November 1, 2019

Ms. Barbara Schroeder, Executive Director
Winneshiek County Conservation Board
2546 Lake Meyer Rd.
Fort Atkinson, IA  52144

RE:   Frankville Stone School, 1111 175th Street, Frankville, IA
      TAN Project #: 202009-8847

Dear Barbara,

Thank you for the time you and John (Kraus) spent with me on 11 September 2019 during my site visit. I am pleased to hear of the efforts you are considering to improve and maintain this important historic resource. I hope my comments at our meeting and the information in this report will be helpful towards that goal.

Please remember the scope of this report is targeted towards items you expressed concern over and is not intended to describe in any detail work related to those items or other rehabilitation or ongoing maintenance work that may be noted in the report. Your current objective is to improve understanding of existing conditions so you may continue to address those items utilizing treatments appropriate to a historic resource.

Construction at this site should not adversely impact historic character nor should it require significant changes to or loss of historic features or materials considered to be character defining elements. Continuing appropriate and regular maintenance while protecting the resource’s intrinsic historic character will serve you well as you work towards realizing the goals of your project.

Specific architectural design and engineering is beyond the scope of this report. This report does not provide specifications or sufficiently detailed descriptions of work to secure proposals or to complete the work of a project. Suggestions made should be further verified by more complete observations, analysis, and where appropriate professional guidance before implementation; this is a preliminary overview only.
GENERAL PLANNING

In my opinion documenting plans for rehabilitation including long term care and maintenance is an often overlooked but valuable tool. Planning should be identified as a high priority task, especially in stewardship situations where individual involvement and roles change over time. A written plan may help maintain focus on tasks spanning changes in personnel, serving as a tool helping to ensure the resource's longevity by providing focus to tasks and coordinating available funds and resources with needs. Planning for immediate and future concerns generally fall into one of two critical paths forward; BUILDING STABILIZATION or BUILDING REHABILITATION which combined yield a Master Plan for rehabilitation.

BUILDING STABILIZATION: Deals primarily with high priority tasks such as correcting safety concerns, protecting the structure from moisture damage and implementing necessary maintenance work needed to address concerns that may cause or accelerate deterioration if ignored. This work is often completed in the earliest phases of projects and must be completed with sensitivity towards the building’s historic character.

BUILDING REHABILITATION: Deals primarily with tasks to develop and implement plans created to address needed repairs and improvements in response to changes in building codes and contemplated alterations to accommodate changes in building usage all while maintaining sensitivity to the building’s historic character. Additionally, work of this phase often presents opportunities to correct previous alterations that may have had an adverse impact on the building’s historic character. This is often presented as a multiple phase scenario to allow for distribution of costs over an extended period.

Because each of these pathways has great potential to impact a building’s historic character, they each need to be completed with great care and with specific attention directed towards protecting surviving (known and discovered) historic fabric. The overall success of the project very often depends on development of a coordinated project plan (Master Plan) that includes both of these project elements at a minimum.

Although typically implemented early in the project, building stabilization actions should be tempered and guided by goals consistent with your long-range vision for the building’s rehabilitation conforming to recommended procedures for historic buildings. Such overarching guidance is found in Attachment 1 “The Secretary of the Interior’s Standards for Rehabilitation” (STANDARDS) and the recommendation made in this report to develop a Master Plan for the building’s rehabilitation early in the project’s timeline. The following report sections are provided to assist you with planning strategies for development of a Master Plan including development of Building Stabilization and Building Rehabilitation plans.

PROJECT PLANNING - DEVELOPING A MASTER PLAN

GENERAL

Building stabilization and rehabilitation work must be coordinated as the details of each project component evolve. The overall success of building stewardship depends on development of a coordinated project plan (Master Plan) that includes at least a minimum Building Stabilization and Building Rehabilitation considerations. Work completed prior to understanding the scope of the entire project (whether it is for STABILIZATION OR REHABILITATION) may be a wasted or inefficient effort if it must be undone to accomplish subsequent work. This suggests that, unless a given work item is determined to be of critical importance to life/safety and or preservation of building fabric, implementation should wait until the full planning process is complete and the entire scope of the project is identified and sufficiently understood. This in turn leads to a suggestion that project planning be completed as soon as practical in tandem with a stabilization plan.
Developing a set of well documented and published long range and short-range goals for the historic resource covering rehabilitation of the building and site may guide fiscal planning and position you and any financing partners to react quickly when funding sources or specific development opportunities come to your attention. A Master Plan that outlines and illustrates the types of repair and alteration work you hope to accomplish, including probable construction costs may be a useful tool for seeking donations, grants and other funding as well as providing a road map for you to follow over time. This is an important beginning step in a process of refinement that continues through the life of the historic resource.

BUILDING EVALUATION AND STABILIZATION
This step involves preparation of a *Condition Report* or similar document which identifies and prioritizes concerns related to the basic building as it now stands. Depending on your goals this level of report may represent the entire report or just a portion of a broader scope report. See Attachment 3 for an overview of various levels of reporting offered by this firm as an example. The content and scope of each of these may be customized to meet the particular needs of an owner. The Building Evaluation becomes the basis for development of a Building Stabilization/Rehabilitation Plan.

BUILDING EVALUATION
This step establishes a baseline for the building and proposes remedial actions associated with a basic project to protect the building from further deterioration and generally includes:

- Establish your vision for the building
- Identify your professional consultant team
- Prepare measured drawings as needed, based on field measurements or available drawings
- Identification and photo documentation of the building’s character defining features and materials to ensure their protection through the stabilization/rehabilitation process
- Architectural, structural, mechanical and electrical observations as needed with prioritized suggestions for remedial work
- Research into completed studies
- Research maintenance history and work completed where pertinent
- Opinions of probable construction costs for remedial work

BUILDING STABILIZATION AND REHABILITATION PLAN
This effort defines the project’s rehabilitation goals and strategies for implementation through development of a written *Program Statement* and *Schematic Drawings* showing proposed architectural, structural, mechanical and electrical alterations under study for the entire project and should include:

- Written description of how the building and site will be used including any special requirements for the project (*Program Statement*)
- Analysis of applicable codes
- Identification of appropriate treatments for the building’s character defining features and materials to ensure protection of the building’s overall historic character
- *Schematic Design* study drawings showing how proposed uses or anticipated changes may fit into the building/site (or if not a fit, then what compromise is necessary)
- Outline specification for proposed work, and
- Opinions of probable construction costs for proposed work

Frequently work must be phased to match available finances with construction and other costs. While this is not the most cost-effective approach, often it is the only option when resources are limited. Care must be taken when planning phased projects to be certain “new work” is not going to be lost when the next project is implemented. A Master Plan may help with that type of project coordination.
SITE OBSERVATIONS AND GENERAL COMMENTS

Following are my notes and recollections of our discussions at the site.

GRADING

Soil within 25 feet of the building should be shaped to slope away from the building so that surface drainage is not directed towards the foundation. The general contour of the ground in the vicinity of the building and the large open area around the building appear to make feasible the types of work necessary to create properly established surface drainage. However, this should be verified by your own more thorough investigation.

Low areas or areas that do not promote such drainage should be corrected. For example, areas under the fire escape and roof drip edges are indented and do not provide adequate drainage away from the building foundation. These low areas and areas with a slope towards the building foundation must be corrected so the areas do not collect and retain moisture in the soil adjacent to the foundation. Pour drainage adjacent to the foundation may also result in splash back onto the building as water cascades from the roof onto the ground, keeping these areas of the building exterior walls inappropriately damp. These conditions are often associated with discoloration and visible deterioration of masonry near the grade line, damp basements and crawl spaces, especially in the vicinity of this wet area of ground.

It is important that all necessary grading work is completed without raising the height of the soil against the building foundation above its historic alignment to retain the historic relationship of the building to grade level.

I did not have my level with me during my site visit. Photos taken that day appear to show the slab at the front door sloping back towards the building or without adequate slope away. If your investigations confirm this condition the slab should be replaced to provide positive drainage away from the building. When replacing the slab, refer to historic photos and building history to provide consideration to alternative treatments that may be more historically appropriate including size and material of the stoop. The historic photo you provided does not shed information related to this. Hopefully, you will discover other photos that are more helpful. In my opinion, a properly sloped concrete slab is acceptable if no other evidence is found to support an alternative.
VEGETATION
Plants growing near the building should be frequently trimmed to allow air to circulate to protect exterior wall construction and finishes by accelerating surface drying and making maintenance easier. Currently shrubs are maintained well away from the building. (See photo above)

INAPPROPRIATE MORTAR AND GENERAL MORTAR RESTORATION
In general the exterior mortar appears serviceable, requiring only minor localized repair. Minor masonry cracking and minor deterioration of masonry should be periodically monitored for change and the cause of any ongoing (repetitive) deterioration diagnosed and corrected.

Deteriorated mortar should be removed and replaced with appropriate mortar, loose or misaligned stones should be reset. The use of the correct mortar is critical, you must seek professional guidance from consultants and contractors that are familiar with historic preservation techniques and specifically the use of lime-based mortars. I believe you have already taken this step. Many masons do not understand the importance of this and often use an improper mortar for masonry rehabilitation resulting in future, often serious damage to the historic masonry. A masonry rehabilitation plan should be created.

A first step in this planning process is to carefully document current conditions; dated photographs work well for this purpose. The initial set of photographs made should include overall as well as close-up details of the deteriorated area. These photographs may then be referenced in the future to determine with more certainty any changes in the masonry’s condition and patterns of deterioration; useful information for appropriate masonry repairs. Once repaired, continued monitoring will allow you to determine if the cause has been adequately addressed and may provide useful information for subsequent repairs.

Another early step in the masonry repair process is to determine which of the mortars on the building is the historic material and to develop a “recipe” for the mortar so subsequent repairs will match the historic mortar and not cause damage to the building. It appears the building may have been pointed with a mortar that is not historic in a relatively limited number of locations.

The appropriate mortar mix should be confirmed by sampling mortar from deep inside a few random masonry joints and a thorough laboratory analysis of the mortar samples made. Laboratory analysis provides information about the materials and proportions in the original mortar mix. Such an analysis is
often required for grant funded work. Once that information is discovered several trial mortars should be made using slight adjustments to mix in order to achieve a color and texture match to the historic mortar. Mortar used for future repairs should match the historic mortar documented from this exploration. Pointing mortar should be matched to the color of the unweathered historic mortar found inside an original joint. This is especially important where the mortar is not subsequently covered by a tuckpointing mortar. Avoid matching the surface color of the setting mortar as that is not necessarily the historic mortar color on this building. There are several experts on historic mortar in this region; consultation with one of them is advisable on this project because of the importance of the mortar to the wall system.

It is important for you and your mason to understand that two techniques (pointing and tuckpointing) have been used on this building (See photos above). Each of these techniques is considered a character defining element. Therefore, care must be taken to use the appropriate technique in the proper location to maintain the historic character of the building. The terms pointing and tuckpointing are often inappropriately used interchangeably; in fact, they are two different types of work:

- **Pointing** or in the case of replacing deteriorated or missing mortar, repointing, is the process of placing mortar into the masonry joint and tooling the joint to create a relatively flat finish surface on the mortar. This process appears to be a method used on some elevations of the masonry on this building.

- **“Tuckpointing describes a primarily decorative application of a raised mortar joint on top of flush mortar joints”** (Preservation Brief 2, National Park Service). This treatment was used on the stonework of this building in some locations. It is important to identify this with your mason so any of these areas that are repointed are also tuckpointed to maintain this embellishment to the masonry work. Although not ideal it is possible to add the tuckpointing at a later date – I do not recommend that approach.

Although the mortar on the building appears to be fairly hard, use of a softer lime based, low portland content repointing and tuckpointing (where it exists) mortar is critical to preserving the masonry. Compared to modern portland based mortars, lime mortar is more flexible, tolerates some movement, and has the advantage of being “self-healing” as moisture brings the lime into solution and carries it to the crack where it solidifies and “seals” the crack. The mortar should be placed in layers, compacted and tooled to match the historic joint tooling, joint depth, color and texture. It is acceptable to use a mortar that is softer than the historic mortar but a mortar that is harder should never be used as it will cause damage to the masonry. The hardness of mortar can usually be predicted by the amount of portland cement that is used in the mix, increasing portland increases mortar hardness.

Deteriorated mortar should be removed and the prepared joint repointed with mortar blended and tooled to match physical and visual qualities of the historic mortar. Consultants and masons, skilled in the techniques of historic masonry should be used exclusively for masonry work involving historic materials on this building.

**Spot pointing areas of deteriorated mortar is preferred over replacement of all mortar.** Only deteriorated mortar should be removed, unless special circumstances exist; avoid unnecessary removal of otherwise sound mortar. Mortar, although a relatively small percentage of the overall building fabric is considered by
the National Park Service to be a character defining element on an historic building; as such, it should be preserved. Except in unusual circumstances, joints that have been inappropriately filled with caulking should also be cleaned of this material and pointed with mortar.

Grinding to remove deteriorated mortar may cause serious and irreversible damage to the masonry. Even skilled workers have “bad” days and may cause damage with these powerful tools. Therefore, it is important to individually qualify crew members that will use these power tools. The preferred method of mortar removal is to use hand tools, banning the use of power tools completely. With harder mortars this may a difficult and costly requirement but a good investment in the preservation of the exterior masonry. The comprise in brick or coursed stone masonry is to allow the qualified mason to cut a narrow kerf (groove left by the passing of a saw blade) down the center of the mortar joint and then use hand tools to remove the remaining mortar from the joint. You should require the masons working on the project to demonstrate their competence with this method by having them provide sample areas showing mortar removal and pointing. These mock-up areas can then be used to gage other work as it is completed on the building for compliance with the standards agreed to at the mock-up site. The craftsmen completing the mock ups should be the only craftsmen working on the building in the capacities they have qualified for.

Joints that are prepared for mortar replacement should be cleaned of existing mortar to a minimum depth equal to 2 to 2.5 times the width of the joint or a greater depth as required to find sound mortar. This depth reduces the chances of mortar popping. I did not measure the width of the joints. However, it is likely that they are close to 1/2 inch in width making the recommended depth of pointing mortar closer to 1" not 1/2 inch which is often proposed by masons. Masons not familiar with pointing historic buildings will propose a shallower repair which will not be as durable.

Refer to Preservation Brief 02: Repointing Mortar Joints in Historic Masonry Buildings for additional detailed discussion of this topic.

**EXTERIOR MASONRY CLEANING AND WATERPROOFING**

I do not recommend cleaning masonry beyond simply washing it with a non ionic detergent, water from a garden hose, natural fiber brushes and elbow grease unless there are circumstances that warrant a more aggressive cleaning. The minimal amount of dirt on the building does not appear to be causing damage and is part of the charm of an older building. The correct process of masonry rehabilitation will involve sufficient gentle cleaning for this building.

Application of a waterproof coating on the building is not recommended and, in many instances, does not comply with the Secretary of the Interior’s Standards. The use of waterproofing adds another maintenance item, requiring replacement every few years to be effective. It is difficult to visually assess the condition of such coatings (and the quality of the initial application) making it difficult to maintain the coating and evaluate its effectiveness. Some coatings can irreversibly damage the masonry, causing physical damage, an unnatural sheen, discoloration and staining. The National Park Service suggests that installation of waterproof coatings be considered only as a last resort when the building’s longevity may be jeopardized if such an action is not taken.
This building does not require a waterproof coating and this type of work should not be permitted. Refer to *Preservation Brief 01: Assessing Cleaning and Water-repellent Treatments for Historic Masonry Buildings* for additional detailed discussion.

**CHIMNEY**

The existing chimney is not original to the building. The historic photo (See photo at left below) clearly shows a more decorative brick chimney extending through the roof. The historic photo and visible evidence inside the building show that the chimney was not historically attached to the rear elevation of the building rather it ran up through the interior at approximately the same location near the rear of the building. This observation is mentioned only out of interest, there is no requirement to replace the historic chimney. However, if chimney work becomes necessary, strong consideration should be made to reconstruction of the historic chimney.

![Chimney profiles](image)

The chimney does not appear to be well flashed to the roof. This observation which was made from the ground should be confirmed. A stepped base and cap flashing system with the cap flashing set at least 1 - 1/2 inches into the masonry joints similar to the details shown in the Sheet Metal and Air Conditioning Contractor’s National Association’s *Architectural Sheet Metal Manual* (Figure 4-17A below) should be provided if no adequate flashing exists.

![Chimney flashing detail](image)

All active chimneys should be professionally cleaned and inspected to determine their overall condition. It is especially important to discover whether the active flues are properly lined for their full length and that
the lining is in good condition. Active flues that are not fully or properly lined should be lined with a metal flue liner or other appropriate liner material up to termination above the top of the chimney. If the flue is lined this may be a good time to have it inspected to be certain it is not broken or leaking. Lining flues helps prevent further damage to the chimney’s masonry and more importantly, reduces the risk of flue gases ending up in the building. Flue gases pose a significant health/safety risk and should be addressed immediately if the chimney is suspect.

The flue may be too large to effectively vent modern appliances which are more efficient than earlier models. The use of high efficiency (horizontally vented) appliances may make the chimney functionally obsolete when such equipment is installed. Alternatively, you may choose to line the flue with a smaller metal liner so the flue is properly sized for any new appliances.

If the chimney is no longer used as an appliance vent it should be cleaned and capped to prevent moisture from entering the flue. The abandoned and capped flue should be vented with fresh air to prevent moisture from becoming trapped in the chimney which leads to deterioration from the inside out. Venting should provide a natural path for air to flow via gravity (warm air rising) through the flue and along the greatest length of flue as possible. Create a vent low in the flue path by removing a brick in the cellar or installing a brick vent in an exterior wall location that is not visible. The chimney cap may be detailed to provide the exhaust vent, or a brick vent may again be used if it is not visible. The chimney although not ornate is a character defining element (an integral part of the building architecture) on this building and as such should be retained even if it is not used as a chimney.

**STONE AND CAST STONE TRIM**

Damaged decorative stone trim, such as the stones above the front door shown at right, should be repaired by an experienced mason using appropriate masonry restoration products such as those manufactured Jahn Restoration materials. Only in extreme cases of deterioration should the historic material be removed and replaced with new; preservation and maintenance of historic materials should be the highest priority in each project.

**EXTERIOR CRACKS AND BUILDING MOVEMENT**

There are a few isolated areas where stones are cracked. Over time, moisture will cause these damaged units to further deteriorate so repair seems prudent. There is no visible deterioration associated with these cracks at this time. A stone patching material should be used that is specifically formulated for such repairs such as Jahn Restoration Mortar products. These areas of repair should be monitored for a period of a year or more after repair is complete to be certain the cracks have stabilized.

**ROOFING**

The existing wood shingle roof that covers the majority of the building appears serviceable. It is difficult to estimate its remaining service life. However, my guess is that the roof may provide another 5 to 10 years of service, depending on many variables. Extreme care must be taken when working on areas adjacent to the wood roof to avoid damage to the shingles.
When the roof is replaced all roofs and flashings should be removed to expose the original roof deck so the
deck can be repaired to provide the best substrate possible for the new roof system. Plan to provide an
overlay sheathing prior to reroofing to provide the best substrate for new materials. This is not necessary if
it is discovered during tear-off of the existing roof that the existing sheathing is acceptable to the shingle
manufacturer; however, it is advisable to plan for this work so the project can move forward in a timely
way once tear-off begins.

Wood shingles appear to be the original roof material making that the preferred replacement material.
The initial cost of wood will be higher than asphalt; however, the service life of a well-maintained wood
roof may exceed the life of a lower quality asphalt roof. Replacement of all flashing is suggested at the next
roofing project because most of those flashings will need to survive as long as the replacement roof. If a 30
year roof is installed, it is imperative to use flashings that will have a similar service life. Flashings that have
already been in service will not meet that test. While it is preferred to restore the original roof material,
the Standards do not require that you do so. Therefore, you may wish to also explore substitute materials
as alternative approaches when the roof is replaced. For example, an architectural shingle having
significant thickness and coloring to have an appearance similar to that of wood shingles is an acceptable
alternative; changing to a metal roof where one did not exist historically is not an acceptable alternative.

**FLAT ROOFS**
The existing flat roof at the bell tower is leaking and must be replaced. EPDM is acceptable. Avoid
extending the roof over the edges so it is visible from the ground. Instead use copper or a painted metal
flashing to terminate the perimeter edge of the roof where it will be visible from grade level vantage
points.

You are planning to replace this roof soon. Consider now in advance of that work, how the roof can be detailed to
accommodate reconstruction of the corner posts and bell tower roof structure at a future date without having to redo
the flat roof. Use the historic photos you have to guide sizing, spacing and detail of railings and vertical supports. I
recommend reworking the metal siding on the bell tower base because the current detail of sheet metal is not appropriate
and may trap moisture. Removal of the metal covering and examination of historic photos may reveal the original detailing of this feature.

**ROOFING – ATTIC VENTILATION**
The roofing project must also include ventilation of the attic space to ensure preservation of the wood
framing and best service life from the roof membrane. This includes sufficient openings both high and low
in the roof system to promote the flow of air through gravity. This work should be coordinated with the
detailing and replacement of the roof so the ventilation can be disguised and concealed in that work.
Improperly detailed ventilation may adversely impact the visual integrity of the building, reduce roof
performance and void roof warranties. This seemingly simple element should be carefully detailed by
someone versed in preservation and not left to an industry standard roofer/contractor solution.
LIGHTNING PROTECTION
There is a lightning protection system on the building that is in disrepair. Downleads for this system are not well installed and the effectiveness of the system, as judged by its connection to earth (ground), is unknown. Downleads were observed to be broken. I could not tell if the bell for instance is connected to the system, I believe it should be. The installation does not appear to comply with contemporary design and code requirements. You indicated that the system has not been tested or inspected. The lightning protection system, including other work that is not related to aerial terminals but still considered integral with a complete lightning protection system should be brought into compliance with modern codes to achieve UL Master Label certification for the system.

![Typical roof mounted air terminal](image1)
![Typical suspect grounding connection](image2)
![Broken downlead at building corner](image3)

GUTTERS AND DOWNSPOUTS
A complete roofing project will also include any necessary work on the gutters and downspouts. I am concerned there are not enough downspouts serving the main roof area. I suggest adding downspouts so there is on at each corner. Discharging downspouts at the foundation may result in wet/damp basements and is not recommended as a long-term solution.

![Inappropriate modern downspout hanger.](image4)
![An appropriate downspout hanger found on building.](image5)
![Discharge of water at foundation not recommended](image6)

When installed, the complete system should include a system of underground piping to collect water from the downspouts and direct it to daylight at nearby drainage swales, roads or an on-site drywell. (Similar to a septic system except it is intended to only handle stormwater.) Half round gutters and corrugated round downspouts may be an appropriate selection when/if this work is completed. This is a change from original detailing but it seems an appropriate treatment to deter damage to the building from water cascading from the roof to grade. Gutter hangers should be roof deck mounted or fascia mounted and not installed with
fasteners driven through the roof membrane which only serves to create holes in the roof in the area where snow, ice, and the highest concentration of moisture exists.

**Insulation**

We did not access the attic or explore sidewall cavities (I don’t believe there are any sidewall cavities of a size sufficient to insulate). When the attic is accessed you should determine the amount of insulation installed. Attic insulation is often an investment with an acceptable return developed through energy savings whereas sidewall insulation does not have that same magnitude of benefit. In addition, sidewall insulation often results in damage to exterior wall construction due primarily to the absence of adequate sidewall vapor barriers in retro fit installations.

**Exterior Carpentry and Paint**

Deteriorated wood trim should be repaired to help prevent rodent and vermin access into the building. (See photo at right for example) Wood trim requires minor, localized repair, spot priming and painting on each of the buildings. Exterior trim should be cleaned, prepared, spot primed, and painted to protect wood from moisture.

Deteriorated boards should be replaced with wood trim fabricated to match existing profiles, retaining as much of the historic material as possible. Replacement pieces should be backprimed (primed on all surfaces) prior to installation to further protect them from moisture.

Also consider a slight modification to the eaves when they are repaired to facilitate attic ventilation which will help preserve the roof shingles and their supporting framing. It is important that this detail be accomplished in a manner that is not evident to the casual observer. See roofing section(s) for additional ventilation requirements.

**Structural Concerns**

Structural analysis of the building is beyond the scope of TAN services. However, visual indications make it clear that conditions exist in this building that suggest some level of structural reinforcement of the main floor at least is necessary to level it off.

**Crack Monitoring**

The building may continue to settle as deterioration advances. As you develop your overall recovery/repair strategy I suggest you closely monitor the building for change. A deliberate monitoring process provides useful information for development of repair strategies and may help you feel confident that movement has stopped so future repairs are not in jeopardy. A first step in this process is to establish baseline conditions. This can be accomplished by mapping cracks by room and location and creating a log of photographs. I suggest you invest in several crack monitors for use in monitoring both interior and exterior cracking. Crack monitors, such as those manufactured by Avongard Products USA Ltd. [www.avongard.com](http://www.avongard.com), may help you
monitor the individual cracks. Information gathered from these monitors will help you determine the extent and speed of movement. These devices (shown below) are fairly inexpensive and easy to install.

![Monitors](image.jpg)

**INTERIOR FINISHES**

The full condition of any surviving plaster or other historic wall and ceiling materials could not be observed because of the materials covering them. The nonhistoric materials should be removed from the walls and the plaster or other historic wall finishes restored. The wood ceilings appear historic and should be retained and repaired.

![Historic finishes](image1.jpg)

Typical modern finishes installed over historic materials

It is preferable to retain and repair historic materials where feasible. Loose areas of plaster that may be discovered that are otherwise sound may be secured to the lath with plaster screws and washers. Some areas of plaster and cracks will need to be repaired, refer to NPS Preservation Brief 21: Preserving Historic Flat Plaster - Walls and Ceilings for techniques.

**WINDOWS AND DOORS**

I did not study each window in detail. It appears that many of them are historic and repairable (See Attachment 2 for additional information provided in *Preservation Brief 09: The Repair of Historic Wooden Windows*). Repair is the preferred approach; replacement should be considered a last option.

I prefer exterior wood storm windows if they are appropriately detailed to compliment the historic sash. Exterior storms protect the historic sash from weather and may be a way to provide obscured vision at windows where that is necessary without replacing historic glass. Consider ultra-violet light protection for glass in storm windows if UV sensitivity of a room’s contents is an issue. Avoid installing such films and treatments on historic glass. If repair of the prime windows is not imminent, I suggest you immediately repair the storms to protect the primary window sash and frame from weather. If the storms will not soon be repaired, I suggest you remove them as they are trapping debris and moisture causing deterioration to the primary sashes and frames.
Cellar openings should be restored and detailed to provide appropriate protection, security and seasonal ventilation of the basement spaces. An interim solution is to install mechanical dehumidification and fans to circulate air in these closed spaces. Ventilation of the basement is important to the longevity of the wood framing as well as masonry and mechanical equipment in the basement.

While repair of the historic doors is preferred, some doors may be beyond repair. Repair of the main entry and other original doors should at least be diligently investigated as these are important doors to the building’s historic character. My initial belief is they are repairable. When a door requires replacement the new door should be of similar detail, material and operation as the door it is replacing.

**ULTRA VIOLET PROTECTION**

Historic contents of the building may be damaged from exposure to sunlight and its damaging ultra violet light. It may be possible to install ultra violet (UV) protection on the storm window glazing to protect building contents from UV degradation. Care must be taken not to change the reflective qualities of the glass in this process. Alternatively, interior shades could be used and kept closed when the building is not occupied to control UV light.

**MOLD**

There is visible evidence of mold growth in some areas of the building. This should be investigated by an environmental lab to determine if any health hazard associated with mold exists. This investigation should be completed before any work begins inside the building - including removal of stored items.

**TOXIC MATERIALS**

The building should be tested for lead and asbestos content so future rehabilitation work can be planned with full awareness of the presence of such materials.

**HOUSEKEEPING**

Removal of all the items stored in the building that are not part of the building’s rehabilitation or current use is an important first step in the rehabilitation process. The building should be completely emptied of stored items and debris, except items that were once part of the building’s construction (such as salvaged moldings, doors or similar items) or an integral part of its current use. Once emptied, the building will be
more accessible for measuring, making observations regarding the building’s construction, condition, and for implementing repairs and maintenance operations. Removal of these stored items will also allow air to flow more freely through the spaces, helping to maintain the necessary dry conditions in the building.

**HVAC- MECHANICAL AND ELECTRICAL**

The building does not have an HVAC system, functioning plumbing system, nor an adequate (code compliant) electrical system. The HVAC system should be completed in a way that does not detract from the character of the building and so that it maintains required control for the protection of the valuable artifacts you have stored in the building. Modern codes require substantial amounts of fresh air to be distributed in the building requiring large ducts and pieces of equipment that must be properly blended to the architecture to minimize visual impact. It may be possible to place some of this unit in the attic with minimal disruption to the main floor areas of the building.

You may wish to request additional TAN consultation for specific advice on maintaining the proper environment for your artifacts when you remove them from the building for storage. I do not recommend they remain in the building.

The building’s plumbing system has been abandoned in place and its condition is unknown. The Master Plan should address which portions of this system should be restored and which should be abandoned. Water service should be restored to the building including sizing and consideration for the eventual installation of fire sprinkler system.

The electrical system should be replaced with code compliant service, distribution wiring and controls.

**MOTHBALLING**

Buildings that will not be soon rehabilitated and those that are fully or partially unoccupied for extended periods time should be mothballed. This appears to be the circumstances this building may face and so mothballing seems an appropriate and beneficial treatment to consider with regard to planning future rehabilitation expenses. Among other things, mothballing helps ensure that an unoccupied building or area of a building is monitored for change. This single component of the multifaceted mothballing process helps facilitate timely repairs, slow overall deterioration, and improve safety within and around the building. In addition to active building monitoring the mothballing process helps prevent moisture laden and stagnant air from causing or accelerating deterioration of the building’s construction. This often-overlooked activity may help preserve and protect surviving historic fabric for future rehabilitation thereby reducing those costs and protecting the building’s historic character.

There are six basic considerations when mothballing a building:

- Moisture
- Housekeeping
- Utilities
- Pests
- Security /Monitoring
- Ventilation

Attention to each of the six considerations shown above during the building’s idol period helps protect the building from preventable damage and deterioration. It is suggested that appropriate mothballing treatments as described in *Preservation Brief 31: Mothballing Historic Buildings* be considered.
Mothballing Checklist:
The following checklist may be helpful when preparing a mothballing plan to help ensure work items are not inadvertently omitted. This is a broad scope list that has not been modified to specifically target your building.

Moisture
- Is the roof watertight?
- Do the gutters retain their proper pitch and are they clean?
- Are downspout joints intact?
- Are drains unobstructed?
- Are windows and doors and their frames in good condition?
- Are masonry walls in good condition to seal out moisture?
- Is wood siding in good condition?
- Is site properly graded for water run-off?
- Is vegetation cleared from around the building foundation to avoid trapping moisture?

Pests
- Have nests/pests been removed from the building’s interior and eaves?
- Are adequate screens in place to guard against pests?
- Has the building been inspected and treated for termites, carpenter ants, rodents, etc.?
- If toxic droppings from bats and pigeons are present, has a special company been brought in for its disposal?

Housekeeping
- Have the following been removed from the interior: trash, hazardous materials such as flammable liquids, poisons, and paints and canned goods that could freeze and burst?
- Is the interior broom-clean?
- Have furnishings been removed to a safe location?
- If furnishings are remaining in the building, are they properly protected from dust, pests, ultraviolet light, and other potentially harmful problems?
- Have significant architectural elements that have become detached from the building been labeled and stored in a safe place?
- Is there a building file?

Security
- Have fire and police departments been notified that the building will be mothballed?
- Are smoke and fire detectors in working order?
- Are the exterior doors and windows securely fastened?
- Are plans in place to monitor the building on a regular basis?
- Are the keys to the building in a secure but accessible location?
- Are the grounds being kept from becoming overgrown?

Utilities
- Have utility companies disconnected/shut off or fully inspected water, gas, and electric lines?
- If the building will not remain heated, have water pipes been drained and glycol added?
- If the electricity is to be left on, is the wiring in safe condition?

Ventilation
- Have steps been taken to ensure proper ventilation of the building?
- Have interior doors been left open for ventilation purposes?
- Has the secured building been checked within the last 3 months for interior dampness or excessive humidity?

*a Preservation Brief 31: Mothballing Historic Buildings, National Park Service, September 1993.*
FINDING OUT MORE ABOUT GRANT PROGRAMS

The most direct way to discover available grants through the state is to contact the Grants Administrator to discuss the building and your specific goals once they are established. Contact Kristen Vander Molen, Grants Manager, State Historical Society of Iowa, 515-281-4228.

STANDARDS

The “Secretary of the Interior’s Standards for the Treatment of Historic Properties” provides pertinent direction for building treatments. The guidelines for rehabilitating historic buildings found within those standards are used as a basis for suggested remedial work in this Report (Attachment 1). The National Park Service publishes a series of useful Preservation Briefs (Attachment 2) that provide detailed discussion of appropriate treatments for historic buildings and materials. Recommendations of the Preservation Briefs are used as a basis for formulating strategies and approaches to implementing remedial work of this project.

PROTECTING ARCHEOLOGICAL AND HISTORIC POTENTIAL

There may be archeological potential associated with this site and so all ground disturbing work should proceed cautiously so the maximum benefit may be reaped from any such discovery. You should discuss this with crews working at the site so they are aware of your interest and special instructions regarding this.

It is also a good idea to share the historic significance of the property with workmen, perhaps during an initial meeting at the site, so they are aware of the property’s value to you and the community. This helps them appreciate and understand their role in preserving the resource.

GENERAL GUIDANCE

Many firms have worked on historic buildings and will gladly tell you of their success. Do not be hesitant to educate yourself and probe deeper into their experience. Often people claiming extensive experience with the rehabilitation of historic buildings are not familiar with the Secretary of the Interior’s Standards or do not adequately understand them. Extensive experience on old buildings does not necessarily equate to an understanding of appropriate treatments.

Preference should be given to repairing deteriorated historic fabric over replacement whenever that is feasible. Workmen should be cautioned to protect significant historic features and held responsible to provide satisfactory repair if damage occurs.

In conclusion, it appears that a carefully planned and professionally guided rehabilitation project should be incorporated into the overall plan for rehabilitating this important historic resource. To that end, it seems appropriate to take immediate action to stabilize the building and to move forward with organizing and planning the rehabilitation project. A focused task such as this is an ideal scope of work for preservation grants available through the State and other sources. The majority of grants and similar incentives directed towards preservation of historic resources require listing or at a minimum a determination by the State Historical Society that the building is eligible for listing on the National Register. Access to grants and other financial incentives such as these is a good reason to implement work which does not adversely impact the building’s National Register of Historic Places eligibility by ensuring all work conforms to the STANDARDS described in Attachment 1.
I hope this information is helpful in your effort to maintain this important building in your community. Please keep in mind this report is limited in scope and is not intended as a full assessment of the building or its structural or mechanical condition. Please do not hesitate to call if you need additional assistance, I would be pleased to help in any way that I am able. Thank you again for the opportunity to be a part of this important effort.

Sincerely,

Douglas J. Steinmetz, AIA  
HISTORIC PRESERVATION TECHNICAL ASSISTANCE ARCHITECT  
STATE HISTORICAL SOCIETY OF IOWA – TECHNICAL ADVISORY NETWORK

Attachments:  
1. Secretary of the Interior’s Standards for Rehabilitation.  
2. National Park Service’s list of available Preservation Briefs.  
3. Overview of Types of Planning Documents.
The Secretary of the Interior's Standards for Rehabilitation

The Secretary of the Interior's Standards for Rehabilitation are ten basic principles created to help preserve the distinctive character of a historic building and its site, while allowing for reasonable change to meet new needs.

The Standards (36 CFR Part 67) apply to historic buildings of all periods, styles, types, materials, and sizes. They apply to both the exterior and the interior of historic buildings. The Standards also encompass related landscape features and the building's site and environment as well as attached, adjacent, or related new construction.

The Standards are applied to projects in a reasonable manner, taking into consideration economic and technical feasibility.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.

6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.
1. Cleaning and Water-Repellent Treatments for Historic Masonry
2. Repointing Mortar Joints in Historic Masonry Buildings
3. Improving Energy Conservation in Historic Buildings
4. Roofing for Historic Buildings
5. Preservation of Historic Adobe Buildings
6. Dangers of Abrasive Cleaning to Historic Buildings
7. The Preservation of Historic Glazed Architectural Terra-Cotta
9. The Repair of Historic Wooden Windows
10. Exterior Paint Problems on Historic Woodwork
11. Rehabilitating Historic Storefronts
12. The Preservation of Historic Pigmented Structural Glass (Vitrolite and Carrara Glass)
13. The Repair and Thermal Upgrading of Historic Steel Windows
14. New Exterior Additions to Historic Buildings: Preservation Concerns
15. Preservation of Historic Concrete
16. The Use of Substitute Materials on Historic Building Exteriors
17. Architectural Character: Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving Their Character
18. Rehabilitating Interiors in Historic Buildings - Identifying Character-Defining Elements
19. The Repair and Replacement of Historic Wooden Shingle Roofs
20. The Preservation of Historic Barns
21. Repairing Historic Flat Plaster – Walls and Ceilings
22. The Preservation and Repair of Historic Stucco
23. Preserving Historic Ornamental Plaster
25. The Preservation of Historic Signs
26. The Preservation and Repair of Historic Log Buildings
27. The Maintenance & Repair of Architectural Cast Iron
28. Painting Historic Interiors
29. The Repair, Replacement, and Maintenance of Historic Slate Roofs
30. The Preservation and Repair of Historic Clay Tile Roofs
31. Mothballing Historic Buildings
32. Making Historic Properties Accessible
33. The Preservation and Repair of Historic Stained and Leaded Glass
34. Applied Decoration for Historic Interiors: Preserving Composition Ornament
35. Understanding Old Buildings: The process of Architectural Investigation
36. Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes
37. Appropriate Methods for Reducing Lead-Paint Hazards in Historic Housing
38. Removing Graffiti from Historic Masonry
39. Holding the Line: Controlling Unwanted Moisture in Historic Buildings
40. Preserving Historic Ceramic Tile Floors
41. The Seismic Retrofit of Historic Buildings
42. The Maintenance, Repair and Replacement of historic Cast Stone
43. The Preparation and Use of Historic Structures Reports
44. The Use of Awnings on Historic Buildings: Repair, Replacement and New Design
45. Preserving Historic Wooden Porches
46. The Preservation and Reuse of Historic Gas Stations
47. Maintaining the Exterior of Small and Medium Size Historic Buildings
48. Preserving Grave Markers in Historic Cemeteries
49. Historic Decorative Metal Ceilings and Walls: Use, Repair and Replacement
50. Lightning Protection for Historic Buildings
OVERVIEW OF TYPES OF PLANNING DOCUMENTS

Owners want to know how to take care of their buildings. We are often asked to survey buildings and make recommendations regarding maintenance and repair. There are many different levels of studies available, depending on the needs of the building, the needs of the owners, and the funds available.

DEFINITIONS

Site Consultation:
Usually based on one to four hours at a site. This consultation can include any subject of interest to the owner. Brief oral or written recommendations are made. No construction costs are estimated. These consultations are often provided to owners concerned about maintaining and improving their buildings without damaging architectural integrity or physical fabric.

Report of Site Visit:
After a brief walk-through a spreadsheet is prepared which identifies general work areas and priorities. Photographs and sketch floor plans are usually included in the report. No construction costs are estimated. This report is a very preliminary planning document, seldom used for funding applications.

Condition Report:
This extensive report concentrates on the physical fabric. It is a detailed report which identifies deficiencies, recommends repairs, includes cost estimates, and prioritizes work items. Granting agencies often ask for a condition report to ensure the owner understands the full scope of maintenance requirements and is attacking high-priority needs.

Historic Structures Report:
The highest level report currently recognized in the preservation field, often required when restoration is anticipated. It may be used when high-level funding is being sought for a significant resource. Historical analysis as well as study of the physical condition of the building is included.

COSTS

Professional fees vary depending on size and complexity of the building or site, location, general condition of the building, extent of the survey and report, etc., so any simple summary of fees is approximate:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
<th>Fee Range</th>
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<tbody>
<tr>
<td>SC</td>
<td>Site Consultation</td>
<td>$500 to $1,000</td>
</tr>
<tr>
<td>SV</td>
<td>Report of Site Visit</td>
<td>$1,500 to 6,500</td>
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<tr>
<td>CR</td>
<td>Condition Report</td>
<td>$5,000 to 18,000</td>
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<tr>
<td>HSR</td>
<td>Historic Structures Report</td>
<td>$15,000 to 120,000 or more</td>
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Each building and owner is unique. No estimate of professional fees can be accurate without a brief site visit and consultation with the owner to determine the scope of the survey.
## Overview of Types of Planning Documents

### Summary of Scope

<table>
<thead>
<tr>
<th>Service Description</th>
<th>SC</th>
<th>SV</th>
<th>CR</th>
<th>HSR</th>
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<tbody>
<tr>
<td>Targeted inspection and/or walk-around inspection</td>
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<td>Walk-through inspection</td>
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<td>Detailed inspection</td>
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<tr>
<td>Brief oral or written recommendations</td>
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<tr>
<td>Annotated spreadsheet of work items w. priorities</td>
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<td>Spreadsheet as above plus a written description</td>
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<td>Review of existing drawings</td>
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<td>Construction chronology</td>
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<td>Brief historical overview</td>
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<td>Extensive historical analysis</td>
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<td>Engineering systems inspection</td>
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<td>Special studies (such as wheelchair accessibility, future uses, renovations or additions)</td>
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*These services are options. Many reports are customized with these or other studies.

1 Note that these reports do not include construction Contract Documents such as working drawings and specifications.