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DRAFT 22 February 2022

Anser Advisory, LLC 18 Tremont Street Boston, MA 02108

Attention: Margaret Minor Wood

Reference: Camp Naumkeag Conditions Assessment

Dear Margaret:

In January of 2022, we surveyed each of the five building structures that make up Camp Naumkeag in Salem. During this time, we evaluated both the interior and exterior conditions of these structures in order to assess their suitability for continued use and the feasibility of being moved.

Please note that all elevations facing Memorial Drive will be referenced as the east facing elevations throughout this report.

GENERAL DESCRIPTION

What is now Camp Naumkeag was originally founded in 1916, initially functioning as a caring facility for tuberculosis patients. Over time, the property expanded into a summer camp for children which has served generations of families. For a short span, the Salem YMCA adapted the historical space for its own use, however, the five buildings now remain vacant. Figure 1 below displays the locations of the five buildings that this report will cover, labelled A-E.

Buildings A-D are all wooden stick-framed structures that rest upon elevated foundations composed of scattered timber posts and stacked concrete masonry units (CMU). Each is covered with painted wood clapboard siding while each of the four roofs are protected with asphalt shingles. Structure A has a pavilion attached at the south facing elevation. Buildings B-D are all enclosed, rectangular shaped structures with the roof supported by a series of trusses. Building E is constructed in a different manner than the other four; the walls are entirely built from CMU supported by a concrete slab foundation. Its roof, however, displays a similar wood truss system and remnants of a once existing dropped ceiling.

Each of the five buildings are suffering varying levels of damage, which will be elaborated on in the following sections.



Figure 1: Aerial map display of Camp Naumkeag buildings and locations

NOTED CONDITIONS AND DEFICIENCIES

The following is an inventory of deficient and damaged conditions that need to be corrected or repaired.

Building A ("The Zoo") / Exterior:

The south end of this structure makes up a square shaped pavilion that is attached to a one room structure which maintains a rectangular deck at its north end. The pavilion roof is supported at its center by a single timber post with a series of diagonal lumber members extending from the post. Considering the pavilion is exposed and openly accessible to the outside, its conditions will be included in this section.

South Elevation

 The bottom two-thirds of the pavilion roof is heavily worn and covered in biological growth (please see Photo 1 of the Appendix). The decking beneath the asphalt shingles is water damaged, as seen from the pavilion's exposed underside. Due to the likelihood of water entering into the roofing system and remaining, the sheathing and roof rafters in this area are experiencing deterioration. Photo 2 shows several sheathing boards failing while the surrounding ones are either water damaged or stained with biological growth.

Camp Naumkeag Building Evaluation Salem, MA

• Part of the deck's sill is built into the grade (near the entry way seen in Photo 1) which will encourage unwanted damage as water from the soil seeps into the exposed wood grain.

West Elevation

- The pavilion roof on the west side is also experiencing heavy amounts of biological growth, as well as some sagging in the center (Photo 3). Just like at the south side, the rafters and decking are damaged from the water entry and are now rot-deteriorated enough where it is not sufficiently carrying the load.
- At the north end of the west façade, there are wood siding boards missing, exposing the interior wall sheathing and framing. Beneath the opening, the boards that are still intact are bulging out consequently from constant water entry and plant growth along its surface. The facia along the roof eave is also sagging, suggesting that the roofing issues continue at this end. The southernmost window at this elevation also has several broken glass panes, permitting rain and wildlife to penetrate through (Photo 4).

North Elevation

- The north side of Building A has a porch wood deck that overhangs a beam running over the northernmost line of CMU piers and picks up the porch's roof along the outer edge. The cantilevered joists are small for the overhanging span and there appears to be insufficient counterbalance on the interior span to keep the cantilever from tilting outward were the roof to be full of snow and the outer edge of the porch full of people. The beam that runs across the piers below sags, causing the wood deck and roof edge to sag.
- As will be discussed in the "Foundation" portion of Building A, many of these piers are slanted and/or not embedded in grade, meaning they are relying solely on the weight of the structure to keep them from shifting. Additionally, the beams that are supporting the joists of the deck visibly sag, implying the member is overloaded. The dips in the framing members are felt on the deck itself as the decking shifts up and down along the joists. Photo 5 shows an overall view of the deck, its shifted piers, and bending framing members.
- The wood siding slopes down towards the center of the north wall, following the dip in the floor beams. The decking on the balcony are also suffering end grain damage and biological growth. Photo 6 shows the sloping siding and worn state of the deck.

East Elevation

At the north end of the east elevation, the fascia and soffit are missing (Photo 7). As discussed with the previous conditions, this situation will lead to further water damage within the wall and ceiling.

- Beneath the southernmost window, a few of the wood siding boards have become dislodged (Photo 7).
- Both the stairway to the pavilion and north end deck are extremely worn and suffering decay (Photo 8).
- At the pavilion's east elevation, the roof is heavily deteriorated, leaking and contributing to the rotting of the roof structure and floor structure below (Photos 8 & 9).
- The east roof eave sags due to the rotting and compression of the supporting structure below, where a gap in the skirt board is letting water seep into the framing (Photo 8).

Foundation

The foundation supports under Building A vary between circular wooden posts and dry stacked CMU. While some piers are visibly supported by concrete footings, this is not the case for all, and appears random throughout.

Several of the wood foundation posts are deteriorated at the top where they
make contact with floor framing. Additionally, a large majority of the CMU piers
are out of plumb and are topped with brick masonry to reach the underside of the
beams (Photo 10). As mentioned previously, several of the beams are sagging,
indicating that there are not enough posts to carry the load.

Building A / Interior:

The interior of building A contains a kitchen area, bathroom, living area, and bedroom space. The bedroom and bathroom are separated from the living/kitchen area by a partition wall.

- At the north end of the building, about five feet south of the wall, there is a rise in the floor where the beam below spans east to west. However, at the north and south end walls, the floor dips down towards the middle span where the floor beams sag below. The floor movement has influenced the wall paneling within, causing it to sag with it (Photo 30).
- Within the building's northwest corner, where the kitchen is located, there are large holes in the ceiling, exposing the lath and strapping system (Photo 31). These holes were probably initiated by roof leakage and then worsened by rodents.

Camp Naumkeag Building Evaluation Salem, MA

• There is a pronounced sag in the easternmost part of the ceiling. The sag location corresponds to where the fascia and soffit are missing from the exterior and is probably related to water intrusion.

Building B (Boys' Bathroom) / Exterior:

This structure is rectangular shaped in plan and has the same red painted clapboard siding and asphalt roof of Building A. The foundation similarly consists of scattered CMU piers and posts, however these were more difficult to access because of the closeness in grade and surrounding wood stripping around its perimeter.

South Elevation

- The roof shingles are extremely deteriorated and have begun to lift up and away from the membrane. The roof structure itself sags heavily in the center above the doorway, where the fascia is also missing (Photo 11).
- Several siding boards are misaligned or deteriorated enough that small gaps and holes are forming in the elevation (Photo 11). Water that enters within can promote wood rot and damage to the interior structure of the wall.
- Large portions of the elevation display extremely worn and alligatored paint over the exterior wood siding.
- Several of the CMU foundation piers that run along the east end of the south elevation were found to be shifted and out of plumb.

West Elevation

• As seen on the south side, the paint is in poor condition and there are several holes in the siding boards, specifically above both windows. The rake boards at the gable ends are also in a state of deterioration (Photo 12).

North Elevation

- The fascia member along the entire span of this elevation is rotted and covered in biological growth.
- Several areas are missing siding boards or in some cases, where the clapboards are still present, they have begun to bulge out. The bulging could be from detachment of the boards from the sheathing, or, more critically, buckling of the sheathing due to rotting and compression of the wall framing behind it. There is also a noticeable sag in the roof eave that is impacting the siding below; the boards warp up and down following the deformation of the roof (Photo 13).

East Elevation

• The damage at this elevation is very similar to what was seen at the west end. The gable ends have rotted rake boards, the paint is weathered, and there are holes between the clapboards which have begun to detach from the wall (Photo 14).

Foundation

• Though the access was limited, we were able to view the foundation under Building B from the outside. The perimeter of the building is supported by CMU piers, while the center beam rests on square timber posts (Photo 15).

Building B / Interior:

The interior wall and roof framing of Building B is generally exposed, aside from the bathroom area at the southeast corner. The roof is supported by a truss system and two metal wire reinforcing ties that span north to south.

- There are six trusses in total, one of which that has failed after the collar tie separated from the rafter (Photo 32), and two that are on the verge of experiencing the same failure. These two that have almost reached failure are undergoing rafter separation at one end and wood rot at the other.
- The westernmost truss has a large notch cut in its collar tie, which reduces its capacity to carry load (Photo 33).
- At the easternmost end of the structure, the roof is not supported by any trusses but rather two vertical wood members, which is most likely one of the factors contributing to the sagging in the roof line (Photo 34).
- The floor of the building slopes down towards the center, which is associated with foundation movement, discussed in the "*Exterior*" conditions section.

Building C (Administration Building) / Exterior:

Building C is also a rectangular shaped timber framed structure that has a four-post supported overhang at the north end of its west elevation.

South Elevation

- The top third of the east end rake board is completely rotted away (Photo 16), exposing the internal wall system to the weathering elements.
- The siding at the gable has several gaps, contributing to the internal decay. Holes in the boards progress with each freeze thaw cycle as rot consumes the member, as can be seen in many areas of these buildings.

• Between the two windows, there is a wood shelf that is also deteriorating (Photo 17). Its connection to the siding will encourage more rotting as water becomes trapped between the two elements.

West Elevation

- The roofing is very weathered and the fascia is rotting away.
- At the south end of the west elevation, there is a significant sag in the roof, which is following a corresponding sag in the west wall, which can be seen in Photo 18. At the base of this sagging façade, the lower siding is rotting away, leaving a gap that is covered by a makeshift plywood panel (Photo 19).
- The sill and shutters of the southernmost window is rotted; the end grain is rotting most likely from exposure to water that pools at the ledge (Photo 20).
- The flashing surrounding the base chimney has failed (Photo 18), letting water seep into the interior.
- The north end of the west elevation is in better condition than at the south end, however, at the base of the elevation, the clapboard siding runs right down and into the grade (Photo 21), causing the base of the wall to rot.

North Elevation

• The north elevation has several areas where siding is no longer present or rotted gaps are forming and strips of plywood have been used to cover the damage (Photo 22).

East Elevation

• The failed flashing, worn roof, and south end sag of the west façade continues over to the east elevation. In addition to this damage, the base of the building is suffering from rotted and detached siding. There is a large hole next to the sill of the doorway, inviting water and rodents to enter the building structure (Photo 23).

Foundation

• From what could be seen of the foundation, the perimeter is supported by CMU piers, some of which are out of plumb. A center timber beam, supported by square wood posts, spans in the east-west direction. It appears that the beam extends, unsupported, for a longer span than its capacity can handle, which is most likely contributing to the floor slope discussed in the "*Interior*" conditions section.

Building C/ Interior:

Building C has a similar configuration to Building B, where the roof is supported by six trusses, that span east to west, and are experiencing similar damage as discussed previously.

- At the south end, where the roof was observed to be sagging the most, is where interior truss damage is located. Because of the truss failure and associated deflection, the roof ridge board has failed in bending (Photo 35). Associated with that is the connection failure of the collar tie and west end rafter of the fifth truss from the north (Photo 36). This is where the lowest point of the roof sag is located.
- At the floor framing level, the decking is noticeably higher at the center of the building and then slopes down towards the perimeter (Photo 37). The low points are found to be near the corners of the building. The total drop in the floor is estimated to be about 8" of deformation.

Building D (Girls Bathroom)/ Exterior:

South Elevation

- The roofing shingles are heavily weathered and there is a dip in the ridge and eaves at the center of their span. The east end fascia is completely eroded, and remnants of a gutter system remain in its place.
- The siding is starting to detach and fall off, mainly at the westernmost end of the south elevation, which at the east end there are large gaps forming between the panel connections.
- The CMU piers of the foundation are exposed at this side and are sinking into the grade, which is contributing to the sag of the façade and roof (Photo 24).

West Elevation

- At the gable, the boards are pulling away from one another, allowing for gaps and rot damage at the panel ends. The damage continues to the peak of the elevation, where the vent is distorted and falling apart.
- The base of the door is riddled with rot damage, leaving behind gaping holes at the bottom. See Photo 25 for an overall view of the west elevation.

North Elevation

• The north elevation shares the same damage as what was observed on Building D's south side. This includes roof damage and movement, dislocated boards and holes, and sinking foundational CMU piers (Photo 26).

East Elevation

• The east elevation displays similar damage in the siding, just like at the west elevation, however, there is also a noticeable lean in the CMU piers at its foundation level. The façade damage can be seen on Photo 27.

Foundation

• The perimeter CMU piers lean and sink into grade while the center beam, supported on cedar posts, slopes with the movement of these posts. The impacts of this movement are discussed in the "Interior" conditions section.

Building D/ Interior:

- The roof of Building D was originally constructed with collar ties too high to provide enough restraint between its eaves, and as a result the eaves bowed out and the ridge sagged. 2x4 collar ties were added closer to the bases of the rafters at a later date, however the nailed end connection appears insufficient for the expected loads.
- Along the north elevation, there is detectable eave spread along the entire span.
- At the southeast corner of the building, there is a form of white mold or rot developing on the sheathing, indicating consistent water presence (Photo 38). This lines up with the missing fascia on the exterior of the south façade.
- At this southeast corner is also where the lowest point of the floor framing is reached, meaning the surrounding decking slopes down to this area. The amount of unevenness in the floor is beyond what would be considered safe for continued public occupancy.

Building E ("Art Barn"):

This structure is the only one of the five that is constructed of CMU, which has been beneficial in its ability to resist most of the damage seen in the other four buildings.

- The roofing shingles are deteriorating and collecting biological growth.
- The fascia on the north and south elevations are rotting and even missing in some areas (Photos 28 & 29).
- There is a missing windowpane at the west elevation.

Building E/ Interior:

The interior conditions of the building are safe. See Photo 39 for overall view of the building.

CONCLUSION

In consideration of the vast extent of damage noted during our survey, other than for Building E, the "Art Barn", the existing buildings at Camp Naumkeag are in extremely poor condition and in our opinion, presently unsafe and unfit for human occupancy.

The work that would be required to restore and preserve them on the present site would approach the cost of totally reconstructing them, and the cost of repairing them and moving them to another site would exceed the cost of replacing them with new facilities. Other than for their historic value, we see no utility gained in preserving them.

Thank you for the opportunity to provide this investigation. Please contact us if you have any questions of if we can be of further service.

Respectfully yours, Structures North Consulting Engineers, Inc.

John M. Wathne, PE (MA), President

Jillian Borghardt, EIT

Please see attached Appendix (23 pages, including cover sheets)

APPENDIX, 23-pages, including cover pages

Page 1

Photo 1: Pavilion roof suffering from heavy biological growth Photo 2: Rot - damaged pavilion roof (facing south)

Page 2

Photo 3: Sagging and damaged pavilion roof (west elev.)

Photo 4: Missing panels, sagging roof, and broken window (west elev.)

Page 3

Photo 5: Insufficient foundation and sagging floor framing (north elev.) Photo 6: Sagging clapboard and deteriorated deck ends (northeast elev.)

Page 4

Photo 7: Missing fascia and soffit & shifted siding (east elev.) Photo 8: Deteriorated roof, sill and stairs (east elev.)

Page 5

Photo 9: Warped and damaged roofing members (facing east) Photo 10: Rotted wood posts and shifted CMU piers

Page 6

Photo 11: Damaged roof and siding (south elev.) Photo 12: Decaying rake boards and siding (west elev.)

Page 7

Photo 13: Missing siding, sagging roof, and wall structure (north elev.) Photo 14: Small siding gaps and eroding rake boards (east elev.)

Page 8

Photo 15: Overall view of Building B's foundation system Photo 16: Deteriorated rake board at Building C (south elev.)

Page 9

Photo 17: Rotted wood shelf attached to façade (south elev.) Photo 18: Sagging roof and eroded flashing around chimney (west elev.)

<u>Page 10</u>

Photo 19: Missing siding boards at base of west elevation

Photo 20: Southernmost window with rotted sill and shutters (west elev.)

<u>Page 11</u>

Photo 21: Siding panels covered by soil (west elev.) Photo 22: Covered up rotting and missing clapboards panels (north elev.)

Page 12

Photo 23: Overall view of east façade damage Photo 24: Overall view of south façade damage

<u>Page 13</u>

Photo 25: Overall view of damage at west elevation Photo 26: Overall view of damage at north elevation

<u>Page 14</u>

Photo 27: Façade damage at east elevation Photo 28: Roof and fascia damage at south elevation

<u>Page 15</u>

Photo 29: Rotting fascia at north elevation Photo 30: Visual of floor framing deformations at north and south elevations

<u>Page 16</u>

Photo 31: Holes in ceiling at northwest corner of kitchen Photo 32: Failed rafter and collar tie connection (facing north)

Page 17

Photo 33: Notch cut in collar tie at west end truss Photo 34: Lack of truss system at east end of Building B

Page 18

Photo 35: Failed rafter at south end of Building C Photo 36: Collar tie and rafter connection failure in Building C

<u>Page 19</u>

Photo 37: Slope away from high point at center of floor framing system (Building C) Photo 38: White mold growth/rot on roof sheathing of Building D

Page 20

Photo 39: Safe interior conditions of Building E



Photo 1: Pavilion roof suffering from heavy biological growth



Photo 2: Rot-damaged pavilion roof (facing south)



Photo 3: Sagging and damaged pavilion roof (west elev.)



Photo 4: Missing siding, sagging roof, and broken window (west elev.)



Photo 5: Insufficient foundation and sagging floor framing (north elev.)



Photo 6: Sagging clapboard and deteriorated deck ends (northeast elev.)



Photo 7: Missing fascia and soffit & shifted siding (east elev.)



Photo 8: Deteriorated roof, sill and stairs (east elev.)



Photo 9: Warped and damaged roofing members (facing east)



Photo 10: Rotted wood posts and shifted CMU piers



Photo 11: Damaged roof and siding (south elev.)



Photo 12: Decaying rake boards and siding (west elev.)



Photo 13: Missing siding, sagging roof, and wall structure (north elev.)



Photo 14: Small siding gaps and eroding rake boards (east elev.)



Photo 15: Overall view of Building B's foundation system



Photo 16: Deteriorated rake board at Building C (south elev.)



Photo 17: Rotted wood shelf attached to façade (south elev.)



Photo 18: Sagging roof and eroded flashing around chimney (west elev.)



Photo 19: Missing siding boards at base of west elevation



Photo 20: Southernmost window with rotted sill and shutters (west elev.)



Photo 21: Siding boards covered by soil (west elev.)



Photo 22: Covered up rotting and missing clapboards boards (north elev.)



Photo 23: Overall view of east façade damage



Photo 24: Overall view of south façade damage



Photo 25: Overall view of damage at west elevation



Photo 26: Overall view of damage at north elevation



Photo 27: Facade damage at east elevation



Photo 28: Roof and fascia damage at south elevation



Photo 29: Rotting fascia at north elevation



Photo 30: Visual of floor framing deformations at north and south elevations



Photo 31: Holes in ceiling at northwest corner of kitchen



Photo 32: Failed rafter and collar tie connection (facing north)



Photo 33: Notch cut in collar tie at west end truss



Photo 34: Lack of truss system at east end of Building B



Photo 35: Failed rafter at south end of Building C



Photo 36: Collar tie and rafter connection failure in Building C



Photo 37: Slope away from high point at center of floor framing system (Building C)



Photo 38: White mold growth/rot on roof sheathing of Building D



Photo 39: Safe interior conditions of Building E