ONAWA PUBLIC LIBRARY
Building Assessment
July 15, 2021

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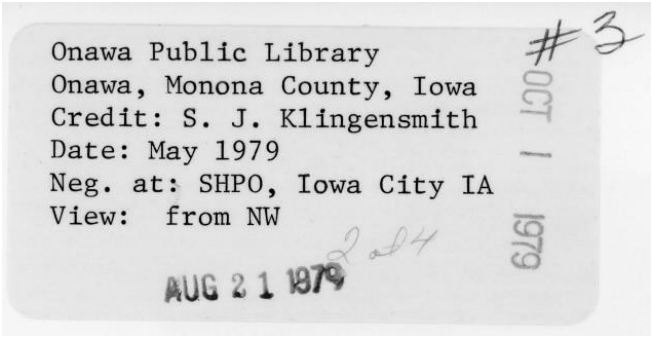
Lincoln, NE 68508
(402) 475-0597


Onawa Public Library
Onawa, Monona County, Iowa
Credit: S. J. Klingensmith
Date: May 1979
Neg. at: SHPO, Iowa City IA
View: from NW
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2 of 4

Onawa Public Library
Building Assessment
June 24, 2021

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Appendix A – Clay Tile Shingles

Onawa Public Library
Building Assessment
June 24, 2021

Introduction:

The current Onawa Public Library was constructed with the generous financial support of local Judge Addison Oliver and philanthropist Andrew Carnegie. "*The building was designed by Norman S. Patton and Grant C. Miller, Chicago architects, and erected between October 1908 and October 1909. Patton and Miller specialized in library architecture and the Onawa library is one of at least 20 which they designed in Iowa between 1900 and 1915. The Onawa library is among the best of their Iowa libraries and is certainly the most original. The firm designed libraries in a variety of styles which range from the elegant French classical of Webster City (1904), Mason City (1903-4, or Clinton (1903-4) to the English late medieval or Tudor of Monticello (1903-4), Spencer (1904) or Marengo (1905). Onawa is their only Iowa library which is unmistakably Prairie School in style.*"[1] A major addition, designed by FEH Architects/Engineers of Des Moines, was completed in 2005. The architects are to be commended for their respect for the original design style.

On May 28th, Library Director Amy McDermott contacted our office at the suggestion of Iowa's State Historic Preservation Officer (SHPO) with regard to fixing a hole in the library's roof. Within a matter of days, it was agreed that Berggren Architects' preservation architect would spend a day on site. "*The primary focus of my assessment will be the roof. I'll be leaving from Lincoln and should arrive about 9:30 AM. I'll spend the day, until 5 PM, before heading back. So, I should have time to assess most, if not all of the exterior. If there are other parts of the library which you would like me to assess, I'll be happy to do that, time permitting. The fee will be one thousand dollars plus my travel expenses.*"[2] June 24th was the agreed upon date for this assessment.

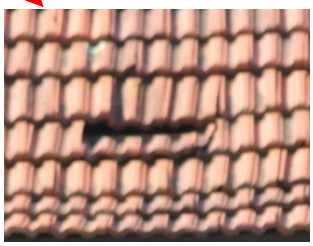
[1] National Register of Historic Places Nomination #79000917
[2] Berggren's email to Director McDermott, June 7, 2021.

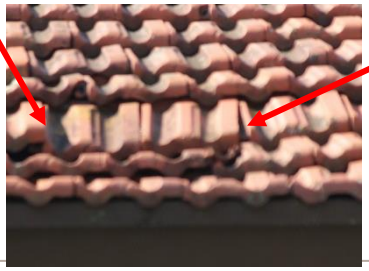
The Roof Assessment:

The Shingles:

The roof of the 1908 building is covered with French interlocking clay tile shingles and clay tile trim pieces. It's believed that this roof has served continuously since it was first installed. In 1908 there were several manufacturers of clay tile roof shingles and trim pieces. Today, if replacement pieces are needed, the shape, size and color can be matched by Ludowici, of New Lexington, Ohio.

The current hole in the library roof was likely created by the impact of a tree branch during a storm. There are other locations on the north facing slope which appear to have been damaged by the impact of branches or other heavy objects. In the image below there are two shingles adjacent to one another which are out of alignment with the rest of the roof. They have shifted to the left, raising the adjacent shingle to the left and leaving a gap between the shingles to the right.





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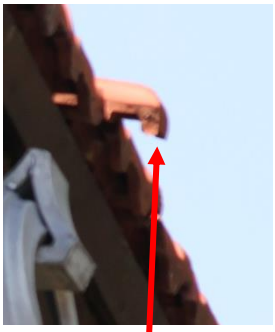
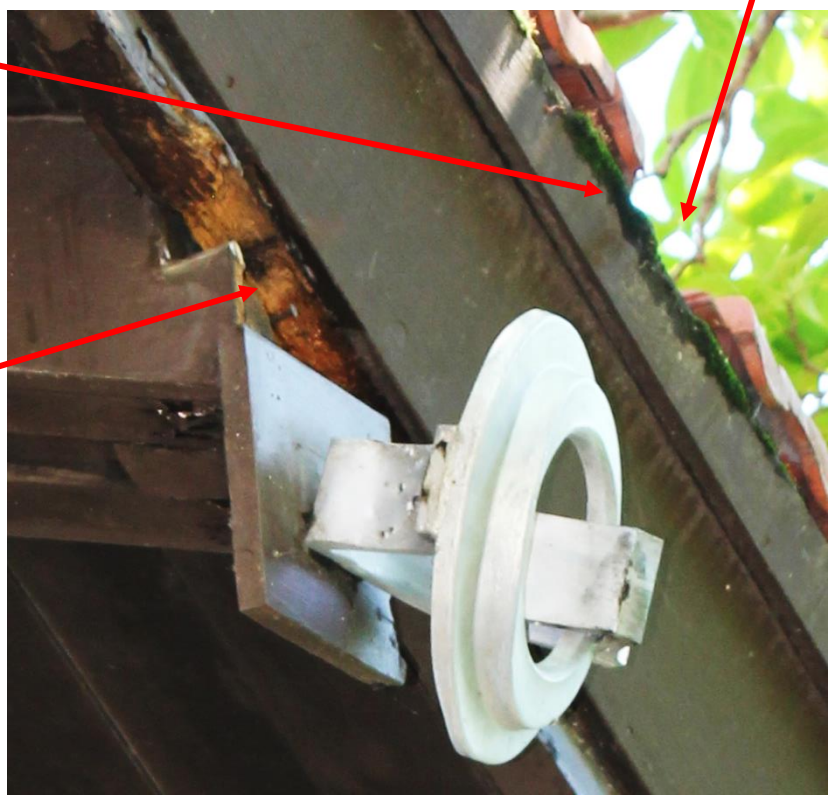
To the left is an exaggerated image showing other shingles which are no longer lying flat.



There is also a broken shingle projecting from the overhang of the roof.

On the east side of the original building there is one first course shingle partially missing. Moss has developed in the area of the missing shingle primarily since it is on the shaded side of the roof. This location has been leaking for some time as the soffit board has deteriorated. Water has collected at the location of the missing shingle and run into the soffit. Without a way for the water to drain, it has saturated the soffit board, causing the deterioration.



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Another shingle, on the east side, is damaged or missing near the northeast corner of the original library.

The west slope seems to have survived in better shape. I could see only a few eave shingles which are slightly misaligned.

These misalignments are minor as compared to those on the north and east.

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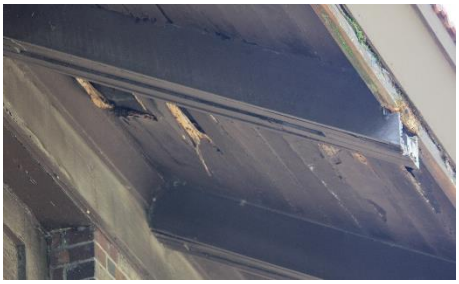
As expected, the shingles on the addition are in excellent shape.

The Roof Deck:

The roof leak has caused roof sheathing to deteriorate. This area under the spot where a branch or some heavy object hit the roof will require new sheathing boards.



By enlarging the image, it is easy to see that a section of the sheathing is completely missing, exposing the original underlayment.

An original roofing nail, circled in red, is also visible. To the right, from inside the library, the extensive amount of deteriorated sheathing is more readily visible.

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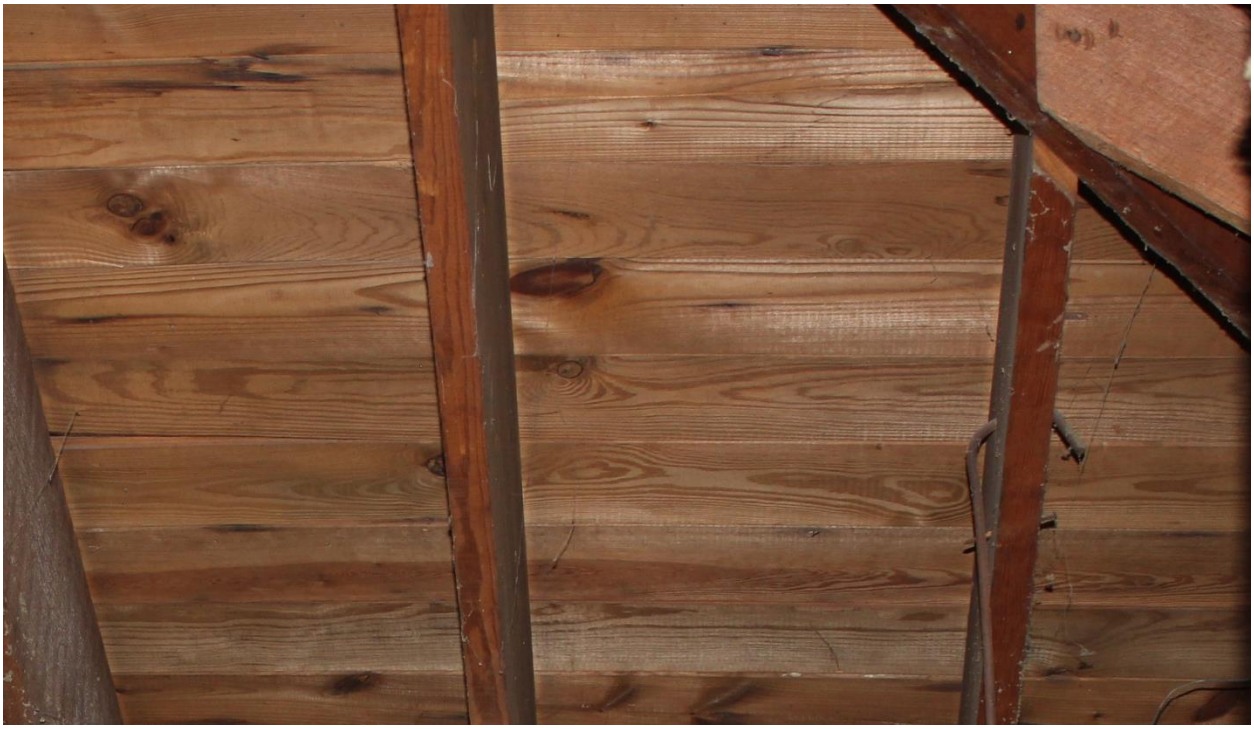
Below is a somewhat typical illustration of the sheathing boards from



inside the attic. While examination of every board was not possible, those which could be seen, and touched were all sound with no sign of moisture damage. When replacing the sheathing boards at the leak, the new lumber needs to be of the same species and dimension as the original. The original boards appear to be "ship lapped" to create a better fit. Since 1908, virtually all dimension lumber has been reduced in cross section. Replacement boards may have to be specially milled to match the original boards.

Canopy Roof:

The canopy roof is such an iconic statement that the architects for your addition wisely chose to repeat this design feature at your new, primary entrance.

There is obvious deterioration at the eaves and on the fascia boards. There are water stains on the limestone pilaster caps beneath the canopy and the wood trim pieces at the pilasters are loose.

This damage is due to roof leaks, if not current, then at some time in the past. The image, of the canopy, to the right is from the 2nd floor window. Drainage from the roof is so slow that moss has begun to grow on the asphalt shingles. The moss further impedes the drainage process.

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Asphalt shingles are not intended for roof slopes less than 3 inches in 12 inches. The eaves of the canopy are nearly flat, far less than the required slope for asphalt shingles. Flashing and counter flashing exists between the canopy roof and the north façade of the library. However, it appears that it was installed without enough overlap to prevent moisture from getting past it. Also, it is obvious that the asphalt shingles were not the original roof surface meaning the counter flashing has been lifted out of the way for re-roofing at least once. The action makes it more difficult for the counter flashing to return to its original shape. The lowest piece of counter flashing in the image above, circled in red, has an extremely large opening where wind driven rain can penetrate.

In my opinion, the canopy was most likely intended to have a terne metal roof. That material was common in 1908 and could be installed with flat-lock solder joints to prevent moisture from getting to the wood roof deck. Terne metal, a composition of about 15% tin and 85% lead, is an excellent roofing material, but must be protected with paint to prevent rust. Terne metal is still available and could be reinstalled. However, copper roofing is more readily available and does not require the ongoing maintenance of repainting.

Recommendations:

While on site I recommended that your re-roof and repair project start on the north slope. My thoughts at that time were that the other slopes may not need to be re-roofed. After studying the photograph and considering the very low slope at the eaves, I believe it is in your best interest to plan on doing a complete re-roofing project for the historic structure. This will result in perfectly aligned shingles on all slopes, replacement of cracked, chipped or broken clay shingles. Further, this will create the opportunity to install Grace Industries' Ice and Water Shield, or other similar product, for added protection of the sheathing at the eave overhangs.

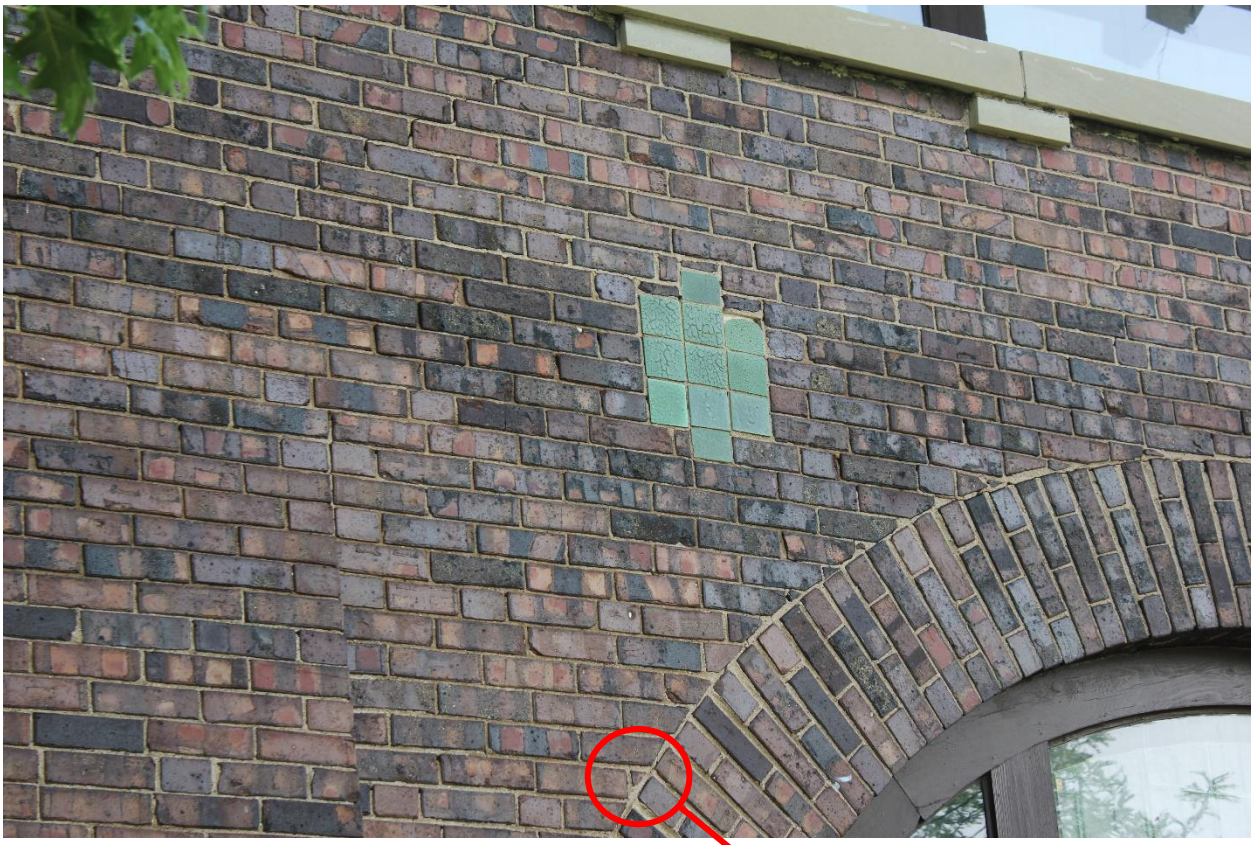
In addition, it is imperative to re-roof the canopy at the historic front entrance. During the process, the flashing should be redesigned to extend up the wall not less than 8 inches. The counter flashing should be redesigned to extend horizontally over the top of the lower course of counter flashing by not less than 4 inches. I highly recommend that the roof, flashing, counter flashing and trim all be copper. Copper has a life expectancy approaching 100 years or longer.

The canopy of the addition is covered with a rubber membrane roofing material. It's now almost 20 years old. Typically, rubber membranes exposed to ultra violet light have a life expectancy of 20 to 30 years depending on mil thickness. Since its roof is nearing the end of its life and since you will have craftsmen on site re-roofing the historic canopy roof, I recommend taking advantage of the craftsmen and having that canopy re-roofed at the same time.

The Masonry Assessment:

Brick Masonry:

The masonry used to construct the library is of very high quality. The installation seems to be of equally high quality with few exceptions. The image below is of the west elevation and shows nearly flawless joints.



Before any masonry repairs are made, mortar analysis needs to be performed. It will identify the percentage of aggregate, percentage of binder and the type of lime used to make up the binder. If any Portland cement is present, that will also be identified including the ratio of Portland to lime. I believe there is some Portland in the original mortar mix due to the presence of hairline cracks, commonly occurring between the mortar and the masonry units. These hairline cracks have not progressed enough to require re-pointing of the joint.

This enlargement of from the previous image near the limestone window sill, a stair-step crack has formed.

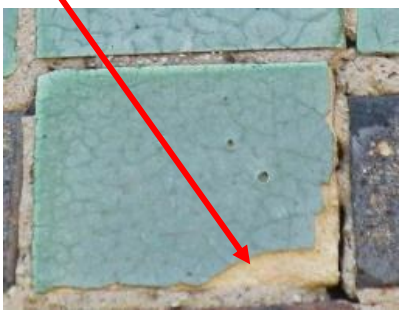
This crack and the hairline cracks described on the previous page are due to two factors, natural shrinkage of the mortar and bond failure between the mortar and the masonry units, brick or stone. The stair-step crack occurs in an area where the brickwork is continuous across the entire length of the building. Other areas of this façade are broken up by window openings which help compensate for some of the shrinkage. Hairline cracks in particular are of virtually no concern. The stair-step crack is of little concern because it is partially due to expansion and contraction across the face of the façade. The open area of this crack is not sufficient to be of concern at this time, however. It should be monitored. Eventually, it should be repointed. If other areas require re-pointing before this crack fully opens, then the stair-step crack should be repaired at that time. The quality of the masonry units is exceptional. I found only one fractured brick. It is located on the west side adjacent to the arch over the south window. There is no evidence that it is causing a problem. When the time comes to re-point the brick work, the masons may be able to inject a bit of epoxy into the fracture. The joints to the left and right of the brick appear to have a limited amount of mortar. Stabilizing the brick with epoxy before re-pointing is the better sequence to follow.

The chimney is an important, character defining feature. It is my understanding that the current mechanical system does not require the chimney and that it is abandoned. It appears, from Google Earth, that the flue is still open. This is a good thing. Capped abandoned chimneys trap condensation and they deteriorate from the interior, unseen by the property owners. When in use, the exhaust heat kept the chimneys dry. Without that heat, the masonry will deteriorate. With that in mind, a vented cap should be installed. The style shown to the right will always turn away from the wind preventing snow or rain from entering the chimney. It is fitted with a screen to prevent birds from building a nest in your chimney.

From the ground, the chimney's mortar joints appear to have weathered more than the joints on the rest of the structure. This is logical since the chimney has the worst exposure. Even so, I believe re-pointing of the chimney can wait until a craftsman is on site to repoint the other surfaces clad in brick.

The image below is of the west façade of the library. There are a few head joints, circled in red, which are beginning to fail. Head joints more often than bed joints fail first. Before placing a brick in the wall, the mason lays down a bed of mortar on the course below. He can see the bed and knows that there is sufficient mortar. However, the end of the brick, to be laid into the wall, must be "buttered" with enough mortar to fill the head joint between the two bricks of this course. The mason cannot see the end of the

brick, consequently, less experienced masons sometimes do not provide enough mortar to completely fill the joint. The joints circled have not deteriorated enough to require re-pointing yet. They should be monitored as the openings are likely to increase in size.



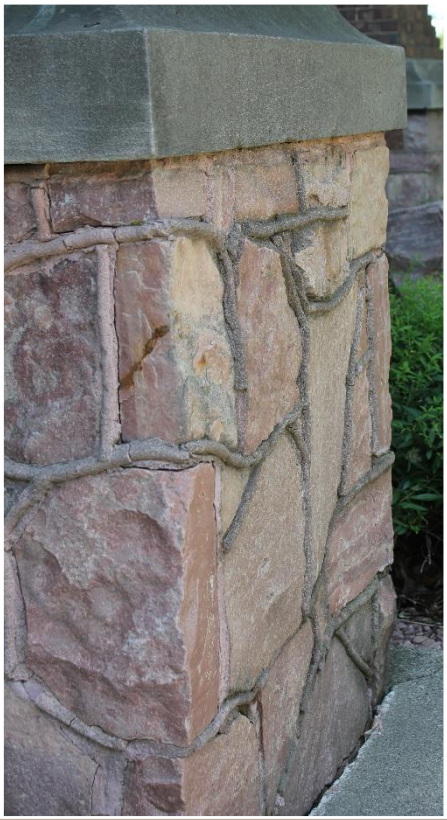
Decorative Tile:

The decorative glazed tiles on the facades appear stressed from years of exposure to the weather. The "crazed" surface is typical for all of the tiles. In some locations the glaze has spalled off of the surface as can be

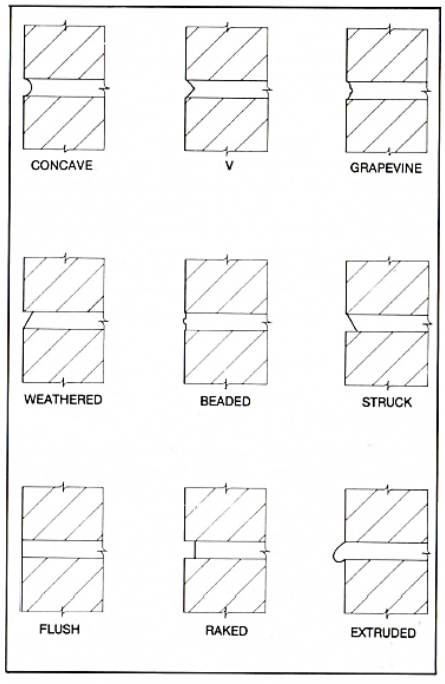
seen in the enlargement. Once the glaze has spalled off the underlying bisque is exposed. The bisque is less water resistant and will deteriorate over time. The tiles should eventually be re-surfaced. Edison Coating, Inc. of Plainville, Connecticut have been manufacturing masonry restoration products for more than 40 years. They offer custom colored patching products which can be used to repair the spalled areas of these tiles. Edison Coating is unique in that they only sell their products to craftsperson whom they have trained. Below is an example, before (left) and after (right), of repairs to terra cotta using Edison Coating products. The building is a courthouse in central Nebraska. The repairs were made in 2015.

Granite Masonry:

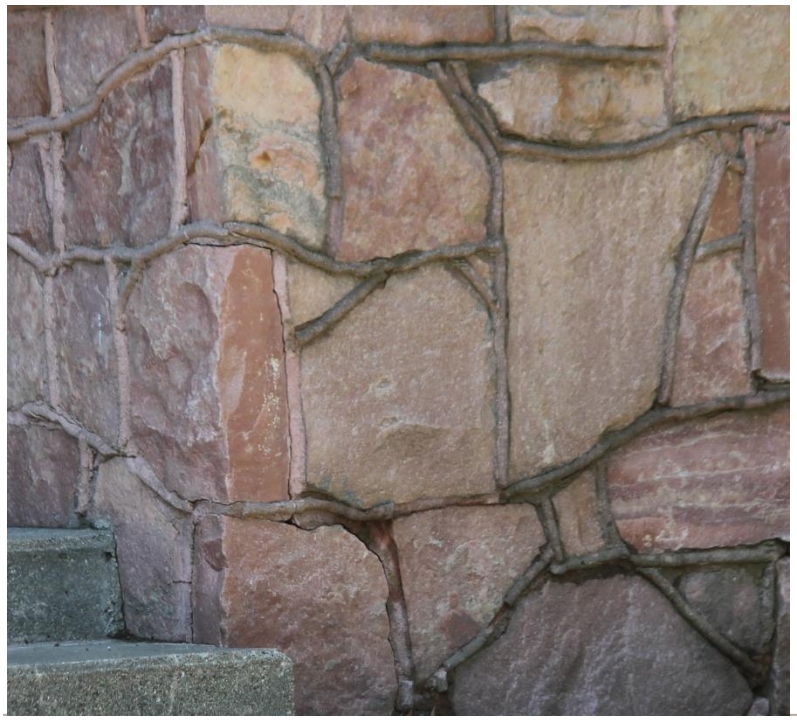
Granite is a naturally dense, hard substance with excellent weather resistance. The mortar joints in the granite water table base of the library and its addition are a problem. The style of joint is commonly called; "Extruded." According to the Brick Institute of America's Technical Notes #7B;



"Only the concave, 'V' and compacted grapevine joints are recommended for exterior use. For interior masonry work, other joints, such as the weathered, beaded, struck, flush, raked or extruded joints can be used."



The enlargement to the right illustrates how the mortar is tooled after it is extruded out of the joint. This style of joint is not recommended for a number of reasons including the fact that there is much more mortar exposed to the weather increasing the amount of surface which is likely to absorb moisture. It is difficult to butter the masonry units with sufficient mortar to be able to extrude enough mortar to create the tooled appearance. When the extruded mortar is not enough, the mason is left with trying to add mortar to the surface. It is obvious, from the image to the right, that the masons attempt to add mortar on the surface did not bond sufficiently and even though this is a protected location the "extruded" mortar has fallen off.



Just by noticing the various colors of mortar in this wall, it is obvious that the joints have failed and been repointed numerous times.

Unfortunately, there is no long-lasting solution for this problem. The fact that the extruded style joint is original and an obvious character-defining feature, eliminates the opportunity for the State Historic Preservation Office to consider permitting the shape to be changed to something more suitable for this exterior application. The extruded joints on the original library and its addition should be checked each spring and those that have spalled off, or failed in any other way should be re-pointed to restore the shape. The location shown to the right is at the northeast corner of the library. These open joints should be re-pointed as soon as funds are available.

A more challenging issue exists at the granite retaining wall just east of the drop-off driveway. There is insufficient space between the poured concrete and the stone wall. The concrete is not on a frost footing thus, throughout the winter, the concrete is forced up and down from the freezing and thawing of the soil beneath. Most frequently it is breaking the extruded mortar off the wall. Occasionally, the stone or the concrete is fractured. The wall and the driveway should be separated by

not less than a full inch. Given the shape of the granite and the mortar, there will be locations where the separation will be significantly more than an inch. Perhaps the most cost-effective solution is to cut the concrete driveway in a line about two feet from the surface of the wall. Then re-pour that portion of concrete drive and curb with sufficient space between the wall and the concrete. That joint will need to be filled with a compressible material then sealed with caulking. Before re-pouring the concrete, the wall should be examined and re-pointed where necessary.

A similar condition exists at the original front door. At this location it appears that freeze/thaw action has dislodged one of the stones.

Limestone Masonry:

There are several different types of failure of the limestone trim. Many are of a cosmetic nature and can be repaired by a conservator with lime mortar. Others may require a Dutchman patch. The limestone in the image to the left shows streaks where water has run down the face. This is apparently from the leaking canopy roof. Likewise, the white mortar in the joints of the arch under the canopy indicate water has washed out the original mortar. The excess water has collected on and about the stone base, causing the stones to become soft leading to spalling in some cases. It likely has, by freeze/thaw action, pushed the cheek wall's capstone away from its original position.

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The enlargement of the joint at the capstone to the base stone shows it has moved nearly one-half inch. The capstone on the opposite cheek wall has moved a similar amount. The rough face of the limestone occurs when moisture from within the wall cannot escape through the mortar joints. The moisture then has to escape from the face of the stone. As it does, the surface of the stone becomes soft and eventually spalls, leaving the condition seen in these images. The enlarged image of the joint shows evidence of caulking having been applied to the joint, making it impossible for moisture to escape via the mortar.

Correcting the mortar joint is relatively easy, however, restoring the faces of these large blocks of limestone is nearly impossible. When stones are cut and finished in a rectilinear pattern, as seen below, it is more cost-effective, and the results more attractive to simply replace the stone. A skilled stone conservator can fill the

hairline cracks seen in the image to the right. For this process, the joint should be prepared for re-pointing, then the hairline cracks should be repaired. The re-pointing can be completed once the stone patch has completely cured.

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The limestone trim was very accurately fabricated lending itself to very narrow mortar joints. Only a very experienced craftsman would be qualified to repoint these joints.

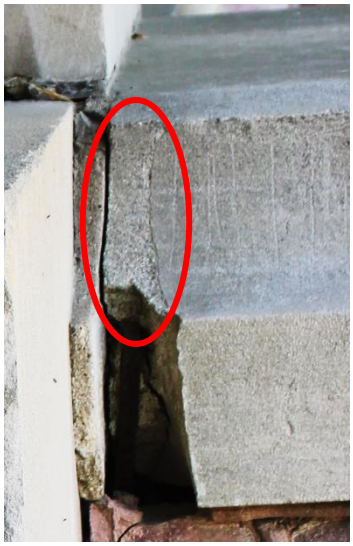
Recommendation:
There are numerous locations which would benefit by re-pointing in the near future. However, there is really only one issue for which I recommend immediate action: the concrete driveway adjacent to the retaining wall at the new entrance, by freeze/thaw action, damaging the wall, its mortar and the concrete drive itself. As soon as your roof repairs are complete, funds should be raised to make this correction.

The masonry units, bricks, granite and limestone, of your library are very high-quality materials. The original mortar was first quality, however, as with all masonry, the mortar is sacrificial in favor of preserving the masonry units. Therefore, a maintenance plan should be created to systematically repair those mortar joints as they fail. The first step to establish that plan is to have a complete analysis of each type of mortar used in the original library. Analysis of the addition's mortar will not be necessary, if the mortar specifications are still on file.

Of the three masonry units, the limestone is the most fragile. For that reason, I recommend engaging a stone conservator to fill the hairline cracks which exist in the limestone to prevent further deterioration.

The same conservator will have the skill to repoint the very narrow joints of the limestone trim. During this project, the spalled limestone trim should be replaced and any necessary Dutchman patches should be installed.

Once the limestone has been preserved, the remainder of the re-pointing can be scheduled. The cheek walls at the original front entrance deserve a bit more investigation. As noted, they have moved. I believe they have stopped moving. That can be verified by installing a simple "crack monitor." If they have not stopped moving then the repairs will require disassembly and construction of frost footing for each wall. On the other hand if, as I believe, they have stopped moving, they can be re-pointed in situ. Or, cost analysis could be done to estimate the expense of disassembly so that they could be reconstructed in their original location. To the right, the red circle illustrates the amount of mortar that was added to this joint to fill the void created by the capstone's movement.

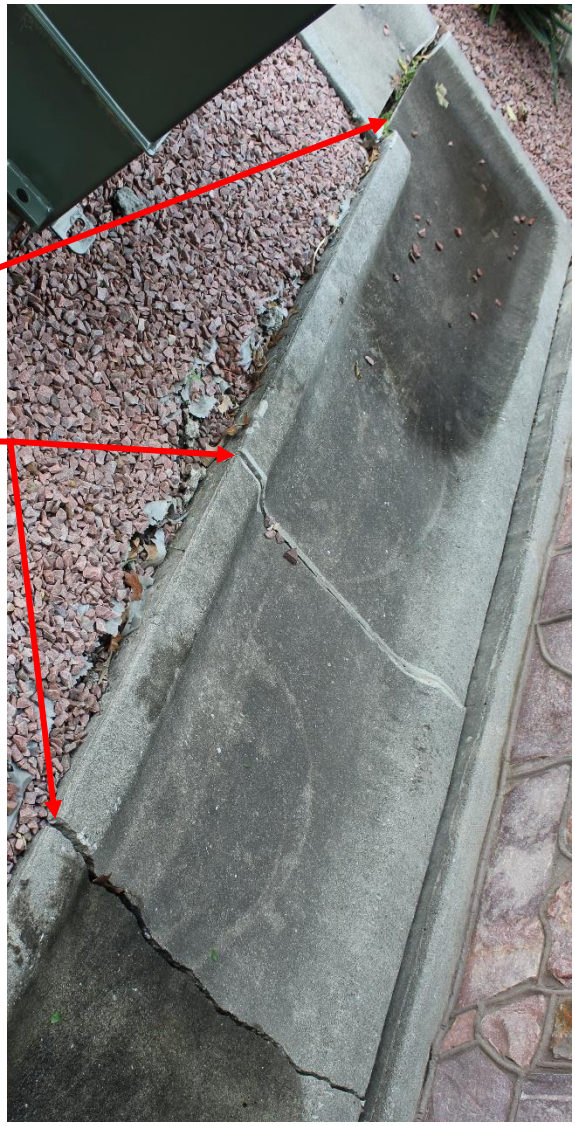


Repointing of the granite will be an ongoing process due to the unique style of the mortar in the joints. Training a local craftsman to monitor and re-point the granite on an as needed basis would be an ideal solution. If that is not possible, perhaps an agreement can be made with a reputable re-pointing mason to inspect and repair the granite's joint on a five–year schedule. You may consider discussing the joint style with the Iowa State Historic Preservation Office to see if they would permit altering the style to one that is more suited for exterior exposure. If they agree, changing the style should be done in one comprehensive project, including the addition.

Re-pointing the brick is the last priority. However, as noted, the decorative tile accents should be "re-glazed" before, or as part of the repointing project.

Site Drainage Assessment:

Generally, site drainage is handled appropriately. The exceptions are the custom poured concrete drainage gutters. This on the west side of the addition is the worst offender. Water is actually standing in the gutter and a crack across the gutter exist near the discharge location.



Upon closer examination, there is an open joint which was hidden by the plant in the earlier image. Another control joint and what appears to be an "unplanned" crack upstream.

Typically, concrete gutters like this one are poured directly on the ground without the benefit of a frost footing. In this case the gutter is located over backfill installed after the footings and foundation for the addition were constructed. Frost heaving is likely the cause for the movement which caused the cracks and separated the joints of this gutter. These opening are permitting water to seep down to the foundation. The addition has only enough space for the elevator equipment room below grade. Unfortunately, it is located relatively close to this gutter and moisture is getting into that room. It may be in the library's best interest to collect the roof drainage in a mini storm sewer and discharge it away from the building.

This condition also exists on the west side of the library. Water can be seen standing in the concrete gutter. It also appears that the yucca plant and the concrete edging for the crushed rock is blocking the flow of rain water away from the building. If a mini storm sewer system is created, the water from this location should be included. A former basement window is located just a few feet north of the above gutter. It serves the basement mechanical room, formerly as a window and currently as a utility access point. Dampness can be seen on the window sill. Below is the same window from inside the basement. The window, to the lower left was properly filled and no moisture was noted at that location.

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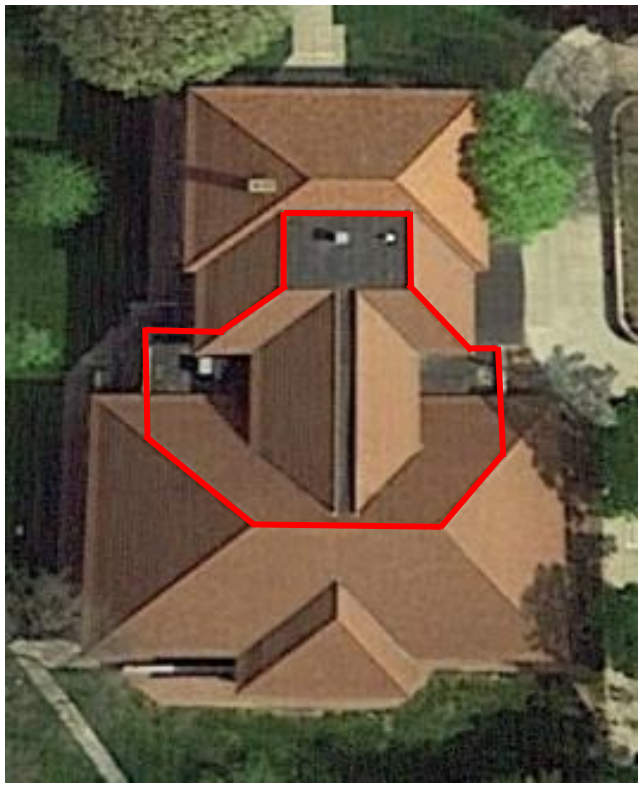
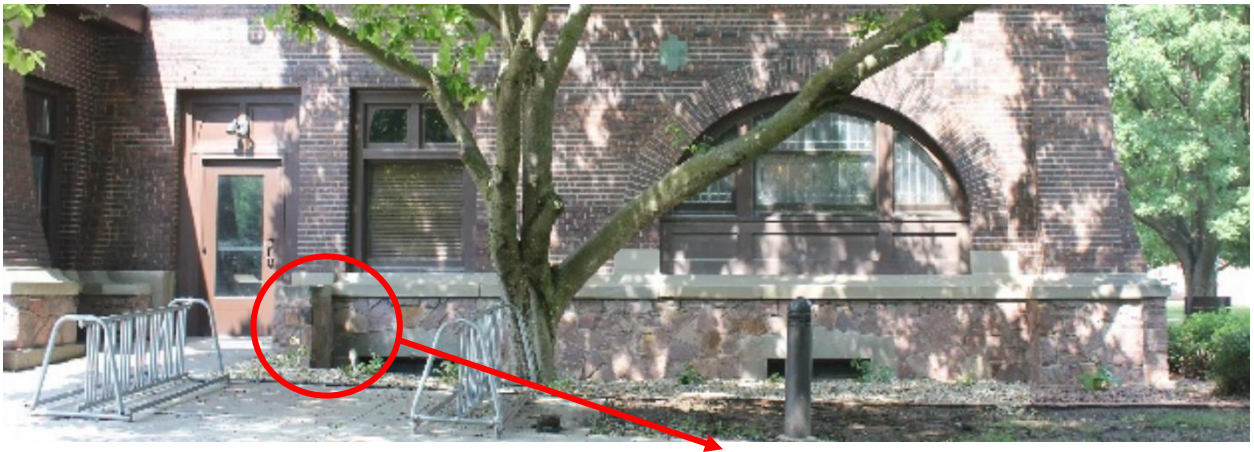
The shingled roof has no gutters or downspouts. The roof drains collect water from the flat roofs and from the shingled portion which spills onto them from above. The red lines indicate roughly the amount of roof drainage that is discharged via the lambs' tongues on the sides of the building. It also illustrates that the majority of the shingled roof spills off the edge and lands in the crushed rock area surrounding the building and its addition. This system is good in that there is never a concern about leaves collecting in and clogging gutters at the roof's edge.

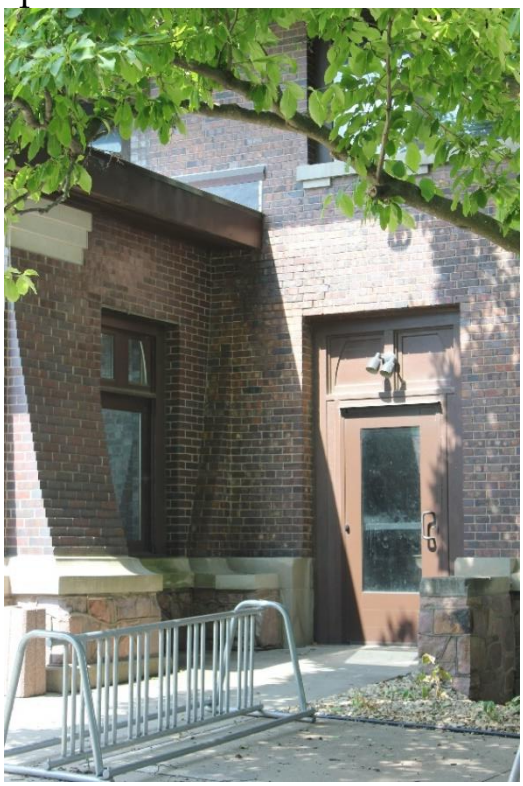


However, as noted on the previous page, the edging for the crushed rock hinders the flow of run off away from the building. On the east side of the building there are additional issues. A retaining wall was added adjacent



to the side door but then the grade north of the wall was not lowered accordingly. Crushed rock at this location is above the basement window sill. Also, the grade seems to slope down to the window from the bicycle parking area. The appearance is more evident in the image on the following page.

The retaining wall does not appear to be anchored solidly to the original building and/or, it is not on a frost footing. Like the cheek wall in the front, it has moved away from the library. The canopy roof also spills water into this area as can be seen in the image below left. The area is along the north side of the new entry way and shaded all year long. The quantity of water, its slow rate of drainage and the constant shade has resulted in algae growth on the limestone.



After considering the amount of roof that drains into this area, the best solution is to capture that water and take it under ground either to the north or to the east. There are advantages and disadvantage with either choice. Consulting a civil engineer may lead to your best options. Discussing this problem with others in the office we believe a Japanese inspired chain would look more attractive than a metal gutter system.

The chain as illustrated in the image to the right guides the roof run off down to grade, or a vessel. For symmetry, a chain drain could be added to the south side of the canopy. From that location it might be possible to drain to the curb of the driveway so the water would find its way to the street.

Once the roof runoff is contained, cleaning the algae off of the limestone is relatively simple task. Prosoco is one of several manufacturers who have designed products specifically for cleaning masonry and products to remove biological growth on masonry.

Poor site drainage is a primary reason there is moisture in the basement. The west wall of the basement just to the south of the former window, now utility entrance, has lost most of its plaster due to excessive amounts of moisture. The floor is obviously wet from the previous night's rain. The moisture has moved along the south wall past the door to the elevator equipment room. The equipment room door was cut into the original foundation and the room itself is the only below grade space in the addition.

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The equipment room is about five inches above the basement floor. However, moisture was present in that room as well. The efflorescence on the concrete block is evidence that moisture has collected in this room many times.

Moisture needs to be eliminated from both of these rooms. The nearly constant presence of moisture promotes rust on the equipment and will shorten its life expectancy. There is a sump pump in the mechanical room which was full when I arrived. It did start and discharged the water out of the building.

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The window above is on the east side of the basement and there is evidence that moisture has gotten into the building at this location.

As a point of reference, this is the basement window located just north of the original side entrance. It's also in a location of questionable drainage. Once the drainage outside is repaired, the interior can be cleaned and mortar softened by exposure to excessive moisture can be replaced.

Recommendation:
It is essential to do what it takes to keep the mechanical and elevator equipment rooms dry. While some of the water is entering the mechanical rooms through the open window, leaks other than the via the window must be the source of water in the elevator equipment room. I recommend that the west foundation wall, adjacent to the mechanical and elevator equipment rooms be exposed on the exterior. All masonry joints in the foundation wall should be checked for soundness with all unsound joints cleaned out to a minimum depth of one inch, then repointed with mortar matching the original formula. When the re-pointing mortar has cured, then the wall should have a coating of dampproofing material applied.

There are two sets of lambs tongue drain spouts in this general area. They should have the roof runoff directed into grade level catch basins connected to a mini storm sewer system. The discharge from the mini storm sewer should be more than 20 feet away from the building.

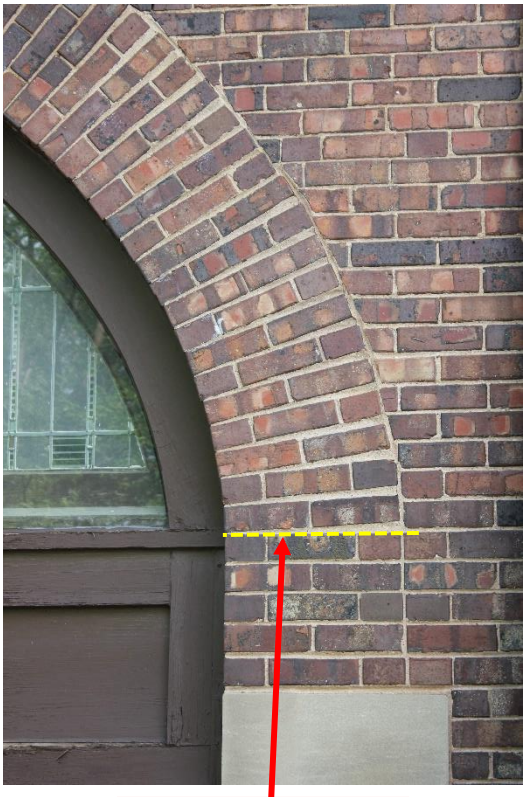
Drainage on the east also needs to be collected in catch basins and routed away from the building in a mini storm sewer system. Unlike the west, I do not foresee the need to expose the foundation and apply dampproofing.

Exterior Wood Assessment:

Windows:

The windows of the library are another character-defining feature.

On the ground floor, there are a pair of large arched windows that flank the front door. Similarly, there are pairs of arched windows on each side of the library. The arched masonry openings are identical. The arches are divided by two wood mullions. Between the mullions, measuring about half the width of the opening, is a double hung window. The sashes on either side are fixed in place. In front, the windows fill the full height of the masonry arches. However, to accommodate book cases along the outside walls, the window sills on the east and west sides are raised and wooden panels fill the masonry opening from the limestone sill to the spring line of the masonry arches.



Each side of the building has Prairie Style leaded windows with patterned glass and colored glass accents.

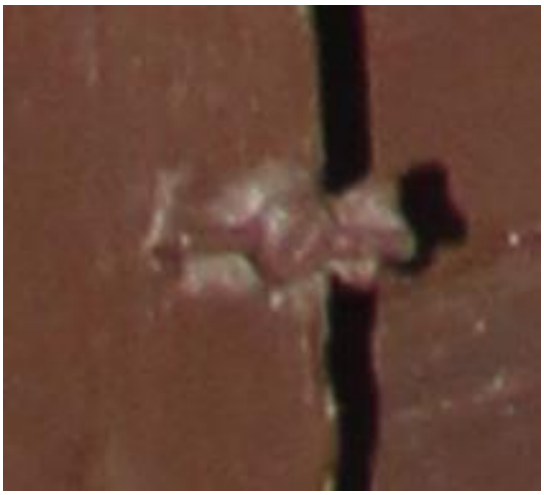
The windows have had good care over the years and most paint appears to be sound. However, the west exposure is harsh and those windows should be touched up, or re-painted in the near future.

In the example to the right, you can see that most of the paint is still bonded to the surface really well. There is probably five to seven years of life left in most of the painted surfaces.

However, places where it has peeled away and exposed raw wood need attention soon. These small areas should be sanded down to bright wood. Then primed, with a good linseed oil base primer. The finish paint probably won't match because of the sun fading the surface. With that in mind it will be less noticeable if the touch up areas are kept small, or if you paint an entire surface to a corner.

Clear covers have been added to the windows for improved thermal efficiency and to protect the historic leaded glass windows. It appears that caulking was used to seal the covering on its entire perimeter. If that is correct, condensation will occur in the space between the clear cover and the window. If not vented, the condensation will accelerate the deterioration of the wood. Small weep holes need to be provided at the window sill to provide proper venting.

In the future you may want to consider more traditional storm windows. They would be more convenient for cleaning the glass surface and when it is time to repaint the original wood windows. A turn button which is typically used to hold storm windows in place still exists on the original south elevation window. Re-introducing traditional storm windows would be an act of restoration.



The second-floor windows are rectilinear with mullions aligned with those of the first-floor windows.

To the left you can see that glazing putty in many locations had dried out and fallen way. These areas should be thoroughly cleaned, removing all loose putty. The raw wood of the sash will need a generous application of boiled linseed oil to help the new glazing putty adhere to the wood. The putty should be painted as soon as it achieves its initial set.

Doors:

I was told that the front doors are original. However, from the cover

photograph taken from the National Register Nomination ca. 1979, and from the description in the nomination, aluminum storefront doors were in place at that time. I believe the current doors are probably accurate replicas of the historic doors. Further evidence is provided by the modern hardware; pulls, lockset and knuckle hinges and no apparent scars from original hardware.

Replicating these doors has dramatically improved the appearance of the library. The front doors and door frame are in much better shape than the windows, having been protected by the canopy. The side door to the original library, although not as well protected, is also in very good condition.

Recommendation:
The doors are in such good shape at this time, it will be appropriate to wait to re-paint them until the decision is made to repaint all of the exterior wood. The windows, however, do need some attention. The re-glazing mentioned should be done as a coordinated effort with a touch up painting project. Volunteers may be an appropriate way to work on the ground floor windows. Some work necessary for the second-floor windows may be done from the interior by volunteers. However, the existing clear covering over those windows limits the amount of work which can be accomplished from the interior. Eventually, five to seven years from now, the protective covers should be removed so that a complete repainting of the exterior can be accomplished.

Creating weep holes at the base of the protective covers should be done immediately. While on site, I neglected to determine if the covers are plexiglass or real glass. If plexiglass, weep holes can be created by simply drilling a couple of holes at the base. If it is real glass the process is a little different. All of the caulking supporting the glass would need to be cut away and small glazing blocks would need to be set under the glass before it is re-caulked. It will be okay to seal the jambs and the head of the window, but the sill can be left completely open. At the very least, half inch long openings should be left at each end of the sill to provide proper ventilation.

Eventually restoring the original storm windows is my recommendation. However, many historic structures have clear coverings over the historic windows and are surviving just fine. Historic storm windows would be the lowest priority of all recommendations I have offered.

Conclusion:

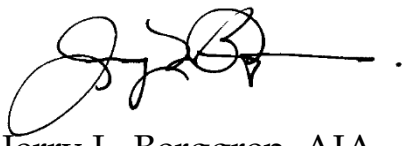
Onawa is fortunate to have such a remarkable library. The structure is iconic and the care it has received in the past is commendable. The addition created nearly 20 years ago is sensitive to the original design and its existence ensures the continued use and appreciation of the facility.

The recommendation made throughout the report are maintenance items, as opposed to necessary renovations. The unfortunate damage to the roof is of course your first priority. The elimination of water in the basement is also a high priority, and will have a relatively high price tag.

At some point in the not-too-distant future, planning for masonry restoration will need to begin. Fortunately, there are choices. You should undertake the planning for all the masonry restoration. Then the choice of when individual projects will be done will likely be determined by your budget. If finances are available to do the entire project, so much the better. That is with the understanding that the style of the mortar joints in the granite are prone to fail much more frequently than the joints in the brick work and limestone. After that, the work to be done should be essentially routine maintenance.

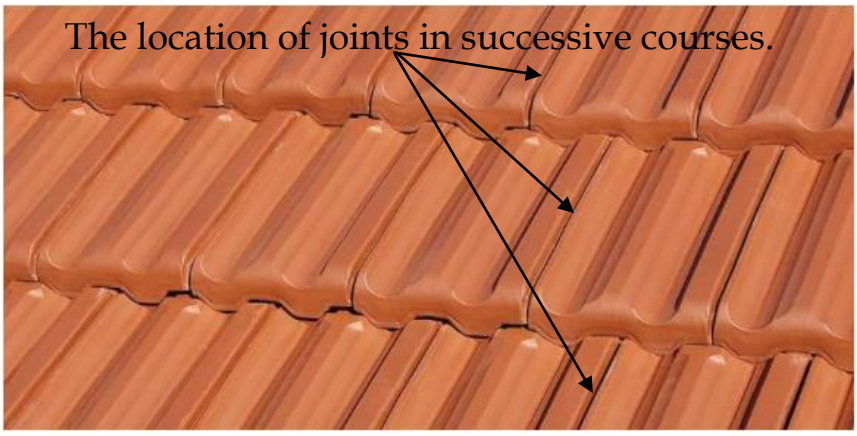
I have enjoyed having the opportunity to visit and assess your historic library. Please know that Berggren Architects would be more than happy to help with any of your future restoration efforts.

Respectfully submitted,



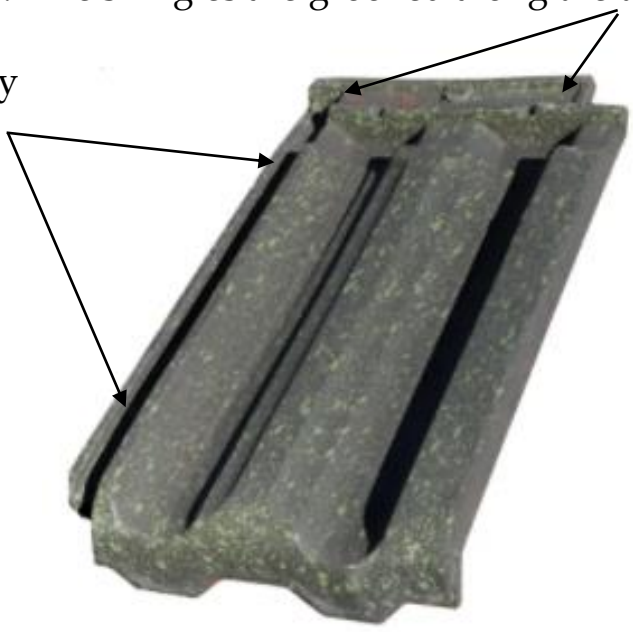
Jerry L. Berggren, AIA

Appendix A
Clay Tile Shingles



This style of shingle is exceptionally durable and weather resistant in most applications. The image to the right was taken from the Ludowici website and illustrates how the shingles are hung. Individual shingles are offset from the previous course so that joints between the shingles do not line up.

The image to the right is also taken from the Ludowici website and show the edges of an individual shingle. The shingles are grooved along the top to receive the lips of overhanging shingles in the course above. They also have grooves along one edge to accept the lip of its adjacent shingle. This interlocking system is designed to prevent rain from getting past shingles where they meet.



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The chart below from their website provides some vital information, especially the minimum slope which is circled in red.

CHARACTERISTIC	SPECIFICATIONS
WEIGHT PER SQUARE	1025 lbs.
PIECES PER SQUARE	133 pcs.
OVERALL SIZE	9" x 16-1/4"
EXPOSURE	8-1/8" x 13-3/8"
INSTALLED BARREL HEIGHT OFF DECK	N/A
MINIMUM SLOPE	3:12
BASE TEXTURE	Smooth

The majority of the roof slope is much steeper than 3:12. However, the roof slope diminishes at the eaves and may be at or less than 3:12 on the original library. There is concern for wind driven rain getting past the interlocking system if the shingles are installed at, or less than, a slope of 3:12. Installation of ice and water shield should be included at all of the eaves whenever the clay shingles are removed and re-installed.

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