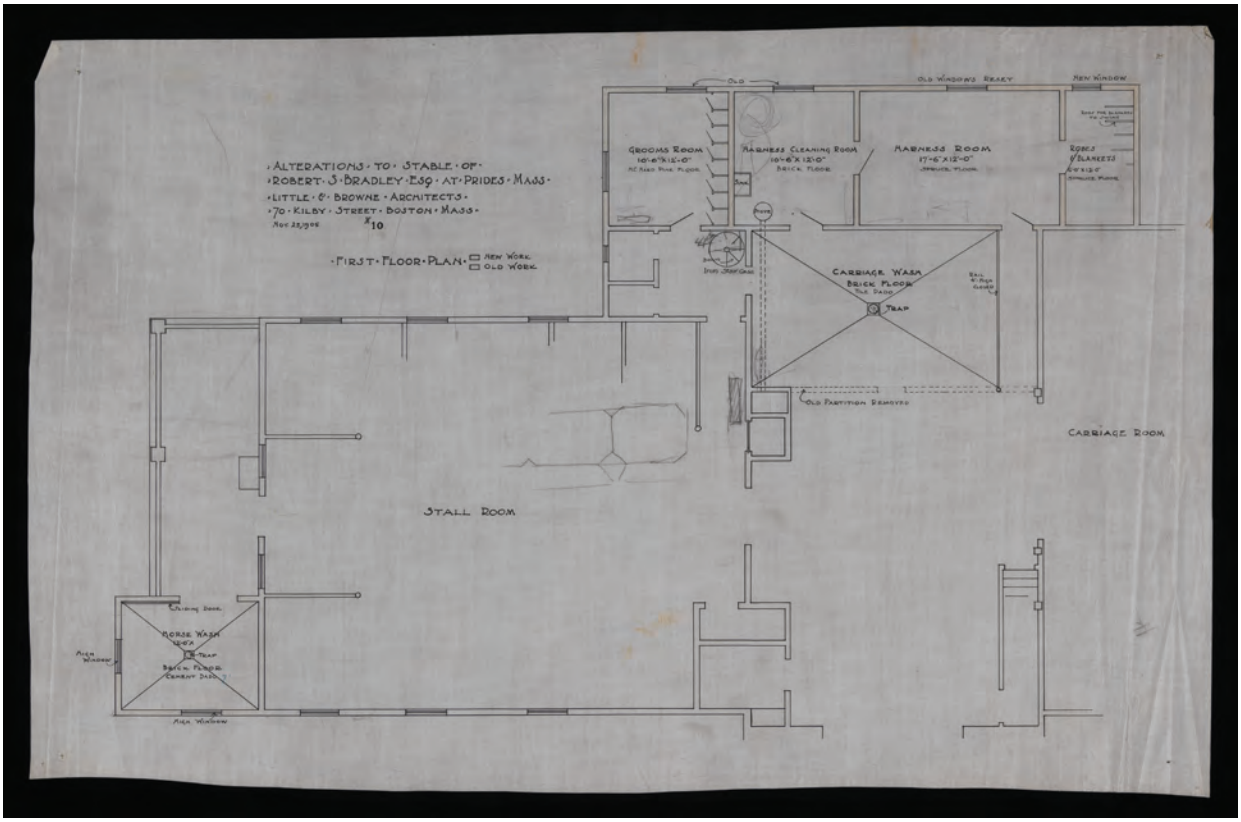

2"x12" Floor Joists, 16" on centres
Scale – Rear Stall Gutter
First Floor Frame.
Scale, ¼ in = 1ft.
Stable for Robt. S. Bradley, Esq.
Prides Crossing, Beverly.
Little, Browne & Moore, Archts.
70 Kilby St. Boston.
9

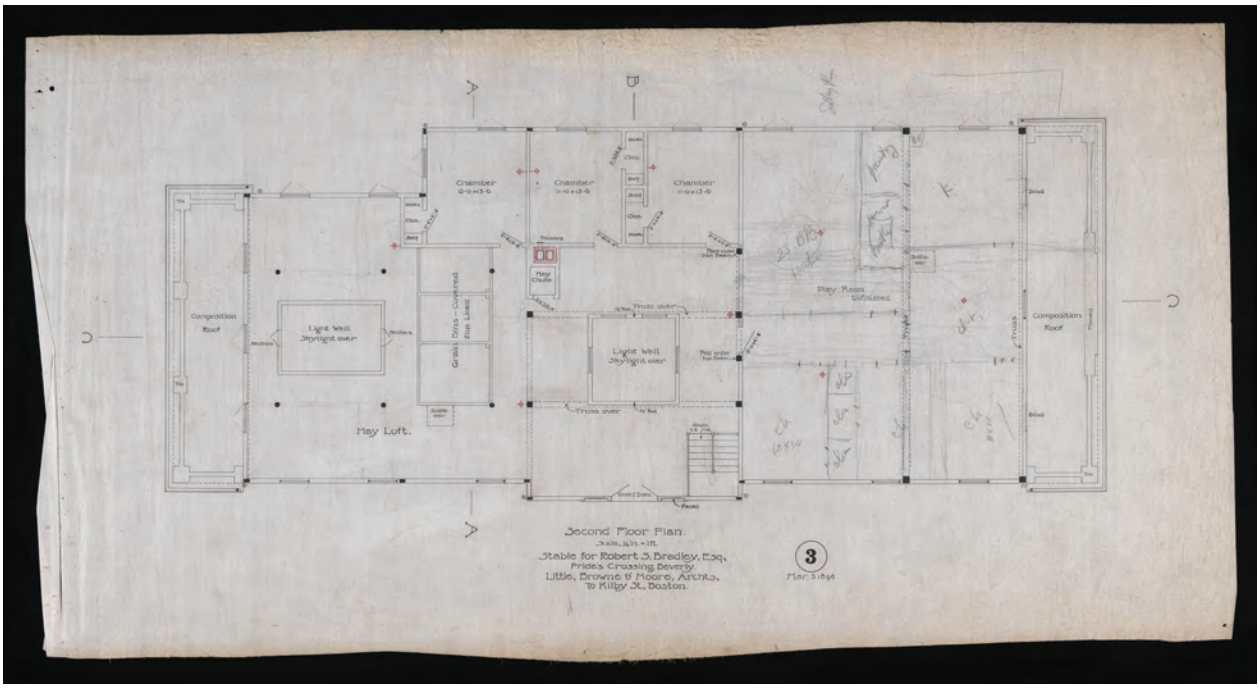

2"x12" Floor Joists, 16" on centres
Iron Post
Second Floor Frame.
Scale ¼ in = 1ft.
Stable for Robert S. Bradley, Esq.
Prides Crossing, Beverly.
Little, Browne & Moore, Archts.
70 Kilby St. Boston.
10

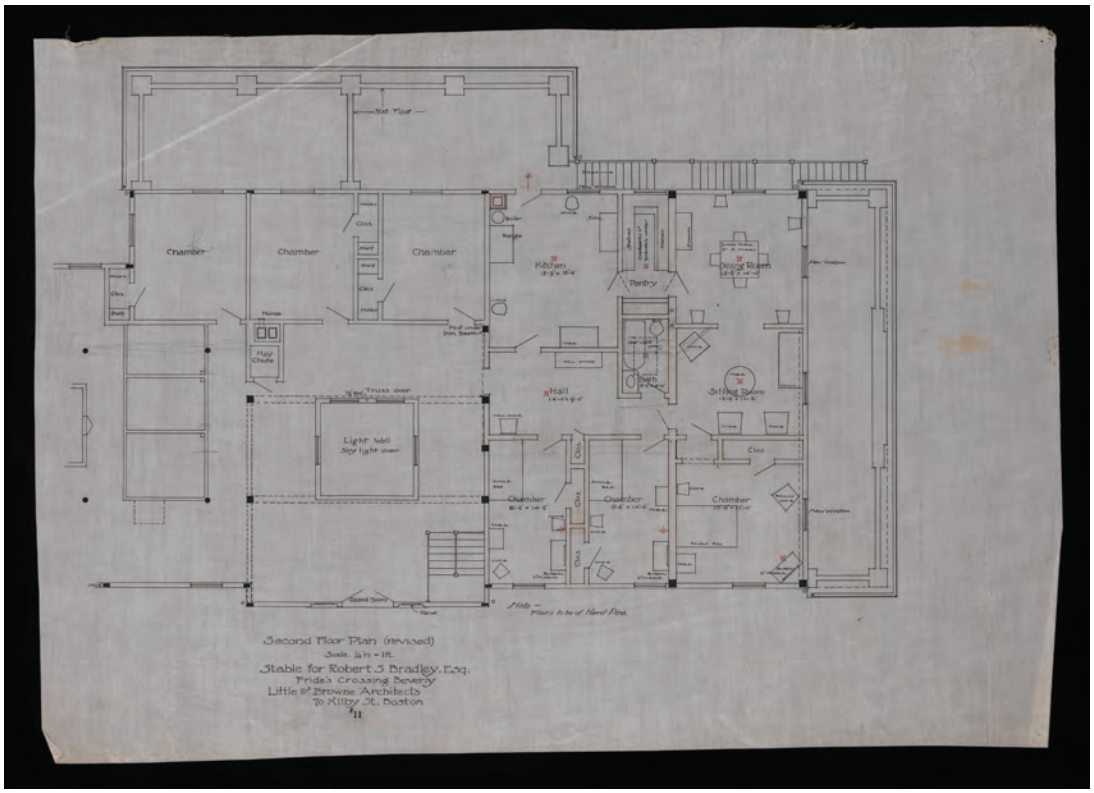

Section A-A
Plan of Roof Frame.
Scale, ¼ in = 1 ft
Stable for Robert S. Bradley, Esq.,
Prides Crossing, Beverly.
Little, Browne & Moore, Archts,
70 Kilby St., Boston.
11
Mar 3 1896

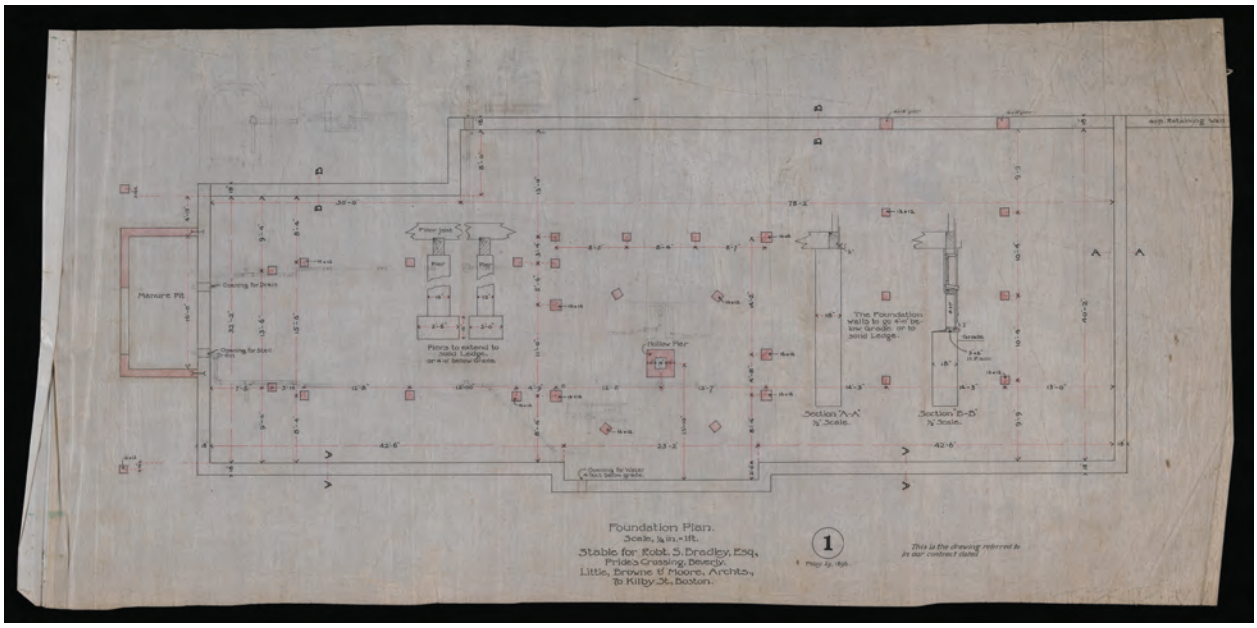

15
March 3, 1896.
Construction Details.
Stable for Robert S. Bradley Esq., Prides Crossing, Beverly
Little, Browne, & Moore, Architects,
70 Kilby St, Boston.
Large Truss over Carriage Room
½ in Scale
Small Truss over Carriage Wash
½ in Scale.
Iron Beam supporting end of Small Truss
½ in Scale.
Section A-A showing floor joists framed into girder. Scale ½ in = 1 ft
Turnbuckle
Floor joist
Pier

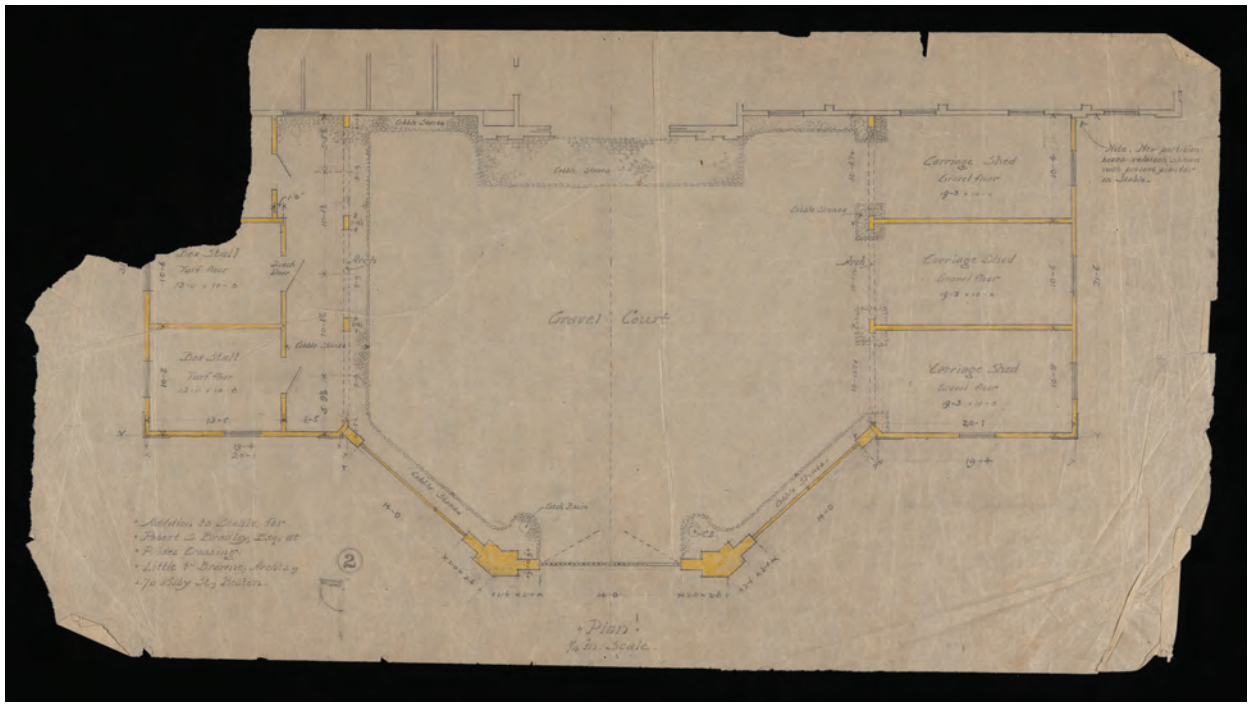

Hose Rm
Elev
Harness Room
Stalls
Box Stall
Elev
Carriage Room
Dry Rock Platform
Stable
Carriage Wash
Elev
Box Stall
Stalls
Elev
Elev
FIRST FLOOR PLAN
Scale

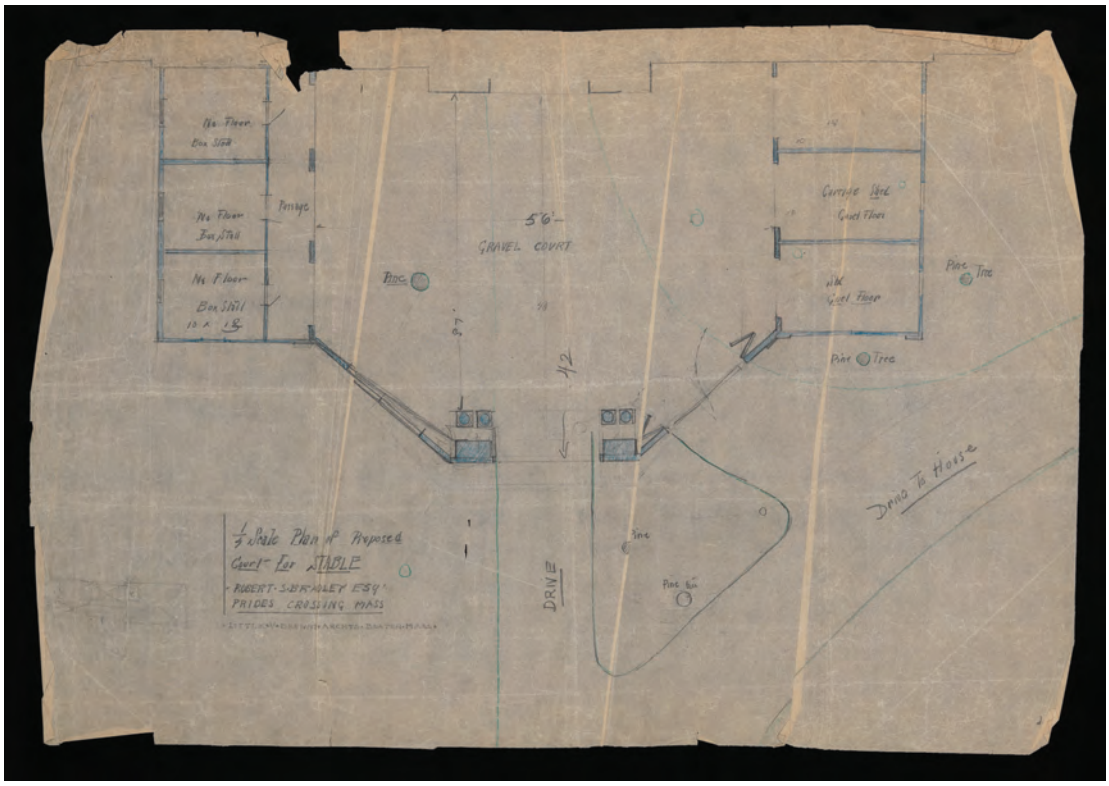

ALTERATIONS TO STABLE OF
ROBERT J. BRADLEY ESQ AT PRIDES MASS
LITTLE & BROWNE ARCHITECTS
70 KILBY STREET BOSTON MASS
Nov 23/908
10
FIRST FLOOR PLAN
NEW WORK
OLD WORK
OLD
OLD WINDOWS REMOVE
NEW WINDOW
GROOMS ROOM
10'-6"X12'-0"
HARNESS CLEANING ROOM
10'-6"X12'-0"
BRICK FLOOR
HARNESS ROOM
17'-6"X12'-0"
ROBES & BLANKETS
8'X12'-0"
Iron Floor Grate
CARRIAGE WASH
BRICK FLOOR
TRAP
OLD PARTITION REMOVED
CARRIAGE ROOM
STALL ROOM
SLIDING DOOR
HORSE WASH
TRAP
BRICK FLOOR
CEMENT DECK
HIGH WINDOW
HIGH WINDOW

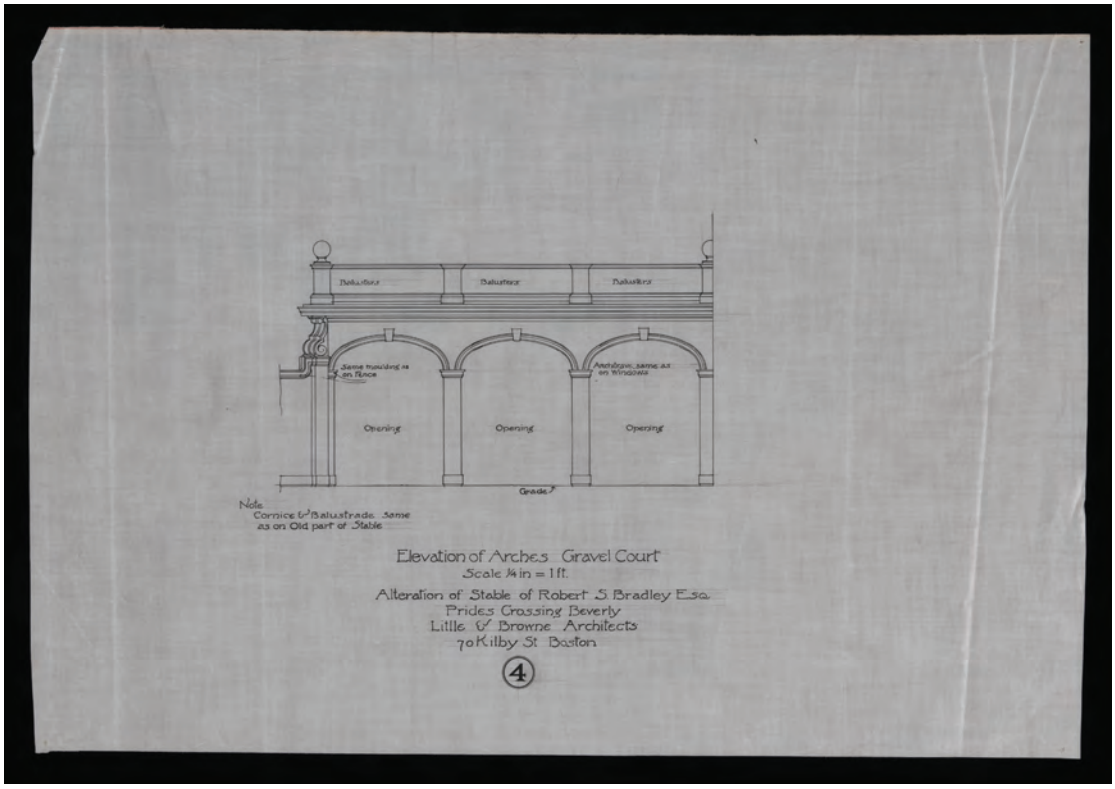

Chamber
Chamber
Chamber
Hay Chute
Play Room
Unfinished
Composition Roof
Light Well
Skylight over
Grain Bins - Covered
Fire Lines
Truss over
Light Well
Skylight over
Composition Roof
Hay Loft.
Second Floor Plan.
Scale, 1/4 in = 1ft.
Stable for Robert S. Bradley, Esq.
Prides Crossing, Beverly.
Little, Browne & Moore, Archts.
To Kilby St., Boston.
3
Mar. 5 1896

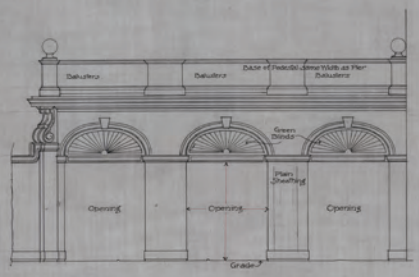

Slat Floor
Chamber
Chamber
Chamber
Kitchen
Pantry
Dining Room
Hay Chute
Truss over
Light Well
Skylight over
Hall
Sitting Room
Chamber
Chamber
Chamber
Note — Floors to be of Hard Pine.
Second Floor Plan (revised)
Scale, 1/4 in = 1ft.
Stable for Robert S. Bradley, Esq.
Prides Crossing, Beverly
Little & Browne Architects
To Kilby St. Boston
11


Foundation Plan.
Scale, ¼ in. = 1ft.
Stable for Robt. S. Bradley, Esq.,
Prides Crossing, Beverly.
Little, Browne & Moore, Archts.,
To Kilby St., Boston.
1
This is the drawing referred to in our contract dated
Manure Pit
Piers to extend to solid Ledge, or 4'-0" below Grade.
Hollow Pier
The Foundation walls to go 4'-0" below Grade, or to solid Ledge.
Section "A-A" ¼" Scale.
Section "B-B" ¼" Scale.
Grade
Opening for Drain
Opening for Steel
Opening for Water 4'-0" below Grade
40 in. Retaining Wall


Gravel Court
Carriage Shed
Gravel floor
Carriage Shed
Gravel floor
Carriage Shed
Gravel floor
Dog Stall
Turf floor
Dog Stall
Turf floor
Cobble Stones
Catch Basin
Dutch Door
Addition to Stable for
Robert S. Bradley, Esq., at
Prides Crossing.
Little Browne, Architects
70 Kilby St., Boston.
2
Plan
¼ in. Scale


56'
GRAVEL COURT
DRIVE
Pine Tree
Pine Tree
Pine Tree
Pine
Pine Tree
Drive To House
Box Stall
Box Stall
Box Stall
Carriage Hse
Coach Floor
Coach Floor
1/2 Scale Plan of Proposed
Court for STABLE
ROBERT S. BRADLEY ESQ.
PRIDES CROSSING MASS

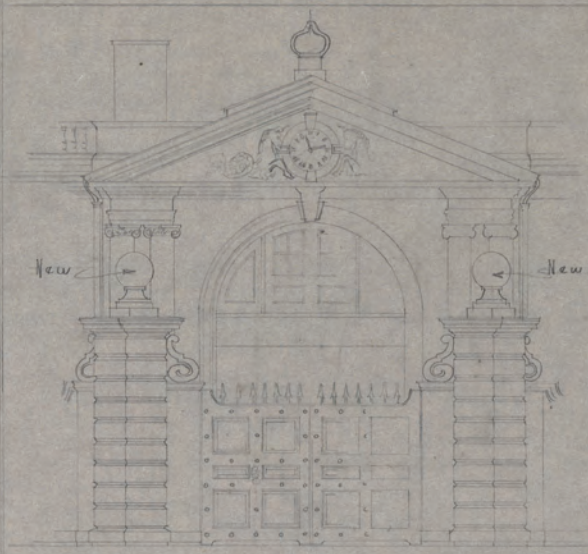

Balusters
Balusters
Balusters
Same moulding as on fence
Architrave same as on windows
Opening
Opening
Opening
Grade
Note
Cornice & Balustrade same as on Old part of Stable
Elevation of Arches Gravel Court
Scale ¼ in = 1 ft.
Alteration of Stable of Robert S. Bradley Esq.
Prides Crossing Beverly
Little & Browne Architects
70 Kilby St Boston
4



Note
Cornice & Balustrade same as on Old part of Stable

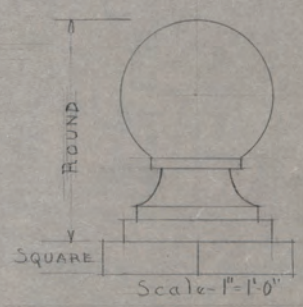
Elevation of Arches Gravel Court
Scale ¼in = 1ft.
Alteration of Stable of Robert S. Bradley Esq.
Prides Crossing Beverly
Little & Browne Architects
70 Kilby St Boston

Discarded



Scale - ½" = 1'-0"

ALTERATIONS TO STABLE OF
ROBERT S. BRADLEY ESQ.
Prides Crossing Beverly
LITTLE & BROWNE ARCH'TS
114 Federal St. Boston, Mass



Scale - 1" = 1'-0"

Structures North Consulting Engineers:
Structural Report (2009)
Plans & Specifications (2010)

www.structures-north.com

Structures North

Salem | Hartford

60 Washington St, Suite 401
Salem, Massachusetts 01970-3517
P.O. Box 01971-8560
T 978.745.6817 | F 978.745.6067

56 Arbor Street, Suite 302
Hartford, Connecticut 06106-1201
T 860.236.6817 | F 860.236.6817

January 28, 2009

Denise A. Deschamps
Lynch Park Advisory Committee
Beverly, MA
rddeschamps@comcast.net

Reference: Conditions Survey
Lynch Park Carriage House, Beverly, MA

Dear Ms. Deschamps:

Structures North Consulting Engineers, Inc. was retained to perform a conditions assessment at the 1800's carriage house at Lynch Park in Beverly. The Lynch Park Advisory Committee (LPAC) is interested in renovating the carriage house for future assembly and business uses, and is interested in the following:

- The general condition of the building overall.
- General load carrying capacities of the floors and roof.
- The possibility of removing walls, especially a particular 1st floor wall.
- Whether a basement column that appears to have been removed needs to be reinstalled.
- Some general structural implications of changing the uses of the rooms.

General Description:
The building is a 2 story, wood framed structure with an exposed basement on the west (Harbor) side, built in the late 1800's. The building was originally used for horses and carriages, with some worker living quarters on the 2nd floor. Currently the 1st floor has a general purpose meeting and art exhibition room, with wood finishes throughout the room, at the south end of the building. The north end of the 1st floor has tractor and equipment storage rooms / garages for the city of Beverly. The 2nd floor at the south and west sides had living apartments, and the north and east sides were uninhabited "attic" space. The basement is all unfinished storage space.

Conditions Survey Limitations:
On November 11, 2008 we visited the building to perform an existing conditions survey. Many of the rooms had finishes intact, and the structure in those rooms could not be observed. Very little of the roof framing could be observed in the 2nd floor residential apartment spaces, and virtually none of the 2nd floor framing could be observed. We could not find access to the roof. The northwest corner of the basement (Beachcomber Café area) was inaccessible due to locked doors. Footings could not be observed. The conditions assessments made in this report are limited only to what could be observed. Assessments are limited to visual inspection only, with the exception of taking 3 selective wood samples to determine the typical wood species used for the framing. We did not test any wood for rot damage.

At the west side, LPAC mentioned that the high tide reaches the foundation walls. It is unknown how high up the walls the sea water reaches during storms, or how much wave impacts strike the

west exterior wall. A wood framed building is not intended to resist impacting waves, and as such, we will not be evaluating the building's ability to withstand ocean, floating, or ice forces.

Conditions Survey Observations:

Visually, the observable framing looked to be in generally sound condition, with a few exceptions:

1) In the smaller west-side 2nd floor apartments the roof had leaked. The areas where water leaked in should be further investigated for rot damage. Please see photos 1, 2, and 6 in the photo appendix.
2) In the smaller west-side 2nd floor apartments, small areas of 2nd floor floor-boards had been removed exposing the 2nd floor joists. Please refer to keynote "2-2" on the attached "Exist. 2nd Floor Plan". Significant notches had been made in several of the joists to accommodate plumbing/sewer pipes. Please see photos 3 and 4 in the photo appendix. These notches would likely not meet notch criteria for modern day buildings, and these joists should be strengthened, and the plumbing relocated to a more suitable location for the framing.
3) In a few areas, it appeared the exterior wall shingles had failed. Please see photos 5, 6, and 7 in the photo appendix. These areas, along with the sheathing and framing below them, should be further investigated for rot damage. This would involve temporarily removing finishes to expose hidden conditions.
4) The stone foundation/basement walls appeared to have some locations where the mortar has eroded away. Please see photos 8 and 9 in the photo appendix. Further investigation should be performed to evaluate the extent of mortar repointing required to address failed mortar joints, especially given the potential for sea water to wash through the wall.
5) Some of the brick piers in the basement appeared to have been damaged by rising dampness. Please see photos 10 and 11 in the photo appendix. These piers should be replaced with new exterior grade brick piers, or concrete piers, or with galvanized steel columns. The beams these piers support would need to be temporarily shored, and if there is not an existing footing, and new one would be needed.

Analysis of Existing Framing:

Where existing framing could be observed, and the framing measured, selected framing members were analyzed to determine their performance under anticipated loads, using loads specified in the current edition of the Massachusetts State Building Code. Our analysis is based on representative framing members, not all members were evaluated, in order to quickly and economically determine the approximate load carrying capacity of floors and roofs. For the analysis, the framing is presumed to be in sound structural condition, with any repairs due to rot, notches, rising damp, etc. already made. The sizes of mortise and tenon type connections could not be determined, and were not evaluated. The attached "Framing Analysis Results Table" describes the results of our analysis. The results are summarized as follows:

- 1st floor: Replace the existing heavy tile floors with lighter wood sleeper floors where possible. Joists and columns/piers are typically adequate, but several beams are overstressed, especially if the 2nd floor becomes occupied space, and will need additional columns and footing supporting them. Some beams are overstressed even under the lightest possible loading conditions, when the 2nd floor is uninhabited, and the 1st floor has the existing heavy tile floors replaced.

- 2nd floor: Joists are typically adequate for stresses, but will deflect (sag) more than modern code limits allow if the 2nd floor has assembly occupancies. Beams were typically unobservable, and it is unknown whether they are adequate. One truss was evaluated and found to be overstressed for any new loads beyond a 20psf "attic" load.
- Roof: Roof framing was typically adequate, except for beams supporting the center gable roof. The adequacy of the truss at the north exterior wall depends on what the truss's bottom chord is, and we were unable to observe it at our site visit.

Of particular interest to LPAC is the 1st floor area shown by keynote "1-1" on the attached "Exist. 1st Floor Plan". This area currently has what is presumed to be a terra-cotta tile floor that slopes to drains. LPAC is interested in creating a level floor in this area that was flush with the floor of the south rooms. A piece of loose tile was taken back to the office for weight and volume measurements, and was determined to have a density of approximately 138 pounds per cubic foot. It could be observed from the basement that in this area, the 1st floor framing (joists) were 6 inches lower than the framing (joists) to the south. Please refer to keynote "1-3" on the attached "Exist. 1st Floor Plan" for the location of the 6" drop in the floor framing. It appeared that the floor was dropped a uniform 6 inches, and the tiles varied in thickness to create the sloping finished surface. The existing dead load (weight) of the floor is approximately 80 pounds per square foot (psf). If the tiles were removed and replaced with a lightweight concrete leveling slab, the dead load would be approximately 69 psf. If the tiles were removed and replaced with a wood framed "sleeper floor", the dead load would be approximately 20 psf.

Also of particular interest to LPAC is whether the wall identified by keynote "1-2" on the attached "Exist. 1st Floor Plan" is a bearing wall. Not all 2nd floor framing could be observed, so we can't say with 100% certainty that it is not a bearing wall, but all indications lead us to believe that this wall is *not* a bearing wall. That being said, however, as we'll discuss in the "Impacts of Future Renovation Decisions" section below, the wall might be assisting in lateral load (wind/earthquake) resistance, and it might not be feasible to remove the wall.

Another item of interest to LPAC is the location where a basement column appeared to have been removed, based on the typical layout pattern of basement columns, as located by keynote "B-1" on the attached "Exist. Basement Plan". Based on our analysis, the column should be re-installed.

Mortise and tenon, notched, or nailed joist to beam connections need further investigation, and may need metal joist hangers to supplement connections found to be inadequate.

Impacts of Future Renovation Decisions:
LPAC provided us with a rough idea of what some of the proposed uses of various parts of the building might become in future renovations. Chapter 34 of the building code outlines what types of structural analysis to use for different renovation conditions when renovating an existing building. The amount of analysis required, and the severity of the building code's rules used in the analysis are dependant on the decisions you make about things such as: how much space you renovate, how much space is classified as a "change of use", whether you are adding weight (dead load) to the building, or whether any framing (including walls) is being removed, added, or altered. There will likely be a lot of architectural implications due to change of use of space that we'll leave to your architect, but here are some of the major structural implications that are influenced by architectural and space planning decisions:

- The biggest implication is whether the structural work will need to conform to "level 1" requirements of building code chapter 3408, or a more restrictive level, such as "level 2". Either an architect or a code consultant might need to clarify what use the existing spaces are technically classified as, as well as what percentage of floor area gets a change of use in the future proposed building layout. The percentage of floor area that has a change of use can determine whether the structural work is "level 1" or "level 2" (or higher levels). If greater than 35% or the building gets a change of use, then the building will need to use the more restrictive "level 2" (or higher) structural work. Based on our assumptions, we think you are proposing that approximately 44% of the building get a change of use, so "level 2" would be required. If you removed the portion of the 2nd floor that is currently unfinished (where the Christmas wreathes are stored) from a change of use, then we think you would be changing less than 35% of the building's use, and you would only need "level 1" structural work.
- We have assumed in our chapter 34 review that any future A-3 assembly use will have an occupancy of less than 1200 people, so that the building does not have a "restricted use" per building code chapter 3408.5.
- If the building needs "level 2" or higher work, then we will need to do a lateral load analysis. We did a rough approximation of the analysis, and there might be some problems in the short (east-west) direction with not enough lateral load resistance. This could affect desires to remove walls, as well as possibly needing to strengthen existing walls with new plywood sheathing. Regardless of whether "level 1" or "level 2" work is required, removing any walls that span in the short direction of the building could be problematic. If level 2 work is required, removing ANY walls might be problematic, and we suspect we'd need to strengthen existing walls, or possibly add new shear walls. Removing walls may also trigger the chapter 34 defined level of work to increase to higher levels.
- There are other issues that can trigger a change from "level 1" work to "level 2" work, such as rehabilitation or renovation of 50% of the total floor area of the building (or 20,000 square feet, whichever is less), or an increase in the weight of the building by 10% or more. There are also levels above level 2 that are even more restrictive, which would be required if even larger percentages of the building were to be removed or reconstructed, so the level of work required by the structural engineer is directly impacted by architectural and space planning decisions. Further structural investigation of existing framing (selectively demolishing finishes to observe framing that wasn't observable during our visit last week) may be required, but will largely be determined by what level of structural work is required by chapter 3408 of the building code.

It should also be noted that at the south end of the 2nd floor, over the meeting room that is used for art exhibitions, we suspect, but could not confirm, that there are two multi-story trusses spanning east-west that support the roof and 2nd floor. The trusses are expected to align with the dropped beams that can be seen in the meeting/exhibition room. For future renovations that turn the 2nd floor space in this area to business offices, it would be ideal to leave the 2nd floor walls that hide the trusses intact and unaltered, as altering them would have significant structural implications. These walls are identified on the attached sketch "Exist. 2nd Floor Plan" by keynote "2-1".

Conclusions and Recommendations:

Much of the structural work that would be required for future renovations depends on the extent and nature of architectural and space planning decisions made. It may be possible to convert the

2nd floor apartments to business offices with little structural implications if the existing 2nd floor walls are left unaltered or are minimally altered. Converting the uninhabited areas of the 2nd floor to habitable space appears to have significant structural implications. The 1st floor framing would benefit from replacing the existing heavy tile floor with a lighter wood sleeper floor, but there are beams that will still be overstressed and will require additional basement columns and footings to support them if the 1st floor is to be converted to assembly space. The roof appears to generally be adequate with the exception of the gable roof support beams, which may need strengthening. Mortar joints in the stone foundation walls will likely need repointing, but will need further investigation to determine the scope of work required. Most of the existing wood framing is in generally sound condition with the exception of some framing that was cut for plumbing pipes and some potentially localized rot damaged areas. Some existing brick piers in the basement will need to be replaced due to damage from rising damp. Joist connections require further investigation, and may need metal joist hangers.

We trust that the preceding information will be useful in understanding the condition of the carriage house at Lynch Park and in establishing the scope of work required to renovate and change uses in the building in the future. Please contact us if you have any questions or comments.

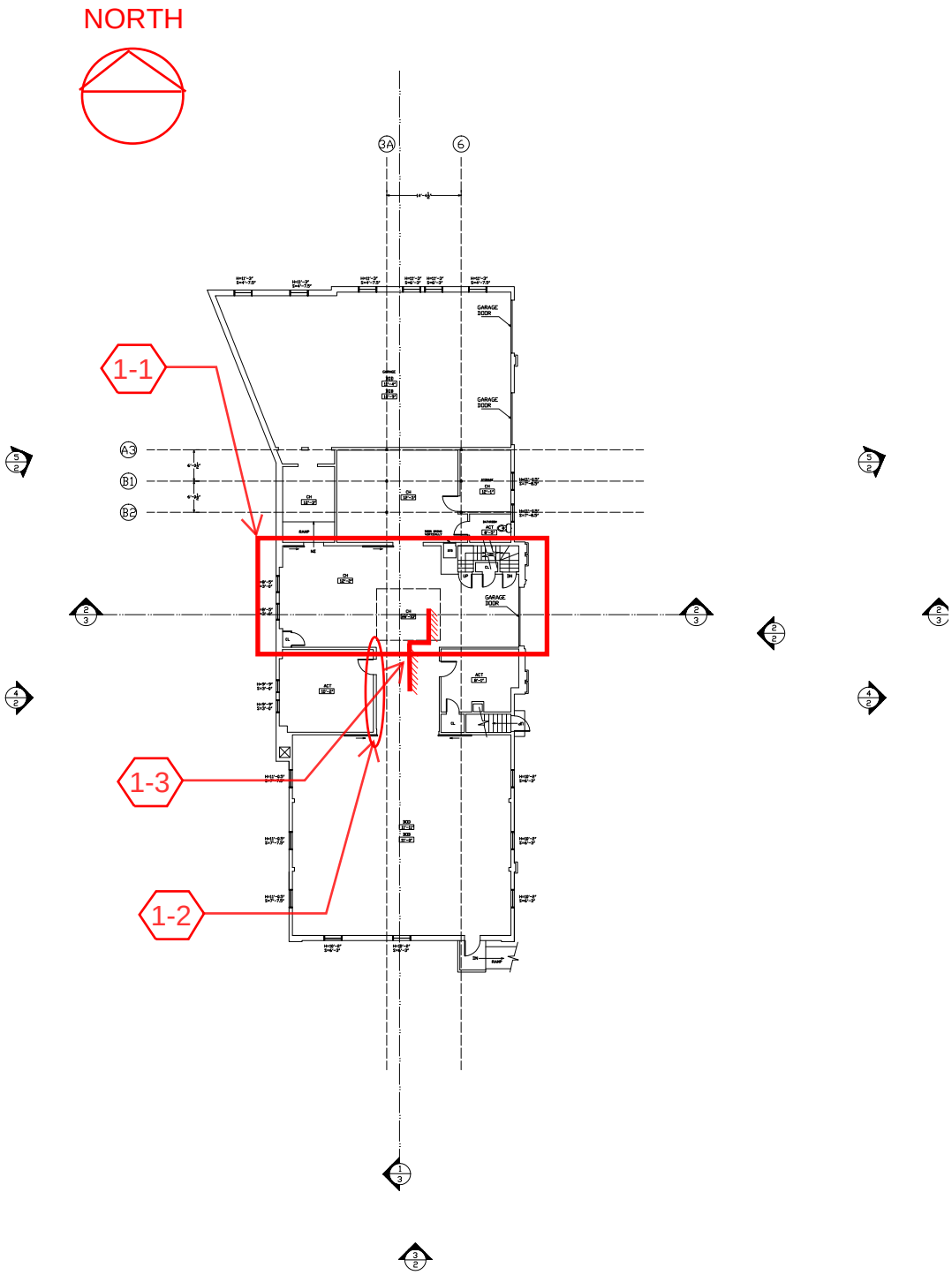
Respectfully Yours,
Structures North Consulting Engineers, Inc.

Jefferey J. Reese, PE

Attachments:
- "Framing Analysis Results Table"
- Sketches:
    - "Exist. Basement Plan"
    - "Exist. 1st Floor Plan"
    - "Exist. 2nd Floor Plan"
- Photo Appendix (5 pages)

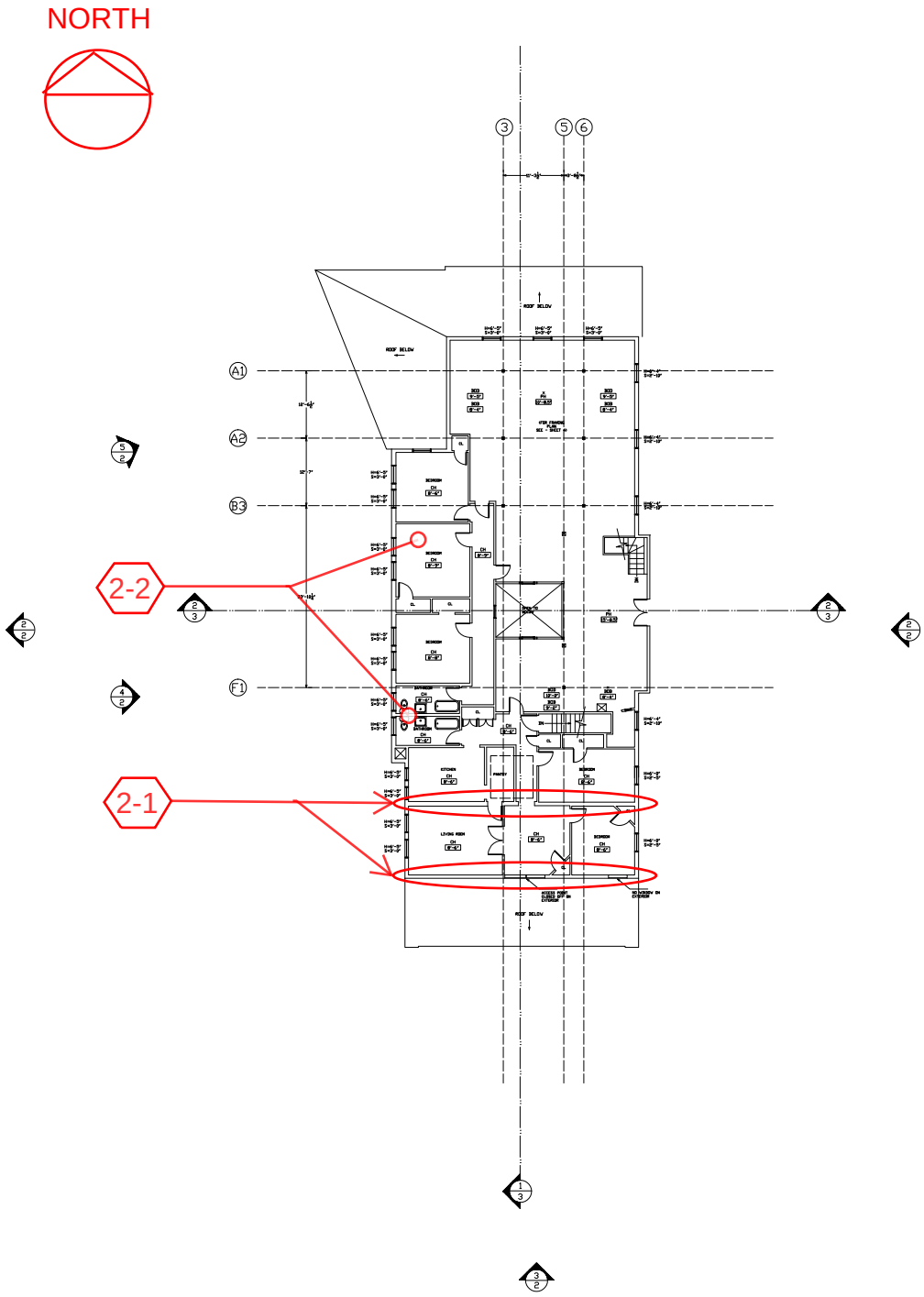
Framing Analysis Results Table

framing level	general location	framing type	engineer's calculation ID	analysis results
1st floor	center of building (area LPAC is interested in)	joist	1J-1	with 100psf assembly live load, joists are OK for all floor finish conditions (exist tile, new concrete leveling, and wood sleeper floor)
"	"	beam	1B-1	**In its existing condition with tile floor it is approximately 8% overstressed when a 100psf live load is applied**. This could be corrected by replacing the tile flooring with something lighter. Existing LL capacity is approx. 88 psf.
"	"	beam	1B-2	**In its existing condition with tile floor it is approximately 23% overstressed when a 100psf live load is applied.** This could be corrected by replacing the tile flooring with a wood sleeper floor, **but not with a concrete leveling slab. Existing LL capacity is approx. 67 psf.**
"	"	beam	1B-5	**Analysis is complicated by the beam supporting both 1st and 2nd floor loads, however, under the lightest possible 2nd floor loading (20psf "attic" live load) combined with the lightest possible 1st floor dead load (20psf wood sleeper floor) and a 100psf 1st floor assembly live load, the beam is still overstressed by more than 29%. The beam will require strengthening either by A) additional columns and column footings to reduce its span or B) sistering of beam with new framing, involving shoring all joist ends, cutting the joists, installing the beam sisters, and reconnecting the joists to the beams with new hangers.**
"	"	beam	1B-6	**similar to 1B-5,** but beam is OK if a 20psf 2nd floor "attic" live load is used in combination with replacing the 1st floor tile with a 20psf wood sleeper floor system
"	"	beam	1B-7	**beam is overstressed by more than 100% in all cases. The beam will require strengthening either by A) additional columns and column footings to reduce its span or B) sistering of beam with new framing, involving shoring all joist ends, cutting the joists, installing the beam sisters, and reconnecting the joists to the beams with new hangers.**
"	"	column/post/pier	1P-1	column is OK in all cases
"	"	column/post/pier	1P-2	column is OK in all cases
"	"	column/post/pier	1P-3	column is OK in all cases
"	"	column/post/pier	1P-4	column is OK in all cases
"	"	column/post/pier	1P-5	column is OK in all cases
"	north end of building	joist	1J-3	with 100psf assembly live load, joists are OK for all floor finish conditions (exist tile, new concrete leveling, and wood sleeper floor)
"	"	beam	1B-8	**beam is overstressed by more than 80% in all cases. The beam will require strengthening either by A) additional columns and column footings to reduce its span or B) sistering of beam with new framing, involving shoring all joist ends, cutting the joists, installing the beam sisters, and reconnecting the joists to the beams with new hangers.**
"	"	beam	1B-9	**similar to 1B-1**
"	"	beam	1B-10	**with 100psf assembly live load, beam is only OK if a wood sleeper floor replaces the existing tile flooring. With the existing tile flooring, the beam is overstressed by approx. 29%, and with a lightweight concrete leveling slab it would still be overstressed by approx. 21%**
"	south end of building	joist	1J-4	OK for 100psf assembly live loads and existing wood floor
2nd floor	center of building	joist	2J-1	OK for 50psf business offices, **exceed deflection limits for 100psf assembly live loads**
"	"	joist	2J-2	OK for 50psf business offices, **exceed deflection limits for 100psf assembly live loads**
"	"	multi-floor truss	TRUSS-2	OK for 20psf "attic" loads, **but 16% overstressed for 50psf business offices and 99% overstressed for 100[sf assembly loads**
roof	north end of building	joist	RJ-1	OK for anticipated loads
"	"	beam	RB-1	OK for anticipated loads
"	"	multi-floor truss	TRUSS-1	**Unable to observe what bottom chord of truss was. If it is the same as the top chord, then the bottom chord is 110% overstressed even with only a 20psf "attic" load.**
"	center of building	rafter	RR-1	OK for anticipated loads
"	"	beam	RB-2	**110% overstressed**



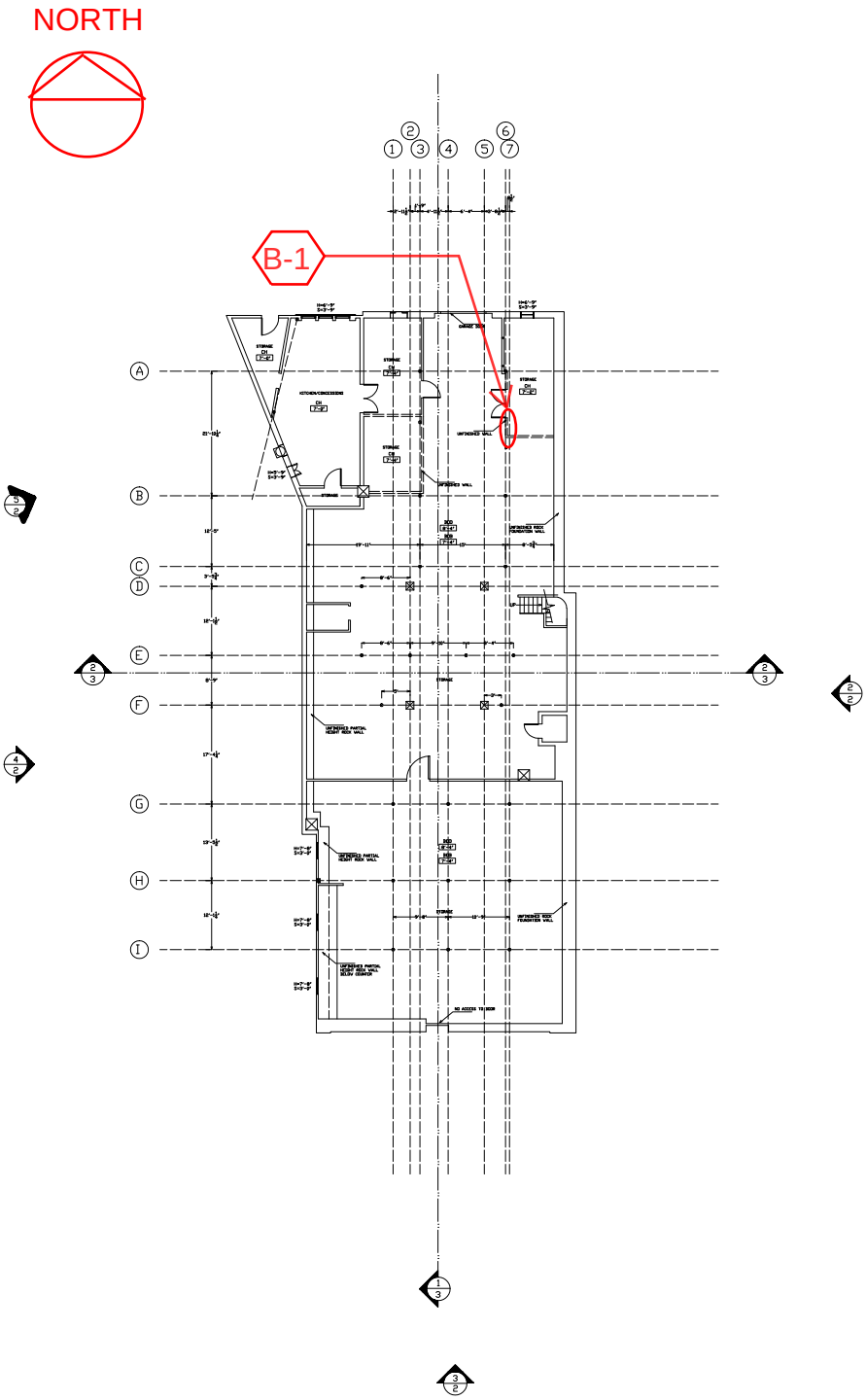
1 EXISTING FIRST FLOOR PLAN

LYNCH PARK CARRIAGE HOUSE, BEVERLY, MA
CONDITIONS SURVEY REPORT
JANUARY 28, 2009



2 EXISTING SECOND FLOOR PLAN

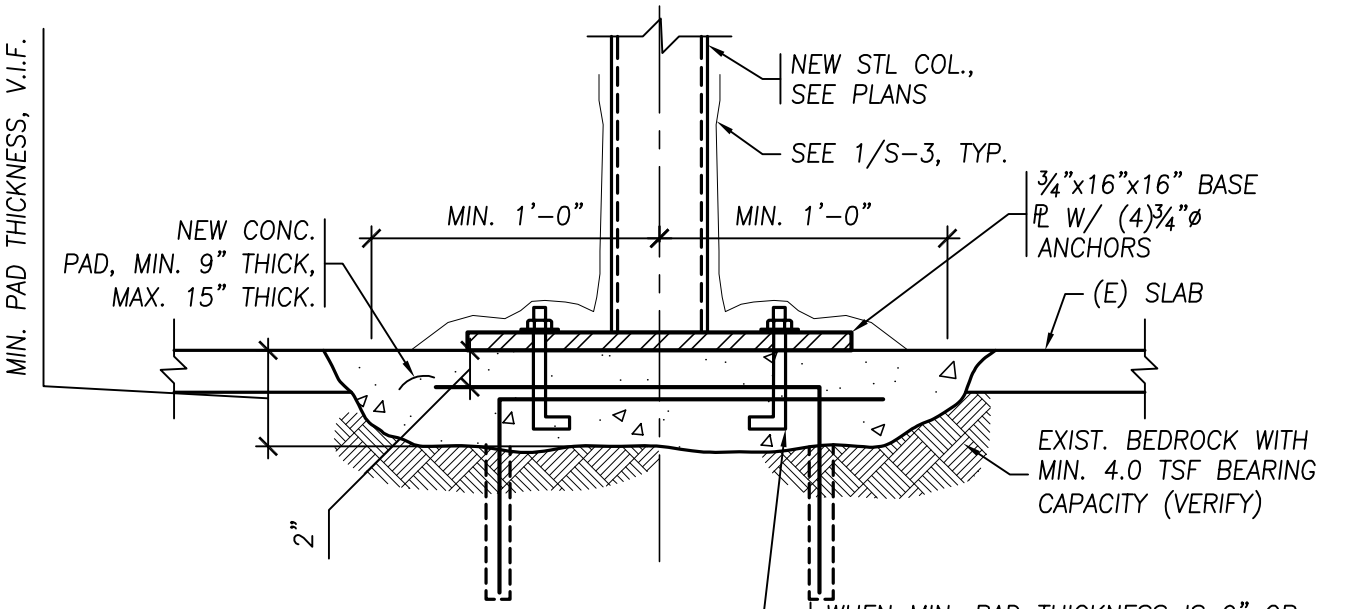
LYNCH PARK CARRIAGE HOUSE, BEVERLY, MA
CONDITIONS SURVEY REPORT
JANUARY 28, 2009



B EXISTING BASEMENT FLOOR PLAN

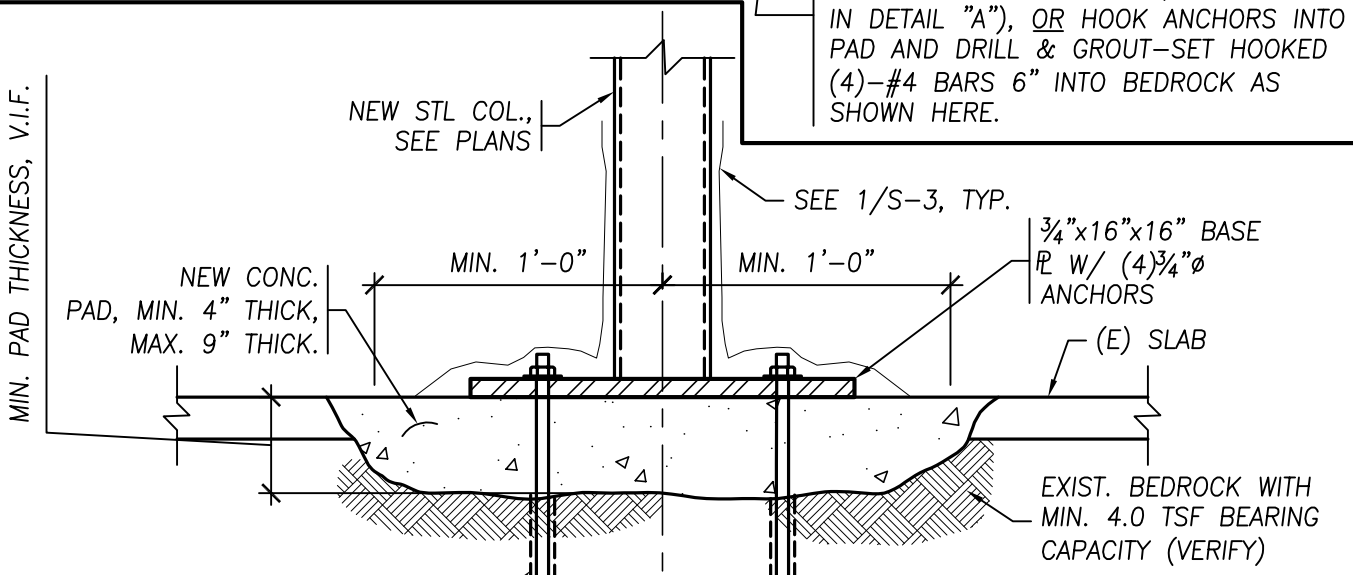
LYNCH PARK CARRIAGE HOUSE, BEVERLY, MA
CONDITIONS SURVEY REPORT
JANUARY 28, 2009

NOTE: USE ORIGINAL DETAIL 1/S-3 IF BEDROCK/LEDGE NOT ENCOUNTERED WITHIN 15" OF TOP OF SLAB. SEE DETAIL 1/S-3 FOR ADD'L INFO. NOT REPEATED HERE. USE DETAIL "A" WHEN MIN. PAD THICKNESS IS LESS THAN 9". USE DETAIL "B" WHEN MIN. PAD THICKNESS IS GREATER THAN OR EQUAL TO 9".



DETAIL "B"

WHEN MIN. PAD THICKNESS IS 9" OR THICKER, EITHER DRILL & GROUT-SET ANCHORS INTO BEDROCK (AS SHOWN IN DETAIL "A"), OR HOOK ANCHORS INTO PAD AND DRILL & GROUT-SET HOOKED (4)-#4 BARS 6" INTO BEDROCK AS SHOWN HERE.



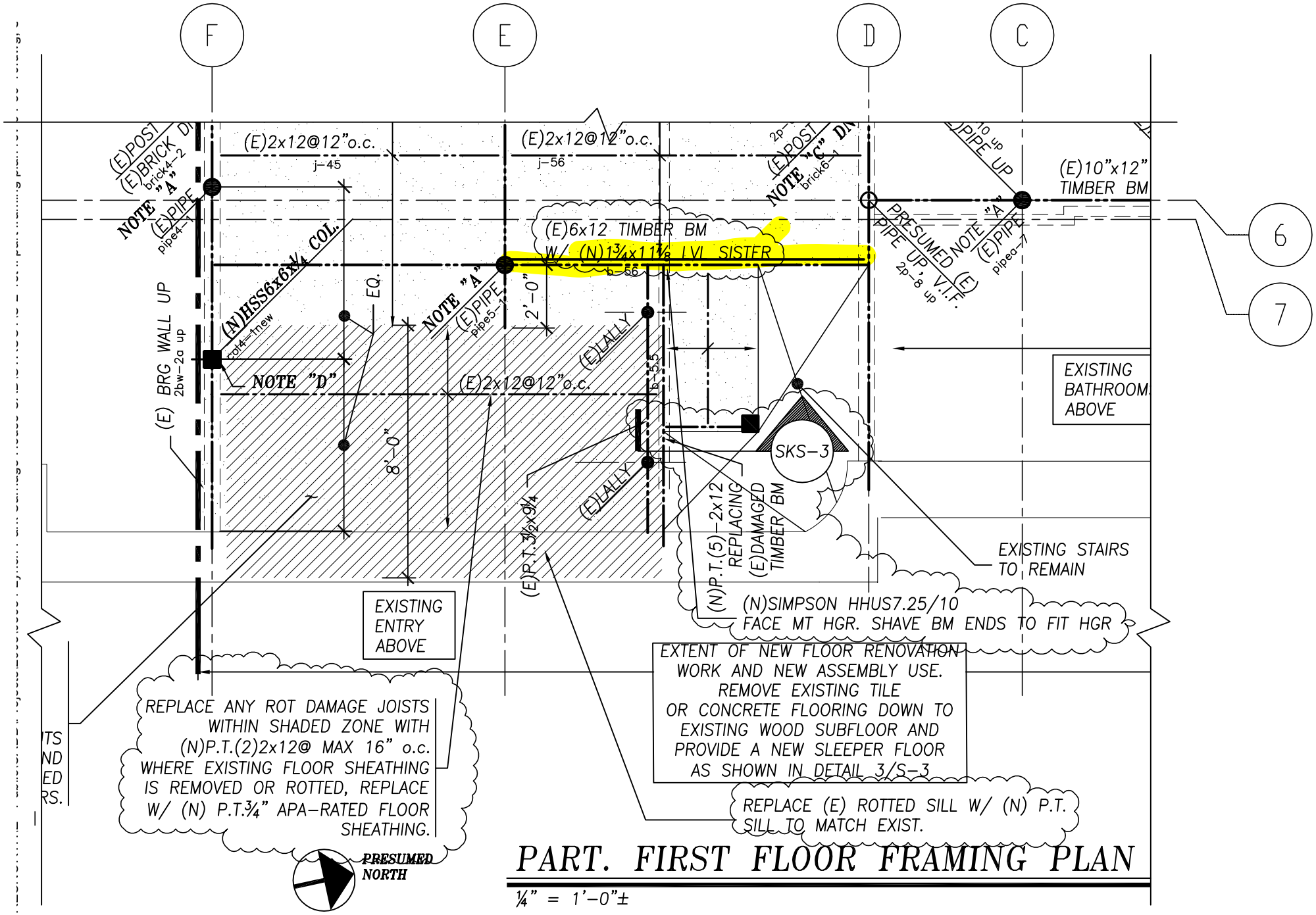
WHEN MIN. PAD THICKNESS IS LESS THAN 9", DRILL & GROUT-SET ANCHORS 6" INTO BEDROCK AS SHOWN HERE.

DETAIL "A"

SKS-1 SECTION
1½" = 1'-0"

Structures North
CONSULTING ENGINEERS, INC.
60 Washington St., Suite 401
Salem, MA. 01970-3517
T 978.745.6817 I F 978.745.6067
www.structures-north.com

JOB NAME: LYNCH PARK CARRIAGE HOUSE	
DRAWN BY: JJR	**CHECKED BY:** JJR
SCALE: AS NOTED	**DATE:** 04/13/10
COLUMN BEARING PAD ON BEDROCK LEDGE	**SKS-1**



PART. FIRST FLOOR FRAMING PLAN

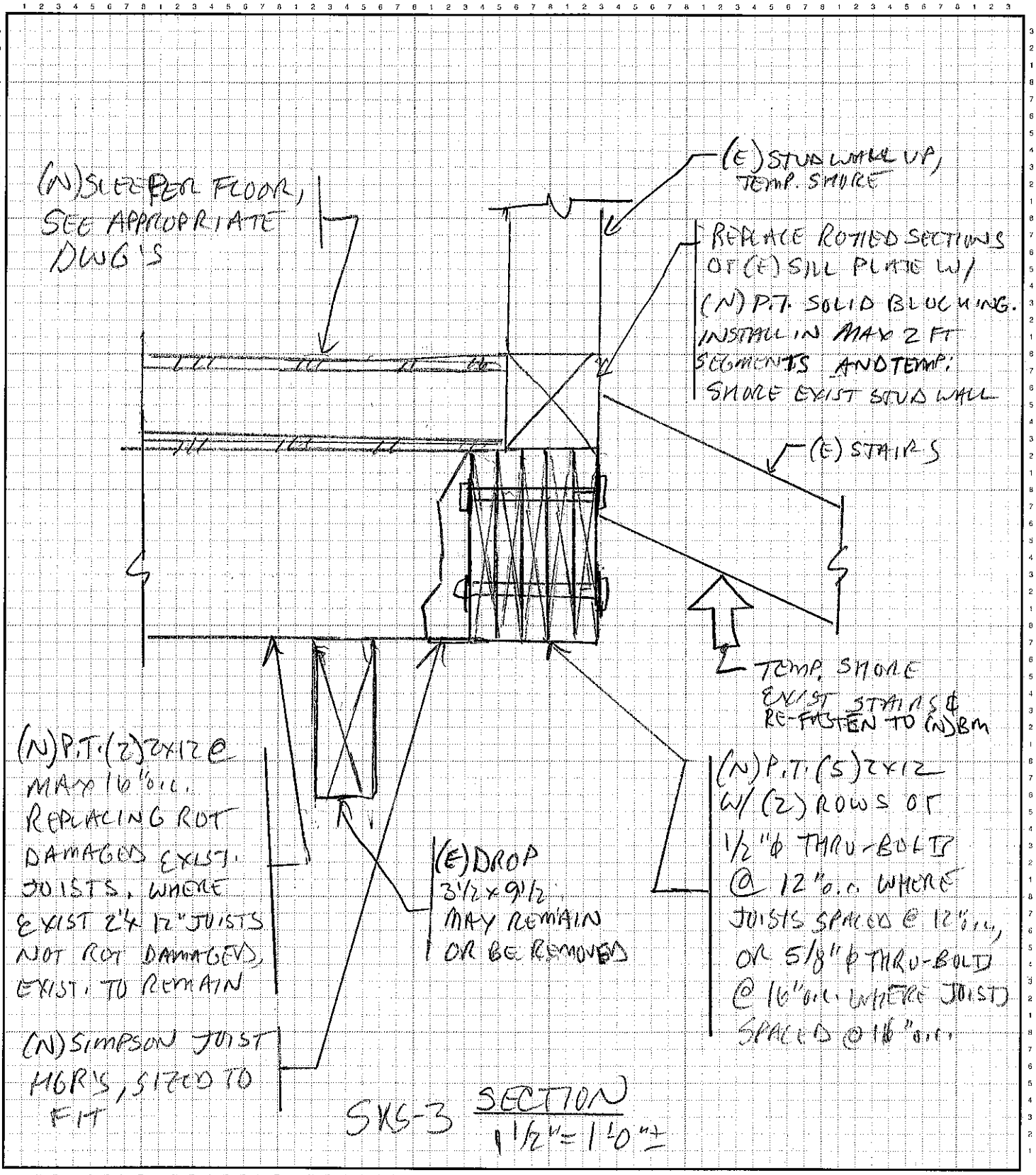
¼" = 1'-0"±

SKS-2 PART. 1ST FLOOR FRAMING
LYNCH PARK CARRIAGE HOUSE

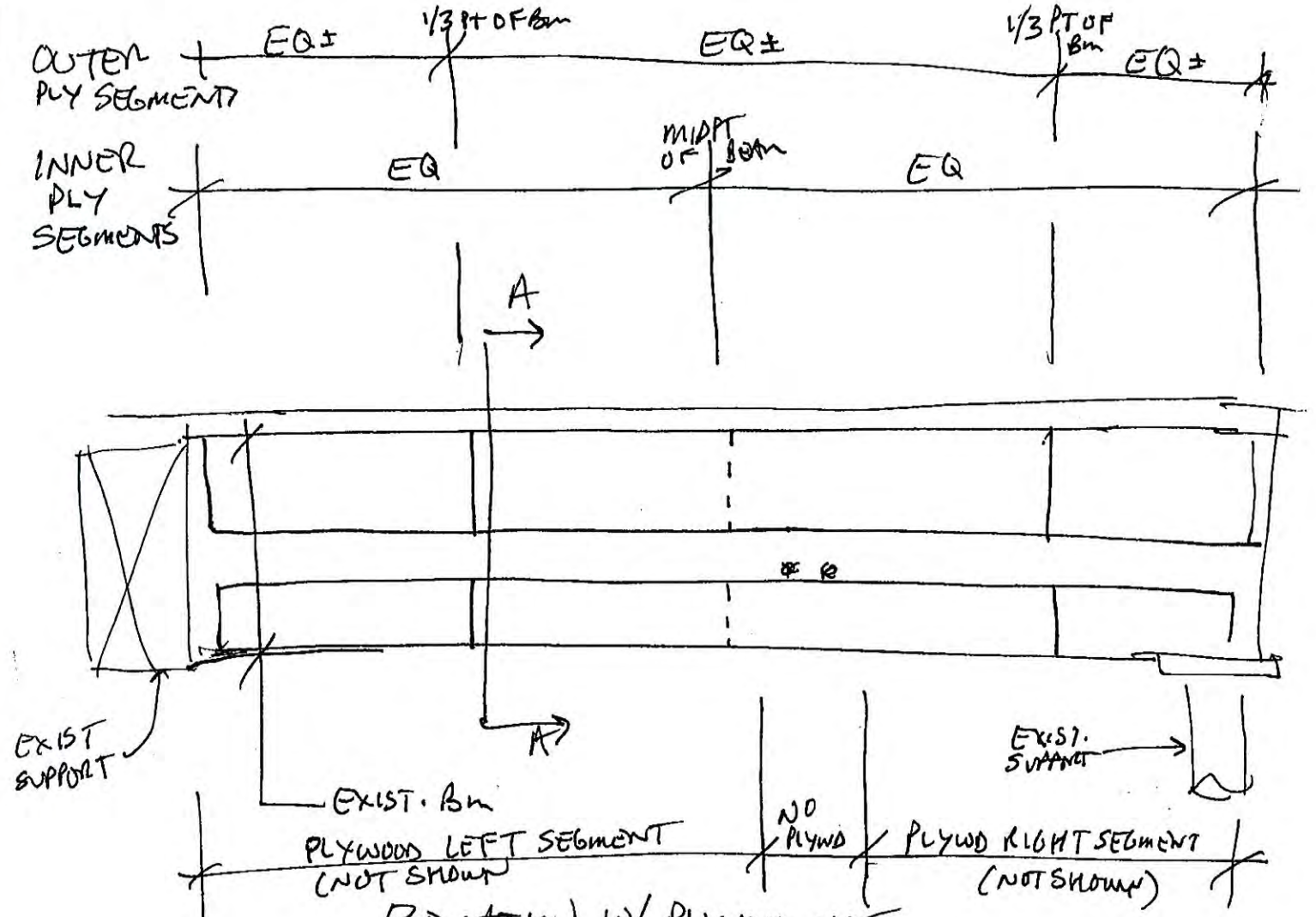
APRIL 30, 2010

STRUCTURES NORTH
CONSULTING ENGINEERS, INC.
P.O. BOX 8560, SALEM, MA 01971
PH 978 . 745.6817 FAX 978 . 745.8067
WWW . STRUCTURES - NORTH . COM

JOB LYNCH PARK CARRIAGE HOUSE
SHEET NO. SKS-3 OF
CALCULATED BY DATE 4/30/10
CHECKED BY DATE
SCALE 1 1/2" = 1'-0" ±

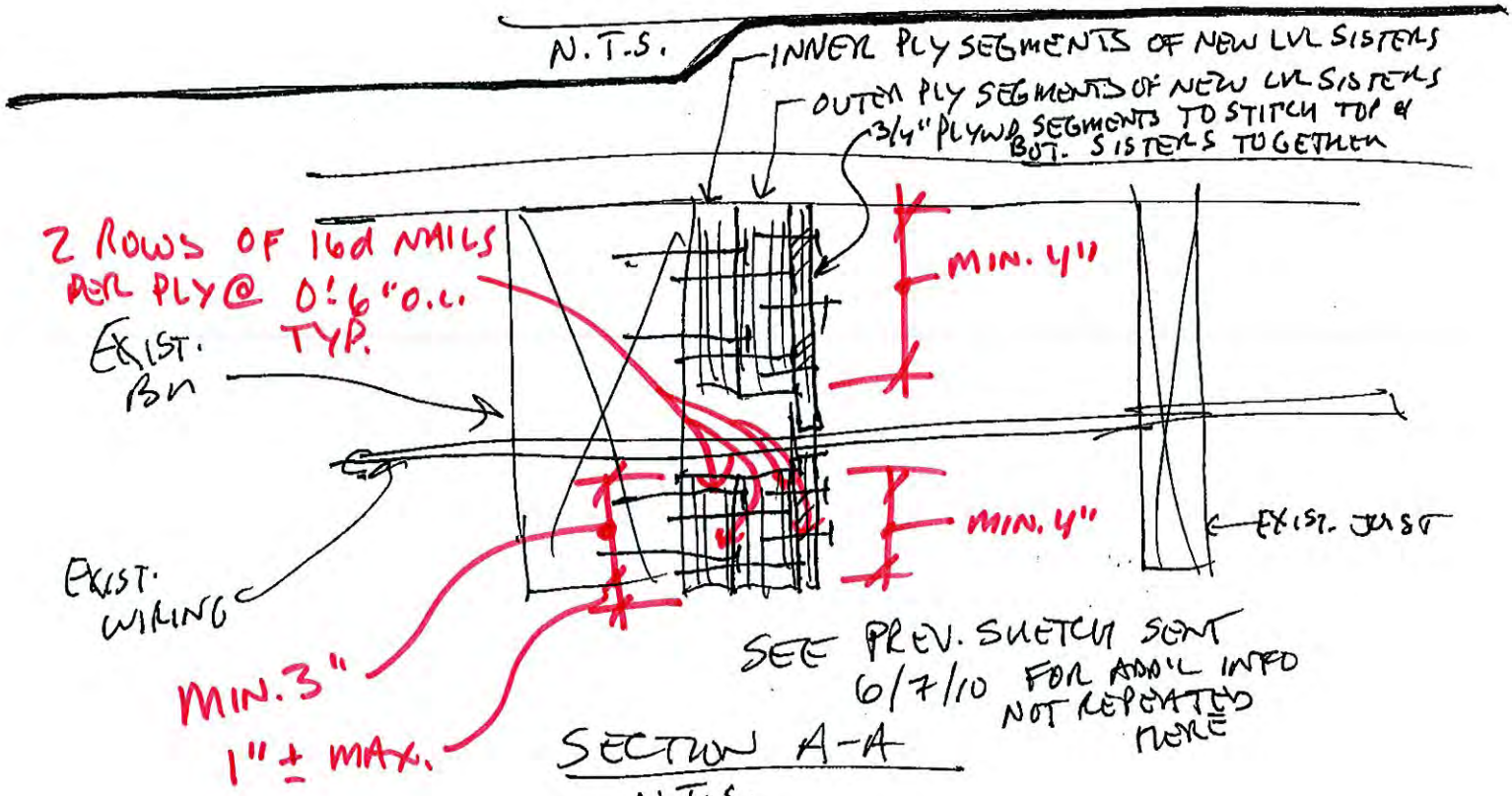


SKS-3 SECTION
1 1/2" = 1'-0" ±



ELEVATION W/ PLYWOOD NOT SHOWN TO CLARIFY SISTERING

N.T.S.



SEE PREV. SKETCH SENT 6/7/10 FOR ADD'L INFO NOT REPEATED HERE

SECTION A-A

N.T.S.

GENERAL

G1. WORK SHALL CONFORM TO THE REQUIREMENTS OF THE COMMONWEALTH OF MASSACHUSETTS STATE BUILDING CODE.

G2. CONTRACTOR IS TO EXAMINE EXISTING ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL CONDITIONS FOR VERIFICATION OF LOCATION AND DIMENSIONS OF OTHER PROJECT REQUIREMENTS NOT SHOWN ON THE FRAMING PLANS. CONTRACTOR SHALL COORDINATE ALL NON–STRUCTURAL ITEMS AND TRADES WITH THE OWNERS.

G3. CONTRACTOR SHALL VERIFY & COORDINATE ALL DIMENSIONS ON THE JOB.

G4. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MAINTAINING THE SAFETY AND STABILITY OF THE STRUCTURE AND ALL ADJACENT STRUCTURES DURING ALL PHASES OF THE WORK, AND SHALL CORRECT ANY DEFECTS OR DAMAGE WHICH RESULTS FROM HIS ACTIONS. PROTECT ALL FINISHES TO REMAIN DURING CONSTRUCTION.

TEMPORARY SHORING AND BRACING

B1. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL MEANS AND METHODS OF CONSTRUCTION EMPLOYED ON THIS PROJECT, AND FOR ALL TEMPORARY BRACING, SUPPORT, AND PROTECTION OF THE EXISTING STRUCTURE. PROVIDE AND INSTALL SHORING DESIGNED TO SUPPORT THE TEMPORARY STRUCTURAL LOADS OF THE SUPPORTED ITEMS. SUBMIT SHORING PRODUCTS, CONFIGURATION, PROCEDURE, AND DESIGN CALCULATIONS STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER TO THE OWNERS FOR HEIR REVIEW.

B2. SHORING SHALL BE OF ANY MATERIAL THAT IS SUITABLE FOR THE APPLICATION. TIMBER SHORING SHALL BE FULLY DRIED AND ALL END GRAIN SHALL BE SEALED TO PREVENT ABSORPTION OF WATER AND ASSOCIATED SWELLING. SHORING SHALL BE MADE STABLE, STIFF, AND SNUG FITTING SO AS NOT TO DEFLECT UNDER LOAD. PRE LOAD SUPPORTED ELEMENTS FOR SNUG FIT ONLY. SHORING SHALL DEFLECT NO MORE THAN THE GIVEN SPAN LENGTH DIVIDED BY 600.

B3. BEARING SURFACES OF SHORING SHALL BE REVIEWED WITH OWNERS IN FIELD AND SHALL PROVIDE FOR PROPER TRANSFER OF LOADS TO SUPPORTING AND SUPPORTED ELEMENTS.

STRUCTURAL DISMANTLING

DM1. PROVIDE FOR THE UNINTERRUPTED SAFETY OF WORKERS AND OCCUPANTS AS WELL AS ADJACENT STRUCTURES DURING ALL PHASES OF THE WORK. PROVIDE WARNING SIGNS, AND BARRICADES AS REQUIRED TO MAINTAIN A SEPARATED, SAFE, SECURE SITE.

DM2. PROTECT ALL ELEMENTS AND ITEMS IN OR NEAR THE WORK THAT ARE TO REMAIN. DO NOT DISMANTLE ANYTHING OTHER THAN WHAT IS SPECIFICALLY INDICATED ON THE CONTRACT DOCUMENTS UNLESS SPECIFICALLY REQUESTED TO DO SO IN WRITING BY THE ENGINEER.

DM3. DO NOT REMOVE ANY STRUCTURAL ELEMENTS UNTIL FINISHES HAVE BEEN CAREFULLY STRIPPED AWAY AND SUPPORTED ELEMENTS HAVE BEEN SUPPORTED BY OTHER SAFE MEANS.

DM4. PERFORM FULL REVIEW OF SITE TO VERIFY EXTENT OF DISMANTLING AND TO PLAN FOR COORDINATION WITH OTHER TRADES. EXAMINE AREAS AND CONDITIONS UNDER WHICH THE WORK WILL BE PERFORMED. CORRECT CONDITIONS WHICH ARE DETRIMENTAL TO THE TIMELY AND PROPER COMPLETION OF THE WORK. PROCEED ONLY WHEN UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. CAREFULLY STUDY EACH ITEM TO BE DISMANTLED AND DETERMINE THE SAFEST, LEAST DISTURBING AND POTENTIALLY DAMAGING METHOD OF DISASSEMBLY.

DM5. DISPOSE OF DEMOLISHED MATERIALS IN ENVIRONMENTALLY SOUND AND APPROVED MANNER.

DM6. MINIMIZE NOISE AND DUST. PROVIDE WETTING AND PROTECTION AS REQUIRED. PROTECT THE BUILDING OCCUPANDS AND PASSER BY OF ALL LEAD OR ASBESTOS THAT MAY BE ENCOUNTERED DURING DEMOLITION, PROVIDING AIRPROOF SCREENING OVER ALL WINDOWS, SEALING ALL OPENINGS, AND MONITORING ALL WORK AREAS, TO THE EXTENT REQUIRED BY ALL APPLICABLE ENVIRONMENTAL REGULATIONS. AVOID MAKING PAINTED BRICKS FRIABLE, KEEPING THEM WET DURING ON–SITE REMOVAL AND DISPOSAL OPERATIONS.

DM7. PREVENT ACCUMULATION OF DEBRIS ON THE SITE. REMOVE REFUSE OR SALVAGED ITEMS ON A CONTINUOUS, ON–GOING BASIS. RETURN SITE TO NEAT, TIDY CONDITION FOLLOWING DEMOLITION OPERATIONS.

DM8. DO NOT DEMOLISH ANY ELEMENTS ON WHICH OTHER ELEMENTS DEPEND FOR THEIR STABILITY WITHOUT EXPRESS PERMISSION OF THE ENGINEER.

DM9. NOTIFY THE ENGINEER IMMEDIATELY IF ANY DAMAGE HAS OCCURRED DURING DISMANTLING ITEMS AND PROPOSE APPROPRIATE METHODS OF REPAIR.

FOUNDATIONS

F1. FOOTINGS SHALL BE FOUNDED ON UNDISTURBED MATERIAL HAVING A MINIMUM BEARING CAPACITY OF 1.5 TONS PER SQUARE FOOT OR ON COMPACTED GRAVEL FILL ON UNDISTURBED MATERIAL HAVING A MINIMUM BEARING CAPACITY OF 1.5 TONS PER SQUARE FOOT.

F2. FOOTING DEPTHS SHOWN ON THE DRAWINGS REPRESENT ESTIMATED DEPTHS AND ARE NOT TO BE CONSTRUED AS LIMITING THE AMOUNT OF EXCAVATION REQUIRED TO REACH BEDROCK/LEDGE OR GOOD BEARING MATERIAL.

F3. FOOTING EXCAVATIONS ARE TO BE FINISHED BY HAND.

F4. MAKE NO EXCAVATIONS TO THE FULL DEPTH INDICATED WHEN FREEZING TEMPERATURES MAY BE EXPECTED UNLESS THE FOUNDATIONS OR SLABS CAN BE PLACED IMMEDIATELY AFTER THE EXCAVATION HAS BEEN COMPLETED. PROTECT THE BOTTOM OF FOOTING SO EXCAVATED FROM FROST IF PLACING OF CONCRETE IS DELAYED. SHOULD PROTECTION FAIL, REMOVE FROZEN MATERIALS AND REPLACE WITH CONCRETE OR GRAVEL FILL, AS DIRECTED, AT NO COST TO THE OWNER.

F5. BACKFILL UNDER NEW STRUCTURES IS TO BE COMPACTED TO 95 PERCENT IN 6" LIFTS.

F6. UNLESS NOTED OTHERWISE, FOOTINGS ARE TO BE CENTERED UNDER SUPPORTED MEMBERS.

F7. PROVIDE 6" OF CRUSHED STONE UNDER ALL NEW SLABS ON GRADE.

F8. FURNISH AND PLACE ALL SUPPORTS, TEMPORARY OR PERMANENT, WHETHER SHORING, SHEETING OR BRACING SO THAT NO HORIZONTAL MOVEMENT OR VERTICAL SETTLEMENT OCCURS TO EXISTING STRUCTURES, STREETS OR UTILITIES ADJACENT TO JOB SITE.

F9. NEW FOOTINGS AND SLABS ADDED TO OR ALONG ADJACENT FOOTINGS SHALL MEET THEM AT THE SAME ELEVATION.

CONCRETE

C1. CONCRETE WORK IS TO CONFORM TO BUILDING CODE REQUIREMENTS FOR REINFORCED AND PLAIN CONCRETE (ACI 318–05) AND SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS (ACI 301), LATEST EDITION.

C2. CONCRETE SHALL BE CONTROLLED CONCRETE, PROPORTIONED, MIXED AND PLACED UNDER THE SUPERVISION OF AN APPROVED CONCRETE TESTING AGENCY.

C3. WHEN CONCRETE IS PLACED AT OR BELOW AMBIENT TEMPERATURES OF 40 DEGREES F, OR WHENEVER LOWER TEMPERATURES ARE LIKELY TO OCCUR WITHIN 48 HOURS AFTER PLACEMENT OF CONCRETE, COLD WEATHER CONCRETING PROCEDURES, IN ACCORDANCE TO ACI 306 SHALL BE FOLLOWED. COLD WEATHER PROTECTION SHALL ALSO APPLY TO REINFORCED BRICK AND CMU MASONRY CONSTRUCTION WHENEVER THE TEMPERATURE FALLS BELOW 40 DEGREES.

C4. CONCRETE IS TO HAVE 4000 PSI (NORMALWEIGHT) COMPRESSIVE STRENGTH AT 28 DAYS.

C5. CONCRETE IS TO BE PLACED WITHOUT HORIZONTAL CONSTRUCTION JOINTS.

C6. STRUCTURAL STEEL BELOW GRADE IS TO BE ENCASED IN CONCRETE FOR RUST PROTECTION OR IS TO BE COATED WITH EPOXY PER STEEL GENERAL NOTES. CONCRETE COVER SHALL BE 2 INCH MINIMUM.

REINFORCEMENT

R1. DETAILING, FABRICATION, AND ERECTION OF REINFORCEMENT, UNLESS OTHERWISE NOTED, SHALL CONFORM TO THE LATEST EDITIONS OF ACI "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318)" AND ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI 315)".

R2. STEEL REINFORCEMENT UNLESS OTHERWISE SHOWN IS TO CONFORM TO ASTM 615 GRADE 60 (YIELD STRESS = 60,000 PSI).

R3. WELDED WIRE FABRIC REINFORCEMENT SHALL BE ASTM A185 WWF 6x6 W2.0xW2.0 IN ALL NEW SLABS ON GRADE.

R4. MINIMUM CONCRETE COVER FOR REINFORCEMENT UNLESS OTHERWISE NOTED IS TO BE AS FOLLOWS:

(A)	UNFORMED SURFACES IN CONTACT WITH GROUND OR EXPOSED TO WEATHER	3 INCHES
(B)	FORMED SURFACES IN CONTACT WITH GROUND OR EXPOSED TO WEATHER	2 INCHES
(C)	EXTERIOR SLABS	2 INCHES

MAXIMUM DEVIATION FROM THESE REQUIREMENTS IS TO BE ¼ INCH FOR SECTIONS 10 INCHES THICK OR LESS; AND ½ INCH FOR SECTIONS OVER 10 INCHES THICK.

R5. WHERE REINFORCEMENT IS CALLED FOR IN SECTION, REINFORCEMENT IS CONSIDERED TYPICAL WHEREVER THE SECTION APPLIES.

R6. WELDED WIRE FABRIC IS TO LAP 6 INCHES OR ONE SPACE PLUS 2 INCHES, WHICHEVER IS LARGER, AND IS TO BE WIRED TOGETHER.

R7. INSTALLATION OF REINFORCEMENT SHALL BE COMPLETED AT LEAST 24 HOURS PRIOR TO SCHEDULED CONCRETE PLACEMENT. NOTIFY ENGINEER OR HIS DESIGNATE OF COMPLETION AT LEAST 48 HOURS PRIOR TO SCHEDULED COMPLETION OF PLACEMENT OF REINFORCEMENT.

MASONRY REPOINTING

MP1. ALL MASONRY WORK SHALL BE PERFORMED BY INDIVIDUALS WITH MORE THAN TEN YEAR WELL–REFERENCED EXPERIENCE WITH HISTORIC BRICK AND STONE MASONRY RESTORATION.

MP2. COMPLY WITH REQUIREMENTS OF MASSACHUSETTS STATE BUILDING CODE.

MP3. PROTECT SURROUNDING SURFACES FROM RAIN–SPLASHED SOIL AND MORTAR SPLATTER BY MEANS OF COVERINGS SPREAD ON GROUND AND OVER WALL SURFACE. PROTECT SILLS, LEDGES AND PROJECTIONS FROM DROPPINGS OF MORTAR. PROTECT ALL NON–MASONRY SURFACES. REVIEW ALL PROTECTIVE MEASURES WITH OWNERS.

MP4. PREVENT CLEANING SOLUTIONS FROM COMING INTO CONTACT WITH PEDESTRIANS, MOTOR VEHICLES, PLANT MATERIALS, BUILDINGS AND OTHER SURFACES THAT COULD BE INJURED BY SUCH CONTACT. DISPOSE OF RUN–OFF FROM CLEANING OPERATIONS BY LEGAL MEANS AND IN A MANNER WHICH PREVENTS SOIL EROSION, UNDERMINING OF PAVING AND FOUNDATIONS, AND DAMAGE TO ADJACENT LANDSCAPING.

MP5. DO NOT PERFORM ANY WET MASONRY WORK WHEN TEMPERATURE OF SURROUNDING AREA IS BELOW 40 DEGREES F., OR BELOW 45 DEGREES F. AND FALLING, OR FORECAST BY PUBLIC NEWS MEDIA TO FALL TO OR BELOW 35 DEGREES F. WITHIN 24 HOURS WITHOUT TEMPORARY HEATED ENCLOSURES OR WITHOUT HEATING MATERIALS OR OTHER PRECAUTIONS NECESSARY TO PREVENT FREEZING. MINIMUM TEMPERATURE WITHIN HEATED ENCLOSURE SHALL BE 40 DEGREES F. DO NOT USE MASONRY MATERIALS WHICH ARE LIKELY TO CONTAIN FROST. DO NOT USE ACCELERATING INGREDIENTS WITH ANY MORTAR. MORTAR SHALL HARDEN WITHOUT FREEZING AND WITH NO DAMAGE FROM FROST. PROTECT ALL WORK AGAINST FREEZING FOR NOT LESS THAN 48 HOURS AFTER INSTALLATION. COMPLY WITH REQUIREMENTS OF INTERNATIONAL MASONRY ALL–WEATHER COUNCIL'S "GUIDE SPECIFICATION FOR COLD–WEATHER MASONRY CONSTRUCTION". HEAT MATERIALS AND PROVIDE TEMPORARY PROTECTION OF COMPLETED PORTIONS OF STONE WORK.

MP6. THE CONTRACTOR SHALL REVIEW THE WATER CONTENT AND ANY REQUIRED ADJUSTMENTS ALONG WITH PROPOSED PRODUCTS WITH THE ENGINEER. CONTRACTOR SHALL THEN SUBMIT A RECORD MORTAR MIX DESIGN ALONG WITH PRODUCT DATA SHEETS TO THE ENGINEER FOR VERIFICATION, REVIEW AND APPROVAL BEFORE BEGINNING ANY MIXING OR INSTALLATION.

MP7. THOROUGHLY MIX MORTAR INGREDIENTS IN ACCORDANCE WITH ASTM C270 IN QUANTITIES NEEDED FOR IMMEDIATE USE.

MP8. MORTAR WASHDOWN CLEANER: "SURECLEAN 600" AS MANUFACTURED BY PROSOCO CORP., OR ENGINEERED APPROVED EQUAL.

MP9. PREPARATION OF JOINTS FOR REPOINTING

1. RAKE/ CUT MORTAR JOINTS IN EXISTING CONSTRUCTION IN AREAS DESIGNATED TO BE REPOINTED TO A MINIMUM DEPTH OF 2.5 TIMES THE MORTAR JOINT WIDTH, 1", OR AS DEEPLY AS NECESSARY TO REACH SOUND MORTAR (WHICHEVER IS GREATEST), BUT NOT TO EXCEED ONE HALF OF THE THICKNESS OF THE STONE THICKNESS WITHOUT SUPPLEMENTARY MEANS OF SUPPORT. EMPLOY TOOLS THAT ARE SHARP AND WILL COMPLETELY CUT OUT JOINTS AT INTERSECTIONS WITHOUT SPLITTING OR DAMAGING STONES OR BRICKS.
2. GENTLY DRIVE WEDGES OR HARDWOOD SHIMS INTO WIDE, DEEP CRACKS IN MASONRY WHERE THERE IS A POSSIBILITY THAT THE VERTICAL AND IN–PLANE LATERAL SUPPORT OF MASONRY WORK WILL BE COMPROMISED DURING DEEP RAKING OF THE JOINTS. THIS SHOULD AT LEAST BE DONE WHERE MORE THAN HALF OF THE LENGTH OF A SPECIFIC JOINT IS REMOVED TO A DEPTH OF MORE THAN ONE THIRD OF THE THICKNESS OF THE STONE.
3. IDENTIFY ANY BRICKS THAT BECOME LOOSE DURING THE WORK OR HAVE SHIFTED– NOTIFY THE OWNER OF ALL SUCH LOCATIONS. IF DIRECTED TO, REMOVE AND RE–SETTING THESE AS DIRECTED BY THE ENGINEER.
4. WIRE BRUSH CLEAN AND THEN PRE–WET THE JOINTS AND ALLOW FOR THE EXISTING MORTAR TO DRY OR SATURATE TO A DULL, NON–GLOSSY FINISH IMMEDIATELY BEFORE APPLYING NEW MORTAR.

MP10. RE–POINTING

1. PRE–WET PREPARED MORTAR JOINT SURFACES UNTIL THEY ARE SATURATED BUT SURFACE DRY.
2. APPLY FINAL "TUCK" LIFT OF POINTING MORTAR, TOOLING JOINTS TO EXACTLY MATCH THE EXISTING JOINT PROFILES THAT ARE ADJACENT TO THE WORK.
3. MOIST CURE ALL WORK, SPRAYING WITH A WATER MIST AND COVER WITH DAMP CLOTH OR TARPAULIN.
4. CLEAN MORTAR FROM ALL SURFACES FOLLOWING COMPLETION AND CURING OF WORK.
5. THE CONTRACTOR SHALL RE–CUT AND REPLACE ANY JOINTS THAT ARE POORLY FORMED, AS DETERMINED BY THE ENGINEER, AT THE CONTRACTOR'S OWN EXPENSE.
6. MOIST CURE ALL WORK, SPRAYING WITH A WATER MIST AND COVER WITH DAMP CLOTH OR TARPAULIN.

MP11. CLEANING AND PROTECTION OF COMPLETED WORK

1. PROTECT BRICK WORK IN PROGRESS AND AFTER COMPLETION.
2. PROMPTLY AS WORK PROCEEDS AND UPON COMPLETION, REMOVE EXCESS MORTAR, SMEARS AND DROPPINGS. CLEAN ADJACENT AND ADJOINING SURFACE OF MARKS ARISING OUT OF EXECUTION OF WORK IN THIS SECTION.
3. SWEEP UP AND REMOVE DAILY SAND, CLEANING COMPOUNDS AND MIXTURES, DIRT, DEBRIS AND RUBBISH. SWEEP OR FLUSH AWAY NIGHTLY, ALL RESIDUAL WASHED MATERIALS. KEEP THE PREMISES NEAT AND CLEAN AT ALL TIMES.
4. AFTER INSTALLATION AND POINTING OR CAULKING ARE COMPLETED, CAREFULLY CLEAN BRICK, REMOVING ALL DIRT, EXCESS MORTAR, WELD SPLATTER, STAINS AND/OR OTHER SITE INCIDENT DEFACEMENTS. CLEAN SOILED SURFACES USING A NON–ACIDIC SOLUTION THAT WILL NOT HARM STONE OR ADJACENT MATERIALS. USE NONMETALLIC TOOLS IN CLEANING OPERATION. APPLY IN ACCORDANCE WITH CLEANER MANUFACTURER RECOMMENDATIONS.

STRUCTURAL STEEL

S1. STRUCTURAL STEEL WORK SHALL CONFORM TO "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" (AISC ASD 1989), OR LOAD AND RESISTANCE FACTOR DESIGN (LRFD), LATEST EDITION; "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" ; AND STRUCTURAL WELDING CODE – STEEL (AWS D1.1), LATEST EDITION.

S2. STRUCTURAL STEEL SHALL BE NEW STEEL CONFORMING TO THE FOLLOWING:

ROLLED STEEL SHAPES:	A992 GRADE 50
PLATES	ASTM A36
STRUCTURAL PIPES:	ASTM A53, GRADE B
STRUCTURAL TUBES:	ASTM A500, GRADE B
ANCHOR BOLTS:	ASTM A307
HIGH STRENGTH BOLTS:	ASTM A325
WELDING ELECTRODES:	AWS E60–XX, LOW HYDROGEN FOR EXISTING STEEL AWS E70–XX FOR NEW METAL

S3. STRUCTURAL STEEL SHALL BE DETAILED AND, WHERE REQUIRED, DESIGNED IN ACCORDANCE WITH THE AISC SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS AND THE SHOP DRAFTING MANUAL, CURRENT EDITIONS.

S4. BOLTED CONNECTIONS SHALL BE SLIP–CRITICAL TYPE AND SHALL BE MADE USING ¾" ø (MINIMUM) ASTM A325 HIGH STRENGTH BOLTS. USE SHORT SLOTTED HORIZONTAL HOLES IN WEB OF BEAM. NON SLIP–CRITICAL TYPE OF BOLTED CONNECTIONS MAY BE USED AT SIMPLE BEAM–TO–GIRDER JOINTS.

S5. WELDING SHALL BE DONE BY APPROVED CERTIFIED WELDERS, AND SHALL CONFORM TO THE AMERICAN WELDING SOCIETY CODE. SEE SPECIFICATIONS. ALL FILLET WELDS SHALL BE MADE WITH A RETURN LEG ON THE WELD END. THE MINIMUM SIZE OF FILLET WELDS SHALL BE DETERMINED IN ACCORDANCE WITH PARAGRAPH J2.2B. OF THE AISC SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS.

S6. ELECTRODES FOR ALL FIELD AND SHOP WELDING SHALL CONFORM TO A–233 (CLASS 70)

S7. ANCHOR BOLTS, LEVELING PLATES, OR BEARING PLATES SHALL BE LOCATED AND BUILT INTO CONNECTING WORK, PRESENT BY TEMPLATES OR SIMILAR METHODS. PLATES SHALL BE SET IN FULL BEDS OF NON–SHRINK GROUT.

S8. ALL STEEL EXPOSED TO WEATHER, SALT WATER, OR SOILS SATURATED WITH SALT WATER SHALL BE HOT–DIPPED GALVANIZED WITH A G90 GALVANIZATION LEVEL CONFORMING TO ASTM A123/A123M AND A153/A153M, AND ADDITIONALLY SHALL BE COATED WITH TNEMEC CHEMBUILD 135, PER MANUFACTURER'S SPECIFICATIONS.

S9. ALL STEEL WITHIN TWO FEET OF THE TOP OF BASEMENT SLAB MUST BE COATED WITH TWO HEAVY APPLICATIONS OF COAL–TAR EPOXY OR WET/DRY 700 SOLVENT–FREE EPOXY (www.epoxyusa.com) WHEN AMBIENT AIR TEMPERATURE IS AT OR ABOVE 55 DEGREES FAHRENHEIT. IF THE WORK IS DONE WHEN AMBIENT AIR TEMPERATURE IS ABOVE 40 AND LESS THAN 55 DEGREES FAHRENHEIT, PROVIDE CORRO–COAT 2100 LT (LOW TEMPERATURE) SOLVENT–FREE EPOXY COATING.

S10. STRUCTURAL STEEL DETAILS NOT SPECIFICALLY SHOWN SHALL BE SIMILAR TO THOSE SHOWN FOR MOST NEARLY SIMILAR SITUATIONS AS DETERMINED BY THE ENGINEER.

S11. FIELD CUTTING OF STRUCTURAL STEEL OR ANY FIELD MODIFICATIONS TO STRUCTURAL STEEL SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL BY ENGINEER FOR EACH SPECIFIC CASE.

S12. STRUCTURAL STEEL FRAMING SHALL BE TRUE AND PLUMB BEFORE CONNECTIONS ARE FINALLY BOLTED OR WELDED.

S13. TEMPORARY ERECTION BRACING AND SUPPORTS SHALL BE PROVIDED TO HOLD NEW STRUCTURAL STEEL FRAMING SECURELY IN POSITION. SUCH TEMPORARY BRACING AND SUPPORTS SHALL NOT BE REMOVED UNTIL PERMANENT BRACING HAS BEEN INSTALLED.

S14. STRUCTURAL STEEL ENCASED IN MASONRY SHALL BE COVERED WITH MASTIC COATING: TNEMEC SERIES 135 CHEMBUILD OR TNEMEC TAR COAL TAR EPOXY.

S15. MINIMUM CONNECTION PLATE THICKNESS SHALL BE ⅜".

S16. SPLICING STRUCTURAL MEMBERS WHERE NOT DETAILED ON THE DRAWINGS IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.

STRUCTURAL WOOD

W1. TIMBER CONSTRUCTION IS TO CONFORM TO PART II "DESIGN SPECIFICATIONS" AS PUBLISHED IN THE "TIMBER CONSTRUCTION MANUAL" (AITC) AND TO "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION", LATEST EDITIONS.

W2. NEW TIMBER FOR STRUCTURAL USE IS TO BE SURFACE DRIED AND HAVE A MOISTURE CONTENT OF NOT MORE THAN 19 PERCENT.

W3. TIMBER CONSTRUCTION SHALL CONFORM TO THE MASSACHUSETTS STATE BUILDING CODE.

W4. STRUCTURAL TIMBER IS TO BE IDENTIFIED BY THE GRADE MARK OF, OR CERTIFICATE OF INSPECTION ISSUED BY, A GRADING OR INSPECTION BUREAU OR AGENCY RECOGNIZED AS BEING COMPETENT.

W5. STRUCTURAL TIMBER IS TO BE VISUALLY STRESS–GRADED LUMBER IN ACCORDANCE WITH THE PROVISIONS OF ASTM DESIGNATION D245–74, "METHODS FOR ESTABLISHING STRUCTURAL GRADES AND RELATED ALLOWABLE PROPERTIES FOR VISUALLY GRADED LUMBER."

W6. TIMBER IS TO BE HANDLED AND COVERED TO PREVENT DAMAGE AND MOISTURE ABSORPTION FROM SNOW OR RAIN.

W7. ALL STRUCTURAL WOOD IS TO HAVE THE FOLLOWING MINIMUM DESIGN STRENGTHS AND IS TO HAVE MATERIAL CERTIFICATES AND GRADE STAMPS ATTESTING THEREOF (UNITS IN PSI UNLESS OTHERWISE NOTED):

TYPE	FB	FT	FV	FC PARALL.	FC PERP.	E(ksi)
CONVENTIONAL WOOD JOISTS	875		70			1400
MICRO–LAMINATED WOOD	2600	1850	285	2700	750	1900

W8. WOOD JOISTS:

1. SPLICES ARE TO OCCUR ONLY OVER BEARING POINTS.
2. MINIMUM BEARING FOR JOISTS = 1–3/4 INCH AT ENDS, AND 3½ INCHES WHERE JOISTS ARE CONTINUOUS.
3. USE METAL JOIST HANGERS AT ALL FLUSH FRAME CONDITIONS.
4. NO JOIST IS TO BE NOTCHED OR DRILLED WITH HOLES WITHOUT PROPER REINFORCEMENT

W9. BEAMS AND GIRDERS:

1. GIRDERS WILL NOT REST LESS THAN 4" ON SUPPORTS.
2. WHERE BEAMS AND GIRDERS OF NOMINAL 2" MEMBERS ARE SHOWN NAIL WITH TWO ROWS OF 16d NAILS SPACED NOT MORE THAN 24" O.C., LOCATE END JOISTS IN MEMBERS OVER SUPPORTS.
3. ALL BEAMS MUST SPLICED ONLY OVER SUPPORTS UNLESS SPECIFICALLY INSTRUCTED OTHERWISE BY THE ENGINEER.
4. ALL BUILT–UP WOOD BEAMS WIDER THAN 6" AND NAILERS ATTACHED TO STEEL BEAMS ARE TO BE BOLTED WITH 5/8" DIAMETER THROUGH–BOLTS AT 2'–0" O.C. STAGGERED SPACING, UNLESS OTHERWISE NOTED.

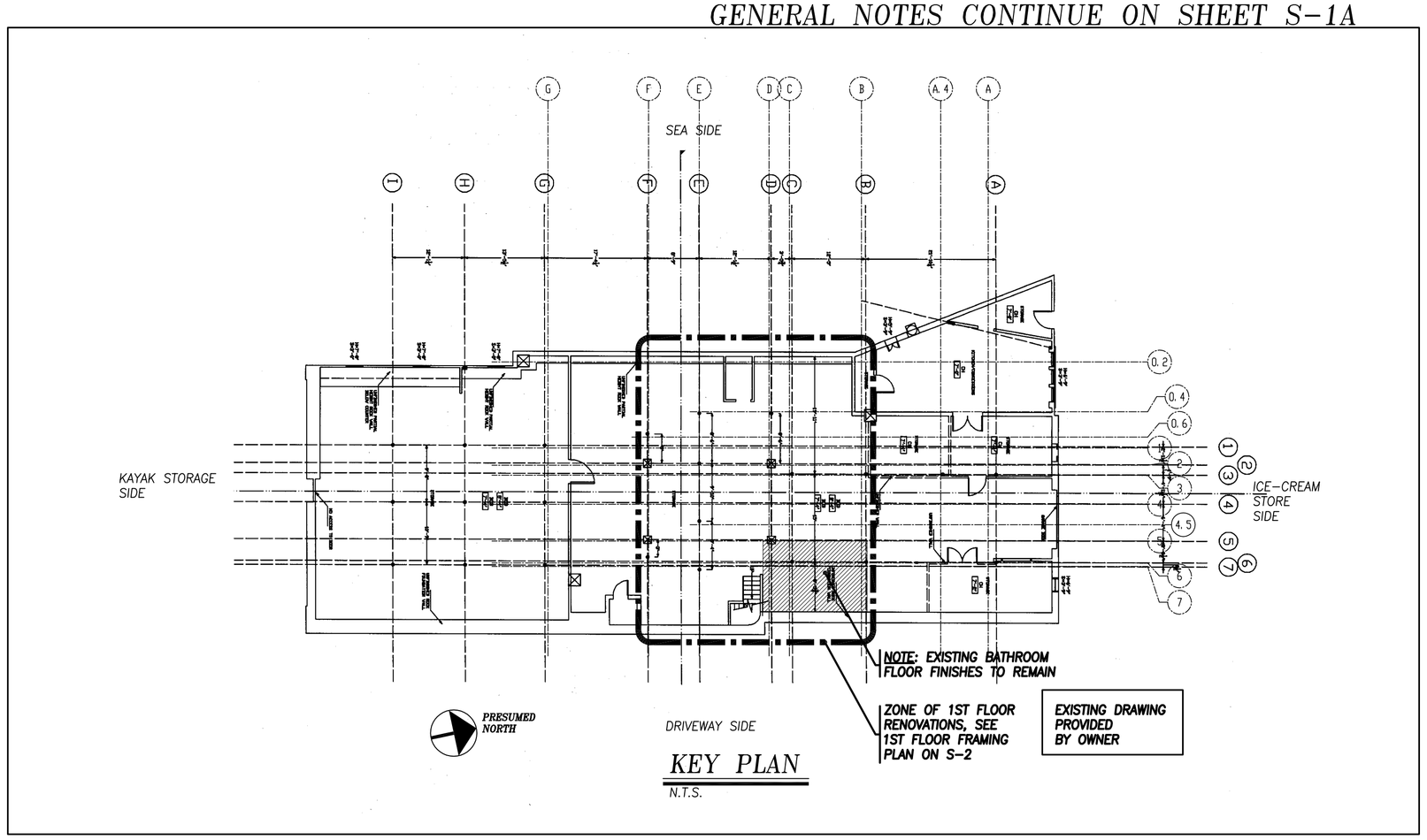
W10. PLYWOOD FLOOR

1. PLYWOOD FLOOR IS TO BE 3/4 INCH THICK GLUE AND NAILED INSTALLED WITH OUTER PLIES AT RIGHT ANGLE TO JOISTS AND STAGGERED IN ADJACENT PANELS. PROVIDE 1/16 INCH JOINT SPACING AT ALL PANEL EDGES.
2. PLYWOOD IS TO BE NAILED WITH 8d COMMON. NAILS ARE TO BE 6 INCHES O.C. AT ALL EDGES AND 12" O.C. AT INTERIOR LINES OF SUPPORT.

W11. CONNECTIONS:

1. COMPLY WITH MANUFACTURER SPECIFICATIONS INSTALLATIONS FOR ALL MANUFACTURED CONNECTORS.
2. ANCHOR BOLTS AND BOLTS FOR STRUCTURAL TIMBER ARE TO BE ASTM A307. STANDARD CUT WASHERS ARE TO BE PROVIDED BETWEEN THE WOOD AND BOLT NUT, UNLESS STEEL PLATES OR PLATE WASHERS ARE USED, AS INDICATED ON STRUCTURAL DRAWINGS. BOLT HOLES IN STRUCTURAL TIMBER ARE TO BE 1/16 INCH LARGER THAN THE NOMINAL BOLT DIAMETER INDICATED.

GENERAL NOTES CONTINUE ON SHEET S–1A



KEY PLAN
N.T.S.

Structures Nortl
CONSULTING ENGINEERS, IN
60 Washington St., Suite 401
Salem, MA. 01970-3517
T 978.745.6817 I F 978.745.6065
www.structures-north.com

FIRST FLOOR CENTER BAY RENOVATIONS
LYNCH PARK CARRIAGE HOUSE
BEVERLY, MA

CLIENT NAME:

DATE: 01–26–2010
SCALE: NO SCALE
DRWN: JJR
CHECKED BY: JMW
REV.: 11–16–2009

KEY PLAN & GENERAL NOTES

Drawing No:
S–1

\\Structuresnorthe public\CADD\Projects\2008\08084 Lynch Park Carriage House CAD\STRUCTS-1 key plan and general notes REV 11-16-09.dwg, S-1, 1/22/2010 2:21:38 PM, Jeff Reese, ARCH D (24.00 x 36.00 Inches 1:1)

GENERAL NOTES CONTINUED FROM SHEET S-1

3. ALL CONNECTION HARDWARE INCLUDING NAILS, BOLTS, AND FABRICATED CONNECTORS THAT ARE WITHIN 2 FEET OF THE TOP OF BASEMENT FLOOR OR THAT ARE IN CONTACT WITH CONCRETE OR MASONRY IS TO BE STAINLESS STEEL OR GALVANIZED. ELECTROGALVANIZED STOCK SHALL HAVE A CLASS RATING OF 40 OR HIGHER, AND HOT-DIPPED GALVANIZED STOCK SHALL BE G-185.

W12. ENGINEERED WOOD TIMBER

1. WHERE NO MANUFACTURED WOOD CONNECTOR EXISTS, FABRICATE FROM ¼ INCH WELDED STEEL PLATE TO CONFORM TO THE MOST SIMILAR SIMPSON CONNECTOR.

2. CONNECTION SHALL BE DESIGNED FOR MAXIMUM CAPACITY OF THE CONNECTED MEMBERS FOR THE SPANS INDICATED.

3. END BEARING OF LVL BEAMS SHALL BE 2-3/4 INCHES MINIMUM AND ACROSS THE FULL WIDTH OF THE BEAM.

4. MINIMUM BEARING LENGTHS ARE GOVERNED BY Fc PERPENDICULAR OF THE WALL PLATE = 425 PSI, OR BY 750 PSI BEARING STRENGTH OF THE VENEER LUMBER WHEN PLACED ON STEEL SUPPORTING CONNECTOR.

5. ALL LVL BEAMS REQUIRE LATERAL SUPPORT OR BLOCKING AT BEARING POINTS.

6. BUILT UP LVL BEAMS SHALL BE NAILED OR BOLTED TOGETHER IN ACCORDANCE WITH THE SCHEDULE ON PAGE 21 OF THE MANUFACTURER'S LITERATURE, BUT NOT LESS THAN 3 ROWS OF 16d NAILS AT 12 INCHES O.C. THROUGH ALL PLIES.

7. ADHESIVES SHALL BE PROVIDED AT ALL PLYWOOD FLOOR TO WOOD JOIST AND BEAM FASTENINGS. ADHESIVES SHALL CONFORM TO TRUSS JOIST MANUFACTURER'S STANDARDS AND MEET THE REQUIREMENTS OF ASTM D2559.

W13. PRESSURE TREATED (PT) WOOD

1. PRESSURE TREATED LUMBER SHALL CONFORM TO AWPA (AMERICAN WOOD PRESERVERS ASSOCIATION) C1 – ALL TIMBER PRODUCTS – PRESERVATIVE TREATMENT BY PRESSURE PROCESS

2. PRESSURE TREATED LUMBER (P/T) SHALL BE SOUTHERN YELLOW PINE #1 OR #2, PRESSURE PRESERVATIVE TREATED WITH A MINIMUM RETENTION OF 0.6 PCF OF ACQ. MOISTURE CONTENT IN POST-TREATED, TO-BE-INSTALLED CONDITION SHALL NOT EXCEED 19%.

RENOVATION AND RESTORATION

L1. WORK SHALL CONFORM TO THE REQUIREMENTS OF THE COMMONWEALTH OF MASSACHUSETTS STATE BUILDING CODE.

L2. THE CONTRACTOR SHALL NOTIFY THE OWNERS AND ENGINEER WHEN, IN THE COURSE OF CONSTRUCTION OR DEMOLITION, CONDITIONS ARE UNCOVERED THAT ARE UNANTICIPATED OR OTHERWISE APPEAR TO PRESENT A DANGEROUS CONDITION.

L3. DAMAGED LOAD BEARING MASONRY SHALL BE REMOVED AND REPLACED OR REPAIRED UNDER SUPERVISION OF THE ENGINEER.

L4. DAMAGED LINTELS SHALL BE REPAIRED OR REPLACED.

L5. NEW MASONRY SHALL BE BONDED OR OTHERWISE TIED TO ADJACENT MASONRY WORK.

L6. INFORMATION REGARDING EXISTING CONSTRUCTION OR CONDITIONS IS BASED ON AVAILABLE INFORMATION AT THE TIME OF DESIGN, WHICH MAY OR MAY NOT TRULY REFLECT EXISTING CONDITIONS. SUCH INFORMATION IS INCLUDED ON THE ASSUMPTION THAT IT MAY BE OF INTEREST TO THE CONTRACTOR BUT THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY OR COMPLETENESS.

L7. VERIFY ALL DIMENSIONS AND CONDITIONS ON THE JOB. DISCREPANCIES SHALL BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THAT PART OF THE WORK.

L8. WHERE NEW WORK WILL BE ADJACENT TO OR FRAMING EXISTING CONSTRUCTION, VERIFY DIMENSIONS OF EXISTING CONSTRUCTION, PRIOR TO FABRICATION OF NEW MEMBERS.

L9. PROVIDE ALL LABOR AND MATERIAL FOR ANY FRAMING REQUIRED TO CONNECT NEW FRAMING TO EXISTING CONSTRUCTION. WHEREVER IT IS NECESSARY TO REMOVE EXISTING CONSTRUCTION IN ORDER TO CONSTRUCT NEW WORK, THE AFFECTED AREA SHALL BE PATCHED AND REBUILT TO MATCH EXISTING ADJACENT WORK TO SATISFACTION OF THE ENGINEER.

L10. DETAILS SHOWN ON ANY DRAWING SHALL BE CONSIDERED TYPICAL FOR ALL SIMILAR CONDITIONS.

L11. NOTIFY ENGINEER OF ANY CONTEMPLATED STRUCTURAL ALTERATION IN REASONABLE TIME TO RENDER AND DOCUMENT HIS DECISION.

L12. STRUCTURAL MATERIALS AND COMPONENTS SHALL HAVE PRIOR APPROVAL OF THE ENGINEER.

L13. STRUCTURAL WORK ON THIS PROJECT SHALL BE PERFORMED UNDER THE SUPERVISION OF AN ENGINEER APPROVED BY THE OWNERS. ALTERATIONS OR MODIFICATIONS NOT INDICATED ON THE DRAWINGS SHALL BE APPROVED BY THE ENGINEER IN WRITING BEFORE SUCH WORK IS INITIATED. THE ENGINEER SHALL INSPECT ALL STRUCTURAL ELEMENTS TO ASSURE COMPLIANCE WITH THE CONTRACT DOCUMENTS AND THE STRUCTURAL INTEGRITY OF THE BUILDING BEFORE SUCH ELEMENTS ARE ENCLOSED. EXISTING STRUCTURAL DEFICIENCIES NOT INDICATED ON THE DRAWINGS OR EXPOSED DURING CONSTRUCTION SHALL BE CORRECTED AS DIRECTED BY THE ENGINEER.

L14. STRUCTURAL ALTERATION SHALL BE PRECEDED BY ADEQUATE SHORING AND BRACING.

L15. SCREW-TYPE SHORING POSTS SHALL BE PROVIDED FOR EXISTING WORK DURING THE REMOVAL OF EXISTING BEARING WALLS AND STRUCTURAL MEMBERS AND THE INSTALLATION OF NEW STRUCTURAL WORK.

L16. TEMPORARY SHORES SHALL BE PLACED AS CLOSE AS PRACTICABLE TO THE EXISTING STRUCTURAL WORK BEING REMOVED.

L17. HEADERS SHALL BE PLACED ACROSS TOP OF SHORING POSTS AND SHALL BE SNUG TIGHT AGAINST UNDERSIDE OF STRUCTURE ABOVE.

L18. TEMPORARY SHORES SHALL BE INDIVIDUALLY DESIGNED, ERECTED, SUPPORTED, BRACED AND MAINTAINED BY THE CONTRACTOR TO SAFELY SUPPORT ALL DEAD LOADS PRESENTLY CARRIED BY THE EXISTING STRUCTURAL WORK BEING REMOVED AND ANY CONSTRUCTION LIVE LOADS.

L19. STRUCTURAL STEEL SHALL BE COMPLETELY INSTALLED BEFORE REMOVING ANY SHORES.

L20. SHORES SHALL BE RELEASED GRADUALLY AND LEFT LOOSELY IN PLACE FOR AT LEAST 2 DAYS TO ALLOW FOR STRUCTURAL SHAKE OUT.

L21. EXISTING FLOOR JOISTS IN A DAMAGED CONDITION (AS DETERMINED BY THE ENGINEER), MUST BE REPLACED.

DESIGN LOADS

DL1 FLOOR LIVE LOADS:

SECOND FLOOR FUTURE OFFICES: 50 PSF
1ST FLOOR FUTURE ASSEMBLY: 100 PSF

DL2 ROOF LIVE LOAD:
30 PSF + SNOW DRIFT

Structures Nortl
CONSULTING ENGINEERS, IN
60 Washington St., Suite 401
Salem, MA. 01970-3517
T 978.745.6817 I F 978.745.6061
www.structures-north.com

FIRST FLOOR CENTER BAY RENOVATIONS
LYNCH PARK CARRIAGE HOUSE
BEVERLY, MA

CLIENT NAME:

DATE: 01-26-2010
SCALE: NO SCALE
DRWN: JJR
CHECKED BY: JMW

KEY PLAN & GENERAL NOTES

Drawing No:
S-1A

\\Structuresnorth\e public\CADD\Projects\2008\08084 Lynch Park Carriage House CAD\STRUCTS-1 key plan and general notes REV 11-16-09.dwg, S-1A, 1/22/2010 2:21:10 PM, Jeff Reese, ARCH D 24.00 x 36.00 Inches , 1:1

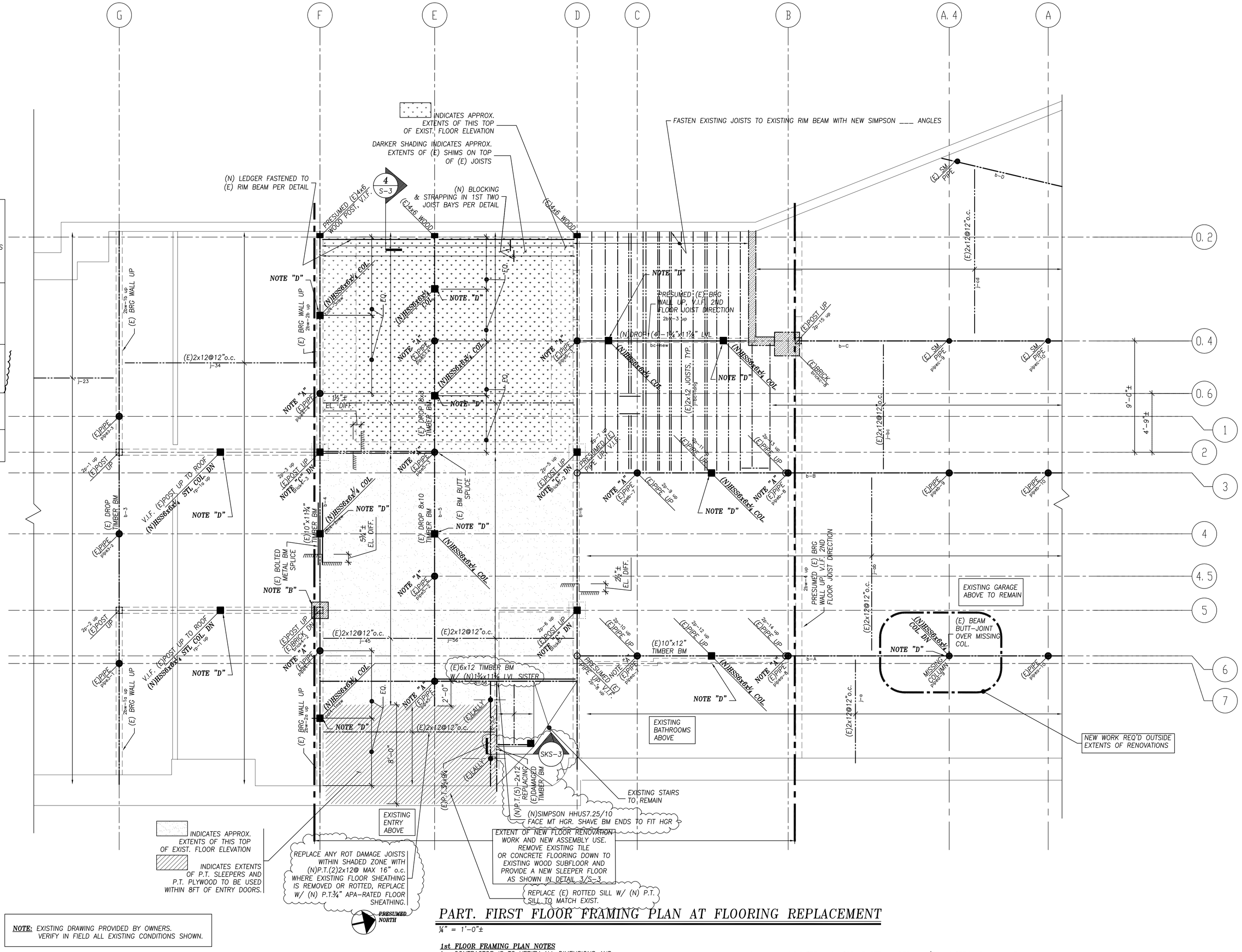
NOTE "A":
(ALL COLUMNS MARKED WITH NOTE "A" HAVE BEEN MEASURED AND DETERMINED TO HAVE A LESS THAN 20% SECTION LOSS AT RUSTED AREAS). AFTER POWER TOOL CLEANING AND REMOVING SCALED AND FLAKED RUSTED IRON DOWN TO SOLID IRON AT THE BOTTOM OF THE EXISTING IRON COLUMNS, PREP EXIST. COLUMN PER TNEMEC REQUIREMENTS AND APPLY TWO NEW COATS OF TNEMIC CHEMBUILD 135 FOLLOWED BY TWO COATS OF COAL-TAR EPOXY SIMILAR TO DETAIL 1/S-3.

NOTE "B":
OPTION 1: REPOINT MORTAR JOINTS THROUGHOUT LOWER HALF OF EXIST. BRICK PIER. REPOINT UPPER HALF AS REQUIRED BY FIELD EVALUATION BY MASON. USE A LYME MORTAR ONLY, DO NOT USE PORTLAND CEMENT.
OPTION 2: (ALTERNATE) REPLACE EXISTING BRICK PIER PER NOTE "C".

NOTE "C":
TEMPORARILY SHORE EXISTING BEAM AND POSTS UP (WHERE REQ'D). REPLACE EXISTING BRICK PIER WITH NEW HSS6x6x¼ STL COLUMN PER DETAIL 1/S-3.

NOTE "D":
AT NEW STL COLUMN LOCATIONS, SEE DETAILS 1/S-3, 1A/S-3, AND 2/S-3.

NOTE: AT NEW STL SEE STRUCTURAL STL GENERAL NOTE S8 ON SHEET S-1



NOTE: EXISTING DRAWING PROVIDED BY OWNERS. VERIFY IN FIELD ALL EXISTING CONDITIONS SHOWN.

PART. FIRST FLOOR FRAMING PLAN AT FLOORING REPLACEMENT

¼" = 1'-0"±

1st FLOOR FRAMING PLAN NOTES

1. CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND LOCATIONS IN THE FIELD. DO NOT SCALE THIS DRAWING.
2. SEE GENERAL NOTES ON SHEET S-1, AND SECTIONS AND DETAILS ON SHEET S-3, INCLUDING TYP. DETAILS NOT SPECIFICALLY REFERRED TO ON THIS SHEET.
3. ALL FLUSH-FRAMED CONNECTIONS ARE TO HAVE STEEL HANGERS, AND ALL POST TO BEAM CONNECTIONS SHALL HAVE STEEL POST CAPS. SUBMIT COMPLETE SCHEDULE OF ALL HANGERS, SELECTED FOR END REACTIONS INDICATED (2.0k) IN PLAN, FOR REVIEW AND APPROVAL. WHERE NO CATALOG CONNECTOR IS AVAILABLE, FABRICATE STEEL CONNECTOR FROM ¼" MIN STEEL SIMILAR TO THE MOST COMPARABLE SIMPSON CONNECTOR. IMPROVISED CONNECTIONS ARE NOT PERMITTED.
4. LVL – INDICATES LAMINATED VENEER LUMBER. LVL/PSL MATERIAL SHALL HAVE A MAXIMUM MOISTURE CONTENT OF 5%. CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL MATERIALS ON SITE CLEAN AND DRY BEFORE, DURING AND AFTER INSTALLATION

DESIGN LIVE LOADS:
30 PSF ROOF SNOW LOAD
50 PSF 2ND FLOOR FUTURE OFFICES
100 PSF 1ST FLOOR FUTURE ASSEMBLY

LEGEND

(E) INDICATES EXISTING FRAMING
(N) INDICATES NEW FRAMING

Structures North
CONSULTING ENGINEERS, INC.
60 Washington St., Suite 401
Salem, MA. 01970-3517
T 978.745.6817 I F 978.745.6067
www.structures-north.com

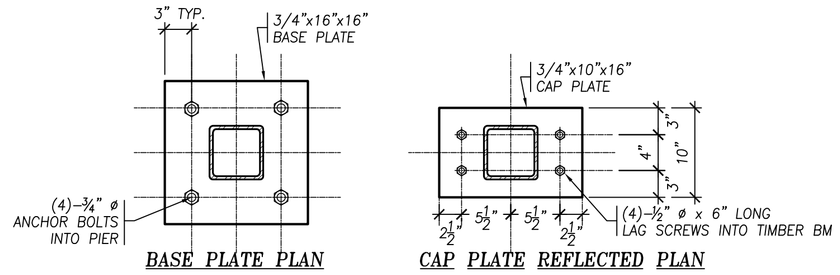
FIRST FLOOR CENTER BAY RENOVATIONS
LYNCH PARK CARRIAGE HOUSE
BEVERLY, MA

CLIENT NAME:

DATE: 01-26-2010
SCALE: AS NOTED
DRWN: JJR
CHECKED BY: JMW
REV.: 01-22-2010
4-30-2010 ???

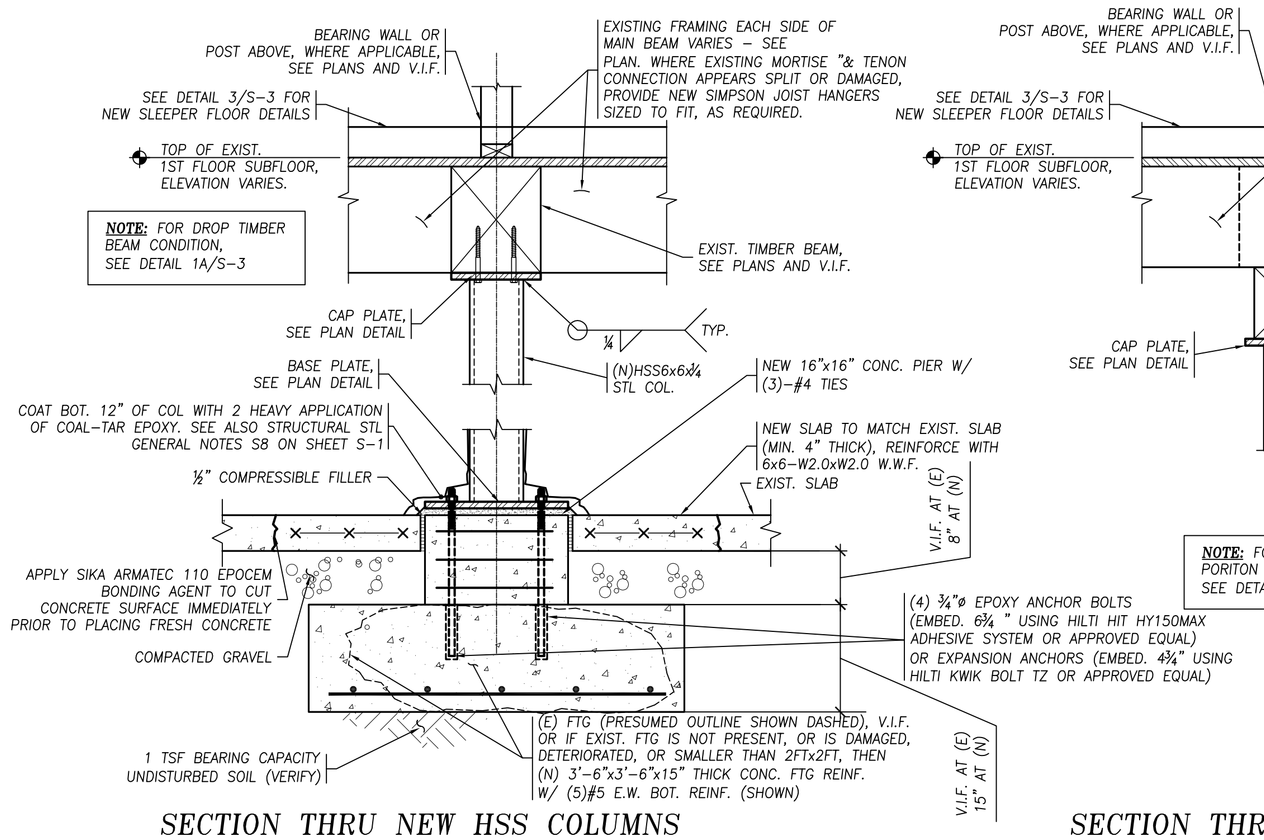
PART. 1ST FLOOR FRAMING PLAN

Drawing No:
S-2



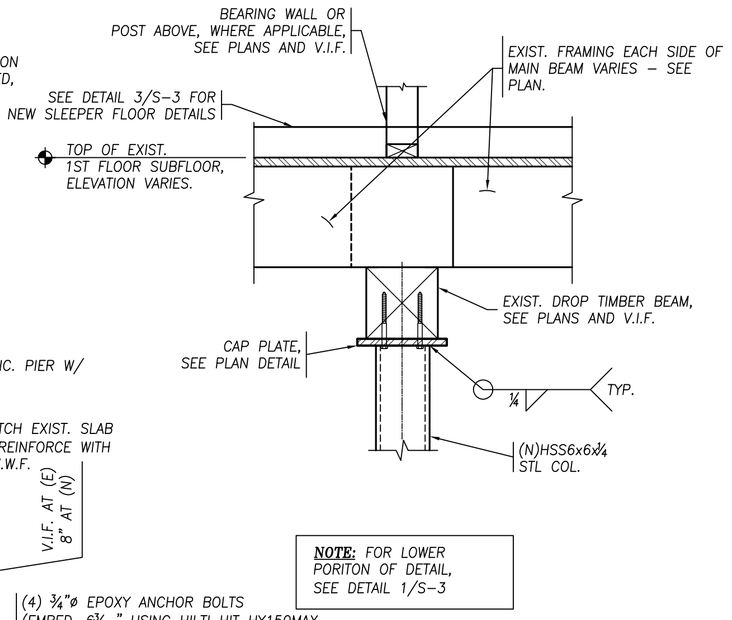
BASE PLATE PLAN

CAP PLATE REFLECTED PLAN



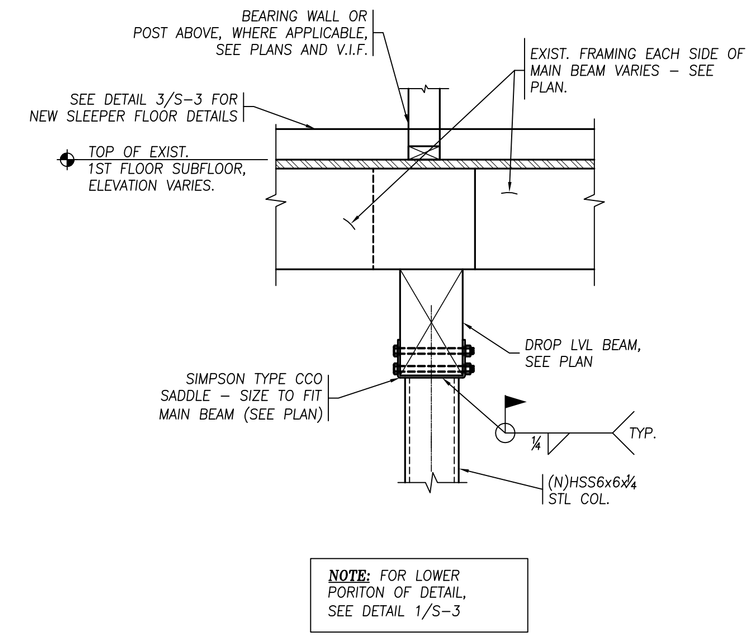
1 S–3 SECTION THRU NEW HSS COLUMNS AT EXIST TIMBER BEAMS, FLUSH CONDITION

1" = 1'–0"



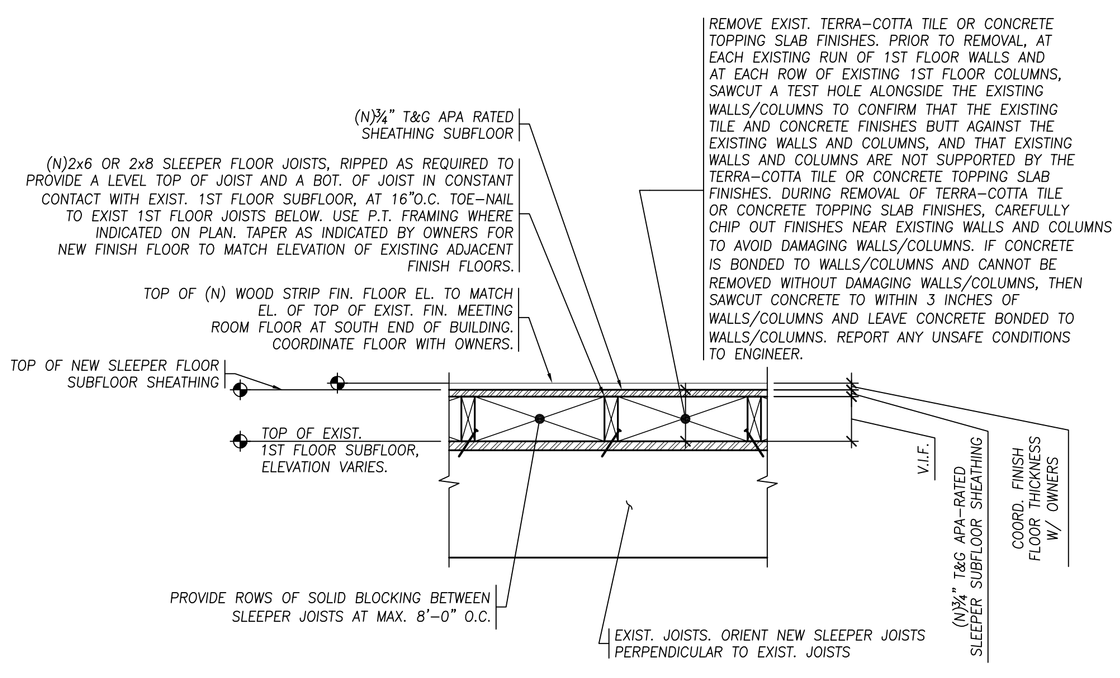
1A S–3 SECTION THRU NEW HSS COLUMNS AT EXIST TIMBER BEAMS, DROP CONDITION

1" = 1'–0"



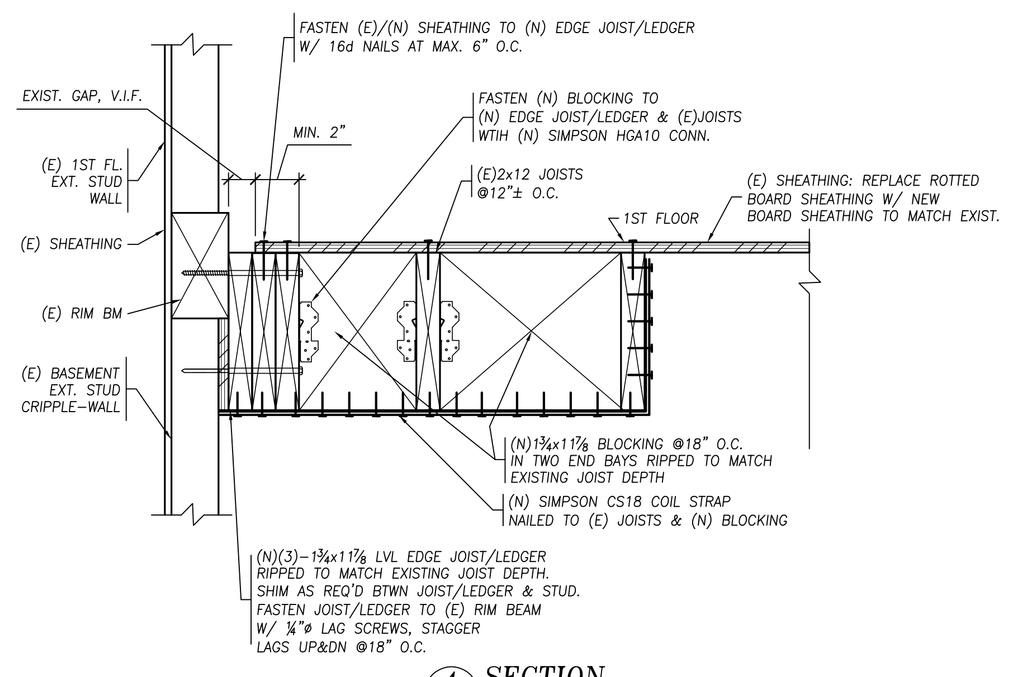
2 S–3 SECTION THRU NEW HSS COLUMNS AT NEW LVL BEAMS, DROP CONDITION

1" = 1'–0"



3 S–3 SECTION THRU NEW SLEEPER FLOOR SYSTEM

1" = 1'–0"



4 S–3 SECTION

1½" = 1'–0"

Structures Nortl
CONSULTING ENGINEERS, IN
60 Washington St., Suite 401
Salem, MA. 01970-3517
T 978.745.6817 I F 978.745.6061
www.structures-north.com

FIRST FLOOR CENTER BAY RENOVATIONS
LYNCH PARK CARRIAGE HOUSE
BEVERLY, MA

CLIENT NAME:

DATE: 01–26–2010
SCALE: AS NOTED
DRWN: SB
CHECKED BY: JJR
REV.: 11–16–2009

DETAILS

Drawing No:

S–3

\\Structuresnorth\e public\CADD\Projects\2008\08084 Lynch Park Carriage House CAD\STRUCT\S-3 details rev 11-16-09.dwg, S-3, 1/22/2010 2:22:43 PM, Jeff Reese, ARCH D 24.00 x 36.00 Inches , 1:1

Flood Plain Projections

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

The AE Zone category has been divided by a **Limit of Moderate Wave Action (LiMWA)**. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LiMWA (or between the shoreline and the LiMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Massachusetts State Plane Mainland (FIPS zone 2001). The **horizontal datum** was NAD 83, GRS 1983 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from the Massachusetts Geographic Information System (MassGIS) and the U.S.D.A. Farm Service Agency National Agriculture Imagery Program (NAIP). Aerial photography is dated 2005, April 2008, and 2010.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

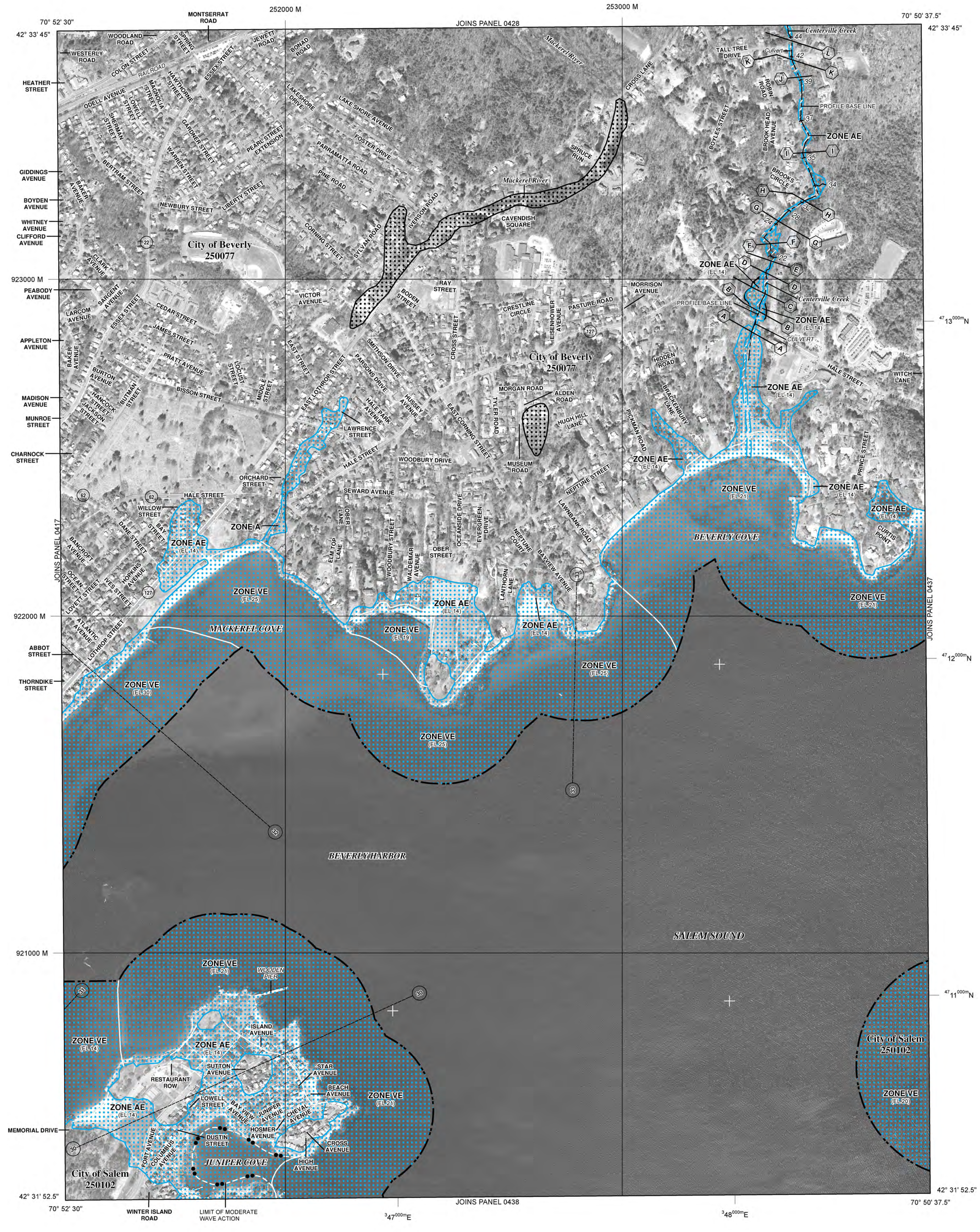
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map,** how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

Only coastal structures that are certified to provide protection from the 1-percent-chance annual flood are shown on this panel. However, all structures taken into consideration for the purpose of coastal flood hazard analysis and mapping are present in the DFIRM database in S_Gen_Struct.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% Annual Chance Floodplain Boundary

0.2% Annual Chance Floodplain Boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.

Limit of Moderate Wave Action

Limit of Moderate Wave Action coincident with Zone Break

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A Cross section line

23 - - - - 23 Transect line

45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere

3100000 FT — 1000-meter ticks: Massachusetts State Plane Mainland Zone (FIPS Zone 2001), Lambert Conformal Conic projection

$^{4}189^{000m}$ N — 1000-meter Universal Transverse Mercator grid values, zone 19

DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)

• M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
July 3, 2012

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

July 16, 2014 - to change Base Flood Elevations and Special Flood Hazard Areas, to change zone designations, to update the effects of wave action, to update corporate limits, to add roads and road names, to incorporate previously issued Letters of Map Revision and to modify Coastal Barrier Resources System units.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0436G

FIRM

FLOOD INSURANCE RATE MAP

ESSEX COUNTY, MASSACHUSETTS (ALL JURISDICTIONS)

PANEL 436 OF 600

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BEVERLY, CITY OF	250077	0436	G
SALEM, CITY OF	250102	0436	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
25009C0436G

MAP REVISED
JULY 16, 2014

Federal Emergency Management Agency

File Location: \\bscbos\wor\GIS-WOR\GISPrj\8957100\Output\Maps\MXD\ReportMaps\Endicott\BeverlyEndicott_Lynch__20170323.mxd
Date Saved: 6/5/2017 12:25:04 PM

0 125 250
Feet

BSC GROUP

Legend

- Sewer Pump Station
- Cultural Resource

N

Source:
-MassGIS
Basemap, Environmental Data, Aerial Imagery
-Beverly MA SLR Inundation Data
Woods Hole Group, Inc.

2030 - 1% ANNUAL PROBABILITY DEPTH OF FLOODING (100 YEAR STORM EVENT)

SLR Inundation Map

Lynch Park, Beverly, MA

massDOT
WOODS HOLE GROUP
UMASS BOSTON

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

File Location: \\bscbos\wor\GIS-WOR\GISPrj\8957100\Output\Maps\MXD\ReportMaps\Endicott\BeverlyEndicott_Lynch__20170323.mxd
Date Saved: 6/5/2017 12:25:04 PM

0 125 250
Feet

BSC GROUP

Legend

- Sewer Pump Station
- Cultural Resource

N

Source:
-MassGIS
Basemap, Environmental Data, Aerial Imagery
-Beverly MA SLR Inundation Data
Woods Hole Group, Inc.

2070 - 1% ANNUAL PROBABILITY DEPTH OF FLOODING (100 YEAR STORM EVENT)

SLR Inundation Map

Lynch Park, Beverly, MA

massDOT
WOODS HOLE GROUP
UMASS BOSTON

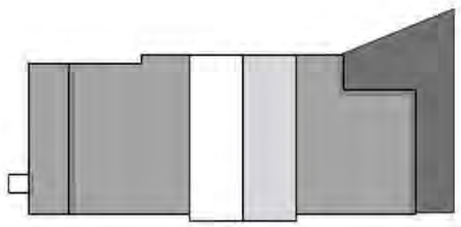
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Aerial Survey

Premium Roof & Walls Report

December 23, 2016

Lynch Park Carriage House Oceanside Drive, Beverly, MA 01915 Report: 16570229



In this 3D model, facets appear as semi-transparent to reveal overhangs.

PREPARED FOR

Contact:	Nicholas Curtis
Company:	Spencer & Vogt Group
Address:	1 Thompson Square Suite 504 Charlestown, MA 02129
Phone:	617-227-2675

TABLE OF CONTENTS

Images 1
Length Diagram 4
Pitch Diagram 5
Area Diagram 6
Notes Diagram 7
3D Wall Area Diagram 8
Alternate 3D Wall View 9
Window and Door Diagram 10
Elevation Diagrams 12
Report Summary 16
Wall Report Summary 18

MEASUREMENTS

Total Roof Area =6,708 sq ft
Total Roof Facets =7
Predominant Pitch =0/12
Number of Stories <=1
Total Ridges/Hips =51 ft
Total Valleys =0 ft
Total Rakes =85 ft
Total Eaves =435 ft
Total Wall Area = 8,321 sq ft
Total Wall Facets = 15

Measurements provided by www.eagleview.com

Certified Accurate
Certified accuracy on all roof reports.

Satisfaction Guaranteed
Satisfaction guaranteed on all wall reports.

This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

Lynch Park Carriage House Oceanside Drive, Beverly, MA 01915 Report: 16570229

IMAGES

The following aerial images show different angles of this structure for your reference.

Top View

This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

IMAGES

North Side

South Side

This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

IMAGES

East Side

West Side

This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

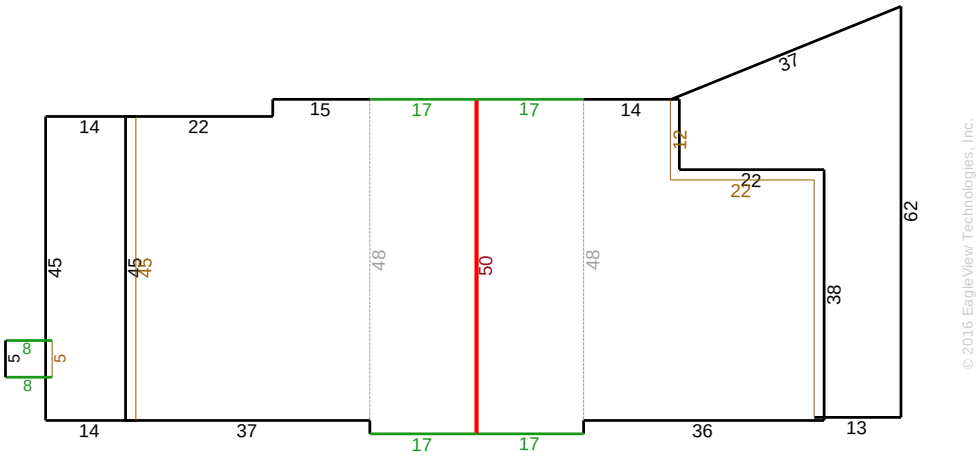
Lynch Park Carriage House Oceanside Drive, Beverly, MA 01915 Report: 16570229

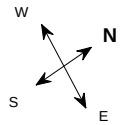
LENGTH DIAGRAM

Total Line Lengths:
Ridges = 51 ft
Hips = 0 ft

Valleys = 0 ft
Rakes = 85 ft
Eaves = 435 ft

Flashing = 120 ft
Step flashing = 0 ft
Parapets = 0 ft





Note: This diagram contains segment lengths (rounded to the nearest whole number) over 5 feet. In some cases, segment labels have been removed for readability. Plus signs preface some numbers to avoid confusion when rotated (e.g. +6 and +9).

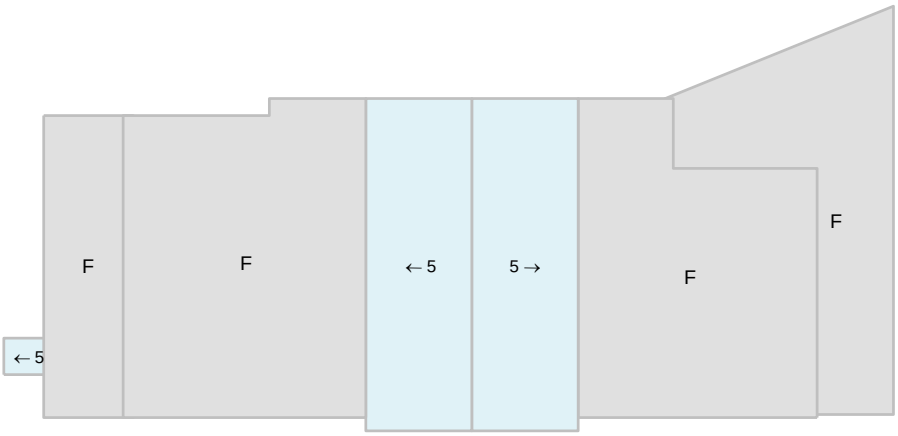
This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

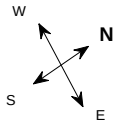
Lynch Park Carriage House Oceanside Drive, Beverly, MA 01915 Report: 16570229

PITCH DIAGRAM

Pitch values are shown in inches per foot, and arrows indicate slope direction. The predominant pitch on this roof is 0/12.



© 2016 EagleView Technologies, Inc.



Note: This diagram contains labeled pitches for facet areas larger than 20 square feet. In some cases, pitch labels have been removed for readability. Blue shading indicates a pitch of 3/12 and greater. Gray shading indicates flat, 1/12 or 2/12 pitches. If present, a value of "F" indicates a flat facet (no pitch).

This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

Lynch Park Carriage House Oceanside Drive, Beverly, MA 01915 Report: 16570229

AREA DIAGRAM

Total Area = 6,708 sq ft, with 7 facets.

Note: This diagram shows the square feet of each roof facet (rounded to the nearest foot). The total area in square feet, at the top of this page, is based on the non-rounded values of each roof facet (rounded to the nearest square foot after being totaled).

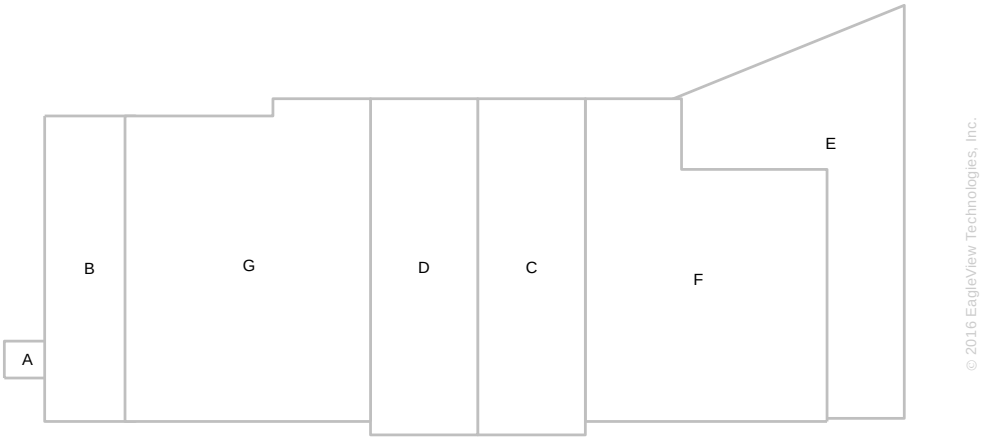
This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

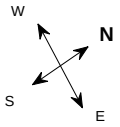
Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

Lynch Park Carriage House Oceanside Drive, Beverly, MA 01915 Report: 16570229

NOTES DIAGRAM

Roof facets are labeled from smallest to largest (A to Z) for easy reference.





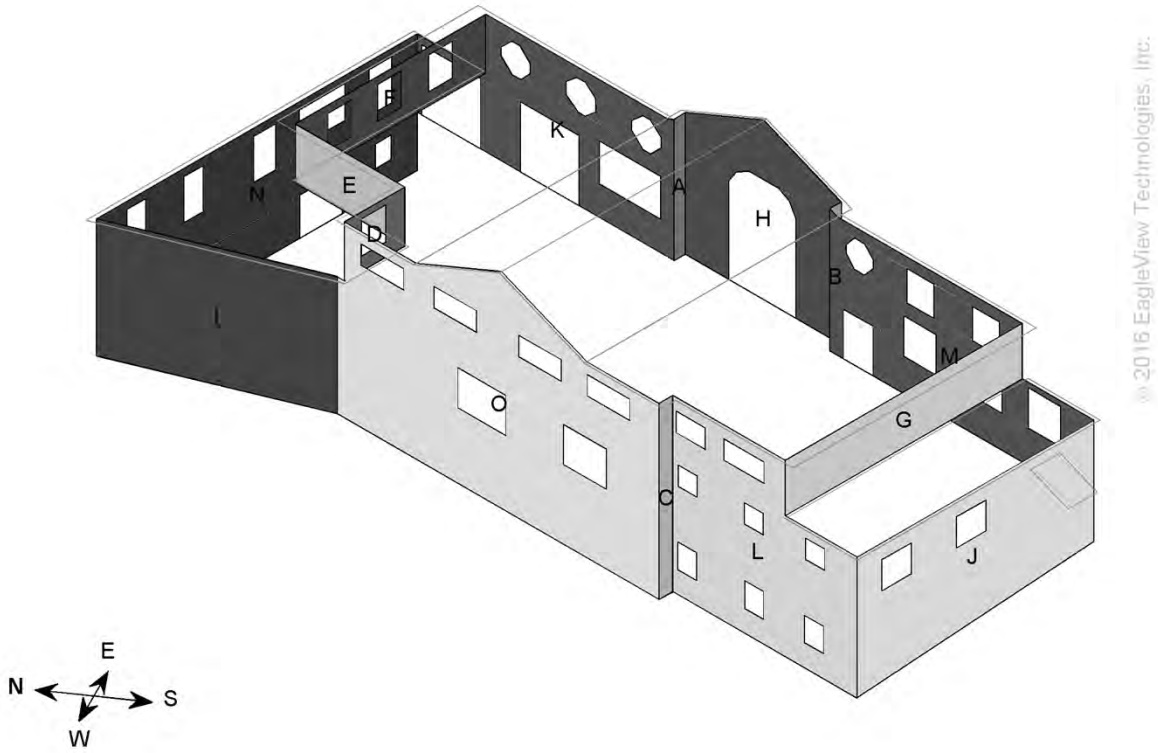
This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

Lynch Park Carriage House Oceanside Drive, Beverly, MA 01915 Report: 16570229

WALL AREA DIAGRAM

Total Wall Area = 8,321 sq ft, with 15 facets.
Total Wall Area with Windows and Doors = 9,962 sq ft



Wall Area by Direction

North	East	South	West
A - 48.9 sq ft D - 80.9 sq ft F - 260.9 sq ft N - 1081.1 sq ft	E - 196.5 sq ft H - 525.7 sq ft K - 552.9 sq ft M - 754.3 sq ft	B - 49 sq ft C - 81.5 sq ft G - 397.4 sq ft J - 887.7 sq ft	I - 766.4 sq ft L - 848.1 sq ft O - 1789.4 sq ft
1471.8 sq ft	2029.4 sq ft	1415.6 sq ft	3403.9 sq ft

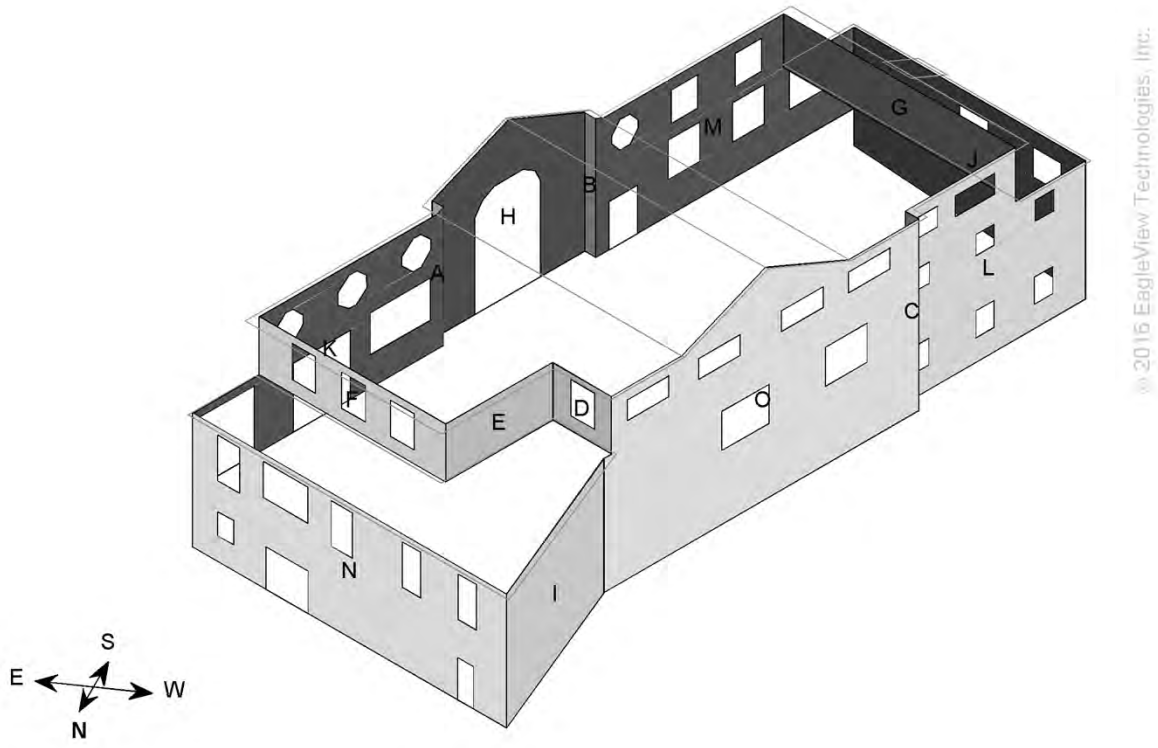
This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

Lynch Park Carriage House Oceanside Drive, Beverly, MA 01915 Report: 16570229

ALTERNATE WALL AREA

Total Wall Area = 8,321 sq ft, with 15 facets.
Total Wall Area with Windows and Doors = 9,962 sq ft



Wall Area by Direction

North	East	South	West
A - 48.9 sq ft D - 80.9 sq ft F - 260.9 sq ft N - 1081.1 sq ft	E - 196.5 sq ft H - 525.7 sq ft K - 552.9 sq ft M - 754.3 sq ft	B - 49 sq ft C - 81.5 sq ft G - 397.4 sq ft J - 887.7 sq ft	I - 766.4 sq ft L - 848.1 sq ft O - 1789.4 sq ft
1471.8 sq ft	2029.4 sq ft	1415.6 sq ft	3403.9 sq ft

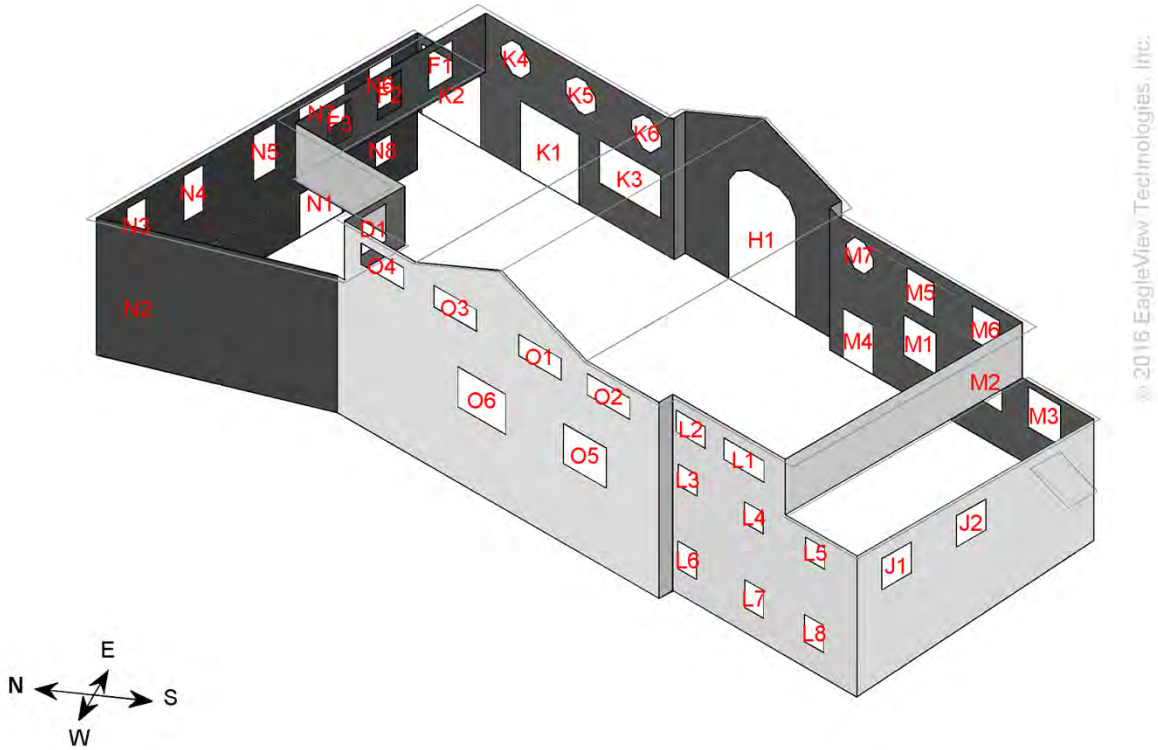
This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

Lynch Park Carriage House Oceanside Drive, Beverly, MA 01915 Report: 16570229

WINDOW AND DOOR DIAGRAM

Total Window and Door Area = 1641 sq ft, with 42 windows and doors
Total Window and Door Perimeter = 992 ft



© 2016 EagleView Technologies, Inc.

Window and Door Measurements

North	East	South	West
D1 - 27 sq ft	H1 - 234.1 sq ft	J1 - 27.5 sq ft	L1 - 26.3 sq ft
F1 - 27 sq ft	K1 - 126.1 sq ft	J2 - 27.5 sq ft	L2 - 19.3 sq ft
F2 - 27 sq ft	K2 - 126.1 sq ft		L3 - 12.3 sq ft
F3 - 27 sq ft	K3 - 80.5 sq ft		L4 - 12.3 sq ft
N1 - 56.3 sq ft	K4 - 22.4 sq ft		L5 - 12.2 sq ft
N2 - 21 sq ft	K5 - 23.8 sq ft		L6 - 15.8 sq ft
N3 - 26.3 sq ft	K6 - 22.8 sq ft		L7 - 15.8 sq ft
N4 - 26.3 sq ft	M1 - 39 sq ft		L8 - 15.8 sq ft
N5 - 30.5 sq ft	M2 - 39 sq ft		O1 - 28 sq ft
N6 - 31.4 sq ft	M3 - 39 sq ft		O2 - 28 sq ft
N7 - 51 sq ft	M4 - 44 sq ft		O3 - 28 sq ft
N8 - 12 sq ft	M5 - 27.5 sq ft		O4 - 28 sq ft

This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

Wall Area by Direction continued...

North	East	South	West
	M6 - 27.5 sq ft M7 - 19.4 sq ft		O5 - 52 sq ft O6 - 58.5 sq ft
362.8 sq ft	871.2 sq ft	55 sq ft	352.3 sq ft

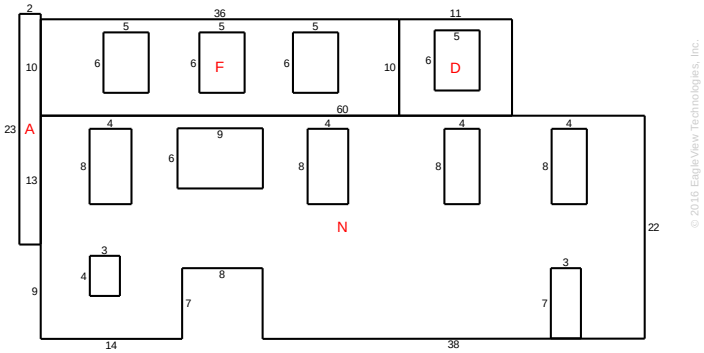
This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

Lynch Park Carriage House Oceanside Drive, Beverly, MA 01915 Report: 16570229

NORTH ELEVATION DIAGRAM

Top of Walls = 110 ft
Bottom of Walls = 110 ft



North Elevation Details

Wall	Wall Area	Window & Door Area	Window & Door Perimeter	Window & Door Count
A	48.9	0.0	0.0	0
D	80.9	27.0	21.0	1
F	260.9	81.0	63.0	3
N	1081.1	254.8	183.6	8
Total	1471.8 sq ft	362.8 sq ft	267.6 ft	12

Note: On-site verification of yellow shaded areas is needed. Details are on the Wall Report Summary Page. This diagram shows segment lengths rounded to the nearest whole number. The window & door and wall area in square feet (rounded to the nearest tenth) is based on the actual (non-rounded) value of each segment length.

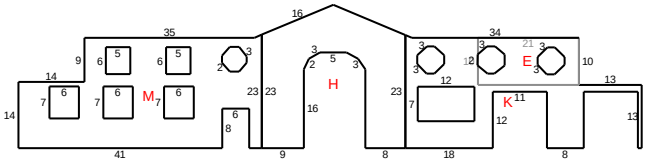
This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

Lynch Park Carriage House Oceanside Drive, Beverly, MA 01915 Report: 16570229

EAST ELEVATION DIAGRAM

Top of Walls = 137 ft
Bottom of Walls = 160 ft



© 2016 EagleView Technologies, Inc.

East Elevation Details

Wall	Wall Area	Window & Door Area	Window & Door Perimeter	Window & Door Count
E	196.5	0.0	0.0	0
H	525.7	234.1	60.2	1
K	552.9	401.7	179.8	6
M	754.3	235.4	160.1	7
Total	2029.4 sq ft	871.2 sq ft	400.1 ft	14

Note: On-site verification of yellow shaded areas is needed. Details are on the Wall Report Summary Page. This diagram shows segment lengths rounded to the nearest whole number. The window & door and wall area in square feet (rounded to the nearest tenth) is based on the actual (non-rounded) value of each segment length.

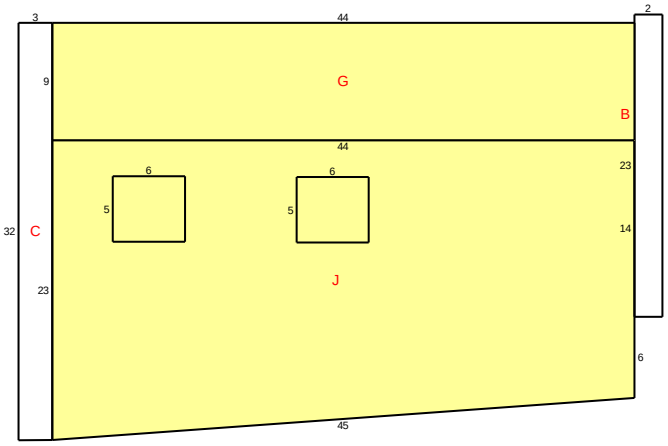
This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

Lynch Park Carriage House Oceanside Drive, Beverly, MA 01915 Report: 16570229

SOUTH ELEVATION DIAGRAM

Top of Walls = 94 ft
Bottom of Walls = 94 ft



© 2016 EagleView Technologies, Inc.

South Elevation Details

Wall	Wall Area	Window & Door Area	Window & Door Perimeter	Window & Door Count
B	49.0	0.0	0.0	0
C	81.5	0.0	0.0	0
G	397.4	0.0	0.0	0
J	887.7	55.0	42.0	2
Total	1415.6 sq ft	55 sq ft	42 ft	2

Note: On-site verification of yellow shaded areas is needed. Details are on the Wall Report Summary Page. This diagram shows segment lengths rounded to the nearest whole number. The window & door and wall area in square feet (rounded to the nearest tenth) is based on the actual (non-rounded) value of each segment length.

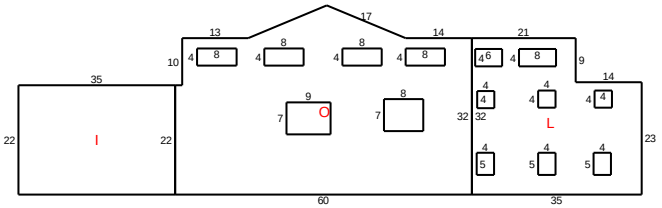
This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved– Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

Lynch Park Carriage House Oceanside Drive, Beverly, MA 01915 Report: 16570229

WEST ELEVATION DIAGRAM

Top of Walls = 132 ft
Bottom of Walls = 130 ft



© 2016 EagleView Technologies, Inc.

West Elevation Details

Wall	Wall Area	Window & Door Area	Window & Door Perimeter	Window & Door Count
I	766.4	0.0	0.0	0
L	848.1	129.8	130.0	8
O	1789.4	222.5	152.0	6
Total	3403.9 sq ft	352.3 sq ft	282 ft	14

Note: On-site verification of yellow shaded areas is needed. Details are on the Wall Report Summary Page. This diagram shows segment lengths rounded to the nearest whole number. The window & door and wall area in square feet (rounded to the nearest tenth) is based on the actual (non-rounded) value of each segment length.

This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

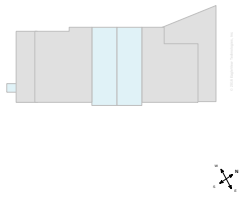
REPORT SUMMARY

Areas per Pitch		
Roof Pitches	0/12	5/12
Area (sq ft)	4930.9	1777.1
% of Roof	73.5%	26.5%

The table above lists each pitch on this roof and the total area and percent (both rounded) of the roof with that pitch.

Waste Calculation Table							
Waste %	0%	10%	12%	15%	17%	20%	22%
Area (sq ft)	6,708	7,379	7,513	7,714	7,848	8,050	8,184
Squares	67.1	73.8	75.1	77.1	78.5	80.5	81.8

This table shows the total roof area and squares (rounded up to the nearest decimal) based upon different waste percentages. The waste factor is subject to the complexity of the roof, individual roofing techniques and your experience. Please consider this when calculating appropriate waste percentages. Note that only roof area is included in these waste calculations. Additional materials needed for ridge, hip, valley, and starter lengths are not included.



Total Roof Facets = 7

Lengths, Areas and Pitches

Ridges = 51 ft (1 Ridges)
Hips = 0 ft (0 Hips).
Valleys = 0 ft (0 Valleys)
Rakes* = 85 ft (6 Rakes)
Eaves/Starter** = 435 ft (19 Eaves)
Drip Edge (Eaves + Rakes) = 520 ft (25 Lengths)
Parapet Walls = 0 (0 Lengths).
Flashing = 120 ft (5 Lengths)
Step flashing = 0 ft (0 Lengths)
Total Area = 6,708 sq ft
Predominant Pitch = 0/12

Property Location

Longitude = -70.8617597
Latitude = 42.5456968

Notes

This was ordered as a residential property.

Online Maps

Online map of property
http://maps.google.com/maps?f=g&source=s_q&hl=en&geocode=&q=Lynch+Park+Carriage+House+Oceanside+Drive,Beverly,MA,01915
Directions from Spencer & Vogt Group to this property
http://maps.google.com/maps?f=d&source=s_d&saddr=1+Thompson+Square,Suite+504,Charlestown,MA,02129&daddr=Lynch+Park+Carriage+House+Oceanside+Drive,Beverly,MA,01915

* Rakes are defined as roof edges that are sloped (not level).
** Eaves are defined as roof edges that are not sloped and level.

This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

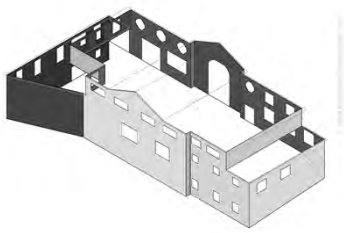
Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.

WALL REPORT SUMMARY

Wall Area Waste Calculation Table (excluding windows and doors)								
Waste %	0%	10%	11%	12%	13%	14%	15%	20%
Area (sq ft)	8,321	9,153	9,236	9,319	9,402	9,486	9,569	9,985
Squares	83.2	91.5	92.4	93.2	94.0	94.9	95.7	99.8

This table shows the total wall area excluding windows and doors, based upon different waste percentages. The waste factor is subject to the complexity of the structure, image quality, siding techniques and your experience. Please consider this when calculating appropriate waste percentages. Note that only the wall area is included in these waste calculations. Accessories may require additional material.

Report Comments
Due to obstructions in available images of this property, please verify measurements on portion of structure highlighted in yellow.



Total Wall Facets = 15
Total Windows and Doors = 42

Total Lengths & Areas

Wall Area = 8,321 sq ft
Wall Area with Windows and Doors = 9,962 sq ft
Top of Walls = 472 ft
Bottom of Walls = 493 ft
Inside Corners = 103 ft
Outside Corners = 196 ft
Inside Corners > 90° = 23 ft
Outside Corners > 90° = 0 ft
Window and Door Area = 1641 sq ft
Window and Door Perimeter = 992 ft

Wall measurements should be field verified to confirm accuracy. Wall areas assume that flat soffits exist at the eaves. If sloped soffits are present, wall height and wall area measurements will likely be off.

This document is provided under License by EagleView Technologies to the requestor for their Internal Use Only subject to the terms and conditions previously agreed to by the requestor when they registered for use of EagleView Technologies Services. It remains the property of EagleView Technologies and may be reproduced and distributed only within the requestor's company. Any reproduction or distribution to anyone outside of the requestor's company without EagleView's prior written permission is strictly prohibited. All aspects and handling of this report are subject to the Terms and Conditions previously agreed to by the requestor.

Copyright ©2008-2016 EagleView Technologies, Inc. – All Rights Reserved – Covered by U.S. Patent Nos. 8,078,436; 8,145,578; 8,170,840; 8,209,152; 8,515,125. Other Patents Pending.