



Northern Bedrock Historic Preservation Corps

Building a Pathway to the Preservation Trades



2016 Field Season

ES · L ·
· INFT
K
NFT ·
ON · G · W ·

HIZAR · THOS · B ·
CO · A · 12TH DEL · INFT
HOLDEN · GEO · A ·
CO · G · 18TH U · S · INFT ·
· M · N · E · C · L · D ·

LA VAQUE · GEO · N ·
CO · D · 1ST MINN · MOUNTED · RANGERS
LA VAQUE · JOHN · H ·
CO · D · 1ST MINN · MOUNTED · RANGERS
LONGMEYER · A · L · E · Y ·

2016 Field Season Report

Northern Bedrock Historic Preservation Corps

Building a Pathway to the Preservation Trades

Report produced by:

Ashley Brey
Dylan Klein
Rhea Harvey

With assistance from:

Rolf Hagberg
Trisha O'Keefe
Emily Nygren
John Lindelof
Lisa Krajewski

December 2016

www.northernbedrockcorps.org | admin@northernbedrockcorps.org

All photo credit © Northern Bedrock Historic Preservation Corps 2016, unless otherwise noted.

ACKNOWLEDGEMENTS

MINNESOTA HISTORICAL SOCIETY

David Grabitsky
Ann Oldenkamp
Andrea Kajer
David Kelliher
Todd Mahon
Sarah Beimers

NORTHERN BEDROCK BOARD OF DIRECTORS

Tim Beaster, Board Chair
Jesse Schomberg, Board Vice-Chair
Doug Bowen-Bailey, Board Secretary
Dana Brumitt (Retired)
Bob Grytdahl
Cynthia Lapp
Paul Ormseth
Joan Peters

NORTHERN BEDROCK STAFF

Rolf Hagberg, Executive Director
Trisha O'Keefe, Finance
Ashley Brey, Communications
Rhea Harvey, Operations
Emily Nygren, Pathway to the Preservation
Trades Program Manager
John Lindelof, Pathway to the Preservation
Trades Program Associate
Lisa Krajewski, Administrative

NORTHERN BEDROCK CORPSMEMBERS

Jessica Fortney, Crew Leader
Dylan Klein, Crew Leader
Grayson Bush
Mary Feitz
Patrick Glander
Edward Harthorn
Cassandra Haxton
Kevin Keenan
Jonathan Petty
Katie Nyborg

Paul Nyborg

SPECIAL THANKS (*"In Order of Appearance"*)

Jon Barry
Mike Braun of Braun Construction
Bill Tefft
Seraphine Rolando of Ely Pioneer Mine
John Seliga of Ely Pioneer Mine
Bonnie Tikkanen of the Finland, MN Historical Society
Dick and Judy Reinke of the Finland, MN Heritage Site
Dale and Joretta Nikula of the Finland, MN Historical Society
Bob Nikolai of the Finland, MN Historical Society
Allen Anderson of the Finland, MN Historical Society
Art Fenstad of the Finland, MN Historical Society
Connie Barnabee of the Finland, MN Historical Society
Honor Schauland & Alma of the Finland Minnesota Historical Society
Rick Fearnall of Duluth Timber Company
Clancy Ward of Duluth Timber Company
Max Taubert of Duluth Timber Company
The American Red Cross
Cynthia Lapp of Meteek & Co.
Randy Larson of Meteek & Co.
John Bredeson of Scandia Cemetery
Jon Borden of Forest Hill Cemetery
Beth Anderson of Forest Hill Cemetery
Gordon Beck of Lake Superior Railroad Museum
Ken Buehler of Lake Superior Railroad Museum
Tim Schandel of Lake Superior Railroad Museum
Jeff and Heide Larson and Family of the Great Lakes Academy of Fine Arts

Derek Wolf of the City of Carlton, Minnesota
City of Carlton, Minnesota
Rick and Karola Dalen of Northern Harvest
Farm
Tim McKenzie Wilderness Ranger of the U.S.
Forest Service, Superior National Forest
Curtis Bellows of Bellows Painting
Mark Poirier, Executive Director of Duluth
Armory Arts & Music Center
Elden Lindamood
Mayor Emily Larson of the City of Duluth
Phil Jents of the City of Duluth
Pakou Ly of the City of Duluth
Hank Martinsen of the City of Duluth
City of Duluth
Mary Mathews of the Duluth Public Arts
Commission
Laurel Sanders of the Duluth Public Arts
Commission
Duluth Public Arts Commission
Darryl & Diane Sannes
Minnesota Civil War Commemorative Task
Force
Jensen Conservation Services, Inc.
Minnesota Representative Mary Murphy
Minnesota Senator Roger Reinert
Ida Rukavina from the Office of U.S. Senator
Amy Klobuchar
Stuart Lourey from the Office of Senator Al
Franken
Jeff Anderson from the Office of U.S.
Representative Rick Nolan
Mark Privratsky from the Office of U.S.
Representative Rick Nolan

COL. (R) Ronald Hein
Merlin Peterson of the Pope County Museum
and Historical Society
Ann Grandy of the Pope County Museum and
Historical Society
Pope County Historical Society & Museum
Mark Johnson of Artisan Restoration, LLC
Mark Halvorson
Ted Halvorson
Lee Johnson of the U.S. Forest Service Superior
National Forest
Stellar Mason of the U.S. Forest Service
Superior National Forest
Michael Baron of the U.S. Forest Service
Superior National Forest
Leslie Coburn, Review and Compliance
Specialist with the Minnesota State Historic
Preservation Office
Natasha Wiener, Historic Architect with the
Minnesota State Historic Preservation Office
John Ludwig of Passport in Time
Bob Jackson of Passport in Time
Deacon Bryan Bassa
Barb Omar
Don Berthiaum
Alexis Crotteau
Jennette Korpela
Lynn Beatty
Cindy Crotteau
Ross DeCaigny
Del Prevost
Bill Jaskari of The Lounge on Big Lake Shores
Paul Ormseth
John Beaty

TABLE OF CONTENTS

A. EXECUTIVE SUMMARY	7
B. LOGISTICS	8
C. FIELD SEASON	12
Introduction	12
2016 Field Season Schedule:	12
Corpsmember Training May 31 – June 7	13
Hitch 1 June 14 – 21, 2016	16
Hitch 2 June 28—July 3, 2016	20
Hitch 3 July 12 – 15, 2016	22
Hitch 4 July 19 – 29, 2016	26
Hitch 5 August 9 – 16, 2016	30
Hitch 6 & 7 August 23 – 30, 2016; September 6 – 13, 2016	32
Hitch 8 September 21 – 23, 2016	36
Hitch 9 October 4 – 11, 2016	38
Hitch 10 October 16 – 20, 2016	41
Hitch 11 October 24 – 27, 2016	43
Hitch 12 October 31 – November 2, 2016	45
D. IMPACT	47

A. EXECUTIVE SUMMARY

Summary

Northern Bedrock Historic Preservation Corps was created to serve two converging trends in Minnesota: the aging stock of historic resources and the growing need of job training for young adults. In partnership with the Minnesota Historical Society (MNHS), Northern Bedrock will help reduce the backlog of maintenance and repair needed on historic structures, and provide young people a strong foundation of historic preservation trade knowledge by integrating training and services with the conservation corps model. Through mentorship and training with technical specialist on the job site, Northern Bedrock provides young people the opportunity to explore diverse skills in the building trades.

Purpose

This season was built on Northern Bedrock's two past crew seasons of 2014 and 2015: expanding corps skills with technical specialists, developing relationships with project hosts, and being a valuable collaborator. This year was Northern Bedrock's first full length field season of 26-Weeks. The crew consisted of six crew members and two crew leaders. Overall Northern Bedrock hired 11 corpsmembers throughout the season, collaborated with 15 project hosts and 7 technical specialists working on these historic structures. This report outlines the logistics of the field season, a description of the work projects, and the total impact including cost-sharing.

Outcomes

In the 2016 Field Season, Northern Bedrock improved the aging stock of Minnesota's historic resources. Northern Bedrock coordinated with project hosts and technical specialists around the lifecycle of historic preservation projects. Technical specialists trained and worked with corpsmembers in cemetery restoration, building and structural preservation, pest mitigation, painting, plaster work, and site stabilization. Beyond the physical work, those involved experienced: camaraderie as they shared meals together, purpose as they came together to accomplish a goal, and history as they restored and repaired these pieces in time.

B. LOGISTICS

About Northern Bedrock

Northern Bedrock's Mission is to develop lifelong workforce skills by connecting young people to the earth, cultures, and traditions through historic preservation work and outdoor service.

Northern Bedrock is dedicated to training the present and future stewards of Minnesota's historic structures, promoting "good history citizenship." Unlike most corps, unique in Minnesota, Northern Bedrock focuses on the specialized needs and skill development opportunities specific to historic preservation, conserving the physical context of our lives.

The Corps Model

Northern Bedrock's goal is to introduce young people to historic preservation and provide a pathway to the preservation building trades. In keeping with the Corps Model Northern Bedrock seeks to develop young people's skills in addressing this community need. Since preservation is a multi-disciplinary career path, corpsmembers gain a base knowledge in a variety of trades.

The Crew Leader and Crew Members are all considered corpsmembers. The crew works on a site for "Hitches" or stretches of time usually 8 days long, then has off time, usually about 6 days. Hitches allow for a complete immersion into a project and skill. The schedule is developed at the beginning of the season and adapted as needed due to inclement weather and project delays. This year the season had 12 Hitches. Since many of the projects are throughout the state, Hitches allow for the efficient use of the crew's travel time, and provides the project host with a constructive block of work hours to complete the project.

The staff work with the project hosts to arrange camping sites. The role of the project host is therefore an integral part of the process. When projects are in urban areas, camping is secured just outside the city to foster a community atmosphere and connection to the outdoors. Together the crew plans their meals for the hitch, then cook and eat communally. A few project hosts have even coordinated community meals and potlucks.

Equipment

Northern Bedrock has purchased two vans and two trailers for crew transportation. Equipment used during previous years was maintained and reused. Additional equipment was purchased as new projects require specialized tools. Northern Bedrock purchased equipment for new crews including tools and spike camp supplies: kitchen sets, tents, stoves, etc. Northern Bedrock continues to build its tool and safety equipment library for future use. The future goal is to be fully equipped, therefore reducing the base funding required, and replacing and adding specialty equipment as needed.

Securing Projects

Northern Bedrock is continually building relationships with Project Hosts, acquiring core skills to further instruct the crews, and complete a wide variety of historic preservation projects. Northern Bedrock coordinates with project hosts and technical specialists around the lifecycle of historic preservation projects. Northern Bedrock works with technical specialists to teach the corpsmembers. Staff works to inform the project hosts of their responsibility in communicating the history of their projects, to provide cost-sharing, and facilitate project completion. The ideal project serves the community, provides opportunities to learn preservation trades skills, has a capacity for cost-sharing, and accommodates camping and community meals.

Projects for the 2016 field season were coordinated through existing relationships, networking, and outreach.

Northern Bedrock has been in conversation with the Forest Service for the last 5 years. This year the Forest Service put a fully funded crew in their budget for 2 hitches or 4 weeks. In working with the Forest Service, Northern Bedrock has gained expertise in maintaining structures built by the Civilian Conservation Corps (CCC).

The staff makes continued contacts throughout the year. While many potential projects are at the planning stages, a smaller number are ready for Northern Bedrock in the field season. Two examples are the Pope County Museum in Glenwood MN, and St. Peter's Church in Duluth MN. Most projects take years to develop, through planning and fundraising.

The Guardian Angel Mission Church in Sawyer, MN highlights the long lifecycle of these projects. The conversation started three years ago with one congregation member who wanted to restore this 1880s church. Northern Bedrock staff continued conversations with the congregation, and the committee was able to get everyone on board to restore the church. The crew started the controlled demolition of the interior, and Northern Bedrock anticipates working with the Sawyer Church to continue restoration on that structure.

As for networking, Northern Bedrock attends events such as the Minnesota Historical Society Preservation Conference, the Minnesota Alliance of Local History Museums conference, and is involved with the Minnesota History Coalition. In addition, Northern Bedrock is involved with local and regional historic preservation groups. The outlook for potential projects has grown tremendously for Northern Bedrock as the organization continues to foster relationships with the historic preservation community.

Recruitment & Hiring

Northern Bedrock recruits individuals who will be productive in the trades, repair and maintenance of unique historic buildings and structures. The type of people we find are in a spectrum of experience in their pathway to the trades. Some corpsmembers have no experience working in historic preservation, but want to work with their hands, many have an interest in history and the trades. All recruits have a variety of educational backgrounds including a few with Master's Degrees in Historic Preservation. Recruiting corpsmembers with different backgrounds is key to providing a well rounded experience. Northern Bedrock is looking forward to becoming a more diverse corps.

Overall Northern Bedrock hired 11 corpsmembers throughout the season: two crew leaders and nine crew members. The crews consisted of six crew members and two crew leaders for the 26-week field season. There was some turnover, and the staff was able to replace them with interested candidates. Applicants were asked to submit a cover letter, resume and response to specific essay questions. The Northern Bedrock staff conducted interviews over the phone and in person. Corpsmembers chosen for the 2016 field season identified Indeed and Craigslist as their recruitment source. Northern Bedrock posted openings on 33 separate organizations and sites including: Conservation Corps Jobs, Adventure Jobs, Local History News, the Preservation Directory, the MN Council of Nonprofits, Minnesota Works, and the National Outdoor Leadership School.

C. FIELD SEASON

Introduction

Northern Bedrock's 2016 Field Season began on May 31, 2016 with crew member orientation and lasted until November 3, 2016. Crew leaders started two weeks earlier than the rest of the crew to assist Northern Bedrock staff with preseason planning and organization. During this 26-week season, the crew completed 23 projects, logged 4,725 project work hours and an additional 180 training/education hours.

2016 Field Season Schedule:

Orientation | 5.31.16 – 6.7.16

Halfway Ranger Station

Stone Splitting

Ely Pioneer Mine

Finland Heritage Site

First Aid/CPR Training

Power Tool Safety Training

Hitch 1 | 6.14.16 – 6.21.16

Cemetery Training

Scandia Cemetery

Forest Hill Cemetery

Lake Superior Railroad Museum

Great Lakes Academy of Fine Art

Hitch 2 | 6.28.16 – 7.3.16

Hillside Cemetery

Halfway Ranger Station

Hitch 3 | 7.12.16 – 7.15.16

Forest Hill Cemetery

Duluth Armory Arts and Music Center

Great Lakes Academy of Fine Art

Hitch 4 | 7.19.16 – 7.29.16

Soldiers and Sailors Monument

Great Lakes Academy of Fine Art

Duluth Armory Arts and Music Center

Hitch 5 | 8.9.16 – 8.16.16

Pope County Historical Society

Hitch 6 | 8.23.16 – 8.30.16

US Forest Service Tofte Ranger District

Hitch 7 | 9.6.16 – 9.13.16

US Forest Service Tofte Ranger District

Hitch 8 | 9.20.16 – 9.27.16

Guardian Angel Mission Church

Hitch 9 | 10.4.16 – 10.11.16

Halfway Ranger Station

Semer Park

Hitch 10 | 10.16.16 – 10.20.16

4th Street Foundation Repairs

Hitch 11 | 10.24.16 – 10.27.16

Halfway Ranger Station

Hitch 12 | 10.31.16 – 11.2.16

Lake Superior Railroad Museum

Corpsmember Training | May 31 – June 7

The crew arrived in Duluth on May 31, 2016. After a brief period of introductions, ice breaker activities, and paperwork it was time to take to the road. Orientation consisted of eight days of training and projects in Duluth, Ely, and Finland, MN. During this period, crew members became acquainted with one another, were introduced to Northern Bedrock Historic Preservation Corps and its mission, and were trained in the importance of historic preservation.

Stone Splitting | 06.01.16

CONTEXT / SCOPE

Many historic stone structures are built with either split or round stones. Northern Bedrock had an interest in learning split stone building techniques, and sought a technical specialist with the knowledge to demonstrate how to split stones. Mike Braun of Braun Construction in Ely, MN, showed the crew his shop, discussed masonry and concrete work, and gave a lesson in rock-splitting. Using a stone sledge with a head consisting of heat treated high carbon steel, Mike split granite stone as if it were wood. The crew attempted to split stone with Mike's guidance.

HOST / TECHNICAL SPECIALIST

Mike Braun contributed three hours of technical advisement and training to the crew, in addition to providing the materials and equipment.

OUTCOMES

The crew spent a combined 24 training/education hours under the instruction of Braun, averaging three hours per corpsmember. Northern Bedrock staff contributed an additional six hours to this training opportunity.

Ely Pioneer Mine | 06.03.2016

CONTEXT

Aside from structures of the Soudan Iron Mine, the Pioneer Mine buildings are the last remaining structures of its kind on the Vermillion Range. The Pioneer was first discovered in 1885, and by the 1930s was considered one of the largest underground mines in the world. It produced ore from two shafts with depths at 1700 ft. The "A" shaft headframe still stands; it was used to send men and supplies into the mine and remove waste rock. The "B" shaft was used to haul ore out of the mine. The existing Pioneer headframe was built in 1943. The mine closed April 1, 1967 and filled with water creating Miners Lake.

SCOPE

The crew worked for half a day at the Pioneer Mine with its two volunteer caretakers, Sera Rolando and John Seliga. The crew used shovels, loppers, and bow saws to remove invasive plants/trees and weeds from the grounds (mullein, buckthorn, honeysuckle), then edged the parking lot.

Corpsmembers worked with Rolando to design a reinforced wooden frame inside an iron ore mining cart. This project offered corpsmembers practice using circular saws, drills, and hand tools. The project hosts used this cart to display loaded ore for the museum.

HOST / TECHNICAL SPECIALIST

Sera Rolando and John Seliga contributed five hours of support each to the project, and Anne Swenson contributed an additional two hours to organizing the project. Sera and John also provided the crew with refreshments.

OUTCOMES

A combined 32 hours were spent working at the Pioneer Mine in Ely, averaging four hours per corpsmember. Northern Bedrock staff contributed an additional four hours of project support.

Finland, MN Heritage Site | 06.04.2016 – 06.06.2016

CONTEXT

Finland Heritage Site houses a number of structures, but the crew focused on two in particular: a log home known as the John Pine house built in 1906 and the sauna circa 1920. The John Pine house was built with rough hewn logs in Finnish style with dovetail log corners. Oakum, old rope and cordage, was used as chinking between logs. The doors are located on the north and east side. The windows are characterized by a six over six sash alternating between vertical and horizontal lights. The cabin has a gable roof with wooden shingles covered by tar paper with a brick chimney located on the east side of building. The sauna was built in a similar Finnish-style with a gable roof and covered wooden shingles, but it is smaller than the cabin. In 1996, damaged and rotten logs were replaced on both the cabin and the sauna.

Multiple logs are deteriorating on the structure leaving hollow sections in the logs, which pose structural risks. The Oakum is deteriorated leaving gaps between logs serving as potential areas of ingress for rodents and the weather. The roof is covered with biogrowth indicating excess moisture. It is leaking in the corners of the interior implying more areas of ingress in the roof. The window sashes are warped as a result of excess humidity in the structure. Vegetation encroaches on the structures holding moisture to the buildings.

SCOPE

The crew received training in surveying historic structures, identifying areas of concern, and documenting conditions. Pictures were taken from 8 angles including the cardinal directions. Both the sauna and the John Pine House were measured to the Historic American Buildings Survey (HABS) standards. Training included documentation, conditions reporting, and producing measured drawings. This documentation was gathered to write a scope of work and assist the Finland Historical Society in applying for grants to assist with future restoration projects. The crew also assisted Heritage Site volunteers and board members with painting picnic tables, clearing trail, and removing hazardous trees.

HOST

The Finland Heritage Site staff and volunteers contributed a combined twenty-four hours of support. Honor Schauland contributed six hours; Dick and Judy Reinke contributed three hours each; Bonnie Tikkanen, Dale and Joretta Nikula, Bob Nikula, Art Anderson, and Connie Barbee provided two hours each to the project. Volunteers also provided the crew with food and refreshments. In addition, camping was provided in-kind for two days totaling \$290.

OUTCOMES

The crew spent a combined 64 training/education hours and 80 project work hours at the Finland Heritage Site, averaging 8 training/education and 10 project hours per corpsmember. Northern Bedrock staff contributed an additional 36 hours. During this time the crew cleared a mile of trail, removed two trees, assessed two buildings, and painted five picnic tables.

Duluth Timber Company | 06.06.2016

SCOPE

Duluth Timber employees Rick Fearnall and Clancy Ward showed the crew around the woodworking shop and discussed a variety of power tools including commercial planers, table saws, band saws, and sanders, in addition to more common tools including circular saws, palm sanders, and grinders. They discussed the importance of respecting power tools, recognizing the potential dangers, and demonstrated how to use tools in a safe manner. Safety was the resounding message at this training.

HOST / TECHNICAL SPECIALIST

Rick Fearnall and Clancy Ward were paid \$100.00 each for the four combined hours of training/education provided to Northern Bedrock's crew and staff.

OUTCOMES

The crew spent a combined 16 training/education hours at Duluth Timber Company, averaging two hours per corpsmember. Northern Bedrock staff contributed an additional four hours to the training.

American Red Cross | 06.07.2016

The crew spent a combined 44 training/education hours at First Aid/CPR Training, averaging five and a half hours per corpsmember. Northern Bedrock staff contributed an additional five and a half hours in training. During this time everyone on the crew was certified in First Aid/CPR for two years through the American Red Cross.

Scandia Cemetery | 06.14.16

CONTEXT

Scandia Cemetery is located at 3300 London Road Duluth, MN next to the Glensheen Historic Estate on the shores of Lake Superior. Built in 1881, it was the first Scandinavian/Lutheran cemetery in Duluth.¹ Since its development as a cemetery, ownership has remained a family legacy. The owner, John Bredeson, acts as the caretaker of the space. The cemetery's northern boundary is enclosed by a wrought iron gate and fence while the remaining three sides are accessible by both lakeshore and the surrounding woods. The most common gravestones include die on base, lawn-type markers, obelisk, and pedestal tomb-vaulted roof. There is one mausoleum on the northern end of the cemetery just inside the gated roadside entrance. The monuments are composed of various types of stone, but most commonly marble and granite. Soil erosion and vegetation encroach on the southernmost borders of the cemetery resulting in an unknown number of lost graves. The stones were covered in lichen and moss. Vegetation and trees impede upon the space for graves and stones. Grave markers are being lost under vegetation and the stones are sinking into the soil.

SCOPE

The crew surveyed the cemetery and designated a section that would benefit most from their intervention. Seven gravestones were marked to be documented and cleaned. This training exercise offered an opportunity to practice newfound skills in cemetery preservation and documentation. The crew removed vegetation. Weeds and sod were cut back from the base of headstones, and branches were trimmed using loppers and handsaws. Lawn-Type Markers were edged, cleared of sod, and cleaned.

PROJECT HOST

Scandia Cemetery remains privately owned, under the care of Duluth native, John Bredeson. Bredeson donated his time, providing assistance in organizing the project. Crew hours and materials were provided in-kind by Northern Bedrock.

TECHNICAL ADVISEMENT & TRAINING

Executive Director, Rolf Hagberg led the cemetery training. The training space was provided by Northern Bedrock Board Member Cynthia Lapp and partner Randy Larson, at their work space, Meteek & Co. in Duluth.

¹ <http://zenithcity.com/ask-the-historian-where-was-the-first-forest-hill-cemetery/>

Topics Covered during the training session include:

- Preservation ethics
- Common grave maker materials
- Common shapes/types
- Preservation prioritization
- Gravestone cleaning: techniques, tools and equipment
- Basic gravestone resetting: techniques, tools and equipment

Headstones are doused with water, scraped with plastic putty knives, soaked again, scrubbed with white bristled scrubbers, and the biological agent D2 is applied. This training method meets the Secretary of the Interior's Standards technique for proper monument care. Northern Bedrock's staff received training from Jarrod Roll, owner of Save Your Stones, and Director of the Monroe County Local History Room & Museum in Sparta, WI in 2015. Crew training consisted of both a classroom lecture session and hands-on training at Scandia Cemetery in Duluth, MN.

OUTCOMES

A combined 32 hours were spent in cemetery restoration training, and an additional 36 hours of work were completed at the Scandia Cemetery, averaging four-and a half hours per corpsmember. During this time, the crew cleaned 25 stones, cleared four stones of vegetation, and edged and cleared an additional 16.

Forest Hill Cemetery | 06.15.16

CONTEXT

Forest Hill Cemetery, located on Woodland Avenue in Hunters Park, occupies a 200-acre tract of land, 100 of which are currently used for gravesites. During the 19th century, Forest Hill was located along the banks of Chester Creek, but was moved as a result of the Rural Cemetery Movement, which placed park-like cemeteries on the outskirts of urban sprawl. Forest Hill is predominantly a Presbyterian cemetery and houses many of Duluth's historically renowned citizens including members of the Congdon family. The cemetery also claims the largest number of Civil War Veteran graves in Northern Minnesota. Resting atop the cemetery's hill and marked by a memorial cannon doffed the "Soldier's and Sailor's Monument" is the resting place of the Grand Army of the Republic. This section and its 105 federally issued white marble gravestones became the focus of Northern Bedrock's crew.² The white marble stones were covered with lichen and moss and stained by other environmental agents. One stone was broken and resting on the ground while others leaned on their foundations.

SCOPE

Work Performed –

First, the gravestones were documented from eight angles. Each stone was cleaned according to the procedure outlined in Hitch 1, Subheading "Scandia Cemetery: Technical Advisement & Training."

² <http://zenithcity.com/rest-in-peace/2/>

PROJECT HOST

The Forest Hill Cemetery is a 501(c)3 nonprofit, overseen by Director Jon Borden. Borden donated his time, providing assistance in organizing the project. All work was performed in-kind by the Northern Bedrock crew.

TECHNICAL ADVISEMENT & TRAINING

Cemetery preservation training was provided by the Northern Bedrock Historic Preservation Corps staff prior to the project.

OUTCOMES

The crew spent 58 hours working at Forest Hill Cemetery, averaging seven and a quarter hours per corpsmember. The staff contributed an additional six hours of project support. In total, 105 Grand Army of the Republic grave markers were cleaned. One additional upright monument was cleaned during this project.

Lake Superior Railroad Museum | 6.16.16 – 6.21.16

CONTEXT

The crew worked at the Railroad Museum on two separate occasions this season. For a more complete history, see Hitch 12. During this first stint, they painted two historic train box cars. Boxcar #5132 was a remnant of the Duluth, Missabe, & Iron Range (DMIR) Railway built in 1914. This “F” series boxcar, brown in color and donated to the museum in 1975, was labeled with the DMIR #5132 logo of the railway company. The second boxcar—# 5124—was built in 1885 by the Duluth & Iron Range Railroad in Two Harbors. It was donated to the museum in 1975 and restored by the Lake Superior Transportation Club. In 1992-93, the Disney film *Iron Will* featured this boxcar. Its logo “Great Northern 5124” is not original but was added during filming.^[3] It has been over twenty years since these boxcars were last painted. Paint loss and peeling, wood deterioration, and metal oxidation were present on both boxcars. The trucks of the cars were coated in grease and grime, which also required scraping, cleaning, and painting. Keeping a coat of paint is important to the longevity of the equipment as wooden boxcars deteriorate over time.

SCOPE

The crew scraped loose paint from the walls of the boxcars using putty knives and paint scrapers taking care not to damage the wood substrate in the process. They applied a pre-primer containing linseed oil, paint thinner, and white primer to areas of exposed wood. After the pre-primer dried, a coat of primer was applied. The crew then painted the wooden surfaces of each boxcar with its respective color. The presence of oxidation on the metal roofs of both boxcars required crew members to scrape rust away using wire brushes before painting. Grease and grime were scraped from the trucks of the cars. Other tasks completed included restacking bricks on pallets and organizing the interior of boxcar #5132. In an interview with NBHPC staff, LSRM board member, volunteer, and

³ *Official Guidebook: Lake Superior Railroad Museum and North Shore Scenic Railroad*, by Steve Glischinski and Jeff Terry, 2013.

North Shore Scenic Railroad conductor, Gordon Beck identified the importance of Northern Bedrock's work at the museum. Beck recognized the museum's overabundance of projects and believes that Northern Bedrock helped complete a project that was backlogged five years.

PROJECT HOST

Lake Superior Railroad Museum was able to cost-share \$1,500 for the services provided by Northern Bedrock. Executive Director of the museum, Ken Buehler, donated his time, providing assistance in organizing the project. Additionally, Buehler and Gordon Beck provided the crew with food and refreshments. The museum contributed in-kind ten tickets for the North Shore Scenic Railroad's Pizza Train.

TECHNICAL ADVISEMENT & TRAINING

Tim Schandel, Museum Curator and Operations Director, provided in-kind 12 project support and technical advisement hours.

OUTCOMES

A combined 415 hours were spent working at the Lake Superior Railroad Museum, averaging 52 hours per corpsmember. During this time, the crew painted two boxcars for a combined total of 2,407 square feet, reorganized the storage area of one of the boxcars, and moved approximately 1,000 bricks.

Great Lakes Academy of Fine Art | 6.16.16 & 6.18.16 – 6.19.16

CONTEXT

Great Lakes Academy of Fine Arts is located at 810 West 3rd Street, Duluth, MN in the former St. Peter's church building. It was purchased in 2016 by artist Jeffrey Larson who has proposed a model for adaptive reuse of the building in the form of an Atelier style fine arts academy. However, turning the building into an art academy was not as simple as moving the students into the space and teaching. The building was plagued with a multitude of structural problems. The roof leaked near the northern bell tower. There was spray foam insulation coating the interior floor, ceiling, and stone walls of the North and South bell towers sealing in moisture.

SCOPE

Work began in the North Tower. Using pry bars, hammers, and chisels, the crew removed the spray foam insulation and the under layer of tar paper from the stone walls. Spray foam was collected in contractor garbage bags and disposed of onsite. The insulation trapped moisture within the walls. This became evident upon removal; water seeped out of the mortar joints in the stone. Insulation was removed on every wall of the bell towers to an approximate height of seven feet.

PROJECT HOST

Jeffrey Larson attended Atelier Lack in the Twin Cities in 1980. Upon graduation he worked as the assistant director and head instructor at a branch of the Atelier located in the western suburbs of

Minneapolis. In 1990 he moved to the South Shore of Lake Superior with his wife, Heide, to focus on his studio work full time. Larson has been a professional painter for thirty-five years. He plans to pour all of his knowledge into students studying at the school hoping that eventually prospective students will flock to Duluth from around the world. During this project, Larson contributed six hours of support and advisement. Food and refreshments were offered to the crew in addition to camping provided in-kind with a value of \$600.

OUTCOMES

A combined total of 42 project hours were spent in the bell towers of the Great Lakes Academy of Fine Art, averaging five and a quarter hours per corpsmember. During this time the crew removed sixteen contractor bags of insulation and exposed a total of 660 square feet of stone wall.

Hitch 2 | June 28—July 3, 2016

Hillside Cemetery | 6.28.16 – 7.1.16

CONTEXT

Hillside Cemetery was established in 1881, situated on the outskirts of Carlton, MN city limits on County Road 3. In the oldest sections of the cemetery, dating back to the turn of the last century, the lack of casket liners or vaults has resulted in settling above the graves. In addition, the cemetery's hilly terrain has undergone natural changes leading to the disappearance of gravestones in the areas. In recent years, the City of Carlton paid a contractor to re-set a few of the larger, up-right gravestones and build retaining walls to prevent loss of grave markers in areas experiencing natural weathering and erosion. The gravestones had been minimally maintained, requiring some stone cleaning, gravestone resetting and straightening, and vegetation removal. During the 2015 Field Season a Northern Bedrock crew spent a total of 180 hours working at Hillside Cemetery. The primary objectives of the project were to provide for the cemetery's longevity by removing sod and vegetation growing over the gravestones, resetting stones that had completely or partially settled into the earth, and filling areas of depressed ground to allow for ease of public access and maintenance of the grounds.

SCOPE

Northern Bedrock returned to Hillside during the 2016 Field Season. The cemetery is divided into four sections: the first marking the most historic burial sites and the fourth representing the newest section. Vegetation and sod impeded upon many of the lawn-type gravestones and in some cases completely covered the markers. Using edging spade shovels, the crew cut back sod three inches around each stone. After completing a grid around all four sections of the cemetery, the crew began resetting sunken stones. Markers and concrete footings were lifted with crowbars and removed. The crew excavated the ground where the stone rested and filled the area with compacted sand. The stones were then reset in place.

PROJECT HOST

The City of Carlton contributed \$5,000 in cost-sharing for services provided by Northern Bedrock. In addition, access to shower facilities was provided in-kind to the crew.

TECHNICAL ADVISEMENT & TRAINING

Derek Wolf, Public Works Superintendent for the City of Carlton, provided in-kind 10 hours of project organization, technical advisement, and training.

OUTCOME

The crew spent a combined total of 303 project hours working at Hillside Cemetery, averaging 38 hours per corpsmember. During this time the crew edged 910 gravestones and reset 20 monuments.

Halfway Ranger Station | 7.2.16 – 7.3.16

CONTEXT

Halfway Ranger Station is located approximately thirteen miles south of Ely, Minnesota along the South Kawishiwi River. The site includes the buildings of both the historic Halfway Ranger Station and the Lake States Forest Experimental Station (LSFES). Collectively it is referred to as the Halfway Ranger Station Historic District (HRSHD). This site boasts 12 standing historic buildings and structures, seven of which were built by the CCC. A more comprehensive history of the HRSHD is provided in Hitch 11 description of this document. The powder-post beetle infestation of the Boat House, District Office, and Warehouse buildings needed to be addressed. Landscaping issues included resetting the sidewalk, cleaning up the yard and removing hazardous trees.

SCOPE

Work Performed—

The crew performed site stabilization, patched a hole in the roof of the LSFES Laboratory, removed vegetation from accessible roofs, and reset the concrete sidewalk. Tim McKenzie, Wilderness Ranger with the USFS and a historic structures technical specialist with expertise in CCC log buildings, instructed the crew on proper treatment of powder post beetle infestations. Under the supervision of McKenzie, they treated the infestation on the Boat House and District Office. The crew used PeneTreat Wood Preservative, a borate-based chemical. Borates are effective in the prevention of most rot and wood-boring insects.

Instructions:

PeneTreat is mixed at the rate of one pound (one loosely packed quart) to one gallon of warm water. Before applying the solution, wood must be clean and ideally bare of dirt, wax, and surface finishes. Because the logs at Halfway are coated with stain, McKenzie instructed the crew to sand surfaces to expose bare wood. PeneTreat is applied by brush or spray at the rate of one mixed gallon per 150 sq. ft. of wood surface. Apply a second coat 4 to 24 hours later.⁴

⁴ <http://www.loghelp.com/products/penetreat-wood-preservative.asp>

PROJECT HOST

Northern Bedrock Historic Preservation Corps served as the host for this project providing lodging for the crew.

TECHNICAL ADVISEMENT & TRAINING

Tim McKenzie, Wilderness Ranger with the US Forest Service and Historic Structures Technical Specialist, contributed in-kind four hours of technical advisement and training.

OUTCOME

The crew spent two days working at Halfway Ranger Station for a combined 136 hours, averaging 17 hours per corpsmember. The staff spent an additional ten hours working with the crew. During this time the crew treated 406 square feet for powder-post beetle infestation, installed a twelve square foot roof patch, and reset thirty square feet of sidewalk. Landscaping work was completed on five acres of land.

Hitch 3 | July 12 – 15, 2016

Forest Hill Cemetery | 7.12.16

CONTEXT

The crew split on day one of Hitch 3. Half of the crew completed a project at Duluth Armory Arts & Music Center while the other half returned to Forest Hill Cemetery. The Forest Hill crew focused their attentions on stones down the hill from "Millionaire's Row," which includes a collection of family mausoleums belonging to Duluth's most prestigious historic families. One grave marker included on the crew's queue was the bench-style stone of William A. McGonagle and his family. McGonagle served as president of the Duluth, Missabe & Northern Railway Company in the early twentieth century and Grand Master of the local masons.⁵ The monuments cleaned by the crew were covered in lichen, moss, and environmental staining. Years of neglect wore away the stones and led to a minimal degree of deterioration.

SCOPE

Before conditions were documented from eight angles. The crew followed the monument cleaning process discussed in Hitch 1 subheading "Scandia Cemetery." Stones were soaked with water to loosen foreign materials and scraped with white plastic putty knives, then rinsed with water, scrubbed with white nylon brushes, and rinsed again. Next, the crew applied D/2 (a biological solution that eliminates bio growth) using a dilution of 1:1. Scrubbing, scraping, and rinsing were continued as necessary. A final coat of D/2 was applied to each of the monuments. The crew documented conditions of each monument after completing the process.

PROJECT HOST

⁵ <http://zenithcity.com/rest-in-peace/2/>

The Forest Hill Cemetery is a 501(c)3 nonprofit, overseen by Director Jon Borden. Borden donated his time, providing assistance in organizing the project. All work was performed in-kind by the Northern Bedrock crew.

TECHNICAL ADVISEMENT & TRAINING

Cemetery preservation training was provided by the Northern Bedrock Corps staff prior to the project. For more information about the training, see Hitch 1 subheading "Scandia Cemetery."

OUTCOME

Four crew members spent 33 hours working at Forest Hill Cemetery, averaging eight and a quarter hour per corpsmember. During this time the crew cleaned four monuments.

Duluth Armory Art and Music Center | 7.12.16

CONTEXT

Built in 1915, it is *the building that made Duluth famous*. The original Duluth armory was erected 1896, but it was too small to house the National Guard companies and all their equipment, and by 1912 newspapers were writing about the need for a new Armory. The land initially scouted for the building was sold by the Northern Pacific Railway to be developed as Lakeshore Park, later to be named Leif Erikson Park. A few concerned residents, donated to the cause and did not want to see the Armory built in the place of the only lakeshore park in Duluth. The council decided instead to construct the Armory at 1626 London Road, across the street from the originally proposed site.

In 1916 the first soldiers mobilized out of the new Armory. Duluth began sending troops overseas after the US declared war on Germany on April 6, 1917. During World War I the troops paraded from the Armory to the Depot on London Road and Superior Street to board the train. This route is a precious part of Duluth History, as many soldiers never returned. The Armory also served as a safe haven following natural disasters. In 1918 the Spanish Flu epidemic reached the Iron Range and a fire erupted in Cloquet. In response to these events, the building was used as a refuge center and hospital. The Armory is a 3-story brick building with a basement and sub-basement. The Chester Creek actually runs through the building's subbasement. It has a low-sloping roof with a brick parapet. On the main level is a stage and balcony where the Armory once hosted hundreds of cultural events and acts ranging from auto shows, Duluth's Home Builder's Show, the annual Home-Boat show, as well as countless performances. Throughout the years the Armory was a hot spot for entertainment; it featured famous musicians, dancers, comedians, and other public speakers. In 2001 the Armory was highlighted in the Preservation Alliance of Minnesota's 'Ten Most Endangered Buildings.' In 2004 it was purchased by the Armory Arts and Music Center to continue its entertainment legacy. The Armory is listed on the National Register of Historic Places and is a contributing property of the Duluth Commercial Historic District.

SCOPE

The half of the crew not cleaning gravestones at Forest Hill Cemetery spent the first day of Hitch 3 at the Duluth Armory cleaning and reorganizing bricks. At the beginning of the project, bricks were

coated with old mortar in unorganized heaps. The goal of this project was to select priority bricks, remove the mortar, and organize them on pallets for future use. Two types of bricks were present: old bricks with soft lime-based mortar and “newer” bricks with a Portland-based mortar. Bricks with a designed face represented first-priority. Using chisels and brick hammers, the crew chiseled and scraped mortar from the face of the bricks. Finished bricks were then organized on pallets for reuse.

PROJECT HOST

Mark Poirier, architect and Executive Director of the Armory Arts & Music Center, donated his time, providing assistance in organizing the project. The Duluth Armory also contributed in-kind parking for crew members for the entire field season with a total value of \$1,760.

OUTCOME

Four crew members spent 33 hours working at the Duluth Armory Arts & Music Center, averaging eight and a quarter hour per corpsmember. During this time, they cleaned 479 bricks.

Great Lakes Academy of Fine Art | 7.13.16 – 7.15.16 & 7.19.16 – 7.29.16

CONTEXT

Located in the former St. Peter’s church, the Great Lakes Academy occupies a building that possesses a fascinating part of Duluth’s history. In 1927, St. Peter’s congregation built a Romanesque-Gothic church designed by Peter Summers, a descendent of Italian immigrants. The church’s congregation featured a number of skilled northern Italian stone masons who volunteered to construct the building out of blue, yellow, and gray stone collected from Duluth’s hillside near Twin Ponds.⁶ These tradesmen also constructed such structures as Duluth’s Enger Tower and the bridges of Seven Bridges Road.⁷

Over the next seventy-five years, St. Peter’s stood as the cultural center of the Italian-American community. In 1968 the Diocese of Duluth took control of the church; St. Peter’s was closed in 2010 due to its dwindling congregation. For the next six years the structure seemed fated to demolition until its designation as a local historic landmark and transfer of ownership to Jeffrey Larson. Larson was confronted with a variety of obstacles: the windows were boarded and the stained glass removed, the roof leaked near the bell tower, the building itself “shifted four inches,” the sub basement was flooded, and plaster fell off the walls exposing the lath underneath.⁸ Repair costs have been estimated at \$500,000.⁹

SCOPE

The crew was tasked with repairing the walls of what was once the sanctuary. This was accomplished under the guidance of Curtis Bellows of Bellows Painting who provided the crew training in wall

⁶ <http://zenithcity.com/duluths-most-endangered-buildings-part-5-st-peters-catholic-church/>

⁷ <http://zenithcity.com/zenith-city-history-archives/duluth-architecture/st-peters-catholic-church-1925/>

⁸ <http://zenithcity.com/duluths-most-endangered-buildings-part-5-st-peters-catholic-church/>

⁹ <http://www.duluthnewstribune.com/news/3885749-how-great-thou-art-house-worship-classroom>

reconstruction and plaster. The crew's first task in this daunting project: locate cracks in the walls and scrape peeling paint. Using carbide scraping tools and putty knives, the crew opened cracks in the plaster in preparation. Durabond 90 Joint Compound was used to make repairs; this product is mixed with water in a mud pan using a rectangular trowel until the desired consistency is reached.

The process goes as follows:

- 1) cracks are filled with a first coat of Durabond
- 2) Fibatape mesh is placed over the crack
- 3) after the first coat dries and the tape adheres, another layer of mud spanning a wider distance is applied
- 4) walls are sanded as necessary in preparation for the final smooth coat
- 5) a final thin coat of mud is applied using 6, 8, and 10 inch taping knives.

This final coat is the most important. The edges of the newly plastered surfaces must be feathered out so as to blend repairs with the original structure. The crew used Durock cement board in large areas of exposed lath where the plaster was no longer existent. They squared off sections using a multi-tool, cut cement board to size, and attached it to wall studs. Joints were mudded, taped, and the Durock was plastered to blend with the existing structure. In irregular areas too small for cement board patches, metal lath was mounted to the wood lath and coated with mud. As a final step, the crew sanded ridges and grooves out of the walls in preparation for painting.

PROJECT HOST

Jeffrey Larson, founder of the Great Lakes Academy of Fine Art, provided \$5,000 in cost-sharing for services providing by Northern Bedrock. In addition, he contributed six hours of project support as well as refreshments and food for the crew.

TECHNICAL ADVISEMENT & TRAINING

Curtis Bellows of Bellows Painting provided 50 hours of technical advisement and training and was paid \$1,500 for his services. He also contributed tools and supplies for the crew to use.

OUTCOME

The crew spent 225 hours during Hitch 3 and 496 hours during Hitch 4 working at the Great Lakes Academy of Fine Art for a total of 721 project hours, averaging ninety hours per corpsmember. During this period the crew resurfaced 1,617 square feet of walls.

Soldiers and Sailors Monument | 7.19.16 – 7.26.16

CONTEXT

Nearly 55 years after the American Civil War came to a close, members of the Grand Army of the Republic (GAR) in Duluth, Minn., worked with St. Louis County to make provisions for a monument to be erected in front of the newly constructed, million-dollar Courthouse. Completed in 1919, The Soldiers and Sailors Monument was designed by Architect Cass Gilbert, renowned for his design of the St. Paul Capitol Building, the U.S. Supreme Court Building and the Woolworth Building, which stood as the world's tallest building for over a decade.

The Ortonville granite base, built by the Hunter Granite Works of Ortonville, Minn., was polished and engraved with approximately 5,000 letters, identifying those who served in American conflicts from St. Louis County, including the American Civil War. An elaborate bronze socket shaft and sixty-foot flag staff sits atop the granite; a bronze eagle perched at each of the four corners. The first verse of the Star Spangled banner is carved in raised letters near the top of the die. A stone knight sits guarding the flag at the base of the monument proper, the creation of sculptor Paul Wayland Bartlett, responsible for the figures of Columbus and Michelangelo commissioned for the Library of Congress, and the pediment for the House wing of the U.S. Capitol.

The Monument was dedicated on Memorial Day, May 30, 1919, where it has since stood in memorandum to those who served. In 1986, the Monument was placed on the National Register of Historic Places (#86003097), by the National Park Service, United States Department of the Interior, as a contributing property to the Duluth Civic Center Historic District.¹⁰

However, years of exposure to the elements damaged the structure. The crew faced a historic monument severely affected by weathering conditions. The granite base was stained and caulking was failing at the joints. The names inscribed in the base were nearly illegible as dirt and grime covered the stone. Deteriorating green and yellow color paint coated bronze pediment resting atop the granite base. The flagpole finish was also corroding.

SCOPE

The crew documented the monument from eight angles and photographed problem areas in need of attention. The crew utilized a magnet to test the composition of the metallic pediment. There was no magnetic attraction confirming that the eagle-adorned pediment could be bronze. This data helped to determine what conservation practices to pursue when treating the metal.

Using linoleum knives, the crew removed caulk from the granite joints and prepared the stone base for cleaning. The granite surface was power-washed to remove excess dirt and debris, and then cleaned with a Prosoco SureKlean masonry cleaner, in a solution mixed 1:1 with water. The stone was rinsed from the bottom up to prevent streaking; as a result of this treatment, the granite will dry six shades lighter.

¹⁰ <http://www.northernbedrockcorps.org/commemoration-of-the-soldiers-sailors-monument/>

After the initial cleaning, the crew applied a 1:1 solution of water and SureKlean Ferrous Metal Cleaner to rust stains present on the stone. This solution was lightly scrubbed into the granite and rinsed off. The entire stone base was then wiped down with rags.

The final step in working with the granite was sealing the joints. Painter's tape was applied as a border to the joints to ensure a clean caulk line. Corpsmembers applied caulk to the joints, smoothed the substance with soapy water, and removed the tape.

Continuing with the bottom up approach, the crew moved on to the bronze details and flagpole. Technical Specialist Rob Jensen, of Jensen Conservation Services, Inc., rented a boom lift and brought in contractors to sandblast the corroded metal pediment and flagpole with Granusil Silica Fillers, an industrial quartz. The raw bronze required two coats of patina to attain its desired dark brown sheen: Sulfurated Potash and Ferric Nitrate applied respectively. The Ferric Nitrate patina was heated with a propane torch during application. The bronze was then waxed with SC Johnson's paste wax, which requires yearly application.

A painting contractor, accompanied by a corpsmember, applied a two-part epoxy of Amerlock 2/400 Resin and Amerlock 400 Cure to the flag pole. This coat was left to dry for a day. The next day a two-component Polyurethane (Ultra 2.08 Black Ready Mix Component A and Pitthane Ultra Component B) was applied over the epoxy as a second layer of protection for the metal flagpole at a 4:1, A:B ratio. The crew cleaned the granite a final time using D/2 following an inspection by the Minnesota Historical Society.

PROJECT HOST

Northern Bedrock received a grant for \$70,620 as part of grant funding from the Arts and Cultural Heritage Fund administered by the Minnesota Historical Society Heritage Recognition Grant Program in collaboration with the Governor's Civil War Commemorative Task Force in commemoration of the Sesquicentennial of Minnesota's involvement in the American Civil War.

The City of Duluth served as the project host for the restoration of the Soldiers and Sailors Monument. City employees involved in the project contributed their time and efforts in-kind. Those involved included: Phil Jents, Pakou Ly, Mayor Emily Larson, Laurel Sanders and Mary Mathews of the Duluth Public Arts Commission, Keith Hamre, Erik Birkeland, and Henry Martinsen. Their contribution is valued at \$1,600.00. The Duluth Public Arts Commission contributed \$1,000 of cost-sharing to the project. Darryl and Dianne Sannes, supporters of the monument restoration, volunteered their time, provided food and refreshments to the corpsmembers and made a financial contribution to Northern Bedrock in gratitude for the work done to preserve the memory of Minnesota's involvement in the Civil War.

TECHNICAL ADVISEMENT & TRAINING

Robert Jensen of Jensen Conservation Service, Inc. provided 56 hours of technical advisement and training to the project. He received \$60,000 for his services, provided by the Minnesota Historical Society Heritage Grant Program. Jensen provided the crew with food and refreshments in-kind during the project.

OUTCOME

The crew spent 231 hours working and learning from conservator Rob Jensen at the Soldiers and Sailors Monument, 88.5 hours of which qualified under prevailing wages standards. This averaged out to approximately 29 project hours per corpsmember. The Monument is comprised of a sixty-foot flag staff resting upon a three tiered 20' x 20' granite base. The die measures 6' x 6' at the top and extends 14' above grade. During this time the monument was cleaned, its joints were sealed, the flagpole was painted, and the bronze was restored.

Duluth Armory Arts & Music Center | 7.28.16

CONTEXT

The crew returned to the Armory during Hitch 4 to receive hands on window training. For a complete history of the Duluth Armory, refer to Hitch 3.

Six windows on the third floor were missing glass and had been covered with plywood as a means of eliminating points of ingress. Plywood windows are both ineffective at keeping weather out of a building and aesthetically displeasing.

SCOPE

Under the direction of window specialist Elden Lindamood of Wagner Zaun Architecture, the crew was trained in window replacement, exploring glazing techniques and glass cutting.

Before removing the window sash from the sill, Lindamood demonstrated the efficiency of first detaching the sash stop. Removing the sash becomes a game of angles and manipulation. Although the glass is missing from the sash, the crew removed the old glazing with putty knives and removed the glazing points. The window opening was measured to determine the size of the new pane.

Lindamood then demonstrated the most effective practices for cutting and fitting double strength glass into the sash.

Using a well-oiled carbide tipped glass cutting tool, the crew scored the glass creating a structurally weak point. This technique requires one to grip the glass with a hand on either side of the score mark; with thumbs on the top side of the pane, pressure is applied downward and the glass breaks along the score mark. Corpsmembers applied a thin bead of Dap Glazing Caulk on the sash shelf, set the pane in place, and inserted glazing points before applying Dap 33 Glazing using putty knives. After glazing the windows, the sash was replaced in the sill.

PROJECT HOST

Mark Poirier contributed four hours of his time in-kind to the project.

TECHNICAL ADVISEMENT & TRAINING

Elden Lindamood of Wagner Zaun Architecture contributed four hours of technical advisement and training in-kind.

OUTCOME

The crew received 32 training/education hours combined and 39.5 project work hours at the Duluth Armory, averaging four training/education and five project hours per corpsmember. Northern Bedrock staff provided 12 hours of support to the project. During this time, the crew replaced and reglazed six windows.

Pope County Historical Society

CONTEXT

According to the Pope County Museum, the “First County Courthouse,” also known as the Ole Peterson Cabin, was originally built in the town of Stockholm, MN, which was the proposed seat at the time of the county’s organization. Since the town lacked any sort of suitable meeting place, it was in the cabin that the county organization was completed in 1866. A year later, the seat was moved to Glenwood, now home to the Pope County Museum and the current resting place of the “First County Courthouse.”

The Torguson Cabin was built in 1880 by Knud Torguson, one of the first settlers in Pope County. The one-and-a-half story cabin was the third built on the homestead, constructed of oak, dovetailed logs, held in place with wooden pegs. The joints are chinked with a Portland cement mixture. The cabin was added onto over the years, but was returned to its original footprint when it was donated to the county and moved to the pope County Museum in 1984.¹¹

We would like to thank the Pope County Museum for putting the preceding history together for us.

SCOPE

“First Courthouse”

Several of the logs of the Courthouse were rotten and the caulking in the joints was in need of replacement. Shingles on the roof were deteriorated and covered with biogrowth.

First, the Northern Bedrock crew removed the old caulk from the joints between the logs with utility knives and chisels. Rotted logs were identified for replacement. Technical specialist, Mark Johnson of Artisan Restoration LLC, and Ted Halvorson milled the ash logs at the nearby Halvorson Farm. Mark led the crew in jacking up the building to prepare for the removal and replacement of the rotted logs. The logs were tested with a flat edged screwdriver to determine the extent of the rot, the interior was braced diagonally with dimensional lumber to prevent further movement, and the rotted logs were removed.

The new logs that had been cut at the sawmill were then prepared for installation; the sides were beveled, measured, and the ends cut to fit the structure with a mortise and tenon joint. The logs were cut to length with a chainsaw and the bevel was done with a hand tool. The new log was then set in the structure. Some of the log and larger holes ends that had rotted and deteriorated were coated with a log consolidate, and then filled with wood chips and epoxy. The structure was treated with Penetreat – a wood preservative.

¹¹ <https://www.co.pope.mn.us/history.php>

One of the final steps was to recaulk the joints between the logs: the joints were sprayed down with water and Log Jam caulk applied. The caulk was smoothed over with a wet putty knife. Lastly, a bundle and a half of new shingles were replaced on the roof and a new ridge was added. A trench was dug around the base of the structure for drainage purposes.

Pope County will continue the work started by the crew, finishing the last two windows on the Courthouse cabin, stain the new logs and add water sealant.

Torguson Cabin

The cabin was rotting in a few places and the daubing was failing. The windows also required reglazing. Glazing, in this case, refers to the material that holds the window pane in place. This material is the "sacrificial element," as it is designed to be replaced. It is a putty that dries to a plaster-like consistency. The old, failing glazing putty was removed, and new putty was smoothed into place to hold the glass pane in place and shed water.

The crew removed the failed daubing from the log joints with masonry chisels and hammers. Next, all the joints were scraped and beveled to create a stronger surface to adhere the mortar. Wire lath was installed with a stapler in the joints to provide extra strength and to hold the new mortar. Next a first layer of mortar was applied to the wire mesh and then scored so the final layer could adhere to the surface. Then a final thin layer of mortar was applied and smoothed. One of the logs on the front side of the cabin near the base was rotten and dimension lumber was put in it to reinforce it. Penetreat was also applied to this cabin.

PROJECT HOST

The Pope County Historical Society provided \$7,000 in cost-sharing for the services provided by Northern Bedrock. Additionally, Pope County Historical Society staff Merlin Peterson and Anne Grandy contributed 22 hours of support. Volunteers Ted and Mark Halvorson provided in-kind materials, equipment, and a combined eight hours of technical assistance. The historical society also gave the crew food and refreshments throughout the hitch.

TECHNICAL ADVISEMENT & TRAINING

Mark Johnson of Artisan Restoration, LLC provided 30 hours of technical advisement and training for which he was compensated \$1,225.

OUTCOME

The crew spent a total of 526 hours working for the Pope County Historical Society, averaging 65.75 hours per corpsmember. Northern Bedrock staff provided an additional 20 hours of project support onsite. The crew replaced 10 logs, installed one and a half bundles of wood shingles, and caulked 462 lineal feet of joints using Log Jam chinking on the Courthouse. Additionally, 200 linear feet of chinking and daubing were replaced on the Torguson cabin and four windows reglazed.

US Forest Service Tofte Ranger District

CONTEXT

Tofte Ranger Station is a 48.3 acre site located on National Forest Land in Cook County along Highway 61 consisting of eleven structures. The site hosts seven historically significant structures built by the Civilian Conservation Corps between 1935 and 1936. Northern Bedrock assisted the Forest Service in maintaining four of these CCC-built structures designed in Adirondack, bungalow style. The buildings were constructed with scribed round Aspen logs, saddle-notched at the corners and stained brown. They have gabled roofs covered with asphalt shingles and concrete foundations. Although Tofte Ranger District has a history of maintenance and repair dating to 1936, the site was in need of attention.¹² Paint peeled off of the log buildings. The window glazing was cracked and falling off, and screens were damaged and in need of new trim and paint. The front and side porches of the Ranger Dwelling were deteriorated and rotting as a result of water damage and log ends on the Southeast corner were punky and rotten. Over a sixteen day period, the crew divided its efforts between the Ranger Dwelling, Garage, and Forester's Dwellings 7103 & 7105.

SCOPE

Garage (16'x24'):

The crew cleared vegetation around the building and cleaned out the interior to serve as a work space. Crew members scraped peeling paint on the exterior of the building, cleaned logs, and recaulked joints between logs using Big Stretch. A log end on the southwest corner of the building was rotten and in need of repair. A corpsmember spliced and shaped a new end using dimensional lumber. Rotting log ends of the southeast corner were repaired using log consolidant and a two-part epoxy.

Forester's Dwelling 7103 & 7105 (20'x30'):

Crew members scraped peeling paint from the exterior of the buildings in preparation for future painting. Rotten logs were marked for future replacement.

Ranger Dwelling (30'x40'):

The crew scraped paint on the corners of the building and used Big Stretch caulk to seal them. Vegetation was cleared from around the building and the west side was treated for bees and wasps. The 24 windows of the enclosed porch were reglazed, sanded, and varnished. The screens also required replacement and staining. In addition, the front porch located on the South side of the structure and the small porch on the West side were rotting and in need of repair.

Front Porch (8'x6'):

Crew members assisted USFS Wilderness Ranger and Historic Structures Technical Specialist, Tim McKenzie, and Passport In (PIT) Time volunteer John Ludwig in removing the damaged front porch on the Ranger Dwelling. USFS Passport In Time (PIT) is a program for volunteers to work on historic

¹² Information gathered from *An Evaluation of Selected Log Structures at Superior National Forest*, Prepared by Edith A. Dunn Purchase Order 43-63A9-7-3143. Forest Archaeologist Lee Johnson reviewed and verified the accuracy of the information gleaned from this source.

buildings. Those involved removed the skirting around the southern side of the structure as well as the logs of the porch. Hydraulic jacks on the east and west sides of the porch raised the southern wall of the Dwelling slightly to alleviate pressure from the sill log. McKenzie assisted the crew in identifying and marking the rotten section of the sill log in need of repair. Crew members used an ax, slick, and chisels to remove damaged and punky wood from the original log. Two sections of dimensional lumber were fitted into the damaged area of the original log. The first plank was added as support for the new face of the log.

The log was hand hewn to size and fastened with six inch TimberLok screws. Under the supervision of Ludwig, crew members hewed the face section from a rectangular timber into a rounded log using a variety of hand and power tools. These included: broad axe, drawknife, slick chisel, Lancelot woodcarving disc on a 4-½ inch angle grinder, sanding disc on a 7-inch angle grinder, and worm drive circular saw.

The face log was notched so that the seam between original and replacement wood disappeared after being stained. The crew fastened it in place using eight inch TimberLok screws. McKenzie demonstrated forming the chisel-toothed ends of the porch using a chainsaw. Crew members were tasked with scribing and notching logs to form the fourteen logs supporting the front porch. In addition, the new stairway was reconstructed by the crew under the guidance of McKenzie.

West Side Porch (3'x6'):

A crew member restored a section of rotting and deterioration of the log ends on the north side of the entryway. Rotten and punky wood was removed from the log; new lumber was spliced and shaped so that it resembled the original features. Consolidant as well as a two-part epoxy were applied to salvageable sections of the structure. The chisel-toothed end of the original log was refashioned on the new lumber. Rotting also occurred where the railing of the porch connected to the west wall of the Dwelling. Crew members chiseled damaged sections away and notched small pieces of Redwood in its place. The crew stained the porch with a linseed oil-based stain.

Gutter:

The crew removed the gutter from the south side of the Dwelling as it was deemed ineffective and a likely cause of the rotting present on the porch. New lumber was provided and the crew constructed a new gutter to replace the original. A crew member designed Art Deco-style brackets to fasten and support the reconstructed gutter. The system was stained to match the exterior of the Ranger Dwelling. While on site, it rained; this allowed the crew to adjust the gutter diverting water runoff from the roof away from the newly constructed porch.

PROJECT HOST

Support for this project was provided by the U.S. Forest Service, Superior National Forest (SNF). The SNF was able to cost-share \$20,000 for services provided by Northern Bedrock. In addition, the SNF contributed camping and lodging as well as food and refreshments. Forest Archaeologist Lee Johnson provided 102.5 hours of technical advisement and project support; additional Forest Service employees offered 30 hours of service.

TECHNICAL ADVISEMENT & TRAINING

USFS Wilderness Ranger and Historic Structures Technical Specialist Tim McKenzie contributed 160 hours of technical advisement and training. Passport in Time volunteers John Ludwig and Bob Jackson provided a combined 112 of in-kind technical support. Ludwig offered 72 hours during Hitch 6, and Jackson an additional 40 during Hitch 7.

OUTCOME

The crew spent 578 hours during Hitch 6 and 580 hours during Hitch 7 working at the Tofte Ranger District for a combined total of 1,158 hours. This averaged to 144.75 hours per corpsmember. The crew scraped paint on three buildings totaling 2,520 sq. ft., repaired 12 screens, reglazed 25 windows, and applied approximately 560 lineal feet of Big Stretch caulk. Additionally five log ends were repaired and the 3'x 6' side porch was restored and stained. The reconstruction of the 8'x 6' front porch called for the addition of 14 logs, a newly renovated set of stairs, and the sill log to be refaced.

Guardian Angel Mission Church

CONTEXT

Moses Posey a Chippewa Band Member and elder of the Guardian Angel Mission Church in Sawyer, MN, built the original log structure in 1884. Before construction of the church, services were held in local homes. Father Casimir (Clement) Vogt, O.F.H., a Franciscan missionary priest, who began ministering in the Fond Du Lac community in 1882, supported the project. According to the St. Kateri Tekakwitha organization, charged with maintaining the structure: “The Sawyer Log Church signifies a mix of Native American initiative and Catholic mission effort. The building is an important marker in the history of Catholicism among the Native Americans of Northern Minnesota.”¹³

Through the years, Franciscan friars, Benedictine monks and Diocesan priests have served the church’s Native American patrons. The church was unused from 1905-1923, but was reopened in 1923. In the 1930s the west addition was constructed with a field stone chimney assembled on its north side. During the 30’s, Native Americans became a minority in the church. In response, Father Ysemans, O.S.C. designed a large oil painting depicting Saint Kateri Tekakwitha, “Lilly of the Mohawks,” a young Native American woman who converted to Christianity in the 1650s.¹⁴ In 1938-1939 the church erected a shrine to Kateri Tekakwitha, which was maintained by Native American and Catholic communities in Sawyer. Although the church sits on the Fond du Lac reservation, the land is deeded to the Diocese of Duluth which has served the parish since 1991.

First called the “Guardian Angel Mission,” the church is now often referred to as “the Church in the Woods.” The building was constructed with massive rough-hewn white pine logs fastened with wooden pegs and daubed with plaster. In 1964 a new brick and cement church was built on the premises. The mission church, now on the National Register of Historic Places, is one of the few historic buildings in Carlton County not destroyed during the widespread fires of 1918.

During the 2016 Field Season, Northern Bedrock spent time addressing issues that threatened the longevity of the Log Church. Mice, squirrels, and powder post beetles had infiltrated the building. Rodents nested above the ceilings and behind the rough-cut board siding on the interior walls. Beetle residue presented itself on the walls and the pews in the church. Many of the exterior logs presented rotting as a result of water damage from overexposure to the elements, and the close proximity of vegetation to the structure. Foundation damage and other structural damage need to be surveyed and repaired. The crew’s purpose on this project was site preparation for further action to be taken in the future. The building is divided into five sections: the original log church, Sanctuary, the meeting hall (west wing), Sacristy (south wing), and North Addition.

¹³ <http://www.stkaterisawyer.com/History>

¹⁴ See more history of “Lilly of the Mohawks” <http://kateritekakwitha.net/kateris-trail/>

SCOPE

The crew removed the contents of the meeting room to a shipping container on the church grounds, including: chairs, lumber, shelving units, and other furniture. The particle board ceiling was removed to access and remove rodent nests. The flooring in the meeting room, north addition, and sacristy was pulled up by the crew to expose the subfloor and foundation below. Using hammers and pry bars, the crew worked meticulously to remove the tongue and groove flooring without causing damage. After the nails were extracted, floorboards were bound in shrink wrap, labeled with their respective rooms, and put into storage. Corpsmembers then proceeded to detach the rough cut board siding from the interior walls in the North Addition, Sacristy, Sanctuary, and West end and balcony of the Log Church. All boards were treated for powder-post beetles, labeled and packaged together, and moved to storage. PeneTreat was applied to the pews, boards, and exterior logs of the structure.

PROJECT HOST

Support for this project was provided by the Saint Mary and Joseph Church in Sawyer, MN. The project host was able to cost-share \$1,500 for the services supplied by Northern Bedrock. Deacon Bryan Bassa, Barb Omar and Don Berthiaume contributed 20 hours of project support to the crew. Additionally, volunteers from the parish provided food, refreshment, and support. These volunteers included: Cindy and Alexis Crotteau, Jennette Korpela, Lynn Beatty, Ross DeCaigny, and Del Prevost.

OUTCOME

The crew spent 190.5 hours working at the Guardian Angel Mission Church, averaging 31.75 hours per corpsmember. Additionally, Northern Bedrock staff contributed several hours of time in support of the project. During this time, the crew removed flooring from three rooms with a combined area of 580 sq. ft., and the Meeting Hall's ceiling with an area of 335 sq. ft. Additionally, 14 walls of rough cut boards were removed translating to approximately 170 boards. PeneTreat was applied to approximately 1,670 sq. ft. of the Guardian Angel Mission Church exterior.

Hitch 9 | October 4 – 11, 2016

Halfway Ranger Station | 10.4.16 – 10.11.16

CONTEXT

Since acquiring stewardship of the Halfway Ranger Station Historic District from Northern Research Station, Northern Bedrock has hired a contractor to eradicate the bat infestation in the Ranger Dwelling and the Lake States Forest Experimental Station (LSFES) building. The main floor of the Dwelling was probably contaminated by rodent feces and urine, and in need of disinfecting to make it inhabitable. Furthermore, the interior and exterior of both the District Office and Boat House buildings were infested with Powder-Post Beetles. This was evident by the presence of a sawdust-like powder and small holes covering the logs of the buildings. The roof of the classroom building leaked; a section of the drop ceiling collapsed, and the roof needed to be patched before further damage was caused.

SCOPE

The crew mowed the lawn, cleaned the Ranger Dwelling, classroom, bunkhouse, Warehouse, and District Office in preparation for the open house which took place on Saturday 8 October 2016. About 30 people attended. Executive Director, Rolf Hagberg led tours around the historic district. Attendees were given the opportunity to watch and discuss the process for treating powder-post beetles with the crew: during the Open House crew members worked in the District Office treating the beetle infestation. In addition, the crew addressed the issue of contamination in the Ranger Dwelling. Corpsmembers disinfected the interior of the Lodge using DSV, a highly concentrated commercial disinfectant. As a result, the crew donned Tyvek suits, respirators, safety glasses, and nitrile gloves. The lodge was disinfected to eliminate any rodent contamination (especially bat) that may have accumulated on the interior of the building. The main floor of the Lodge is now habitable. The crew also attached a tar paper patch to the roof of the classroom building to prevent leaking during the winter and spring. Crew members on this project wore harnesses as a safety precaution. This hitch marked the end of the 2016 Field Season and the beginning of a three week long extension.

PROJECT HOST

Northern Bedrock Historic Preservation Corps served as the host for this project and provided lodging for the crew.

OUTCOME

The crew logged 233 total hours working at Halfway Ranger Station during Hitch 9, averaging 39 hours per corpsmember. Additionally, Northern Bedrock staff contributed 54.5 hours to the project. Approximately 2,160 sq. ft. of the District Office and Boat House were treated for powder-post beetle infestations. A 32 sq. ft. patch covers the leak on the roof of the classroom.

Semer Park | 10.5.16 – 10.7.16, 10.10.16

CONTEXT

At its inception Semer Park was referred to as "The Tourist Camp" or "The Tourist Park." The park was used as an overnight campground, and had a 24 hour caretaker present. Three stone grills were built between 1938 and 1941 as projects for the National Youth Administration (NYA), comprised of local Ely youth. This group created five stone fireplaces, seven stone tables, the stone council ring, foundation for a kitchen, and a Bath House. In 1941 the city council became interested in projects like these providing jobs for the NYA and improving their park infrastructure. Northern Bedrock worked on three stone grills located at the park. These grills were roughly 5'x3'x1' constructed of granite field stone piled two courses high. The bases of the grills were made entirely of field stone, mortar, and concrete. The structures were built on a cement footing well below ground level. Years of exposure to heat and environmental factors had caused mortar failure; as a result, stones fell away and the concrete cap crumbled leaving the stone grills in a state of disrepair. The concrete cap was likely designed to serve as a tabletop for the grill. Under the grate is a fire pit. In order to repair the structure, the original grill was disassembled and reconstructed atop a new concrete foundation.

SCOPE

Under the direction of Ely native and local stone mason Mike Braun, the crew used hammer drills and a jackhammer to demolish the three grills to a sound stone footing approximately 4-1/2 inches below ground level. The stone was cleaned using water and stiff bristle brooms to offer the concrete foundation a surface on which to adhere. An eight inch trench was dug around the foundation on all four sides to allow for the installation of a drain tile. Braun used 2x4's to build a concrete form and placed it around the existing stone footing. Crew members lined the footing with small rocks to prevent cement from running out of the form before it could set.

The crew then mixed the concrete footing and laid the cement. Small concrete hand floats were used to spread the cement evenly across the form and smooth the surface. Two wheelbarrows of cement were added before placing the rebar. Two more wheelbarrows of cement were added, and a fourth and final layer was added then leveled with floats. By consistently smoothing the surface of the cement, moisture is allowed to rise and be removed. After removing excess moisture from the cement, it is allowed to set for an hour before smoothing it again using a larger float. The next day, the concrete had set enough for the form to be removed.

Braun demonstrated laying firebrick which will act as the walls of the new fire pit. Firebrick and Fire Clay (which was used as mortar) are able to withstand excessive heat and will extend the life of the grills. The next step became laying the stones. Mike chose large stones that stood level with the top of the firebrick interior. The project called for masonry cement to be used as mortar. Stones were set on a bed of mortar and wedged in place to prevent movement. After Braun placed the cornerstones, he supervised as the crew worked to find the right stones to place as the first course. Each stone needed to match the corners of adjacent stones, while producing a mortar joint between 1/2 and 1-1/2" wide. Braun expressed to the crew the importance of patience when doing a job like this.

At the end of the day, all the wedges were pulled from under the stones and the crew "struck" the joints. This refers to removing excess mortar from between the stones making the joints as tight as possible. This is to be repeated at the end of each day of mortar work.

The next step consisted of laying the filler stone which would sit behind the facing stones. Placing the fill is less intense than the outer course; there are two requirements for this process:

- 1) filler stone must rest either below or flush with the cornerstones and firebrick walls,
- 2) enough mortar must be applied to cover all surfaces of the stone to prevent infiltration into the structure by water

The crew laid the second course of outer stones making sure that all stones sat level to or below the cornerstones. Setting the outer courses proved to be the most tedious part of the process. After setting all of the stones in place, striking the joints, and allowing the mortar to set up, the crew cleaned the mortar off of the faces of the stone grill.

Mike Braun admitted that “cleaning is the worst part of every job” and was happy to relinquish this task to the crew. Braun’s process for cleaning was as follows:

- 1) wet the stones with water,
- 2) apply a SureKlean 600 Hydrochloric Acid solution,
- 3) scrape the stone with a tuck-pointing trowel and wire brush,
- 4) use plenty of “elbow grease”,
- 5) and when it’s clean, rinse the stone with clean water.

The final step was building the form and pouring the tabletop cap for the grill. Braun constructed the form out of 2x4” and 1x8” planks. It was fitted to rest slightly on the stone structure, fastened in place by metal posts and wooden stakes anchored in the ground, and lined with tar paper to fill the void between the stones and the form. The steel grate was set in place and the form built around it. Three wheelbarrows of cement filled the form, Durawall was placed within the cement for structure, and a shallow concrete edging tool was used to establish an edge along the form. After leaving the form set for an hour, Braun took a deeper edging tool and long concrete floats to make the finishing touches.

PROJECT HOST

The City of Ely served as the host of this project, and was able to contribute \$1,000 for materials.

TECHNICAL ADVISEMENT & TRAINING

Mike Braun of Braun Construction in Ely, MN provided the crew with 28 hours of technical advisement and training in masonry. Braun was paid \$250 for his time; the remaining 23 hours were contributed in-kind.

OUTCOME

The crew spent a combined 160 working at Semer Park, averaging 23 hours per corpsmember. In addition, Northern Bedrock provided 24 hours to the project. During this time the crew disassembled three stone grills and reconstructed one 5’x3’x1’ structure.

4th Street Foundation Repairs

CONTEXT

During the nineteenth century, housing in historic Dayton's Bluff in southeast St. Paul was deemed undesirable due to heavy railroad traffic. However, by the 1880s Dayton's Bluff experienced a shift in interests. St. Paul's entrepreneurs wanted to build on the hill overlooking the area's river bluffs. The neighborhood became a place for both working and middle class families, including many German immigrants. There is a great variety of housing in this neighborhood; it is characterized by a mix of three story mansions and simple one- and two- story homes.

In 1992 Dayton's Bluff Historic District was established. Vacant housing tours and community opposition prevented the city from demolishing many buildings in this neighborhood which had fallen into disrepair. The neighborhood is comprised of fixer-uppers and is in need of individuals willing to improve historic homes and revitalize St. Paul's District 4. Building within the District boundaries is reviewed by the St. Paul Heritage Preservation Commission according to the guidelines explained in the Historical District Handbook. Northern Bedrock's crew worked on a 4th Street house built in 1884. The house has been abandoned for over ten years leaving it in a state of disrepair. The crew's focus was repairing the limestone foundation. The limestone crumbled and stones were loose due to failing mortar joints. In some instances, the mortar had deteriorated and only sand remained.

SCOPE

In order to repoint the foundation of this structure, the crew first removed the failing mortar and replaced the deteriorated limestone. The mortar had to be removed to a minimum depth of twice the width of the joint in order to allow new mortar a sufficient surface on which to adhere. Tools used to achieve this included: masonry chisels, plugging chisels, and hammers. When removing mortar, one must work towards existing voids in the joint. This will alleviate any pressure built up while forcibly removing material. Parging (concrete patches in the place of stone) was also removed.

The crew worked with technical specialist John Beaty to identify areas in need of stone replacement and reconstruction. In areas where the existing stone deteriorated leaving a large gap in the foundation, new limestone was selected and shaped to fit into the void. In reconstructed areas, replacement stones were braced into place with limestone "shims"; gaps behind and between stones were filled with a mix of mortar and rubble. In places where mortar joints were particularly large, filler stones combined with mortar added structure; by using more stone and less mortar in large joints, the likelihood of cracking is diminished.

The crew repointed all accessible foundation joints using a dry mortar mix and tuck-pointing trowels. Large joints were filled with clean/damp rubble and covered with mortar. Repointed surfaces were kept damp and left to set for twelve hours. After the allotted time had passed, crew members finished by scraping mortar from the faces of stones and whacked the joints with a stiff bristled broom. This is a

different approach to striking joints than demonstrated by Mike Braun during Hitch 9. In doing so tool marks are hidden, the joint is cleaned up, and everything is blended.

PROJECT HOST

Paul Ormseth was the host for the 4th Street Foundation Repair project. Ormseth is a registered architect with twenty years of experience. His firm works on a variety of project types including: preservation, restoration and adaptive reuse of historic buildings, as well as single family and multifamily residential and specialized commercial. Ormseth was able to cost-share \$3,860 for the services provided by Northern Bedrock. Additionally, he contributed 10 hours of project planning and support as well as food and refreshments for the crew.

TECHNICAL ADVISEMENT & TRAINING

John Beaty contributed 12 hours of technical advisement and training in masonry. He was paid \$600 for his services.

OUTCOME

The crew spent a combined one 157 hours repairing the foundation of the structure, averaging 39.25 hours per corpsmember. Northern Bedrock staff contributed 34 hours of assistance to the project. During this time, the crew reconstructed and repaired 16 cubic feet and repointed 90 square feet of mortar joints on the limestone foundation.

Halfway Ranger Station

CONTEXT

Halfway Ranger Station is located approximately thirteen miles south of Ely, Minnesota along the South Kawishiwi River. The site includes the buildings of both the historic Halfway Ranger Station and the Lake States Forest Experimental Station (LSFES). Collectively it is referred to as the Halfway Ranger Station Historic District (HRSHD). Historically, Halfway was unique from other Superior National Forest (SNF) ranger stations in that it gave rangers two transportation options: The Kawishiwi River granted access to the interior of the SNF, while the Stony Tote road (later to become Highway 1) connected Halfway with Ely. Stony Tote road was contracted by the St. Croix Lumber Company connecting Ely with a series of lumber camps ending at Source Lake 26 miles to the south.

As the name implies, Halfway Ranger Station rested midway between Source Lake and Ely. HRSHD experienced a period of dynamic change during the nationwide economic depression of the 1930's as a result of legislation passed under President Roosevelt's administration. In response to increased unemployment rates, Roosevelt established the Civilian Conservation Corps (CCC), which sought to conserve the nation's natural resources while providing jobs for young men. The CCC was operated by the Department of Labor, the United States Army, and the Department of Interior. Men from local communities, known as Local Experienced Men (LEMs), provided on-the-job training for enrollees and directed building projects. From 1934-1935 seven buildings were constructed by CCC boys under the direction of LEMs on the Halfway Ranger District. In 1931, a portion of Halfway was dedicated to the Superior branch of LSFES (later known as North Central Research Station). 1957 marked the construction of an insectary building and research laboratory. North Central Research at HRSHD became a focal point for pioneering studies in fire ecology in the 50-60's and radio-telemetry in wolves from 1968-71. By 1974, North Central Research assumed management of Halfway Ranger Station.¹⁵

Architecture: This site boasts 12 standing historic buildings and structures, seven of which were built by the CCC. One structure built by the WPA was erected in 1931 designed as either a balloon or platform-framed building likely using standard dimensional lumber. The structure was built with multiple functions: as an office, laboratory, and living quarters. The seven buildings constructed by the CCC reflect the Rustic or Adirondack style of design used in the 1930s for Forest Service buildings. Prior to the 30s, Forest Service buildings followed a relatively simple design due to availability of resources and a limited workforce. Changes in the FS under Roosevelt's Administration resulted in an evolution in building complexity. The existence of an agency architect and a large CCC workforce allowed for the construction of log buildings similar to those at the HRSHD.

¹⁵ <http://www.fs.fed.us/nrs/projects/kawishiwi/resources/docs/HistoricStructureReport.pdf> 3-15.

The structures at Halfway follow the style laid out by W. Ellis Groben in *Acceptable Plans, Forest Service Administrative Buildings*. This rustic style for log buildings was first used by the National Park Service in the early twentieth century but was reintroduced by Groben in the 30s. Rustic style featured round, saddle-notched logs with chisel-shaped log-ends that ran “proud” of (beyond) wall planes at the corners. The Ranger Dwelling differs from Groben’s Rustic style in that it features a full-length porch, exposed rafter tails, and interior finishes.¹⁶

Both the District Office and Warehouse buildings are nestled against the hillside. Years of erosion have pushed the hillside tightly against the northern wall of the Warehouse and the eastern wall of the District Office. The soil sloped towards the foundation of the buildings. Moisture retention is one of the most degrading environmental factors affecting the longevity of log structures. Not only will these sloped hillsides divert runoff towards the foundation, they also block air flow and limit a building’s ability to breathe. Powder-post beetle residue is present on the North wall of the Warehouse.

SCOPE

In a log cabin restoration workshop in Little Rock, Arkansas, Log Doc Joe Gallagher explained the importance of regrading away from log structures. The majority of logs form checks (lateral cracks) as they dry. Although checks are not structurally detrimental to the log, they offer potential points of ingress for water and debris. As moisture runs off roofs of buildings it comes into contact with soil and will in many cases splash back towards the structure. The water carries particles of soil and lodges in the checks. This combination now acts like a sponge collecting moisture and debris inside of the log and leads to eventual rotting and deterioration. The solution to this problem is regrading around the foundation; installing a four inch slope of soil away from the structure and digging a trench filled with stones at the roof’s drip line will alleviate moisture issues.

The crew set out to stabilize the soil surrounding the Warehouse and District Office by diverting runoff and moisture away from the foundations of the structures. Using pick mattocks, an axe mattock, an axe, and shovels, they aimed to remove soil that had eroded down the hillside and against the northern wall of the Warehouse. Axes assisted in removing tree roots and stumps, and pick axes loosened the soil. An area approximately 60’ in length along the structure and 6’ from the foundation was cleared of soil. The crew hauled 16.5 cubic yards of soil away from the Warehouse. Soil adjacent to the foundation was sloped away from the building. The regraded surface was constructed with a gradual slope spanning its length. The crew dug and filled a trench with stones along the drip line of the roof and graded the soil to divert runoff from the roof and surrounding hillside. A similar approach was taken to the East side of the District Office; however, there was less soil to move. Measures will be taken to monitor hillside erosion and prevent future moisture accumulation along the Warehouse and District Office buildings. Crew members also removed Balsam Fir trees which had grown in close proximity to the buildings. Trees and other vegetation limit sunlight to log structures and retain moisture. Furthermore, the North exterior wall of the Warehouse was treated for its powder-post beetle infestation.

¹⁶] <http://www.fs.fed.us/nrs/projects/kawishiwi/resources/docs/HistoricStructureReport.pdf>. 16-7.

PROJECT HOST

Northern Bedrock Historic Preservation Corps served as the host for this project and provided the crew with lodging.

OUTCOME

The crew spent a combined 114 hours working at Halfway Ranger Station. Northern Bedrock staff contributed five hours of project support. During this time, the crew removed 30 Balsam Fir trees, treated 420 sq. ft. of the Warehouse for powder-post beetle, and regraded around two buildings. 16.5 cubic yards of soil were removed from the Warehouse and a total of 697 sq. ft. of soil were regraded around both structures.

Hitch 12 | October 31 – November 2, 2016

Lake Superior Railroad Museum

CONTEXT

The Lake Superior Railroad Museum is housed in Duluth's 1892 Union Depot along with the St. Louis County Historical Society, and Duluth Playhouse. The historic train depot in Duluth, MN once served as the hub for transportation in the Northeast part of the state. In 1910, seven railroads dispatched over 50 trains a day from Duluth. The last train left the station in 1969, and in 1973 work began to restore the Depot and create a museum.¹⁷

Lake Superior Railroad Museum maintains seven lines of indoor railroad tracks; Historic steam engines, locomotives, passenger cars, and assorted railroad equipment occupy the museum. The crew focused on Track Seven, which is unique to the other six tracks in the Depot in that it possesses a third rail.

According to Tim Schandel, the museum curator, "The bricks [around Track Seven] and the third rail, or trolley rail, were installed in 1980/81 as part of our 'Depot Square' installation. Depot Square is a three-quarter scale approximation of Superior Street in downtown Duluth in 1910. As part of the project we purchased a trolley car from Lisbon, Portugal to run down our newly created main street. The trolley was not standard gauge (4' 8.5") but rather narrow gauge (3') and this necessitated laying the third rail on track number seven."

The railroad tracks in the Depot were not designed to support the continuous weight of trains and have since begun sinking. Prior to the crew's arrival, the museum laid new railroad ties atop a fabric vapor barrier and reinstalled the rails. However, the brick floor that lined the track had not been replaced.

SCOPE

At the time of the project, track repairs were finished and sand was piled on fabric in preparation for bricks to be laid. Northern Bedrock corpmembers were tasked with relaying the brick pathway that once lined Track Seven. Tim Schandel instructed the crew in proper bricklaying techniques. Sand was to act as the footing for the newly placed brick. After piling the sand it was packed with a tamper to

¹⁷ <http://lsrm.org/Home/about.html>

give the brick a solid base. Brick was to be laid level with the concrete landing and rails. A drastic change in elevation between Track Six and Seven required corpsmembers to gradually slope the brick on the South side of the track. It was crucial to keep each row of bricks level and at a consistent height. Rubber mallets were used to set the bricks in place. In spaces too small for a whole brick, masonry hammers and chisels were used to split brick into usable sizes. The last step was backfilling the joints between bricks with sand.

PROJECT HOST

Lake Superior Railroad Museum hosted this project and provided the crew with food and refreshments. Additionally, Museum Curator Tim Schandel donated his time, offering assistance in organizing the project and technical advisement.

OUTCOME

The crew spent a total of 180 hours working at the Lake Superior Railroad Museum, averaging 27 hours per corpsmember. Northern Bedrock staff contributed an additional 22 hours to the project. During this time the crew laid a swath of brick along Track Seven, 60 feet long and 10 feet wide for a total area of 600 sq. ft.

D. IMPACT

During the 2016 Field Season, Northern Bedrock improved the aging stock of historic resources in Minnesota. Northern Bedrock coordinated with project hosts and technical specialists around the lifecycle of historic preservation projects. Under the guidance of technical specialists, corpsmembers earned valuable skills in masonry, plaster work, cemetery restoration, log building repair, and painting. In addition to the work listed, the crew also performed site stabilization: removing hazardous vegetation and waste from building foundations, clearing trails, and removing trees and invasive species.

Cemetery Restoration

Cleaned and Restored 1,079 Gravestones

Cleaned and Restored 5 Large Monuments

Building / Structure Improvements

Total Buildings Improved 16

- 4 Superior National Forest Buildings

Windows Repaired 35

Patched 2 Roofs

Deconstructed 1 Deteriorating Church Interior

Deconstructed 3 Deteriorating Stone Grills

Constructed 1 Stone Grill

Laid 60ft of Brick Platform 10ft Wide

Cleaned 470 Historic Bricks

Chinked and Daubed 5 Buildings

Repaired 5 Log Ends

Reconstructed 1 Porch

Restored 1 Porch

Pest Mitigation

Powder-post beetle treatment on buildings – 4,656 sq. ft.

Painting

Painted 2 Train Box Cars – 2,407 sq. ft.

Painted 5 Picnic Tables

Scraped Paint off 3 buildings - 2,520 sq. ft.

Plaster Work

Walls Resurfaced - 1,617 ft²

The corpsmembers spent a total of 4,725 hours working on these projects and an additional 212 hours or 4% of their time in classroom training. Volunteers contributed 204 hours of time in support of work performed over the course of the season.

The technical specialists trained the corpsmembers for 475 hours throughout the season. Grant funds provided through the Minnesota Historical Society Heritage Grant Program provided \$60,000 for Jensen Conservation Services Inc., in exchange for technical services performed in the restoration of the Soldiers & Sailors Monument. Northern Bedrock committed an additional \$4,700 for technical specialist services over the course of the season, total training and advisement expenses equalling \$64,785.

2016 Field Season

CREW EXPENSES

EXPENSE	
PAYROLL	\$102,646.00
BENEFITS & INSURANCE	\$16,606.00
HIRING	\$400.00
TRANSPORTATION	\$20,604.40
EQUIPMENT	\$6,712.21
MATERIALS	\$2,808.00
TRAINING	\$4,735.00
CAMPING & FOOD	\$12,383.00
OTHER	\$1,891.00
TOTAL	\$168,785.61

2016 Field Season

TECHNICAL SPECIALIST EXPENSE

HITCH	TECHNICAL SPECIALIST	IN-KIND
Training A	Mike Braun, Braun Construction	\$100.00
Training D	Rick Fearnall, Duluth Timber Company	\$100.00
	Clancy Ward, Duluth Timber Company	\$100.00
Training E	American Red Cross	\$910.00
Hitch 3.C	Curtis Bellows, Bellows Painting	\$1,500.00
Hitch 4.A	Robert Jensen, Jensen Conservation Services Inc.	\$60,000.00
Hitch 4.B	Curtis Bellows, Bellows Painting	
Hitch 5.A	Mark Johnson, Artisan Restoration LLC	\$1,225.00
Hitch 9.A	Mike Braun, Braun Construction	\$250.00
Hitch 10.A	John Beaty	\$600.00
Total		\$64,785.00

The project hosts contributed a total of \$56,480 in cost-sharing, and \$35,473.80 of in-kind contributions. Total crew expenses came to \$168,786 including, payroll, benefits & insurance, hiring, transportation, equipment, materials, training, camping & food, and other.

2016 Field Season

IN-KIND CONTRIBUTION

HITCH	TYPE	IN-KIND	PROJECT HOST
Training A	Materials & Equipment	\$100.00	Mike Braun
Training B	Refreshments / Food	\$25.00	Ely Pioneer Mine
	Project Host Support	\$302.40	Seraphine Rolando, John Seliga and Anne Swenson
Training C	Camping	\$290.00	Finland MN, Historical Society
	Food / Refreshments	\$100.00	
	Project Host Support	\$352.80	
	Volunteer Time	\$252.00	
Training D		\$0.00	Duluth Timber Company
Training E		\$0.00	American Red Cross
Hitch 1.A	Project Host Support	\$50.00	Scandia Cemetery
Hitch 1.B	Project Host Support	\$100.00	Forest Hill Cemetery
Hitch 1.C	Food / Refreshments	\$100.00	Ken Buehler
	Food / Refreshments	\$100.00	Gordon Beck
	Pizza Train	\$250.00	Lake Superior Railroad Museum
	Project Host Support	\$650.00	
Hitch 1.D	Camping	\$600.00	Jeff Larson - Great Lakes Academy of Fine Arts
	Food / Refreshments	\$50.00	
	Project Host Support	\$300.00	
Hitch 2.A	Shower Facilities	\$48.00	City of Carlton, MN
	Project Host Support	\$500.00	
Hitch 2.B		\$0.00	Northern Bedrock
Hitch 3.A	Parking	\$1,760.00	Duluth Armory Arts & Music Center
	Project Host Support	\$100.00	
Hitch 3.B	Project Host Support	\$50.00	Forest Hill Cemetery
Hitch 3.C	Food / Refreshments	\$50.00	Jeff Larson - Great Lakes Academy of Fine Arts
	Project Host Support	\$300.00	

Hitch 4.A	Project Host Support	\$1,600.00	City of Duluth Public Arts Commission
	Food / Refreshments	\$250.00	Rob Jensen
	Food / Refreshments	\$200.00	Darryl & Diane Sannes
	Volunteer Time	\$932.40	Darryl & Diane Sannes
Hitch 4.B	Food / Refreshments	\$75.00	Jeff Larson - Great Lakes Academy of Fine Arts
	Project Host Support	\$800.00	
Hitch 4.C	Project Host Support	\$100.00	Duluth Armory Arts & Music Center
	Volunteer Time	\$200.00	Elden Lindamood
Hitch 5.A	Food / Refreshments	\$300.00	Pope County Museum
	Food / Refreshments	\$75.00	Mark Johnson
	Project Host Support	\$554.20	
	Volunteer Time	\$400.00	
Hitch 6.A / 7.A	Food / Refreshments	\$50.00	U.S. Forest Service
	Food / Refreshments	\$50.00	Stellar Mason
	Project Host Support	\$14,325.00	
	Tour of the Cross River Heritage Center	\$75.60	Skip Lamb
	Volunteer Time	\$5,600.00	
Hitch 8.A	Camping	\$300.00	Bill Jaskari
	Food / Refreshments	\$225.00	Guardian Angels Mission Church
	Project Host Support	\$504.00	
	Volunteer Time	\$176.40	
Hitch 9.A	Project Host Support	\$126.00	City of Ely, MN
	Volunteer Time	\$1,150.00	
Hitch 10.A	Project Host Support	\$500.00	Paul Ormseth
	Food / Refreshments	\$50.00	
Hitch 11.A		\$0.00	Northern Bedrock
Hitch 12.A	Food / Refreshments	\$225.00	Lake Superior Railroad Museum
	Project Host Support	\$200.00	
Total		\$35,473.80	