Old Town House
Bremen, ME
Structural Evaluation
Resurgence engineering project number 13-013

performed for

Board of Selectmen
The Town of Bremen, Maine
208 Waldoboro Road
Bremen, ME 04551

Draft Report: October 3, 2013

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1.0 EXECUTIVE SUMMARY

This Structural Assessment is to be used solely to obtain grant funding and to prioritize use of available monies for future design fees, owner's soft costs, and construction costs. A structural assessment is a ***first step*** toward a larger preservation strategy that includes Existing Conditions Documentation, Schematic Design, Design Development, Construction Documents, Specifications, and Construction Administration. Resurgence Engineering & Preservation, Inc. cannot be responsible for consequences arising from construction work or funding gaps that occur before complete plans and specifications are produced. Recommendations listed in this report are not detailed enough to be used as Construction Documents.

The foundation structure of the Bremen Old Town House is in fair to poor condition, considering age and construction type. Insufficient footing depths have not protected the building above from movement caused by soil settlement or frost heave. Additionally, some structural work needs to be performed in the main attic and roof structure, to strengthen the building. Primary structural concerns about the building are (in order from foundation to roof):

A. *Site grading at the front and left (west and north) of the building holds water against and, possibly, beneath the main building and ell;*

B. *Framing rot below the original building, near the northwest corner. A significant carpenter ant colony appears to occupy the framing at this corner of the building;*

C. *First-floor piers are in poor condition and should be further assessed. Piers should be repaired or rebuilt, and columns should be closely examined for base rot. The building may be a good candidate to have a permanent foundation installed, but its proximity to the road may require careful foundation design and monitoring of the excavation work.*

D. *Heavy floor loads at several locations throughout the building are likely causing excessive floor deflection in conjunction with poor foundation support. Insufficient support at the intersection of the main building and ell has caused floor deflections of up to four inches along that wall. The safe in the ell sits above an improperly-supported area of the foundation below, likely contributing to the significant deflection.*

E. *Attachment of the fire escape has caused water infiltration and siding rot (and possibly sheathing and framing rot). Removal of the fire escape, repair of the siding, sheathing, and framing rot, and proper reattachment of the fire escape will be required. The base of the fire escape will need to be installed on proper footings located below frost depth.*

F. *Improperly located collar ties in the main building attic. These collar ties have overstressed the roof rafters and created a sag in the roof rafters. The sag was likely noticed early in the life of the building, and stabilized by the installation of the threaded rod and turnbuckles;*

As is often the case with building preservation projects, many factors need to be considered. Planning issues, economic justification, site safety, usage patterns, and environmental issues all factor into the final decision about the best way to preserve the property in question. Some preservation items, although not immediately necessary to restore, repair, or replace, may need to be addressed earlier to avoid repeating or complicating future work.

Please read the report in its entirety to fully integrate material contained in the Appendices that may not be specifically discussed in the narrative. Appendix I of this report provides photographs relevant to the report. Appendix II of the final report includes information pertaining to cost opinions.

2.0 INTRODUCTION

At the request of Mr. Hank Nevins, Selectman for the Town of Bremen, Resurgence Engineering and Preservation, Inc. (RE&P) performed a structural evaluation of the Bremen Old Town House (OTH). Alfred H. Hodson III, P.E. of REP inspected the building. The work scope did not include evaluation of any mechanical or electrical building systems, accessibility issues, or life safety code requirements.

Based upon available information the Bremen Old Town House dates to 1874. The smaller ell at the front of the building was added in 1938. The Old Town House underwent a previous restoration effort some 10 to 15 years ago.

Photos 1 and 2 indicate the primary building elevations and surrounding site for context.

On July 11, 2013, Alfred Hodson inspected the building. Al Hodson returned to the site on July 8, 2013 to complete inspection work and to measure first floor deflections. He met with Hank Nevins, Martha Varsao and Boe Marsh in August 2012 to discuss significant findings of the building and give a tour of the deficiencies determined to date. The Old Town House Committee also provided information regarding the history of the town house and recent repairs.

The general scope and intent of the evaluation and of this report is to:

a. Inspect and evaluate accessible portions of the building structure and adjacent site, inside and outside, as they relate to the building;
b. Photograph the building structure to document significant features and deficiencies, and provide approximately 24 photos with the report;
c. Submit a draft report to discuss the findings;
d. Submit a final report to the Board of Selectmen.

Appendix I of this report provides photographs relevant to the report. The report and appendices should be read in their entirety. Some photos shown in the appendices may indicate damage not specifically mentioned in the report. Appendix II provides preliminary cost opinions for necessary repairs.

Although we did not perform significant invasive testing of the structure, we were able to closely observe the structure to locate damaged areas. However, rot, insect damage, rodent damage, corrosion, or subgrade undermining may exist beneath concealed surfaces that appeared sound or in areas that were not visible during the inspection. This is typical of any older building. While this report may discuss the presence of potentially hazardous materials, it is not an assessment for these materials. Prior to any rehabilitation work, we recommend that you make yourselves aware of hazardous materials, including testing for lead, asbestos, other known hazardous materials.

For purposes of this report, the west (street-facing side) of the OTH faces Old Waldoboro Road, otherwise known as Route 32. The south side faces the town maintenance garage. The east side faces the quonset hut, while the north side faces adjacent town land. The 1938 ell addition is on the south side of the building.

For purposes of this report, a building element or component in *good* condition is performing its intended purpose, needs no repair, or has only a few minor cosmetic imperfections. A building element in *fair* condition shows anticipated signs of wear, but is still sound, or when up to 25 percent of the element needs to be replaced. An element is considered to be in *poor* condition when the element no longer performs its intended function, needs major repair or greater than 25 percent replacement, or appears to be on the verge of failure. This report considers preservation for the existing structure of the National Register – Listed Bremen Old Town House in strict conformance with the Secretary of the Interior's Guidelines for the Treatment of Historic Buildings, which includes the Rehabilitation standard. Under *Rehabilitation* Standards, there is more leeway to perform replacement, rather than conservation, of deteriorated structural framing elements. This will result in a more practical approach to repairing this deteriorated structure, which has many individual failed beams, posts, joists, and framing connections.

Not all of the structural framing was visible at the time of the inspection. In particular, fiberboard and plaster concealed many interior and exterior walls and support framing in the structure.

Some items detailed in the report describe additional preconstruction services and assessments for this structure. These items should be performed as part of additional engineering, architectural, or preservation services preferably before, or in some cases concurrent with, Priority One Stabilization Items. Engineering costs are provided in the Cost Opinion.

Priority One Stabilization and Repair items detailed in the report are necessary to ensure the short-term stability of the building, and to ensure public safety. They may also be high-impact changes that can be performed quickly and at relatively low cost. Priority One items should be addressed as soon as possible, if indicated, or within two years at the latest. Priority One deficiencies include critical structural safety hazards, repairs necessary to eliminate significant water infiltration, and repairs to prevent structural failure of building components. They also address items that should be performed in the first phase of work, to ensure success of later Priority Two and Three Repairs.

3.0 DOCUMENT REVIEW

3.1 Original Construction Documents

No original construction documents of the Bremen Old Town House were available to review.

3.2 Repair Documents, Previous Studies, Staff Interviews

Resurgence Engineering reviewed a history of the Old Town House, provided to us in the form of many posters and illustrations in the building. Of the many events and modification in the buildings long life, the most important appears to be addition of the ell structure in 1938 and the late 1990s purchase of the building by the OTHC.

Other material documents the recent roof resurfacing that occurred in 2006 or 2007, and assessment reports prepared by Less Fossell in 1999.

4.0 OBSERVATION, EVALUATION, RECOMMENDATIONS

4.1 Roof Framing

Observations and Evaluations:

Fourteen pairs of 4" x 6" sawn rafters support the main building roof, including the pairs at each gable end of the building, while approximately 16 pairs of 1 ¾" x ¾" rafters support the north-south "ell".

Rafter spacing ranges from 36 to 44inches on center at the main building and approximately 24" on center at the ell.. Roof pitches in both locations are approximately 11 in 12.

The raised collar ties at each location create additional bending stress in the rafter pairs. This appears to be problematic in the main building, where rafters are longer and further apart. It appears that this problem was observed soon after construction, as two sets of turnbuckles have been installed to contain outward thrust in the tops of the second floor walls (Photo #3 and Photo #4).

The raised collar ties do not pose a concern in the ell roof framing, where the rafters are shorter and closer together, and the collar ties are closer to the top of the walls (Photo#5 through Photo #7). A code analysis would likely conclude that additional fasteners are necessary at the rafter bases and at the collar ties.

The rafters are undersized by today's standards, but, once the turnbuckles were installed, they appear to have supported the roof adequately for the past 140 years (main building) and 75 years (ell). The undersized framing has created localized areas of noticeable roof deflection, however the deflection does not appear to be serious. Carefully scribed and installed overlay framing could remove most of the sag from the roof rafters, but this does not need to be considered until after the building is placed on a proper foundation and the roof has reached the end of its anticipated lifetime.

We observed several compromised rafters in the main building (Photo #8 through Photo #14). Large checks in one rafter and a large knot in another likely caused these rafters to bend excessively under snow loading or because of foundation settlement. A rafter adjacent to the chimney has rotted from previous moisture infiltration, probably caused by improper chimney flashing. Chimney flashing should be repaired, and roof framing supplemented next to the chimney (Photo #15 and Photo #16).

While we did not perform any analysis on the roof framing, it is likely that the rafters, purlins, and truss bottom chords are undersized by today's standards. Strengthening of the existing connections and roof should be a fairly straightforward process for skilled carpenters, provided that further investigation does not reveal significant truss sag or failure.

Observed Deficiencies and Prioritized Repairs:

Item No.	Priority	Condition (good, fair, poor)	Deficiency	Recommended Repair

4.1.2.1	2	Fair	Localized rafter deficiencies	Locally strengthen damaged rafters.

4.2 Main Roof Surfacing and Sheathing

Observations and Evaluations:

Three-tab asphalt shingles, installed approximately seven years ago, cover the building roof and appear to be in good to fair condition. We did not observe any roof ridge vents or soffit vents. The roof shingles have woven (closed) shingle valleys.

With proper clearing of tree limbs at the north side of the building, we believe that the roof surfacing should be adequate to last at least seven to ten more years. The trees are on town-old property, so coordination with limb or tree removal should be fairly straightforward.

Roof sheathing consists of approximately 1" thick boards (Photo #15). Sheathing boards exhibit some staining from previous water infiltration. Existing roof sheathing does not appear to have been covered with plywood when the roof was resurfaced.

While evidence of prior staining exists, we did not observe any dampness on the underside of roof sheathing, or dripping in the attic during our visits. Areas of sheathing had been replaced during the last roof resurfacing project. We also observed areas of damaged sheathing, which likely occurred during previous re-roofing efforts. Single-span roof sheathing has lower structural capacity than long boards spanning over several rafters. Repair local sheathing damages during the next re-roofing cycle.

In some areas, roofing nails did not penetrate boards, but instead penetrated underlayment . If plywood was not installed on the roof over the existing sheathing boards, this could lead to localized roof leaks in the future. You should monitor for these conditions, particularly during times of snowmelt.

We do not encourage widespread use of gutters and downspouts to keep water away from the foundation, because of the continued maintenance and gutter cleaning that is involved. We believe that proper site grading, tree removal, and perimeter exterior drainage to daylight are better alternatives to eliminate roof runoff, and to efficiently direct water away from the building.

No ridge ventilation was present in the roofs (Photo #17). Ridge ventilation would help airflow through the building and keep it cooler during the summer months. Ridge ventilation can also help eliminate moisture that naturally rises through the building from the floorboards below. Cutting a ridge into the building would be a straightforward task, and installing screened attic entry hatches can help circulate air without cutting in eave ventilation. While the system would not provide perfect roof and attic ventilation, it would be an improvement over existing conditions.

Observed Deficiencies and Prioritized Repairs:

Item No.	Priority	Condition (good, fair, poor)	Deficiency	Recommended Repair
4.2.2.1	2	Fair	Tree limbs overhanging roof	Cut trees and tree limbs as necessary to minimize roof overhang.
4.2.2.2	2	Poor	Water Infiltration at chimneys and failing mortar joints	Repair Flashing and Rebuild Chimney.

4.2.2.3	3	Good	No ridge and soffit ventilation	Install ridge vent and discrete soffit vents.

4.3 Building Envelope; Interior Ceilings and Walls

Observations and Evaluations:

Wood clapboards clad both the main building and ell. Window, door, eave, and soffit trim are also painted wood. Much of the wood siding and trim has alligatored, indicating that it has received so many coats of paint that future painting coats will have trouble bonding to the older substrate, and paint may have worn off from more recently-installed clapboards. Wood trim will typically require periodic maintenance, especially at heavily-travelled areas and at areas vulnerable to splashback or endgrain wicking.

Building windows are reportedly original, and were restored approximately 12 years ago. All together, there are 15 windows on the main building and nine ell windows. The main building windows on the north elevation are in fair condition and should be re-glazed within the next year or two. Other main building and ell windows should be re-glazed and repainted over the next several years.

Peeling paint allows standing water to saturate the wood, further promoting rot and deterioration. Window glazing is in fair to poor condition (Photo 24)

On the main building north elevation, the building envelope has leaked, most likely from the two distinct sources: The fire escape and melting snow (Photo #18 through Photo #23). Improper attachment of the fire escape has allowed water and/or melting snow/ ice to drain against the second floor door sill and to run down the diagonal wall brackets. Significant clapboard, sheathing, and sill rot has resulted (Photo #22).

We also suggest that you have a thorough paint analysis performed, as there is a possibility that the building was not originally painted white. While we did not check this specific possibility, we have encountered buildings in the past from this era that were not painted white or were painted white after decades of use.

Interior walls and ceilings reveal signs of water infiltration in several locations (Photo #26, Photo #31, Photo #32). The area of greatest concern is the wall behind the fire escape. Interior finishes currently cover this wall, so the framing condition is unknown.

In the main building attic, a rock had previously been thrown through the window (Photo #30). Flooring covers the gable end plate below the window, but it is possible that some rot exists below this sill. Rot below the attic window sills is a common occurrence that we observe in older buildings, either due to vandalism or the windows being left open for ventilation.

At the northwest corner of the building, we observed clapboard rot near the vertical trim board (Photo #33). Beneath the foundation, we observed an active ant nest (Photo #34).

Observed Deficiencies and Prioritized Repairs:

Item No.	Priority	Condition (good, fair, poor)	Deficiency	Recommended Repair
4.3.1.1	1	Poor	North wall in the vicinity of the fire escape has rotted siding and trim.	*Remove interior wall surfaces to inspect framing and sheathing. Provide a lump-sum repair budget for temporary exterior repairs.*
4.3.2.1	1	Fair to Poor	Continued deterioration of façade elements, including window glazing and window sills. Siding rot at base of east wall.	*Continued maintenance of wood surfaces, window reglazing, and sill repair.*
4.3.3.1	3	Fair	Façade deterioration and paint peeling	Strip, scrape, sand, prime, and paint façade.

4.4 Foundation and Crawl space

General Description:

Rubble stone foundations support the perimeter of the main building, and stone, concrete, or wood piers likely supported the building interior along the girder lines. Concrete columns support the framing beneath the ell.

In several locations, we observed where flat foundation stones beneath the main building were cracked, most likely due to winter frost heave of the structure (Photo #44). In several locations, concrete piers were installed on the original foundation stones. One of these piers has toppled (Photo #42).

Additional concrete piers were likely added sometime in the 1930s, when the ell addition was installed.

Perimeter dry-stacked walls and interior stone piers originally supported the main building foundation. Additional granite and concrete piers support the perimeter building walls and sills, as well as the interior floor girders. A brick and stone foundation supports the remaining chimney. Small concrete piers support the porch framing.

Substantial amounts of wood waste, leaves, and old concrete formwork debris exist in the crawl space. Wood-containing organic debris decays in soil and can draw excessive moisture into the crawl space. Corroded nails and broken glass provide a threat of injury and discourage entry for maintenance. As you begin to clean debris from the site, you should have someone from the historical society review the material that has been pulled out to determine if it is of historical importance or a portion of the existing building.

We observed a substantial ant colony nesting in the northwest corner of the main building, where existing wood siding and trim is wet and rotted (Photo #34 and Photo #35).

Observed Deficiencies and Prioritized Repairs:

Item No.	Priority	Condition (good, fair, poor)	Deficiency	Recommended Repair
4.4.1.1	1	Fair	Accumulated organic and dangerous (glass and metal) debris under crawl space.	Remove, after verifying that no historic important materials are present.
4.4.2.1	2	Poor	Limited ventilation at west wall.	Perform associated site improvements per Sec. 4.7.
4.4.2.2	2	Poor	Concrete piers below the main building have begun to topple. They will need to be monitored in the near future or replaced when if the floor is leveled.	Replace damaged concrete piers when building floor is leveled.

4.5 First and Second Floor Framing

General Description:

First-floor framing consists of sawn lumber joists and girders. Generally, the first-floor framing appears to be in good to fair condition. However, we were unable to view some of the framing because of a lack of clear space between the floor joists and the grade below the building.

We observed several damaged and rotted joists and girders in the main building crawl space (Photo # 35 through Photo #40).

While there are some localized framing repairs necessary, as described below, the first floor framing appears to be generally in good condition. Analysis would almost certainly conclude that the floor is inadequate to support code-required loads of 100 pounds per square foot for assembly spaces, but we believe that trying to strengthen the entire floor would be cost prohibitive and unnecessary.

Several individually heavy items are stored in the building. These items include an older stove in the kitchen, a safe in the first floor ell , and a wood stove in the second floor meeting room. Using a laser level, we took measurements of the floor deflection at many points in the building. Floor deflection at the doorway between the ell and the meeting room was nearly 4. This worst area of deflection corresponds to a rotted sill and cracked foundation stone (Photo #44).

Second floor framing was not visible, because it was mostly concealed by finishes.

Observed Deficiencies and Prioritized Repairs:

Item No.	Priority	Condition (good, fair, poor)	Deficiency	Recommended Repair
4.5.2.1	2	Poor	At the west side of the building, several feet of sill has rotted and should be replaced, up to and around corner where ant nest exists. Rotted sill exists at line between ell and main building. Ground floor has dropped nearly four inches at this location.	Replace existing rotted sills with new solid timber sills. Repair foundations below.
4.5.2.2	2	Fair	Building Sills and First Floor framing are no longer level	Level floor around the building.

4.6 Ceiling and Attic Framing

Observations and Evaluation:

We were able to view most of the ceiling framing. We did not analyze any of the ceiling connections as part of our inspection.

Attic joists consist of 4x5 (main building) and 2x8 rough-cut members(ell) spaced at approximately 40 inches on center (main building) and 18 inches on center (ell). The joists do not have any blocking in between them to provide lateral support. We recommend that you install 2x10 planks across the joists at approximately six feet on center to provide lateral bracing and to provide a safe walking surface in the attic. The attic is not currently used for light storage, nor should it be in the future unless the ceiling trusses are strengthened.

The ceiling itself in the meeting room consists of drywall or fiberboard mounted to strapping attached to the underside of the ceiling joists. Plaster and lath originally covered the ceiling, as evidenced by fallen plaster in the eaves (Photo #9). In the kitchen, wood beadboard, covers the ceiling).

Observed Deficiencies and Prioritized Repairs:

Item No.	Priority	Condition (good, fair, poor)	Deficiency	Recommended Repair
4.6.1.1	1	Poor	Attic Debris in eaves and attic floor	Clean and remove debris
4.6.1.2	1	Poor	No true walking surface on attic floor.	Install (2) 2x10 planks across framing to create safe walking surface.

4.7 Site Conditions

Observations and Evaluation:

The building sits on a slightly depressed but level area on the east side of Route 32, adjacent to several municipal buildings. Road runoff and plowed snow accumulate near the front of the building and ell. Previous attempts have been made to improve site drainage. A catch basin, installed near the road north of the building, was buried and hidden at the edge of the lawn. Tom Kostenbader dug the catch basin out, likely significantly improving its effectiveness. This catch basin, and a perimeter foundation drain tie into another catch basin near the northeast side of the site.

The grading appears to be limited. The grading slopes away from the foundation fairly consistently and an ample amount of drainage stone has been provided lining the perimeter.

As we understand it, there are no plantings onsite of historic significance.

No ramp or site grading exists to provide universal building access. We suggest that you slightly re-grade the site along the south elevation of the ell, to allow the new ramp to be offset a few feet from the existing building, creating an air gap that should help the south elevation siding dry out. It will be necessary to claim some of the existing driveway in order to provide sufficient space to create the ramp. This design detail should be reviewed by the Maine Historic Preservation Commission prior to construction.

Before any site improvements are made, preservation of these plantings should be taken into account. For instance, the sugar maples should be sensitively pruned by a licensed arborist, to reduce their shade impact on the roof and to allow them to continue to prosper.

Observed Deficiencies and Prioritized Repairs:

Item No.	Priority	Condition (good, fair, poor)	Deficiency	Recommended Repair
4.7.1.1	1	Poor	Drainage off of Route 32 directly down to building site.	Create berm to divert some of the water runoff; provide French drain around west wall of building and ell.
4.7.2.1	2	fair	Low points Low points in the grading at the north wall likely directs water towards the perimeter foundation.	Re-grade building exterior to pitch away from foundation
4.7.2.2	2	Poor	Lack of access to building.	*Provide ramp at ell entrance. Reduce size of paved entrance if necessary to accommodate ramp.*

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4.8 Hazardous Materials

Observations and Evaluation:

We did not perform a Phase I Environmental Site Assessment or hazardous materials evaluation on this property. However, a few specific issues remain worth mentioning regarding the potential presence of hazardous materials in this building.

We observed some (very few) bird droppings in the attic. Bird droppings sometimes contain viruses harmful to humans. Raccoon droppings and porcupine droppings, though not observed, also should be handled appropriately if they are found. Often, we have found that attic insulation covers older bird or bat droppings. You should be aware of this fact if you eventually prepare to rehabilitate or restore the attic framing, ceiling paint and plaster.

Older buildings commonly contain hazardous materials such as lead paint. Lead paint possibly exists on ceilings and wall partitions, and any other painted surfaces. You should assume its presence.

Older buildings often contain fluorescent lights. These fixtures in turn contain ballasts that contain PCB compounds. Ballasts and fluorescent tube lights should be treated as hazardous waste and disposed of properly.

While this property is not residential, you should be aware of the importance of lead-safe contracting and compliance with state and federal regulations for lead paint removal and disposal. A thorough hazardous materials investigation should be performed prior to issuing construction documents, so that any hazardous materials can be dealt with properly during construction, and that they are known about and quantified in advance. This should include evaluation of the crawl space, first floor, stoves, chimneys, and attic. A hazardous materials inspection is also important because it can alert you to places where volunteers should not be working.

Observed Deficiencies and Prioritized Repairs:

Item No.	Priority	Condition (good, fair, poor)	Deficiency	Recommended Repair
4.1.1.1	1	N/A	Potential presence of hazardous materials	Have preconstruction hazardous materials testing performed.

5.0 RECOMMENDATIONS AND CONCLUSION

Overall, the existing structure of the Bremen Old Town House is in good to fair condition considering its age and construction type.

With proper planning, specification, and construction administration, the existing structure can be rehabilitated by contractors trained in preservation work. Appropriate planning, engineering, and site inspection will need to occur to ensure the proper execution of the repairs. The Executive Summary of this report details the most critical repairs necessary.

Some Priority One Items detailed in the report describe or require additional preconstruction services, assessments, and design for this structure. These items should be performed as part of additional engineering, architectural, or preservation services preferably before, or in some cases concurrent with, Priority One Stabilization Items.

Priority One Stabilization and Repair items detailed in the report are necessary to ensure the short-term stability of the building, and to ensure public safety. They may also be high-impact changes that can be performed quickly and at relatively low cost. Priority One items should be addressed as soon as possible, if indicated, or within one year at the latest. Priority One deficiencies include critical structural safety hazards, repairs necessary to eliminate significant water infiltration, and repairs to prevent structural failure of building components. They also address items that should be performed in the first phase of work, to ensure success of later Priority Two Repairs. Priority Two and Priority Three Items address work that can be performed as fundraising permits.

It has been a pleasure to assist you with this project. If you have any further questions about the content of this report, please feel free to contact me at your convenience.

Sincerely,

Alfred H. Hodson III, P.E.
Resurgence Engineering and Preservation, Inc.

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APPENDIX I

PHOTOGRAPHS

APPENDIX II

PRELIMINARY OPINION OF PROBABLE REHABILITATION COSTS

This Structural Assessment and Preliminary Opinion of Probable Costs is to be used solely to obtain grant funding and to prioritize use of available monies for future design fees, owner's soft costs, and construction costs. A structural assessment is a ***first step*** toward a larger preservation strategy that includes Existing Conditions Documentation, Schematic Design, Design Development, Construction Documents, Specifications, and Construction Administration. Resurgence Engineering & Preservation, Inc. cannot be responsible for consequences arising from construction work or funding gaps that occur before complete plans and specifications are produced.

As is often the case with building preservation projects, many factors need to be considered. Economic justification, planning issues, site safety, usage patterns, and environmental issues all factor into the final decision about the best way to preserve the property in question. Some preservation items, although not immediately necessary to restore, repair, or replace, may need to be addressed earlier to avoid repeating or complicating future work.

This report should be read and assessed with the understanding of other economic development, master planning, and preservation issues specific to Bremen Old Town House. Resurgence Engineering has not been involved in any such discussions to date, and our understanding of the site and financial considerations is limited to our structural assessment of the Bremen Old Town House.

Just as one would not ask a builder to price a construction project without a complete set of plans, one should not expect the design professional to complete a thorough construction cost estimate based upon a preliminary assessment. The Opinions of Probable Rehabilitation Cost described in this report are order-of-magnitude costs that must be refined as assessment proceeds to final design. Materials costs, fuel prices, labor availability, and overall economic climate are all volatile variables that can quickly change construction costs.

APPENDIX III
Plans and Structural Details
(included in final report)