

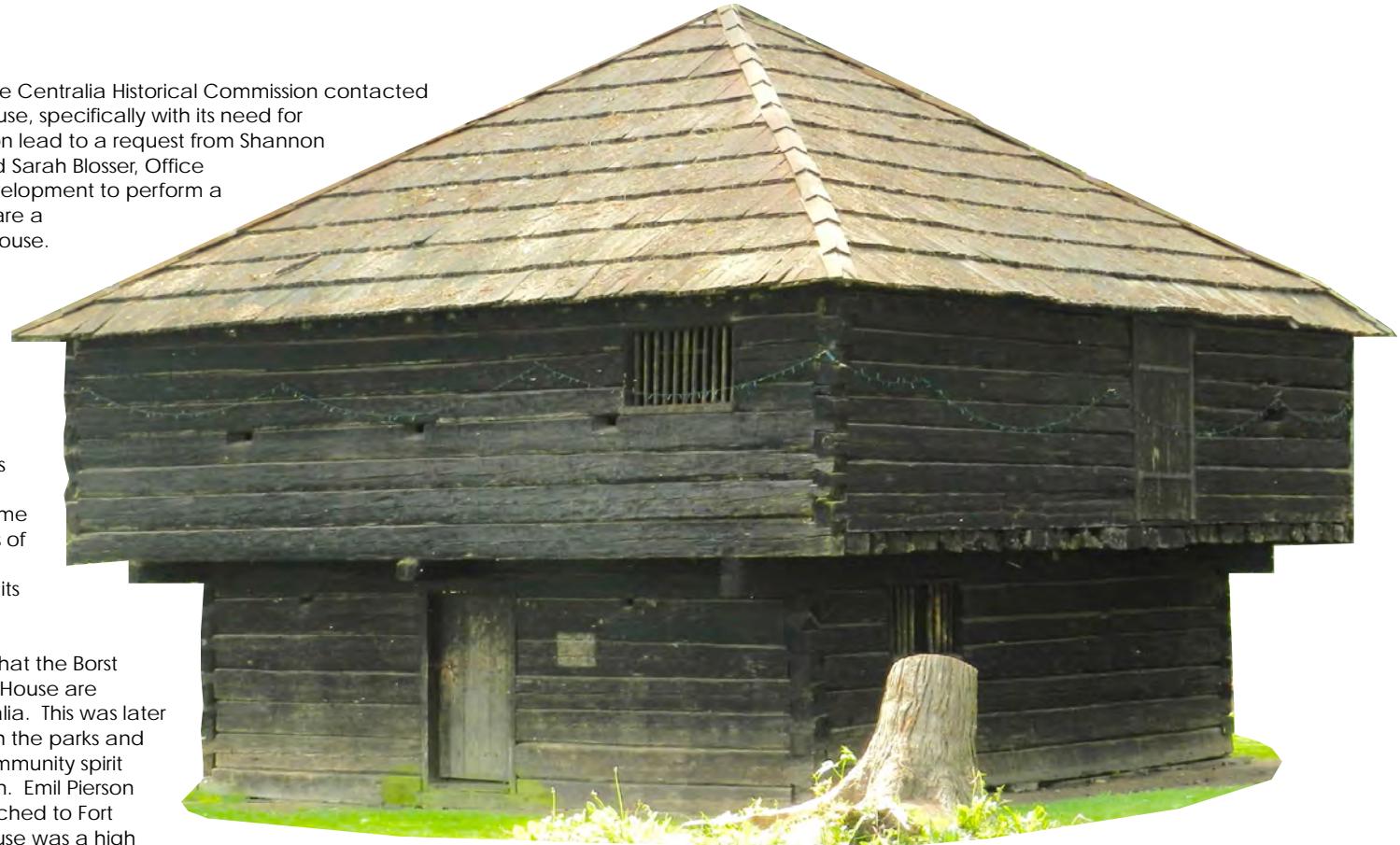
Early in 2014 Roy Matson from the Centralia Historical Commission contacted me relating to the Borst Blockhouse, specifically with its need for preservation. This initial discussion lead to a request from Shannon Murphy-Olsen, City Attorney and Sarah Blosser, Office Coordinator for Community Development to perform a condition assessment and prepare a preservation plan for the blockhouse.

On May 3 a site visit brought me together with Emil Pierson, Director of Community Development, Earl Tennant and Jeff from the Parks Department along with Daniel LaPlaunt, Chair of the Centralia Historical Commission and others from the Historical Commission including Roy Matson. At that time we observed some of the needs of the structure and discussed the city's desire to initiate a plan for its preservation.

It was clear from this gathering that the Borst Blockhouse along with the Borst House are primary heritage icons of Centralia. This was later reinforced by a brief tour though the parks and historic district observing the community spirit that was so obvious at every turn. Emil Pierson indicated that the city was attached to Fort Borst Park and that the blockhouse was a high priority for long term care.

The Centralia website indicated a that "The Historic Preservation Commission, with the help of the City of Centralia, has the goal of restoring the Borst Fort Blockhouse and returning it to its rightful place adjacent to the Borst Home." Little was mentioned on-site of these plans. Moving the structure introduces an additional set of preservation challenges and treatments that should be explored and defined.

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*Historic Preservation is not just about the past.
It is about what we leave for future generations.*



Borst Blockhouse

A comprehensive evaluation of the building fabric was made. Although some of the fabric has been replaced over time the blockhouse continues to retain its historic integrity and character. Additionally, considering the environment and fragility of a log structure it is in relatively good condition but needing preservation attention.

The overall approach for assembling and presenting this document was to provide information that could be helpful and understandable to all who might be engaged in the preservation process and in a graphic format. The general organization is based around historic background and significance, documentation of the building elements before work takes place, current conditions, preservation guidelines to be followed and recommended treatment.



The following links contain historic background and information about the blockhouse:

Historical information	http://www.cityofcentralia.com/Page.asp?NavID=441
Photo slide show	http://www.cityofcentralia.com/SIB/files/Photo%20Album%20Block%20House.pdf
Wiki information	http://fortwiki.com/Fort_Borst
Historic drawings and photos from 1933	http://www.loc.gov/pictures/collection/hh/item/wa0061/
Seattle Times Article	http://www.seattletimes.com/life/outdoors/a-walk-in-the-park-centralia-s-fort-borst-popular-for-picnics-and-play/
Facebook	https://www.facebook.com/media/set/?set=a.399094010131737.83556.399064256801379&type=3
Restoring the Fort Borst Blockhouse	http://www.cityofcentralia.com/Page.asp?NavID=759
HistoryLink	http://www.historylink.org/index.cfm?DisplayPage=output.cfm&file_id=10087
WA Dept. Archeology & Historic	https://fortress.wa.gov/dahp/wisaardp3/



Lat_Long: 46.726757 -122.97967

Borst Blockhouse

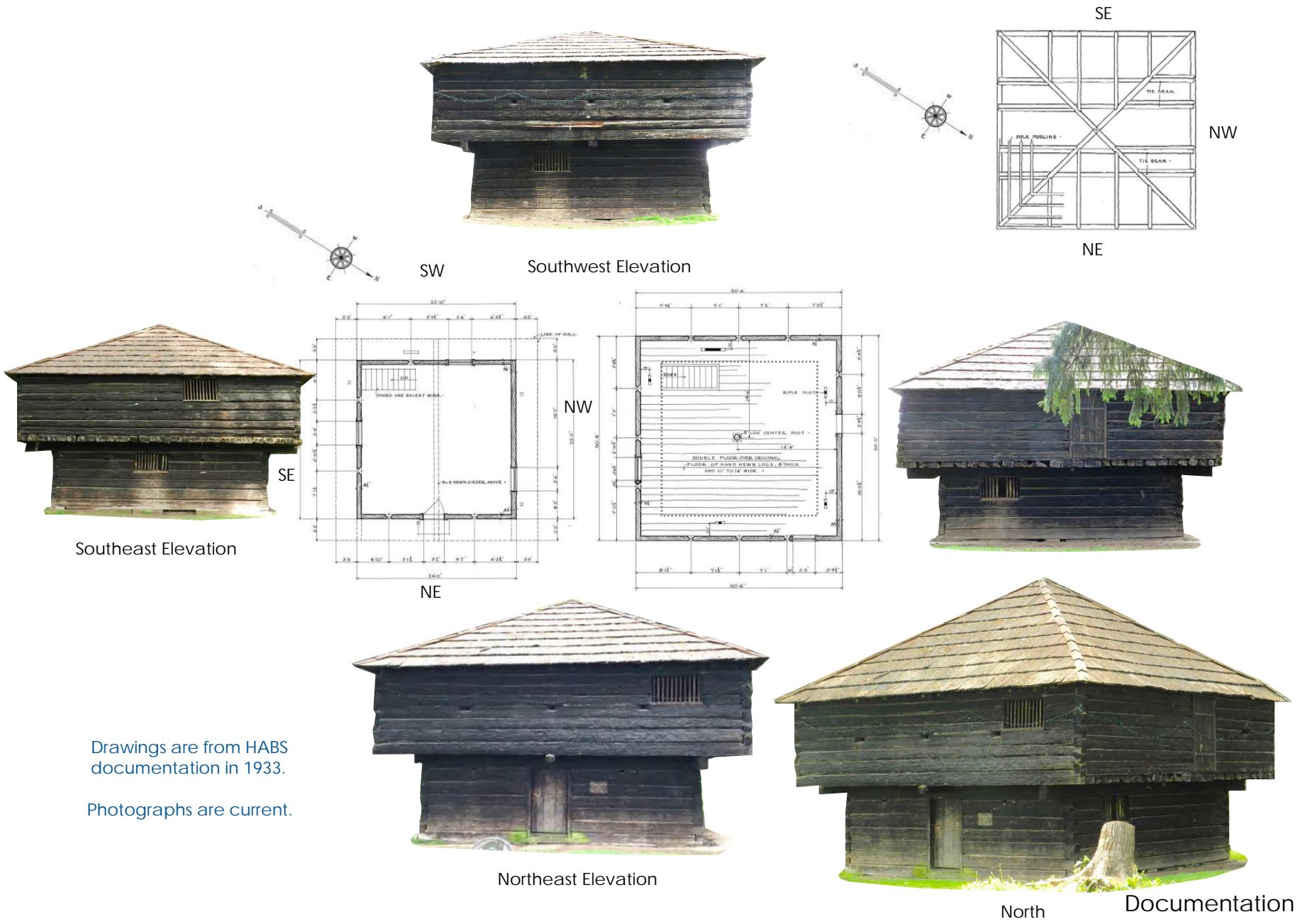
- built 1856 on the Chehalis River near the Skookumchuck River
- used as a residence 1857
- moved in 1919 to Riverside Park
- moved in 1922 to Fort Borst Park

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Significance / Background





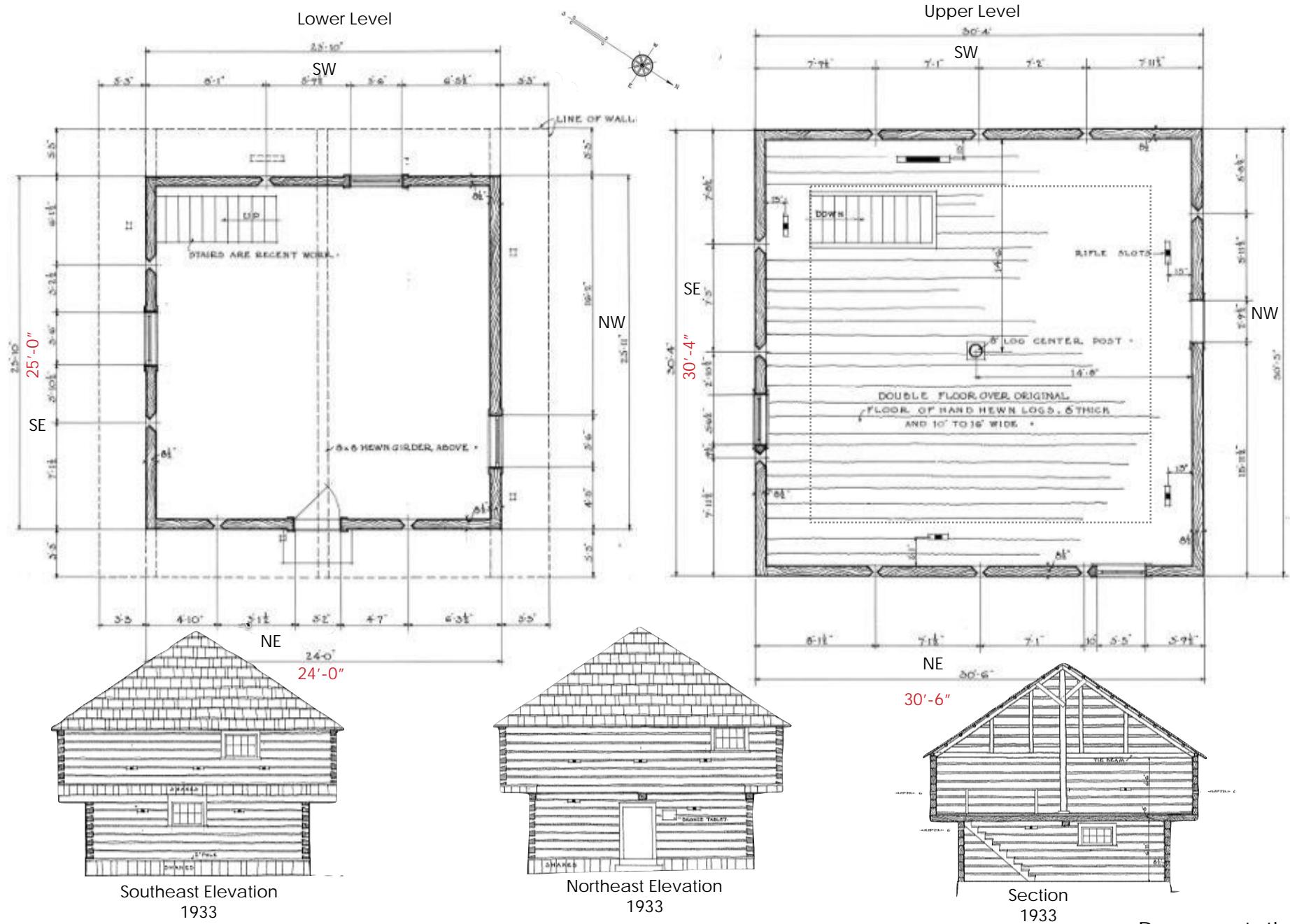
Drawings are from HABS documentation in 1933.

Photographs are current.

City of Centralia, WA

City of Centralia, WA
Condition Assessment / Preservation Plan
Borst Blockhouse





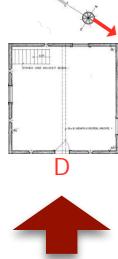
Drawings are from HABS documentation in 1933.

Google on
Historic American Building Survey

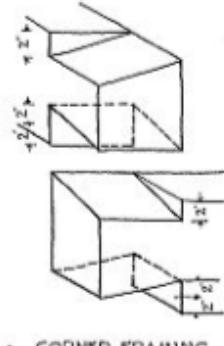
City of Centralia, WA

[http://www.loc.gov/pictures/search/?q=Drawing:
%20wa0061&fi=number&op=PHRASE&va=exact&co
%20hh&st=gallery&sg%20=%20true](http://www.loc.gov/pictures/search/?q=Drawing:%20wa0061&fi=number&op=PHRASE&va=exact&co=%20hh&st=gallery&sg%20=%20true) Documentation





Roofing:
Cedar shake
Approx. 24" exposure
Double coursed



Logs:
Douglas fir, hand hewed
Approx. 8-9" x 12"
Not all logs are original



Deterioration of end of #1

Decayed log ends

88.2° → /

89.5° ←



88.2° → /

87.2° ←

Deterioration of end of beam

Plank door w/ strap hinges
Locking bolt
Not historic; satisfactory for now
Planks scuffed, jamb worn at lock bolt

Plaque missing

Wood rods in slabs with bark
Not historic; satisfactory for now

Shakes not laying flat; suspect
leaks to logs

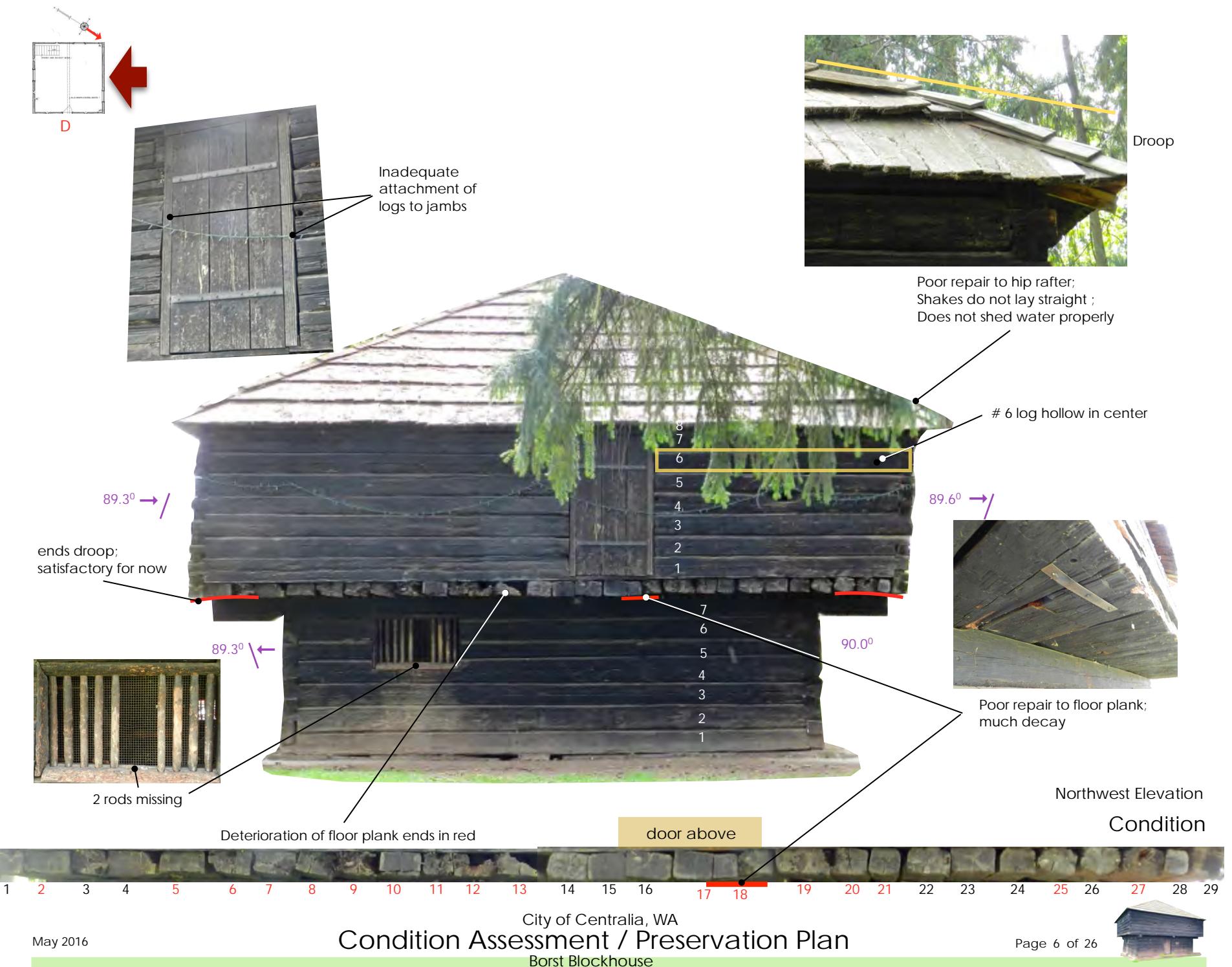
Christmas lights hanging on
hooks screwed into historic
logs not appropriate

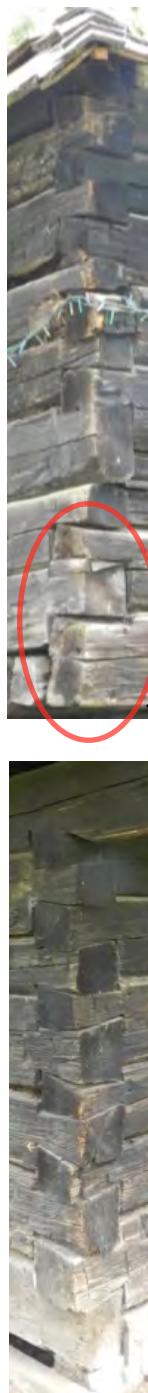
Decayed
log ends



Northeast Elevation
Condition





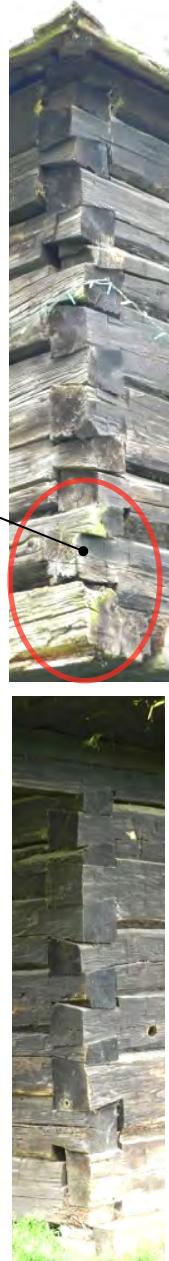


Decayed log ends: Logs to be replaced

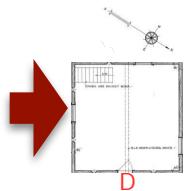
87.6° ←

89.3° ←

Condition described on NW Elevation



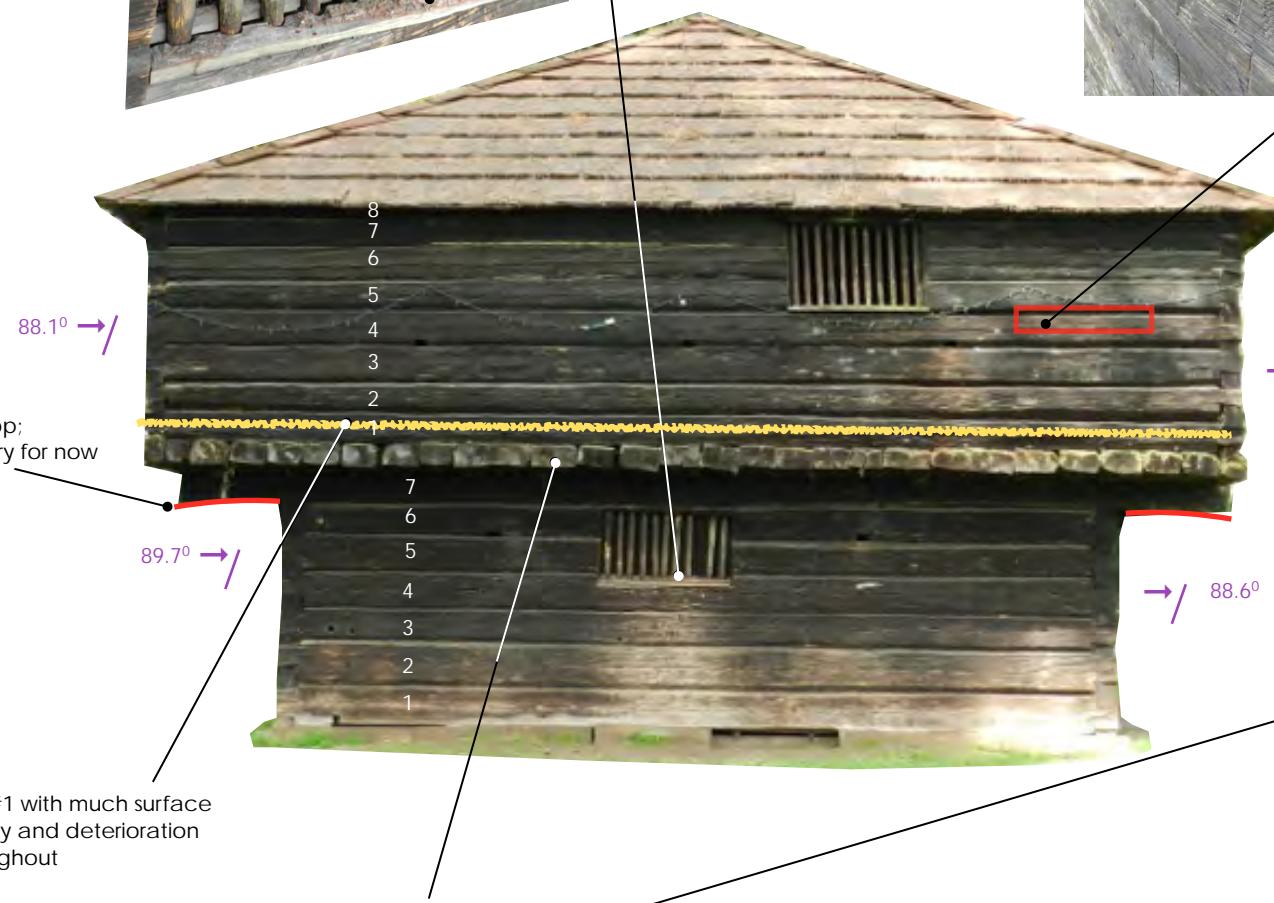
Southwest Elevation
Condition



1 Bark slab sill retainer damaged;
one rod missing



Decay pocket in top of # 4 log



ends droop;
satisfactory for now

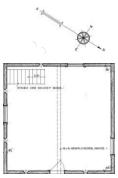
Log #1 with much surface decay and deterioration throughout

All floor plank ends are deteriorated



Southeast Elevation Condition





Surface water drains toward blockhouse



Surface water drains toward blockhouse and puddles around and underneath floor

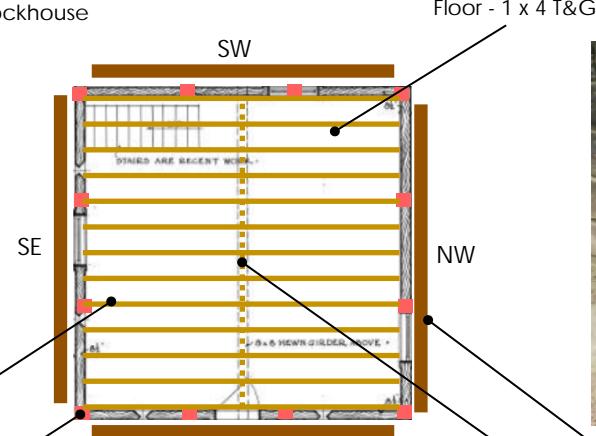


2" x 6" joists approx. 24" to 28" O.C.

concrete footers and timber pads

Unable to observe under floor
Location of concrete foots are approximate
Location and size of floor beam approximate

Possible archeological objects below surface.



Sandstone and timbers along sill logs

Floor beam

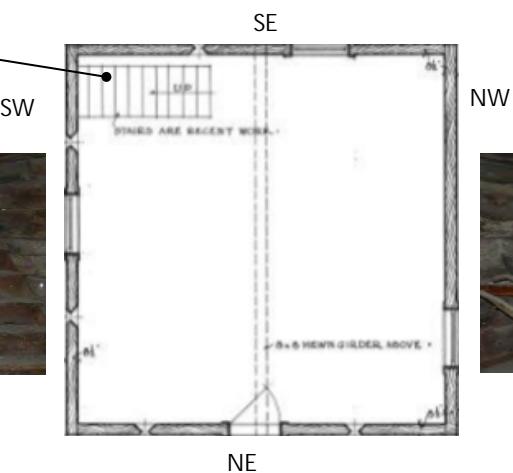
Erosion from roof runoff and surface drainage

Lower Floor / Drainage / Grade Condition





Stairs and railing appear satisfactory at this time.



Interior conditions are generally satisfactory



Environment at time of assessment:

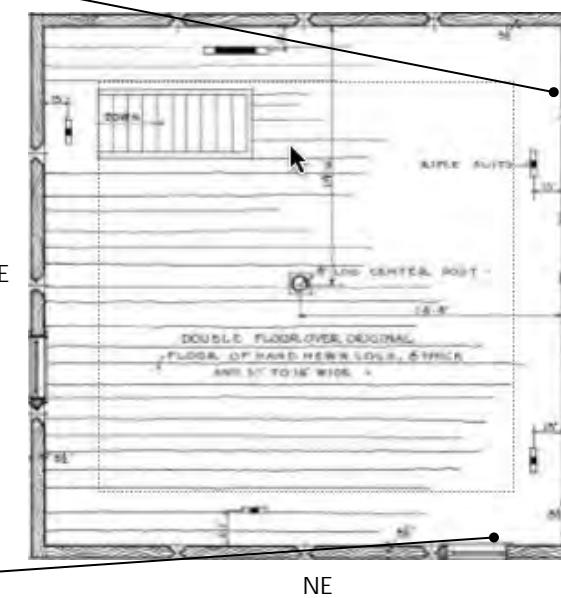
- exterior - 70° , 54% RH
- interior - 71° , 57% RH

Interior - Lower Level
Condition

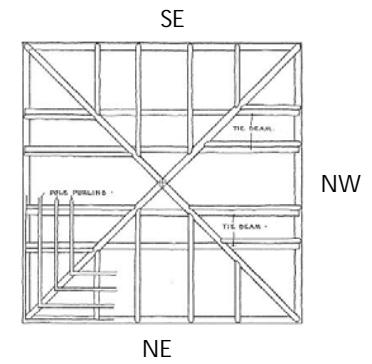




All pole purlins have
been replaced with
recycled lumber

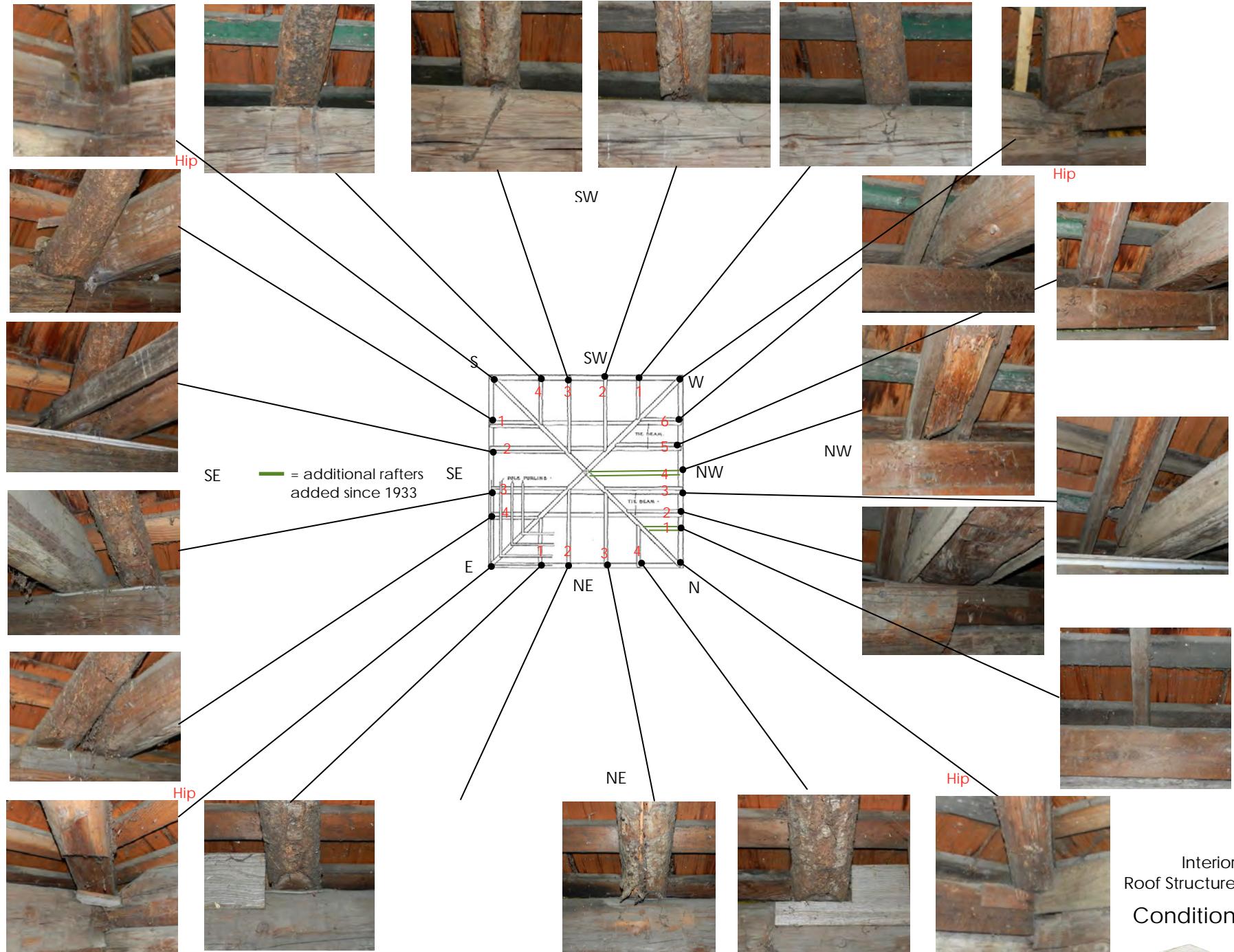


Note: Pole purlins and
many rafters have been
replaced over time.



Interior - Upper Level
Upper Roof Structure
Condition







Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property.

Although the Borst Blockhouse was built in 1880, between two moves and unknown replacements of original fabric, the structure retains its historic integrity and character. It is these values that should be preserved not only by me in my treatment recommendations but by contractors and those who will be working on the structure. This is true for future management decisions and maintenance action over time.

Understanding and following general national preservation standards and guidelines are appropriate for long term care keeping in mind that the goal is to continue to retain the appearance and workmanship so people 100 years, 300 years and more will be able to appreciate and understand early pioneer settlement in Centralia.

The Borst Blockhouse has been a cherished icon of the city for over a century. It, along with the Borst House and Schoolhouse, has defined the community's past.

Standards for Preservation

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

Source:

<https://home.nps.gov/tps/standards/four-treatments/treatment-preservation.htm>

Treatment Standards

Treatment





Planning and implementation of treatment as well as managing and maintaining the blockhouse should consider these guidelines.

Choosing Preservation as a Treatment

In Preservation, the options for replacement are less extensive than in the treatment, Rehabilitation. This is because it is assumed at the outset that building materials and character-defining features are essentially intact, i.e., that more historic fabric has survived, unchanged over time. The expressed goal of the Standards for Preservation and Guidelines for Preserving Historic Buildings is retention of the building's existing form, features and detailing. This may be as simple as basic maintenance of existing materials and features or may involve preparing a historic structure report, undertaking laboratory testing such as paint and mortar analysis, and hiring conservators to perform sensitive work such as reconstituting interior finishes. Protection, maintenance, and repair are emphasized while replacement is minimized.

Identify, Retain, and Preserve Historic Materials and Features

The guidance for the treatment Preservation begins with recommendations to identify the form and detailing of those architectural materials and features that are important in defining the building's historic character and which must be retained in order to preserve that character. Therefore, guidance on identifying, retaining, and preserving character-defining features is always given first. The character of a historic building may be defined by the form and detailing of exterior materials, such as masonry, wood, and metal; exterior features, such as roofs, porches, and windows; interior materials, such as plaster and paint; and interior features, such as moldings and stairways, room configuration and spatial relationships, as well as structural and mechanical systems; and the building's site and setting.

Limited Replacement In Kind of Extensively Deteriorated Portions of Historic Features

If repair by stabilization, consolidation, and conservation proves inadequate, the next level of intervention involves the limited replacement in kind of extensively deteriorated or missing parts of features when there are surviving prototypes (for example, brackets, dentils, steps, plaster, or portions of slate or tile roofing). The replacement material needs to match the old both physically and visually, i.e., wood with wood, etc. Thus, with the exception of hidden structural reinforcement and new mechanical system components, substitute materials are not appropriate in the treatment Preservation. Again, it is important that all new material be identified and properly documented for future research. If prominent features are missing, such as an interior staircase, exterior cornice, or a roof dormer, then a Rehabilitation or Restoration treatment may be more appropriate.

Source:

<https://home.nps.gov/tps/standards/four-treatments/treatment-preservation.htm>

Treatment Guidelines

Treatment



Condition:

- Organic matter from trees and moss growth.
- Possible leaks at north corner
- Inappropriate repair at west hip.
- Shakes have 5 - 10 additional years of functional life

Recommended Treatment:

- Continue to keep roof surface clear of organic matter from trees and moss growth.
- Make minor repairs to roof

Rationale:

- Organic matter on roofs hold moisture against the shakes Possible leaks and poor appearance

Consequences:

- Organic matter greatly accelerate deterioration and greatly decrease their life cycle.

Notes:

Walking on dry shakes can cause them to split resulting in leaks.



Continue to use Wolman F & P Cedar Preservative on clean shakes



Never use a power washer on a historic building !!!



Replace shakes so they will lay flat and not allow water to wet logs. May temporarily place felt between courses.



Replace or readjust damage repair to keep hip in alignment.

Roof
Treatment



Condition:

- Deteriorated logs on SW and SE elevations

Recommended Treatment:

- Replace deteriorated logs on the upper level SW 1 & 2, SE 1 (3 logs total)

Rationale:

- Identified logs deteriorated and are beginning to disintegrate

Consequences:

- Eventually deteriorated portions will fall out leading to settlement of the upper wall.
- Wood decay holds moisture longer which accelerates the deterioration process.

Notes:
Suggest engaging person with proven experience to hew and replace logs

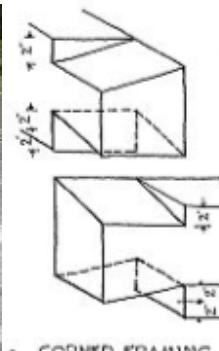
Hew logs to match existing dimensions

Match tool marks to existing workmanship on logs

Lift logs to remove deteriorated log(s)

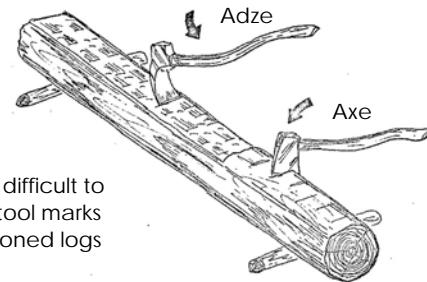
Do not damage existing logs when jacking

Match dovetail notches to fit existing conditions

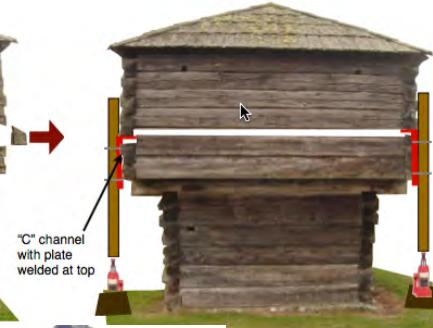
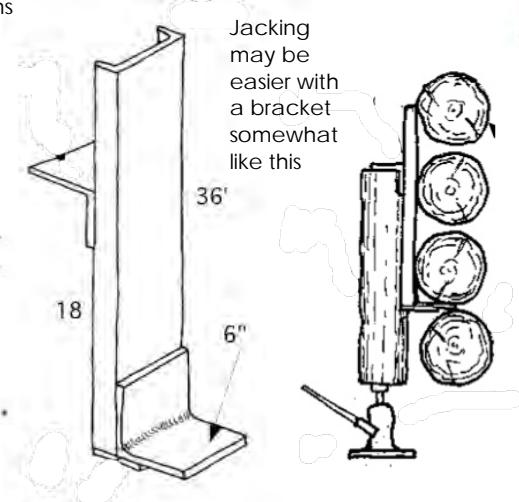


Note that most notches are tight and logs kiss closely throughout the chink space

May 2016



Note:
I will be difficult to match tool marks on seasoned logs



Walls

Treatment



Condition:

- Sill log close to grade and splash will decay faster
- NW upper #6B log is hollow due to decay

Recommended Treatment:

- Insert Impel rods in bottom of sill logs - all 4 elevations
- Incorporate "dutchman" in log 6B

Rationale:

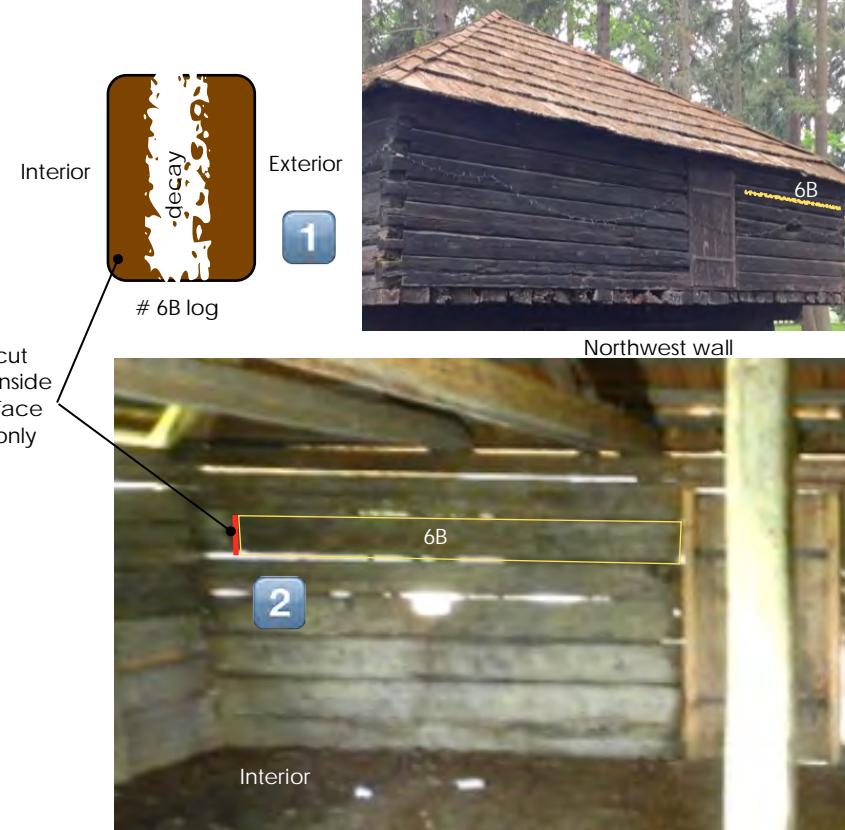
- Borate rods repel fungal decay.
- To preserve historic fabric and appearance

Consequences:

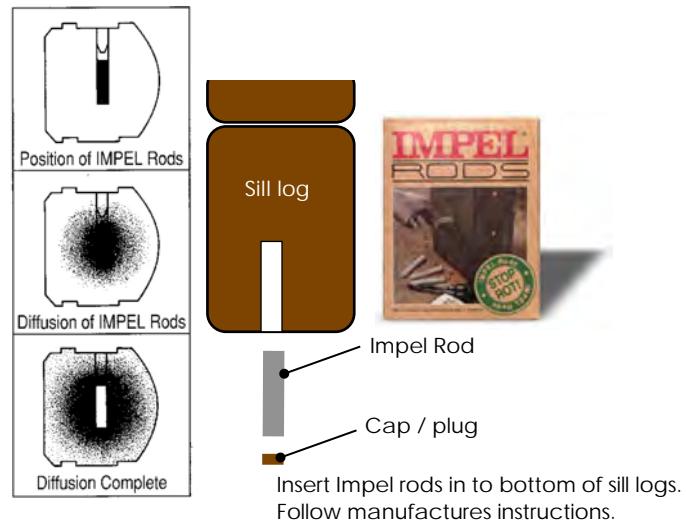
- Untreated log 6B will eventually fall apart like those on the SW elevation

Options:

- Replace log 6B
- Resupport and stabilize interior or 6B with epoxy and polyurethane foam



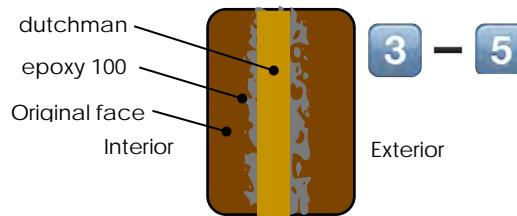
Log 6B in upper NW elevation is hollow in the center but both faces are solid and intact. The approach is to preserve the historic workmanship of the faces and retain the notch without disruption but arrest the decay and resupport the log's interior. This can be done with an internal "dutchman".



http://www.ewoodcare.com/Bor8-Rods--12-X-2_p_13.html

May 2016

1. Log 6B with extreme decay in center
2. On interior make cut and remove interior face without damage.
3. Remove excess decay on inside faces
4. Saturate inside faces with ConServ Epoxy 100 consolidant * a flexible epoxy that will stabilize the interior. Follow manufacturer's directions.
5. Install wood "dutchman" plank to support the two faces. Use appropriate fasteners that will not be visible. Epoxy with fiberglass rods is recommended.
6. Reassemble inner face into position



* = conserveepoxy.com

Walls
Treatment



Condition:
 • SE #4 upper log has decay pocket

Recommended Treatment:
 • Stabilize decay pocket with epoxy.
 Prepare, consolidate, patch, paint

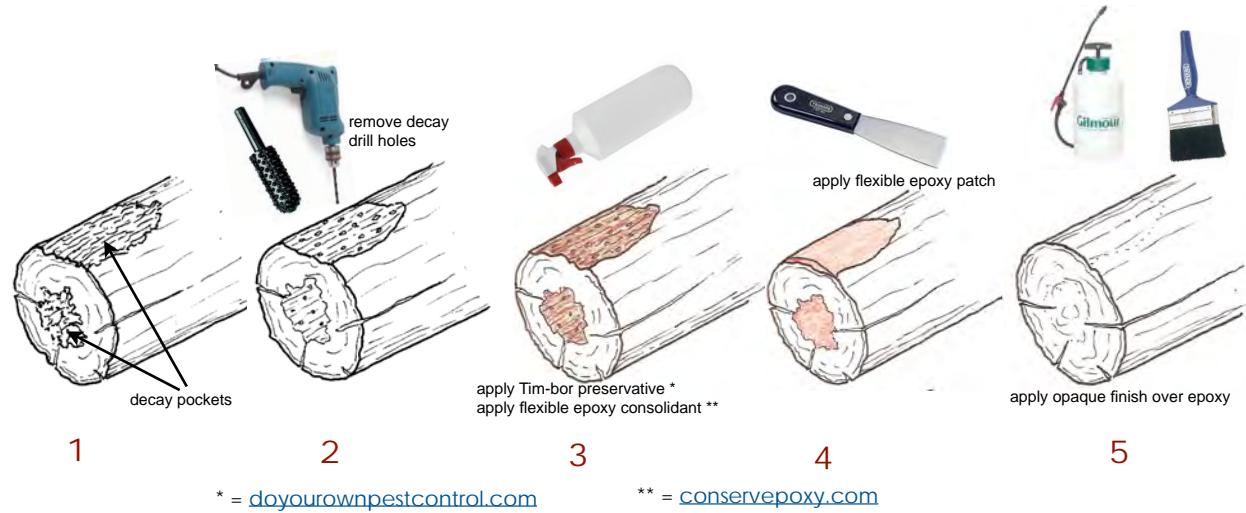
Rationale:
 • Stabilize with epoxy to preserve
 historic fabric and appearance

Consequences:
 • Untreated decay hold moisture
 longer and accelerates the decay
 process

Options:
 • Set in wood "dutchman"



SE



* = doyourownpestcontrol.com

** = conserveepoxy.com



similar treatment on end of
 log in the Davis Blockhouse

City of Centralia, WA

Condition Assessment / Preservation Plan

Borst Blockhouse

May 2016

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Walls
 Treatment

Condition:

- Decay in ends of floor planks and log ends in notches

Recommended Treatment:

- Stabilize decay with epoxy. Clean, prepare decay area, consolidate, patch, paint

Rationale:

- Stabilize with epoxy to preserve historic fabric and appearance

Consequences:

- Untreated decay holds moisture longer and accelerates the decay process

Options:

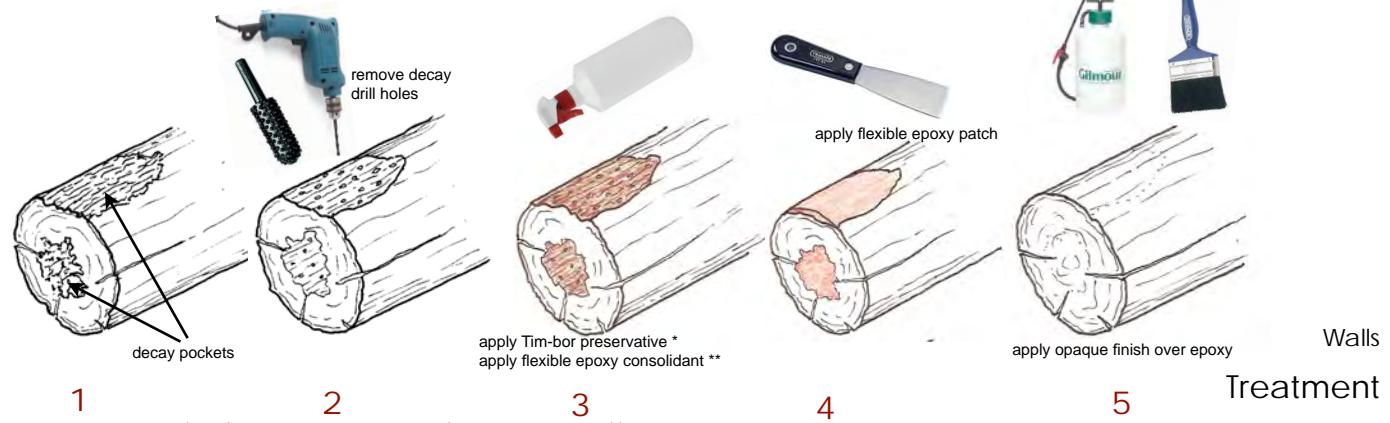
- Splice in replacement ends to planks

Clean with:



1. Log 4 with decay pocket on top
2. Protect face. Remove decay down to good wood with rotary rasp.
3. Saturate with TimBor Preservative * Allow to dry to <15% moisture level. This may take considerable time.
4. Saturate with ConServ Epoxy 100 Consolidant
5. Fill cavity with ConServe Epoxy 200 Patch. Blend surface to existing log
6. Paint over epoxy patch with dark brown paint, smear black paint to blend to color of logs

Never use a power washer on a historic building !!!



Similar treatment on end of log in the Davis Blockhouse, Ebey's Landing NHR

May 2016



Condition:
Early repair to floor overhang on NW elevation at door is inappropriate

Recommended Treatment:
• Replace deteriorated flooring overhang planks with scarf joint and fiberglass pins

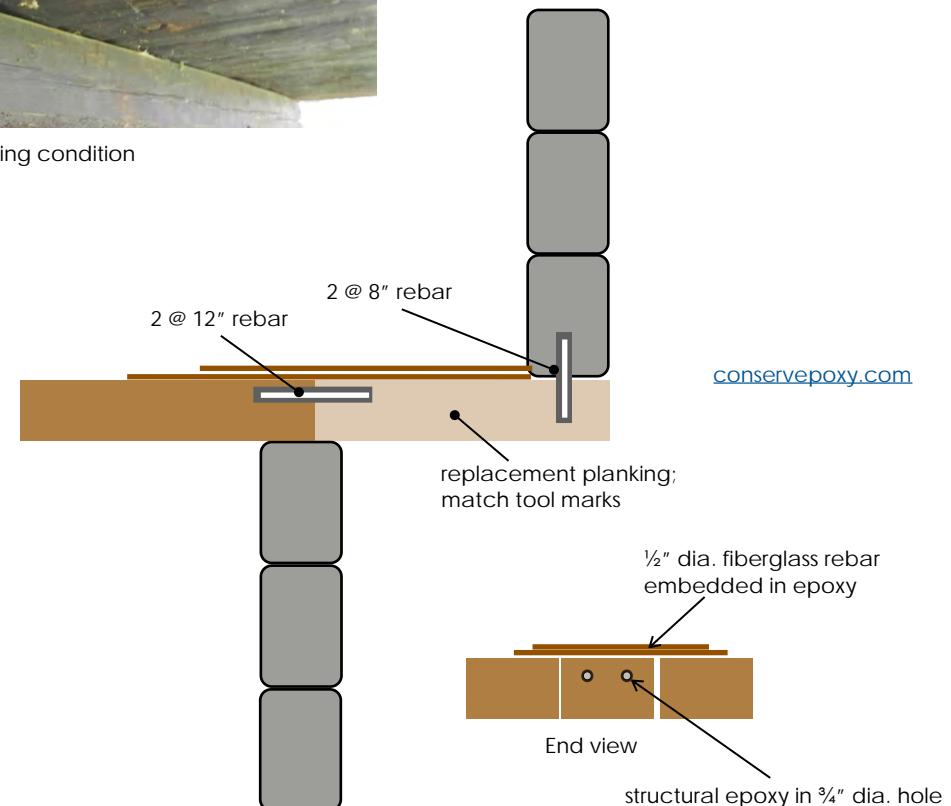
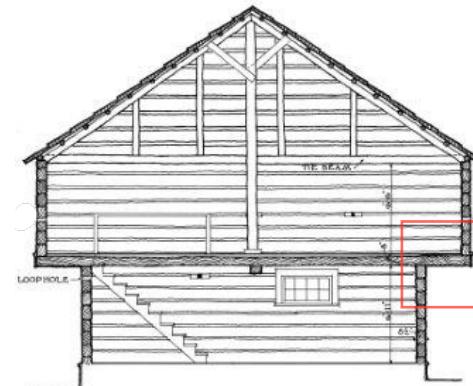
Rationale:
• Poor repair and appearance; plank ends seriously deteriorated

Consequences:
• Fragmented portions of planking will eventually fall out

Options:
• Scarf joint connected with concealed Timber Loc screws



Existing condition



Walls / Flooring
Treatment

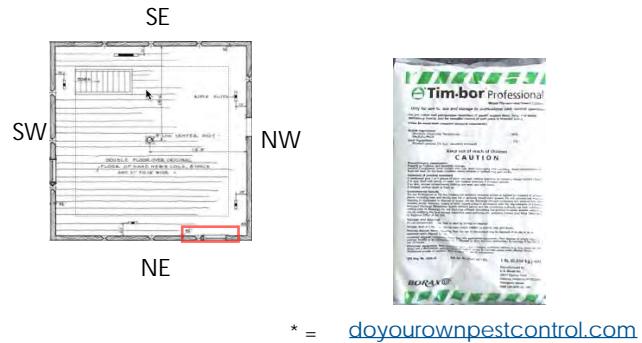


Condition:
Fungal decay in interior of SE logs 2 & 3

Recommended Treatment:
• Treat decay with Tim-bor preservative

Rationale:
• Preserve historic fabric

Consequences:
• Fungal decay will continue to



1. Logs 2 & 3 with much fungal decay
2. Vacuum off all loose decayed wood
3. Saturate decay areas with TimBor preservative *



Condition:
Log checks, chink spaces and connections with dirt, pollen, organic debris

Recommended Treatment:
• Clean logs

Rationale:
• Long term preservation of the logs

Consequences:
• Fungal decay will continue to deteriorate logs
• Debris against logs retains moisture longer and causes accelerated decay

Options:
• May clean exterior surface of logs with a wet wash.



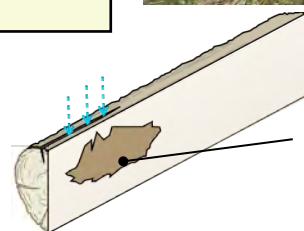
If desired, the exterior logs can be wet cleaned but it is not a necessary preservation treatment for this structure



Do not apply a finish to the logs



BoraCare preservative may be applied to deep checks or into decay pockets



doyourownpestcontrol.com

Never use a power washer on a historic building !!!

City of Centralia, WA

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Walls

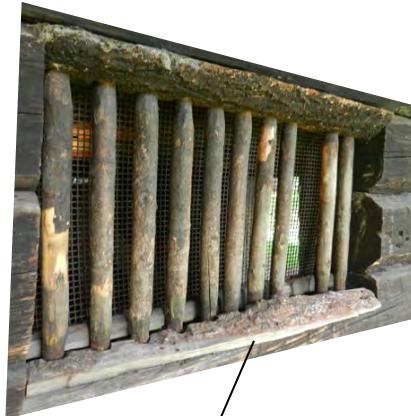
Treatment

Windows

Condition:
Wood rods missing / bark slab sill damaged
Excellent ventilation throughout

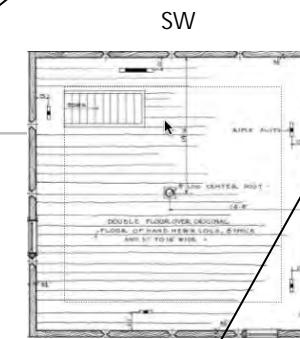
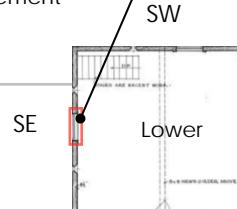
Recommended Treatment:
• Replace rods / repair slab sill

Rationale:
• Security and appearance



Replace missing wood rods

Attempt to repair slab sill rather than replacement



NW

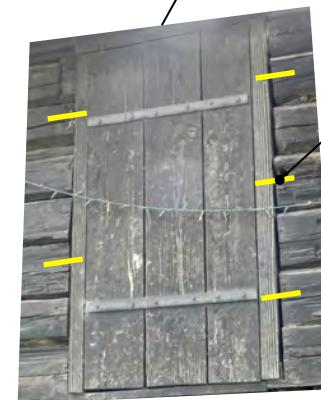
Doors

Condition:
Lower door satisfactory for now

Upper door jambs not adequately attached to wall logs

Recommended Treatment:
• Make only minor repairs for now
• Assure that each log at the upper door has a spike through the jamb.
• Assure that upper NW door is secure

Rationale:
• Security and appearance



Each log is to have one spike through the door jamb

Windows / Doors
Treatment

Assure that upper NW door is secure



It was not possible to observe under the blockhouse.

Condition:
City staff indicated water collects under the floor on occasions.

The grade surrounding the blockhouse slopes toward the NW elevation

Recommended Treatment:

- Raise blockhouse approximately 8" from existing elevation
- Construct foundation and make drainage modifications

Rationale:

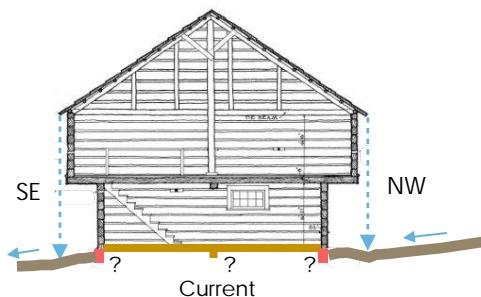
- Provide structural support
- Retain original appearance of logs sitting on the ground
- Capture and redirect surface water and roof runoff away from the base of the structure
- Allow for full ventilation under floor structure but restraining access by animals

Consequences:

- Uncontrolled water and moisture near or under the building fosters fungal decay and mold.

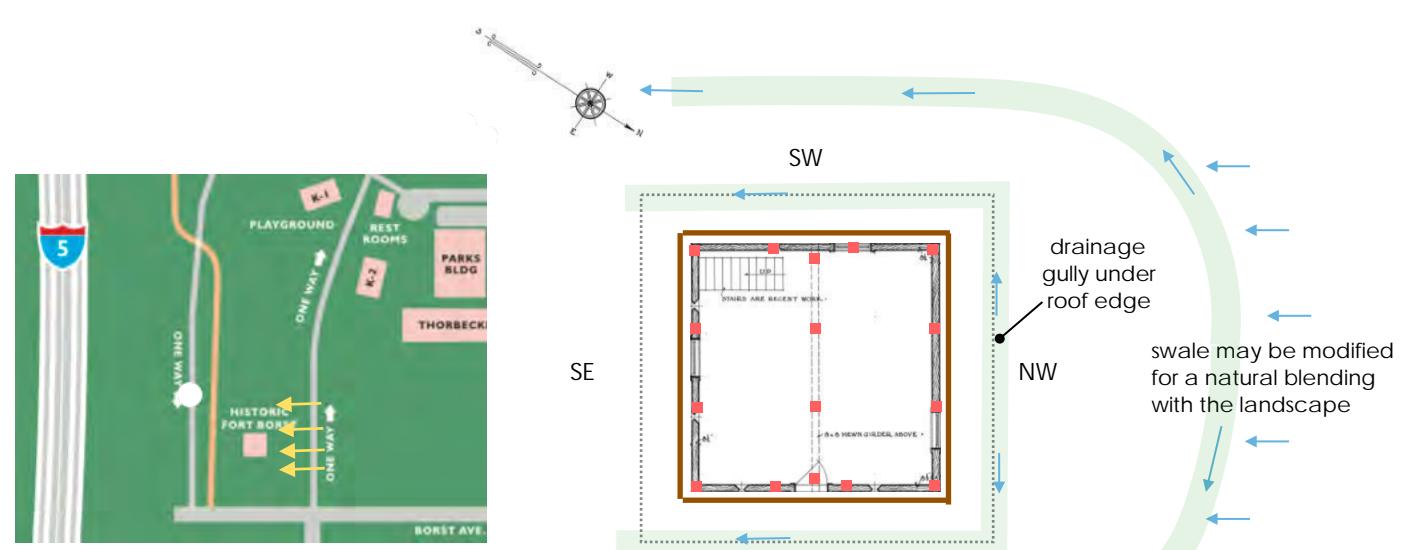
Notes:

- If blockhouse is relocated follow similar treatment for foundation and drainage.

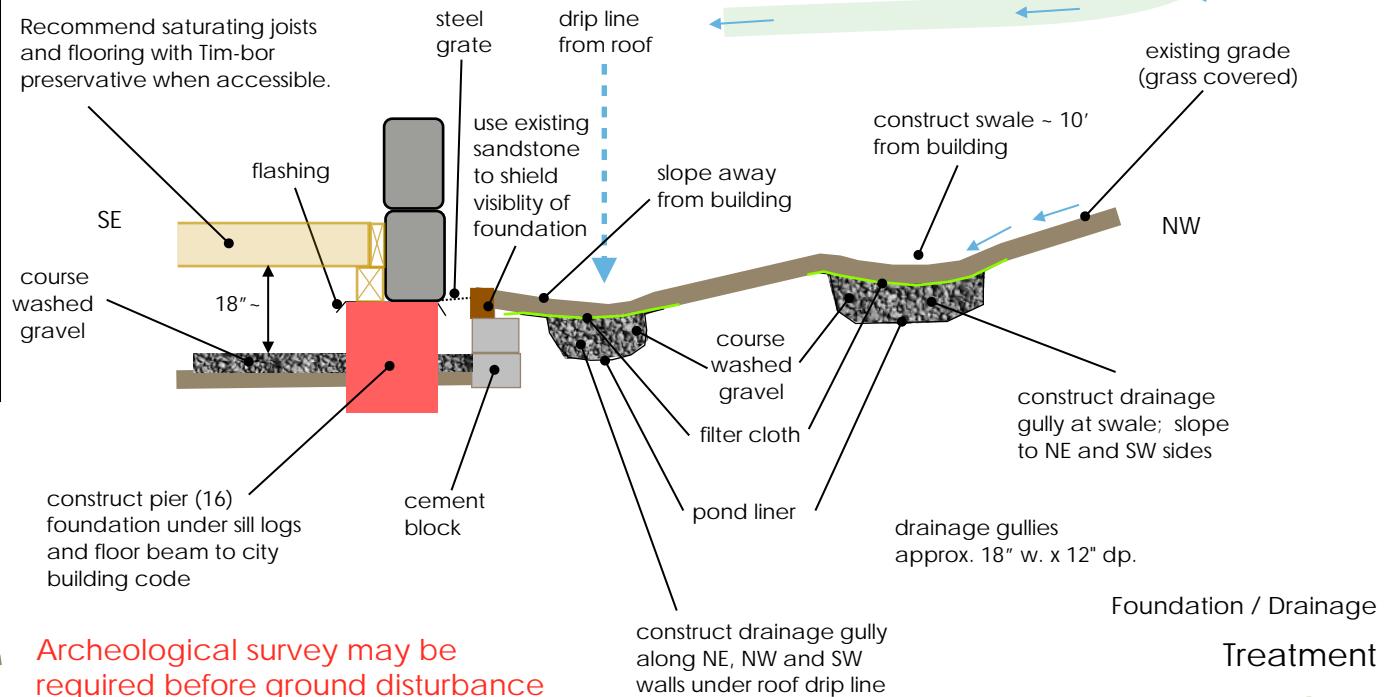


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It is unclear if the city and community want to move the Borst Blockhouse to another location.



Recommend saturating joists and flooring with Tim-bor preservative when accessible.



City of Centralia, WA
Condition Assessment / Preservation Plan
Borst Blockhouse

Foundation / Drainage
Treatment



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Condition:
Unless noted the interior conditions are satisfactory

Recommended Treatment:

- Remove tables
- Clean interior walls
- Apply Tim-bor to interior walls and ceiling planks
- Stairs seem satisfactory

Rationale:

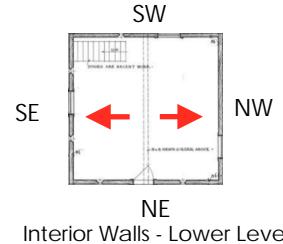
- Tables are inappropriate
- Clean walls before applying Tim-bor

Consequences:

- Much will depend on interpretative plan

Notes:

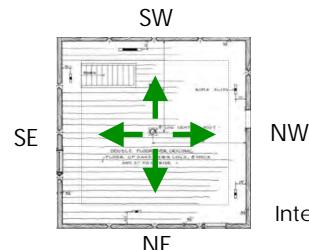
- Walls can be cleaned with OxyClean and Dawn soap with water. Avoid excessive water on floor.



Interior Walls - Lower Level



Clean with compressed air or vacuum with aid of thin saw blade



NW

Interior Walls - Upper Level



Interior Northwest Wall - Lower Level



Interior Southeast Wall - Lower Level



Interior Northeast Wall - Upper Level



Interior Northwest Wall - Upper Level



Interior Southwest Wall - Upper Level



Interior Southeast Wall - Upper Level

Interior Treatment

Never use a power washer on a historic building !!!

City of Centralia, WA

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Condition:

Many rafters have been replaced over time. Two extra rafters were added. All of the pole purlins have been replaced with recycled dimensional lumber, some painted.

Some of the rafters are so deteriorated that scabs have been nailed to the sides of many rafters. Others remain with minimal support.

Connections of roof structure members is minimal.

Recommended Treatment:

- Retain the existing roof structure and covering. Structurally stabilize the rafters for now with 2 x 6 scabs and refasten.
- Apply Tim-bor to all surfaces

Rationale:

- Replacing rafters and pole rafters would require a total reconstruction of the roof. With structural stabilization this can be delayed 20+ years or decided at some later time.
- It is likely the very few people will have access to the upper level.
- Tim-bor retards powder post infestation and fungal decay

Consequences:

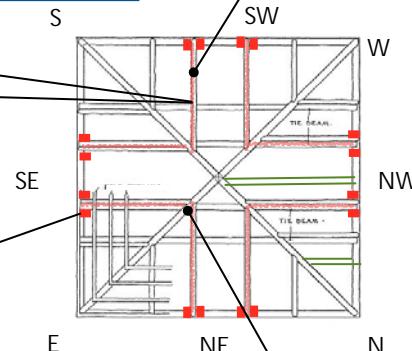
- Roof structure failure



doyourownpestcontrol.com



Identified rafters to be fastened to the plate log with Z-MAX 2 in. x 4 in. 12-Gauge Galvanized Medium L-Angle



Fasten scabs to hip rafters with 6" Timber-Loc screws



Identified rafters - remove existing scabs and replace with 2 x 6 - both sides.
Fasten to rafter with 4" screws.



Be assured that all connections are securely especially cross beams to plates

Roof Structure Treatment



Implementation

In all likelihood finding a contractor may be a challenge. Most of the skills required in this plan involve log hewing square logs, basic understanding of epoxy repairs, and general carpentry. But above all is the need for historic sensitivity throughout all aspect of the preservation work. When working on projects like this it is often easy to lose sight that the primary emphasis is the retention of original or early fabric **AND** matching of workmanship.

When exploring for a contractor look not just for the experience that is presented but look and evaluate the work that was performed. And talk with their clients about their performance on historic log or timber buildings. Working on the Borst Blockhouse is more conservation work than building technology.

And a simple concept that all managers know, planning can be one of the most important aspects of a job.

The unknown for me is the plans for moving the structure. Obviously, my recommendations are for the structure staying in place. This is especially true for the drainage and roof structure stabilization. I will be happy to discuss further experiences I have had with moving log buildings.

Only a few blockhouses remain in Washington. From my perspective I feel it extremely important, and an obligation, to preserve these treasures for people in the future. They are unique and they tell a visual story about early life here in Washington. Retaining their integrity and character are paramount. When the preservation work is complete I encourage the city or parks department to initiate a maintenance or conservation program for it to help assure it remains for as long as possible. The same is true for the Borst House, Carriage House, Schoolhouse and other heritage buildings in Centralia. Preventive maintenance programs in particular are proven ways to retain the value of an important asset and to control the deterioration process before costly repairs. In this case the issue is to help reduce loss of historic fabric. When ready I will be pleased to talk with you about that as well.

Thank you for including me in on your preservation efforts in Centralia.



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*Historic Preservation is not just about the past.
It is about what we leave for future generations.*

Summary

