TREANORHL

Lincoln County Courthouse

CONDITION ASSESSMENT REPORT

JUNE 2020



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A. INTRODUCTION & SUMMARY



View looking at the southwest corner, c. 1900 by G.E. Hutchison. Note lack of south lower entry and lack of carved dedication stone in belt course. PHOTO A-1

A. Introduction

A.1 Scope & Intent

The project scope was limited to an investigation of the exterior of the Lincoln County Courthouse with the intent of assessing the performance of the exterior envelope and making recommendations for treatment, including budgets for those treatments. Points of particular concern were moisture intrusion into the basement level, air infiltration, masonry deterioration (particularly that associated with the north and south entries), as well as the roof and windows. In order to better understand the infiltration issues the interior side of the exterior walls was also reviewed.

The project team included TreanorHL (architect) and Dudley Williams and Associates (structural engineer). The exterior of the courthouse was visually assessed using binoculars for viewing areas above the first floor. The interior side of the walls and the roof were also reviewed. The underside of the roof framing and sheathing were viewed from the attic.

A.2 Acknowledgments

TreanorHL and Dudley Williams and Associates extend our appreciation to the staff and employees at the Lincoln County Courthouse for providing documentation in the County records, as well as accounts of past projects that were not documented. Staff also provided valuable information about leaks and air infiltration. We also thank the court staff and sheriff for their time discussing the court function within the courthouse and how security for the building is handled.

A.3 Executive Summary

Overall, the exterior of the courthouse is in good condition, but select elements of the exterior do require repair. The most notable of these are the windows and the three exterior entry points. Infiltration that is resulting in deterioration of finishes on the lower level was found to have two primary sources: above grade entry and below grade entry. Above grade entry was definitively identified, however, the source of below grade infiltration is less certain. The uncertainty is a result of the concealed conditions and unknowns regarding the most recent efforts to waterproof the foundation. Follow up studies and investigations are recommended based on observed conditions to determine whether a source or sources can be pinpointed. Repair recommendations address the above grade infiltration. However, due to the uncertainty about the below grade infiltration, recommended repairs and costs were not developed.

Recommended repairs include restoration of the wood windows and replacement of the storm windows. Restoration of the windows will address noise and air infiltration issues associated with the windows and new storms will improve the energy efficiency and operation of the windows. Also recommended is the replacement of the north, south, and east entry steps. The way these stair structures meets the building is contributing to water infiltration and each has a code compliance issue. A significant number of stone units in both the north and south stair are deteriorated due decades of exposure to de-icing salts and wet freezing conditions. Additionally, the south walls are beginning to lean out from the concrete stair. Reconfigured, compliant, layouts for the stairs are presented in section C.2. Sheet metal cladding at the eaves, pediments and tower requires re-painting to protect it from the elements. The project budget for this work is estimated at $2.25 million.

Since the courthouse is listed on the National Register of Historic Places and the Register of Historic Kansas Places, work will be reviewed by the State Historic Preservation Office. With that in mind the repair recommendations are made such that they comply with the Secretary of the Interior's Standards for Rehabilitation. The Standards for Rehabilitation offer the most flexibility in approach. Compliance with this Standard also allows the county to take advantage of the State Historic Tax Credit program which provides a transferable credit equal to 25% of qualifying project expenditures.

As the entry points are involved in potential repairs and the courthouse still serves for court proceedings a cursory review of security was conducted. This study recommends the county consider implementing a single point of entry to the building with security screening. Three different options for implementation are presented with their respective budgets which range from about $600,000 to $1.5 million. Integrating any of these with a repair project may result in some cost efficiencies.

Additional studies are recommended for the interior as well. During the time on site several issues that affect the health, safety and welfare of building occupants were identified. These issues include: inappropriately placed heavy storage, large accumulations of bird and bat guano in the attic, use of the boiler room for other activities and a second path of egress, the lack of egress hardware on a door, and frequent leaks associated with the radiator piping. A historic structure report, including a full condition assessment, code review, and space use study is recommended. The report would be useful in determining all unsafe conditions, re-allocating space appropriate to various functions in the courthouse, and planning for upgrades and repairs to aging plumbing, electrical, heating, and cooling systems before they become critical. Replacement of mechanical systems generally causes disturbance of spaces and finishes, projects that consider spatial changes along with such comprehensive repairs are a best practice for making a historic building function appropriately for modern use.

Lincoln County has one of the most beautiful and unique courthouses in the state. Civic pride in the courthouse is evident from interactions with staff and the public. The county commission is wise to plan for the continued use of this wonderful gift from past generations.



Enlarged section of Photo A-1, showing glazing in fan lights above second floor paired windows. PHOTO A-2



Colorized postcard image of the Courthouse, undated. PHOTO A-3



Undated aerial postcard image of courthouse. PHOTO A-4

A.4 Courthouse Background

When assessing an existing building it is important to understand how the building was constructed and what changes have occurred over time. When assessing an historic building it is important to understand what features contribute to the significance of the structure so that they can be preserved for future generations. Understanding the maintenance and repair history is also important when determining whether the condition being observed is the result of a resolved issue or an ongoing problem. The windows, stone finish, clock tower, pressed metal and entry stairs are all character defining features.

The Lincoln County Courthouse was designed by C. W. Squires of Emporia and constructed by a local contractor, W.P. Baker. Construction was bid in August of 1899 and commenced in September that year. A formal dedication with a parade was held on September 6, 1900.

The history documented here is based on:

- drawings provided by the county clerk and the State Historic Preservation Office. Included in that are the 1899 design and construction drawings, 1936 proposed site improvement plans, 1991 handicap barrier removal construction drawings and specifications, 1994 courthouse preservation construction drawings and specifications.
- interviews with county staff who work in the courthouse
- photographs on the walls in the first-floor hall
- history and description contained in the National Register nomination form

SIGNIFICANT EVENTS

- September 1899 construction start
- September 6, 1900 courthouse dedicated
- 1936 proposed improvements of courthouse grounds (drawings for site only, but shows upper and lower south entry, likely WPA project involvement. Other changes likely in this period: replacing north, east and west stairs, addition of restrooms, finishing southeast basement rooms, applying metal ceilings to second floor plaster ceilings, the dedication stone on the southwest corner was likely carved at this time)
- Late 1960s-early 1970s: Window restoration, courtroom remodeling, entry doors replaced, more finishing of basement rooms. No documents have been located for these changes, but date range is based on the materials and style of finish. This date range also coincides with similar alterations made to other county courthouses in Kansas that TreanorHL has worked on.
- December 12, 1975 courthouse listed on the National Register of Historic Places (fan light windows painted over and "modernized doors," mentioned in the description.)
- 1975 – 1991 Removal of west lower stairs (undocumented alteration).
- 1991 handicap barrier removal project provided elevator and ramp entry to south lower door and altered basement restrooms.
- 1994 courthouse preservation work (replaced handrails, tower windows called for repair, stone repointing and cleaning, exterior painting of wood and metal, water proofing and other improvements shown in the drawings do seem to have been undertaken based on oral history of the 2001 project).
- 2001 foundation water proofing and roof drainage work. This likely included more stone repairs and repainting windows. Much of the work described as occurring in 2001 was similar in scope to various bid items outlined in 1994 and some may have been delayed until 2001. The architect responsible for the 2001 work was contacted and had destroyed records for the project. To date, the county has not located copies of drawings or specifications.
- 2005 Boiler replaced.
- 2012 roof replaced.
- May 4, 2020 tower struck by lightning resulting in damage to roofing, roof sheathing, and framing.

B. ASSESSMENT



South facade, April 2020 PHOTO B-1



Typical steel corrosion and concrete distress at railing attachment points. PHOTO B-2

B. Assessment

B.1 Exterior

The exterior assessment of the courthouse was performed as a visual inspection from grade with the assistance of binoculars for viewing elements above the first story. Conditions related to the exterior stone, windows, doors, stairs, and roofing were noted on copies of the original elevations. The elevations were supplemented with annotated photos and sketches of details. The condition assessment notes are included in the appendix. The findings are summarized below and broken out by building element.

The courthouse is constructed primarily with limestone from the Greenhorn Limestone formation, known regionally as post rock limestone. The dark stripe through the middle of ashlar stones is the result of oxide content in this layer and makes the stone distinctive. Stones exhibiting the stripe are naturally bedded. Lighter stones forming arches and other trim on the building are the same post rock limestone, set in a face bedded configuration to show off the lighter-colored layer. Dark stones used at the base of the building are Dakota sandstone, which was quarried in the region. Post rock limestone is still commercially available; however, Dakota sandstone is not.

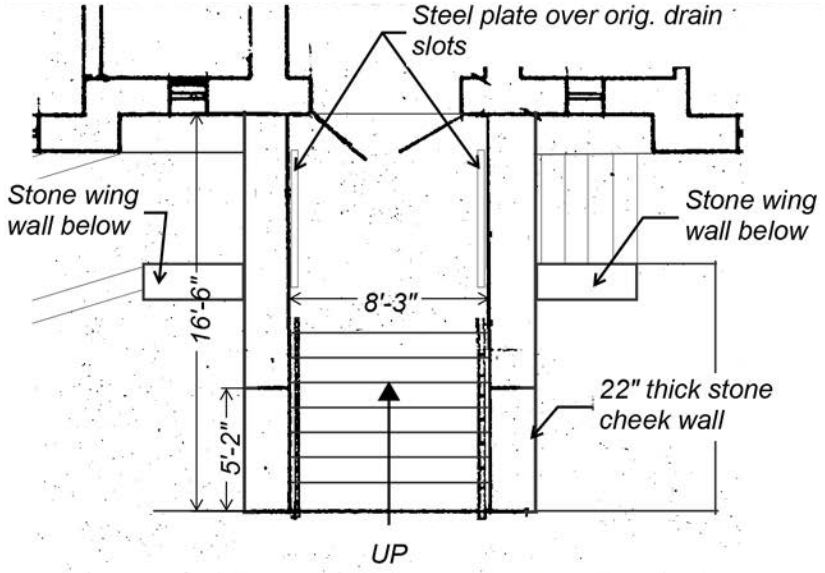
The courthouse retains original windows except at the clock tower base. Original sheet metal cladding at pediments, eaves, and tower is intact. The original roofing, which appears to have been shingles with standing seam metal at the turrets, has been replaced with asphalt shingles. Three of the four original chimneys have been dismantled to below the roof. The northeast chimney has been altered and shortened, but still appears to serve as the flue for the boiler.

B.1.a STAIRS

There are three sets of exterior stairs (north, east, and south) that provide egress points from the building. Until recently all three were open and used by the public to enter the building. The east stair to the lower level has been locked to bar entry (see discussion in Doors). None of the stairs is fully compliant with current building codes, refer to Figures B-1 through B-3. Painted steel railings at all stairs exhibit significant corrosion at grade level and cracks in the concrete slab associated with rust jacking of inserts was typical.

South Stairs

The south stairs are on the primary face of the building and are the main public entry. Refer to Figure B-1a and B-1b for summary of conditions and code review. The stairs have two components, an upper stair that leads to the first level and a lower level entry that is accessed by stairs on the east and a ramp on the west (see Accessibility discussion for details about the ramp). Alterations for the ramp date from the 1991 handicap barrier removal project. The upper and lower stairs likely date from c1936 and were probably a WPA era funded improvement. Drawings do not exist, but the stairs appear to match a 1936 site plan for improvements to the courthouse site. The stairs appear to be constructed using load bearing stone cheek walls to support east and west running concrete beams at the north and south ends of the landing with a one-way slab between. The stone wall system is used to form retaining walls to create a lower entry. The area under the stairs is likely earth filled.



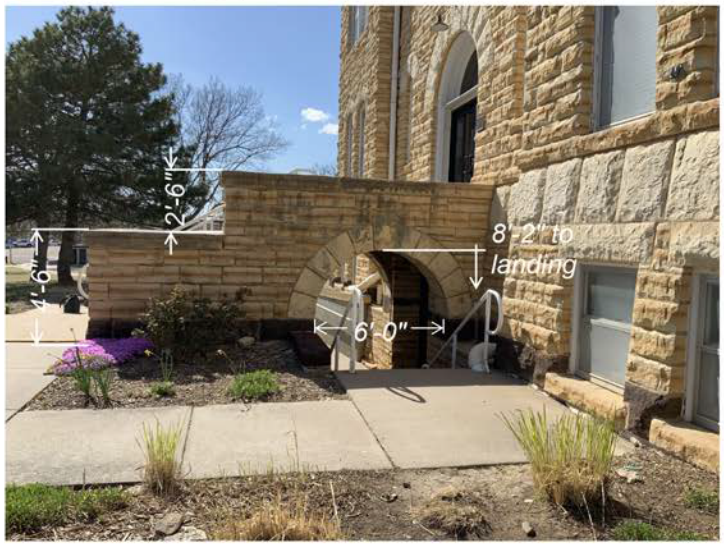
Code review summary:

Riser height (7") and tread depth (12-1/2") are compliant.

Upper and lower landing are compliant

Handrail lacks required lower extension

Stone cheek wall does not provide height compliant guardrail.



Condition review summary:

Concrete to stone joint at the building is allowing water into the lower level of the building, causing deterioration of finishes, the header and lintel above lower door and the automatic door operator. Joint does not allow for movement between stone and concrete, nor does it accommodate a properly configured sealant joint.

Upper landing concrete slab has significant deterioration.

West cheek wall is leaning out. East cheek wall has pronounced bulge in stonework.

Concrete to stone cheek wall joint is failing. Rough stone finish makes this joint difficult to maintain.

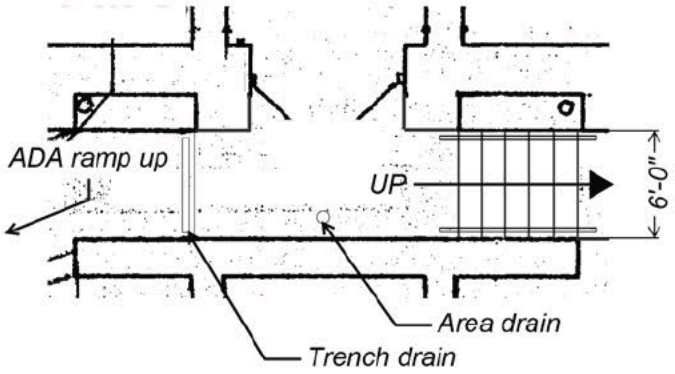
Some stones are deteriorated enough to require replacement.

Concrete steps are in fair condition.

Steel handrail is corroding at anchor points.



Figure B1a - South upper stair condition and code summary.



Code review summary:

Riser height exceeds 7" maximum, except for topmost riser. Risers are not compliant with dimensional consistency requirement (greater than 3/8" deviation in heights). Tread depth is compliant (11-3/4 to 12")

Upper and lower landing is compliant.



Condition review summary:

Concrete to stone cheek wall joint is failing. Rough stone finish makes this joint difficult to maintain. This is likely one source of infiltration at the building.

Mortar joints are failing.

Some stones are deteriorated enough to require replacement.

Wall across from the door exhibits efflorescence.

Concrete is in fair condition, cracking is typical at handrail anchor points.

Steel handrail is corroding at anchor points.



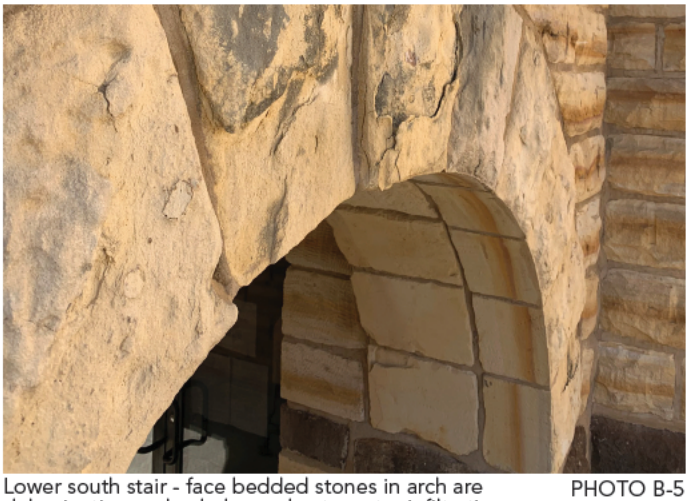
Figure B1b - South lower stair condition and code summary.



South stair cheek wall leans out approximately three degrees. PHOTO B-3



Lower south stair - failing mortar joints and efflorescence (white spots) indicate significant moisture infiltration through stairs and landing above. PHOTO B-4



Lower south stair - face bedded stones in arch are delaminating on bed planes due to water infiltration. PHOTO B-5



The concrete beam supporting the landing at the door has been repaired in the past. The concrete patching is cracked and detaching, indicating that deterioration has occured since repairs were last made. PHOTO B-6

The west cheek wall leans out from the stair. While the east wall also leans, it is not as pronounced as the west. The east wall also has a significant bulge adjacent to the arched opening. Limestone units exhibit some deterioration, the most pronounced of which are associated with the arches and with the wall below the upper stairs. Efflorescence, likely from deicing salts and water intrusion moving through concrete stair and earth fill is evident on the wall below the stairs. Deterioration at the stair level on the interior side of the cheek walls is also common. Approximately one-third of the limestone units will require repair or replacement. Sandstone units appear to be in serviceable condition. Mortar joints are in generally fair to poor condition, particularly in retaining walls and under the upper stair. The joint between the concrete structure and the stone wall is deteriorated and allowing water into the structure.

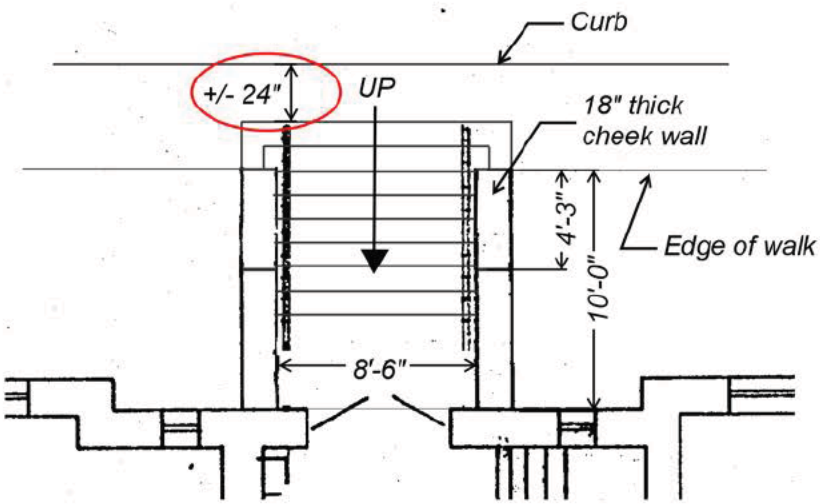
The upper landing concrete slab has been topped once in a previous effort to extend its life (date of repair unknown). The slab is in poor condition, refer to report from Dudley Williams & Associates. The way the landing meets the exterior wall face is poorly detailed. As constructed, it does not isolate the stair structure from the building to allow proper movement of the two elements, nor does it provide a proper sealant joint to exclude water. Water infiltration at the head of the lower entry door is attributable to this detail.

The lower entry landing concrete slab is in good condition. Issues related to drainage were not reported.

North Stairs

The north stair leads from the parking lot to the main level of the courthouse. This stair is used by staff and by the public. Refer to Figure B-2 for summary of conditions and code review. The north stair appears to be a replacement for the original, and based on the similarity of detailing, likely date from the same period as the south. Like the south stair the cheek walls appear to be mass walls. It is unclear, whether they support the concrete stair structure or if the stair rests on earth fill.

Approximately 50% of the limestone units at the north stair walls exhibit deterioration, particularly at the stair side of the cheek walls. Deicing salts have likely contributed to the deterioration of the limestone units. The sandstone units are in good condition. The mortar joints are deteriorated with previous repointing failing. The joint between the concrete structure and the stone wall is deteriorated and allowing water into the structure.



Code review summary:

Riser height (7") and tread depth (12") are compliant.

Upper landing is compliant

Lower landing does not meet 48" minimum run requirement

Handrail lacks required lower extension

Stone cheek wall does not provide height compliant guardrail





Condition review summary:

Concrete to stone joint at the building is allowing water into the lower level of the building and eroding mortar joints. Joint does not allow for movement between stone and concrete, nor does it accommodate a properly configured sealant joint.

Concrete to stone cheek wall joint is failing. Rough stone finish makes this joint difficult to maintain.

Some stones are deteriorated enough to require replacement.

Concrete is in fair condition.

Steel handrail is corroding at anchor points.

Figure B2 - North stair condition and code summary.



North stair cheek wall - mortar joints exhibit bond line failure and distress in some stone units. PHOTO B-7



North stair landing condition at building face is a cold joint between the original stone threshold and the concrete landing, this allows water into the wall. South landing is the same detail. PHOTO B-8



East stair open mortar joints in building wall and concrete poured tight to stone with a cold joint allowing water infiltration. PHOTO B-9

The concrete is in fair condition. But like the south stair does not isolate the stair structure from the building to allow proper movement of the two elements, nor does it provide a proper sealant joint to exclude water. This is allowing water to enter the building wall assembly. The water intrusion is deteriorating mortar and stone on the exterior building wall adjacent to the stair walls. And it is the source of water intrusion at the north wall of the lower level maintenance room that pools on the floor.

East Stairs

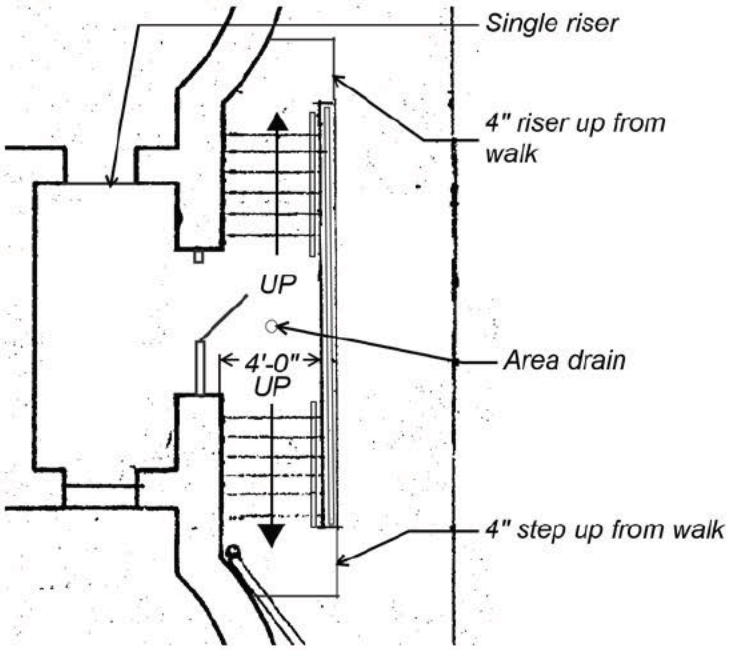
The east stairs and east cheek wall are all made of concrete. Refer to Figure B-3 for a summary of condition and code compliance. The age of the steps and wall are not documented and there have been modifications. The steps appear to have been altered at the upper and lower landings. The lower landing has been raised approximately 7-inches. The raised landing incorporates an area drain that is reported to be easily overwhelmed, sending water in under the east door. The raised lower landing continues inside and a single step down is present between the east vestibule and the boiler room. The upper landings are approximately 4-inches above the adjacent east walk. The concrete does not appear to be the same age as the lower alteration.

The concrete stairs and landings are poured tight to the stone walls. This does not allow for differential movement, nor does it provide a proper sealant joint. Deteriorated mortar and limestone units were noted on the interior and exterior sides of the wall.

B.1.b DOORS

Original doors at the south (upper and lower), north and east entry have been replaced with aluminum storefront systems, the date of this alteration is unknown. The north and south doors on the main level are set in original wood surrounds. The east door and sidelights have been replaced entirely with a storefront system. All doors appear to function properly on their hinges. All four doors are required exits and marked as such.

All except the east are equipped with panic hardware for single operation egress. Deterioration of the power operator/closer on the south lower door was noted. This corrosion damage is related to the south stair upper landing detailing, refer to B.1.a for further description.



Code review summary:

Single riser layouts are considered a trip hazard and should be avoided, particularly in an emergency egress path.

Single riser from vestibule to boiler room is not code compliant; this should be a sloped walking surface.

Riser height is compliant (7" exist).

Tread depth (9-3/8" to 10") is less than required 11" and does not meet dimensional consistency requirements.

Guardrail complies with height requirement, but does not meet 4" sphere requirement



Condition review summary:

Concrete to building joint does not allow for proper isolation from stone or sealant joint and is allowing water to enter the wall. Interior side exhibits deteriorated mortar joints and efflorescence. Rough stone texture makes joint difficult to maintain.

Concrete is in good condition.

Steel railings are in good condition.

Area drain is overwhelmed during rain events and water flows into the building under the door. Landing at door has been infilled to conceal a riser.



Figure B3 - East stair condition and code summary.



East facade, lighter stones are face bedded post rock. Stain from air conditioner runoff is evident, particularly under upper unit. PHOTO B-10



North facade - failure along bed planes of face bedded stone due to water and salts wicked up from adjacent stair cheek wall. PHOTO B-11



East facade - previously repaired cracks between basement and first floor windows. Mortar joint cracking observed in this location. PHOTO B-12

B.1.c WALLS

The walls are load bearing and the full thickness appears to be stone based on limited observations in the attic and basement. Intact finishes were not disturbed to confirm construction. Original drawings provide some information regarding the wall construction, but the use of anchors is not detailed (except for roof framing). Given the era of construction there is low probability that significant amounts of metal were used.

The masonry units are generally in good to excellent condition. Deterioration noted is limited to stair cheek walls (see Stairs), locations adjacent to the stairs, and a limited area near the roof line. The north façade has the most deteriorated conditions, the light-colored belt course between the lower and first floors and down, on both sides of the stairs is the largest concentration of deterioration. The belt course stones in this area are suffering delamination of the bed planes, brought on by moisture and likely soluble salts wicking into the walls rom the stair. Similar mechanisms are affecting the stones below the belt course, but as the bed planes are oriented to be in compression the effects are not so visibly dramatic. The stones around the south stair have similar, but less severe deterioration. The southern exposure dries faster than the northern.

Another area of stone failing due to water infiltration on the north can be seen at the base of the west spire adjacent to the attic dormer. The bottom two stones have material losses, these failures are likely due to roofing, flashing, roof drainage or a combination of the three allowing water to enter the wall assembly.

Stone units with cracks were noted on most faces, three on the south, six on each the east and west. Cracks were generally minor in nature and exhibited previous treatment to seal them, which will require periodic renewal.

Mortar joints were in good condition overall, however open, and cracked joints were observed. These joints generally occur around openings and are not uncommon on masonry buildings constructed before the common use of movement joints. Such conditions were observed on all faces. Mortar joints at the grade line around the building are universally in fair to poor condition.



Failing paint on window frames and sashes is typical on all facades - west face shown. PHOTO B-13



Failing paint on window frames and sashes is typical on all facades. Weather stripping is missing or in poor condition. Storm windows are difficult to operate. PHOTO B-14



Glazing putty is failing resulting in rattling glass and contributes to air infiltration. PHOTO B-15

The most predominant soiling pattern on the masonry is the result of run-off from window unit air conditioners. Condensation runoff from the units promotes biological growth on the stone, and soluble salts or other minerals from the condensation and the surfaces it drains from frequently add another layer of discoloration. The salts and minerals may cause staining that cannot be cleaned.

B.1.d WINDOWS

The courthouse retains its original wood windows, except for the windows at the base of the tower (replaced with vinyl) and transom window above the north door. Exterior storm windows were installed over the original windows in the 1970s. No documentation of the restoration exists, but the last major window restoration is reported to have been in the 1970s, with at least one painting campaign since. The windows and trim are painted white on the exterior side and have a light stained transparent finish on the inside.

Building occupants nearly universally report that the windows can be difficult to operate and that the storms are particularly difficult to operate. Drafts, rattling glass, and whistling were also reported.

The interior finishes of the windows are in fair to good condition. The exterior finish is in poor condition, and generally exhibits cracking, peeling, and missing paint. Glazing putty used to seal the glass to the wood window sashes is cracked and missing in some locations. The deterioration in the glazing putty allows the glass to rattle in the wind. This condition may also explain the cracked glass identified in several windows. Weatherstripping appears to have been properly installed during the 1970s restoration, but where it has not been removed it is deteriorated; missing seals and worn brushes are common. This condition accounts for the drafts and whistling noises.

The double hung windows retain their original hardware, only a few missing pieces were noted. Windows in the attic and the lower level rely on jamb pins for security and operation. The windows on the first and second floors, being larger and heavier rely on counterweights and latches for operation and security. Sash cords are broken on many windows on the first and second floor. And some have had the cords replaced with a much finer cord, that will have a shorter life than it should. It appears that all the first and second floor windows likely retain their counterweights.



Broken counterweight sash cord. PHOTO B-16



Sash cord replaced with line that is too light weight. PHOTO B-17



Detaching and sagging panel product in the east fan light of the magistrate judge's office. PHOTO B-18

Windows at the vault locations are equipped with metal security shutters, which can be seen from the outside. Most of these windows have stored materials blocking access to them from the inside. Two windows on the south face are blocked up from the interior as they are now part of the elevator hoist way.

Paired windows on the second floor are all topped with a nine-lite fan window. The interior side of the windows is covered with a panel product that infills the entire window box. The glass in the lights appears to have been removed and replaced with a panel product that, like the original glass, is set with glazing putty. The glazing putty is cracking and failing. One panel infill on the east façade is warped and sliding out of position.

Window air conditioning units are present in many windows as the building lacks central air conditioning. The units vary in placement, some have drip pans and condensate drain lines to direct drainage and others do not. Window air conditioners with clogged drains or that are not properly sealed may cause damage to windowsills and moldings. Units were not removed to inspect exterior sill conditions.

B.1.e ROOF

The eaves and pediments that make up the roof line are all clad in ornamental pressed sheet metal, as is the clock tower. The roofing has been replaced recently and building occupants and maintenance staff report that they have not experienced roof leaks since the work was completed. They also report that bats and birds no longer appear to be residing in the attic and tower.

The rear side of most sheet metal elements can be observed in the attic. Most of this metal has wood sheathing or skip sheathing behind it for support, there is not felt or rosin paper. But there are areas that are unsupported. Where the round turret meets the main slope of the roof is typically not supported. The condition occurs at removed chimney penetrations and on the opposite side of the turret. This lack of support can make it difficult to adequately secure roof flashing and the metal cladding together in a durable manner. These intersections are prone to leaks, though they are performing adequately for the time being. Some ornamental pieces of the sheet metal are missing. And the paint finish on all of the metal is in poor condition.



Peeling paint typical on all sheet metal components at eave, roof and clock tower, west facade shown. PHOTO B-19



Sheet metal seal to stone and roofing is tenuous, while no leaks are being reported the condition should be monitored. PHOTO B-20

The underside of the roof and the framing is visible in the attic. Some areas of missing and damaged sheathing were noted, while not large, they represent another opportunity for leaks to re-appear. Water streaking is evident on the underside of most of the roof deck. For further discussion of the roof framing and adequacy, refer to structural engineer's report.

Roof drainage is from a built-in gutter above the sheet metal eave and outboard of the wall on the main roof. Leaders run down from the gutter to a sub-grade drain line. It is unclear whether the turrets have gutters, the eave level is higher than the main roof level and no connecting downspouts are visible to connect the turret eave with the main roof eave. The roof drains are connected to underground drain lines. The underground piping was reported to be replaced in the 2001 project, and at least some of the piping was described as perforated. During the last re-roofing one of the leaders was cleared of debris that reportedly was fully blocking the height of the line. It was not possible to review the condition of the gutters from grade. But there are many trees on the site that may contribute to gutter and leader blockages.

The roof and tower do not have a lighting protection system. The courthouse is tall and isolated from other tall buildings which makes the chances of a strike more likely. And shortly after the field work for this report was completed the tower was struck by lighting, igniting a fire and causing damage.

The roof and attic is not insulated, which is common for the period of construction.

B.1.f SITE

The building site is relatively flat, the high side being the east side and the lowest edge the west. Grade is approximately 7-inches higher on the south side of the building than the north. There is a deep drainage swale cut parallel to the east walkway to cut off site drainage sheeting to the building, but the area between the swale and the building is very flat. Drainage on the west side of the building is very flat until it reaches the innermost ring of trees. There are multiple PVC pipe outlets at the south curb line, some appear to be linked to site drainage elements, but others are not documented.

The 1994 courthouse preservaton project included installation of two manholes withsump pumps to manage storm drainage adjacent to be east and west sides of the building. These improvements wre not made.



Drainage swale parallel to the sidewalk, east side of the courthouse. PHOTO B-21



Yard around the west facade is very flat adjacent to the building. PHOTO B-22



Tree root immediately adjacent to the north turret on the west facade. Roots may be negatively affecting waterproofing and underground drainage system. PHOTO B-23

Gas, water, and electric utilities all enter the building on the north side. Sanitary sewer appears to exit the building on the west face from the lower level women's room. Telecom lines also appear to enter the building near the northwest turret. There is a second water line to feed site irrigation that comes into the site from Lincoln Avenue. Maintenance reports that the irrigation system has been turned off. There are no known drawings that fully document underground utilities on the site.

The site has mature trees. At the northwest turret, the root system for one of the trees can be seen at the base of the building. Planted landscape beds are present on either side of the south stair cheek walls and along the southeast corner of the building. Lawn abuts the building on the southwest corner and continues along the west face. Gravel is in place along most of the north side. And a small stone paved seating area with gravel occupies the northeast corner.

Parking occurs along the perimeter of the courthouse square on Lincoln Avenue, 2nd Street and 3rd Street. There is a parking lot immediately adjacent to the north side of the courthouse. A small brick storage building, and a two-story brick jail and sheriff's facility also occupy the courthouse grounds. The chip and seal parking lot paving is somewhat deteriorated.

Concrete walks encircle the perimeter of the courthouse grounds, parallel to the streets. And concrete walks join the jail to the east and north sides of the courthouse. The east walk continues around to the south stair and then turns south to join the main public sidewalk along Lincoln. The walking surface at the base of the south stair has settled on the east side. This is the same general location as bulge in the east cheek wall and indicates that there may be localized drainage or settlement issues. The concrete surfaces themselves, while worn in some places are in serviceable condition. See Stairs, for discussion of concrete directly associated with entries.

Three memorials are located along the south public sidewalk, one at the west end, one between the west end and the south stair walk, and one to the east of the south stair walk.



Designated accessible parking along Lincoln Avenue. PHOTO B-24



Slight settlement and cracking in ramp paving. PHOTO B-25



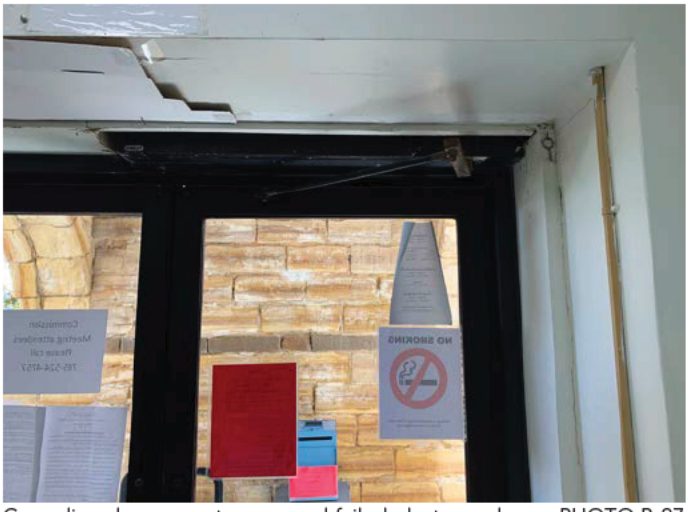
Cracking in ramp paving. PHOTO B-26

B.1.g ACCESSIBILITY

Designated accessible parking exists along Lincoln Avenue, southwest of the courthouse. The overall configuration of the parking and the curb ramp appear to meet current accessibility requirements; however, the slopes may exceed 1:50 in areas due to the crown of the street.

A concrete walk leads south from the curb ramp and joins the diagonal walk shown in the 1936 site plan, the diagonal walk leads to the ADA ramp accessing the lower south entry. The arrangement of the parking and access shown on the 1991 handicap barrier removal plans does not reflect the layout constructed. The site plans presented as part of this report are a composite representation based on site plans provided by the county, satellite images of the site and notes taken on site.

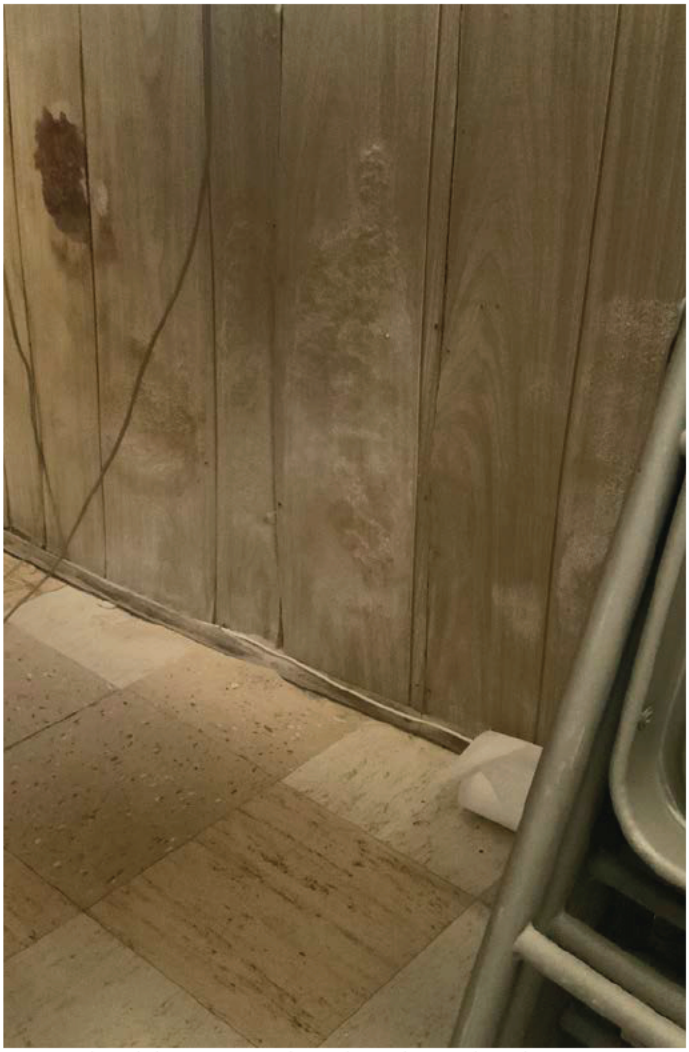
The ramp to the lower south entry complies with current requirements for layout and clearances. The paving surface does have settlement issues near the top of the ramp where there is small vertical displacement at a slab crack. The ramp also has several cracks, generally perpendicular to the slope, these are likely self-developed control joints since there were none cut into the slab when it was constructed. Settlement does not appear to have occurred at most, but it is a condition that should be monitored.



Corroding door operator arm and failed plaster and wallboard finishes (patched with cardboard) at the south lower entry door. PHOTO B-27



Area of plaster deterioration outside the elevator at the lowest level. PHOTO B-28



Water induced deterioration of wood paneling and sandy debris indicative of deteriorated plaster and possibly mortar behind the paneling. Lower level, southwest office. PHOTO B-29

B.2 Interior

Exterior walls, and most interior walls are stone construction. On the upper level some interior walls are framed. The elevator shaft installed in 1991 is constructed of concrete masonry units. Floor and ceiling structures, except for vault floors and ceilings, are wood framed. Vault floors and ceilings appear to be masonry arches, as indicated in the original drawings. The courthouse is heated by steam radiators supplied from a boiler in the basement.

The interior side of the exterior walls was visually observed during the assessment. The interior of the courthouse is largely compromised of finished space. The exceptions are the boiler and maintenance rooms in the lower level and the attic space.

B.2.a Water Intrusion

Water intrusion concerns currently exist at the lower level. Two primary sources of water infiltration were identified during the review on site: above grade and below grade. The fold out entitled Water Intrusion Mapping at the end of this section documents deterioration and sources or likely sources.

The lower level walls are typically covered in wood paneling. The restrooms are finished with a fiberglass paneling. These wall coverings all date from the late 1960s through the 1990s. Drawings for the restroom improvements in 1991 indicate the presence of plaster on the walls, this plaster would likely date from the 1930s when indoor plumbing was likely added to the building. The room was a fuel room according to the 1899 drawings and it is unlikely that the walls were finished originally.

Stone flooring is exposed in the boiler room, but other floors are covered with sheet good, tile, carpet, or resinous flooring. The uneven stone flooring can be felt under most carpeted areas, but those with tile, sheet good or resin may have been ground smooth or leveled.



Southwest turret in Economic Development office where wall finishes were removed and mortar joints repointed in the last 5 years. Some efflorescence is visible in the mortar, indicating some moisture movement through the wall. PHOTO B-30



West wall of main hall in lower level, note darkened area of plaster at floor line. PHOTO B-31



Boiler room in lower level - stone paving is exposed, exposed stone exterior walls have been painted, below grade the paint is failing. PHOTO B-32

The restrooms on this floor were likely added c1936 with other improvements. This is the only area of the basement that appears to have underground piping.

Above Grade Infiltration

This infiltration is associated with the north and south entries and the way they are detailed to meet the building. The condition is described in B.1.a. The intrusion has resulted in deteriorated stone and mortar in the maintenance room. During heavy rains small amounts of standing water accumulate on the floor. At the south door, the intrusion has deteriorated finishes (plaster and gypsum wallboard) as well as the operating hardware doors, including the power door operator.

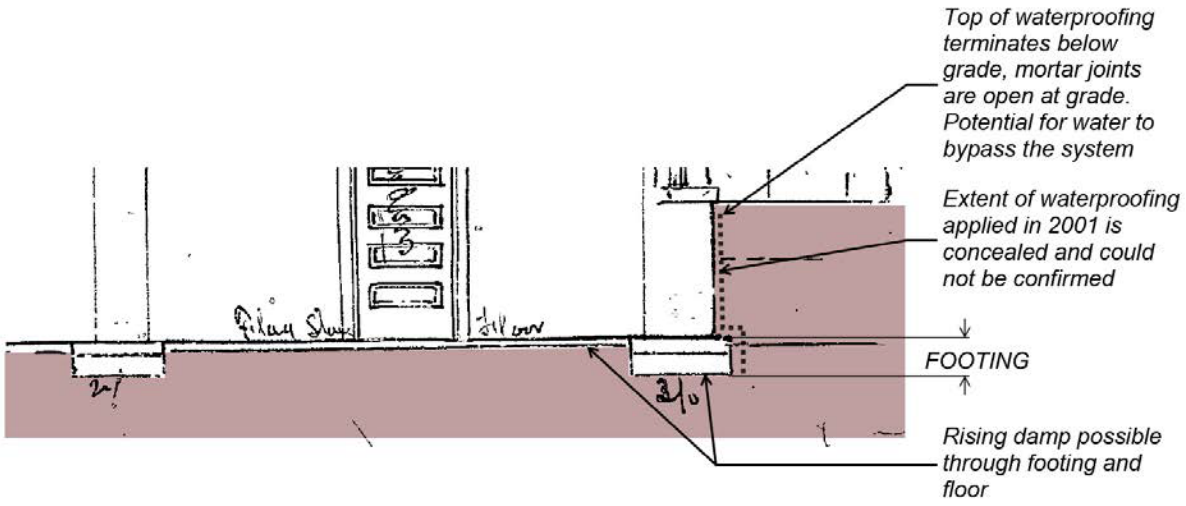
Below Grade Infiltration

Water damage to plaster and wood paneling were identified in several rooms, predominantly at the exterior walls, but interior walls at the hall also showed evidence of ongoing plaster damage. The worst damage is in the southwest corner, in the economic development office, elevator and elevator equipment room. The 2001 foundation waterproofing work was intended to address this issue, but occupants report that the plaster finishes at the elevator have been repaired multiple times in the years since and deterioration at the lower wall has continued.

The elevator pit is the lowest point in the basement, and it is equipped with a sump pump. As the pit is the lowest level elevation and within the boundary of the worst damage the pit drainage is the most likely culprit. However, issues with the pump, standing water, or problems with the elevator equipment were not reported during the site visit or follow up discussions.

With evidence of water present and no apparent problems with the sump, the water is either bypassing the sump system or not making it to the sump.

The turret section of the wall in the economic development office had the wood paneling and underlying finishes removed about five years ago and the stone wall was repointed. The wall has remained stable since those repairs. A small area of efflorescence was noted, indicating that some moisture is still present and traversing the wall thickness.



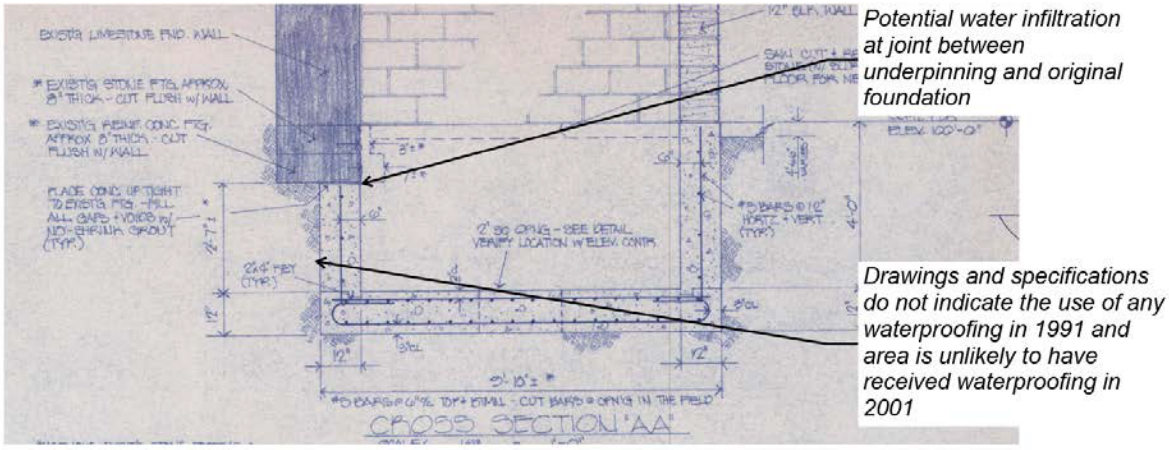


FIGURE B5 - Potential sources of below grade moisture entry.

Other areas of exposed stonework in the boiler room and east entry vestibule exhibit deteriorated mortar and stone. Paint coatings applied to the boiler room walls are flaking and peeling. Deterioration in these spaces is more pronounced below grade.

The foundations and water proofing were not able to be observed. The original construction documents indicate that the stone flooring in the basement is level with the top of the footings. And it is unclear whether there was an original foundation drain, though there does appear to have been an original underground piping system to gather the roof drains. Several potential sources of water intrusion were identified:

- Water bypassing the water proofing system via one or more of these paths:
  - Open or cracked joints at grade in the exterior walls were observed in many locations and this condition may allow water into the wall above the water proofing termination.
  - Subgrade discontinuities of the waterproofing system, such as at the entry points. Based on observations made on site there is little evidence of cutting and patching that would have been necessary to access areas of the foundation around the entries. It is more likely that the waterproofing is discontinuous at these locations.
  - Termination of the waterproofing at the footing. Waterproofing typically relies on a foundation drain set below the interior floor level and above the waterproofing termination that collects and drains water away from the building. If a line was not installed with the waterproofing work, or an older line was abandoned during the waterproofing work and cut off from the drain path this may allow water to accumulate and wick up into the walls from the bottom.
  - Roof drain piping may also be a source of localized water either from breaks in the pipe or from the type of piping used. During discussion of the piping work performed during the water proofing work, the use of perforated piping was mentioned. Perforated piping attracts tree root growth which clogs the pipes, backups may result in connection failures and localized ponding.



Courtroom, north stair landing above north entry, note cracked and deformed plaster above arched transom opening. PHOTO B-33



Storage area east of the courtroom, vertical crack occurs where stone wall changes to frame, horizontal cracking is at frame wall section. PHOTO B-34

The only flooring detachment observed was in the women's room where a sizable section of sheet flooring is delaminated and bulging along the north wall. This condition indicates high moisture content and it may be associated with foundation drainage or it may be a condition related to the sanitary piping that appears to date to 1936.

B.2.b Plaster

Plaster was reported to have been repaired with either the 1994 or 2001 projects and those repairs are holding up well. The second-floor storage area was not included in that project and cracks, as well as peeling paint were noted in that location. The cracks on the exterior walls are generally consistent with changes in the underlying construction from mass masonry to frame and are the result of differential movement over decades. The other cracks noted in this space are along the frame wall that demises the southern wall of the courtroom. This wall has an unusual wood truss-like structure (visible in the attic and the original construction drawings as criss-crossing members). The member appears to be supporting south side of the roof trusses and tower loads. Cracks in this wall may be the result of forces distributing through the truss members.

The only other location of note was on the mid-landing for the north stair in the courtroom. The landing crosses the transom over the north entry door, which has been blocked off. The plaster is above the transom and below sills for the windows above. There are no current signs of distress in the exterior stone arch above the transom. But infiltration at the windowsill above (active or repaired) may have contributed to the condition. Wood paneling obscures the area between the deteriorated plaster and the windowsill so it is not able to be traced.



Second floor standing at courtroom doors, looking south - fan light above paired windows is covered with panel product. Cabinetry in foreground is the security screening station used when the district judge is holding court. Photo B-35

B.2.c Floor Loading

During review of the windows and interior side of exterior walls a few rooms were noted that contain compact file storage units. And one portion of what was originally courtroom space is also being used for storage. Heavy storage is a concern noted by the structural engineer's report, refer to items 4.i and 9.g in the attached structural engineer's report.

B.2.d Court Security

The United States Department of Homeland Security has provided a review of the Lincoln County courthouse to the 12th District Court. The assessment provided as part of this report is independent of that report. As security is typically tied to entry points a cursory review of court security was performed to determine what procedures are in place and whether there are opportunities to be considered as part of a repair project. The courthouse currently lacks a single secure entry point. Three entries are open to the public: the south lower, south main and north main levels. Defendants are currently moved through the courthouse using the same public circulation paths as the general public. The sheriff escorts the defendants in custody from the jail facility and enters either the north or south entry and proceeds to the second-floor courtroom. Those in shackles or with mobility problems have difficulty navigating the stairs. The jail facility is on the opposite corner of the courthouse grounds from the accessible ramp, which requires a longer path to enter.

When district court is in session screening occurs on the second floor immediately outside the courtroom. Without a single, secure, and screened entry point, anyone carrying a firearm or other weapon, legally or not, may enter the courthouse and conduct business.

While jury trials have not been common in Lincoln County in recent years, this part of the courts function should also be considered. With recent changes in office configurations,

the current plan is to utilize the lower level meeting room for jury deliberation. This will require the jury to move two floors from the courtroom and would locate the deliberation room away from the court clerk's office which presents functional and security issues for jury trials. Isolating the jury from public contact or contact with affected parties during deliberation to prevent threats, intimidation or tampering is important to the integrity of the process. Access to the clerk to request transcripts, evidence or to pose procedural questions is also important. The clerk's access to secure resources on the second floor to support the jury deliberations is a component of providing that support. The clerk's access to secure resources on the second floor is to support the jury deliberations also requires security. Without a secure entry point the current arrangement of spaces represents an increased risk to the integrity and security of the court process.



Courtroom, north stair landing above north entry, note cracked and deformed plaster above arched transom opening. PHOTO B-36

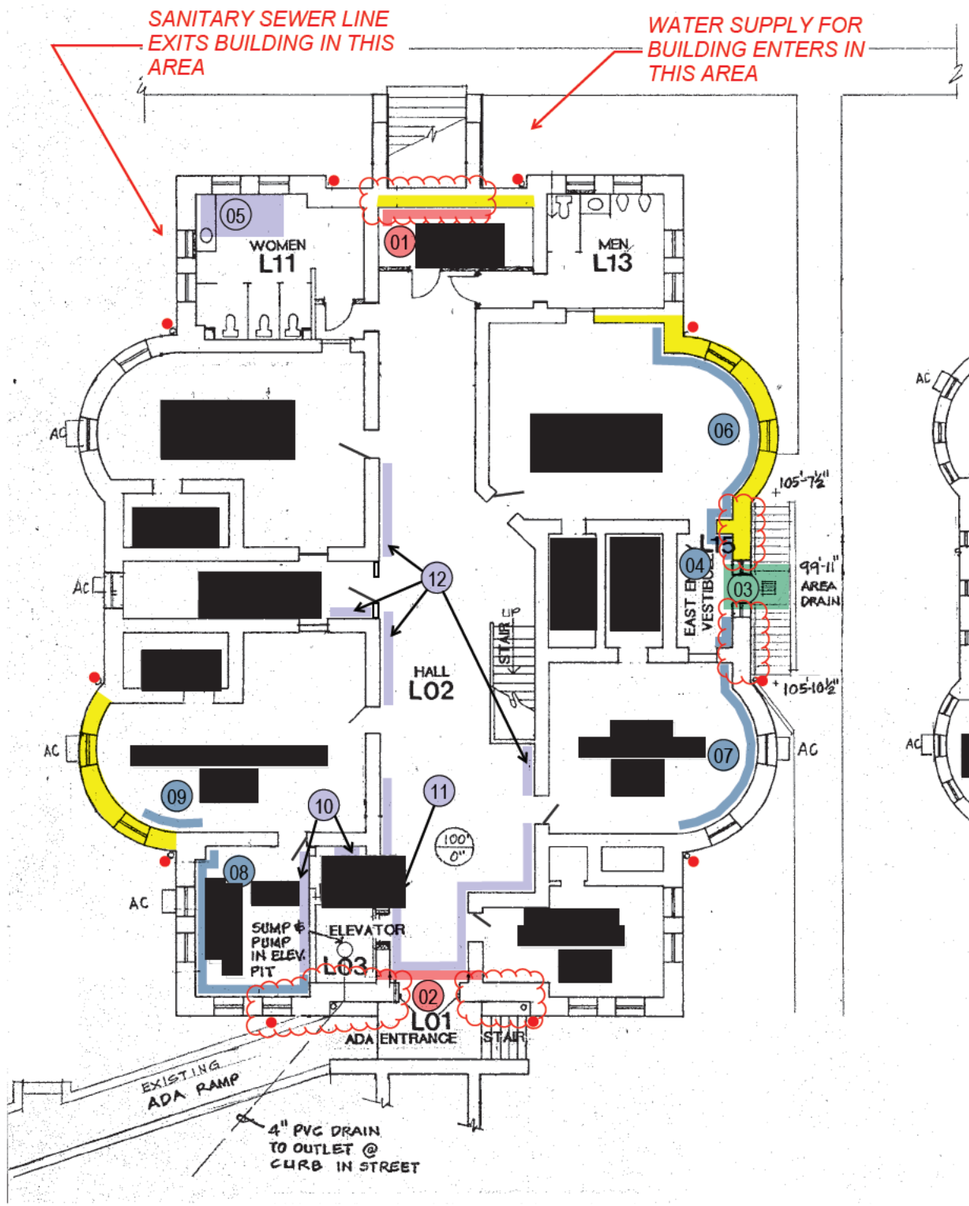
B.2.e Code and Systems

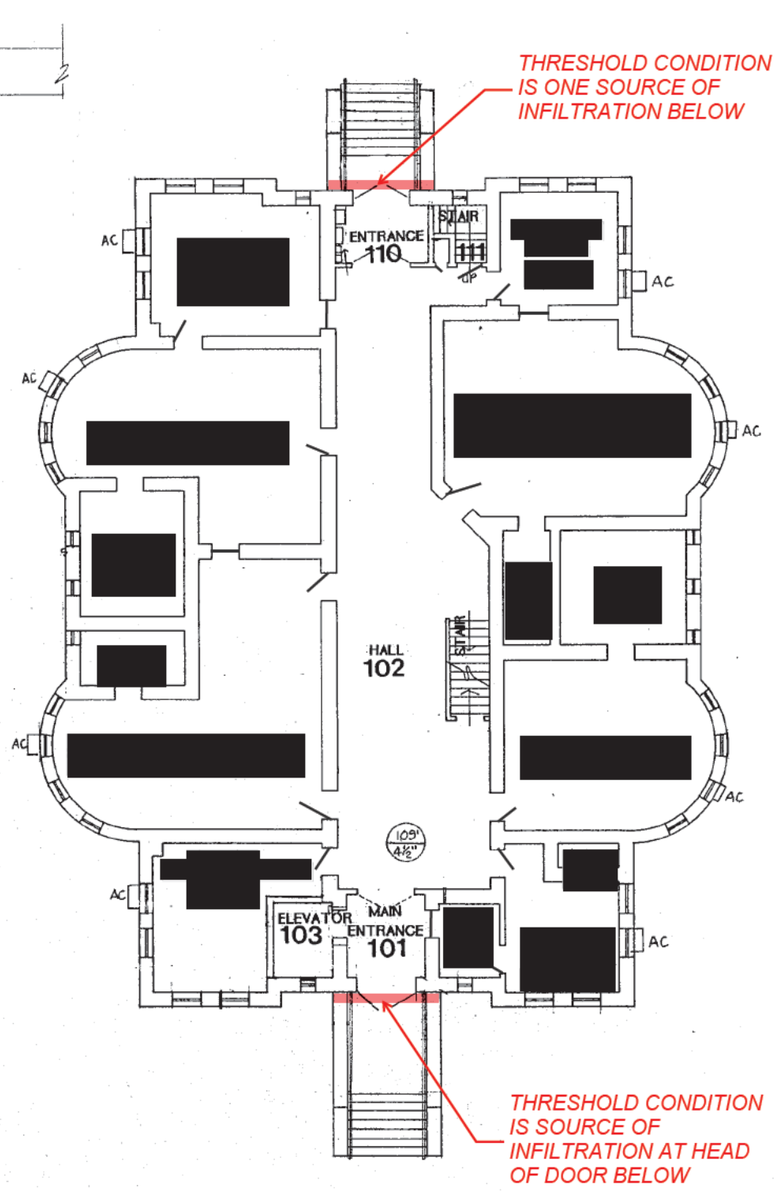
A thorough evaluation of the building interior is outside the scope of the work, however, in the process of reviewing the interior side of the exterior walls and the roof, several conditions were noted that warrant being mentioned.

- Boiler room – the boiler room is currently being used as an employee kitchen and break room. The room is also an intervening room for a required second egress path from the lower floor. This is a code violation. The egress door lacks panic hardware, please see discussion of east lower door in B.1.b.
- Jury box – the jury box is raised from the primary courtroom floor. This arrangement, while historic, does not comply with ADA standards.
- HVAC – radiators and window air conditioners provide heating and cooling and only some windows function properly. Building occupants nearly universally expressed dissatisfaction with the thermal comfort of the building. Leaks from radiator piping were noted in many rooms and maintenance and the county clerk report frequent issues with the system functioning properly.
- Fire detection, notification, and protection – the building lacks fire sprinklers and a comprehensive fire detection and notification system. Given that the primary interior floor framing and the roof framing are wood, fire sprinklers are highly recommended. Detection and notification are required by code.
- Electrical wiring – some questionable wiring was encountered in the attic and may exist in other locations.
- Attic – Bat guano and bird feces are present in large quantities in the upper attic. This condition presents a health hazard.
- Lightning protection - the courthouse is not equipped with a lightning protection system that would protect it from strikes that may cause fires and other structural damage.

WOOD PANELING (FIBERGLASS IN THE RESTROOMS) ON FURRING CONCEALS THE INTERIOR SIDE OF THE WALLS IN ROOMS OTHER THAN THE HALL AND STORAGE (PLASTER WALLS). THE BOILER ROOM, VESTIBULE, AND A SMALL PORTION OF THE ECONOMIC DEVELOPMENT OFFICE HAVE EXPOSED STONE WALLS. THUS IT IS NOT POSSIBLE TO DETERMINE THE EXTENT OF INFILTRATION AT ALL MASS WALLS WITH MUCH ACCURACY, EXCEPT WHERE SUCH INFILTRATION HAS COMPROMISED THE PLASTER OR WOOD PANELING.

FOUNDATION WAS REPORTED TO BE EXPOSED AND WATER PROOFED WITH FLUID APPLIED PRODUCT c2001. UNDERGROUND PIPING FOR THE ROOF DRAINS WAS REPORTED TO BE REPLACED WITH THIS WORK. BID DOCUMENTS FOR THIS WORK HAVE NOT BEEN LOCATED, BUT WERE LIKELY BASED ON THE 1994 RESTORATION PROJECT THAT APPEARS TO HAVE BEEN ONLY PARTIALLY EXECUTED. BASED ON SITE REVIEW OF CONDITIONS IT IS UNLIKELY THAT THE ENTIRE FOUNDATION WAS EXPOSED - CUTTING AND PATCHING TO EXPOSE AREAS SHOWN IN RED CLOUDS WAS NOT IDENTIFIED.





Legend

- INFILTRATION THROUGH BELOW GRADE EXTERIOR WALL
- INFILTRATION FROM ABOVE
- INFILTRATION FROM UNDER DOOR
- INFILTRATION AT BELOW GRADE INTERIOR WALL (RISING DAMP)
- INTERIOR FACE OF WALL IS EXPOSED MASONRY CONSTRUCTION
- (00) LOCATION INDICATOR
- ROOF DRAIN LEADER CONNECTION TO UNDERGROUND DRAIN PIPE
- SECTION OF EXTERIOR WALL THAT LIKLEY LACKS WATERPROOFING

(01) *ACTIVE - INFILTRATION FROM STAIR LANDING AND STAIR CONSTRUCTION FOR ENTRY ABOVE. MAY ALSO BE SUBJECT TO THROUGH WALL INFILTRATION.*

(02) *ACTIVE - INFILTRATION FROM STAIR LANDING AND STAIR CONSTRUCTION FOR ENTRY ABOVE.*

(03) *ACTIVE - INFILTRATION LINKED TO RAIN EVENTS THAT OVERWHELM THE AREA DRAIN.*

(04) *ACTIVE - INFILTRATION THROUGH OPEN JOINTS AND STAIR CONSTRUCTION ON EXTERIOR SIDE OF WALL.*

(05) *MAY OR MAY NOT BE ACTIVE - SHEET FLOORING IS BUBBLED AND DEBONDED FROM SUBSTRATE. CONDITION IS NOT NEW.*

(06) *MAY OR MAY NOT BE ACTIVE - MASONRY COATING IS BUBBLED AND DETACHED ON WALL AREA BELOW GRADE.*

(07) *MAY OR MAY NOT BE ACTIVE - SANDY DEBRIS FREQUENTLY FOUND ON THE FLOOR AT THE BASE BOARD.*

(08) *ACTIVE - BOWED AND WATER DAMAGED WOOD PANELING THAT IS REPORTED TO BE PROGRESSIVE.*

(09) *ACTIVE - EFFLORESCENCE OBSERVED ON MORTAR JOINTS.*

(10) *ACTIVE - DETERIORATED FINISHES ON ORIGINAL WALLS AS WELL AS WALLS CONSTRUCTED WITH ELEVATOR.*

(11) *ACTIVE - PLASTER REPAIRED MULTIPLE TIMES AND CONTINUES TO FAIL.*

(12) *MAY OR MAY NOT BE ACTIVE - DARKER AREA NEAR FLOOR LINE, SOME BUBBLING OF PLASTER.*

North

WATER INTRUSION MAPPING
1" = 16'-0"

C. RECOMMENDATIONS



West face of the south entry stair structure. PHOTO C-1

C. Recommendations

This section of the report outlines next steps that should be taken and makes some broader recommendations for the county to consider regarding the care and maintenance of the courthouse.

C.1 Further Studies

Lower Level Water Intrusion and Dampness

The following further studies are recommended to better understand the causes of water infiltration at the lower level. Two primary sources of water infiltration were identified:

- Bulk water intrusion at entry points: east lower level, north and south first floor landing to building attachment points. Solving the infiltration related to the north and south entries is outlined in section C.2. The east lower entry may be partly solved by the repairs outlined in section C.2, but if a portion of the intrusion is related to sub-grade piping and water proofing it may not sufficiently address the intrusion.
- Subgrade infiltration through exterior walls and apparent rising damp.

Understanding the cause is key to determining what needs to be done to remedy the situation and what the realistic cost for that work will be. Since several obvious and prudent design choices were implemented in 2001 one of the steps needs to be evaluating those changes and confirming that construction was performed appropriately. All of the existing sub-grade drainage relies on gravity drain lines, if these lines are level, or have discharges upslope from the inlets the system may not be working properly which may result in infiltration.

- Scope underground drainage lines from the roof leaders out to their discharge points. Document piping layout on site plan and record blockages, sections of pipe that are not appropriately sloped, or other problems discovered during the scoping. Clear blockages as they are encountered.
- Scope the areaway drain on the east and the south lower entries and the elevator sump pump drain line, documenting findings in the same manner as described for roof drains.



Photo taken looking northeast to the west facade, all site drainage components rely on gravity and there may not be enough fall from the building to the outlets. PHOTO C-2

- Scope sanitary sewer from both lower floor restrooms out of the building and to the sewer main, documenting findings in the same manner as described for roof drains.
- Perform four geotechnical bores that are at least 10-feet deep, one on each side of the building. Document soil and rock types encountered, the depth of those layers and the relative elevations. Note levels of any water encountered.
- Commission a topographic survey to obtain elevation points at the south and east lower entries, the main level north and south entries, all drain inlets and inverts at cleanout locations in subgrade drain lines, and drain outlets along Lincoln Ave, all paved areas (parking, walks, ramps, etc), and at soil boring locations to correlate elevations of subsurface conditions with lower level conditions.
- Conduct footing and foundation investigation. This would require digging down to identify the bottom of the footing at several locations around the building and documenting the condition of the wall, the waterproofing and any other materials or assemblies encountered. Ideally this would be done on the exterior and interior of the building, but exterior only is a possibility.
- Monitor the underground drainage system to see if it is functioning by regularly inspecting for discharge at outlets along Lincoln Avenue after rain events. Failure to see discharge may indicate that the system is not properly sloped to drain and that the sump pumps such as those shown in the 1994 design documents that were not built are needed.

Further studies aimed at definitively diagnosing the cause of lower level infiltration may uncover select deficiencies or they may reveal that the entire waterproofing system needs to be replaced. It would be best to make this determination prior to replacing the exterior entries so that the system can be continuous. Combining the work would reduce the number of times the site is disturbed and would thus save associated costs.

The following recommendations do not solve the intrusion issue but are aimed at managing ongoing maintenance costs and health concerns arising from the intrusion if work to identify and correct the waterproofing deficiencies is not able to be fully undertaken.

- Remove interior wall finishes such as paneling and plaster at all locations feasible (limitations will apply in restrooms). Based on the original documents for the building, these spaces were utilitarian and unfinished except for the stone floor. While early finishes, dating from the 1930s might be considered historic there is no extant documentation to confirm the extent or degree of finish so a case can be made for removing the finishes.
- Clean and repoint stone and leave it exposed as it is in the economic development office.
- Remove carpet and sheet flooring and identify areas of under slab moisture that may be linked to buried piping and repair them.
- Smooth, patch, and polish stone or concrete floors to provide a code compliant walking surface and leave them exposed.



View of the south and east facades PHOTO C-3

Historic Structure Report

A historic structure report (HSR) is recognized as a best practice for planning and caring for older buildings. These reports provide a review of the entire building and its systems. This exterior report represents what would be one or two chapters in a complete report. During our time at the courthouse several issues related to the interior, that are outside the scope of the current project were noted. Some of these issues affect the health, safety and welfare of building occupants and visitors, these include the use of the boiler room as an employee kitchen and break room and the lack of an appropriate second egress path from the lower floor. Thermal comfort and mechanical systems control also seem to be issues for occupants. The building lacks a fire detection and notification system and lightning protection.

A complete code review is generally included to identify and address safety and accessibility issues. A space use and allocation study should also be part of the report. The goal of the study would be to develop plans for the building that re-allocate space to provide greater functionality and safety. To provide an example of the work that could be undertaken consider the Courtroom Functionality discussion on the following page. Similar discussions about other functions within the building would be used to develop plans that improve function and service for the county.

A historic structure report would provide a framework for assessing all the building systems and assemblies, creating priority order for repairs and improvements, and looking at space planning and allocation needs within the building. This document provides a foundation for planning and implementation of maintenance and alterations necessary to provide modern functionality for the county while respecting the historic nature of the courthouse. For more information about these reports: https://www.nps.gov/tps/how-to-preserve/briefs/43-historic-structure-reports.htm

Environmental Assessment

The county should undertake an environmental assessment of the building with the goal of identifying hazardous materials that are present, including asbestos containing materials (ACM), lead based paint (LBP), and polychlorinated biphenyls (PCBs) or other chemical contaminants. Encountering any of these substances during a renovation or repair project will cause delays and increase costs. Planning for abatement, removal, or encapsulation should be part of planning for any upcoming project. Such studies are typically undertaken by companies specialized in identification, sampling and testing materials. They are independent of typical architectural and engineering design projects. Specialty contractors with training and appropriate licensing and insurance undertake abatement projects either before or concurrent with construction projects under a separate contract with the Owner.

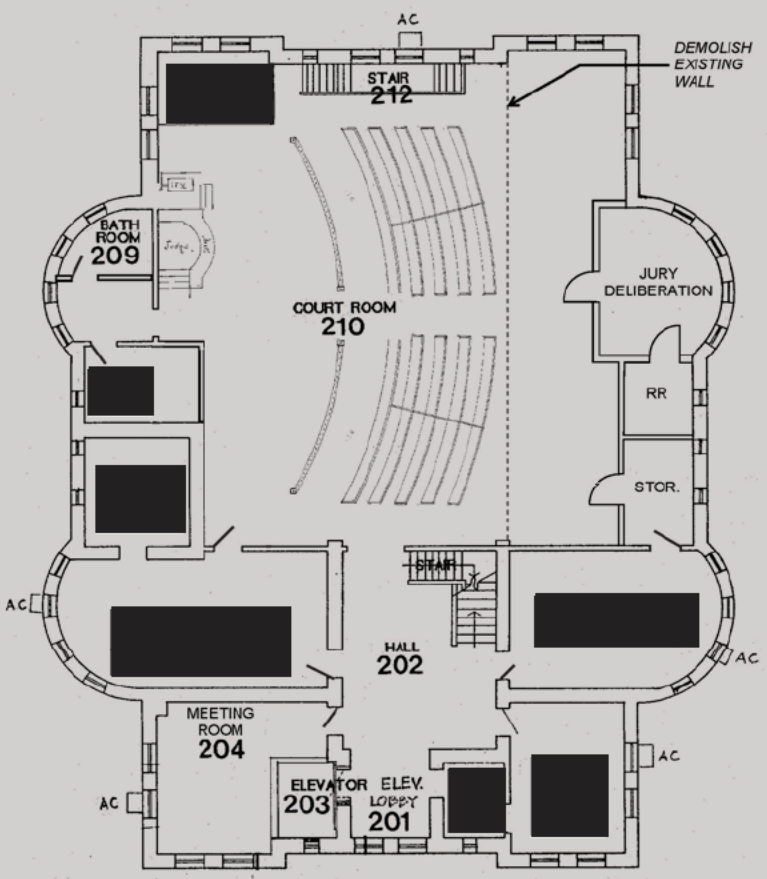


FIGURE C-1: Potential reconfiguration of second floor spaces to provide a jury room adjacent to the court that could be used as another meeting room when court is not in session. Heavy storage currently on this floor would move to the storage room indicated and down to the lower level

Courtroom Renovation

Our team reviewed the courtroom layout and security during our visit. In our discussions with staff the current courtroom has security incorporated during days of court. During the security review several concerns regarding the suitability of the current arrangement of spaces prompted thoughts of possible improvements.

Jury Deliberation

The current plan for a deliberation room will be the lower level meeting room. Although this courthouse does not see many jury trials a year, the location of the deliberation room is important for the safety and security of the courts. These individuals serving the county need to have a space that does not have them interact with the public or defendants when moving through the building.

Relocating the storage in the area east of the courtroom to a more appropriate location in the building, as recommended by the structural report, would free up this space. Figure C-1 illustrates how the original volume of the courtroom could be restored and incorporate a jury room, allowing for jurors to move from the jury box to the deliberation room without moving in the public circulation. When not in use as a deliberation room it could serve another meeting room, and if the county commission utilized the courtroom for meetings, the room would allow them to retire to an executive session for privacy during a public meeting. A single toilet room can be created off the deliberation room for ease of access. Reviewing the existing plans, the plumbing can be easily brought to this room from below.

Attorney/Client Room

The meeting room on the second-floor southwest corner is currently being used for storage and meetings. These storage units could be relocated to the lower level as recommended in the structural report. By removing those units this space can better accommodate meetings. And the room can be equipped with new audio/visual for mediations, first appearances, video arraignment and attorney/client conferences. Many cases are moving towards video and with the pandemic the judiciary are finding ways to have meetings and cases virtually. This space can be used by many staff and departments throughout the building when not in use by the judiciary.



North stair, current layout does not meet code, refer to FIGURE B2 for summary and figure C1 for recommended layout. PHOTO C-4



South stair landing edge beam at the building has been repaired in the past. Patching is cracked and repairs are detaching due to water infiltration. PHOTO C-5

C.2 Exterior Repairs & Costs

The following list of exterior repairs is recommended:

- Selective repointing and masonry repairs to the building walls
- Replacement of the south, north and east exterior stair entries (evaluate south lower entry lintel beams as part of the work)
- Window restoration including exterior refinishing of sashes, frames, wood replacement, reglazing, hardware restoration, fan light restoration, custom storm windows
- Painting exterior wood and metals.
- Installing panic hardware on east lower entry door for egress

At present this does not include items related to repairs or alterations of waterproofing systems because not enough information is known to determine the extent necessary for that work. Sketches for reconfigured stairs are included in Figures C-2 through C-4. A concept sketch illustrating different ways to isolate the concrete from the existing or new stone is in Figure C-5. The same or similar methodology should be employed to isolate the stone in the rebuilt stair structures from the existing historic stone walls. Prior to finalizing the budget for this work a hazardous materials assessment and testing report should be made for materials impacted by the work. It is important to determine whether abatement of lead-based paint or asbestos based sealants will need to be included in the project. Costs are presented in 2020 dollars. The county should apply an escalation factor to adjust the value depending on when a project is anticipated to occur. A factor of 3% to 5% per year is generally recommended.

Costs presented in this section are independent of the exterior repair costs preented in Section C.2.

CONSTRUCTION COSTS - EXTERIOR REPAIRS			COST PER	SUBTOTAL
Demolition	1	LS	$27,000	$27,000
Site Work	1	LS	$81,000	$81,000
Concrete	1	LS	$62,000	$62,000
Masonry Repairs	1	LS	$145,000	$145,000
Window Restoration	1	LS	$895,000	$895,000
Railings & Door Hardware	1	LS	$22,000	$22,000
Exterior Painting	1	LS	$49,000	$49,000
Construction Contingency	10%	PERC		$128,100
Fees and General Conditions	25%	PERC		$352,275
Total Construction Cost				**$1,761,375**
SOFT COSTS			COST PER	SUBTOTAL
Design Fee's, construction testing, printing, legal, etc.	15%	PERC		$264,206
Change order Contingency	3%	PERC		$52,841
Project Contingency	10%	PERC		$176,138
Total Project Cost				**$2,254,560**

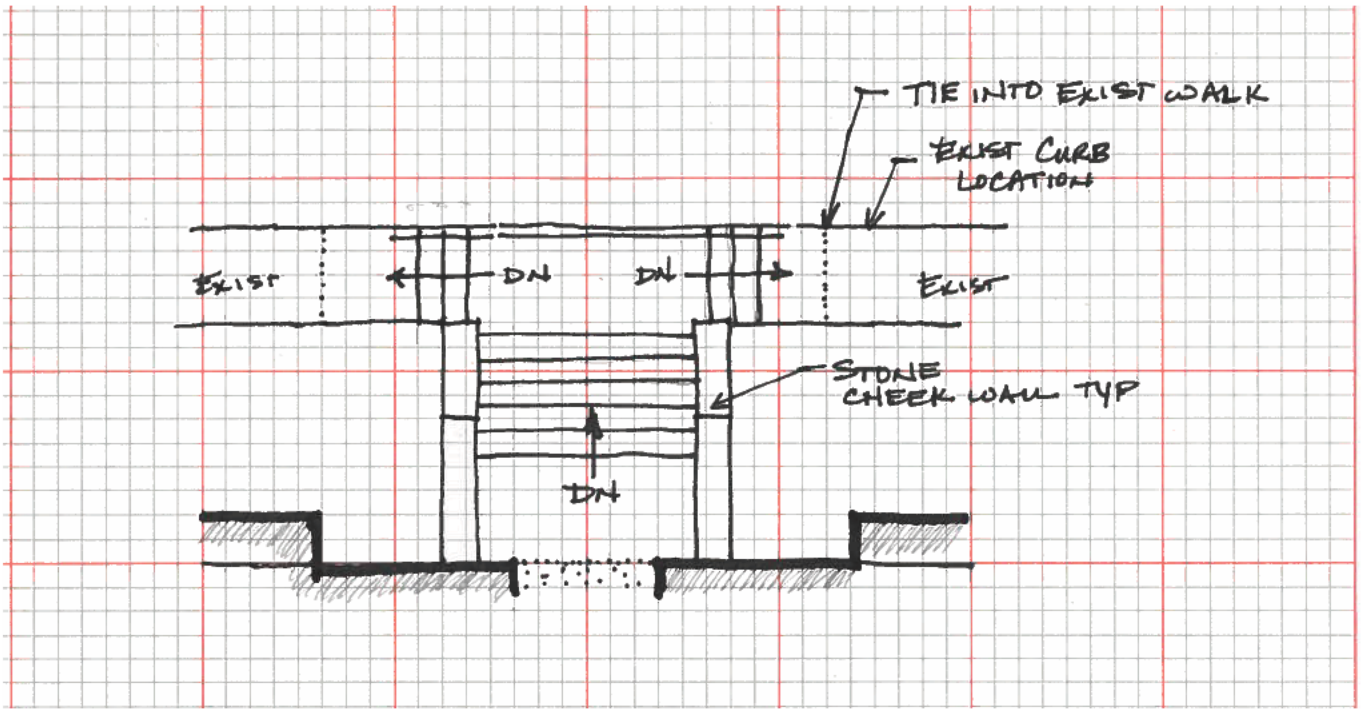


FIGURE C-2: Compliant layout for north stair that preserves existing sidewalk and parking lot layout.

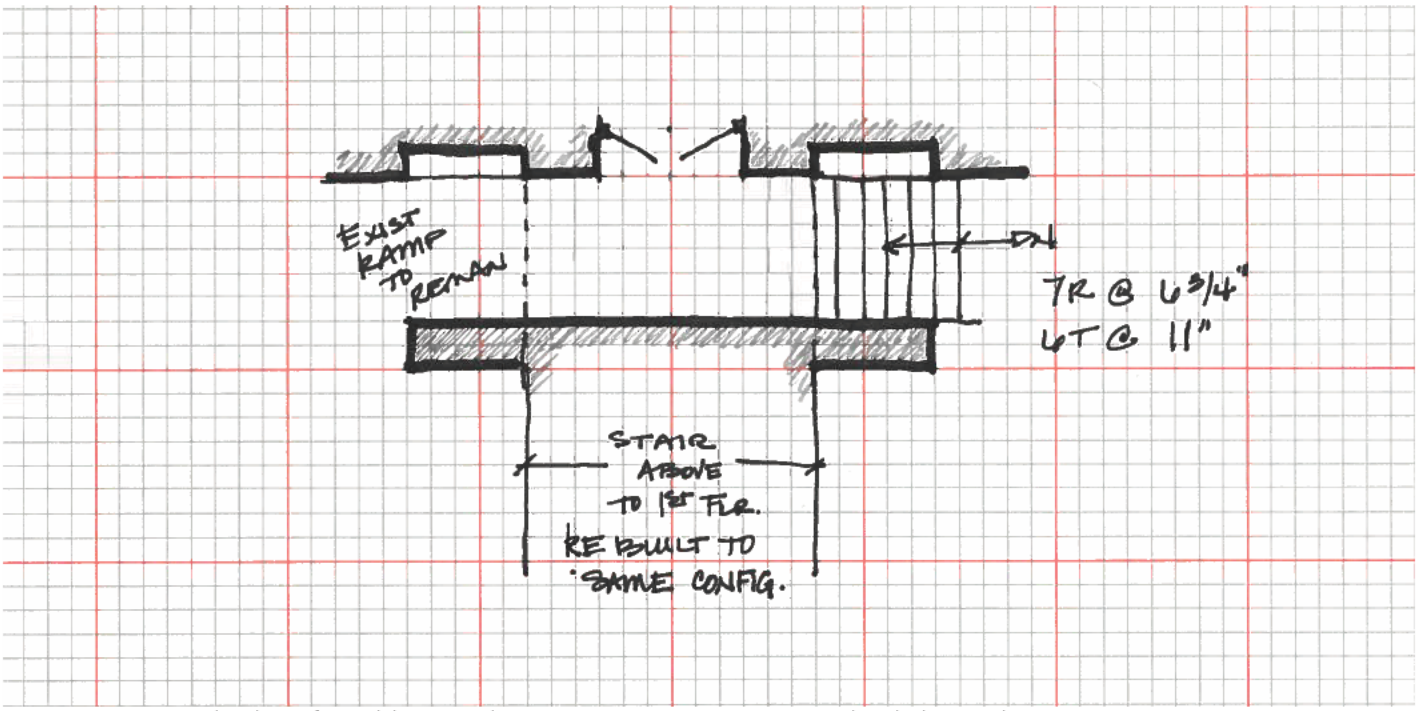


FIGURE C-3: Compliant layout for south lower stair that maintains existing ramp; upper stair to be rebuilt to match existing.

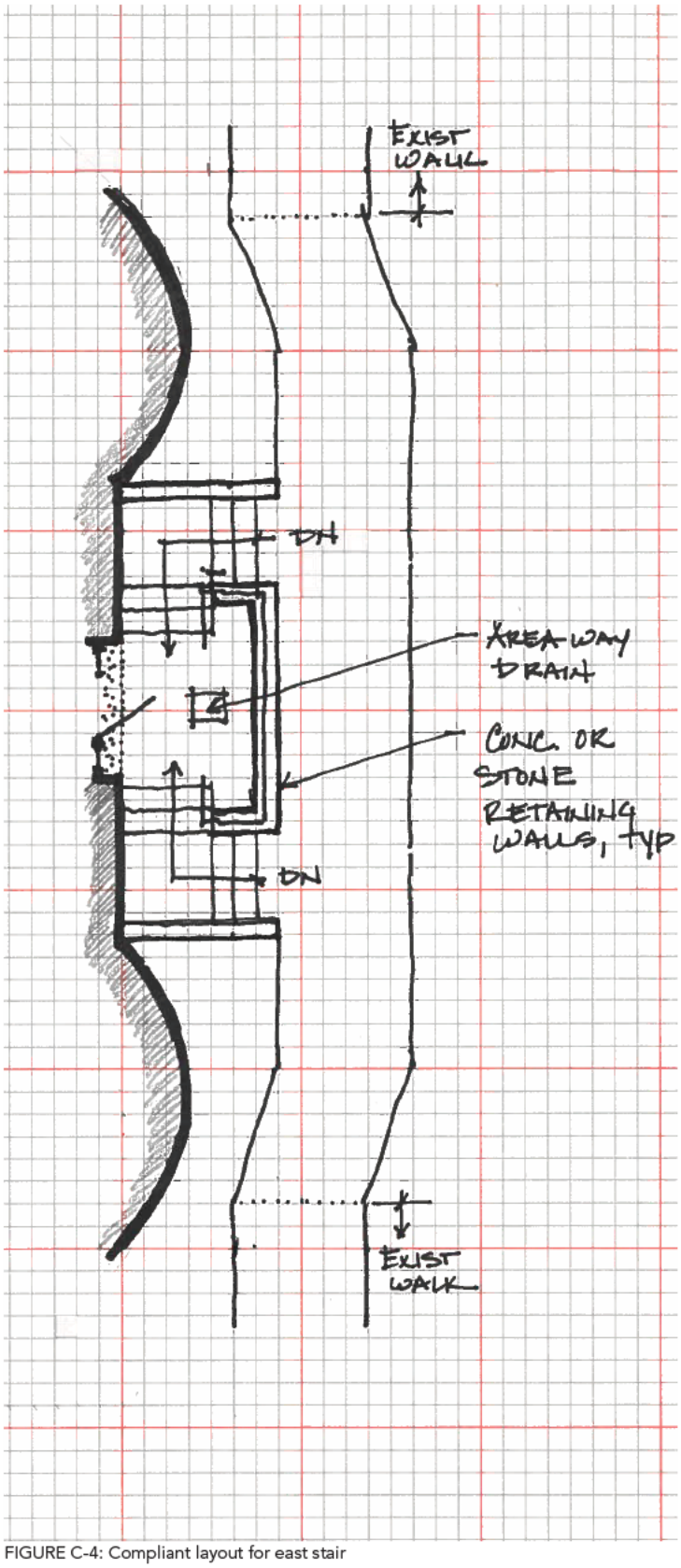
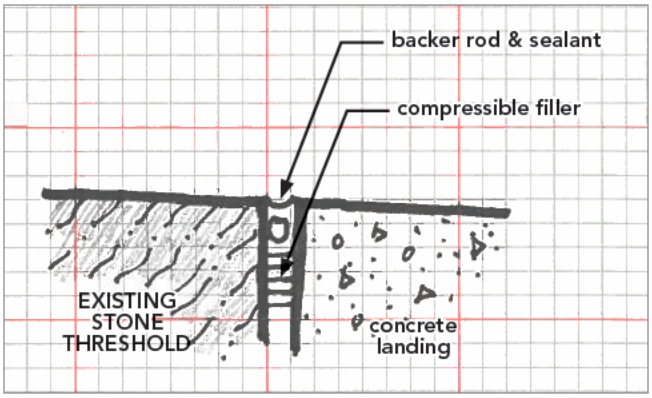
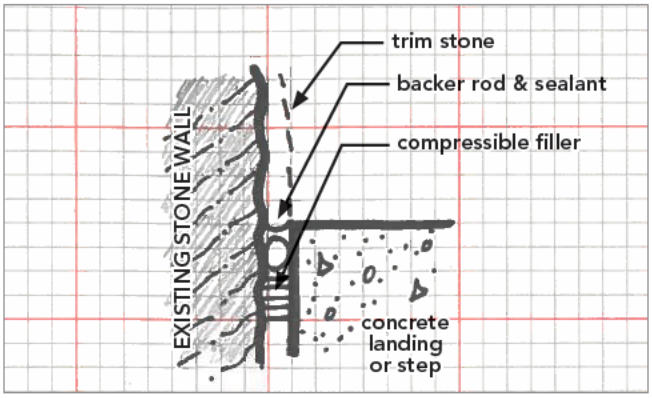


FIGURE C-4: Compliant layout for east stair





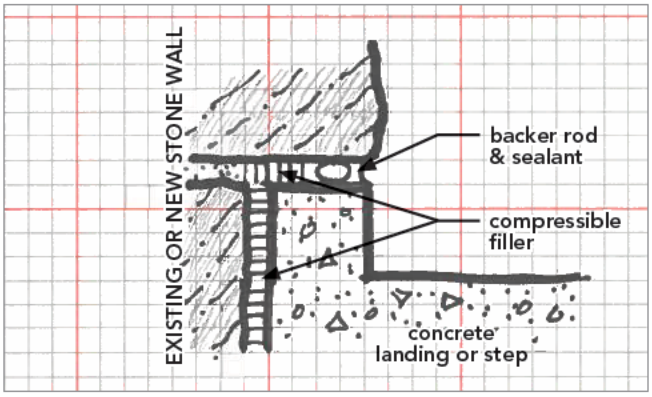


FIGURE C-5: Suggested details for isolating concrete and mass stone structures.

C.3 Secure Entry Options & Costs

Purpose of security checkpoint

The purpose of a secure checkpoint is to ensure that weapons do not enter the facility past a certain point and to allow properly trained security staff to evaluate threats to the persons and property by observing all who enter the facility. Persons who are legally carrying weapons publicly, should be refused entry into the building where a secure checkpoint is utilized. The presence of the checkpoint will simply bring the point of conflict for a person with ill intent to the entrance of the building rather than the target sought by the perpetrator. Design and construction of security checkpoints and associated building operational changes all entail expending funds. The county will need to determine whether the potential harm of allowing concealed carry is warranted for any building, given the risks of the activities in that facility.

The checkpoint is a useful element in a building to provide security for staff. In many office areas the barrier between an angry citizen and staff is a counter or desk. A secure checkpoint moves the point of confrontation to a location with personnel trained to handle such situations. Lincoln County should review the options in this report and consider incorporating a secure checkpoint.

How to secure the courthouse

The courthouse currently has three public entry points, lower south, main level south, and main level north. The lower level south entry serves as the main wheelchair accessible entrance. Parking is along the square and main parking area to the north of the building serving the courthouse and jail. A fourth entry at the lower east level is locked, but is a required second exit from that level.

To secure the courthouse will require identifying a single point of entry to serve all the building entrants. The remaining entries will be secured from entry to the building but will be available for emergency egress from the building. Staff may use a separate entrance, so long as it is restricted with key card or other entry limiting means. Securing these entries will involve changes to door hardware and the installation of door monitoring hardware and systems to monitor the operation of these doors.

Three options were explored as part of this study and are presented on the following pages. Each option is unique, the pros, cons, and cost associated with each are outlined below the option description. All options assume that the entries not associated with the secure checkpoint will be secured and function as exit only. Changes to the entries are outlined in each option.

Costs presented in this report have been prepared in 2020 construction values. The county should modify these figures to include escalation depending on when they may anticipate actual construction of the project.

Costs presented in this section are independent of the exterior repair costs preented in Section C.2.

See foldouts at the end of this section for a plan of each secure entry option.

SOUTH OPTION: MINIMAL RENOVATION

The secure checkpoint will be located on the lower level in the main corridor. This option uses the current accessible entrance on the south entry as the main entry to the building. The secure checkpoint would include new casework for staff, magnetometer, and baggage scanner. The elevator for access to all floors has good line of sight for security staff. Additional cameras would need to be installed in strategic areas of the courthouse with a monitor at the secure station. All pathways, parking and greenspace would remain for this option:

PROS:

- Does not disturb the historic building and defining features
- Utilizes the existing accessible entrance of the building and elevator without an additional lift
- Existing exterior circulation is maintained
- Does not cover the existing building with an addition and maintains the visual character of the existing building
- This option has the least impact to all current interior finishes and exterior materials

CONS:

- The main entry to the courthouse is an egress only
- Security screening occurs inside the primary building enclosure
- Entry would not be obvious for the public that is coming to the building
- Changes circulation paths inside the building
- Screening occurs after passing the elevator entry point (potential for bypassing screening)

CONSTRUCTION COSTS - SOUTH OPTION			COST PER	SUBTOTAL
Demolition	1	LS	$35,000	$35,000
Site Work	0	LS	$0	$0
Existing Building Renovation	500	SF	$175	$87,500
New Building Construction Cost	0	SF	$0	$0
Security Equipment	1	LS	$130,000	$130,000
Security Electronics/Cameras	1	LS	$120,000	$120,000
Construction Contingency	5%	PERC		$18,625
Fees and General Conditions	25%	PERC		$97,781
Total Construction Cost				**$488,906**
SOFT COSTS			COST PER	SUBTOTAL
Design Fee's, construction testing, printing, legal, etc.	15%	PERC		$73,336
Change order Contingency	3%	PERC		$14,667
Project Contingency	5%	PERC		$24,445
Total Project Cost				**$601,335**
ANNUAL OPERATING COSTS			COST PER	SUBTOTAL
Personnel	2.5	FTE	$125,000	$312,500
Utilities	1,000	SF	$0	$0
Cost				**$312,500**

EAST OPTION: RENOVATION

This option places the security checkpoint on the ground floor of the historic courthouse and creates an accessible route to the east lower level entrance. The entry steps, retaining wall and entry door will be reworked to create an accessible entrance. The retaining walls and pathway would be included to facilitate the grading changes and continue the pedestrian connection to the North parking lot. The secure checkpoint would be in the current commission chambers. The commission chambers would need to be relocated or the courtroom could be used for commission meetings, as it is in many counties.

PROS:

- Limits disturbance to the historic building and defining features
- Utilizes the existing elevator without an additional lift to provide accessibility to the courthouse
- Function of the secure checkpoint brings everyone to one location prior to moving throughout the building
- Does not cover the existing building with an addition and maintains the visual character of the existing building
- This option has minimal impact to all current interior finishes and exterior materials
- Reworks the east entry and would incorporate alterations to alleviate water intrusion at this location

CONS:

- The main entry to the courthouse is an egress only and the building will have two accessible means to the building
- Security screening occurs inside the primary building enclosure
- Entry would not be obvious for the public that is coming to the building
- Changes circulation paths inside the building

CONSTRUCTION COSTS - EAST OPTION			COST PER	SUBTOTAL
Demolition	1	LS	$96,000	$96,000
Site Work	1	LS	$147,000	$147,000
Existing Building Renovation	650	SF	$175	$113,750
New Building Construction Cost	0	SF	$0	$0
Security Equipment	1	LS	$130,000	$130,000
Security Electronics/Cameras	1	LS	$120,000	$120,000
Construction Contingency	5%	PERC		$30,338
Fees and General Conditions	25%	PERC		$159,272
Total Construction Cost				**$796,359**
SOFT COSTS			COST PER	SUBTOTAL
Design Fee's, construction testing, printing, legal, etc.	15%	PERC		$119,454
Change order Contingency	3%	PERC		$23,891
Project Contingency	5%	PERC		$39,818
Total Project Cost				**$979,522**
ANNUAL OPERATING COSTS			COST PER	SUBTOTAL
Personnel	2.5	FTE	$125,000	$312,500
Utilities	1,000	SF	$0	$0
Cost				**$312,500**

NORTH OPTION: ADDITION

The addition provides a security checkpoint in a new 1,100 square foot addition to the North end of the building. The addition includes a half story lift to provide wheelchair access to the main level and relocation of office space for an accessible pathway into the building. The existing elevator will serve for wheelchair access to all floors. The addition provides the main entrance on the North and could be a connection to a new jail when constructed. The remaining pathways on the site would remain and the main façade keeps its historic features.

PROS:

- Security screening occurs outside the primary building enclosure
- Limits disturbance of the historic building to a rear facade
- Creates an obvious entry point for the courthouse
- Circulation paths remain unchanged and this solution has the least impact to the current interior
- Could serve as a secure checkpoint and linkage to a new jail when built

CONS:

- Redefines the entry of the courthouse
- The main entrance of the courthouse is egress only
- The new addition changes the character of the building and the way the public will view the building
- Entry would not be obvious for the public that is coming to the building
- Will require alterations to existing staff parking and may require removal of brick storage building
- Requires new lift to access main level

CONSTRUCTION COSTS - NORTH OPTION			COST PER	SUBTOTAL
Demolition	1	LS	$85,000	$85,000
Site Work	1	LS	$156,000	$156,000
Existing Building Renovation	0	SF	$0	$0
New Building Construction Cost	1,100	SF	$395	$434,500
Security Equipment	1	LS	$130,000	$130,000
Security Electronics/Cameras	1	LS	$130,000	$130,000
Construction Contingency	5%	PERC		$46,775
Fees and General Conditions	25%	PERC		$245,569
Total Construction Cost				**$1,227,844**
SOFT COSTS			COST PER	SUBTOTAL
Design Fee's, construction testing, printing, legal, etc.	15%	PERC		$184,177
Change order Contingency	3%	PERC		$36,835
Project Contingency	5%	PERC		$61,392
Total Project Cost				**$1,510,248**
ANNUAL OPERATING COSTS			COST PER	SUBTOTAL
Personnel	2.5	FTE	$125,000	$312,500
Utilities	1,100	SF	$3.25	$3,575
Cost				**$316,075**

C.4 Funding Sources

Funding sources for capital improvement projects may come from one or from many sources. The following discussion outlines potential funding sources for future projects. It provides links, where appropriate, for further information. Not all sources will be appropriate for all projects..

Grants and Loans

Grants are typically money that is given with some conditions attached and are generally intended for limited specific purposes. This report is funded by a grant. Grants are not large enough to fund a large construction project, many require a match (either cash or in kind), and most are competitive.

The Kansas State Historical Society offers two grant programs, the Historic Trust Fund may be used for bricks and mortar projects, where the Historic Preservation Fund may only be used for planning and evaluation projects.

https://www.kshs.org/p/grants/1461

The U.S. Department of Agriculture has loan and grant programs that the county may be eligible for that would help fund improvements to the courthouse.

https://www.rd.usda.gov/programs-services/community-facilities-direct-loan-grant-program/ks

https://www.rd.usda.gov/programs-services/economic-impact-initiative-grants/ks

State Historic Tax Credits

The county may take advantage of the Kansas State Historic Tax Credit program. These credits are transferable in Kansas, meaning they can be sold to entities who have tax liability they would like to offset. These credits generally sell for 80-90 cents on the dollar. The credit can be claimed for 25% of qualifying costs that come out of the owner's pocket. Qualifying costs include design fees as well as construction costs that are permanently attached to the building.

https://www.kshs.org/p/state-historic-rehabilitation-tax-credit/14666

Based on the description in Section C.2 75-85% of the project costs would likely be considered qualifying. If the county were to fund the project entirely from their own coffers the return on the tax credits may be between $300,000 and $400,000. Funding from tax credits comes after the project is complete, so the costs do need to be covered up front.

Likely Range of % Qualifying	HTC	Return Rate in $	Estimated Credit Amount
75%	25%	0.80	$338,184
90%			$405,821
75%	25%	0.82	$346,639
90%			$415,966
75%	25%	0.84	$355,093
90%			$426,112
75%	25%	0.86	$363,548
90%			$436,257
75%	25%	0.88	$372,002
90%			$446,403
75%	25%	0.90	$380,457
90%			$456,548

Bonds

The county may want to consider implementation of a sales or other tax that can be used to pay off a bond over a set term. Bonds can be written such that the proceeds to be used for a set purpose and with a sunset date on the tax. Bond returns vary, but this method of financing capital improvement projects is leveraged by many levels of government from cities to states.

Bonds could be used in conjunction with the Historic Tax Credits.

ELM STREET

THIRD STREET

STOR.

JAIL

SECOND STREET

NEW ENTRY RAMPS AND STAIRS

DN

DN

DN

DN

EAST ENTRY VESTIBULE

L5

STAIR C

ADA

OFFICER STATION

SCANNER

MAGNETOMETER

ENTRY CIRCULATION

LINCOLN AVENUE

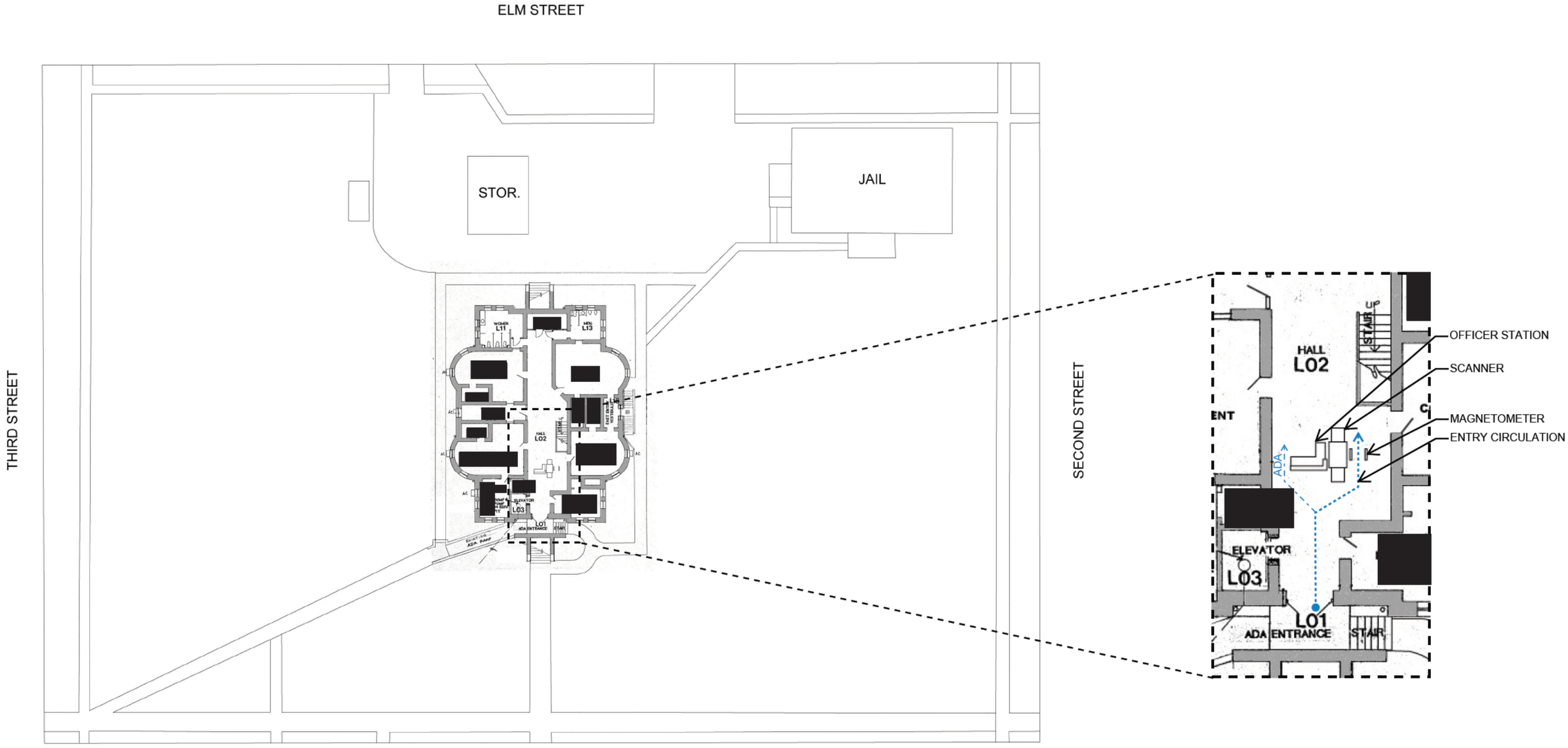
Lincoln County Courthouse Condition Assessment - East Entry Option

216 E Lincoln Ave, Lincoln, KS 67455

North

SITE PLAN
1" = 40'-0"

TREANORHL



Lincoln County Courthouse Condition Assessment - South Entry Option

216 E Lincoln Ave, Lincoln, KS 67455

North

SITE PLAN
1" = 40'-0"

TREANORHL

ELM STREET

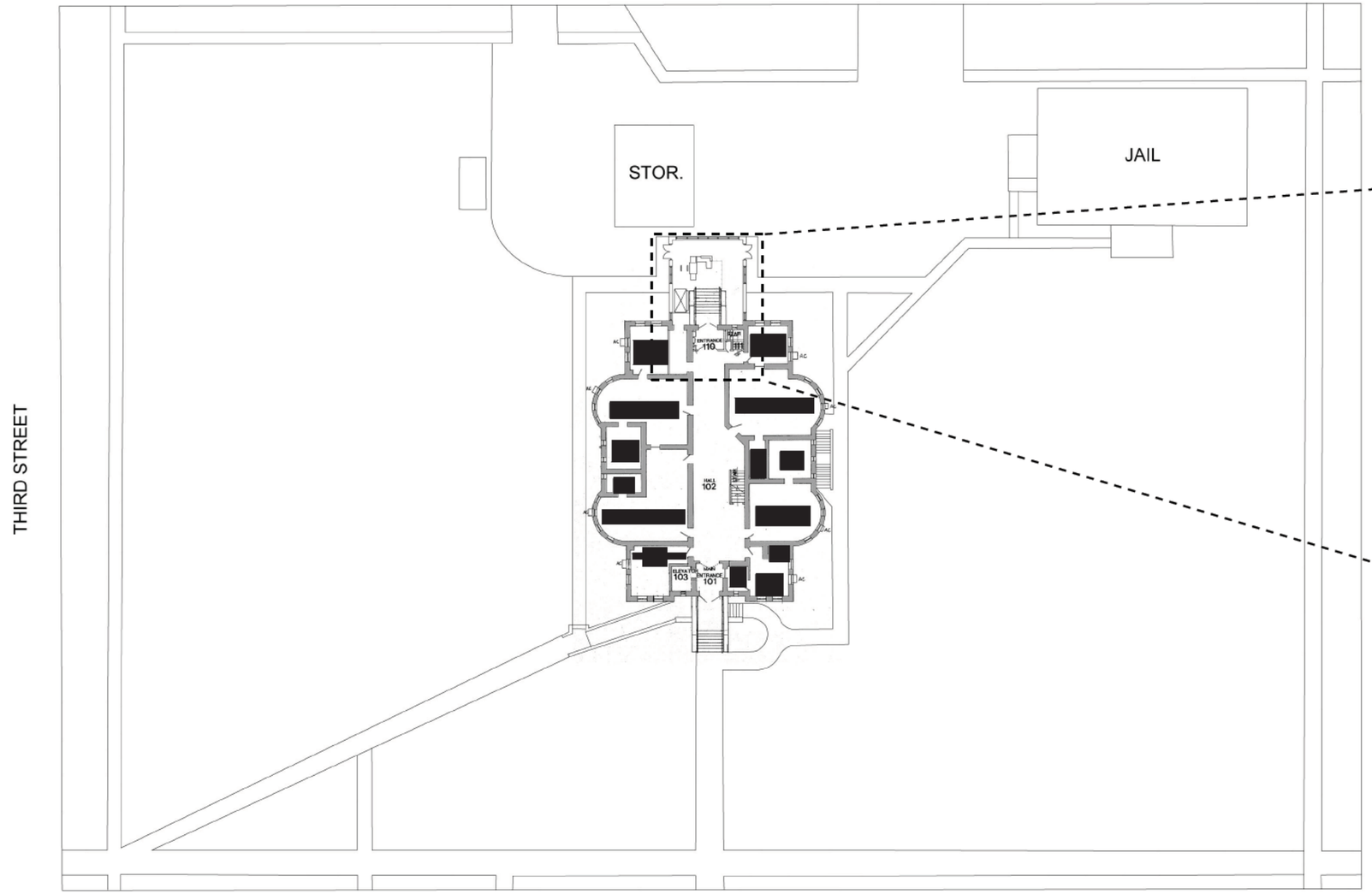
THIRD STREET

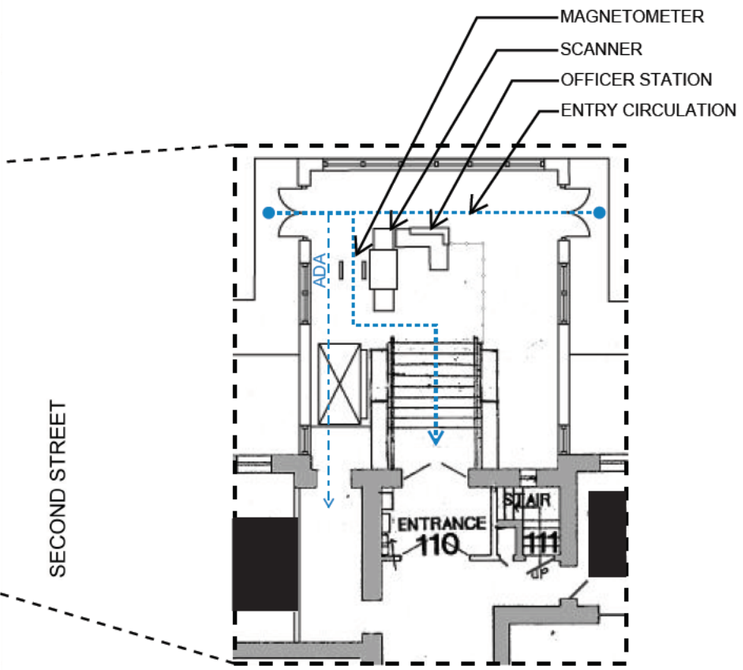
SECOND STREET

LINCOLN AVENUE

STOR.

JAIL





Lincoln County Courthouse Condition Assessment - North Entry Option

216 E Lincoln Ave, Lincoln, KS 67455

North

SITE PLAN
1" = 40'-0"

TREANORHL

D. APPENDICES

D. Appendices

D.1 Structural Report

D.2 Field Notes

D.3 Photos

D.1 STRUCTURAL REPORT

STRUCTURAL OBSERVATIONS

1.0 EXECUTIVE SUMMARY

In general, the Courthouse structure is constructed with quality materials that have performed well over the past 120 plus years. Maintaining an exterior sealed envelope at the perimeter of the building is critical for protection of the Courthouse facility. There is current evidence of moisture infiltration at the exterior entries on the north, south, and east sides of the building. Additional evidence of moisture infiltration was observed at the base of the interior walls. The exterior stair structures are weathered, and the stone and concrete materials are deteriorating. Potential roof flashing issues were observed at three locations where previous brick chimneys have been removed. The existing wood framed floors appear to be performing satisfactorily, but there were some areas of heavy storage that should be relocated or reinforced to prevent overstressing the framing members. Likewise, the roof structure appears to be performing adequately but there are some member and connection concerns.



2.0 SCOPE OF INVESTIGATION

The scope of the structural investigation is limited to visual observations made on April 17, 2020 of the interior and exterior building elements that were visible without removing any finishes. Most of the existing floor framing was concealed by floor and ceiling finishes. Exterior observations were made from the ground elevation with the naked eye and as aided by a camera lens. Attic observations were made by access through a stair and door at the southeast side of the second-floor corridor. Specific areas of structural concern were identified by TreanorHL as being the second-floor file storage, and the north and south exterior entry slabs and masonry.

3.0 DESCRIPTION OF STRUCTURE

The Courthouse structure is a three-story building with plan dimensions of approximately 87 feet in the north-south direction and 54 feet in the east-west direction. Four semicircular areas, two on the east and west sides of the building extend the east-west plan dimension to 75 feet.



The roof and upper level floors are wood framed with dimension lumber, multi-ply wood, and timber members. Built-up wood trusses at the roof level provide greater spans for the upper courtroom area. Interior and exterior stone masonry provide bearing walls that also function as shear walls for the building's lateral force resisting system. Foundations were not

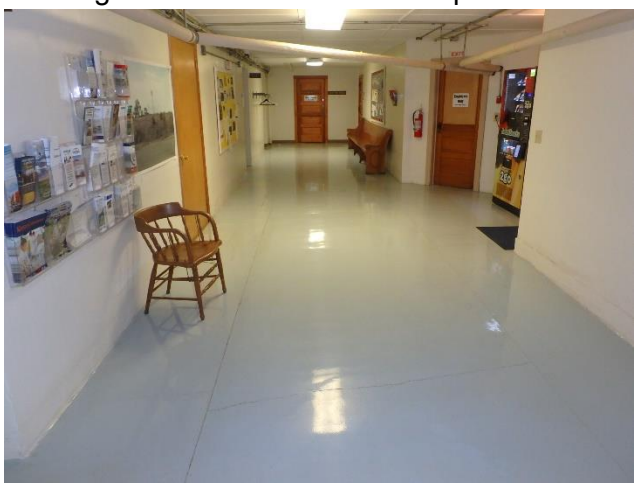
observed but are believed to be conventional spread footings of stone masonry bearing on native soil materials.

4.0 **DISCUSSION OF SITE VISIT**

a. The existing basement floor at the northeast utility room consists of natural stone units. The surface is irregular and the joints between units may allow underground moisture to wick upward through the joint.



b. Other floor areas appear to have been topped with a leveling compound and epoxy floor covering. The surface irregularities are better but still present.



c. Interior mortar joints at the exterior walls are soft and crumbling where they are below exterior grade. Past moisture infiltration through the masonry joints has resulted in the loss of the binder in the mortar leaving the loose sand behind. The mortar deterioration weakens the masonry wall.



d. Additional mortar loss was found at the interior masonry walls. Moisture has likely wicked up the wall from a below grade source. The moisture infiltration has caused the loss of the binder material within the mortar resulting in the sand left behind. The sand falls from the joint onto the floor and is constantly being swept up. Again, the loss of the mortar weakens the wall and impacts the structural performance of the wall.



e. Floor framing was visible above the northeast utility and breakrooms. The joists were measured at a true 2x12 size spaced at 16 inches on center. The lumber

appeared to be southern pine and would likely be graded as select structural material.



f. Past termite damage was observed in the floor framing above an east window in the utility room. The damage appeared to be limited to a small area where the spans are shorter, and the floor loading capacity is less impacted. There was no active termite activity in the area at the time of the visit.



g. The building contains several secure vault storage areas. These areas have masonry walls and masonry/concrete floor and cap slabs for protected records storage. Horizontal steel rods at the base of the arched slab provide tension ties to resist the thrust forces from the shallow arch geometry.



h. The south basement entry is a more recent accessibility improvement and there was no opening at this location when the building was first constructed. There is a double member steel beam lintel above the basement opening that supports the masonry sill for the door opening above. The exterior structural concrete slab appears to be supported by a reinforced concrete edge beam at the existing building wall.



i. Record storage was occurring at several second-floor areas. Filing cabinets were located on wood framed floors. A fully loaded 5-drawer filing cabinet can weigh close to 1,000 pounds. A fully loaded rotating filing cabinet can weigh 4,000 to 7,000 pounds depending upon the actual

size. On average, the floor loading below filling cabinets should be designed for 300 psf. The existing wood framed floors are not designed to support record storage loading.





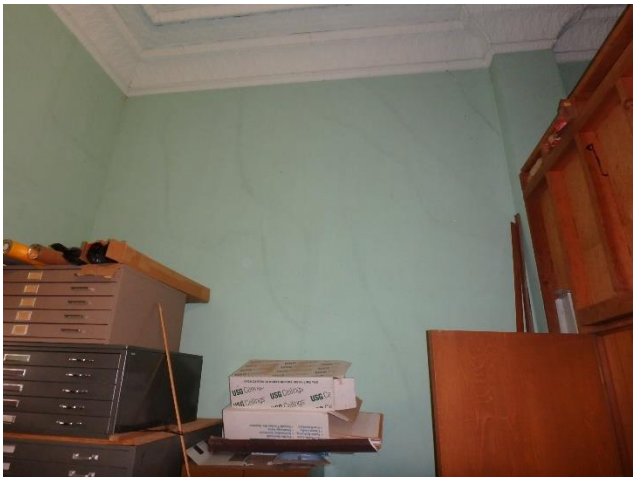
j. Additional heavy storage was located behind the second-floor courtroom.



k. Peeling paint was observed below a location where the only remaining chimney exists. This may be an indication of moisture infiltration at a failed roof flashing.



l. Random cracks were observed in the plaster at interior and exterior walls.



m. A horizontal offset in the interior plaster was observed at the north wall above the entry arch. There was no noticeable horizontal offset in the exterior masonry at this location, but the exterior joints at the west side of the arch might be slightly thicker than other joints.



n. Attic and roof framing were observed by accessing a second-floor stair at the south side of the building. The framing uses conventional lumber for roof rafters and ceiling joists. Four trusses span the north-south direction over the courtroom. The trusses are constructed from multiple 2x members that are bolted together. Timber members are used to frame the base of the tower.



o. The south diagonal top chord member of the two center trusses has a bow in it that is likely from weak axis compression buckling of the member. A brace has been added at the mid-point of the diagonal for reinforcing.



p. The framing for the circular cone roofs is systematic and uniform at the center of the cone but becomes random at the interior base with noticeable gaps in the load path.





q. There are cantilevered outriggers at the base of the cone roof structure along the

exterior wall that do not have a back-up span. Anchor bolts appear to be spaced far between and may be ineffective at some locations. Secondary framing effects are acting to resolve existing indeterminate structural conditions.



r. Some of the roof sheathing is broken and/or splintered from multiple re-roofing operations.



s. Some roof members are unbraced at their ends and are subject to buckling under compression loading.



t. Several vertical and diagonal members are very slender and may buckle under compressive loading.



u. A hip ridge member is poorly connected at its upper connection. There is a gap between the end of the member and the support.



v. Timber connections at the tower framing appear to bear on a shallow notch and rely on spiking and gravity loads to hold the connection together. The connection may be subject to failure under stress reversals caused by wind or seismic loading.



w. The tower framing appears to be functioning satisfactorily even though the framing is unconventional with offset connections and indirect load paths. Secondary framing effects are contributing to the structural performance of the tower.



x. Bat guano was observed on the various floor levels of the tower framing. Bat guano can be a health concern for building occupants.



y. Exterior stone walls appear to be straight and plumb with no noticeable bowing or major distress.



z. Exterior masonry is in relatively good condition with some open masonry joints. Open joints provide a pathway for the infiltration of moisture which is the major contributing factor to material degradation.



aa. There are some cracked stones. The cracks are an open pathway for moisture infiltration.



bb. Past maintenance efforts have repaired a number of stone cracks with what appears to be an epoxy injection.





cc. A tree root was observed extending above grade adjacent to the building foundation. It is not known if the root is native or just happens to be in the backfill that was placed following past drainage work. Active tree roots adjacent to the foundation can cause damage to the foundation and subject any drainage system to clogging and failure.



dd. Some stone units have surface spalling from weathering.



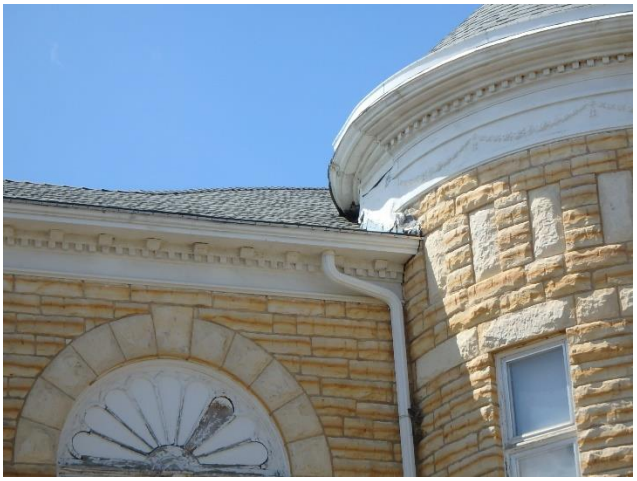
ee. There are several open joints that were observed at or just above the finish grade line. These open joints may be a source of moisture infiltration and could be a contributing factor to the deterioration of the mortar joints observed on the interior side of the wall.



ff. The exterior wood trim work is in need of repair and painting. Deteriorated wood materials may provide an open pathway for moisture infiltration to the structural elements resulting in deterioration and weakening of the structure.



gg. The metal panel infill at a previous chimney location may be loose and have some flashing issues.



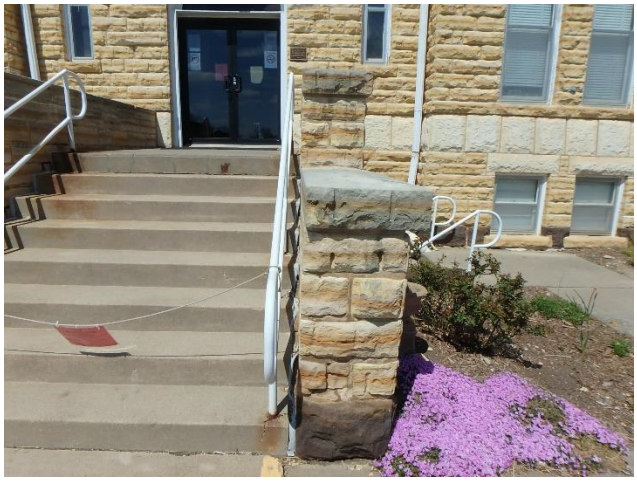
hh. The south entry stair upper landing slab has crazing cracks that extend through the slab. The slab has a dull thud when sounded with a hammer indicating portions of the concrete are delaminating and beginning to spall. Moisture entering the cracks is expanding and contracting as it freezes and thaws. The freeze/thaw cycles cause internal forces within the concrete that cause it to crack and deteriorate at an ever increasing rate.



ii. Additionally, the masonry retaining and landing support walls at the south exterior stair are deteriorating.



jj. The east and west walls of the south stair lean outward at the top and are bowed in plan.



kk. The stone walls of the south stair have lost mortar and the strength of the masonry wall is diminished.



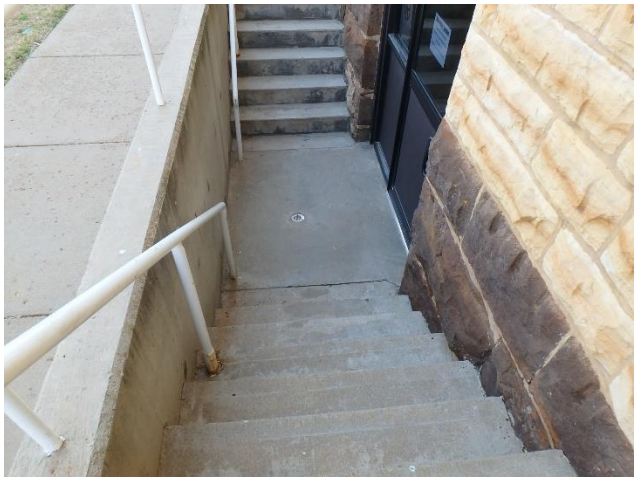
ll. Additional slab cracks can be seen from the bottom of slab indicating that the cracks likely extend through the entire slab thickness.



mm. Mortar loss was also observed at the building side of the slab near the support and at the base of the opening jamb. A drainage slot between the slab and the masonry wall may be contributing to the loss of mortar at the arch and its supports. The slot allows moisture to drain through it and likely onto the masonry.



nn. The east entry into the basement is open to the sky and subject to rainwater. There is a single drain at the lower landing slab. The drain is relatively small and could easily be blocked by leaves and other debris. It is apparent that water has entered the building at this location.



oo. Drainage water and the use of chemical deicers have likely caused deterioration of the adjacent foundation stones at the east stair.



pp. Open head joints at the east stair may be allowing moisture to infiltrate the masonry wall.



qq. The masonry retaining walls at the north stair are deteriorated. There is loss of mortar and crumbling stone.



rr. It is apparent that moisture has leached the binder from the original mortar causing its strength to be reduced.



ss. The north stair has code violations including a short bottom landing with a potential curb trip hazard.



5.0 **PRELIMINARY OFFICE ANALYSIS**

Archive drawings were provided and reviewed against observations made on site. In general, the structure found on site is consistent with the archive drawings. Exceptions include the actual use of multiple ply lumber members in lieu of the timber members shown for the roof trusses and alternate geometry at the base of the tower.

6.0 **TEST PROGRAM**

No material testing is included in the current scope of this work.

7.0 **FINAL COMPUTATIONAL ANALYSIS**

Calculations were performed to determine the relative live load capacity of the existing floor joists based on assumed spans and joist orientation. Following are the member live load capacities based on being southern pine select structural 2x12 and assuming a dead load of 23 psf:

Span	Allowable Live Load	Failure Mode
20’-9”	50 psf	Deflection
20’-6”	50 psf	Deflection
17’-9”	70 psf	Bending
16’-0”	95psf	Bending
15’-6”	100 psf	Bending
14’-0”	130 psf	Bending
13’-3”	145 psf	Bending
12’-0”	180 psf	Bending
11’-0”	220 psf	Bending
10’-0”	275 psf	Shear
8’-0”	350 psf	Shear
6’-0”	500 psf	Shear

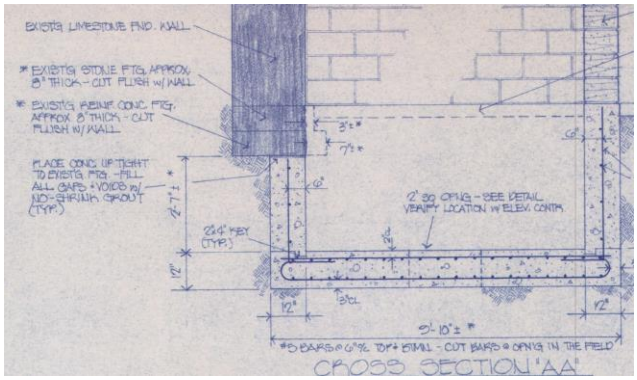
The live load values above are not recommendations as other factors such as connection capacity may govern the actual capacity. These values are for comparison and any recommendations will need to be verified by physical observation of the joist members, their connections, and associated supporting members. All existing conditions could not be observed due to the current finishes concealing the conditions.

Load tables for masonry arches from Kidder and Parker Architects’ and Builders’ Handbook (Eighteenth Edition, 1966) indicates that the vault floors may have a live load capacity in excess of 500 psf.

The south basement entry lintel beam was checked for applicable wall and floor

loads. The two W5x16 beam sections have adequate capacity to span the approximate 6'-3" opening.

1991 archive drawings show an elevator addition at the south end of the building just west of the current entry. Drawings indicate that the existing stone footings were partially underpinned. The existing masonry wall then bears partially on existing soil and partially on the new concrete. This could be a potential problem with varying bearing material strengths and levels resulting in potential eccentricity and foundation settlement. No noticeable distress was observed on site. It is unknown if the new elevator foundations were installed as indicated in the drawing or if the full thickness of the existing wall was actually underpinned.



8.0 **INPUT FROM OTHER DISCIPLINES**

Additional survey and design recommendations are being prepared by other consultants.

9.0 **CONCLUSION AND RECOMMENDATIONS**

a. Overall, the Courthouse building is in good structural condition. However, there are some current maintenance issues that need to be addressed to restore the integrity of the exterior envelope and protect the building from moisture infiltration. The root cause of most structural material degradation is from moisture. A well-maintained exterior envelope not only protects the building structure but also protects the building contents and occupants.

b. There appears to be an active moisture problem at the foundation level. Past projects have attempted to resolve the moisture issues at the foundation level but apparently have been unsuccessful. A review of the existing system is recommended to ensure that it is properly designed, constructed, and maintained. Further action to correct any discovered deficiencies will be required.

c. Following repairs and corrective measures to prevent foundation moisture infiltration the existing masonry walls can be repaired by removal of loose and deteriorated mortar and stone units and repairs using replacement units and new compatible mortar for repointing. Repairs should be made to the interior and exterior sides of exterior walls and to interior walls as determined by additional investigation.

d. Existing floor structures that are scheduled to be exposed by the removal of flooring and/or plaster should be accessed for their structural condition and repaired or reinforced as determined by the assessment.

e. Special attention should be given to assessing any termite damage to wood framing since some damage was observed at the northeast corner of the building. Maintaining an active termite inspection and prevention plan is also recommended.

f. The south basement entry lintel condition should be reviewed for possible improvements when the exterior upper landing slab is replaced.

g. Heavy file storage should not be located on the existing wood framed floors. Heavy storage loads should be relocated to the

masonry/concrete vault floor slabs or to the basement floor.

h. The condition of the existing chimney (masonry, cap, and flashings) at the northeast corner of the building should be investigated and any deficiencies repaired to prevent water infiltration and peeling paint on interior surface.

i. A plaster survey should be performed to determine the existing materials soundness on walls and ceilings. Plaster repairs may be required to ensure the safety of building occupants from loose and falling plaster.

j. The existing building structure is historic and meets special requirements for being exempted from current building code requirements under certain conditions. However, there are ways to improve the performance of the existing structure and in some case make the structure code compliant. The current roof structure appears to be performing adequately but there are members that look to shallow for their spans and to thin for their height. A detailed structural analysis of the roof framing could be performed to identify weak component members and connections. Identified deficiencies could then be repaired and reinforced. Items of particular concern include load path continuity, unbraced lengths of compression members, member connections, and eccentricities caused by member offsets.

k. Consult with an environmental engineer regarding the removal of the bat guano.

l. The exterior masonry has been surveyed by others to determine the extent of required repairs. Existing cracked stones should be repaired in a manor that seals the cracks. Existing open mortar joints should also be properly repointed to the minimum depth of two times the joint width to seal the wall from moisture infiltration. Damaged stone units should be identified for repair or replacement.

m. The south entry stair structure is in the process of deteriorating. There appears to be some inherent moisture issues with the current stair structure that has resulted in the active failure of the masonry walls and of the concrete slab. The overall stair structure is approaching the end of its useful life and consideration should be given to replacing the stairs with new construction that resolves the current moisture problems.

n. The east entry stair lacks adequate drainage and as such is likely contributing to the moisture infiltration and masonry wall deterioration in and around the stair. An improved stair entry that protects the existing masonry is recommended.

o. The exterior stair walls at the north entry are badly deteriorated and the walls are at the end of their useful life. A new code compliant stair with an improved pathway is recommended.

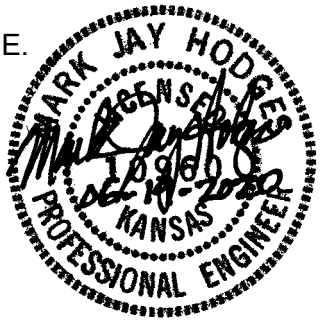
10.0 **APPENDICES**

All site photos taken on April 17, 2020 are attached as an electronic file.

Respectfully reported,

Dudley Williams & Associates, P.A.

By: Mark Hodges, P.E.
Kansas No. 10960



D.2 FIELD NOTES

TREANORHL

PROJECT: Lincoln Co Courthouse (KS)
HP0885.2001.00

DAMAGE AND DETERIORATION - EXTERIOR

Customize for your project by editing designations or adding custom notes

Stains and Deposits

- Rust or ferrous stain
- Atmospheric gyp or carbon
- Efflorescence
- Graffiti
- *A/C runoff staining & soiling*
- Cuprous (copper) stain
- Biological (lichen, algae, mold, moss)
- Mineral or water scour
- Guano

Spalls, Chips and Losses

use markers for damage under 3 sq inches:

- Spall with loss
- Incipient spall
- Chip
- Spall at anchor with loss
- Incipient spall at anchor
- Missing piece
- Broken glazing
- *Customize*
- *Abandoned anchor*

use areas for losses greater than 3 sq inches and note if anchor is present:

- Loss: spall, chip, or missing piece
- Incipient loss

Cracks, Seams and Joints

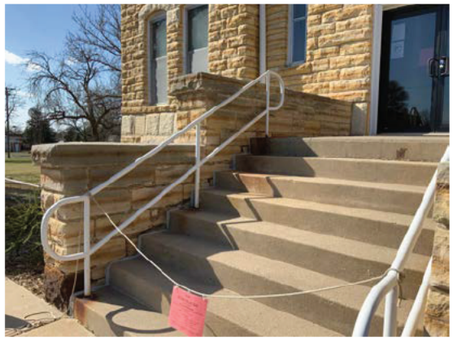
- Crack > 1/16" with displacement
- Crack < 1/16" with displacement
- Crack > 1/16" no displacement
- Crack < 1/16" no displacement
- Natural seam - unstable
- Natural seam - stable
- Mortar joint - open/partly open
- Mortar joint - cracked/bond line failure
- Sealant joint - failed

Surface Deterioration

- Delamination or Exfoliation along bed planes
- Scaling or Contour Scaling parallel to the finish face
- Stucco, plaster or parge coating hollow
- Erosion (typ a result of water runoff)
- Disintegration Sanding/Sugaring/Powdering
- Stucco, plaster or parge coat loss
- Paint loss
- Wood rot (wet or dry)
- *Customize*

Modifiers and Miscellaneous

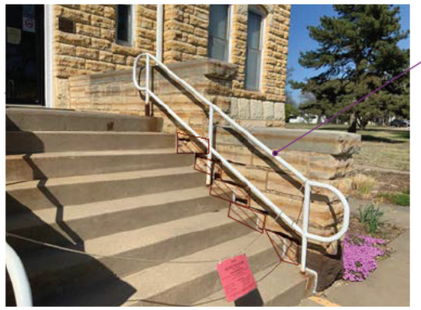
- PR — Previous repair or repair attempt
- PRF — Previous repair or repair attempt failed or failing
- ret — Return face (vertical face)
- bot — Soffit (horiz return on bottom of stone)
- top — Wash or ledge (horiz return on top of stone)
- horiz — Horizontal
- vert — Vertical
- diag — Diagonal or stair step
- A — Anchor location (specify if known)
- Bird roost or nest
- Woody plant (tree, vine, etc)
- epf — Failure of epoxy jt original to construction
- S — Sag, or sagging
- L — Loose or wobbly (paver)
- ? — unidentified material





Same detail as north, but grout bed added under threshold

Stair structure does not appear to be tied to walls



22 wall



Wall is leaning west about 3 degrees, most pronounced area is here at the step in the wall
But shorter section is also leaning

All metal needs paint especially turret toppers,

Joints are all bad, wall is leaning 1 or 2 degrees bulge in wall near the south side of the arch

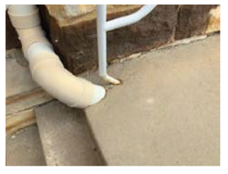


Chimneys are gone

Painted wood tunettes typ in arch and jack arch windows, probably to accommodate storm

This eave is all at one elevat on





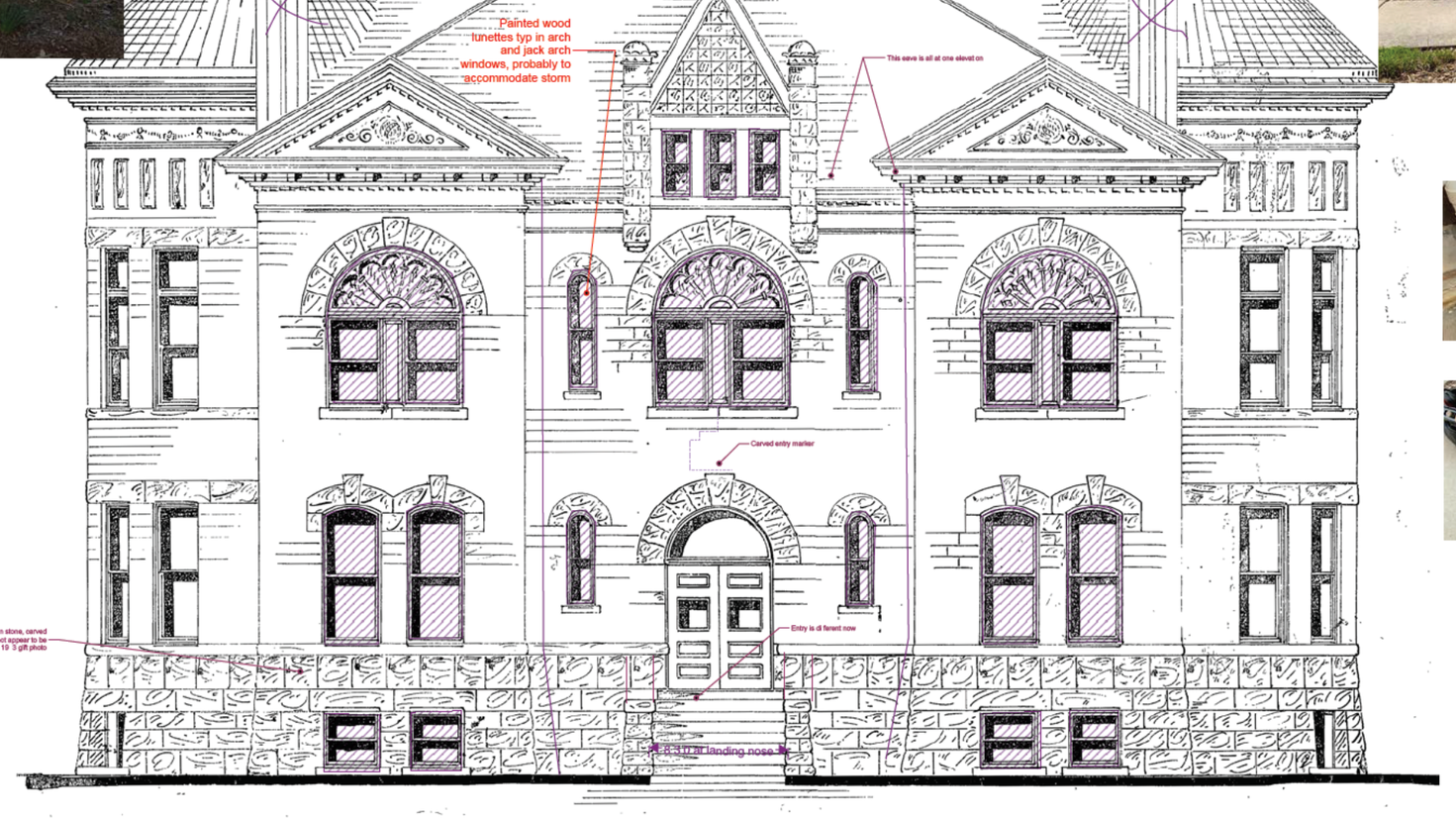




Carved entry marker

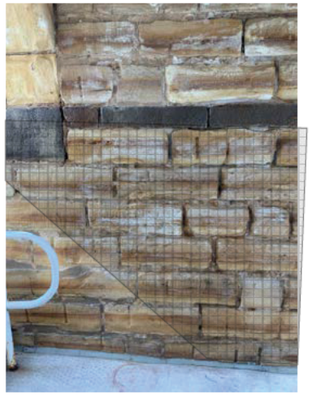
Dedication stone, carved
This does not appear to be carved in the 19 3 gift photo

Entry is di ferent now



SOUTH FACADE CONDITION NOTES











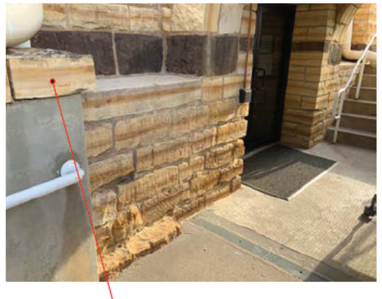












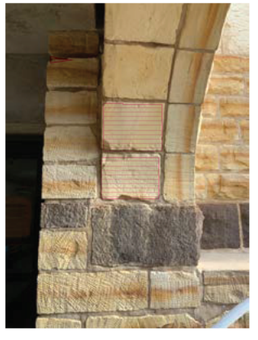
















SOUTH FACADE CONDITION NOTES

EAST FACADE CONDITION NOTES





No chimney

Chimney has been rebuilt most of the way up

backsides of sheet metal is generally visible at the intersection between the frieze and the soffitt - no backing and no support for much of this area

sheet metal repairs in these areas are poor, connection to roofing is probably not strong



PRF SEALANT





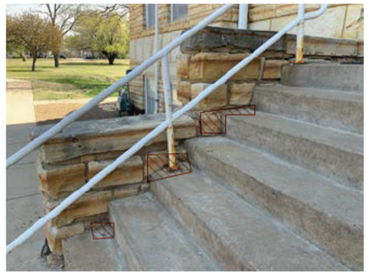


PR sealant

Area needs 100% repoint

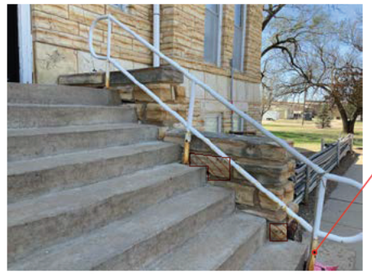
PR sealant

Area drain can't handle heavy rain







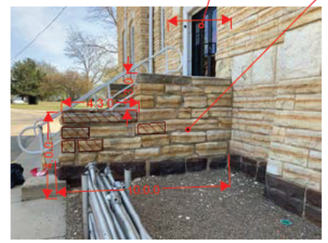


Corrosion typ

10% repoint, deep



18" wall



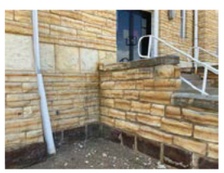
Not compliant with current railing code

Q100% repoint deep



All pressed metal and wood need paint
Moderate biological soiling, typ run line from sills and overhangs

Some bond line failures and some shrinkage cracks
Joints are wide, sand used is too fine





Water meter

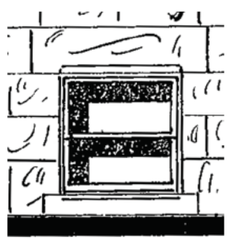
NORTH FACADE CONDITION NOTES

WEST FACADE CONDITION NOTES

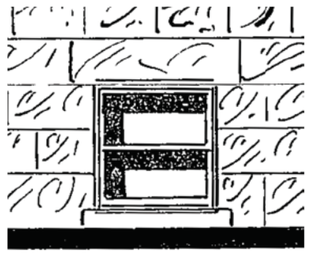
There is not great fall away from the bldg until you get past the inner ring of trees on this side

Most metal has checkered paint, particularly on soffits

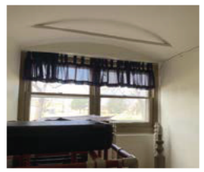




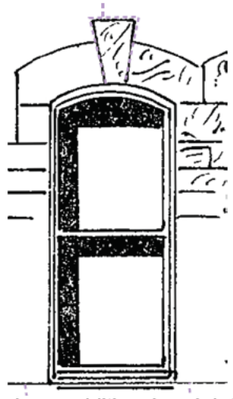
Type A
Size: 30"x31"
Count: 16
Broken Panes: -
Window A/C Units: -



Type B
Size: 26"x31"
Count: 8
Broken Panes: -
Window A/C Units: 3

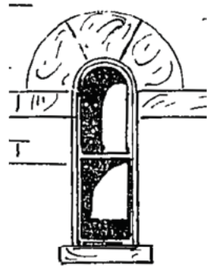


Type C
Size: 12"x73"
Count: 1
Broken Panes: -
Window A/C Units: -



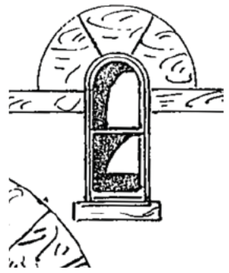
4 units have additional sash latches on upper and lower sashes

Type D
Size: 30x83
Count: 16
Broken Panes: 1U
Window A/C Units: 2



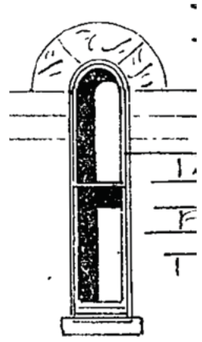
2 are Vault windows

Type E1
Size: 12x59
Count: 6
Broken Panes: -
Window A/C Units: -



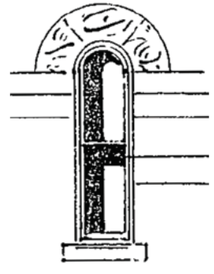
Vault windows

Type E2
Size: 12x47
Count: 4
Broken Panes: -
Window A/C Units: -



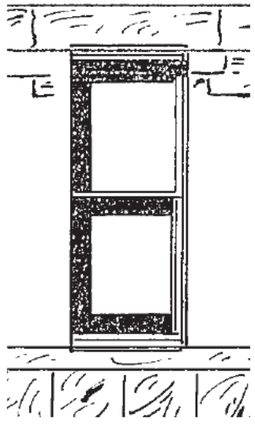
1 in elevator shaft

Type E3
Size: 12x80
Count: 4
Broken Panes: -
Window A/C Units: -



1 in elevator shaft

Type E4
Size: 12x66
Count: 4
Broken Panes: -
Window A/C Units: -



Type F
Size: 26x83
Count: 16
Broken Panes: 2U
Window A/C Units: 4

Hardware sets
1. Type A & B: Spring pins and latch
2. Type C & L: Latch, spring balance
3. All others except G, H2, K & J2: Pulleys w/sash cord, latch, lift, sash pull socket, cord keeper (for blinds)
4. Type J2: Rod style transom operator, hinges, latch
5. Type K: Pulleys, latch, lift
6. Type G & H2: no hardware

Hardware scope of work: Clean all hardware. Replacement per schedule below
1. Replace all
2. No work
3. Replace all sash cords, assume all weights are intact, replace one lift
4. Replace 12 sets
5. No work - windows to be fixed
6. No work



Fixed Transom
Replace north entry (currently glazed with plywood)

Type G
Size: 6'x36"
Count: 2
Broken Panes: -
Window A/C Units: -

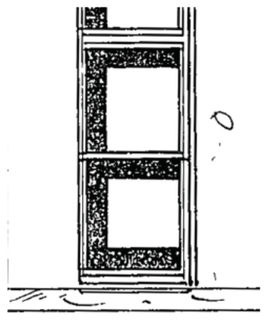


Type H1
Size: (2) 30"x59"
Count: 10
Broken Panes: -
Window A/C Units: 3

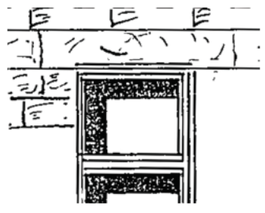


Fixed Transom
Replace all glazing, remove infill on interior

Type H2
Size: 93"x44"
Count: 10
Broken Panes: 90 fans, 100 fillers
Window A/C Units: -



Type J1
Size: 26"x71"
Count: 16
Broken Panes: 1L, 1U
Window A/C Units: 2



Operable Transom

Type J2
Size: 26"x30"
Count: 16
Broken Panes: -
Window A/C Units: -



Type K
Size: 18"x44"
Count: 6
Broken Panes: -
Window A/C Units: -



Vinyl replacement units set in wood frame. Wood frame requires paint and repair on exterior

Type L
Size: 32"x37"
Count: 4
Broken Panes: -
Window A/C Units: -

LINCOLN COUNTY
PROPOSED IMPROVEMENT
of
COURT HOUSE GROUNDS
County Engineers Office
3-6-36
County Engineer











SITE CONDITION NOTES

LEGEND

notes about conditions are in red

notes about existing conditions or uses, corrections to the plan

8.0 0

denotes floor to ceiling (or framing) height

eroded mortar joints at and below grade

painted exposed stone work - paint is bubbling and failing, deteriorated joints at and below grade are typical

Monday 10 am
Every week

area at door has been raised one step, water flows under the door in heavy rain

carpeted, wood paneling, drop ceiling

carpet, wood paneling, drop ceiling, equipment conceals most of the wall

sand pile at base of wood paneling

Men's

Urinal

FD

Stall

Ash Room

Place Boiler here..

Stone floor

7.11.0
B.o. floor framing to stone
Stones are uneven



small amounts of standing water are typical in this room after a heavy rain, comes through north wall - origin is at landing connection to orig wall - based on maint reports

John Paul - bldg maint office

storage board covers most of the wall, but joints are severely deteriorated and eroded



Vague waterline seems to be present along the west wall at floor level

8.0 0

coating over substrate, floor is slightly crowned in the center, lower at the walls on either side

water pours out of lintel around auto operator during heavy rains, closer/opener arm is corroded

Plaster replaced about 6 times since ' 01

Plaster damage

8 light ramp up

Elevator

Cmu

plaster deterioration

7 9.0

wood paneling & plaster damage behind

entry added c1936, see 1993 drawings and exterior field notes



Wall SECTION
5cL 1/4"=1'F

Buckling floor covering

Women's

3 stalls

FD

Sink

FUEL Room

FUEL ROOM

carpet over uneven floor, wood paneling, drop ceiling

Plaster damage

9x9 two tone tile

paneling except at turret wall - turret wall was exposed and repointed ~5 years ago tile floor, drop ceiling

does not appear that floor level has been altered since orig construction



Efflorescence

7 8.0

Wall looks good

window hardware this level:
latch (i think)
spring bolts
except for 1960s replacement - which have latches, lifts, and spring balances

North

STONE

STONE



No entry anymore

1960s or later



parge over stone



LOWER LEVEL CONDITION NOTES











LEGEND

notes about conditions are in red

notes about existing conditions or uses, corrections to the plan

8.0 0

denotes floor to ceiling (or framing) height

Upper pane cracked

Missing lift

Upper pane cracked

Cracked upper glass

Typ window hardware:
Lift
Lock
Pulleys
Upper sash push/pull plate

Turret windows are not curved

Terri

JUDGE

JURY

Rhonda

21-6 x 28-0"

Tami

built ins and counters are all gone

SEATING

door locked, no panic hardare

low clearance under stair anding to courtroom

Enc osed stair w/ door

MAIN CORRIDOR

3 cameras

Vestibule doors gone

See elevator set, window is not accessible from inside

Elevator

PUBLIC

Dawn

or g transact on counters are gone, but systems furniture typ ca ly in the same locat on serving the same purpose

PUBLIC

DESK

DESK

rail s gone

Leann

Hannah

railroad coach latches on sash jambs, both upper and lower sashes

All pulleys

Sarah

Windows in central sect on are not shown correc ly on this floor, ref elevations

North

MAIN LEVEL CONDITION NOTES

UPPER LEVEL CONDITION NOTES

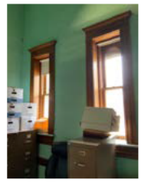
LEGEND

notes about conditions are in red

notes about existing conditions or uses, corrections to the plan

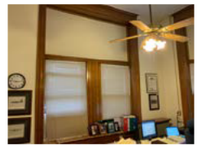
8.0 0

denotes floor to ceiling (or framing) height

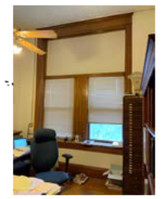




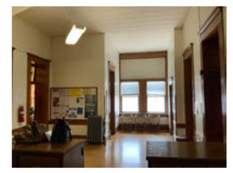


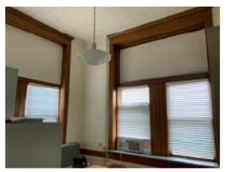




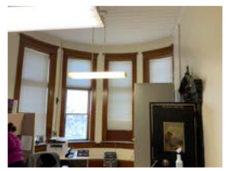












Rattles pretty good windows in this corner weren't accessible due to stored materials

crack in the corner

crack

this is a frame wall

Crack on all 3 sides of arched soffit, probably a framed soffit

Currently storage

cracking typ in wall

Broken glass,

Mtl clng

Cries cross truss

Jennifer

Ropes cut, pulleys intact, bad putty Judge reports: howling, rattling windows, drafts

12-0 x 10'2"

Frame wall

Camel

Timber truss, one each side of dormer

plaster below windows and above transom opening is cracked and detaching from the wall

COURT ROOM - 50'x52'-6"

Probably late 1960s or early 1970s renovation

BAR

jury seats on raised platform here, no gate

Security camera

CLERKS LOBBY

Desk

Judge

Taylor

12-0 x 10'6"

Mtl clng

Single hole bathroom

5.0.0

MAIN CORRIDOR

Casework

Mtl clng

Security checkpoint

ARCH. CALL WINDOW

Elevator

See elevator set, window is not accessible from inside

Sash cord has been replaced with very thin cord more like "string" fairly typical repair

These two do not appear to be accessible from the interior - stored materials make viewing difficult, but it appears the openings may have been plastered over - metal shutters are still visible from exterior

Sash string, works well though

North

D.3 PHOTOS



courthouse1.jpg



DSCN3566.JPG



DSCN3567.JPG



DSCN3568.JPG



DSCN3569.JPG



IMG_9166.JPG



IMG_9167.JPG



IMG_9168.JPG



IMG_9169.JPG



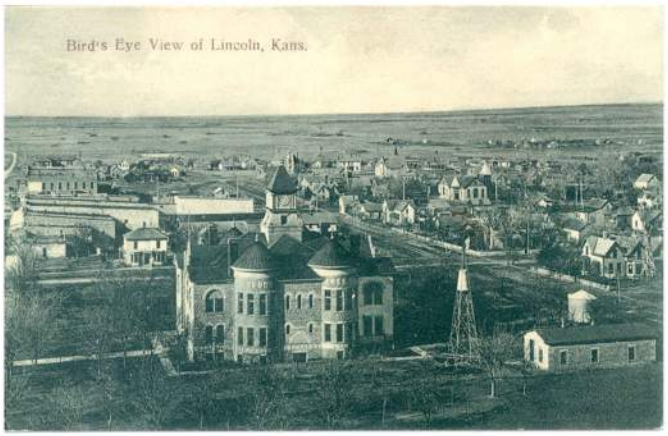
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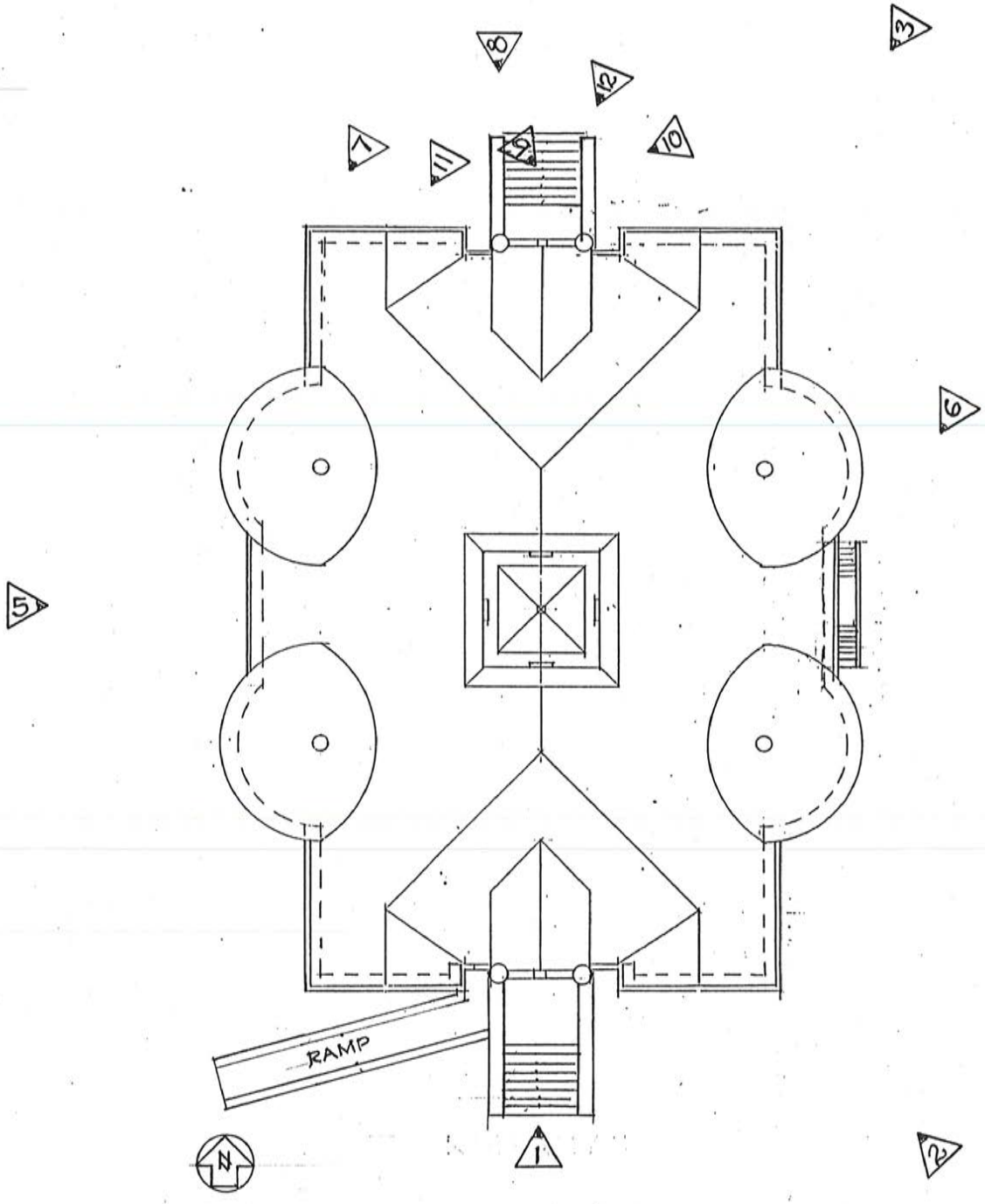
IMG_9469.JPG



IMG_9470.JPG



lincoln2.jpg



ROOF PLAN SCALE 1/16" = 1'-0"
KEY TO PHOTOGRAPHS AND SLIDES

LINCOLN COUNTY COURTHOUSE
HISTORIC RESTORATION 10-10-95



SOUTH ELEVATION 1



SOUTHEAST ELEVATION 2



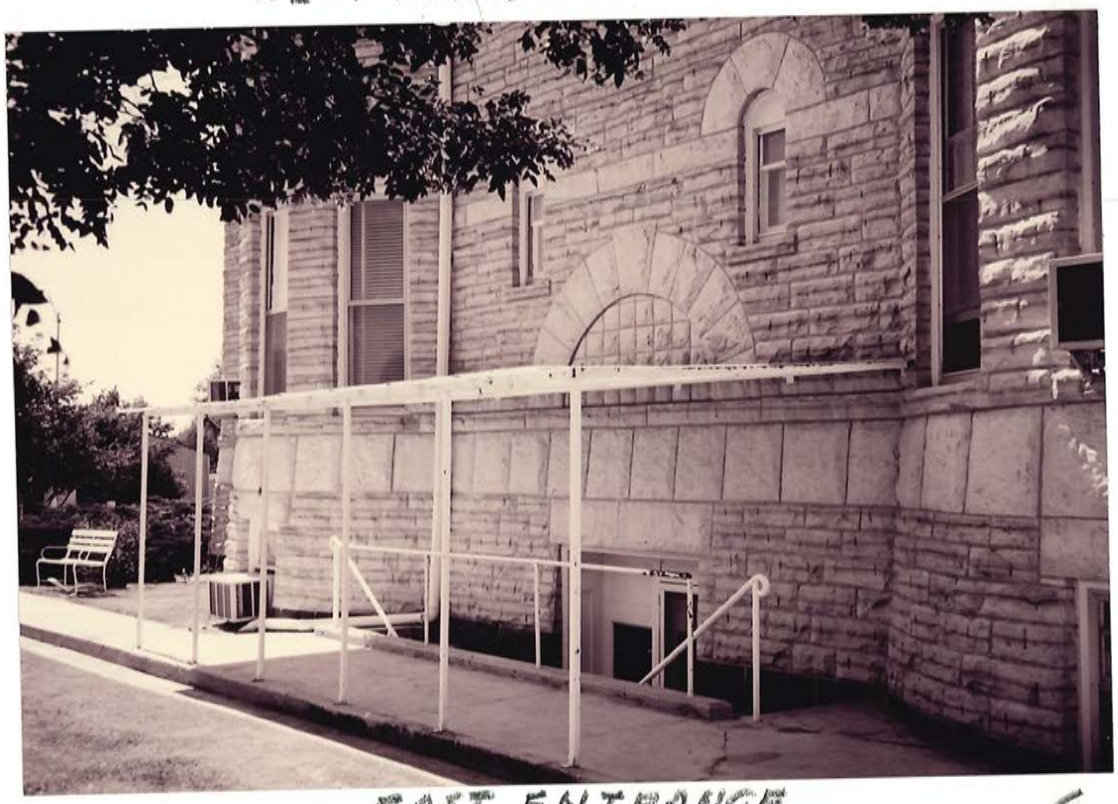
NORTHEAST ELEVATION 3



EAST ELEVATION 4



WEST ELEVATION 5



EAST ENTRANCE 6



NORTHWEST CORNER
7



STONE AT REAR (N) STEPS
8



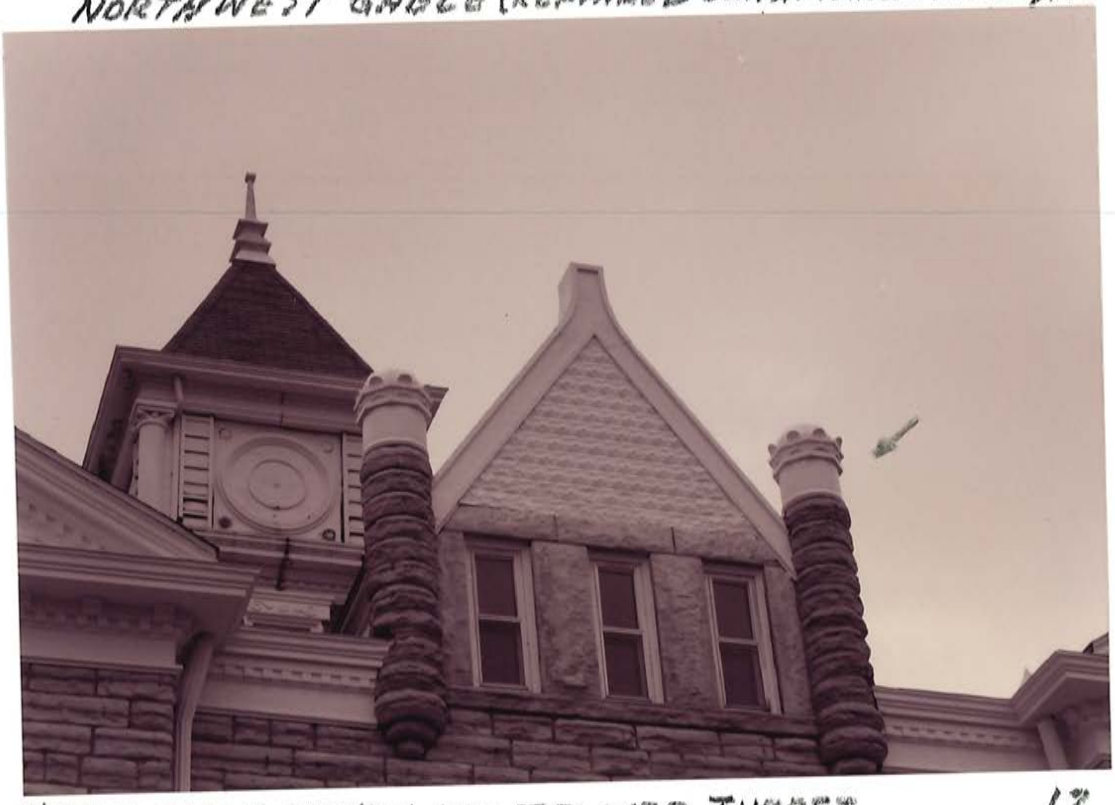
STONE AT REAR STEPS - NEW HANDRAILS 9



STONE & MORTAR JOINTS - REAR (N) ENTRANCE 10



NORTHWEST GABLE (REPAIRED ORNAMENTAL METAL) 11



NORTH GABLE SHOWING NEW REPLACED TURRET 12

NORTH WEST



LINCOLN COUNTY COURTHOUSE - NORTHEAST



SOUTH WEST



WEST ELEVATION



9-15-9



LINCOLN COUNTY COURTHOUSE - SOUTHEAST
HISTORIC PRESERVATION 9-15-95

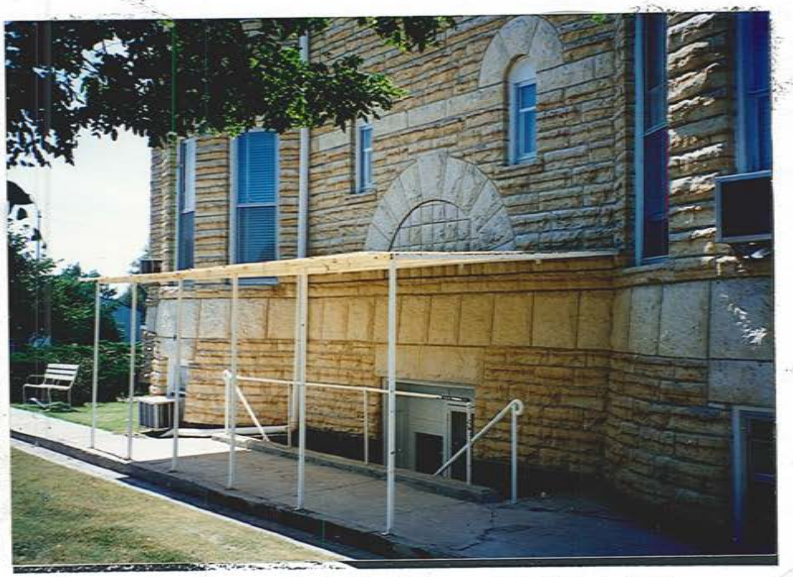


SOUTH - FRONT ELEVATION



EAST

Photos by A.K. Bader,
The Shaver Partnership



BOILER ROOM STAIRS - EAST SIDE

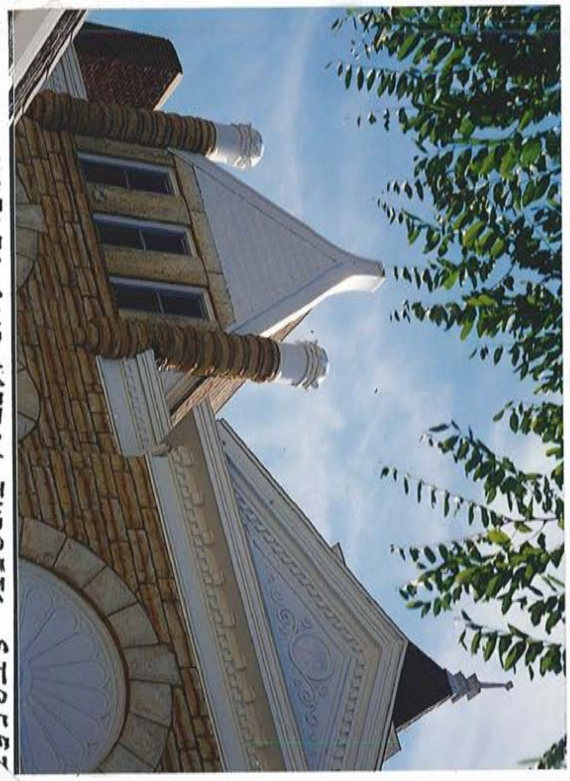
LINCOLN COUNTY COURTHOUSE 9-15-95
HISTORIC PRESERVATION - NORTH STEPS



NORTH ENTRANCE



NORTH GABLES AND METAL TURRETS. STREET PLBG. BUILT R.H. TURRET (WAS MISSING) & REPAIR



NORTHWEST CORNER





DSCN3590.JPG



DSCN3591.JPG



IMG_0436.JPG



IMG_0437.JPG



IMG_0438.JPG



IMG_0440.JPG



IMG_0441.JPG



IMG_0442.JPG



IMG_0443.JPG



IMG_0444.JPG



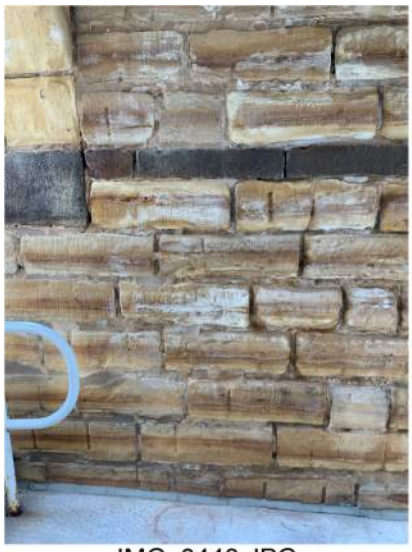
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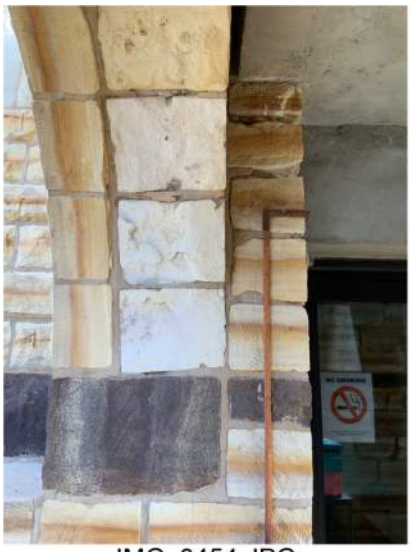
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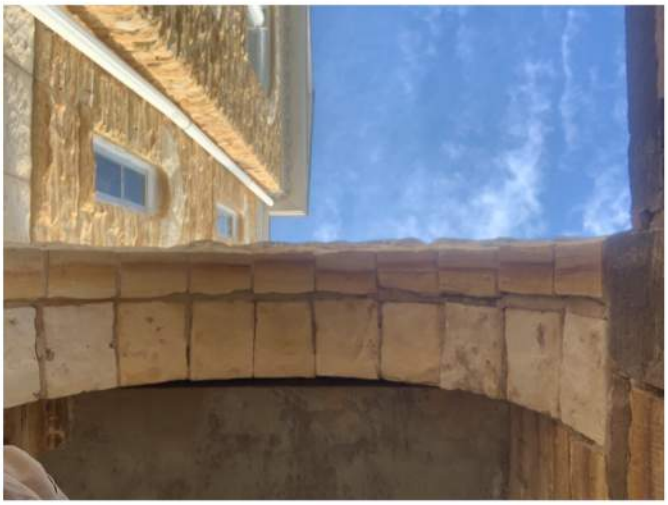
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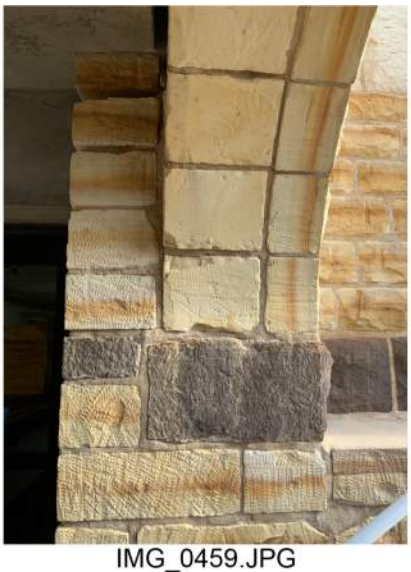
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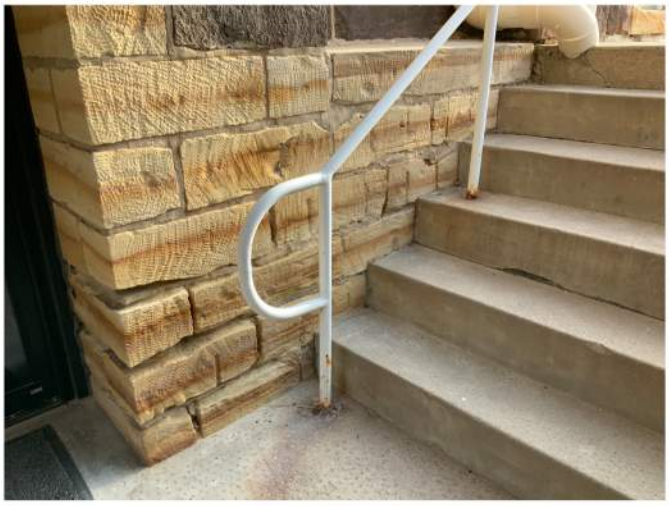
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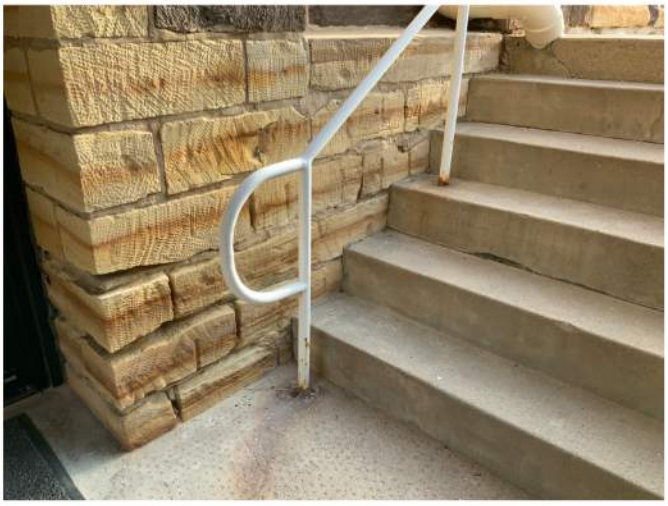
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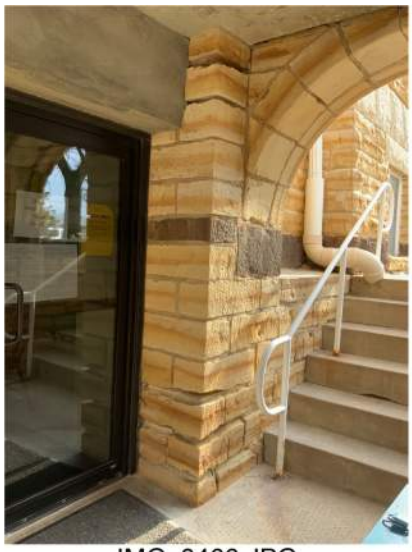
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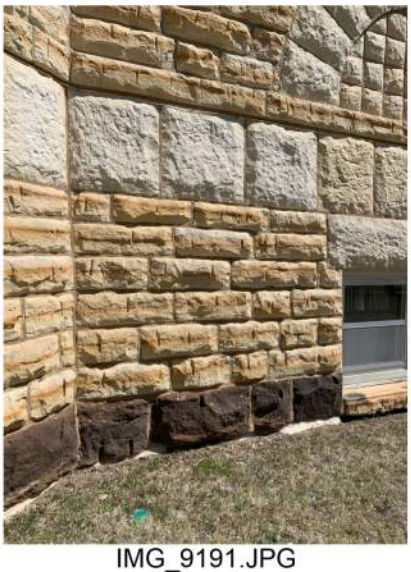
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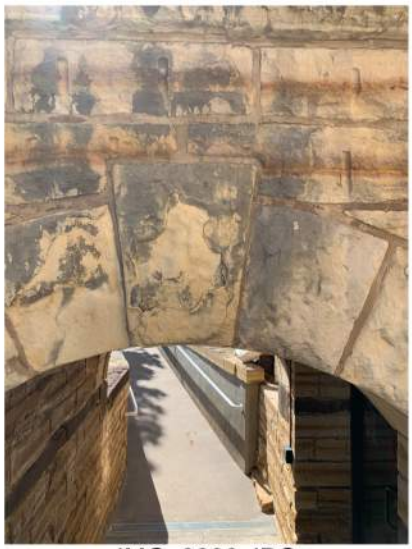
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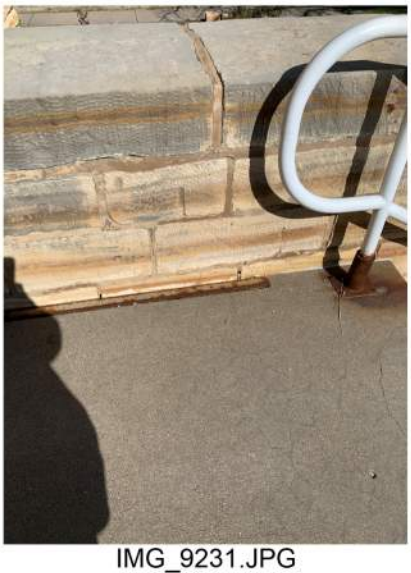
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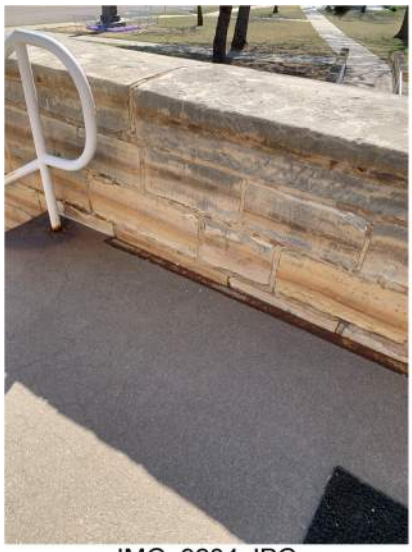


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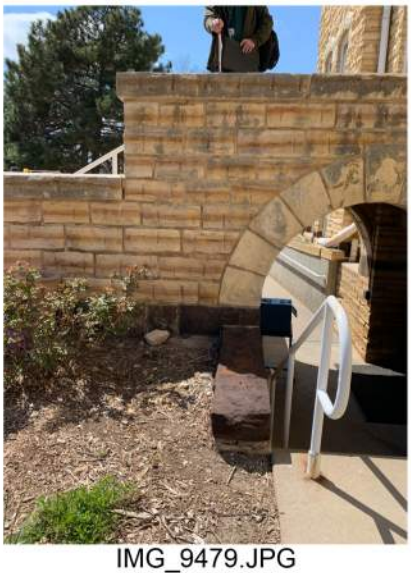

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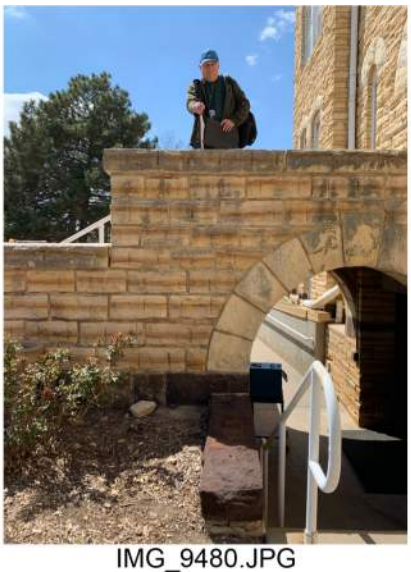

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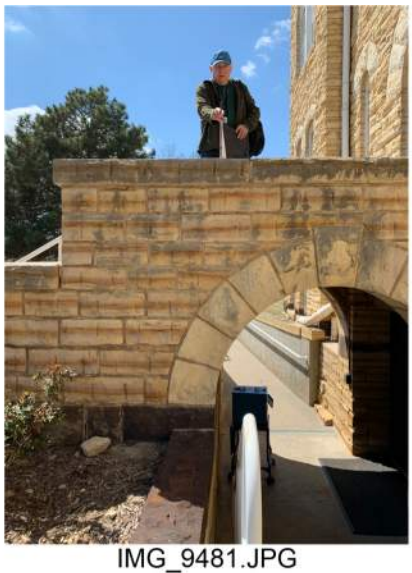

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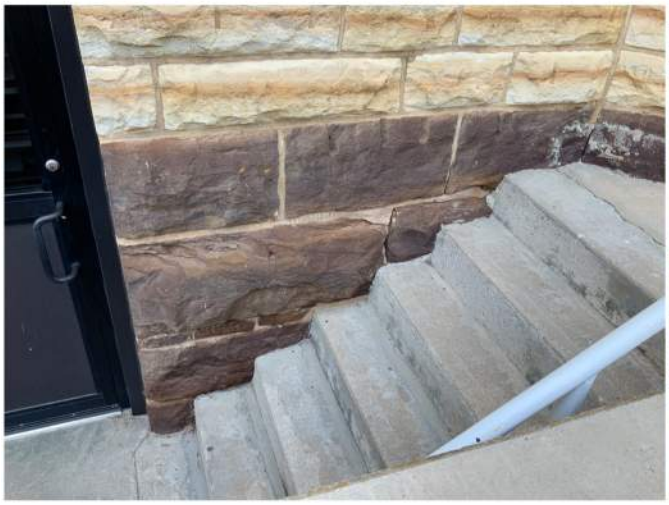
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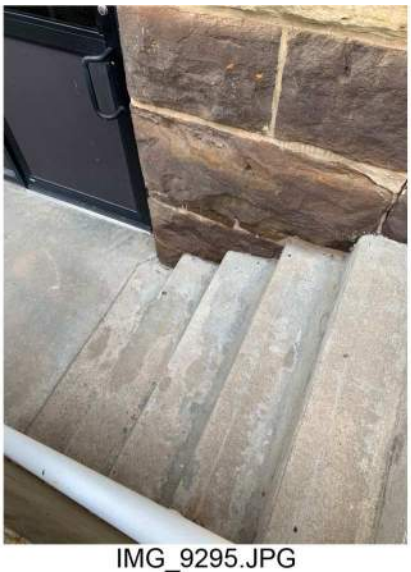
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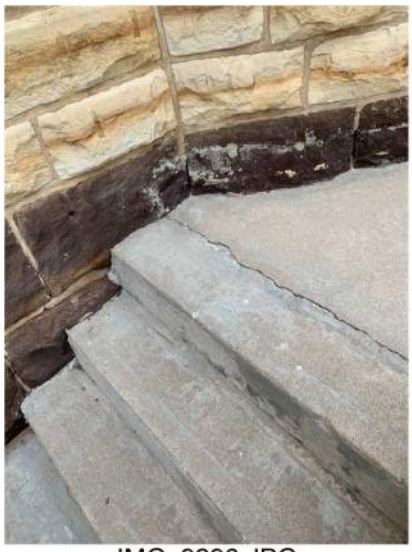


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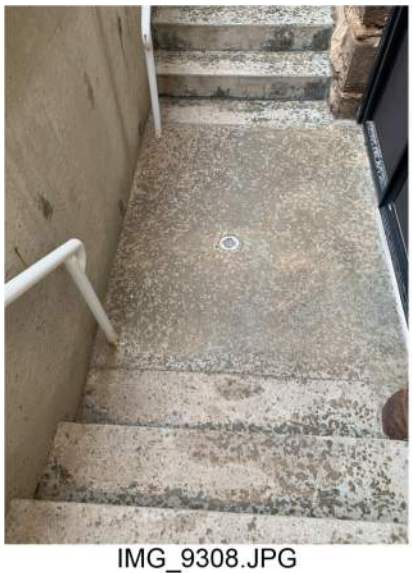
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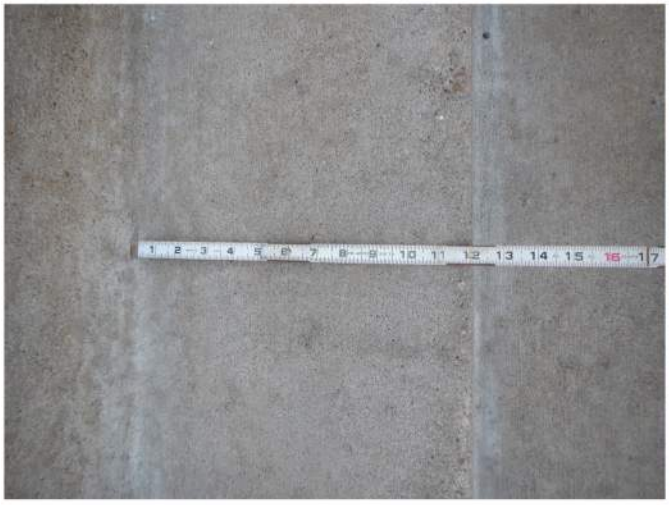
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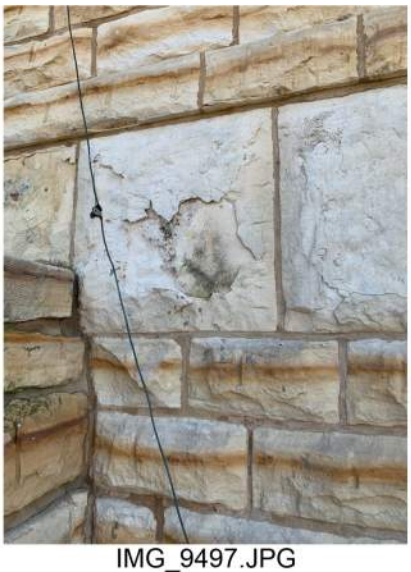
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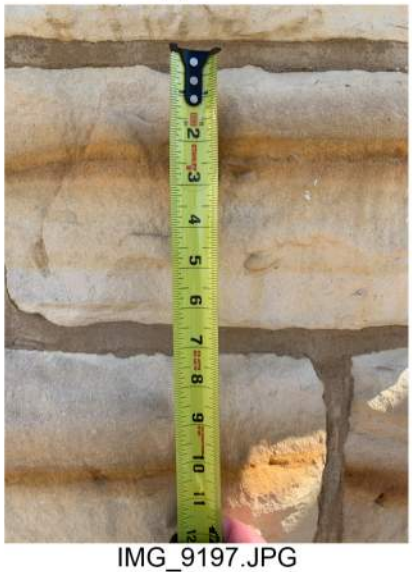


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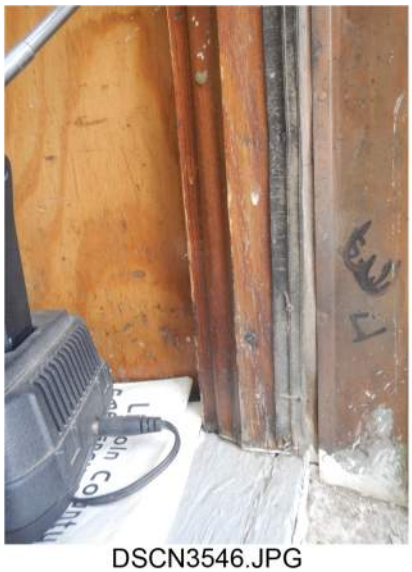
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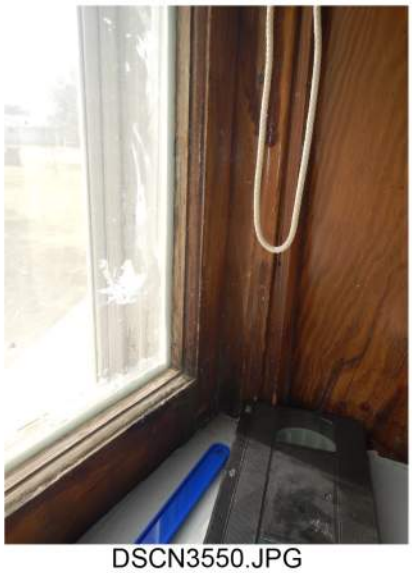
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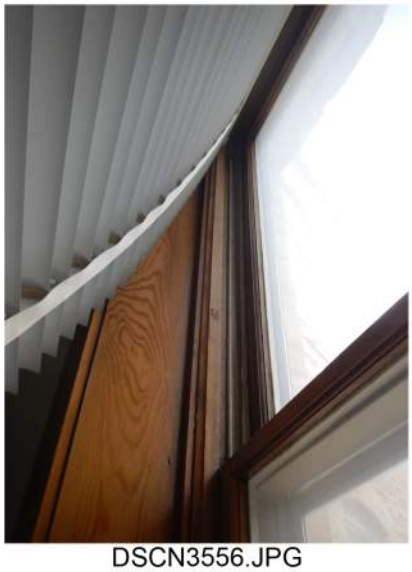
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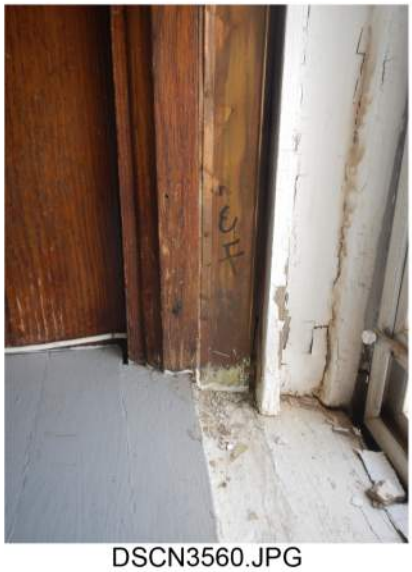
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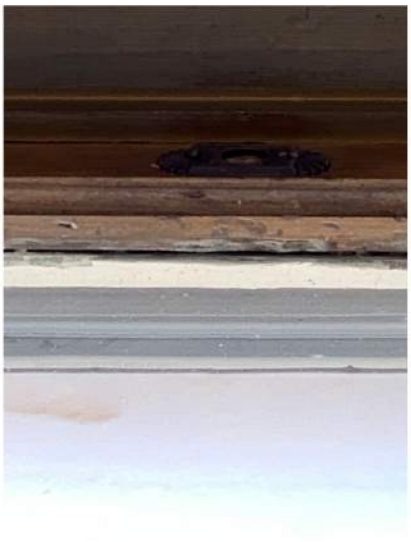

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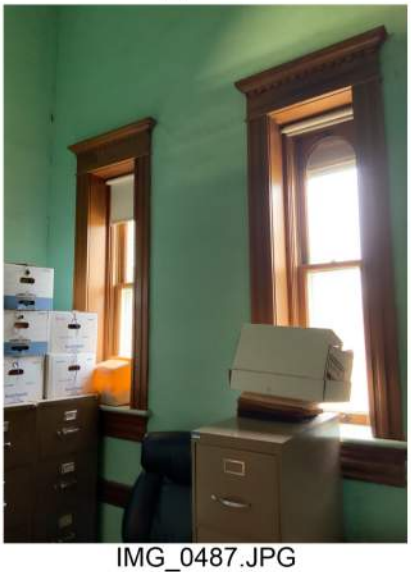
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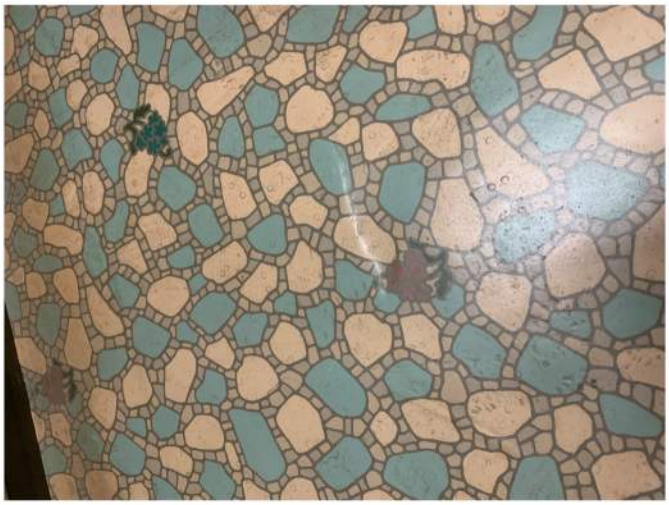
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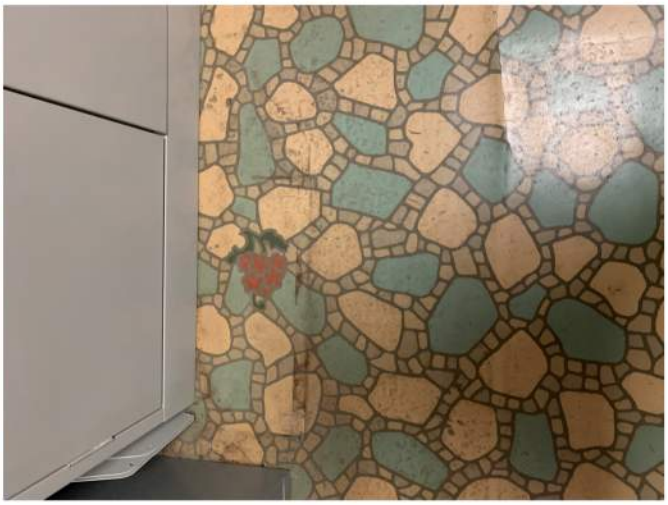
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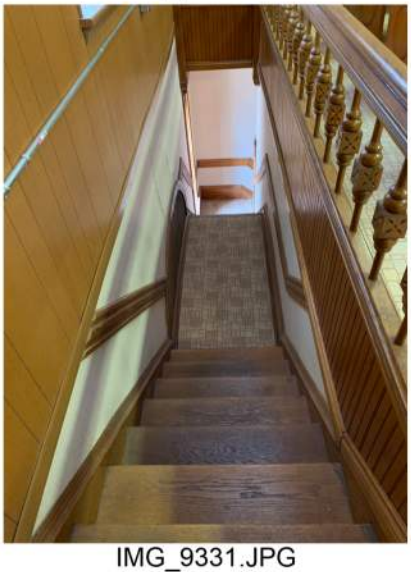
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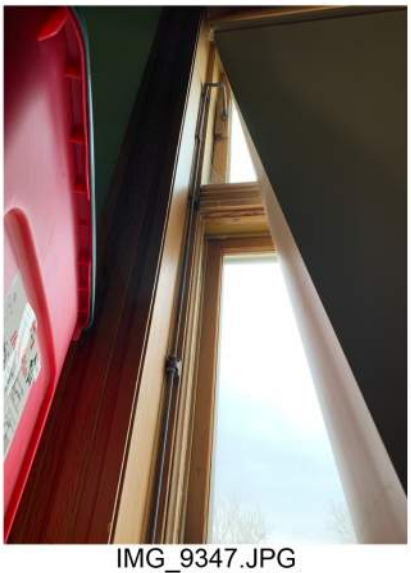

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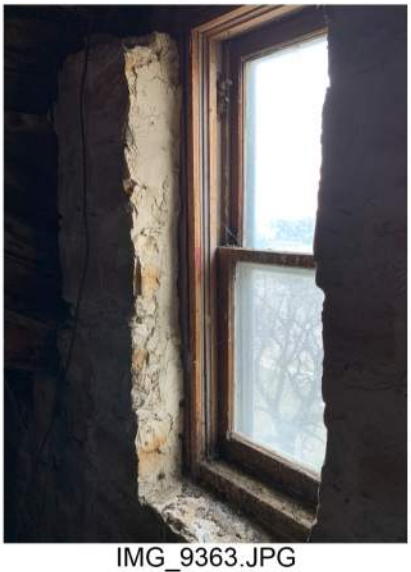

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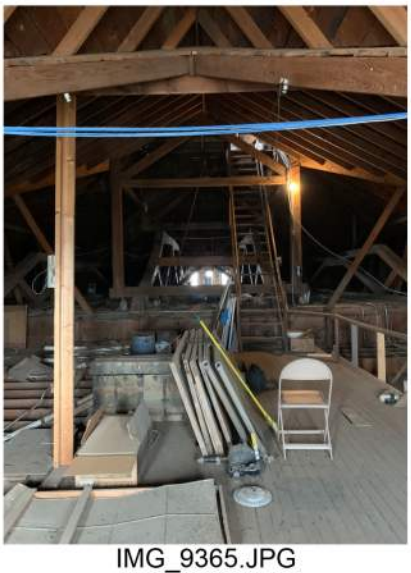

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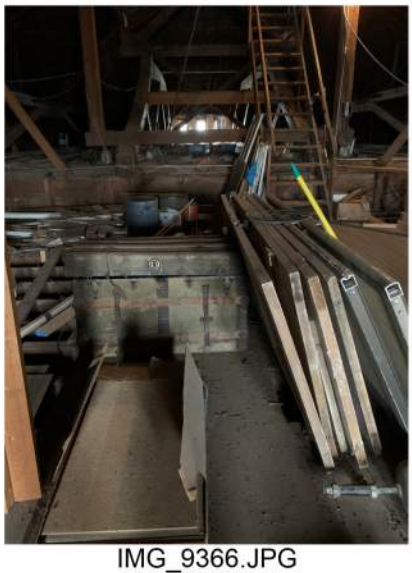

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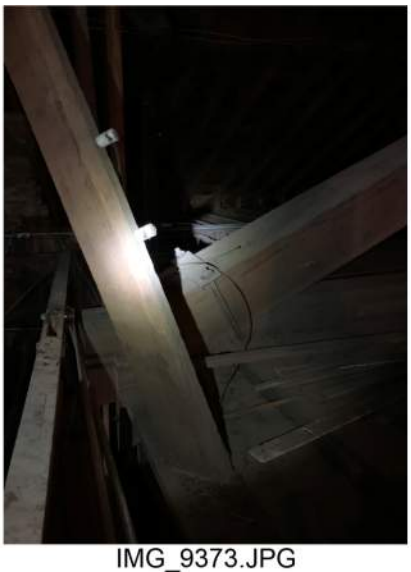
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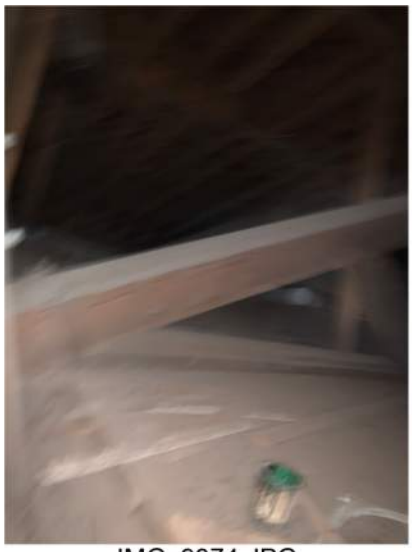
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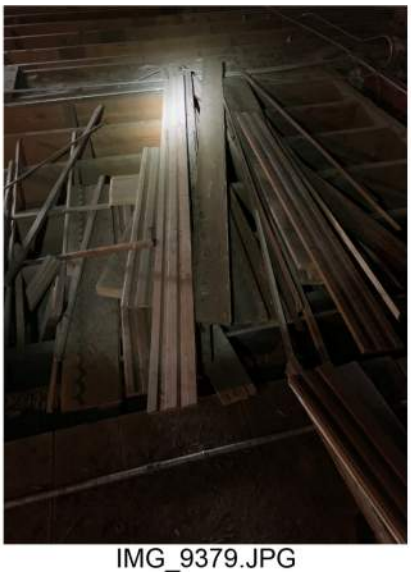
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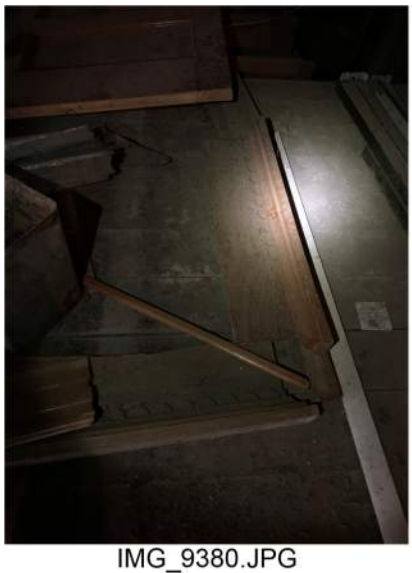


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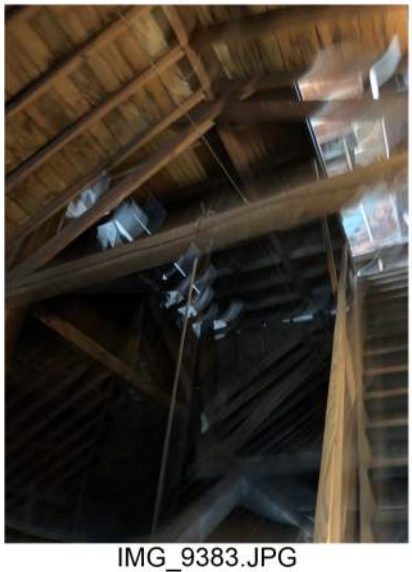


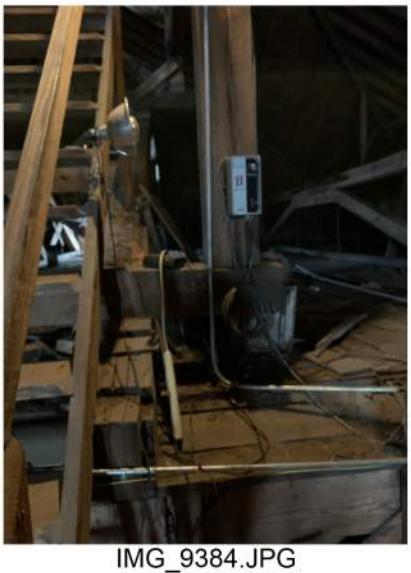
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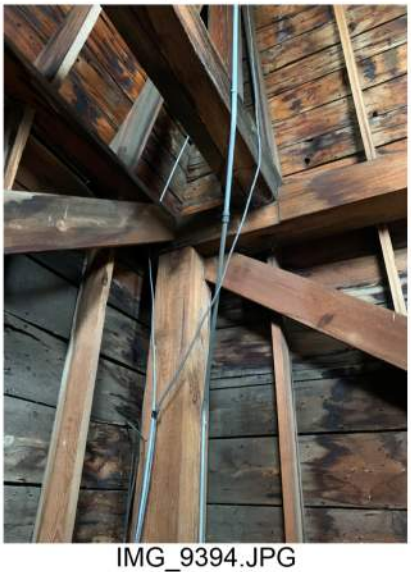

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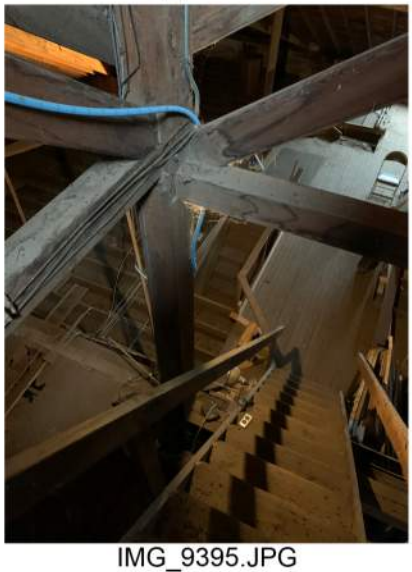

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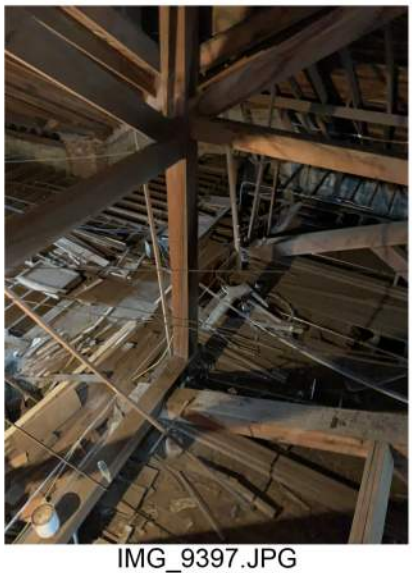

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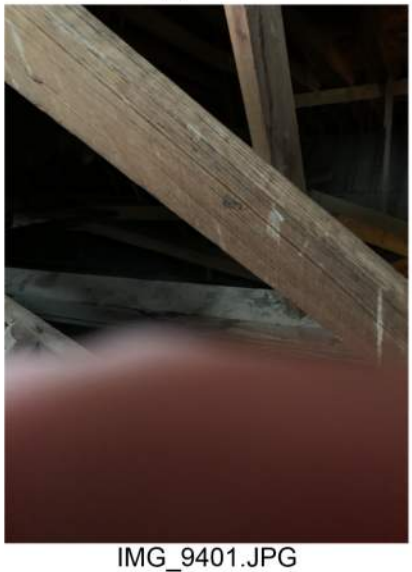
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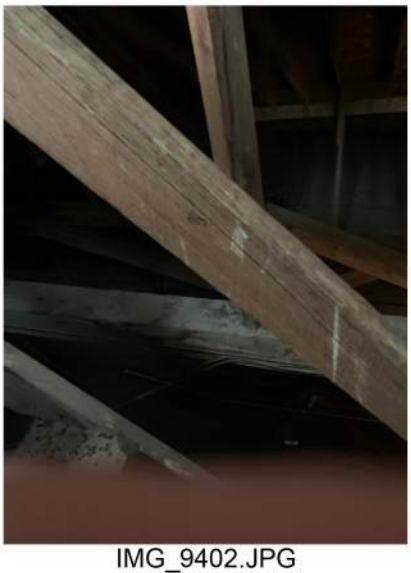
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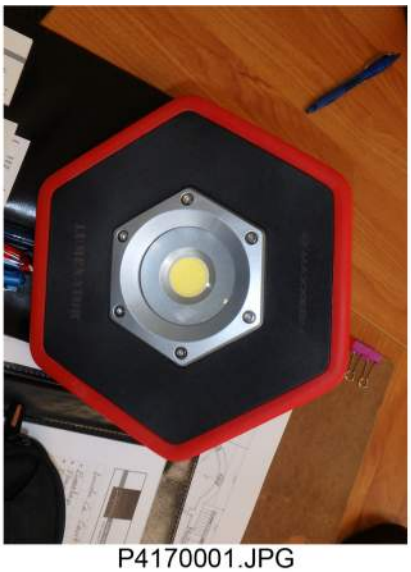
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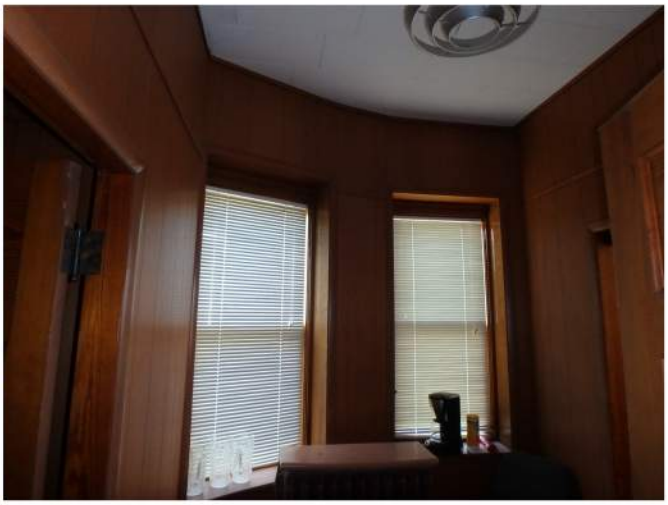
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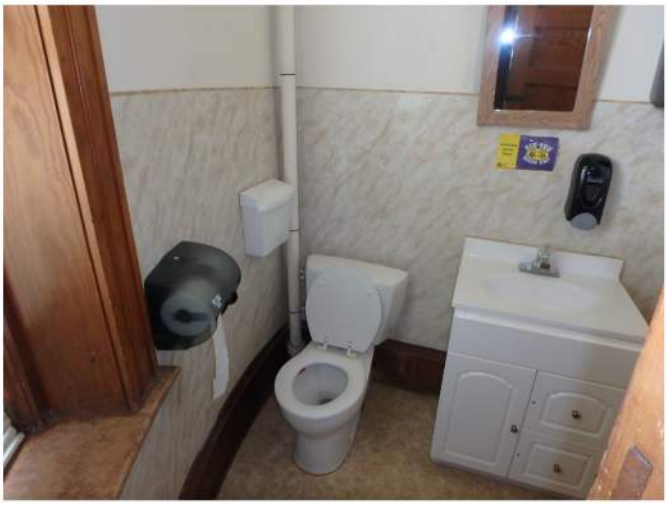
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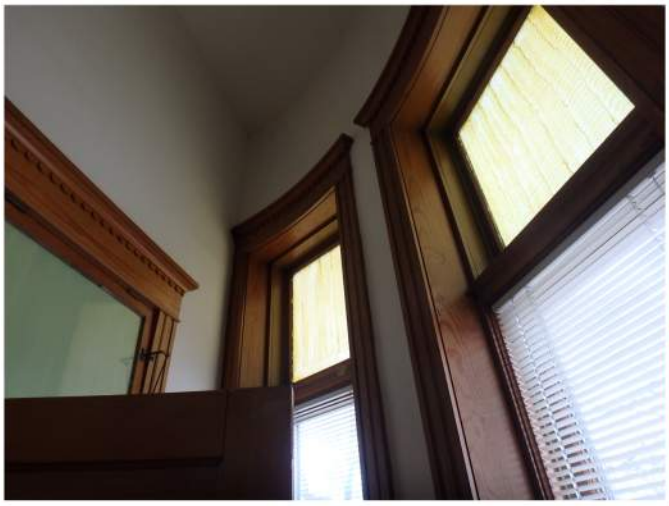
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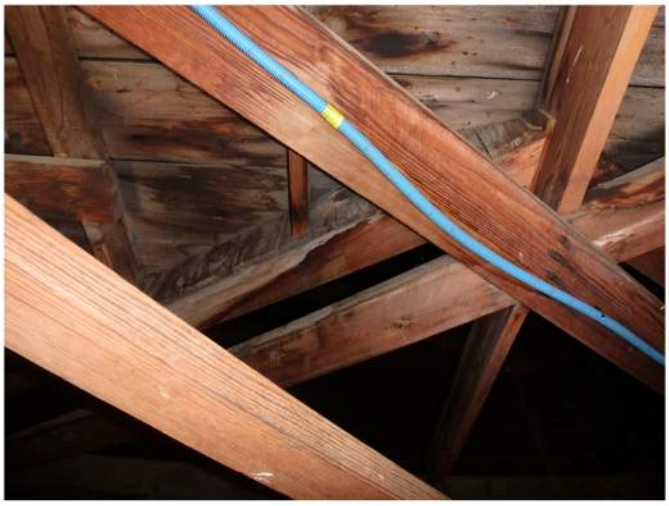
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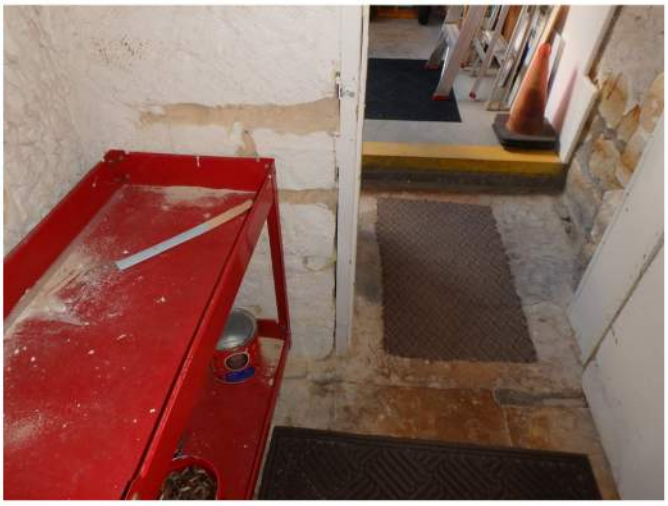
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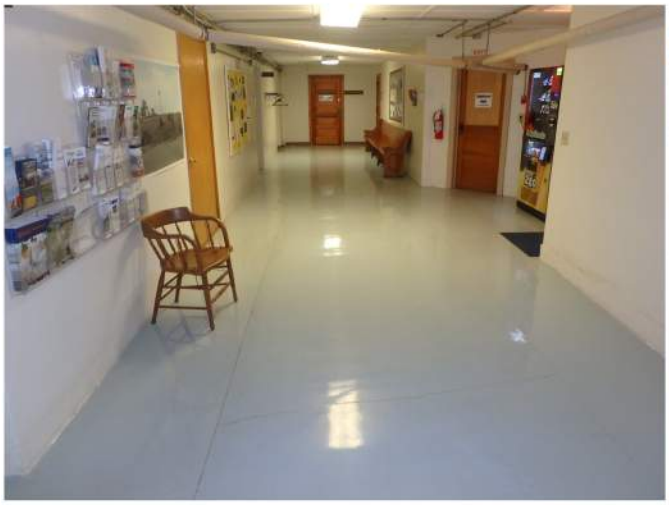
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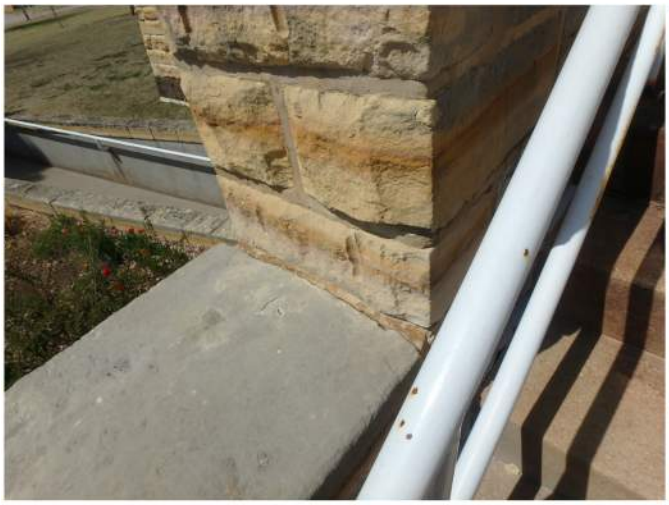
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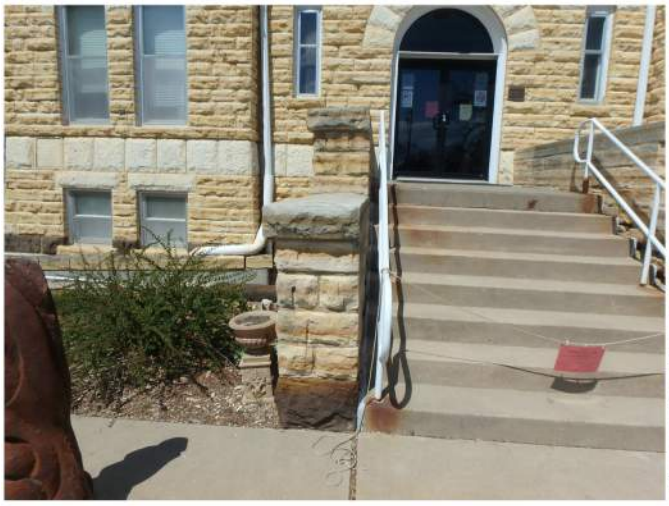
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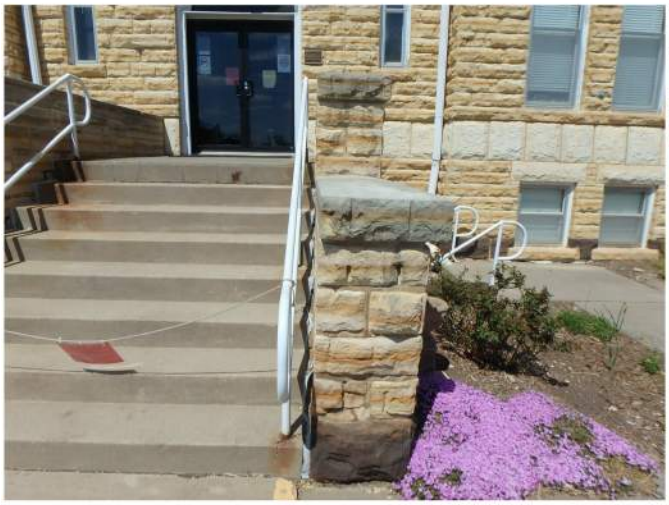
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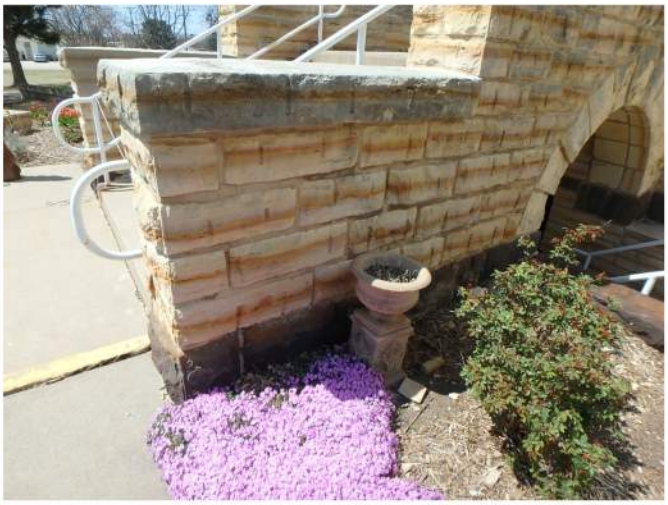
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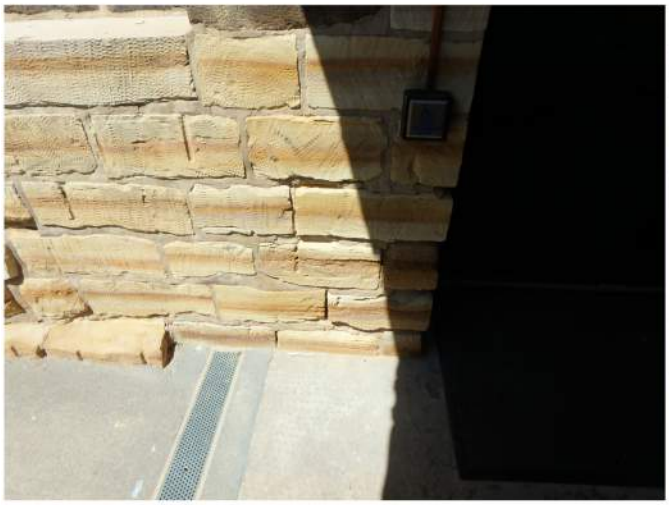
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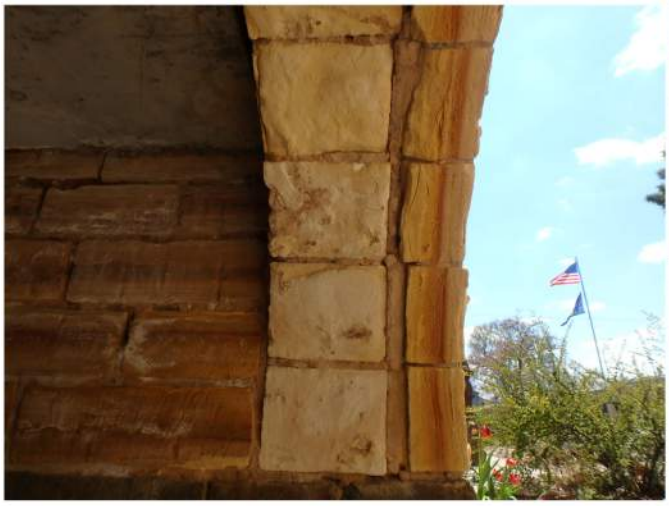
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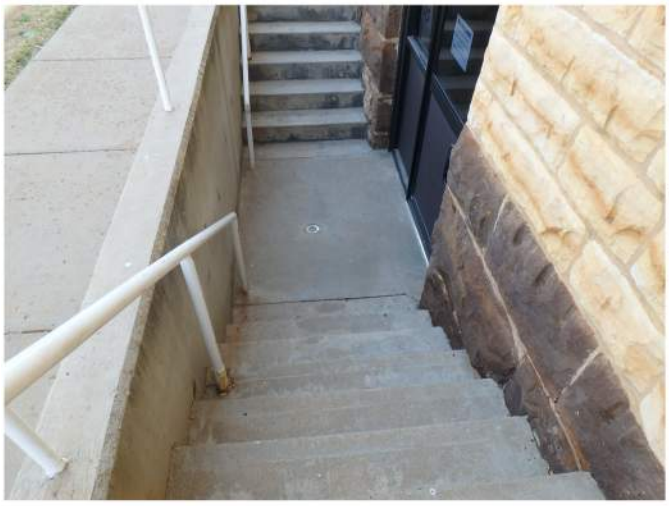
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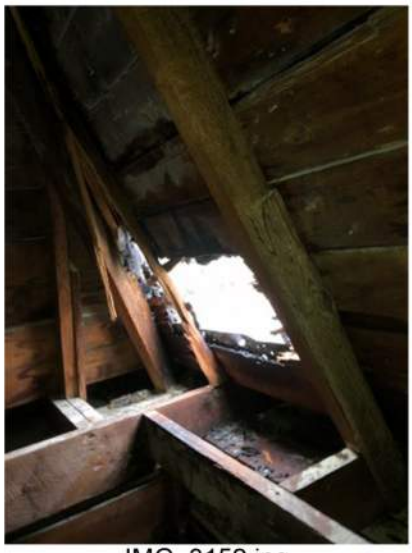
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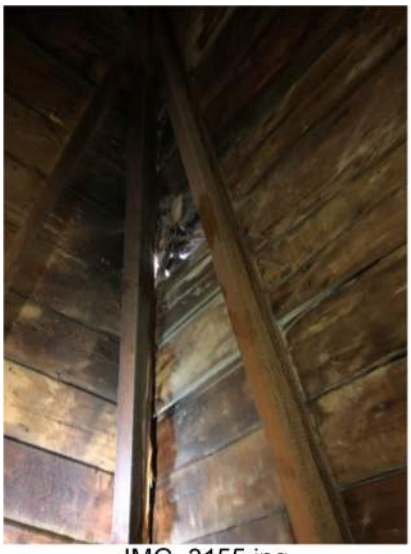
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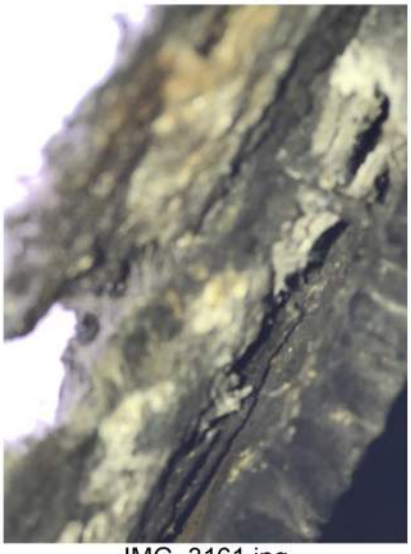
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IMG_3167.jpg



IMG_3168.jpg



IMG_3169 (1).jpg



IMG_3169.jpg



IMG_3170.jpg



IMG_3171.jpg



IMG_5568.jpg



IMG_5569.jpg