

Northern Bedrock Historic **Preservation Corps** Building pathways to the preservation trades

2021

Field Season Report

Field Season Report Northern Bedrock Historic Preservation Corps *Building Pathways to the Preservation Trades*

Report produced by Northern Bedrock Historic Preservation Corps Staff November 2021

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O Northern Bedrock Historic Preservation Corps www.northernbedrockcorps.org



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Charley Langowski Administrative Operations Manager Peter Bergene Historic Preservation Program Manager Marshall Boone Field Logistics Coordinator

CORPSMEMBERS

Isaac Fein Sonia Fields Gana Ibrahim James Gimpl Andrew Shamoo Naomi Ingber Sunflower Noonan Austin Akset Robert Ditto Michael Rick Chloe Herness Ava Martin Alli Hagg Laynie Martineau Ashley Newton-Deckrow Fevisa Bati Rebekah Harmadi

TECHNICAL SPECIALISTS Allen Olsen Mark Johnston - Historic Design Consulting, LLC. Laura Leppink Craig Lundberg - Advanced Masonry Restoration Andrew Kromroy - Advanced Masonry Restoration Sadie Young - Grand Portage National Monument Stewart Chilvers - Colville National Monument Stewart Chilvers - Colville National Forest Mark Goulet - Voyageurs National Park Rachel Hines - Superior National Forest Kimberly Thompson - Superior National Forest

SPECIAL THANKS

PROJECT HOSTS Harold Langowski - City of Ely Bill Erzar - Ely Cemetery Committee Becky Mitchell - Becker County Historical Society Liz Rice - HistoriCorps Sean Dunham - Chippewa National Forest Lee Johnson - Superior National Forest Kolleen Kralick - Chequamegon-Nicolet National Forest Seth Nelson - Voyageurs National Park Bob DeGross - Voyageurs National Park Josh Glashauckas - Voyageurs National Park Shawn Smith - Grand Portage National Monument Sara Hanson - White Bear Lake Historical Society Shirley Davidson - City of Perham and the History, Arts & Cultural Association of East Otter Tail County Andrea Weber - Minnesota Department of Transportation

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EXECUTIVE SUMMARY

Purpose of this Report

This report covers the 2021 Field Season (June - October). It includes an overview of the field season structure and schedule, the impact on historic resources, the impact on the Corpsmembers' lives, and 17 project reports. The MNHS partnership funded two crews and a portion of the overhead for the program as a whole. Thank you for your continued support - especially in these financially and otherwise trying times.

Summary

In the era of COVID-19, we feel fortunate to have grown our programming and continue to foster meaningful community relationships. We onboarded seventeen Members for our 2021 Field Season. In an effort to diversify recruiting, we decided to run two full season (June to October) and one summer-only (June to August crew). Members were recruited from across the country, but Staff made a concerted effort to recruit local participants.

COVID-19 continues to impact our community engagement. We were able to facilitate two socially distanced public workshops with the help of RETHOS and Grand Portage National Monument. Northern Bedrock was anticipating hosting a third public workshop with RETHOS and the City of Stillwater; however, given the changing COVID landscape, the workshop has morphed into a how-to video staring Northern Bedrock AmeriCorps Members and Board Members.

Projects are scheduled as eleven, nine-day, camping-based project "hitches" that run from June through October, with five days off in between each hitch. Projects are planned in collaboration with a variety of groups throughout the state of Minnesota, including non-profits and government entities at all levels (federal, state, county, and local).

ORGANIZATIONAL OVERVIEW

Our Mission: To develop enduring workforce and life skills through service learning in historic preservation and community stewardship.

Our Values: Serving, Transforming, Preserving, Honoring

We focus on young adults, ages 18 – 25, who are interested in gaining hands-on experience in the trades. These Corpsmembers are selected from all backgrounds and walks of life for their enthusiasm, desire to learn, and commitment to serve. They receive a stipend in exchange for their service on one of three field crews. Corpsmembers are eligible to receive a Segal Education Award from the Corporation for National and Community Service (CNCS) upon successful completion of their AmeriCorps term of service. Other benefits include student loan deferment, leadership and team-building experience, an introduction to a spectrum of historic preservation trades, mentoring from staff and technical experts in the field, outdoor living skills development, and a chance to practice real-world communication, project management, and community engagement.

Hello friends,

This year's field season has been another success, despite the best efforts of Covid-19, droughts and fires, and pesky black flies.

Picture this:

15 individuals from across the United States were brought together by Northern Bedrock Historic Preservation Corps to preserve some pretty cool historical places while learning trade and life skills. Our diverse crew comes from a wide range of backgrounds not only geographically, but also in age, interests, and prior experience. What holds us together is our shared desire to learn, work together, and, most importantly, to continue the tradition of historic preservation.

From the Twin Cities to Voyageurs National Park, and from Detroit Lakes across the border to Cable, Wisconsin, the ground we've covered could never outweigh the skills we've developed and the friendships that have blossomed this season. This fall, some of us will continue to work in the preservation field while some will explore other paths. But regardless of what the future holds, all of us will come away stronger – both individually and collectively as a corps – and are grateful for the memories, bonds, and experiences that have made these months so valuable.

Thank you to all the awesome people who have given their time and money to Northern Bedrock Historic Preservation corps to help make this season possible. As another crop of us enter back into the world filled to the brim with technical and personal skills we've cultivated this season, we can't wait to see where the future will take us and Northern Bedrock!

Sincerely,

2021 Northern Bedrock Corpsmembers

Suplower Morran Ava R. Martin sine field



Training

We welcomed our new Members with hands-on training in leadership, team-building, OSHA 10, driving, Leave No Trace, meal planning, group culture and inclusion, AmeriCorps policies, risk management, and Wilderness First Aid / CPR. We also introduced Historic Preservation regulatory practices and approaches. Northern Bedrock believes in embedding continuous training into all projects and hitches by contracting Technical Specialists to provide project-specific instruction as needed. We offer career preparation and resume guidance throughout the season as Members explore their next steps.



I FEEL LIKE I'VE REALLY BEEN ABLE TO CHALLENGE MYSELF AND TRACK MY OWN DEVELOPMENT, BOTH IN TECHNICAL SKILLS AND INTERPERSONAL SKILLS. I TRULY BELIEVE THAT I AM EXITING THIS PROGRAM A STRONGER AND WISER PERSON - SOMEONE I AM PROUD OF.

Corpsmember

Advice to future Members:

- 1) Remember we are all a team
- 2) Ask questions! Most technical specialists are willing to happily teach you new skills!
- 3) There are no good and bad experiences, just different experiences.
- 4) Take the time to ask fellow Members questions about themselves.
- 5) Address issues as they arise.
- 6) Remember everyone is here to learn new skills! Don't be afraid to try!

Public Outreach

EVERYONE HAS SPACES, PLACES, AND PEOPLE IMPORTANT TO THEM, AND BY WORKING TO CONNECT PEOPLE FROM ALL WALKS OF LIFE WE CAN BETTER HELP EVERYONE TURN KNOWLEDGE INTO ACTION. THE PLACES THAT WE INTERACT WITH ARE MORE THAN JUST DOTS ON A MAP, THEY ARE PLACES THAT CAN PROVIDE A SENSE OF COMMUNITY AND COLLECT THE STORIES OF THE MANY PEOPLE THAT HAVE LOOKED OUT THEIR WINDOWS, LIE IN THE CEMETERIES, AND STEWARDED THE HISTORIC PLACES YOU ALL HAVE WORKED ON.

NBHPC Board Member





Rethos window workshop. Photos courtesy of Brian Fisher.

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Pictured left: Northern Bedrock and Rethos hosted a window restoration workshop at Halfway Ranger Station Historic District. Laura Leppink walked workshop participants through working with lead, removing windows, prepping surfaces, and replacing glazing putty. Participants were able to work with historic windows removed from Halfway or bring their own window from home.





By the Numbers

2 joists replaced 15 square feet of firebrick installed 22 jars of peanut butter eaten 25 feet of log replaced 30 square feet of firebrick removed 42 windows restored 56 square feet of siding installed 85 Monuments reset 211 feet of trim installed 609 feet of daubing installed 900 square feet of flooring installed 906 square feet of interiors demolished 1,160 square feet of pest mitigation installed 1,746 square feet of masonry repointed 1,844 square feet of masonry cleaned 1,846 tortillas eaten 3,024 square feet of Borate applied 6,816 square feet of roofing replaced 8,995 square feet of landscape managed 10,533 square feet of structures cleaned 14,974 square feet of finish scraped 20,662 square feet of finish applied

11,945 Total Project Hours

11,377 Corpsmembers Hours179 Volunteer Hours389 Staff Hours

Project Hosts

- 3 Historical Societies
- 1- Other non-profit
- 5 Federal Partners
- 1 State Partner
- 1 City Partner



I LEARNED A LOT OF TECHNICAL SKILLS. I HAVE A BETTER UNDERSTANDING OF HOW TO LIVE AND WORK WITH A GROUP OF PEOPLE.

Corpsmember

FIELD SEASON OVERVIEW

Northern Bedrock received 49 applications and interviewed 27 applicants. We enrolled a total of 11 participants for the full field season (900 service hours) and 6 participants for summer only (450 service hours). We had a great deal of interest in our program and attracted applicants from across the country as well as from other corps!

Staff participated in the following virtual and in-person recruiting events: UMD AmeriCorps Week Tabling Head of the Lakes Career Fair NEMOJT Career Fair Minnesota Private Colleges Career Fair UMD Public History Classroom Presentation Northland AmeriCorps Collaborative Zoom UMD Northland AmeriCorps Collaborative Table Change, Inc. Classroom Presentation



Corpsmember Demographics

State of Residency

Minnesota – 8 Wisconsin – 3 Other States - 6 • Alaska, Ohio, Massachusetts, California, Michigan, North Dakota

Education

GED – 2 High School Diploma- 2 AA - 1 Some college education -1 Bachelors - 10 Graduate Degree - 1

Race/Ethnicity

White - 13 Middle Eastern - 1 Black - 2 Jewish - 1





Project Hosts

Our Project Hosts partner with us to address critical preservation issues and to build pathways to the preservation trades for our Corpsmembers. These service projects enable us to provide opportunities for young people to learn real-world skills and open the door to a future career. Building relationships with our community partners, fellow volunteers, Project Hosts, and Technical Specialists is always the most memorable part of Northern Bedrock's field season.

THE STAIRS WERE IN DISREPAIR AND DANGEROUS FOR VISITORS AND COMMUNITY MEMBERS. NORTHERN BEDROCK'S WORK HAD MADE THE MT. ROSE TRAIL A SAFER AND MORE APPEALING ASSET TO OUR PARK. THE CREW UTILIZED HISTORIC METHODS PREVIOUSLY USED BY THE CCC-INDIAN DIVISION TO CREATE THE STAIRS NEARLY 100 YEARS AGO.



Project Host

Technical Specialists

In our most technical season yet, we had the pleasure of working with several passionate and insightful technical instructors. This year Technical Specialists provided hands-on instruction in roofing, masonry and window restoration, site maintenance, dutchman log repair, and archaeological site survey. Technical Specialists provide more than 700 hours of hands-on guidance and career advice to our Members.





This project has been financed in part with funds from the State of Minnesota Arts and Culture Heritage Fund through the Minnesota State Historical Society.

Field Schedule

Hitch 1 | June 1 – June 9

See orientation

Hitch 2 | June 15 - 23

- 1- Halfway Ranger Station Historic District (windows + public window restoration workshop)
- 2 Fairground Cabin, Becker County Historical Society (log maintenance, roofing)
- 3 Fenske Pavilion, Superior National Forest (roofing, masonry)

Hitch 3 | June 29 – July 7

- 4 Hoist Bay, Voyageurs National Park (scraping/painting, siding repair)
- 1 Halfway (windows cont., prep for Passport in Time)
- 5 Ely Cemetery (cemetery restoration)
- 6 Grand Portage National Monument (historic trail masonry restoration)

Hitch 4 | July 13 - 24

- 7 Graeser Park, Robbinsdale (masonry, landscape restoration)
- 8 Forest Lodge w/ HistoriCorps, Chequamegon-Nicolet National Forest (roofing)
- 6- Grand Portage National Monument (historic trail masonry restoration cont.)

Hitch 5 | July 27 - August 4

9 - Sawbill Cabin, Superior National Forest (log maintenance, scraping/painting)

- 10 Continental Divide Wayside, Chippewa National Forest (masonry, roofing)
- 11 Perham Cemetery, Otter Tail County Historical Society (cemetery restoration, chinking and daubing)

Hitch 6 | August 10 – 18 (all crews and staff)

12 - CCC Camp Rabideau, Chippewa National Forest (carpentry, scraping/painting)

Hitch 7 | August 24 - September 1

13 - Fillebrown House, White Bear Lake Area Historical Society (woodwork, window repair)
14 - City of Stillwater (window restoration video)
4 - Fujita Cabin, Voyageurs National Park (log maintenance, scraping/painting)

Hitch 8 | September 7 - 15

4 - Camp Marston, Voyageurs National Park (scraping/painting) 15 - East Bearskin Boathouse, Superior National Forest (log maintenance, scraping/painting)

Hitch 9 | September 21 - 29

4 - Kettle Falls, Voyageurs National Park (flooring, chinking and daubing) 1 - Halfway Ranger Station Historic District w/ Passport in Time volunteers (roofing, masonry)

Hitch 10 | October 5 - 13

16 - Isabella Ranger Station, Superior National Forest (log workshop, log replacement and maintenance) 1 - Halfway Ranger Station (carpentry, log maintenance)

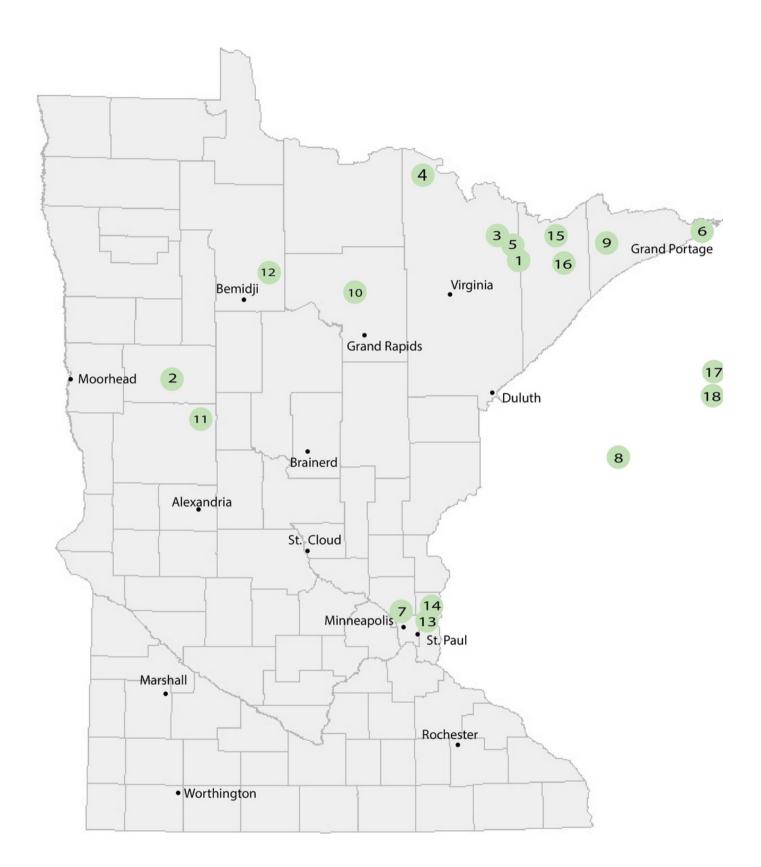
Hitch 11 | October 19 - October 27

17 - Lost Lake Cabins, Chequamegon-Nicolet National Forest (window restoration)

18 - Franklin Lake Campground, Chequamegon-Nicolet National Forest (masonry)







Project: Program OrientationHost: Northern Bedrock Historic Preservation CorpsSite: Halfway Ranger Station Historic DistrictHitch 1: June 1-9, 2021

HITCH SUMMARY

Tuesday - Welcome to the Program!

- Hello! Introductions + Our COVID Protocols
- Onboarding and Overview
- Introduction to Halfway Ranger Station Historic District
- Scavenger Hunt
- Emergency Response Plan
- Expectations and Culture Discussion

Wednesday – Intro to our Service

- Leave No Trace
- Vehicles: Systems, Protocol, Practice
- Trailering and Inventory
- Behind the Wheel
- Historic Preservation 101
- Upcoming Projects Overview

Thursday – OSHA 10

• OSHA 10 with TBG

Friday – OSHA 10 cont. & Your Stomach

• All Things food, Nutrition, and Meal Planning

Saturday – Intro to Hands-On Projects

- Risk Management circle-up: Safety, Quality, Quantity
- Hands-on Project rotations

Sunday – Program Roles and Policies / CPR

- Crew Roles and Policies
- CPR
- Crew Leadership Scenarios, Conflict Resolution Practice

Monday – Wilderness First Aid (WFA)

Tuesday – WFA cont.

• Orientation Reflections and Feedback

Wednesday – Wrap Up

- Clean facilities, Wrap up projects,
- Circle Up: Debrief Orientation, Questions?
- Take a break and get psyched for Hitch







Corpsmembers practicing first aid technics learned during Wilderness First Aid



AmeriCorps members learning the basics of log work: peeling logs.

I HOPE TO GAIN GREAT SKILL AND KNOWLEDGE REGARDING HISTORIC PRESERVATION PRACTICES, AND I ALSO WANT TO LEARN HOW TO BE A BETTER OUTDOORS PERSON.

Corpsmember



Corpsmembers practice how to erect scaffolding during OSHA 10 class.



Members collaborate in coming up with a list of common values they would like to uphold during their season with Northern Bedrock

Project: Log Structure Restoration
Host: Becker County Museum
Site: Fairground Cabin
Host: Allen Olson, Allen Olson Roofing
Hitch 2: June 15-23, 2021

ABOUT THE SITE

Dating back to 1891, the cabin was constructed to be a single-family dwelling and was originally located on the northeast shore of Tamarac lake. The structure has seen a variety of uses over the last century. In 1904 the building served as a school house before reverting back to a dwelling. The structure has been moved at least twice. Once to the Tamarac National Wildlife Refuge where it was used as a hunting cabin. The cabin was moved to its present location at the Becker County Fairgrounds in 1992.

HITCH SUMMARY

Members worked to replace three logs, daubing, unsympathetic siding, and the failed roof covering to ensure the structure's long-term preservation. The Becker County Historical Society worked with a local Amish sawmill to source replacement siding and logs for the restoration work.

QUANTITATIVE MEASUREMENTS

25 linear feet of log replaced

- Three candidates for replacement were identified
- Steel "pins" were inserted through the wall above the logs to be replaced
- "Ears" were detached to allow the log to slide horizontally out of the wall. Two pilot holes were drilled, 5/16" diameter. Using a 1-1/4" chisel, the ear was split from the log.
- Using hydraulic jacks, the structure was lifted roughly 1 inch to remove deteriorated logs.
- Using what remained of the original logs, replacement logs were shaped and fitted into the wall.
- Once the replacement logs fit, the building was lowered back into its original location. Using the pilot holes drilled through the "ears" previously and square pegs of "ears" were reattached to the original logs.

293 linear feet of daubing replaced

- Removed failed daubing
- Used 1:3:7 Portland:Lime:Sand mixture
- Installed new daubing along the replacement logs

440 square feet of roofing replaced

- Removed old roofing
- Replaced with #1 Cedar shingles

56 square feet of siding replaced

- Removed failed board and batten siding
- Replaced with new Dutch lap siding

2 joists installed

2 windows restored



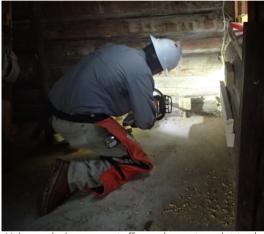




The Becker County Fairground Cabin between removing the failed roof covering and installing the new cedar shingles.



The first courses of cedar shingles installed.



Using a chain saw, a staff member cuts a slot to the wall to be pinned and then hydraulically lifted.



Corpsmembers removed unsympathetic siding on the north gable.



The replacement siding was milled locally to match the original found on the south gable.



The bottom logs on the east wall were replaced

Project: Window Restoration and Site Maintenance
Host: Northern Bedrock Historic Preservation Corps
Site: Halfway Ranger Station Historic District
Technical Specialist: Laura Leppink, RETHOS
Hitch 2: June 15-23, 2021

ABOUT THE SITE

The Halfway Ranger Station Historic District (HRSHD) is located on the South Kawishiwi River, 10 miles south of Ely, MN. The Historic District consists of seven log buildings constructed by locally based Civilian Conservation Corps companies and three stick framed buildings used by Lakes States Forest Experimental Station (LSFES). The latter started operating as early as 1924, conducting forest research in the area. From at least 1910 until 1950, the site was the location for the Halfway Ranger Station of the Superior National Forest. Management of the site was assumed by the Northern Research Station (formerly LSFES) in 1968, and the buildings were utilized by federal biologists conducting long-term large mammal research. Northern Bedrock Historic Preservation Corps has a long-term Section 111 lease with the Forest Service to preserve the site for its adaptive re-use.

HITCH SUMMARY

Members attended a window restoration workshop organized in partnership with Rethos. Four community members, 5 Members, and 5 staff attended the workshop. Members learned how to prepare a workspace when working with lead, the art of window restoration, and how to identify and match historic finishes. Members also completed site maintenance projects. Members also maintained the stretch of highway adopted by Northern Bedrock and worked on site maintenance projects.

QUANTITATIVE MEASUREMENTS

8250 square feet of brush removed 3703 square feet of structures cleaned 12 windows prepped for restoration

- Removed sashes from casing
- Removed old glaze
- Collected sample of finish to color match
- Scraped paint
- Measured for replacement glass







Work area was prepped



Working in PPE, Corpsmembers removed sashes



Northern Bedrock crew members maintain a section of highway right-of-way by removing litter from ditches.



With sashes removed, jambs can be worked on.



With the direction of Laura Leppink, corpsmembers learn window restoration skills



Window sash restoration

Project: Roofing and Masonry **Host:** Fenske Lake Campground **Site:** Fenske Pavillion, Ely, MN **Hitch 2:** June 15-23, 2021

ABOUT THE SITE

Fenske Lake Campground is located just off Echo Trail. The campground has a fishing dock, boat put-in, and swimming area. The Pavilion was built by the CCC in the 1930's though is not listed on any historic registry.

HITCH SUMMARY

Work here was funded by the Great American Outdoors Act (GAOA) and will allow the pavilion fireplace to be used once again.

QUANTITATIVE MEASUREMENTS

1064 square feet of roofing materials stripped
30 cubic feet of firebreak demolished
549 square feet of exterior surfaces scraped in preparation for finishing
765 square feet of exterior surfaces painted
1064 square feet of new roofing installed
1096 square feet of structures cleaned
15 cubic feet of firebrick installed







Fenske Pavilion: a CCC constructed picnic shelter in Superior National Forest



Repair work on the firebox begins



Repair work continues on the fire box



New flashing installed around original chimney



New asphalt shingles installed



Eave access was achieved off of scaffolding

Project: Exterior Refinishing, Scrapping, Painting
Host: Voyageurs National Park
Site: Hoist Bay (Logging Camp 75)
Hitch 3: Tuesday, June 29, 2021- Wednesday, July 7, 2021

ABOUT THE SITE

Edward Hines and the Weyerhaeuser family pooled their resources to create the Virginia and Rainy Lake Lumber Company in 1905. Lumber was transported from Hoist Bay (Logging Camp 75) to their sawmill located in Virginia, Minnesota. Aptly named, a hoist was required to lift the logs out of the water and onto empty train cars for transportation to the Virginia sawmill. The Virginia sawmill could process one million board feet of lumber a day. Between 1913 and 1929, 13.5 million board feet of lumber were transported from Hoist Bay to the sawmill. By 1929 most of the white and red pine stands were cut; Camp 75 was shut down and dismantled, ending part one of the Hoist Bay story.

The Hoist Bay area lay dormant for almost 10 years, changing ownership 50 times, until 1939 when Ted and Fern Monson purchased the land. When the Monsons arrived, there were few reminders of the previous logging era - only a railroad trestle, an old root cellar, and a garbage dump remained. Between 1939 and 1945 the Monsons built 4 cabins; each cabin had 4 bedrooms, a kitchen, and a living room. During their time there, the Monsons built a total of 14 buildings that were enjoyed by summer visitors. In 1973, Ted and Fern sold Hoist Bay, and in 1978 the land was acquired by the National Park Service. It has designated a point of interest for visitors, and a new chapter in the history of Hoist Bay began.

HITCH SUMMARY

Members worked to lightly scrape, prime, and paint two building on the complex – the Kitchen and Cabin buildings. Three additional buildings on the complex were cleaned.

QUANTITATIVE MEASUREMENTS

1805 square feet of exterior surfaces scraped6147 square feet of exterior painted2880 square feet of structures cleaned









Structures at Hoist Bay were sided with clapboard - before refinishing

After scraping



Corpsmembers us a variety of ladders to gain access to entire wall surface.



Repainting the exterior



After refinishing

After refinishing

Project: Window Restoration, Site Maintenance, and Cemetery Restoration
Host: Northern Bedrock Historic Preservation Corps
Site: Halfway Ranger Station, Ely Cemetery
Hitch 3: June 29 - July 7, 2021

ABOUT THE SITE

Halfway Ranger Station

The Halfway Ranger Station Historic District (HRSHD) is located on the South Kawishiwi River, 10 miles south of Ely, MN. The Historic District consists of seven log buildings constructed by locally based Civilian Conservation Corps companies and three stick-framed buildings used by Lakes States Forest Experimental Station (LSFES). The latter started operating as early as 1924, conducting forest research in the area. From at least 1910 until 1950, the site was the location for the Halfway Ranger Station of the Superior National Forest. Management of the site was assumed by the Northern Research Station (formerly LSFES) in 1968, and the buildings were utilized by federal biologists conducting long-term large mammal research. Northern Bedrock Historic Preservation Corps has a long-term Section 111 lease with the Forest Service to preserve the site for its adaptive re-use.

Ely Cemetery

The City of Ely continues to remain a strong project and training partner for Northern Bedrock Historic Preservation Corps. Owned by the City of Ely, the local cemetery has digitized burial records to genealogical research. Northern Bedrock is pleased to have partnered with Ely Cemetery to provide cemetery restoration training for the past several seasons.

HITCH SUMMARY

Halfway Ranger Station

Members completed window restoration on the Boat House and District Office.

Ely Cemetery

Members learned to edge, clean, and reset headstones.

Quantitative Measurements Halfway Ranger Station

2820 square feet of finishing applied 10 square feet scraped 17 Windows reglazed

Ely Cemetery

11 Monuments cleaned 17 Monuments Reset



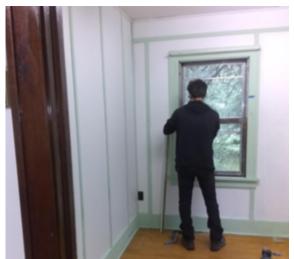




Window restoration work continued where the previous Hitch left off.



Corpsmembers learn how to safely and accurately lift and reset stone monuments.



Re-installing the restored window sashes



Resetting headstones on newly leveled bases. Specific monument setting putty and lead wedges are used.



Using D2, a non-reactive cleaner, a Corpsmember removed bio-growth from grave markers.



A cleaned and reset headstone.

Project: Historic Trail Masonry Restoration
Host: Grand Portage National Monument
Site: Mount Rose Trail
Technical Specialist: Sadie Young
Hitch 3: June 29 - July 7, 2021
Hitch 4: July 13-21, 2021

ABOUT THE SITE

Grand Portage National Monument is located on the north shore of Lake Superior within the Grand Portage Indian Reservation and is dedicated to the preservation of the center of fur trade activity and Anishinaabeg Ojibwe heritage. The land was established as a National Monument in 1960. It explores the partnership between the Grand Portage Ojibwe and the North West Company during the North American fur trade. The park is home to a heritage center, an Ojibwe Village exhibit, Canoe Warehouse, kitchen, reconstructed Great Hall Depot, the Grand Portage trail, and Fort Charlotte and is surrounded by the Grand Portage stockade. It is reported by the National Park Service that "no historic structures remain from the fur trade era at either site; nor have any illustrations or detailed descriptions of the depot buildings been discovered" (https://www.nps.gov/parkhistory/online_books/grpo/adhi1.htm). Rather the structures present are recreations and representations of the past, specifically the late 18th and early 19th centuries. A significant amount of archaeological research has been conducted at the site, which has contributed greatly to the understanding of the site and how it is interpreted today.

A special relationship exists between the Federal Government and the Chippewa Tribe. This is outlined in the 1958 Act (P.L. 85-910) authorizing the establishment of the monument.

HITCH SUMMARY

Worked with the Grand Portage Conservation Corps to restore aged stone steps along Grand Portage's Mt Rose trail. Members removed loose stone and demolished old mortar; rebuilt dangerous steps; re-pointed stone lacking mortar; and cleaned steps

QUANTITATIVE MEASUREMENTS

65 square feet of masonry cleaned 67 square feet of masonry repointed 138 cubic feet of masonry prepped







An example of the masonry stairs along the Mt. Rose trail prior to restoration work.



Corpsmembers begin work on restoring the masonry stairs.



Stairs during restoration.



During restoration work.



After restoration.



After restoration.

Project: Masonry, Landscape Restoration
Host: MN Department of Transportation
Site: Graeser Park
Technical Specialist: Craig Lundberg, Advanced Masonry Restoration
Hitch 4: July 13-21, 2021

ABOUT THE SITE

Graeser Park was built in 1939 as part of a larger project to develop roadside parks along 12.5 miles of Highway 100. The development of Lilac Way (Highway 100) was overseen by the Work Progress Administration and Minnesota Highway Department. The park's beehive fireplace is one of two remaining fireplaces. Landscape Architect Arthur Nichols designed the "parkitecture" found at Graeser Park. Minnesota Department of Transportation is currently working to restore the park before returning the park back to the city of Robbinsdale.

HITCH SUMMARY

Members restored one picnic table and three picnic table pads using salvaged stone as well as repointed portions of the retaining wall.

QUANTITATIVE MEASUREMENTS

67.5 cubic feet of stone was prepped for restoration547 square feet of stone was cleaned242 square feet of stone was repointed







The overlook wall at Graeser Park shows signs of deterioration since its construction in the 1930s



Corpsmembers clean the sediment and failed pointing from one of the original picnic table pads.



The salvaged masonry table bases needed cleaning prior to reinstallation.



The table pads were made of limestone set in a bed of mortar on top of a concrete foundation. Loose or missing stones were replaced with salvaged material.



Repointing portions of the picnic table base



The newly reinstalled picnic table in its original location.

Project: Roof Replacement and Site MaintenanceHost: HistoriCorps, Northland CollegeSite: Forest LodgeHitch 4: July 13-21, 2021

ABOUT THE SITE

In 1999, the Chequamegon-Nicolet National Forest accepted a gracious donation from Mary Griggs Burke of her 872-acre Forest Lodge estate with an obligation to "provide environmental research and educational programs on or related to the Mary Livingston Griggs Special Management Area." In 2002, Forest Lodge was placed on the National Register of Historic Places. Since 2013, Forest Lodge has been in a transition period, having been closed to the public and now open—but with very limited facilities—due to the condition of the buildings. Building rehabilitation and preservation is in progress, and public educational programs began in 2016 for the first time in the property's history. A partnership with Northland College will ensure preservation of the estate's infrastructure through consistent public use.

HITCH SUMMARY

Under the supervision of HistoriCorps, whose mission is "to save and sustain historic places for public benefit through partnerships that foster public involvement, engage volunteers and provide training and education," we tackled a variety of projects including cedar shingle roofing, general carpentry, and site maintenance. Our Members worked alongside seven HistoriCorps volunteers and three staff.

QUANTITATIVE MEASUREMENTS

100 square feet of landscape maintenance2545 square feet of cedar shingles installed170 square feet of structures cleaned







A view of the project roof as seen from the scaffolding.



Installation of cedar shakes followed procedures outlined by the Cedar Bureau.



The chimney crickets were flashed with copper and then cedar shakes installed.



Corpsmembers relaxing to some fiddle music at the end of the work day. Photo Courtesy Willie Gorham / HistoriCorps.



A nearly competed roof.



A nearly competed roof.

Project: Site and Landscape MaintenanceHost: Superior National ForestSite: Sawbill Lake Guard StationHitch 5: July 27 - August 4, 2021

ABOUT THE SITE

Sawbill Lake Campground is located in a majestic stand of mature birch, red pine, and white pine on the shore of Sawbill Lake. This is a highly visited campground and a popular entry point for the Boundary Waters Canoe Area Wilderness. Located by the campground is Sawbill Canoe Outfitters which offers a variety of commercial services including canoe rental, trip outfitting, showers, and sales of some groceries and gear. Having a long history as a popular fishing destination, the foundation of the old Sawbill Lodge remains at the south end of the lake.

Built before the ease of travel we experience today, this guard station served as a remote work site for Forest Service employees, and features a one bedroom cabin with complete Kitchen, and cellar, a boathouse, and now a garage to hold fire equipment. This cabin was used in the 1950's as a place to entertain the leadership of the USFS Region 9 and their families, and now still occasionally hoses volunteers and serves as an entry point for Forest Service Crews.

HITCH SUMMARY

Crew cleaned, scraped, sealed, and painted exterior of two buildings as well as reset and maintained stone pathway. The roofs of each structure were swept of pine needles.

QUANTITATIVE MEASUREMENTS

1307 square feet of caulking applied
1350 square feet of structures scraped and painted
285 square feet of landscaping
1350 square feet of structures treated for powder post beetles
24 square feet of stone pathway reset







A Corpsmember paints the log ends on the Guard Station.



A Corpsmember packs checks with close cell foam prior to sealing with caulk.



Corpsmembers and staff us ladders and scaffolding to access the gable wall and roof overhang.



Boathouse before exterior refinishing and removal of accumulated sediment



Before any work undertaken on the Guard Station at Sawbill.



After work was complete.



After exterior refinishing and roof sweeping.

Project: Site MaintenanceHost: Chippewa National ForestSite: Laurentian Divide WaysideHitch 5: July 27 - August 4, 2021

ABOUT THE SITE

The Laurentian Divide Wayside is an interpretative site within the Chippewa National Forest. The site explores the Laurentian continental divide and its geographically relationship to the United States.

HITCH SUMMARY

Corps members worked with Chippewa National Forest to reroof the picnic pavilion and repoint and clean the stone walkway wall.

Doug Thompson, Northern Bedrock Board Member, spoke to the crew on the history of the land and the relationship between the Chippewa National Forest and the Leech Lake Band of Ojibwe.

QUANTITATIVE MEASUREMENTS

906 square feet of demolition 1130 square feet of finish applied 793 square feet of masonry, cleaned, reset, and tuckpointed 1917 square feet of asphalt roofing installed 3780 square feet of structure cleaned







The main overlook wall prior to restoration, note the stone that rest on top of the wall since they have fallen out.



Interior underside of picnic pavilion prior to staining.



The same portion of wall after restoration work.



The corner of this wall was repaired; a before and after view





Removing the failed roof covering on one of the information kiosks at the Wayside



The re-roofed kiosk.

Project: Log Structure Maintenance and Cemetery Restoration
Host: City of Perham, the History, Arts, and Cultural Association of East Otter Tail
County, and Shirley Davidson
Site: Perham Cemetery, Perham Pioneer Village
Hitch 5: July 27 - August 4, 2021

ABOUT THE SITE

Pioneer Village

Located on 25 acres, the Perham Pioneer Village includes a dozen historic structures and large parcels of wooded and open grasslands that currently operates as an event center.

Perham Cemetery

The first burial at the Perham Cemetery was in 1880. The cemetery is now maintained by the City of Perham

HITCH SUMMARY

A crew worked on replacing failed chinking and daubing on two structures at the Pioneer Village and reset headstones and markers at the Perham Cemetery.

QUANTITATIVE MEASUREMENTS

246 square feet of failing chinking and daubing replaced on two structures66 square feet of masonry cleaned68 monuments reset







Corpsmembers lift sunken foot-stones at the Perham Municipal cemetery during restoration work.



A reset grave marker.



Cemetery restoration in progress



A headstone is reset using a tripod and block and tackle.



Corpsmembers use scaffolding to access the gable wall of a pioneer cabin to replace the mortar daubing.



The same gable wall as the photo at right, after daubing replacement.

Project: Site Maintenance, Carpentry, End of Summer Term and Mid-Season Orientation
Host: Chippewa National Forest
Site: CCC Camp Rabideau, Blackduck, MN
Hitch 6: August 10-18, 2021

ABOUT THE SITE

Camp Rabideau, located on 112 acres of forest service land, represents one of the bestpreserved Civilian Conservation Corps camps in the country. When in operation, 300 men between the ages of 17 and 28 called Camp Rabideau home. Once WWII concluded, the site was operated for nearly thirty years by the University of Illinois until 1973. They used this site as a training facility for their forestry and engineering students. The site sat vacant and with minimal use until a significant investment was made with American Reinvestment and Recovery Act money in 2009. Now the site is operated by the Chippewa National Forest as a hiking and educational center during the summer months.

Dedicated leadership from the University of Illinois and Chippewa National Forest has ensured the fifteen original buildings remain standing for today's visitors. It is particularly fitting that our 21st Century Conservation Corps crews are able to work at one of the sites that hosted the original iteration of the Corps model.

HITCH SUMMARY

The crew scraped and painted portions of two buildings (the Educational Buildings and Barracks #7); entirely painted Barracks #5; replaced, in-kind, missing corner and window trim on the Recreation Hall.

This hitch served as the final hitch for the Summer-only crew members. Having the entire Corps together for this hitch was a great way to bookend the Summer-only members time and provided those continuing into the fall, the opportunity to reconnect with fellow Corpsmembers they may not have seen since the start of the summer.

NBHPC Board Member, Doug Thompson, spoke to the crews about the history of the land as it relates to the Ojibwe people. Sean Dunham, Chippewa National Forest, arranged a panel discussion with forest service personnel about careers in the Forest Service.

QUANTITATIVE MEASUREMENTS

211 feet of trim installed on the Recreation Hall.

- Measured the dimension, and then cut the trim to be installed
- Painted trim prior to installation
- Installed with 8d galvanized nails

5800 square feet of exterior walls scraped and painted.

- Using a nail set, countersunk any nails that were proud of the surface
- Covered work area with tarps to collect any paint flakes
- Lightly scraped walls, painted surface with primer containing, latex based paint.







A side by side comparison of pre and post refinishing.



Members scrape the south elevation of Building #5, Barracks.



AmeriCorps volunteers scrape the exterior of the east wing of the Education Building.



Corpsmembers learn how to replicate missing trim elements from the Recreation Hall.



Building #5 after the exterior was refinished.



The Education building after refinishing.

Project: Window Restoration
Host: White Bear Lake Area Historical Society
Site: Fillebrown House, White Bear Lake, MN
Technical Specialist: Mark Johnston, Historic Designs Consulting LLC
Hitch 7: August 24 - September 1, 2021

ABOUT THE SITE

Fillebrown House, White Bear Lake

The Fillebrown House, listed on the National Register of Historic Places, is owned and operated as a museum by the White Bear Lake Area Historical Society. Built-in 1879 for the Charles and Emily Noyes family, later sold to the Youngs, and then the Fillebrown family. It served as the primary residence for the Fillebrown family until its donation to the WBLAHS in the early 1970s.

The interior of the building is much as it was in the 1920-1940s when the Fillebrown family decided to move from St. Paul to White Bear Lake and have this home be their primary residence. Built in the Stick Style, the home is deemed historically valuable for its excellent and well-preserved interior and exterior design elements.

HITCH SUMMARY

The crew of six Northern Bedrock Corpsmembers, worked to maintain some of these distinct features by restoring a number of the colored-glass wood-sash windows and repairing a number of the storm windows.

QUANTITATIVE MEASUREMENTS

4 windows restored1 door restored1 stained glass window restored4 storm windows restored







A Corpsmember temporarily boards up a window opening during restoration.



Fillebrown House



Restoration work on the windows at Fillebrown involved the careful cleaning of original stained glass.



The crew removed the failed paint layer on the window sashes prior to restoration.



Much of the original stained glass needed to be reassembled with epoxy. Care was taken to select an epoxy with the same light refraction properties as glass.



Installing a new storm window.

Project: Window Restoration Video Production
Host: City of Stillwater
Site: Warden's House, Stillwater, MN, Washington County
Technical Specialist: Laura Leppink
Hitch 7: August 30, 2021

ABOUT THE SITE

The Warden's House is a two-story, stone building built in 1853 as a residence for the Minnesota Territorial Prison warden. The house functioned as a primary residence for the Warden until 1914 when the prison moved to Bayport. The Deputy Warden or Superintendent lived in the building for many years after this move. The house has functioned as a house museum since the Washington County Historical Society acquired the site in 1941.

The building and the grounds served as the setting for the production of a series of educational widow restoration videos.

HITCH SUMMARY

Northern Bedrock partnered with the City of Stillwater and Rethos: Places Reimagined to aid in the production of a series of educational window restoration videos. A pair of Northern Bedrock Corpsmembers appeared alongside Technical Instructor Laura Leppink in showing how to restore historic wood sash windows. These videos were produced for inclusion at the Minnesota State Historic Preservation Conference held virtually in late September 2021.

QUANTITATIVE MEASUREMENTS

A series of four window restoration videos were produced for the State Historic Preservation Conference in partnership with Rethos and the City of Stillwater.







Filming at the historic Warden's House in Stillwater, Minnesota.



Corpsmembers and Technical Instructor take guidance from the videographer.



A still image from the series of educational videos produced through this collaboration.



Northern Bedrock crew members show how to safely and effectively remove old glazing compound.



Filming in progress.

Photos and stills courtesy of Rethos: Places Reimagined. Instruction videos can be found on Rethos' Youtube page.

Project: Site Maintenance, Scraping and Painting **Host:** Voyageurs National Park Site: Camp Marston, Polaris Cabin; Fujita Cabin; Rainy Lake Visitors Center Hitch 7: August 24 - September 1, 2021 Hitch 8: September 7-15, 2021 **ABOUT THE SITE Polaris Cabin, Camp Marston**

The Polars Cabin at Camp Marston is located on Brown's Bay on the eastern side of Rainy Lake in Voyageurs National Park. The cabin is the last remaining structure from a series of buildings built in the 1930s as part of Iowa State University's engineering program. They used the site between 1923 and 1940 as an educational camp where students learned about engineering, surveying, and building principles in remote settings.

Fujita Cabin

The Fujita cabin is listed on the National Register as historic for its association with Jun Fujita perhaps the first Japanese-American photojournalist — and the broad patterns of outdoor recreation in the first half of the 20th century. Given the prejudice of the time, the land was purchased around 1928 by Florence Carr, Fujita's long-term companion, rather than Fujita himself. Jun Fujita designed and built the cabin on the island himself.

Rainy Lake Visitors Center

This Visitors Center is the main access to Rainy Lake. Located on the west side of the lake, it serves as an educational and informational center catering to members of the public as they enter the National Park.

HITCH SUMMARY

Polaris Cabin, Camp Marston

The crew worked to lightly scrape, prime, and then paint the exterior of the Polaris Cabin.

Fujita Cabin

Crew members completed the scraping and priming during the first project hitch and completed the two coats of exterior paint on the second hitch at the site.

Rainy Lake Visitors Center

The crew headed back to the mainland to complete some deferred maintenance tasks on a comfort station at the Rainy Lake Visitors Center.

QUANTITATIVE MEASUREMENTS

Polaris Cabin, Camp Marston

937 square feet of walls and trim scraped 937 square feet of oil-based primer applied 5708 square feet of finish applied to walls and trim 2052 square feet of exterior latex paint applied

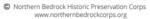
Fujita Cabin

1028 square feet of walls and trim scraped 1028 square feet of primer applied

Rainy Lake Visitors Center

500 square feet of exterior wall scraped 500 square fee of exterior paint applied









The Polaris Cabin at Camp Marston, significant scaffolding was needed to gain access to one gable walls and one eave wall.



The entire eastern eave wall needed staging erected, this was two or three courses tall for the majority.





Corpsmembers enjoying the evening at Fujita Cabin.



The surface was lightly scrapped prior to priming with an oil based primer and two finish coats of latex paint.



The east elevation of Fujita mid-restoration at sunrise.





Project: Log Maintenance, Site Maintenance, Pest Mitigation
Host: Superior National Forest
Site: East Bearskin Guard Station
Technical Specialists: Rachel Hines and Kimberly Thompson, USFS
Hitch 8: September 7-15, 2021

ABOUT THE SITE

Located on the edge of the Boundary Waters Canoe Area Wilderness, this is a CCCconstructed guard station. It served, and still serves, as an administrative and support site for staff of the Superior National Forest.

The site contains two main structures - the Boathouse and the Guard Station. Each are round-log scribe-fitted log buildings. The crew camped at the East Bearskin USFS Campground and worked with the technical instruction of Rachel and Kim of the Superior National Forest Heritage Program team.

HITCH SUMMARY

The crew undertook a series of deferred maintenance and preventative maintenance tasks on both the Boathouse and the Guard Station

QUANTITATIVE MEASUREMENTS

1160 Square feet Mouse-proofed by filling possible entry points with steel wool-type material.

One window and one screen repaired 3005 square feet of finish applied

- cleaned the building with TSP
- scraped failing paint
- applied borates
- repainted with a single coat of Cabot Oil Stain Oxford Brown
- filled checks and sealed them with LogJam







The Boathouse at East Bearskin showing the sun damaged, originally Oxford brown, stain.



Corpsmember staining log ends on the boathouse.



The porch of the guard station with some weathered stain.



Members staining under the lintels of the guard station.



The finished boathouse.



AmeriCorps Members and Forest Service employees enjoying the newly stained guard station.

Project: Carpentry, Landscaping
Host: Voyageurs National Park
Site: Kettle Falls Dam Tender's Cabin
Technical Specialist: Mark Goulet, Voyageurs National Park
Hitch 9: September 21-29, 2021

ABOUT THE SITE

Located at the east edge of the Kabetogama Peninsula, the dam tenders cabin was built to house the dam keeper. It is part of a series of structures built between 1910 and 1913. The cabin itself is a simple round log building with chinking and daubing sealing the gaps between courses of timber.

HITCH SUMMARY

A crew of six Northern Bedrock Corpsmembers worked for a full hitch under the guidance of Mark Goulet of Voyageurs National Park. He instructed the crew in replacing tongue and groove flooring, chinking and daubing, and the weatherproofing of window openings by scribe fitting plywood covers. The crew installed the framing elements, subfloor, and floor covering. They helped maintain adequate site drainage by installing an appropriate french drain around the structure.

QUANTITATIVE MEASUREMENTS

900 square feet of subfloor framing installed 900 square feet of tongue and groove flooring installed 70 linear feet of chinking and daubing installed 95 linear feet of french drain installed







Interior of the Kettle Falls Tender's Cabin without a floor. Note some log replacement has been previously done.



Chinking labeled prior to removal and subsequent replacement.



Floor joists being installed. The wall to be rechinked is visible on the right.



Tongue and groove flooring going in over the subfloor.



Interior wall after rechinking.



Finished cabin floor.

Project: Roof Covering Replacement, Framing, Preventative Maintenance
Host: Northern Bedrock Historic Preservation Corps
Site: District Office, Halfway Ranger Station Historic District
Hitch 9: September 21-29, 2021
Hitch 10: October 5-13, 2021

ABOUT THE SITE

The Halfway Ranger Station Historic District (HRSHD) is located on the South Kawishiwi River, 10 miles south of Ely, MN/ The Historic District consists of seven log buildings constructed between 1934 and 1936 by the locally based Civilian Conservation Corps companies. The site was used as an administrative site by the Superior Forest Service. Management of the site was transferred to the North Central (now Northern) Research Station - a branch within the USDA Forest Service. Northern Bedrock has been involved with this site for many years now and this continued in 2021 with the signing of a Section 111 lease agreement with a 50-year term.

The work was accomplished with significant help from the Passport In Time (PIT). The PIT volunteer program is administered by the PIT Clearinghouse, a part of the USFS. Through an NBHPC partnership with Superior National Forest, we were able to host four PIT volunteers from across the country to help in the completion of this work. Thank you to our dedicated volunteers that helped make this project a success!

HITCH SUMMARY

Work during this period was centered on rehabilitation work on the District Office. The roof covering was replaced after years of water incursion that led to the total deterioration of the roof framing over the 1960's era bathroom addition. This portion of the roof was reframed entirely. The sill plate on the bathroom was replaced due to rot. The interior, non-historic plywood siding was removed as was the water logged and decaying insulation. The exterior and interior were both washed with TSP and borate solutions were applied to all the log surfaces to mitigate powder post beetle infestation. On the exterior of the building, a coat of oil based stain was applied. Any sashes with deteriorated glazing were removed and reglazed; broken lites were replaced. Along the east and south side of the building, accumulated soils were removed. The deteriorated masonry chimney was restored.

QUANTITATIVE MEASUREMENTS

8 Windows reglazed and reinstalled
80 square feet of sheathing replaced along with requisite framing elements
850 square feet of failed roof covering replaced
48 linear feet of swale installed around the structure
7 gallons of borate solution applied to structures. 1584 square feet covered
Restored and counter flashed chimney







The east elevation showing heavy accumulation of duff and moss.



The chimney proved to be so deteriorated that most brick was unsalvageable and needed complete rebuilding.



East elevation of the finished roof



The accumulation of bio-growth on the bathroom lead the complete deterioration of the roof structure. Here a volunteer and staff removes the failed material.



A crew member deconstructing the chimney.



Keeping with the original materials and execution, valley flashing was made with galvanized steel and left exposed.

Project: Log Repair, Site Maintenance
Host: Superior National Forest
Site: Isabella Work Station
Technical Specialist: Stewart Chilvers, Colville National Forest
Hitch 10: October 5-13, 2021

ABOUT THE SITE

Another example of CCC era log structures in Northern Minnesota. This site was built in the mid-1930's and consists of four log structures - an oil shed, warehouse/workshop, office building, and tool shed. There is a modern garage at the site. The log structures are all round-log and scribe-fit construction demonstrating the skill of the builders. Currently, Superior National Forest uses these buildings as an area for their fire crews, timber management activities, and other miscellaneous administrative functions to occur.

Over the years, significant deterioration of the north facade and the log crowns occurred as a result of water infiltration. Working under the direction of Stewart Chilvers of the Colville National Forest out in Washington, the crew learned log hewing and dutchman repairs of deteriorated sections. A series of log crown replacements were needed.

HITCH SUMMARY

Six Northern Bedrock Corpsmembers along with the Heritage Program staff of the Superior National Forest, spent a full hitch learning log replacement techniques and skills. A series of logs were re-faced on the north facade of the office building. Log crowns were repaired with dutchman and log splices on both the warehouse and office buildings. A series of borate rods were installed every 12 inches along the sill logs of the office building wherever there was evidence of moisture accumulation in the timber.

QUANTITATIVE MEASUREMENTS

70 linear feet of logs repaired

- 25 feet of half logs hewn for facing
- 6 log crowns replaced

90 borate rods installed







Rotten bits of logs have been removed on this wall at Isabella Work Station.



Log end being replaced.



Crew members replacing log ends.



Picture showing the half log replacement.



Log ends displaying 'Dutchmen' replacing half of log ends.



The finished log replacements.

Project: Window Restoration, Masonry Repointing
Host: Chequamegon-Nicolet National Forest
Site: Lost Lake Organizational Camp, Franklin Lake Campground
Hitch 11: October 19-23, 2021

ABOUT THE SITE

Lost Lake Organizational Camp

Lost Lake Organizational Camp was built by men enrolled in the CCC in 1938. Built in the Rustic Style, the site was designed to fit in with the natural environment. Large overhanging roofs, rough-cut board and batton siding, and casement windows mark many of the buildings.

Franklin Lake Campground

The development of the Franklin Lake Campground was a joint venture between the CCC, WPA, and Forest Service. CCC enrollees from Camp Ninemile (64lst Company) worked in cooperation with the Forest Service in developing the landscape, roads, trails, and campsites. Construction of the buildings was performed by enrollees from the Warvet Camp (WPA camp made up of WWI veterans).

HITCH SUMMARY

Lost Lake Organizational Camp

The crew of six stayed at the Lost lake site for five days. While there, they stayed in the original dining hall and worked to complete a series of deferred maintenance tasks and window restoration work on a number of the buildings at the site.

Franklin Lake

During this hitch, work was focused on repointing the walls, specifically the privacy partitions built to enclose the entrance doors, of the Comfort Stations. These walls extend beyond the roof outline and experience a significant amount of weathering and deterioration. With a mortar analysis performed, 12 Corpsmembers used a natural hydraulic lime mortar to repoint deteriorated portions of the walls.

QUANTITATIVE MEASUREMENTS

Lost Lake Organizational Camp 11 windows removed, spot glazed, and reinstalled 7 screen inserts repaired

Franklin Lake Campground 644 square feet of rubble stone masonry repointed

- Failed mortar was removed
- dislodged stones were repointed

378 square feet of masonry cleaned







Lost Lake - Corpsmember working to remove the old finish and glazing putty.



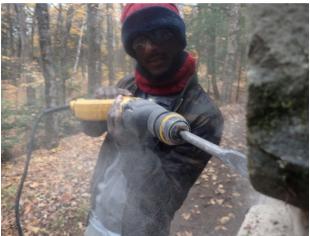
Franklin Lake - Rocks that came out during chiseling were kept in their general locations so as to keep track when rebuilding.



Franklin Lake - The above wall finished with mortar repointed and certain areas rebuilt.



Lost Lake - Window with new glaze and prepped for finish.



Franklin Lake - An Americorps volunteer does some of the 'heavy lifting' of removing mortar with a rotary hammer.



Franklin Lake - Using a milk room heater helped the Natural Hydraulic Lime based mortar to set despite the cold temperatures .