T. A. Moulton Barn

Preservation Plan

Grand Teton National Park

Revised
6/16/14

Prepared by:
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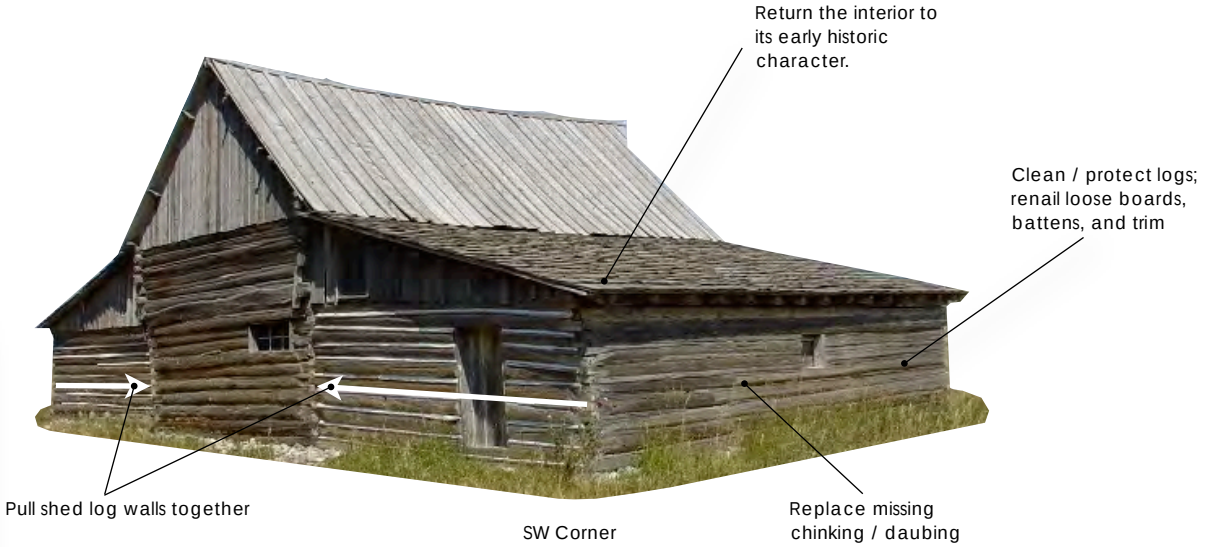
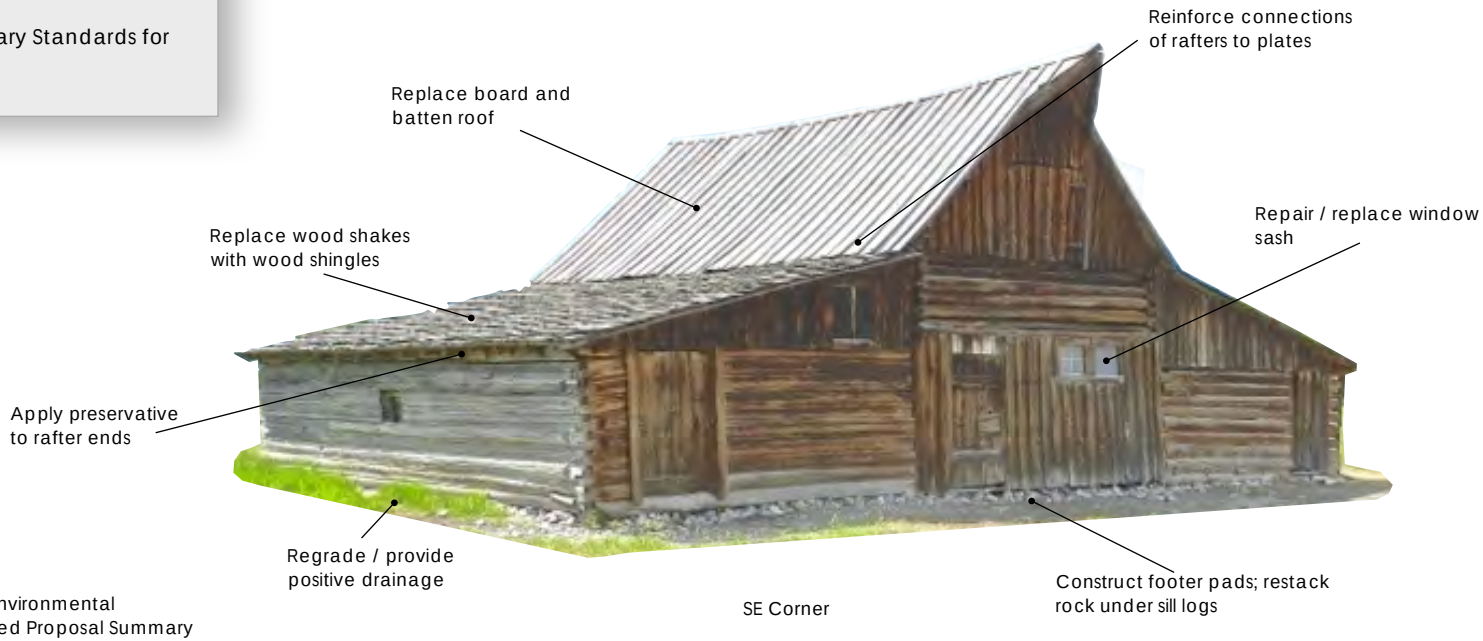
Preservation Goals:

- Retain and preserve the historic and visual character defining features
- Repair rather than replace historic fabric
- Place focus on stabilizing and preserving barn in current "unoccupied homestead" condition
- Follow Secretary Standards for Preservation





* Mormon Row environmental Assessment: Preferred Proposal Summary

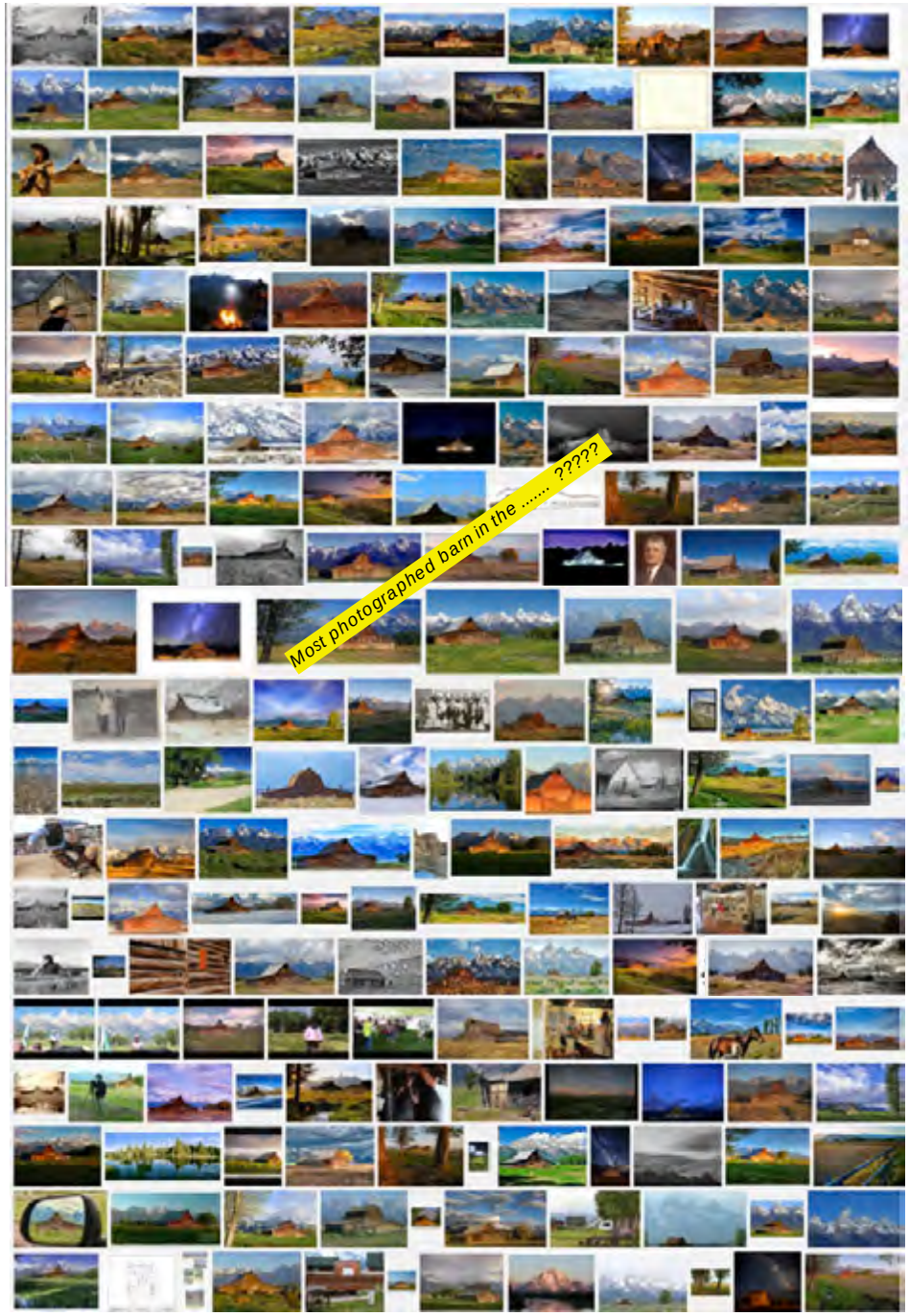
Introduction

There has been recent awareness and concern about the condition of structures and landscape features throughout Mormon Row. Most of the original buildings are either missing or are in serious condition from a preservation standpoint. Character defining features are critically deteriorated to the point where details and workmanship is being lost. Some are being severely impacted by weather, leaking roofs, and decay from moisture. Some are near collapse. All are suffering from a lack of conservation care and neglect.

But there has been recent interest from the Park, GTNP Foundation, the Moulton Family, many individuals across the country, and photographers about the long term preservation of the T. A. Moulton Barn, often considered the icon of the historic district. Although the barn has recently been stabilized there are immediate concerns about the deterioration of the roof coverings, log walls, windows, doors, and foundation. Most important is the long term preservation of this significant historic structure.

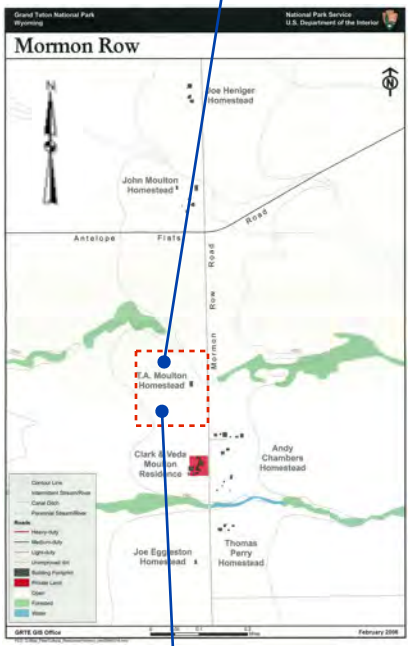
This document was funded to provide a comprehensive Preservation Plan for the work that is immediately needed. Consideration must also be given to continuous inspection and preventive conservation when complete. It has been prepared in a simplistic format for all who will be engaged in the planning and implementation of this effort as well as provide documentation for the future.

My appreciation to Katherine Wonson, Cultural Resources Specialist, Grand Teton National Park for her assistance and dedication to preserving the Park's historic and significant treasures.



Screen shot from Google search

Contents



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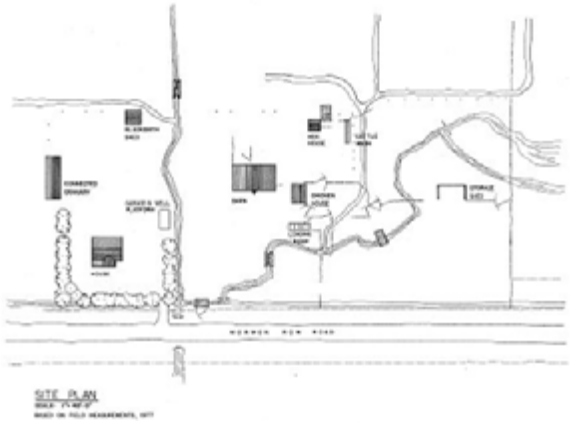
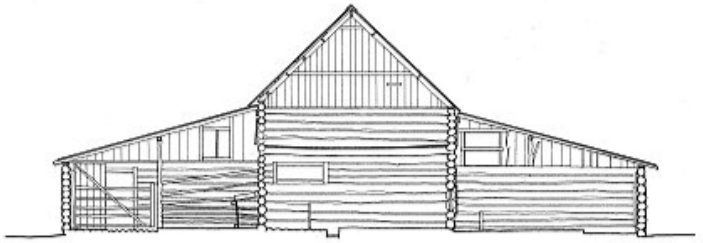
Revised 6/16/14

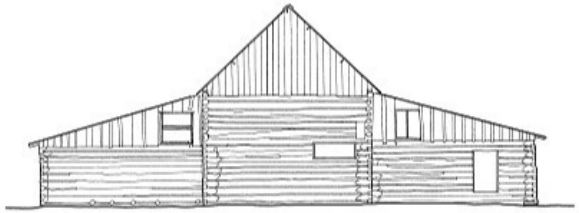
Location





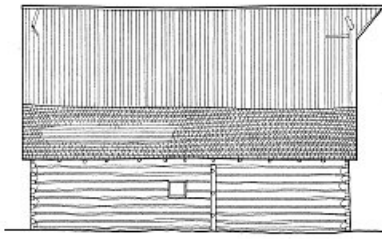
Section

SE corner

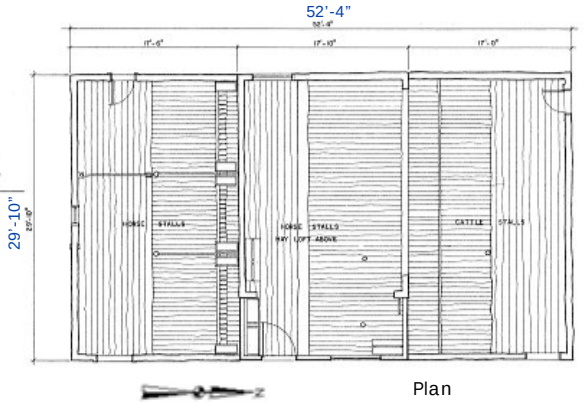


West Elevation

NE corner

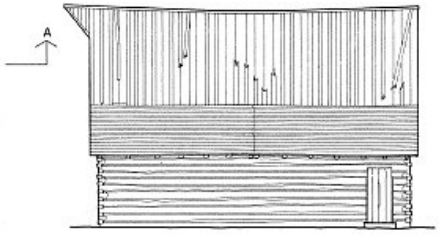


South Elevation



Plan

Note: Some of the floor planking shown in these 1977 HABS drawings is incorrect. It has been corrected in the flooring section of this Plan.



North Elevation

HABS 1977

East Elevation

HABS Documentation

Historic American Building Survey drawings & photos 1977

http://www.loc.gov/pictures/item/wy0033.sheet.00001a/resource/

T. A. Moulton Barn

Preservation Plan

Description

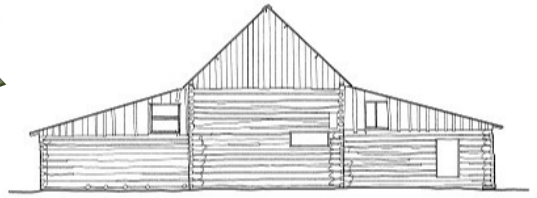
SE corner

http://youtu.be/yjwlClMRIFQ

Go here for an overview of the T. A. Moulton Barn

Compliments: Ironcreekphotography.com

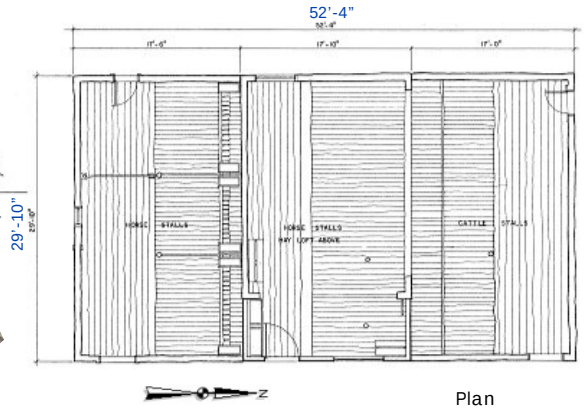
West Elevation



The Picture comes to life

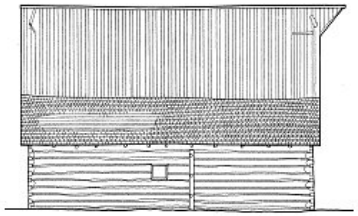
http://youtu.be/1S6GTZjygGU

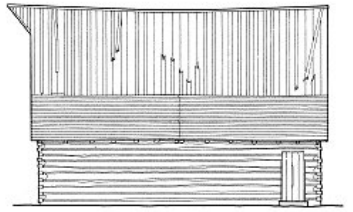
South Elevation



Plan

North Elevation





East Elevation

Revised
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T. A. Moulton Barn

Preservation Plan

Barn History:

T.A. Moulton Barn (1913 – 1934, HS-1324)

1913 – 1934: Construction date

1913: T.A. Moulton built central flat-roof component of his barn.

1928: Constructed gabled roof/hay loft on barn.

1934: Constructed south shed-roof horse stalls on barn.

1939: Constructed north shed-roof component on barn for hogs.

1954 – 1956: Electricity arrived at Mormon Row.

ca. 1950s: Grand Teton NP acquisition of Mormon Row and removal of all other structures on site except the barn.

1994: Moulton Family made repairs to the shed roofs.

1995: 1950s power poles and wires removed.

1997: Emergency stabilization by Michigan volunteers of the roof structures including the replacement of the upper plank roof, log replacement, installation of window security panels, and placing rock under the log walls.

2012: NPS installs FEMA Raker Shore bracing to internal Walls - 6 locations

2013: Volunteers from across the country stabilize interior by installing vertical posts to interior log walls, place cabling to restrain plate movement, jack and block south shed wall, and make roofing repairs.

Mormon Row History and Importance:
http://www.greateryellowstonescience.org/download_product/1047/0

https://www.youtube.com/watch?v=a2WDYcIHSho

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Character Defining Features

- Log barn with hay mow and side sheds
- Gable roof with board and battens / shed roofs with shakes (shingles)
- Hay hood
- Board and batten siding at gable ends and east center section
- Plank doors / simple windows
- Exposed rock foundation

http://www.nps.gov/history/history/online_books/grte2/hrst.htm

Identification:

Feature: T.A. Moulton Barn	
Feature Identification Number:	95300
Type of Feature Contribution:	Contributing
IDLCS Number:	051886
LCS Structure Name:	Moulton, T.A. Barn
LCS Structure Number:	HS-1324

pre 1977

2013

T. A. Moulton Barn

Preservation Plan

Historical Significance

National Register Date: 06/05/1997

Significance Level: State

Contributing feature of the Mormon Row HD, significant at the state level, under NR Criteria A&C for its association with western settlement/ agricultural development, vernacular architecture,& engineered irrigation systems. Period of Significance: 1908-1950. Individually eligible under Criterion C.

Mormon Row

"Mormon Row constitutes one of the best remaining examples of early 20th century western farming communities within the National Park system and the park is dedicated to the preservation of this site and adding interpretive elements so that visitors can better appreciate Mormon Row."

Management Plan for Buildings Listed on the National Register of Historic Places, GTNP, February 2000

Integrity:

Overall the barn retains integrity

Setting: Many early structure have been removed or are rapidly being lost to deterioration throughout Mormon Row. The homestead farmhouse, granary, blacksmith shop, chicken house, fencing with gates, corrals, and the historic headgates and bridge over the irrigation ditch are missing.

Design: Little visual change to the barn exterior since 1939. Extensive impact to interior stalls and flooring when 2012 bracing was installed

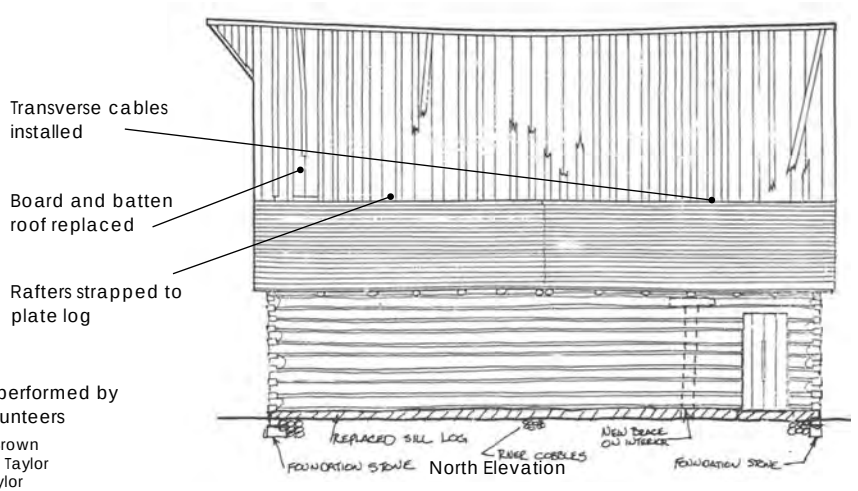
Materials: Similar material replacement to the original. In 1990's pole rafters, shingle shed roofs, and board and batten gable roof were replaced.

Workmanship: Retains integrity

Feeling: Exterior retains integrity

Association: Retains integrity

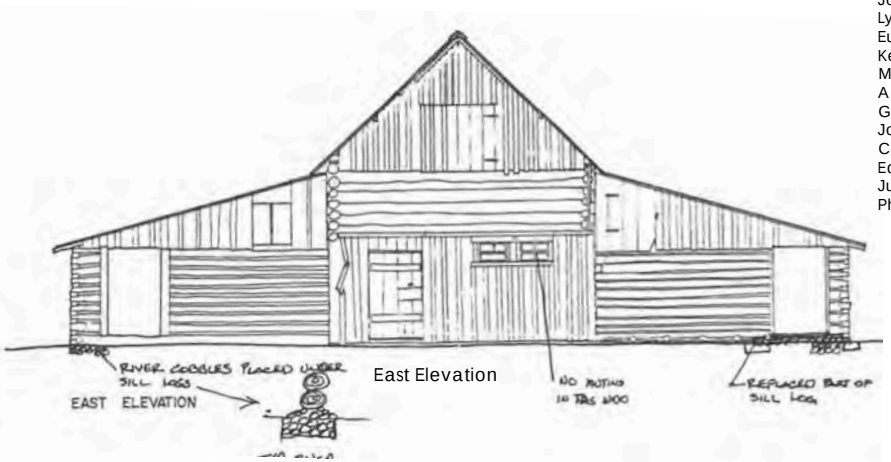
Watercolor by Margaret Taylor
1997



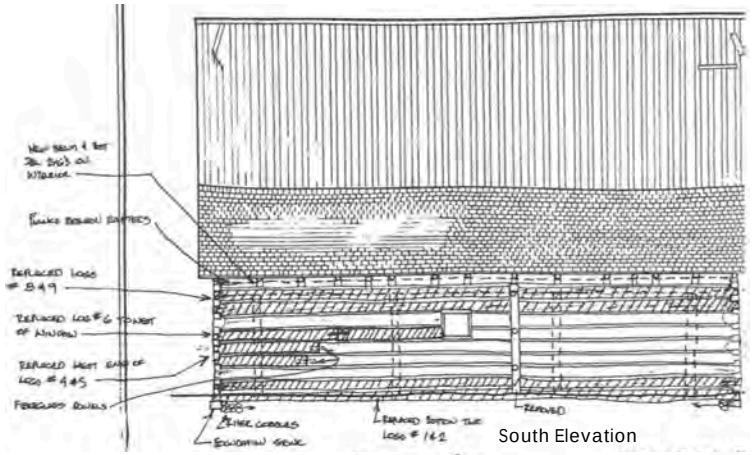
North Elevation

Preservation performed by Michigan Volunteers

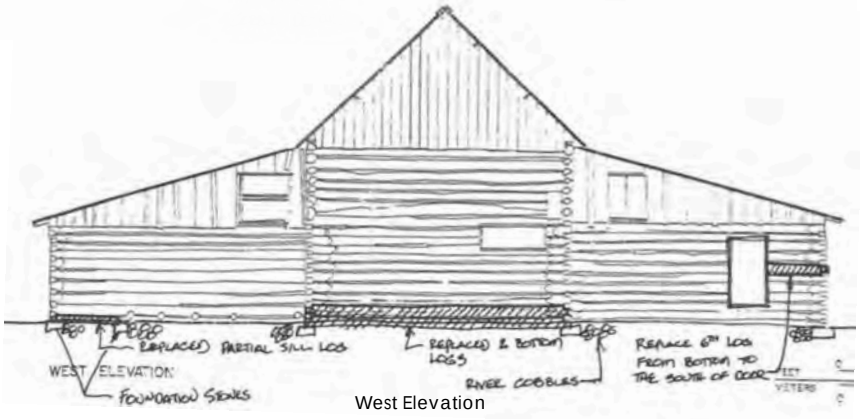
Edward Brown
Margaret Taylor
Judith Taylor
Elisabeth Brown
John Shives
Lynda Meade
Eunice Wood
Kelly Hyvonen
Marv King
Amelia King
Grahm King
Joe Bouchard
Connie Doyle
Edna Eckert
Julie Kain
Phyllis Gloden



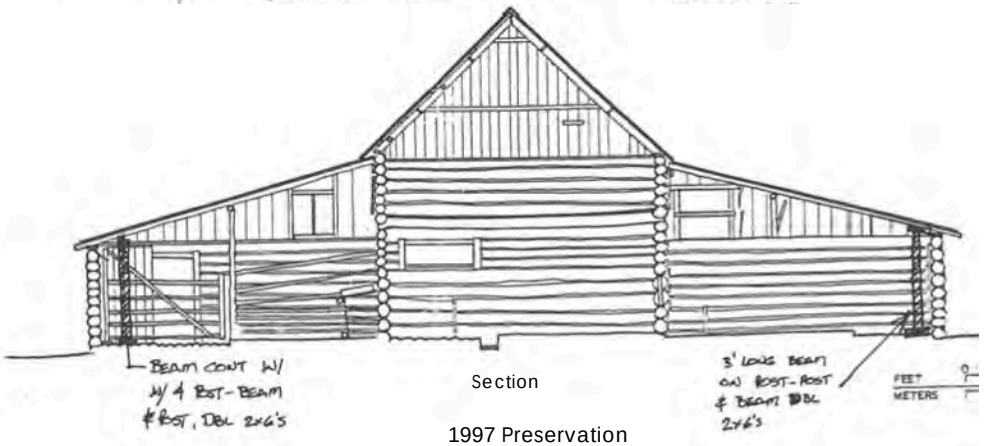
East Elevation



South Elevation

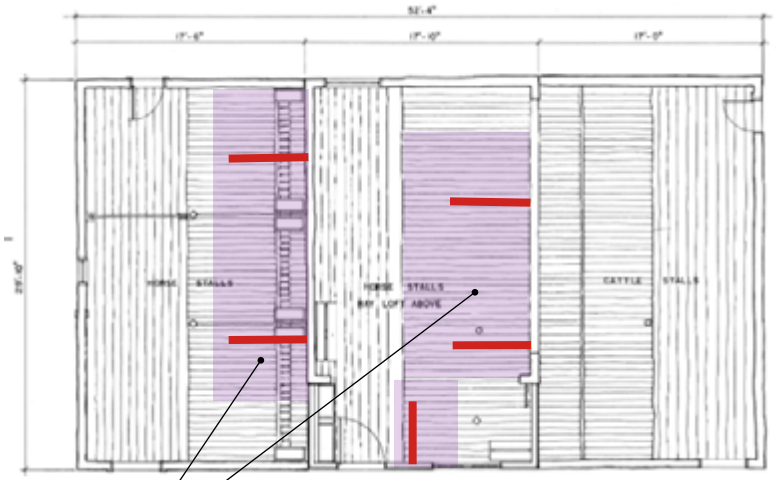


West Elevation



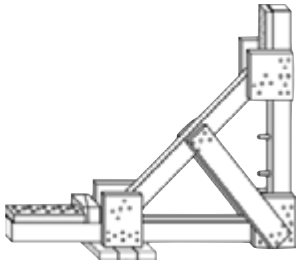
Section

1997 Preservation

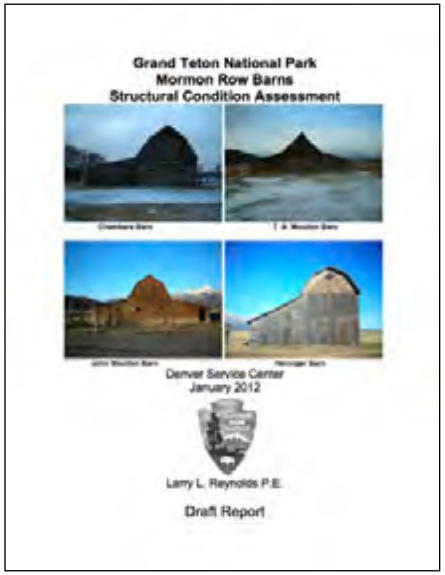


Flooring, mangers, and stalls have been damaged

Preservation performed by GRTE Maintenance



FEMA Raker Shore Brace



2012 Stabilization

Clean / organize interior; remove deteriorated wood; label and store other selected at another location.

Refasten roof planking. Reset or renail loose and lifting boards and battens. Screws may be used if needed.

Make repairs to shake roof. Replace missing shakes or where there are openings through to the interior; repair split shakes; reset popping nails.

Install flashing between south roof panels when feasible and if needed.

Be assured of connection of rafters to plate logs.

Install posts to walls of center section. Bolt posts together through chink areas with all-thread. Then remove unnecessary scabs.

Install cables across the plates and diagonally across the corners. Move north shed cables up. Consider relocation of south shed cable.

Install diagonal plank across mow floor joists. Screw plank to joists.

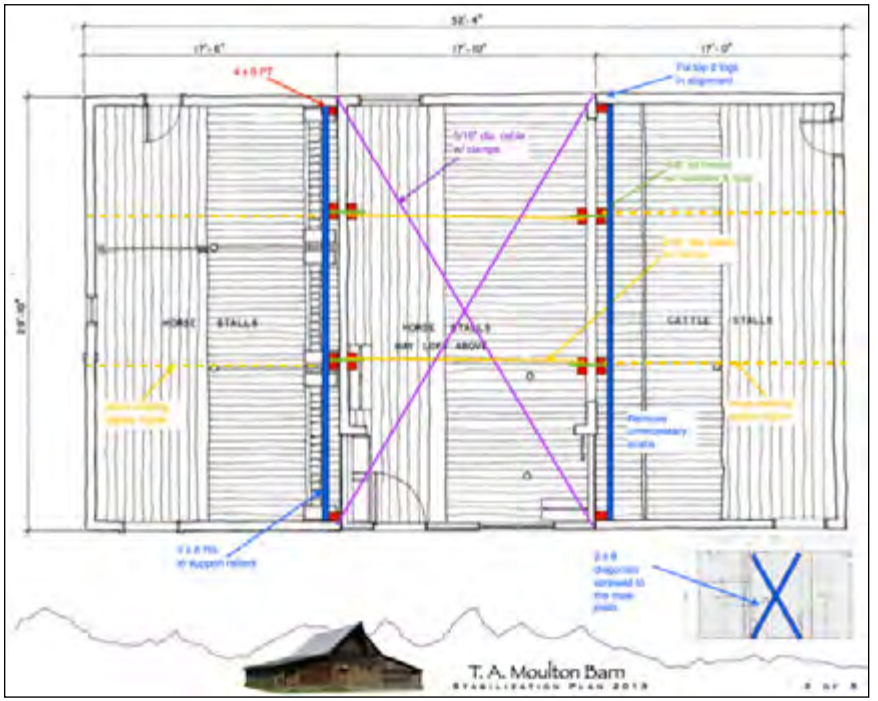
Place two logs on west wall of north shed into alignment; fasten in place.

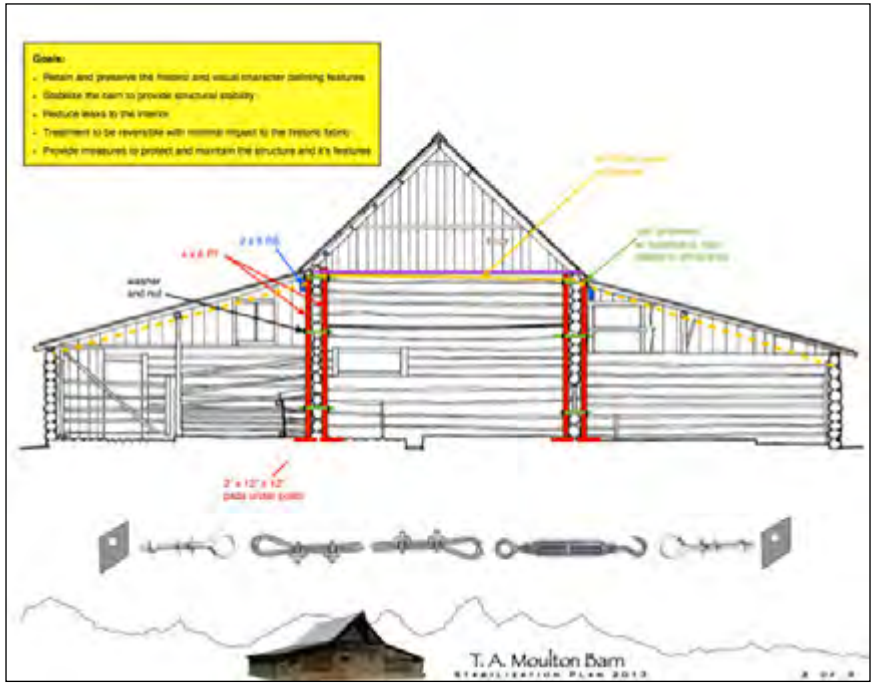
Repair / secure doors all around.

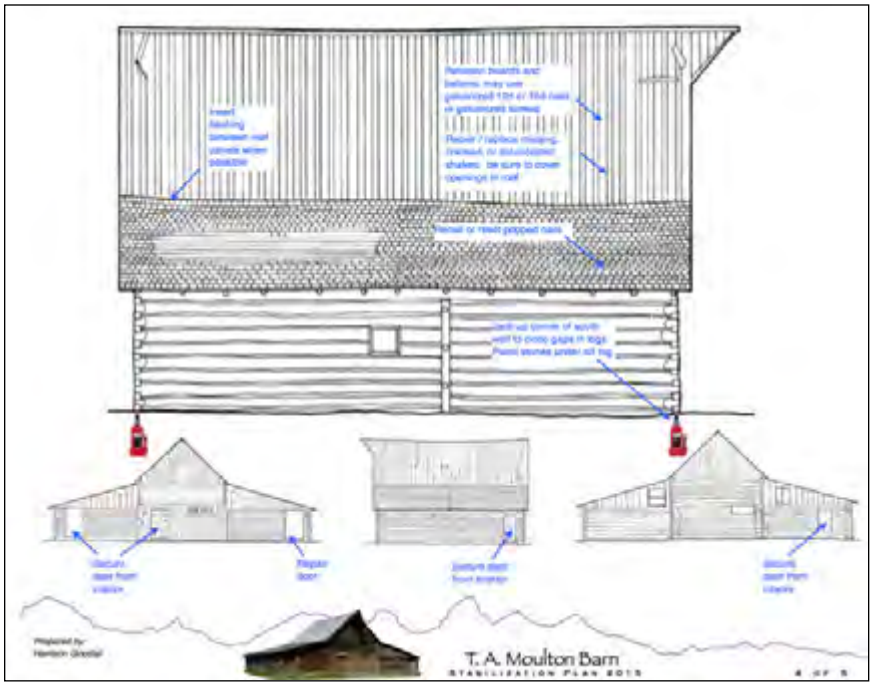
Jack up south wall to close gap; place on rock for now

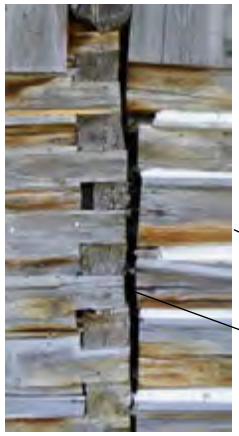
Preservation performed by Volunteers

Edward Brown
Judith Taylor
Elisabeth Brown
Sherry Birch
Sheila Bricher-Wade
Fred Chapman
Heather Sultz
Reed & David Moulton
Tammy & Greg Nyen
Lee Chavez
Bob Haynam









Shed walls have pulled away from the center section

Hay Mow floor missing

Interior flooring and stalls damaged and deteriorated

SW Corner

Dirt and organic matter in checks; log faces seriously weathered

Missing and deteriorated chinking / daubing

Rafter connection to plate logs require additional stabilization

Wood shakes improperly laid, checking. Roof leaks.

Board and batten roofing with serious check; lifting

SE Corner

Window sash deteriorated, missing

Rafter ends deteriorated

Grade too high; roof runoff splashes against lower wall logs

Loose rocks; wall settlement

Condition 2013

Preservation Guidelines

The T. A. Moulton Barn should be guided by accepted preservation principles, values, and ethics then matched with Grand Teton National Park management directives.

In brief, the following factors have been taken into consider in this Preservation Plan and should implemented accordingly.

Identify, Retain and Preserve:
Recognizing the architectural features that give the barn its visual character. Retain and preserve these character defining features unaltered as much as possible.

Repair:
Damaged and deteriorated original fabric is to be repaired by patching, splicing, consolidating, or reinforcing. Repair may also entail limited in-kind replacement with matching or compatible material when encountering badly deteriorate or missing pieces. Both the material and original design of the feature is to be matched as closely as possible.

Replacement:
When a feature is missing or irreparably deteriorated or damaged, matching or compatible materials should be considered and employed.

Improvements and Modernizing:
Efforts intended to improve the design or appearance of the historic fabric or features is to be discouraged. However, it is acceptable to employ details and materials that will extend the life of the barn's fabric and features and provide necessary structural stability or safety if not readily visible.

Protect and Maintain:
Keeping heritage buildings in good physical condition lessens the loss of historic fabric and workmanship and greatly reduces the cost of major treatment at some later time. Periodic inspection and preventive conservation are essential for long term preservation.

Secretary of the Interior's Standards for the Treatment of Historic Properties:
Understanding and interpreting these preservation standards is to be followed at all phases of of preservation treatment - planning, implementation, protecting, and maintaining.
http://www.nps.gov/hps/tps/standguide/

Refer to the next page for the Secretary of the Interior's Standards for Preservation, the preferred approach for preserving the T. A. Moulton Barn.

Management Information:

Should be preserved and maintained (06/10/2005)

Structures:

- All NPS owned structures will be stabilized and preserved in current condition to retain the feel of "unoccupied homesteads."
- No interiors will be restored.

GRTE, Mormon Row Environmental Assessment: Preferred Proposal Summery

Preservation Goals:

- Retain and preserve the historic and visual character defining features
- Repair rather than replace historic fabric
- Place focus on stabilizing and preserving barn in current "unoccupied homestead" condition
- Follow Secretary Standards for Preservation

Secretary of the Interior's 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.

Revised
6/16/14

Standards for Preserving T. A. Moulton Barn

1. The T.A. Moulton barn is a cultural landscape feature in Mormon Row contributing to the interpretation and story of early settlement in Jackson Hole. Distinctive materials, features, spaces, and spatial relations will be retained. The barn is to be protected and maintained and not allowed to deteriorate.

2. The historic character will be retained and preserved. Only severely deteriorated or damaged historic fabric will be replaced. Emphasis will be repair and protection of historic materials, features, and workmanship.

3. The barn 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 the barn 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 the barn 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. The Park Archeologist will be notified if any archeological resources are revealed.

Key Reminders for Preserving T. A. Moulton Barn

Visually retain the same appearance of character defining features

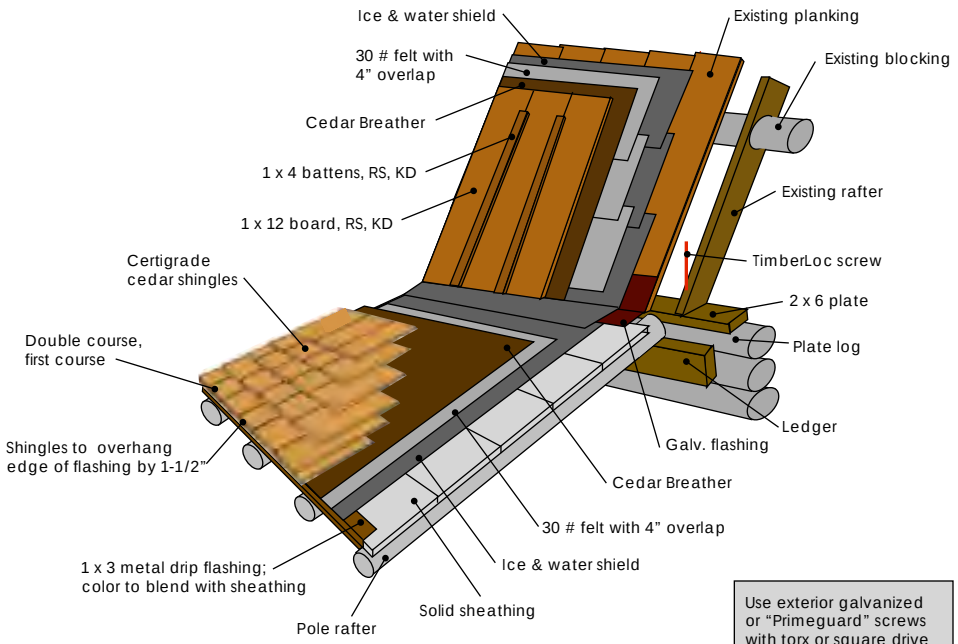
Retain or match original workmanship

Repair rather than replace when feasible

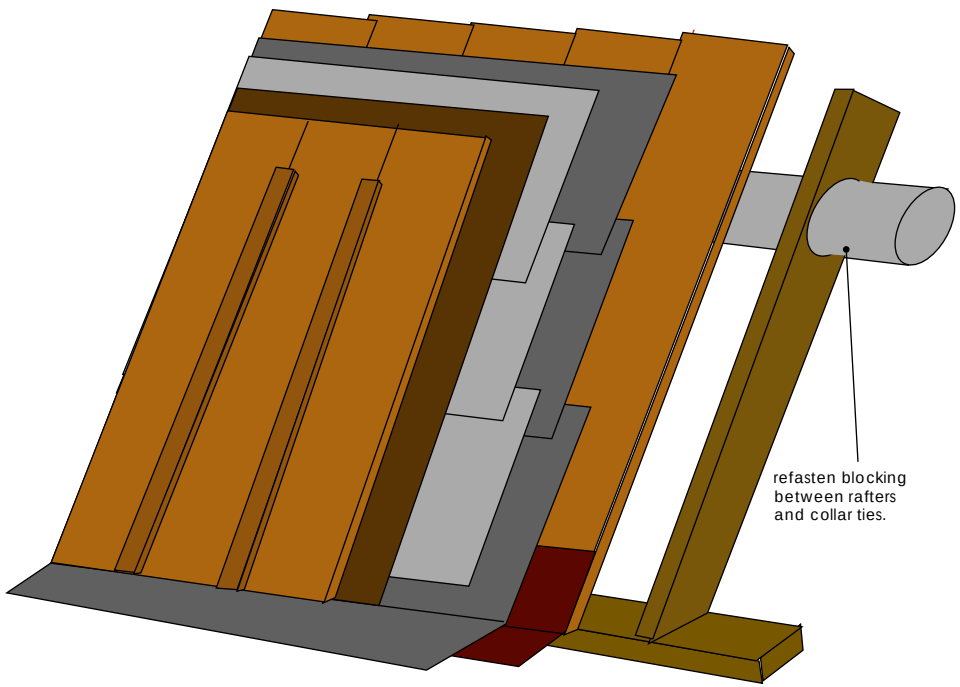
Limited in-kind replacement must match and blend to original and surrounding elements

Modern treatment may be employed to provide structural stability or safety if not readily visible

All who will be engaged with preservation treatment should have a functional understanding of these standards and reminders prior to the beginning of any work.



Use exterior galvanized or "Primeguard" screws with torx or square drive head for most fastening.



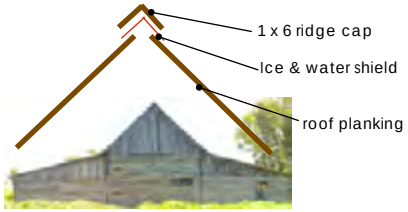
Approx. 875 SF.

Upper Gable Roof

Proposed Treatment:

Replace Board & Batten Roof

- Remove 1997 (existing) board and batten roofing
- Reinforce rafter connections to purlins and plates
- Retain the planking underneath; only replace deteriorated planks; refasten - may use screws
- Be assured of of secure fastening of rafters to plates; install TimberLoc screws if needed
- Install 24" wide galvanized flashing at roof transition (base)
- Cover gable roof panels and transition with Ice & water shield followed by 30# felt paper and Cedar Breather
- Lay 1x12 rough sawn KD planking; fasten with 2" galv. screws
- Install 1x4 rough sawn KD battens; fasten with 2" galv. screws



Lay double layer of Ice & Water Shield over ridge. Cap with 1' x 6" ridge boards

Condition Description:

Serious cupping and splitting of board and batten roofing. Nails popping. Water enters barn and is retained between planking layers. The current roofing fabric is NOT historic

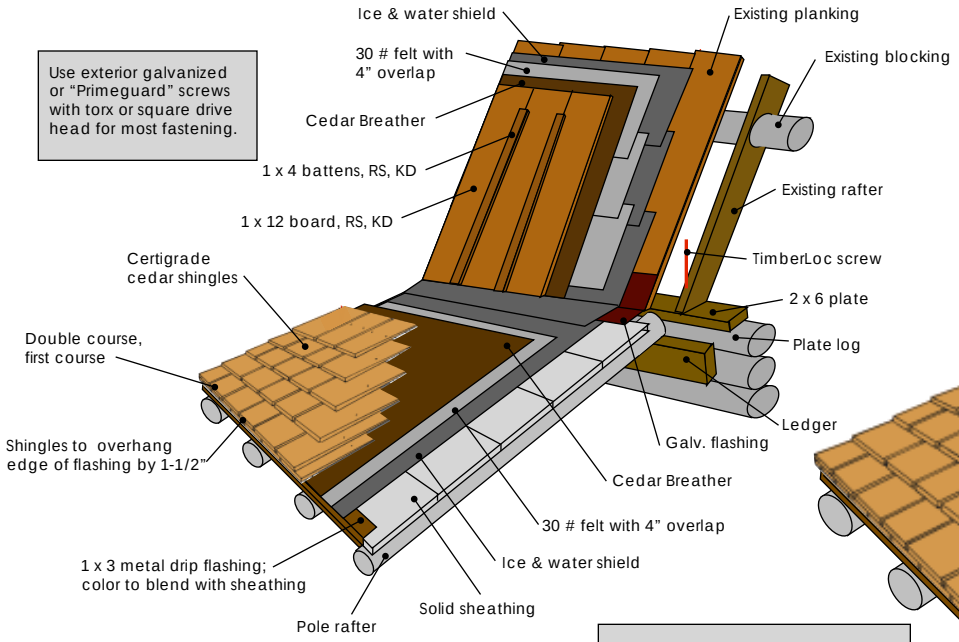
Rationale:

- Metal flashing is needed to bridge the gap between roofs and provide support for ice and water shield
- Ice and water shield will seal holes at nail penetrations and reduce leaks to the interior
- Kiln dry planking to < 12% before installing to reduce splitting
- Felt paper will reduce leaks to interior
- Galvanized torx or square head drive screws are to be used throughout for easier future repair or removal. In most locations the head will not be noticeable.

Note:
Rough sawn boards and battens must be kiln dried to < 12% moisture content before installation.

Priority:

Immediate. Shed roofs should be replaced prior to upper gable roof. Lay plywood over shed roof to protect it from damage while upper roof work is being on.



Note:
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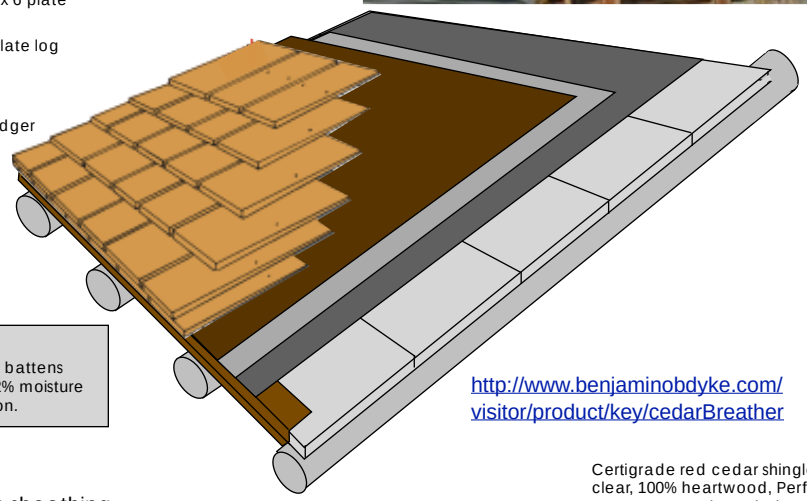


Approx. 1200 SF,
12 SQ., or
52 bundles

Certigrade red cedar shingles, # 1 Blue Label, 100% edge grain, 100% all clear, 100% heartwood, Perfection grade. Use only galv. box nails that do not penetrate through sheathing.

http://www.benjaminobdyke.com/visitor/product/key/cedarBreather

Cedar Shingle and Shake Bureau
http://www.cedarbureau.org

Shed Roofs

Proposed Treatment:

Replace shakes with wood shingles

- Remove 1994 (existing) shakes
- Repair or replace any skip sheathing; renail
- Install metal eave drip flashing with 1" exposure; paint to blend with sheathing
- Be assured of secure fastening of rafters to plates; concealed screws may be used for fastening
- Lay Ice & water shield, 30# felt at eave edges, and Cedar Breather
- Lay cedar shingles with 5-1/2" exposure
- Nail shingles according to Cedar Shingle and Shake Bureau. Use 5d galv. shingle nails
- Shingles to tuck under flashing and upper roof board and batten
- Place 1 x 6 diagonals inside rafters

Condition Description:

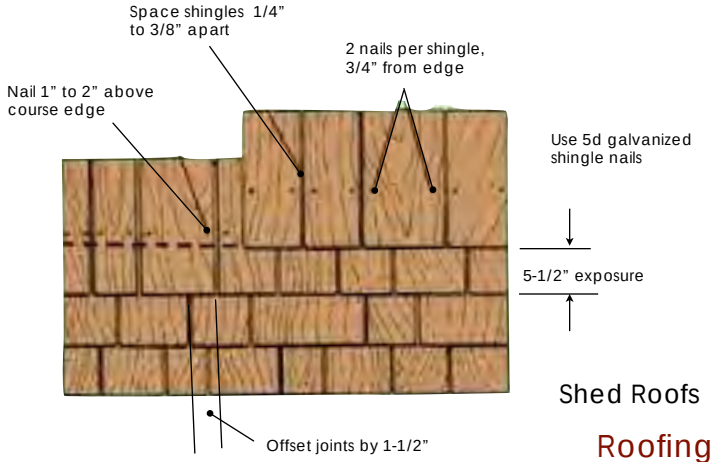
Serious cracking and splitting of shakes. The current shakes are NOT historic. Massive leaks to the interior. Shakes are at end of effective use. Previous (and likely original) roofing was cedar shingles.

Rationale:

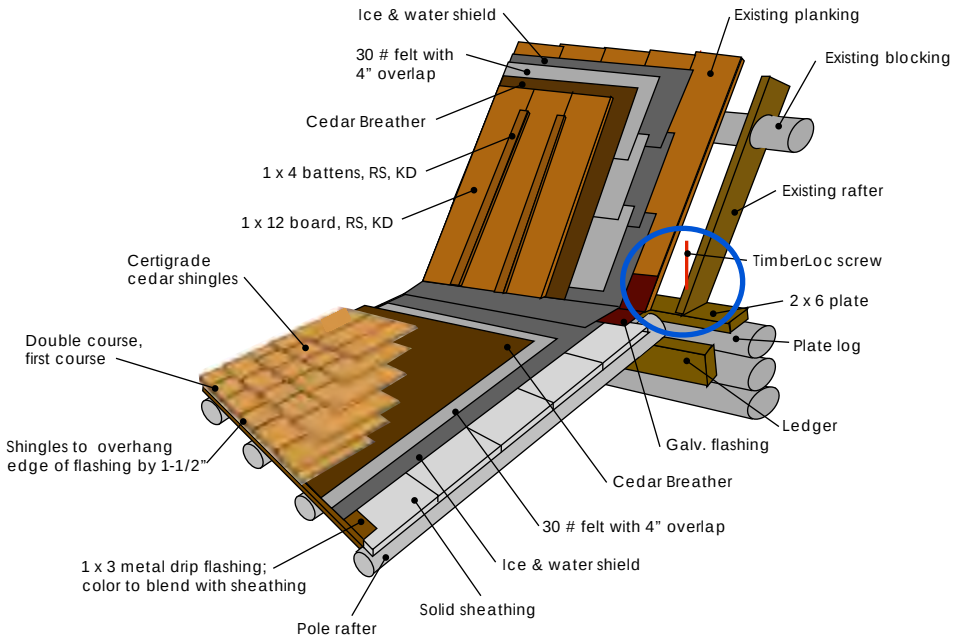
- National Register Nomination (1977, page 29) indicates wood shingles were on the shed roofs prior to the roof replacement in 1994. It seems logical to return to the earliest known roof treatment.
- Cedar Breather will allow for air movement and drying between shingles and skip sheathing and will extend the life of the shingles
- Interweaving shingles with felt will reduce snow blowing and melt to the interior.

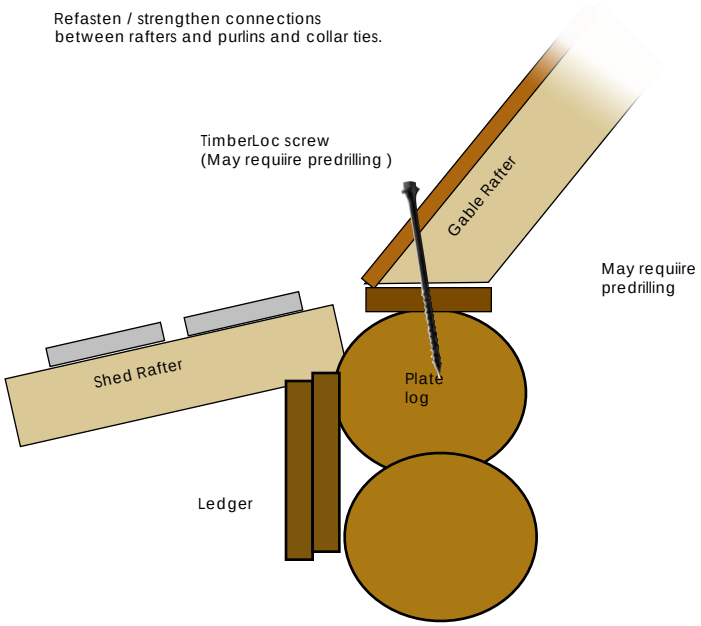
Priority:

Immediate. Shed roofs should be replaced prior to upper gable roof. Lay plywood over shed roof to protect it from damage while upper roof work is being on.



http://www.jlconline.com/roofing/roofing-with-cedar-shingles.aspx





Reinforce Connections of Rafters to Plates

Proposed Treatment:

- Reinspect the connection of the gable rafters to the plates to insure they cannot push off the plates.
- If deemed necessary refasten the rafters with additional straps or brackets or with one or more TimberLoc screws. Attempt to conceal the fasteners. Installing the TimberLoc screws may have to be accomplished by drilling a hole through the vertical planking.
- Adjust the transverse cables to be tight to prevent the plates from any outward thrust.

http://www.fastenmaster.com/details/product/timberlok-heavy-duty-wood-screw.html

Condition Description:

- Wind and heavy snow loads can cause the rafters to push outward.

Rationale:

- The connection between the rafters and plates are critical to prevent collapse. Likewise, the plate logs must be restrained from pushing outward as well.

Priority:

Critical. This process can be accomplished in a few hours. It should be performed with the preservation effort.

Apply Preservative to Rafter Ends

Proposed Treatment:

- Blow out debris from rafter ends with air compressor.
- Saturate rafter ends with BoraCare preservative

Condition Description:

- Many rafter ends have been continuously wetted from the roof edge causing decay.

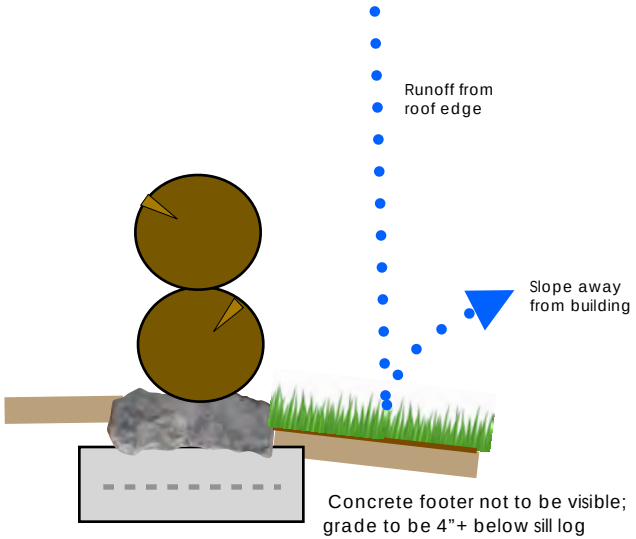
Rationale:

- If decay is allowed to continue the rafter ends will lose structural stability leading to replacement and massive disruption to the building fabric.

Priority:
High. This process can be accomplished in a few hours. It should be performed with the preservation effort.

Rafter Ends

http://store.doyourownpestcontrol.com/bora-care-boracare-termites-powderpost-beetles?gclid=CMfvgOTm4roCFeQ1QgodoVcANA



Grade / Drainage

Regrade / Provide for Positive Drainage

Proposed Treatment:

- Adjust grade to be > 4" below the sill log

Condition Description:

- In some locations the grade is too close to the sill logs causing them to retain moisture. Grade is flat that could cause puddling and splash back against the lower logs.

Rationale:

- Moist logs, especially sill logs, deteriorate.

Priority:
Very Important

Grade / Drainage Preservative on Rafter Ends

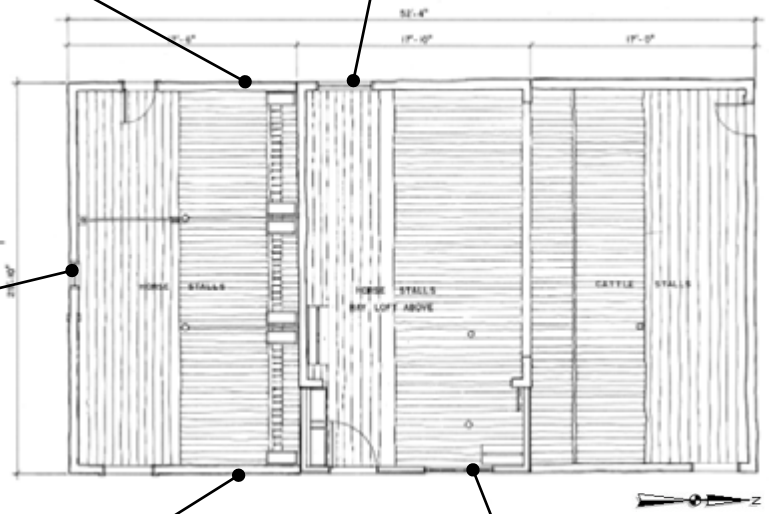
Recommended Treatment

5

Construct sash with muntins matching those on east side. Repair / refasten trim.

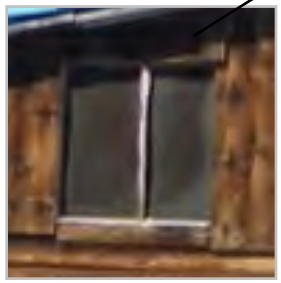
4

Construct sash with muntins matching those on east side. Do not install trim.



6

Replace north jamb with weathered wood. Mount plywood panel over interior. Do not include sash.



Attempt to retain as much of the original sash as possible. Plexiglas may be used in place of glass.

1

Repair and use existing sash.

2

Repair and use existing sash.

3

Construct sash with muntins to match adjoining.

Repair / Replace Window Sash:

Proposed Treatment:

- Construct sash for identified window openings; retain others.
- Clean window elements.
- Do not return missing trim
- Retain early character

Condition Description:

- Window sash are missing or seriously deteriorated

Rationale:

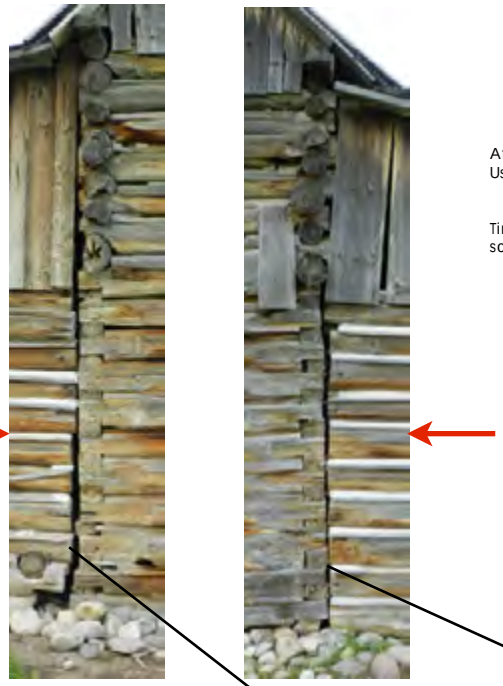
- Retain same or similar look yet make somewhat secure to reduce wind and rain penetration to interior but to provide light.

Priority:
High

Retain the historic character of the windows

Repairing or constructing sash should be accomplished prior to the preservation project and in a shop with appropriate tools. Window work is not a field activity, especially for unexperienced workers / volunteers.

Photograph and take measurements for each window. Label and remove sash and take to shop for repairs.



Attempt to pull north and south shed walls together on west elevation. Use caution to not crush or damage log walls.

TimberLoc screws may be used from the interior to secure logs. Angle screws diagonally and bury head to conceal fasteners.

Pull Shed Log Walls Together

Proposed Treatment:

- Place pulling rig across inside of west wall with cable extending through the center walls.
- Attempt to bull west walls together
- May fasten shed logs to center section logs or the stabilization posts in the corner of the sheds

Condition Description:

- West shed walls have separated by as much as 2”

Rationale:

- Log ends that join the center section need to be secured to prevent pushing out.

Priority:

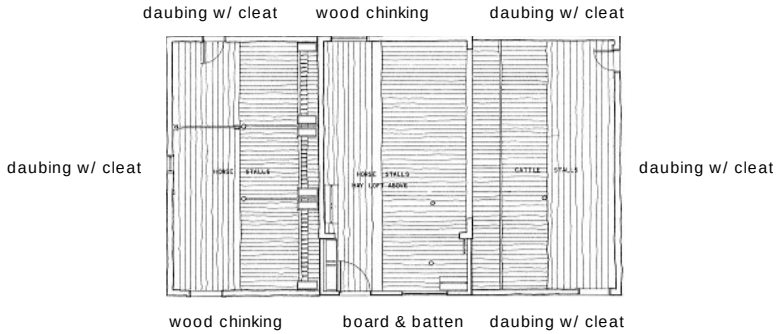
High. Include with preservation process

loop around timber

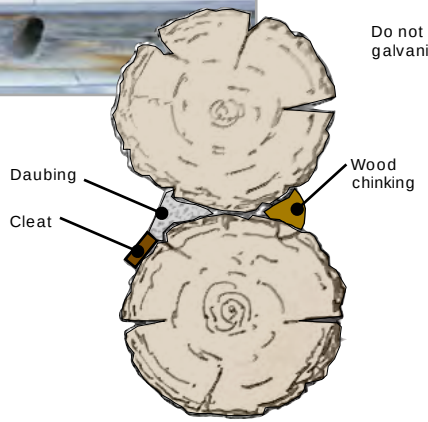
4” x 6” + timber

Spreading Walls

Recommended Treatment



Retain methods of chinking and daubing



Do not use galvanized nails

Daubing Procedure

1. Remove loose, deteriorated, or unacceptable existing daubing.
2. Clean chink area with compressed air and a stiff brush.
3. Galvanized nails, wire mesh or other reinforcement may be used to retain the daubing. Reinforcement must be 1/2" minimum below the surface.
4. Saturate logs and chink areas at least two days prior to application. Moisten areas periodically prior to application. Do not apply daubing in direct sunlight or when logs are hot. Install curtain if necessary.
5. Match original daubing in formula, texture, and color. This may require trial and error sample batches. Allow to dry when comparing. Mix daubing to a stiff or firm consistency - like stiff mashed potatoes. Mix only enough daubing that will be used in 1/2 hour. Keep covered. Do not remoisten mix if it becomes too stiff. Discard.
6. Press daubing mixture firmly into the chink area. Use of a square or margin trowel works best. Angle daubing surface so it it is tucked under the upper log. See detail. Do not apply in direct sun or if temperatures drop below 40 degrees. Moisten installed daubing with a fine mist periodically for 6+ hours after application.
7. Trowel or brush daubing to match texture and appearance of original or early daubing.
8. When daubing is cured (2+ days), scrub logs with mild vinegar-water mix (1/2 cup vinegar to 1 gallon of potable water) to remove residue if necessary. Clean, brush, and scrape residue from checks. Rinse with fine spray.

Daubing Formula

7-9 parts of sand
4 parts Type S lime
1/2 part white portland cement (match color of existing)
1 part agricultural gypsum
Clean water to create consistency of dry mashed potatoes

Replace Missing Chinking / Daubing

Proposed Treatment:

- Remove loose and deteriorated daubing; repair/refasten daubing cleat; clean
- Saturate logs with water over 2 day duration
- Mix and apply daubing; retrowel after about 30 to 60 minutes; Mist periodically for 6 + hours following.
- Clean log faces; blow out dirt and debris from checks; brush if needed
- Repair, refasten, replace wood chinking

Condition Description:

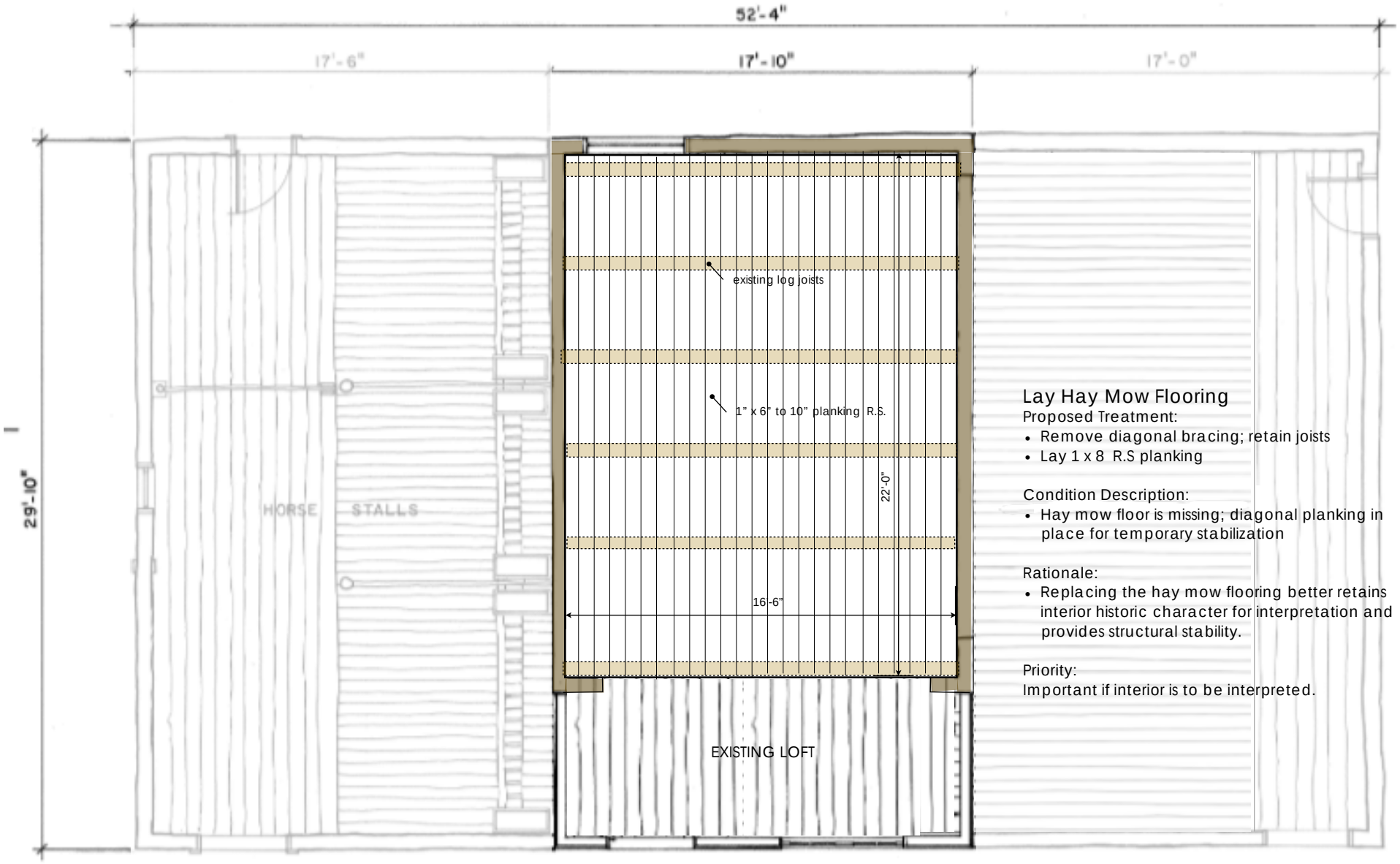
- Some daubing is missing, deteriorated, and cracked. Wood chinking is loose and pulling away from chink area.

Rationale:

- Daubing and chinking help prevent blowing snow and rain from saturating the interior.

Priority:
High. Include with preservation process

Revised
6/16/14



Lay Hay Mow Flooring

Proposed Treatment:

- Remove diagonal bracing; retain joists
- Lay 1 x 8 R.S planking

Condition Description:

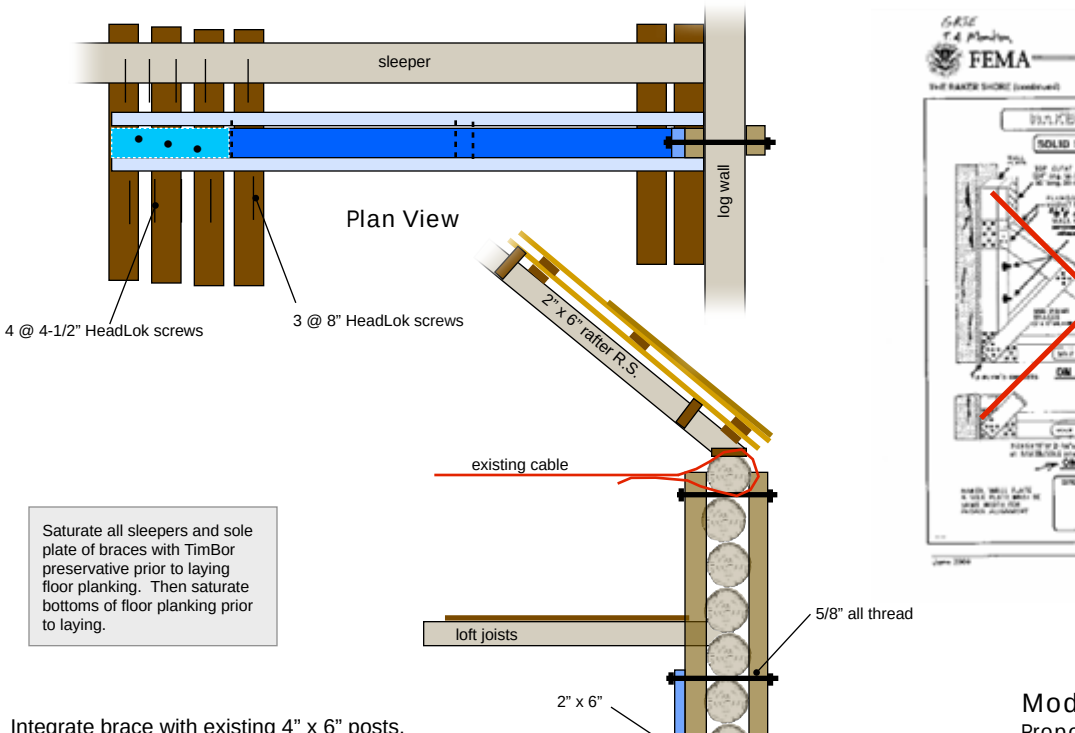
- Hay mow floor is missing; diagonal planking in place for temporary stabilization

Rationale:

- Replacing the hay mow flooring better retains interior historic character for interpretation and provides structural stability.

Priority:
Important if interior is to be interpreted.

Wood planking to be fully seasoned < 20 % MC.

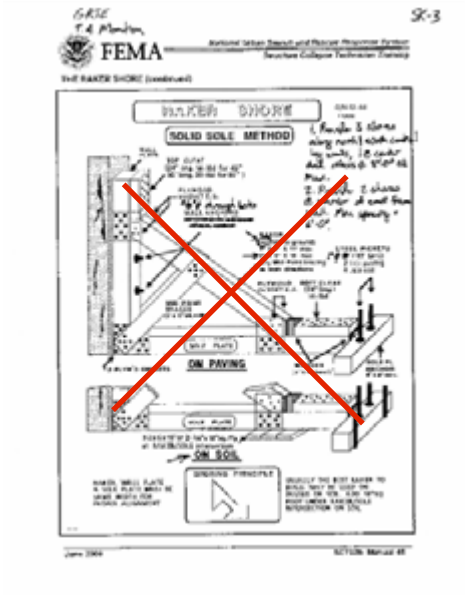


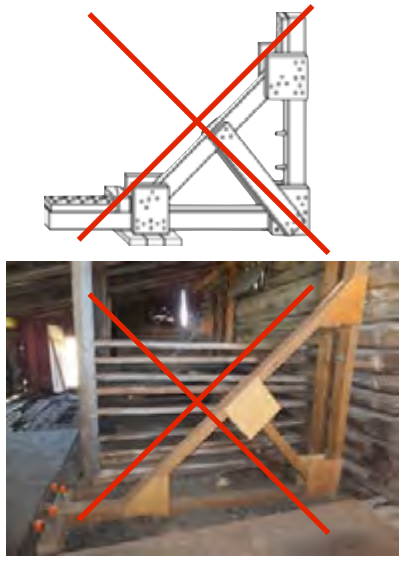
Saturate all sleepers and sole plate of braces with TimBor preservative prior to laying floor planking. Then saturate bottoms of floor planking prior to laying.

Integrate brace with existing 4" x 6" posts.
See plan view for locations

Floor planking lays over sole plate

Integrated Brace with Post





Remove existing FEMA type braces
(may reuse materials)

Modify Bracing / Lay Flooring

Proposed Treatment:

- Remove FEMA bracing. Construct compatible bracing at existing structural posts. Lower sole plate to be below flooring.
- Regrade interior dirt flooring; Replace deteriorated sleepers and planking.
- Reconstruct feed boxes and replace and repair original mangers.

Condition Description:

- FEMA bracing is unsafe for interior visitor interpretation and provided no support to the upper wall logs. Installation of the braces damaged much original flooring and mangers. 30% of the original flooring is either missing or seriously damaged.

Rationale:

- Integrating the braces with the wall posts retains structural stability, is much safer, and better retains interior character.

Priority:
Critical if interior is to be interpreted.

Also refer to next page for locations

Revised
6/16/14

T. A. Moulton Barn
Preservation Plan

Wood for sleepers, planking, braces, and repairs to be fully seasoned < 20 % MC.

Revised
6/16/14

G Estimated replacement: sleepers - 100% planking - 100%

F Estimated replacement: sleepers - 50% poles - 40%

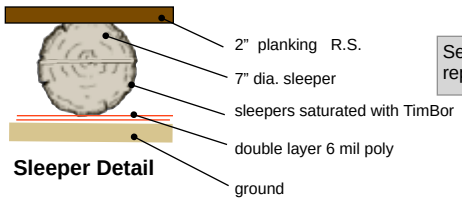
E Estimated replacement: sleepers - 40% planking

D Estimated replacement: sleepers - 50 % planking - 30%

C Estimated replacement: sleepers - 50 % planking - 30 %

B Estimated replacement: sleepers - 100% planking - 100 %

A Estimated replacement: sleepers - 100 % planking - 100 %



Sleeper Detail

See previous page for typical detail of modified bracing. Existing FEMA type bracing is to be removed and replaced by integrating braces with existing structural posts with lower sole plates under the floor planking.

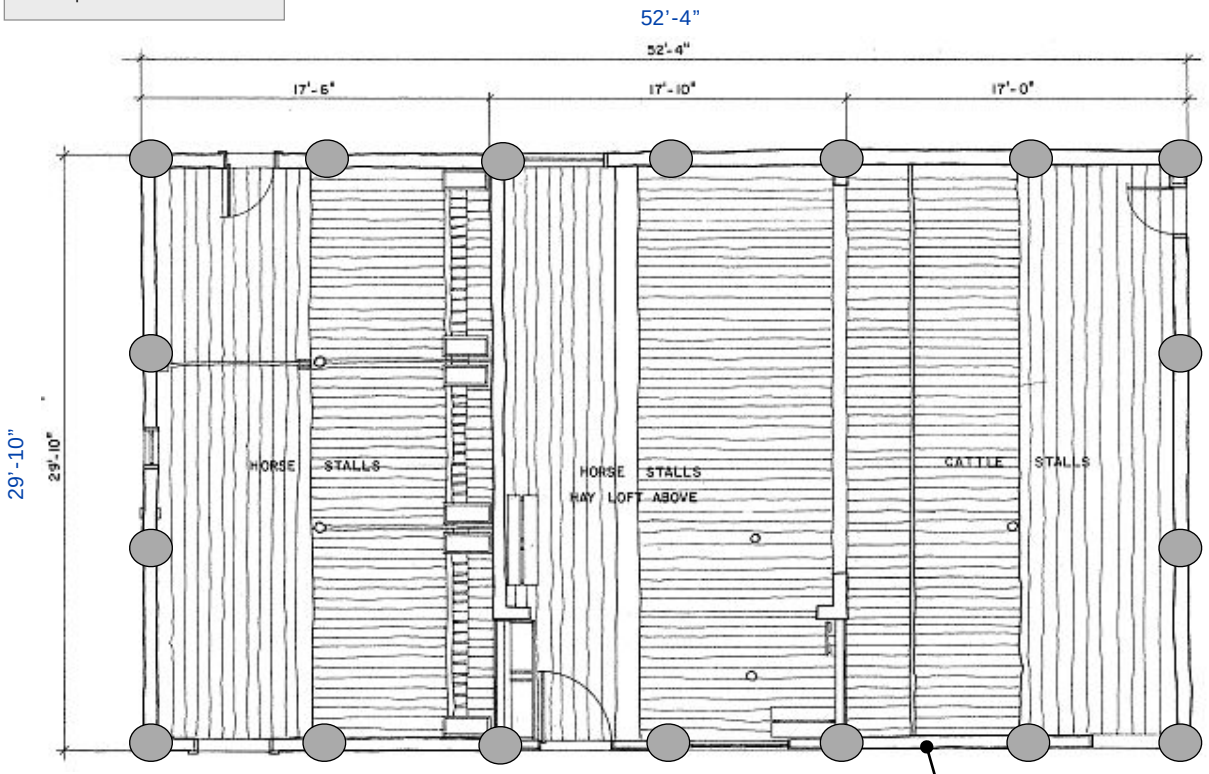
T. A. Moulton Barn

Preservation Plan

Flooring / Structural Bracing

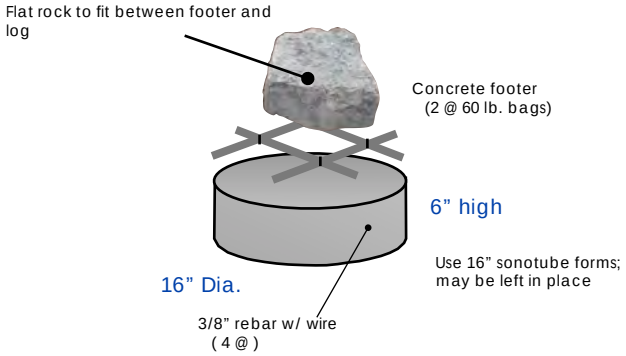
Recommended Treatment

Determine if archaeology survey is needed prior to earth disturbance



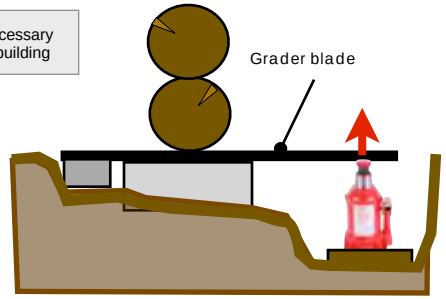
18 @ footer pads

Infill between footer pads with existing rocks



Footer Pads

It is NOT necessary to level the building



Relieve weight of wall while footer is constructed and rock placed

Construct Footer Pads

Proposed Treatment:

- Relieve weight of log wall
- Construct footer pads under pressure points in structure
- Place large flat rock to rest between sill log and footer
- Infill between footers with loose rocks

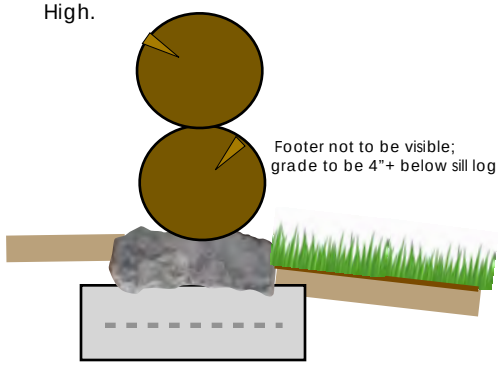
Condition Description:

- At present an accumulation of loose rocks are holding up the structure. Freeze / thaw cycles has caused extensive movement of the rocks.

Rationale:

- The barn needs structural stability.

Priority:
High.



Revised
6/16/14

T. A. Moulton Barn

Category	Sub Cat.	Qty.	Unit	Description	Notes	Estimated Cost
Materials						
Materials	Bracing	10	ea	2" x 6" x 8'-0", PT.	Sole plates	$100
Materials	Bracing	10	ea	2" x 6" x 12" x 12'-0", PT.	pads under sole plate	$150
Materials	Bracing	240	ea	4-1/2"" HeadLok screws	fastening	$180
Materials	Bracing	15	ea	8"" HeadLok screws	fastening	$18
Materials	Bracing	4	ea	4" x 6" x 8"	brace elements	$100
Materials	Bracing	30	ea	1/2" dia. x 2'-0" rebar	pins through sole plate	$60
Materials	Daubing / Chinking	10	bags	Masons sand		$50
Materials	Daubing / Chinking	1	bags	White portland cement		$14
Materials	Daubing / Chinking	4	bags	Type S lime		$45
Materials	Daubing / Chinking	1	bags	Agricultural gypsum - if available		$20
Materials	Daubing / Chinking			wood for cleats and split pole chinking		
Materials	Flooring	1020	bf	2" x 6", R.S. - full @ $.80 / bf	A & B flooring	$816
Materials	Flooring	170	lf	6" - 7" logs @ 1.00 / lf	A & B sleepers	$816
Materials	Flooring	150	bf	1" x 11-1/2", R.S. @ $.80 / bf	C flooring	$816
Materials	Flooring	150	lf	6" - 7" logs @ 1.00 / lf	C sleepers	$150
Materials	Flooring	150	bf	1" x 11-1/2", R.S. @ $.80 / bf	D & E flooring	$120
Materials	Flooring	75	ea	4"-5" dia. poles x 12' @ $3. / ea	F flooring	$234
Materials	Flooring	120	lf	7" dia. logs @ $1. / lf	F sleepers	$120
Materials	Flooring	240	bf	2" x 6", R.S. - full @ $.80 / bf	G flooring	$192
Materials	Flooring	180	bf	6" - 7" logs @ 1.00 / lf	D & E sleepers	$180
Materials	Flooring	240	ea	7" spikes @ $.80	F nails	$192
Materials	Flooring	75	lb	20d common nail @ $1.50/lb	A,B,D,E,G nails	$120
Materials	Flooring	15	lb	8d common nail @ $1.50/lb	C nails	$24
Materials	Flooring	300	lf	6 mil poly sheeting		$315
Materials	Footing	2	shts	1/2" x 4' x 8' ply, CDX		$50
Materials	Footing	12	lf	16" dia SonoTube	forms	$50
Materials	Footing	44	bags	RediMix concrete		$176
Materials	Footing	88	lf	3/8" steel rebar		$65
Materials	Footing	4	spools	Fencing wire		$30
Materials	General			Wood for feed boxes / repair mangers	from flooring extras	$0
Materials	Hay Mow	450	bf	1" x 8" to 10", R.S. , <20% MC	flooring	$400
Materials	Hay Mow	15	lb	6d common nail	flooring	$36
Materials	Protect Logs/wood	2	gal	BoraCare Preservative	rafter ends	$180
Materials	Protect Logs/wood	2	ea	TimBor Preservative , in 25 lb buckets	flooring, sleepeers	$180
Materials	Rafter ends	2	ea	BoraCare preservative	www.	$180
Materials	Rafter to Plate	50	ea	TimberLoc screws, 8"		$70
Materials	Rafter to Plate	50	ea	TimberLoc screws, 10"		$70
Materials	Roofing	150	lf	1 x 12 sheathing, RS. Shed	Only an approximation	$120
Materials	Roofing	12	SQ	Certigrade cedar shingles, # 1 Blue Lable, Perfection	18" x 5 / 2 1/4", 52	$3,300
Materials	Roofing	12	rolls	30# roofing felt, 216 sf/roll@$25	gable and shed roofs	$300
Materials	Roofing	2000	sf	Cedar Breather, $55/sq	benjaminobdyke.com	$1,100
Materials	Roofing	60	lf	Brown edge drip flashing, 1" x 3"		$40
Materials	Roofing	60	lf	Galv. flashing, 24" wide	@ transition	$150
Materials	Roofing	2000	sf	Ice & water shield (adhesive back) $.90/sf	shed & gable roof	$1,800
Materials	Roofing	100	ea	Plank, 1" x 12" x 14', rough sawn, KD, # 1, no knots	Board & batten roofing	$1,125
Materials	Roofing	10	ea	Cloth nail aprons		$30
Materials	Roofing	25	lb	Shingle nails, hot dipped zinc galv, 5d,	shed	$60
Materials	Roofing	3	boxes	T-50 staples		$35
Materials	Roofing	20	lb	Common nails, hot dipped galv., 8d		$60
Materials	Roofing	20	lb	Common nails, hot dipped galv., 10d		$60
Materials	Roofing	20	lb	Common nails, hot dipped galv., 16d		$60
Materials	Roofing	400	ea	Deck screws, torx head, 2-1/2", glavanized		$25
Materials	Roofing	200	ea	Deck screws, torx head, 3-1/2", glavanized		$25
Materials	Roofing	10	lb	box nails, hot dipped zinc galv, 6d,		$14
Materials	Roofing	5	lb	3/4" galv. roofing nails		$14

T. A. Moulton Barn

Category	Sub Cat.	Qty.	Unit	Description	Notes	Estimated Cost
Materials	West shed walls	2	ea	4 x 6 x 8' timbers, poles may be a substitute	for pulling walls	$50
Materials	West shed walls	100	lf	1/4" stranded steel cable w/cable clamps		$100
Materials	Window	2	shts	3/8" x 4' x 8' ply, CD	protective panels	$40
Materials	Window	1	gal	Paint, exterior, flat black		$30
Materials	Window	2	ea	Paint trays, sleeves, frames		$20
Materials	Window			wood, glass, glazing	assorted	$100

Additions and modifications will occur as this project progresses. **Total Estimated Cost** **$14,977**

Materials, Tools and Equipment lists were created in a database. Adjoining is a tentative / draft copy. Expect changes and modifications as the project is refined or redefined. A 25% + contingency is suggested.

Harrison Goodall Project Tracking - GRTE

Project Tracking - Materials / Tools

T. A. Moulton Barn

Category	Sub Cat.	Qty.	Unit	Description	Notes	Estimated Cost
Safety	General	10	ea	Safety helmuts		
Safety	General	15	ea	Safety glasses		
Safety	General	1	ea	First aid kit, eye wash, Emergency dispatch #		
Safety	Roofing	3	ea	Safety Harness w/ lines, anchors, connections		
Tools / Equip	Chinking / Daubing	3	ea	1/2" cold chisel	Removing old daubing	
Tools / Equip	Chinking / Daubing	3	ea	Flat masons trowels		
Tools / Equip	Chinking / Daubing	3	ea	Hawks - may make on site		
Tools / Equip	Footing	1	ea	Bolt cutter		
Tools / Equip	Footing	4	ea	Metal buckets		
Tools / Equip	Footing	3	ea	Round shovels		
Tools / Equip	Footing	4	ea	Flat shovels		
Tools / Equip	Footing	6	ea	4 ton hydraulic jacks w/ handles w/ steel plates		
Tools / Equip	Footing	4	ea	3'-4' grader blades		
Tools / Equip	Footing	2	ea	5'+ steel bars		
Tools / Equip	General	6	ea	Saw horses		
Tools / Equip	General	1	ea	Wheel barrow		
Tools / Equip	General	1	ea	Reciprocating saw w/ 12 extra blades		
Tools / Equip	General			Assorted tools-screw drivers, pliers, wrenches, etc.		
Tools / Equip	General	1	ea	2' level		
Tools / Equip	General	2	ea	Hatchets		
Tools / Equip	General	1	ea	10" chop saw w/ extra blade		
Tools / Equip	Grade / Drainage	2	ea	Pulaskis		
Tools / Equip	Rafter ends	1	ea	Garden sprayer		
Tools / Equip	Rafter ends	1	ea	Paint paddle / stirrer		
Tools / Equip	Rafter ends	1	ea	Metal buckets		
Tools / Equip	Rafter to Plate	3	ea	Drill Drivers / Impact driver w/ chargers		
Tools / Equip	Roofing	4	sets	scaffolding, w/ braces, pads, planks		
Tools / Equip	Roofing	2	ea	6 & 8' stepladder		
Tools / Equip	Roofing	2	ea	Extension ladders, 24' and 28'		
Tools / Equip	Roofing	2	ea	6 & 8' stepladder		
Tools / Equip	Roofing	8	ea	Roof jacks		
Tools / Equip	Roofing	6	ea	2 x 8 x 12' planking for roof jacks		
Tools / Equip	Roofing	12	ea	Hammers		
Tools / Equip	Roofing	2	ea	Shingle hatchets		
Tools / Equip	Roofing	2	balls	String		
Tools / Equip	Roofing	4	ea	Chalk line		
Tools / Equip	Roofing	6	ea	Utility knives		
Tools / Equip	Roofing	1	ea	Tin snips		
Tools / Equip	Roofing	1	ea	Hand saw		
Tools / Equip	Roofing	4	ea	Framing squares		
Tools / Equip	Roofing	4	ea	Speed squares		
Tools / Equip	Roofing	6	ea	Measuring tapes 12' to 25'		
Tools / Equip	Roofing	2	ea	Pull bars, 24"		
Tools / Equip	Roofing	2	ea	Flat bars,		
Tools / Equip	Roofing	1	ea	Hack saw		
Tools / Equip	Roofing	2	ea	Electric drills		
Tools / Equip	Roofing	2	ea	HD Side cutter / wire cutter		
Tools / Equip	Roofing	2	ea	Portable circular saw		
Tools / Equip	Roofing	1	ea	Generator, w/ fuel & oil	High KW	
Tools / Equip	Roofing	4	ea	HD Extension cords 25' & 50' + connectors		
Tools / Equip	Roofing	50	lf	Line / rope	safety and lifting items	
Tools / Equip	Roofing	2	ea	T 50 slap stapler w/ 1000 staples		
Tools / Equip	West shed walls	2	ea	4 ton come-a-long		

Additions and modifications will occur as this project progresses.

Total Estimated Cost

Tool and Equipment lists were created should implementation be carried out by a volunteer group and requiring GRTE tools and equipment. in a database Adjoining is at tentative / draft copy. Expect changes and modifications as the project is refined.

As expected, a contractor or Western Center for Historic Preservation would be providing their own tools and equipment.

Priorities

Although all needs and tasks have priorities it makes practical, organizational, and financial sense to implement all of the treatments as defined in this plan. Planning, staging, and dealing with workers will be a major aspect of the preservation work.

- ★★★★★ • Replace shakes with wood shingles on sheds
- ★★★★★ • Replace boards and batten roofing on gable roof
- ★★★★★ • Reinforce connections of rafters to plates
- ★★★★ • Apply preservative to rafter ends
- ★★★★ • Regrade / provide for positive drainage
- ★★★ • Repair / replace window sash
- ★★★★ • Pull shed log walls together
- ★★★ • Replace missing chinking / daubing
- ★★★★ • Construct footer pads
- ★★★★ • Minor structural stabilization
- ★★★★ • Modify interior bracing
- ★★★★ • Reconstruct interior flooring and hay mow

The stabilization work performed in 2012 and 2013 provides general structural stability for the barn. Tasks above are recommended to be implemented within the next few years to help assure long term preservation.

Implementation

There are a number of ways to implement the preservation work:

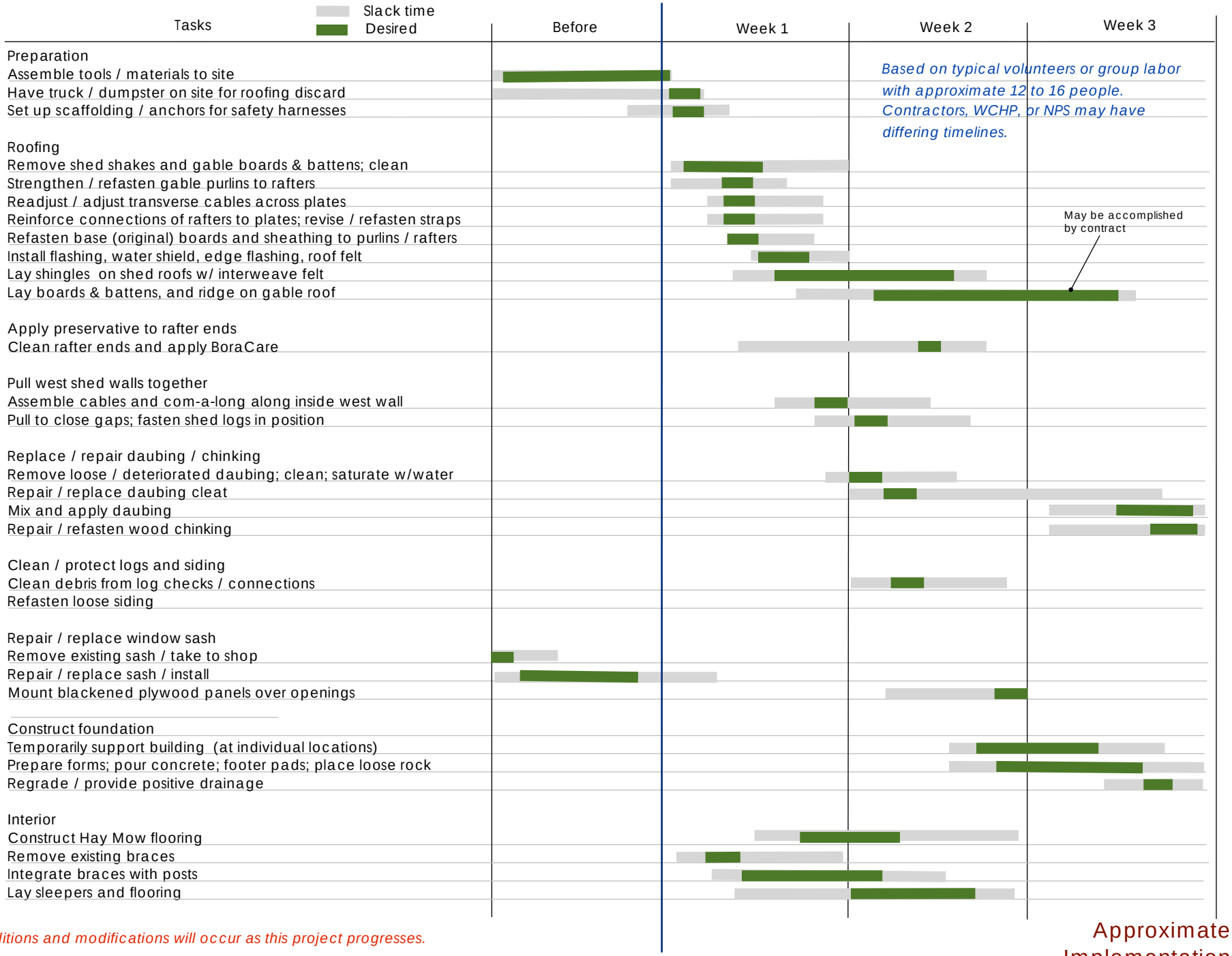
A. Professional conservator contract
B. General building contractor
C. Western Center for Historic Preservation
D. GRTE maintenance division
E. Preservation group (s) *
F. Volunteers *

* May be one or rotating groups

Due to the high significance of the barn it is highly recommended that day to day implementation of this plan be supervised or coordinated with an experienced architectural conservator. This applies to B., D., E., and F..

Costs for implementation with A. and B. are likely to be considerable more than with E. and F. Costs with C. and D. are unknown.

But in ALL possible situations I strongly recommend have one or more supervisors or coordinators with proven background to be on-site during the entire preservation process.



Additions and modifications will occur as this project progresses.

Revised
6/16/14

T. A. Moulton Barn
Preservation Plan

Approximate Implementation Timeline

Documenting the Preservation of the T. A. Moulton Barn

Documentation of heritage buildings and structures has many different meanings, levels of complexity, uses, and purposes in historic preservation. Generally, documentation is the written and graphic record of information or detailed evidence relating to a historic building, complex, or site.

For some situations this becomes extremely complex and comprehensive that involve a Historic Structures Report or measured drawings. Documentation of heritage buildings applies primarily on an detailed description prior to significant preservation work and a comprehensive record after completion, the latter often being called a completion report or an as-built.

Documenting prior to preservation treatment

Purpose:
provides historic or background information for planning and implementation
creates a evidence of conditions before implementation of treatment

Contains: (if available)
- Historical data
  - date / period of construction
  - family or site background and uses
  - previous modifications, studies, contracts
  - early photographs / drawings / records

Architectural Description
- fabric definition - drawings, materials, sizes, workmanship
- character defining features - architectural significance
- photo and graphic images
- aerial of site, corners, elevations, details, interior features
- condition of features

Archived:
- Initially the documentation should be integrated within the preservation plan
- Copies stored with the owner, steward, preservation agency, or local historical society. Consider multiple locations.

Documenting during preservation treatment

Purpose:
- provides historic and reference information for what took place during the preservation process
- documents materials, processes, and people
- most of the documentation is for inclusion in the Completion Report

Contains: (if available)
- Action images (photographs and video)
- graphic images of each step or process including the people involved performing it
- Detailed listing with sources for materials including quantity, specifications, and rational for use.

Archived:
- Initially the documentation should be integrated within the preservation plan and completion report
- Copies stored with the owner, steward, preservation agency, or local historical society. Consider multiple locations.

Documenting after to preservation treatment

Purpose:
- summarizes and provides a record of what changes and preservation treatment occurred - often called a completion report
- evidence of retention of character defining features
- becomes reference for future treatment, maintenance, or conservation
- reference for monitoring and for evidence of accomplishment

Contains: (if available)
- description and schedule of preservation treatment
  - what, how, when, why, who, materials, discoveries, problems, procedures
- before and after comparison graphic images
- personnel / contractors involved
- schedules / time frames
- costs / financial accounting
- description of how treatment followed the Secretary of Interior Standards
- material sources / details
- photos that visually define each phase of treatment
  - include detailed photos or video of procedures, problematic issues, process
  - match camera positions with prior photos of corners, elevations, details
  - visual record of matching workmanship

Archived:
Copies stored with the owner, steward, preservation agency, or local historical society. Consider multiple locations.

Organize Data
- Forms complete and readable
- Edit photos for exposure, clarity, contend
- Label each photo by Property #, site, building
- Put photos of each building in a folder - label
- Combine building folders into Property # folder
- Combine Property # folders to a CD / DVD - label

Photos
- Details of construction, character defining features, deterioration, problems, interesting details
- Include images of people carrying out treatments and explaining the process
- Exterior & interior of structure including site

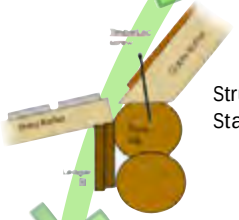
Process
Regardless of how the preservation treatment is implemented, it is recommended that a person be designated to coordinate and assemble all of the documentation for completeness and continuity.

Aside from the historic significance to Mormon Row, the Jackson Hole area, and broad expression of western settlement, the image of the T. A. Moulton Barn against the Tetons is a classic vista for visitors and photographers. But it's importance is not just for now or the next 20 or 50 years. As time passes the structure and the Mormon Row historic district will only continue to be more of an American treasure.

Preservation and stabilization has recently occurred. Now is the time for long range care and conservation. Following this proposed preservation treatment should be a process of continuous preventive and predictive conservation to allow generations long into the future an opportunity to enjoy and better understand our heritage.

http://archive.freeroamingphotography.com


Roofing

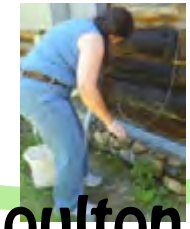

Structural Stabilization

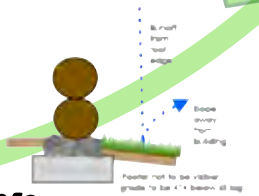
Rafter Ends


Windows

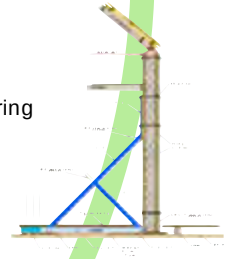

West Wall


Chinking / Daubing


Cleaning / Protecting


Grade


Hay Mow


Bracing / Flooring


Footers


Documentation


Preventive Conservation

T. A. Moulton Barn

Preservation Plan

Revised
6/16/14

Summary