Mechanics Hall – East Princeton, MA

Prepared for: Friends of Mechanics Hall
Prepared by: JD McCarthy, Inc.
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Overview

JD McCarthy Inc. is a licensed building contracting company, specializing in historic restorations. Information provided in this report is based on current building code and professional on-site assessment as a contractor. While we endeavor to provide the most accurate information possible, we make no representations, express or implied, that this report should replace a full structural review by a licensed structural engineer.

Mechanics Hall, which was originally built as a school house in 1852 and is currently listed in the National Register of Historic Places, has served the residents of East Princeton as a meeting hall and community center. However, due to deterioration and inadequate maintenance, the structure has fallen into disrepair. Through the support and dedication of the Friends of Mechanics Hall, it is the community's intention to revive this prominent landmark for their use and enjoyment.

In October 2013, **JD McCarthy Inc.** was commissioned by the Friends of Mechanics Hall to assess the current condition of this 1852 historic structure, to advise on:

- Current structural conditions
- Estimated construction costs to stabilize the current structure
- Plan to create multi-functional space

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Basement Evaluation

Foundation:

Three existing current conditions: original stone foundation, poured concrete reinforcement and inadequate/non-existing foundation.

The original stone foundation appears to be in relatively good condition, but upon initial inspection, it is presumed to require some repair to maintain structural integrity and to minimize infiltration of water. Some areas in need have already been addressed with poured concrete and other areas, where the foundation is currently non-existent, will require the addition of a new foundation section to provide proper structural support.

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Basement Evaluation (cont'd.)

Floor: Current basement floor is original earth floor. Perimeter drains, vapor barriers and the addition of a poured concrete floor are recommended to create improved functionality for mechanical systems, storage and moisture control.

Stairs: Stairs leading from main floor to basement are in need of a complete rebuild, due to compromised structural components.

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Basement Evaluation (cont'd.)

Framing: Sills and girders are constructed of original 8x8 timbers. Upon initial inspection, existing interior girders appear to be in sound structural condition. Many of the visible sills appear to be in sound condition as well; however, two areas were identified as being in need of repair at the Northeast and Southeast corners of the main structure, where the sills are visibly deteriorated at the corner post intersection. Additionally, portions of the sills that are not currently visible can not be evaluated until the removal of exterior sheathing takes place.

Floor joists are constructed of 2x8 timbers running West to East, spaced 16" on center. Joists are notched and connected at the supporting girders in notched pockets, commonly referred to as a butt cog joint. The maximum joist span is 112" and is expected to conform to current building code, subject to approval of the structural engineer. The girders are supported by 10" diameter round, timber posts that do not appear to be on any footings. Footings will need to be added to provide proper support.

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Basement Evaluation (cont'd.)

An area of damage in the Northwest corner contains compromised structural elements including apparent moisture damage to joist, girder and sill components. The damage appears to be contained to an area of four joist bays, approximately 6' in length.

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First Floor Evaluation

Main Building

The first floor is currently comprised of two main rooms, two bathrooms, a foyer and a hallway encompassing approximately 1,100 square feet in the main section. Ceiling height is 102". Floors are tongue-and-groove hardwood throughout and appear to be salvageable.

Exact floor plan is yet to be determined. Pending further details regarding specific space usage, if the original intent to maximize open space is assumed, it is anticipated that demolition of existing partition walls will take place and a structural engineer's expertise will be required to identify load bearing points.

Much of the existing woodwork, windows, doors and plaster are in good condition; however, the presumed presence of lead-based paint will require further investigation into proposed use and may likely involve the need for abatement, encapsulation or containment.

Access to the second floor is from the main section of the building is limited to one main staircase located at the Southwest entrance to the building on Main Street. The structural elements of the staircase appear to be in sound condition but does not fully conform to current building code regulations.

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First Floor Evaluation (cont'd.)

Rear Addition on Main Building

This approximately 420 square foot space currently consists of one open space with a 7' ceiling height. Floors are tongue-and-groove hardwood throughout and appear to be salvageable.

There are two existing staircases in the rear addition: one in the Northeast corner enabling access from the basement to the first floor; the second in the Southeast corner enabling access from the first floor to the second floor. Both staircases would require moderate reconstruction to ensure safe egress.

This space will require the most structural work due to its lack of foundation and lack of access from the first floor main structure. Pending further space and use design, this space may be considered a potential location for a proposed elevator.

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Second Floor Evaluation

Main Building

The second floor is currently comprised of one large, open space approximately 1,100 square feet. Ceiling height is 118". Floors are tongue-and-groove hardwood throughout and appear to be salvageable.

Much of the existing woodwork, windows, doors and plaster are in good condition; however, the presumed presence of lead-based paint will require further investigation into proposed use and may likely involve the need for abatement, encapsulation or containment.

Access to the rear addition on the main building can be gained through the entrances on either side of the stage platform at the East end of the main building.

The stage platform appears to be in sound structural condition; however, there are safety concerns based on usage, namely, the platform-level windows on both sides of the stage platform.

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Second Floor Evaluation (cont'd.)

Rear Addition on Main Building

This approximately 420 square foot space currently consists of one open space with a sloped, 8' to 7' ceiling height. Floors are tongue-and-groove hardwood throughout and appear to be salvageable.

Attic Space Evaluation

The attic consists of original 2x8 roof rafters and original roof sheathing. Aside from some visibly compromised sheathing and two missing collar ties, the roof system appears to be in sound structural condition.

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Exterior Evaluation

Windows

The existing six over six wood framed original windows with single pane glass, appear to be structurally sound. Some glazing will need to be replaced on specific units as well as application of proper weather sealing to ensure peak performance. The surface is in need of a coat of paint at this time.

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Exterior Evaluation (cont'd.)

Siding

The exterior of the structure is covered in original clapboard siding. The wood appears to be sound at this stage, but the existing paint is not providing adequate protection. Without a coat of paint, the wood will deteriorate quickly.

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Exterior Evaluation (cont'd.)

Trim

Similar to windows and siding, the vast majority of exterior trim elements appear to be in sound condition, but will require a coat of paint to ensure longevity.

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Exterior Evaluation (cont'd.)

Fire Escape

A steel fire escape exists on the North side of the structure, connecting the second floor to the ground level. The fire escape appears to be sound, but could benefit from a coat of paint for protection. Furthermore, additional investigation will be needed to determine if this access point will meet the current building code requirements for a second egress from the second floor.

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Exterior Evaluation (cont'd.)

Roofs

The main structure roof is a three tab asphalt shingle material. Most manufacturers warranty about thirty years on similar products. It is estimated that the current roof is approximately 20 – 25 years old and nearing the end of its lifespan. The roof on the back portion of the existing structure is a rolled rubber product, which appears to be functional and of a similar age.

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Conclusions and Recommendations

Overall, Mechanics Hall is in better condition than I would have suspected after so many years of disuse/ disrepair. However, in my professional opinion, several aspects of the restoration should be part of your immediate Phase 1 plan in order to preserve existing historic elements. Furthermore, several additional upgrades are recommended to bring the structure into more functional use.

Phase 1 Recommendations

- Foundation repair and additions
- Structural repairs to framing
- Rebuild of basement stairs
- Exterior paint
- Insulation
- Heating system
- Septic system
- Electrical upgrade
- Roof replacement
- Lead paint analysis
- Assessment by structural engineer
- Design/use plan

Phase 1 recommendations have been made as they relate to maintaining the structure at a level that would afford an element for basic use, while leaving possibilities for future improvements/renovations to be made for more specific community use. This may include the reconfiguration of the first floor plan layout, the addition of handicapped access in the forms of exterior ramps and an elevator, and reconfiguration of the upstairs floor plan to include amenities such as a small kitchen area. Until a solid design use plan is in place, I will not presume to speculate on the scope of your long-term plans. Specific cost estimates based on a future design/ use plan can be addressed in a Phase 2 cost estimate.

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Estimated Costs

	Estimated Cost	Comments
Foundation Repairs & Additions	$30k-40k	Install new foundation section at back and sides of rear addition; selective repair to existing stone foundation; addition of footings below load bearing posts
Structural repairs to framing	$45k-55k	Rebuilding of back and sides walls of the addition; repair of damaged joists in front Northwest corner of main building; replacement of damaged sill and post sections at Northeast and Southeast corners of main building
Rebuild of basement stairs	$2k-3k	Complete rebuild of basement stairs in Southwest corner of main building
Exterior paint	$35k	To be estimated by painting contractor; assumed lead paint
Insulation	TBD	Cost estimate to be provided based on specific use requirements

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Estimated Costs (cont'd.)

	Estimated Cost	Comments
Heating system	TBD	Cost estimate to be provided based on specific use requirements
Septic system	TBD	Cost estimate to be provided based on specific use requirements
Electrical upgrade	TBD	Electrical upgrade will be needed in the form of main service and new branch circuits; estimated cost outside the scope of this report
Roof replacement	$15k-20k	Replace both roofs with 40 year three tab architectural shingles
Lead paint analysis	TBD	Presence of interior and exterior lead paint assumed; analysis and specific recommendations should be performed by a licensed lead paint analysis firm; estimated cost outside the scope of this report
Assessment by structural engineer	TBD	A full structural assessment/report by a licensed structural engineer is recommended; estimated cost outside the scope of this report
Design/Use plan	Typically 8-15% of construction costs	A design/use plan will need to be established with the assistance of engineering/ architectural services

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