

Predesign Report:
Lake Lodge

**Lake Vermilion-Soudan Underground Mine
State Park**

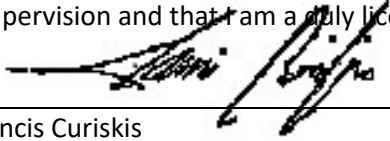
Near Soudan, MN
January 20, 2026



DNR Project No.: 8P205
File No.: SPK.00285.00.10.52
DNR Region: 2
County: St. Louis
Sect/Township/Range: 62 14 N 18 W

Submittal Certification

Signature I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly licensed Architect under the laws of the State of Minnesota.



Jancis Curiskis

01/20/2026

24866

Date

Registration No.

Project Contacts

Charles Carpenter, DNR Parks & Trails Division
PAT Region 2 Manager
218-328-8986
Charles.carpenter@state.mn.us

Jordan Schaefer, DNR Parks & Trails Division
PAT Region 2 Assistant Manager
218-328-8790
Jordan.schaefer@state.mn.us

Jen Westlund, DNR Parks & Trails Division
PAT District 3 Supervisor
218-235-2523
Jen.westlund@state.mn.us

Jim Essig, DNR Parks & Trails Division
LV-Soudan Underground Mine SP Manager
218-753-2245
jim.essig@state.mn.us

Stacy Smith, DNR Parks & Trails Division
Acquisitions and Development Supervisor
651-259-5649
Stacy.smith@state.mn.us

Melinda Anderson, DNR Parks & Trails Division
Development Consultant
651-259-5644
Melinda.anderson@state.mn.us

Jarrett Purdue, DNR Operations Services Division
Design and Construction Manager
651-259-5501
jarrett.purdue@state.mn.us

Jancis Curiskis, DNR Operations Services Division
Architect
651-259-5462
Jancis.curiskis@state.mn.us

Dave Sobania DNR Operations Services Division
Regional Engineer
218-828-2620
dave.sobania@state.mn.us

Jason H Peterson DNR Operations Services Division
Landscape Architect Supervisor
651-259-5488
Jason.h.peterson@state.mn.us

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Section 1: Predesign Summary

1.A Introduction

This Project will support the mission of the Minnesota Department of Natural Resources (MN DNR) by designing, bidding, constructing, furnishing, and equipping a new Interpretive Center for the state park, tentatively named the Lake Lodge, as described herein and in accordance with Minnesota Statute. The new facility will fulfill specific visitor functions delineated in the Lake Vermilion Cooperative Master Plan and campground development plans. Capital bond funding will be utilized to pay for construction costs and professional services fees.



Lake Vermilion - looking west from Armstrong Bay

1.B Scope

The new facility will include a new lodge building with parking for approx. 36 vehicles. Plans will be developed to include several additional structures such as picnic shelters/ gazebos or an amphitheater which will be bid as add alternates to the project to ensure project scope meets funding available. These structures will be in the area around the building to encourage outdoor activities. The building plan will include addressing the existing water treatment facility and will be in the area that has already been disturbed. the design will include integrated artwork and displays throughout the building and grounds where appropriate and the project will reflect the DNR's vision for a "next generation" park.

Total Square Footage

Estimated total area of building: 4,000 square feet

1.C Costs

Cost Estimate Summary

See 6A Capital Expenditures for DNR Total project estimated cost form
Preliminary estimated Project Costs for this development:

➤ Predesign Costs	\$ 38,200.00
➤ Design Costs inc. Contingency	\$ 504,240.00
➤ Project Management Costs	\$ 361,240.00
➤ Construction Costs + Contingency 20%	\$ 5,187,000.00
➤ <u>Occupancy Costs</u>	<u>\$ 316,000.00</u>
▪ <u>Subtotal</u>	<u>\$ 6,406,680.00</u>
▪ <u>Inflation factor 10%</u>	<u>\$ 640,668.00</u>
Total Estimated Costs	\$ 7,047,348.00

1.D Funding Source

Laws of Minnesota 2023, Chapter 72, Article 1, Section 7, Subdivision 9: \$7,200,000.00

1.E Operating Costs

Summary: See 6.B Ongoing Operating Expenditures for further breakdown.

Costs for Staffing (includes fringe):	\$90,000.00
Costs for Maintenance, Operations & Utilities:	\$26,100.00
Total Estimated Costs:	\$116,100.00/Year

1.F Schedule

Further developed schedule is in section 7 of this document.

➤ Design	July 2026 – July 2027 (13 Months)
➤ Bidding and Award	August 2027 – October 2027 (3 Months)
➤ Construction	November 2027 – March 2029 (16 Months)
➤ Occupancy	April 2029

1.G Project Data Sheet

➤ Name of Project	Lake Lodge
➤ Agency	Minnesota Department of Natural Resources
➤ Project Location	Lake Vermilion-Soudan Underground Mine State Park, St. Louis County
➤ Occupancy Type (Storage)	Mixed Occupancy, Types A-3 (Interpretive Center), B (Office) and S
➤ Type of Construction	Type V-B
➤ Primary Space Types	Lobby Vestibule/Foyer fireplace, Porch, Office space, Restrooms, Multipurpose Meeting and Exhibit space, Multipurpose Storage room, Mechanical room, MNIT Electrical Closet
➤ Freestanding structures	Add Alternate Amphitheater, Picnic shelters
➤ Building Size	4,000 SF
➤ Number of Stories	Single level
➤ Space Efficiency	70% usable/30% circulation/mechanical/structural/wall thickness
➤ Staff/Office Space	Seasonal staff, "plug-in" space for roaming park staff
➤ Site Size	Approximately 25 acres
➤ Parking Type	Paved Surface Parking
➤ Number of Car Stalls	30
➤ Number of Oversize Stalls	6
➤ Area of Parking	Approximately 45,000 SF
➤ Roofing System	To be determined options include Structural Insulated Panels (SIPS) or pre-finished metal roofing system and EPDM for flat roof areas.

-
- Exterior Wall Type Structural Insulated Panels (SIPS) or high-performance framing
 - Interior Wall Type Consistent with Type V-B
 - Structural System Structural Insulated Panels (SIPS) / exposed timbers or glulam's / TBD
 - Mechanical System In-slab radiant heating. Single central air handling for HVAC. Certain windows to be operable
 - Plumbing System The existing water service is to be replaced as part of this project is an onsite lake-sourced treatment/storage facility. With a Separate meter for tracking Building water usage
 - Septic System Onsite (mound) sewage treatment system
 - Fire Protection Description None required; Option for full protection with NFPA 13 compliant sprinkler system
 - Electrical System 120/240-volt single-phase power. Pad mounted transformer with distribution board and branch panels as necessary. Separate utility meter (integrated with BAS) for energy use tracking. LED lamp light fixtures
 - Renewable Energy Systems Building will be Photovoltaic (PV) ready meeting B3 guideline requirements
 - Technology Systems Voice/data drops at primary spaces. Point of sale capability. BAS connection
 - Building Life Expectancy 75+ years

Section 2: Basis For Need - Project Background Narrative

2.A Mission Statement

The mission of the Minnesota Department of Natural Resources (DNR) is to work with Minnesotans to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life. Parks and Trails vision is to create unforgettable parks, trails, and water recreation experiences that inspire people to pass along the love for the outdoors to current and future generations. In addition to natural resources restoration and management, the division administers grants-in-aid to local units of government who partner with local volunteer clubs to maintain 22,000 miles of snowmobile trails, 3,200 miles of off-highway vehicle trails, and 1,100 miles of cross-country ski trails. It is also responsible for Lake Superior Safe Harbors, and stewardship programs for the state's lakes, rivers and trails.

2.B Strategic Plan

The new park was designated to be managed in cooperation with its next-door neighbor, Soudan Underground Mine State Park, per a *2010 Cooperative Strategic Plan* that integrates all aspects of management, interpretation and operations between the two parks (note: in 2014 both parks were merged into one unit). The Strategic plan articulates the DNR's vision for a "next generation" park including activities and experiences aimed to inspire participation in outdoor recreation amongst the next generation of Minnesotans who are becoming more diverse and less connected with the natural world. It also provides an opportunity for the Department to preserve and restore natural and cultural resources while providing visitors with learning and recreational experiences in Minnesota's outdoors. The (merged) park encompasses more than 4,300 acres of land, roughly 10 miles of shoreline and important cultural histories of the Lake Vermilion area to be protected and available to the public.

2.C Operational Plan

Model energy efficiency for buildings and operations by utilizing renewable energy sources whenever feasible and striving for "net zero" energy consumption and emissions on an annual basis for new development.

Provide wireless connectivity in major activity centers of the parks, including the main campgrounds and interpretive center. The park should embrace emerging technologies that make "being away" easier and enhance user experiences but also attempt to minimize technological intrusions for those who prefer an "unplugged" experience.

Develop day-use areas and facilities at the main interpretive center location, the Stuntz Bay Boathouse Historic District and Armstrong Bay.

- Locate the building near the lake. It should be a blend of modern and up-north design (combining steel, timber and site-specific rock materials), and should include the following:
 - 1) Mix of indoor and outdoor gathering spaces (lakeside deck and indoor/outdoor fireplaces, and an amphitheater, if budget allows)
 - 2) interpretive spaces and integrated artwork (focused on major interpretive themes)
 - 3) indoor meeting space and large informal gathering space
 - 4) Hoteling office area. To allow unassigned staff secure space when working in this area of the park.

-
- The Lodge is to serve as a hub for nearby trails and lakeside hiking. Providing a starting point for future development of an accessible trail to the existing Armstrong Bay day use and boat-up access to the park. A swimming area, and shore fishing opportunities are a visitor priority that the DNR is exploring.
 - Provide places for active outdoor learning opportunities in a natural setting. An adventure area should be situated near the lodge and space planned to allow for installation of several gazebos and shelters that can be included when funding is confirmed.

2.D Basis for Need

For State Parks of this size and expected use an interpretive center is provided to allow visitors the opportunity to learn about the park, provide a place to gather and an option to rent equipment needed to enjoy seasonal activities for both water and land experiences.

The vision for the Lake Lodge is that it is a blend of a traditional State Park interpretive center and a trail center. It will be a year-round place to gather and linger; and a place that feels as “comfortable as home”:

The Lodge will provide various opportunities for quiet activities as well as space for campers to gather when it rains.

Day-use visitors will find an abundance of activities to hold their interest so they will want to visit the park repeatedly. Interpretive information displays and artwork will be integrated into the overall building/landscape design.

2.E Existing Site

Lake Vermilion State Park was established on June 8, 2010, following a nearly three-year negotiation process between the property’s previous owner, U.S. Steel Corporation, and (then) Governor Tim Pawlenty. The park’s establishment will protect the cultural heritage of American Indians and Iron Range mining; provide an array of “up-north,” lake-oriented recreational opportunities; and protect a representative slice of the natural resources that are found in the Border Lakes Ecological Classification System subsection and the Vermilion River watershed.

2.F Existing Facilities

The site location within the park was chosen to take advantage of the existing site amenities noted in Section 3. The building will be located to take advantage of and incorporate as much of the existing water treatment facility infrastructure as possible. DNR is exploring ways to minimize the length of time needed to upgrade the existing water treatment facility and having the new lodge program include the needed square footage to construct a new water treatment room will minimize the downtime needed to make the necessary upgrade. DNR will be exploring if converting the existing water treatment structure to a storage facility makes sense financially and programmatically. This will minimize the building impact on the existing untouched areas. Existing utility lines that currently serve day use area and campgrounds nearby run next to this site further reducing the need for extensive added utility construction. The parking area and retention ponds will be designed to work with these existing utilities.

Section 3: Organization Planning

3.A Comprehensive Plan

The Minnesota Department of Natural Resources worked in partnership with Minnesota citizens and an interdisciplinary resource team to develop a cooperative master plan for Lake Vermilion and Soudan Underground Mine State Parks (2011-2020). The master plan was reviewed by members of the Parks and Trails Division Leadership Team and the Northeast Regional Management Team during December 2010. The cooperative master plan was developed through an open public process that included:

- Natural and cultural resource assessment work (literature and field research).
- Internal DNR park master planning effort conducted in consultation and collaboration with a 12-member project delivery team and a 10-member executive planning team.
- Consultation with and recommendations from a 19-member Citizens Advisory Committee, comprised of tribal, local and statewide interests.
- An early public input questionnaire on the DNR Web site and at the Minnesota State Fair.
- A 30-day public comment period, as required by MS 86A.09.
- A Web-based draft master plan review questionnaire.
- Public open houses to give participants an opportunity to ask questions and provide input as required by MS 86A.09.

This predesign document has been compiled from years of input starting with input from the LVSP Project Team, which was and is made up of staff from several DNR divisions, including project managers, park managers, regional managers and supervisors, acquisition and development staff, engineers, architects, and landscape architects. Over the years the team has expanded to include the neighboring community and the Bois Forte band of Chippewa which will play a key role in directing the message this project will convey.



LV-SUM SP Inland Beaver Dam Impound

Deliverables include written, photographic, and diagrammatic research, programming documents, site analysis, space and adjacency analysis, concept plans and images, brief specifications, and preliminary cost estimates.

The “Lake Lodge” interpretive Center was identified in the 2010 master plan; relevant excerpts are as follows:

-
- Model energy efficiency for buildings and operations by utilizing renewable energy sources when feasible aiming for “net zero” energy use and emissions on an annual basis for new development.
 - Develop day-use areas and facilities at the main visitor center location, the Stuntz Bay Boathouse Historic District and Armstrong Bay.

 - Build the park lakeside lodge/ interpretive center near the lake, preferably near the statutory boundary that separates the two parks. The center should be a blend of modern and up-north design.

 - Develop the area surrounding the lakeside lodge/ interpretive center for day use activities including connecting trails to both new and existing boat-up access. The Lodge is to serve as a trail center providing a hub for nearby trails.

 - Provide places for active outdoor learning opportunities in a natural setting.

 - Visitor amenities at Lake Vermilion State Park will be developed with high standards for accessibility, sustainability, conservation design and utility.

3.B Site Selection

The Armstrong Bay Location has been chosen for the following reasons:

- Greater lake presence to improve intuitive wayfinding for boaters & snowmobilers
- Improved shoreline access with docking opportunities
- Synergy of nearby lakeside hiking trails & Armstrong Bay Day Use Area.
- Efficient use of existing and future utility infrastructure and good alignment with B3 Site criteria
- Offers a logical location in relation to future camping and day use activities

3.C Technology and Telecommuting (Remote Work) Plans

- The new “Lodge” will incorporate the Master plan objective to Provide wireless connectivity in the major activity centers of the parks, including the main campgrounds and interpretive center. The parks should embrace emerging technologies that make “being away” easier and enhance user experiences but also attempt to minimize technological intrusions for those who prefer an “unplugged” experience.
- Telecommuting is not a concern. No dedicated staff or hours of operation at this building.

3.D Historic Documentation

DNR has and will continue to work with SHPO (State Historic Preservation Office) to identify all cultural and historical archeological areas in the vicinity of the proposed new lodge site. There are no existing historical buildings / structures above ground. In this area. This project will have no impact on the Stuntz Bay Boathouse Historic District. The DNR has entered into a Joint Powers agreement (JPA) with Bois Forte to work in cooperation to ensure that their concerns with how the impacted area for this project is treated meets their needs.

3.E Disposal of State-Owned Buildings: None

3.F Stakeholders

The DNR's Division of Parks and Trails and Lake Vermillion State Park are the primary stakeholders involved and affected by this project. The Section of Management Resources within the Operations Services Division prepared this predesign report and will oversee preparation and review of construction documents, bidding and construction, and long-term building maintenance.

MN.IT provided input on the security, audio/visual, and data needs for the project included in this report. They will install these systems during construction and provide support once the building opens to the public.

The Office of State Archaeology also has a vested interest in this project given its proximity to archaeological resources. They will review the project, beginning with predesign, checking for compliance with state and federal standards.

A 19-member Citizens Advisory Committee, comprised of tribal, local and statewide interests provided consultation and guidance ensuring that the proposed site location will protect the natural, cultural and economic assets that exist within the park and the lodge site as well as the surrounding communities.

3.G Impacts

Agency Operations: This project will be well connected to the broader landscape, recreational and social/economic matrices in which it is situated. The park will:

1. Recognize its place within nested watersheds and Ecological Classification System (ECS) subsections and manage resources accordingly.
2. Connect users to other area outdoor recreational opportunities, acting as the hub of a recreational wheel with many spokes.
3. Support local economic and social well-being by explicitly connecting local communities with the parks' tourism opportunities.

Agency Operational Budget: No significant impact will be placed on the Agency operational budget beyond the operations costs outlined in section 1E operations costs.

Section 4: Project Description

4.A Program

4.A.1 Lake Lodge Detailed Space Program

Occupancy: A3, B, F-2, & S

Type: V-B

Interior Spaces	Qty.	Size SF	Total SF	SF/Occ.	Occupants	Notes:
Lobby,	1	464	465	15	31	Integrated with or adjacent to porch, flexible space that adjacent to restrooms and Multipurpose room. A place to find information. Location for art/ displays
Restrooms	3	190	190	0	0	3 unisex restrooms including 1 ADA restroom and 1 Adult change facility/ restroom
Mechanical Room	1	288	288	300	1	Mechanical room located to support restroom mechanical and fixtures and building HVAC
MNIT Elec.	1	50	50	300	1	Central location next to multi-purpose and office spaces
Porch	1	400	400	15	27	Porch / screen with view to lake. Movable furnishings
Office/ Hotel Space	1	125	125	100	2	Seasonal staff; "Plug-in" space for roaming park staff, storage. flexible workstation. Secure area.
Storage - Multipurpose	2	162	162	300	1	Adjacent to multi-purpose/ meeting room
Multipurpose/ Meeting Room	1	1200	1200	15	80	Warm inviting space to allow for various activities, displays and artwork
Janitors Closet	1	35	35	300	1	Custodial storage w/ mop sink adjacent to restrooms
Water treatment	1	700	700	300	3	Replace existing water treatment- reuse salvageable equipment
Subtotal			3,615		147	
Circulation/ Walls/Structure t	1	385	385	9.35%	0	Wall thickness and structure
TOTALS			4000		147	

Exterior Spaces

Outdoor Gathering Plazas / Terraces	2-3	7,000	Adjacent to MP room as part of staging interpretive programs. Series of terraces with lake view. Includes a fire pit. Paths to existing nearby facilities, views.
Information Kiosk(s) To be coordinated with DNR sign specialists		Quantity TBD	At visitor arrival points – road, trail and lake. Adjacent to outdoor gathering plazas
Exterior Interpretive Displays/ Art		Quantity TBD	Integrated with or adjacent to outdoor gathering plazas
Amphitheater (Bid Alternate)	1		An outdoor space that supports outdoor presentations. Portable A/V screen. 30 or so seated capacity. Integrated or combined with terraces
Nature / Play Area	1		Developed around interpretive themes and incorporating native features, such as flowing water, trees and rocks.
Vehicle Parking Oversize Vehicle Parking	30 6	45,000	Both auto and oversize vehicles, and includes at least one elec. vehicle charging station

4.A.2 Lake Lodge Space Needs Inventory

A. Lobby

Square footage:	464 SF
Occupancy:	A-3
Function:	Building entry lobby, integrated with or adjacent to porch. Open 24/7/365
Adjacencies:	Restrooms, Porch, Office and Multi-purpose spaces
Furniture, Fixtures & Equip.:	Information, directional and interpretive displays, Artwork, floor mats and Benches
Architectural Finishes:	
Floor:	Tile or terrazzo with recessed mat
Walls:	Aluminum and glass entry system, wood paneling or painted gyp. board
Ceiling:	Wood paneling, acoustic surface, or painted gyp. board
Lighting:	Natural light – windows, high-efficiency ambient fixtures
Wall base:	Tile or terrazzo
Ceiling height:	10'-0" approx. or varies
Special criteria:	Auto door openers for HC access at one door.
Mechanical/HVAC/Piping:	In-slab radiant heat & mechanical ventilation
Electrical Requirements:	Power supply for space and lighting needs
Technology Requirements:	Wi-Fi access for visitors, and as necessary for space needs and security/surveillance

B. Restrooms (3 Unisex total 1-ADA, 1ADA/Adult Change, 1-general / unisex)

Square footage:	190 SF
Occupancy:	-
Function:	Public space providing all rest room functions for the interpretive center.
Adjacencies:	lobby, Porch
Furniture, Fixtures & Equip.:	Toilet accessories, waste containers, visitor orientation and room name signage, changing tables or counters
Architectural Finishes:	
Floor:	Tile
Walls:	Tile, painted gypsum board, wood trim
Ceiling:	Painted gyp. board
Lighting:	Natural light (no view/obscured glazing), high-efficiency ambient fixtures
Wall base:	Tile
Ceiling height:	9'-0" approx.
Special Criteria:	Highly durable finishes, good acoustics and lighting control
Mechanical/HVAC/Piping:	In-slab radiant heat, natural & mechanical ventilation, restroom plumbing fixtures and equipment
Electrical Requirements:	Occupancy sensors for lighting controls. Flexible power supply for all interpretive center needs,
Technology Requirements:	As necessary for security and HVAC

C. Mechanical Room

Square footage:	288 SF
Occupancy:	S-1
Function:	Primary location for interpretive center mechanical equipment, HVAC equipment, electrical service,
Adjacencies:	Custodial office, men’s and women’s restrooms
Furniture, Fixtures & Equip.:	Cleaning equipment, supplies, grounds-keeping equipment
Architectural Finishes:	
Floor:	Sealed concrete
Walls:	Painted gypsum board with wood (protection) wainscot
Ceiling:	Painted gyp. board
Lighting:	High-efficiency ambient fixtures
Wall base:	None
Ceiling height:	9-0” approx.
Special criteria:	Provide a separate enclosed area with door for telecom. Adequate space must be provided to accommodate all equipment and storage needs
Mechanical/HVAC/Piping:	In-slab radiant heat, Lake Vermilion treatment facility potable water source, storage tanks and water distribution piping, high-efficiency gas-fired water heaters supplemented by solar water heating, natural & mechanical ventilation
Electrical Requirements:	Electrical service location, flexible power supply for all interpretive center needs, technology and telecommunications hub
Technology Requirements:	Technology service location - telecommunications, BAS, security and surveillance. Separate telecommunications room within mech space

D. Office

Square footage:	125 SF
Occupancy:	B
Function:	Space for seasonal staff; “plug-in” space for roaming park staff, and necessary storage. flexible workstation. Staffed approximately 9 hours per day, 7 days per week from May 15 – Sept 15, and staffed weekdays and weekends balance of the year on an adjusted schedule. Also functions as a secure area/safe room function that can be closed off from public spaces
Adjacencies:	Lobby
Furniture, Fixtures & Equip:	Systems furniture, chairs, table surface space, files, computers, phone and necessary office equipment (copier, etc.)
Architectural Finishes:	
Floor:	Carpeting
Walls:	Wood paneling, painted gypsum board
Ceiling:	Acoustic surface, painted gypsum board
Lighting:	Natural light, high-efficiency ambient fixtures
Wall base:	Wood

Ceiling height: 9'-0" approx.
 Special criteria: View to the exterior plazas/visitor approach from office area may be desirable. A degree of separation via systems furniture between the individual workspaces is desirable
 Mechanical/HVAC/Piping: In-slab radiant heat, natural & mechanical ventilation
 Electrical Requirements: Flexible power supply for space needs
 Technology Requirements: Phone and computers at workstations with internet access, and as necessary for space needs, security and surveillance

E. Porch

Square footage: 400 SF
 Occupancy: A-3
 Function: 3 season screen porch with view to lake (lodge feel) that funnels visitors to outdoor activities, but also a hangout space for groups or individuals
 Adjacencies: Lobby, and outdoor plazas. Open 24/7/365
 Furniture, Fixtures & Equip.: Movable, comfortable furnishings suitably arranged for group or individual use. Lamps, tables, benches, waste and recycling containers, fire extinguisher, seasonal rugs
 Architectural Finishes:
 Floor: Wood, concrete
 Walls: Wood paneling, stone, glazing at windows
 Ceiling: Wood paneling, acoustic surface, or painted gyp. board
 Lighting: Natural light – windows, high-efficiency ambient fixtures
 Wall base: Wood
 Ceiling height: 9'-0" approx. or varies
 Mechanical/HVAC/Piping: Not heated or mechanically ventilated
 Electrical Requirements: Power supply for space and lighting needs
 Technology Requirements: Wi-Fi access for visitors, and as necessary for space needs and security/surveillance

F. Storage – Multipurpose (split into 2 locations)

Square footage: 162 SF
 Occupancy: S-1
 Function: General storage for equipment, tables, chairs and supplies
 Adjacencies: Multipurpose
 Architectural Finishes:
 Floor: Sealed concrete
 Walls: Painted gypsum board with wood (protection) wainscot
 Ceiling: Painted gypsum board
 Lighting: High-efficiency ambient fixtures
 Wall base: Wood
 Ceiling height: 9'-0" approx.

Mechanical/HVAC/Piping:	In-slab radiant heat, natural & mechanical ventilation
Electrical Requirements:	Flexible power supply for space needs
Technology Requirements:	As necessary for space needs, security and surveillance

G. Multipurpose / Meeting Room

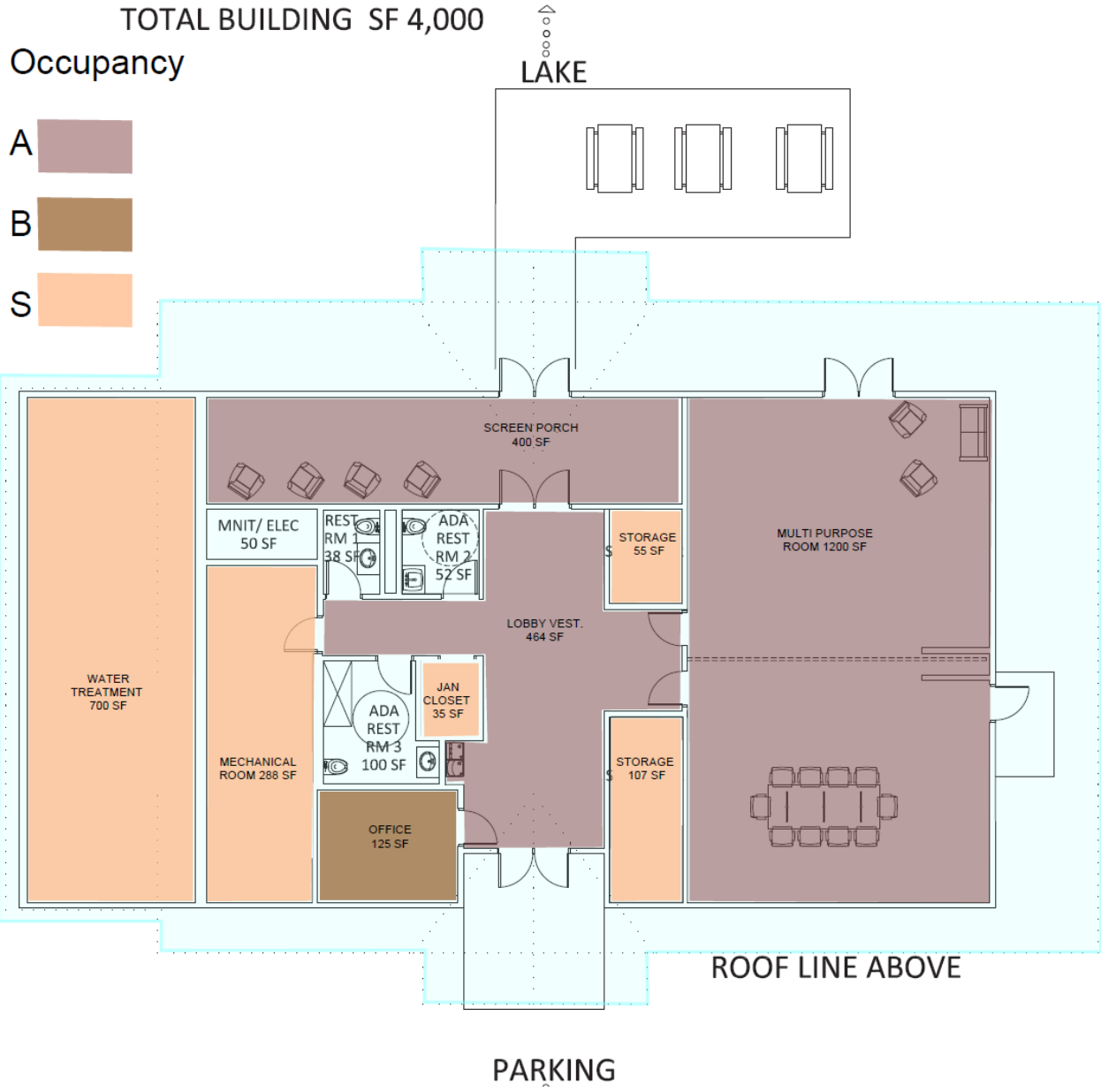
Square footage:	1200 SF
Occupancy:	A-3
Function:	Warm inviting space with mix of opportunities for overnight and day users Meeting room space can be partitioned off for interpretive or classroom programs. Flexible multi-use space for staff, community members and visitors to use for meetings, cultural demonstrations, naturalist programs and various other gatherings. Direct access to the exterior is desirable. Configured to allow part of the space to be open 24/7/365, with remainder accessed during hours staff are present.
Adjacencies:	Lobby, porches and outdoor plazas
Furniture, Fixtures & Equip.:	Movable, comfortable furnishings suitably arranged for group or individual use. Lamps, tables, benches, waste and recycling containers, fire extinguisher, rugs. Multi-media equipment, open casework for books, media and games, (lockable) storage casework, interpretive displays and artwork.
Architectural Finishes:	
Floor:	TBD. - Tile, terrazzo, polished concrete or wood can be considered. No carpeting due to mud/ maintenance issues.
Walls:	Wood paneling, painted gyp. board
Ceiling:	Wood, acoustic surface, or painted gyp. board
Lighting:	Natural light – but controllable for media presentations, task lighting, high-efficiency ambient fixtures
Wall base:	Wood
Ceiling height:	Varies - vaulted ceiling with exposed structure in certain areas, but lower ceiling heights in smaller/quieter spaces
Special criteria:	Flexible space to accommodate a variety of interpretive center functions and group gatherings, durable finishes, good (quiet) acoustics and lighting control, flexibility to accommodate multiple or different sized groups, secure and safe for visitors, storage space required. Kitchenette function
Mechanical/HVAC/Piping:	In-slab radiant heat, natural & mechanical ventilation
Electrical Requirements:	Flexible power supply including floor outlets
Technology Requirements:	Multi-media equipment rough-ins, Wi-Fi access for visitors, and as necessary for space needs, security and surveillance

H. Janitor Closet

Square footage:	35 SF
Occupancy:	S-1
Function:	Supply closet with mop sink
Adjacencies:	Lobby, restrooms
Furniture, Fixtures & Equip.:	Cleaning equipment, Supplies
Architectural Finishes:	
Floor:	Sealed concrete
Walls:	FRP, Gyp Board
Ceiling:	Painted Gyp Board
Lighting:	High-efficiency ambient fixtures
Wall base:	Vinyl
Ceiling height:	9'-0" approx. or varies
Special criteria:	none
Mechanical/HVAC/Piping:	In-slab radiant heat, mechanical ventilation
Electrical Requirements:	Flexible power supply for space needs
Technology Requirements:	Outlets

I. MNIT/ Electrical

Square footage:	50 SF
Occupancy:	S-1
Function:	IT Closet for MNIT Equipment
Adjacencies:	Mechanical room
Furniture, Fixtures & Equip.:	MNIT to provide
Architectural Finishes:	
Floor:	Sealed concrete
Walls:	Gyp Board
Ceiling:	Painted Gyp Board
Lighting:	High-efficiency ambient fixtures
Wall base:	Vinyl
Ceiling height:	9'-0" approx. or varies
Special criteria:	none
Mechanical/HVAC/Piping:	In-slab radiant heat, mechanical ventilation
Electrical Requirements:	Flexible power supply for space needs
Technology Requirements:	Outlets coordinate with MNIT



Concept Plan

4.B Precedent Studies

Grand Portage State Park Visitor Center & Rest Area

Location: Grand Portage, MN
 Completed: June 2010
 Size: 6,000 SF

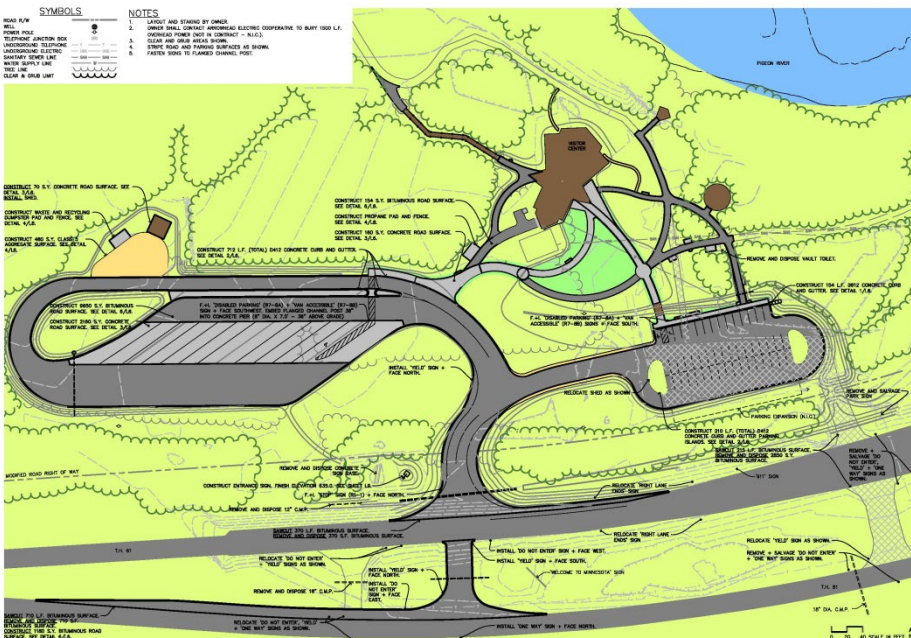


SOUTH ELEVATION

Elevations



EAST ELEVATION



Conceived as the third of three-visitor center/rest areas located within a State Park along the north shore and envisioned by park planners as a “bookend” to the *north shore experience*. It is similar in scope and scale to the proposed Lake Lodge facility. Developed jointly with Mn/DOT, providing park, tourist and traveler information, Ojibwa interpretive displays, a nature store and other operational functions.

Site Plan



Image at Entry



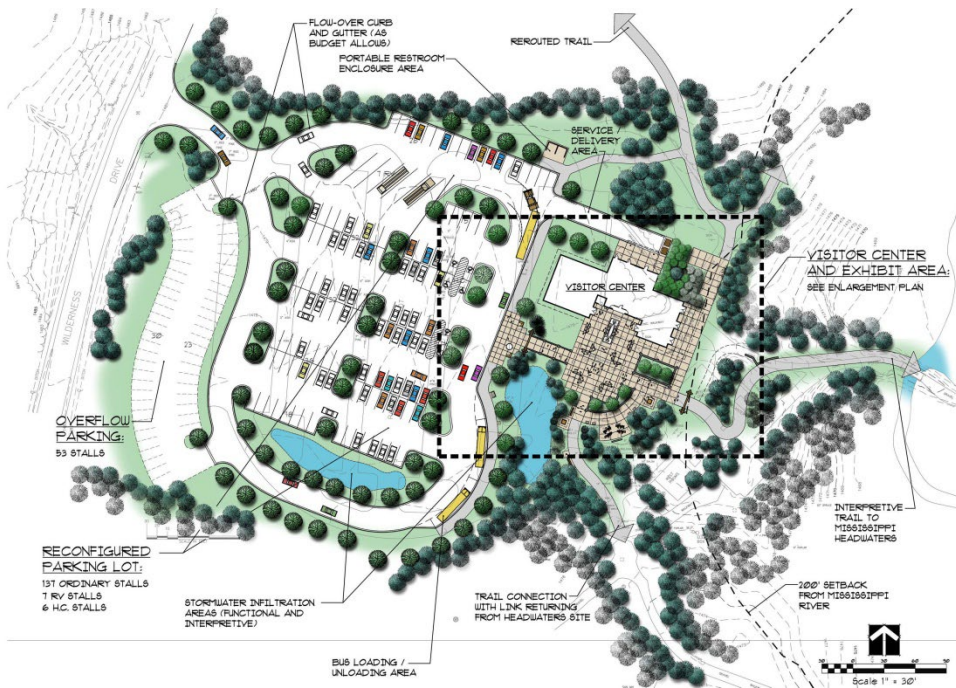
Lobby Rotunda



View from Hwy 61

Mary Gibbs Headwaters Visitor Center at Itasca State Park

Location: Park Rapids, MN
 Completed: July 2005
 Size: 10,130 SF



The Mary Gibbs Visitor Center provides space for environmental education and interpretation pertaining to the natural and cultural history of the Mississippi Headwaters area, as well as visitor orientation. The center features a nature store, restaurant, restrooms and necessary storage. It also includes significant exterior sheltered spaces for interpretive exhibits and dining opportunities

Site Plan



Elevation

A primary goal design of the building was that it be authentic to its location and convey a “sense of place”. Larger in size and program to the proposed Lake Lodge facility, but is similar however in function



Headwaters Path

8P205

Bear Head Lake State Park Trail Center

Location: Ely, MN

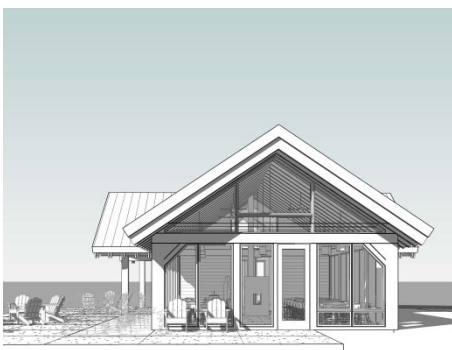
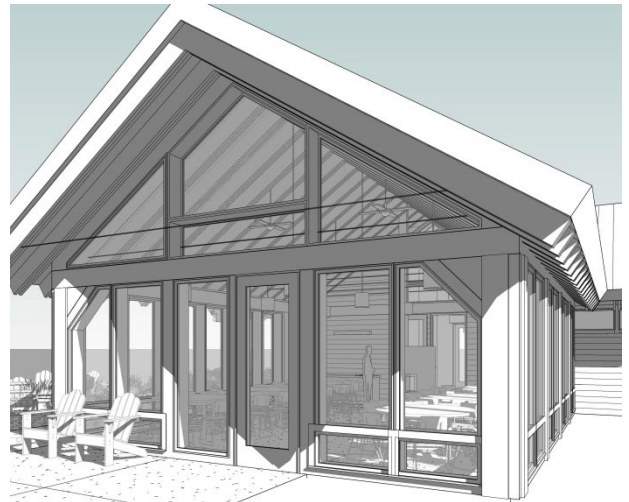
Completed: August 2013

Size: 2,020 SF

The Trail Center provides space for gathering, rest, visitor orientation, environmental education, and interpretation. A primary design goal was that it be authentic to its location and convey a sense of place, continuing the CCC legacy while reflecting current technology. Interior spaces are intended to provide a contemplative experience for visitors to rest and gather. Interior spaces maximize a visual connection to the resource. A major goal was for the building and site design to incorporate sustainable design principles and exhibit them for interpretive benefit.

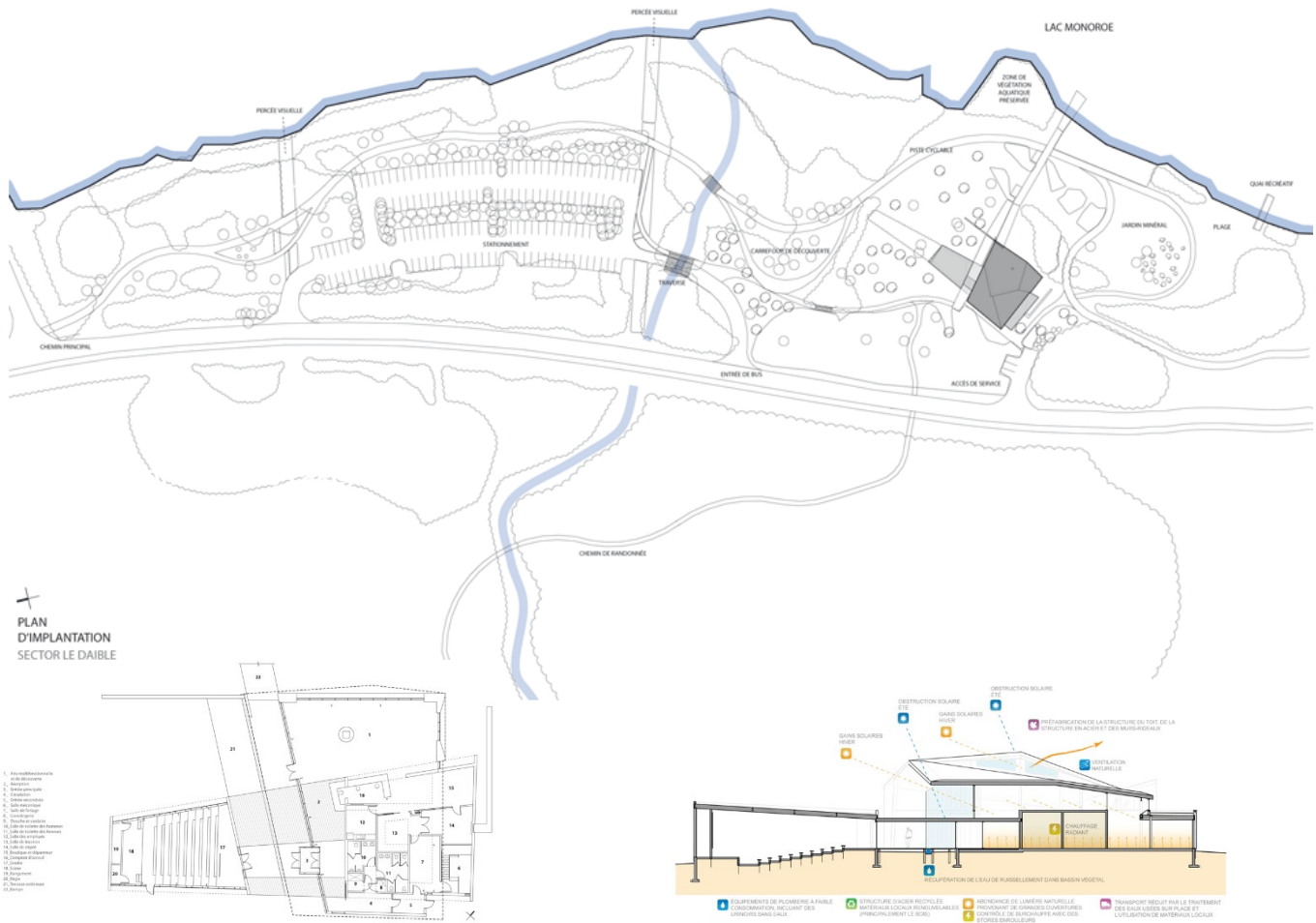


Image at South Entry

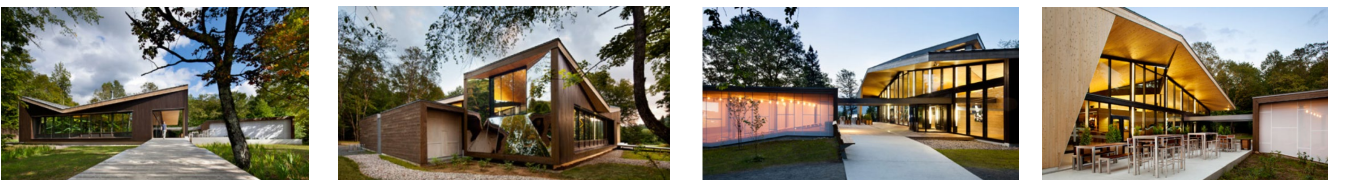


Bear Head Lake Trail Center also functions as a starting/ending point for outdoor recreation activities such as hiking, skiing and snowmobiling, similar to the Lake Lodge program. It includes a wood burning stove for winter warming, and an outdoor fire pit

Visitor Centre in Canada's Mont-Tremblant National Park



The Mont-Tremblant National Park Discovery Centre is located in the province of Québec and was designed by Montreal firm Smith Vigeant Architects for an organization called Sépaq that manages the region's parks and the tourism facilities. The building is intended as a place for visitors to learn about the nature and culture of the park and is situated on the edge of the forest on the eastern shore of Lake Monroe. To help the building merge with its surroundings, the architects used timber cladding across the facades and an angular roof that projects over the entrance and folds down to meet a wooden deck. "Given its pristine location in the heart of nature, the use of wood as the primary material facilitated the harmonious insertion of the building into the unspoiled setting," said the architects in a statement. "To achieve this, a wide variety of wood species were used on both the exterior and interior, reinterpreting the site's richness in textures and colors, while giving the building durability and resistance."



Lake Lodge Program Images – Porch

Porch / screen porch with view to lake (lodge feel) that funnels visitors to outdoor activities, but also a hangout space for groups or individuals...Movable, comfortable furnishings suitably arranged for group or individual use. Lamps, tables, benches, waste and recycling containers, fire extinguisher, seasonal rugs...



Lake Lodge Program Images – Lobby

Lobby / Fireplace: Public “orientation” space providing access to restrooms, park staff, porches, outdoor space; and is the central location for visitor access to all public building functions, and a dynamic, flexible space that works in conjunction with the multipurpose room and fireplace...Visitor orientation and information display, display casework, map cases, vending machines, drinking fountains, waste and recycling containers, room name signage, casual furniture, and benches...



Lake Lodge Program Images – Indoor Activities

Warm inviting space with fireplace feature and mix of active and passive “hangout” opportunities for overnight and day users including quiet space (library/board games/reading); lingering and coffee sipping space; active space (table tennis, interactive electronics, pool table). Possibly share fireplace with lobby...Flexible multi-use space for staff, community members and visitors to use for meetings, cultural demonstrations, naturalist programs and various other gatherings...Movable, comfortable furnishings suitably arranged for group or individual use. Lamps, tables, benches, waste and recycling containers, fire extinguisher, rugs. Multi-media equipment, open casework for books, media and games, (lockable) storage casework, interpretive displays and artwork, pool table and accessories, table tennis and accessories, interactive electronic games and interpretive installations...



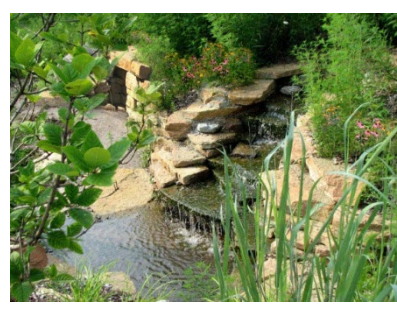
Lake Lodge Program Images – Outdoor Activities

Lake Vermilion-Soudan Underground Mine state park will inspire enthusiasm for outdoor recreation activities among emerging and existing parks and trails users...the Lake Lodge is conceived as a starting/ending point for outdoor recreation activities such as hiking, skiing and snowmobiling, and will feature a fireplace and outdoor fire pit for winter warming...



Lake Lodge Program – Nature / Interpretive / Play Area

Interpretive themes and features, such as flowing water, trees and rocks will be explored as ways to provide highlights and focal points along selected trails and viewing areas. These will be minimal additions used to help inform and excite park goers of all ages and abilities.



4.C Technology Plan and Telecommunications Plan

The project will follow the State of Minnesota, Minnesota IT Services (MN.IT) Telecommunications Standards and follow MN.IT Services-Design Standards throughout the design process, including Schematic Design, Design Development, Construction Documents, and Bidding.

Technology Infrastructure Verification.

Staff onsite indicated that all Technology needs in the new building are simple: Ethernet jacks and Wi-Fi devices. The new building will have a mixture of both.

Distribution Room Requirements

New distribution room will be required for more extensive technology needs such as card readers, cameras, door holders, or other security/control equipment.

The new building will be provided with a new utility service at 480V / 3-phase. The size of the service will be determined by the utility after load calculations are performed.

4.C1 Telecommuting Plan

This project does not have staff assigned to this building and this project will not require telecommuting. The shared Office will be set up to include options for telecommuting potential if that need should arise in the future. Design team will be working with MNIT during the planning phase to ensure building can be “telecommute ready” as needed.



January 09, 2026
Jancis Curiskis
Supervising Architect
DNR – Operation Service Division
500 Lafayette Road
St. Paul, MN 55155

Dear Jancis,

RE: Information Technology and Telecommuting Plans

Lake Vermilion Lodge

Minnesota statutes require state agencies to prepare an information technology and telecommuting plans when proposing capital investments in office space. Office space requests include a new building (new construction or acquisition of an existing building), renovation/remodeling and/or relocation. MNIT@DNR is required to review and approve these plans.

This project provides for a new Lake Vermilion Lodge building to support the DNR Parks and Trails. It is assumed that information technology will be limited to telecommunications; network, security, audio/visual conferencing and cabling.

I have reviewed the pre-design information provided for this project and ascertained that technology planning is included and has cited intentions to follow MNIT Enterprise's *"Building Infrastructure Guidelines for State-Owned Buildings"* and future meetings with MNIT@DNR personnel in developing detailed plans. It is also understood that the nature of staff employees work would include telecommuting on a part time basis during periods of low staffing levels.

If you have any questions concerning this memorandum, or the requirements for these plans, please contact myself.

Sincerely,

Dani Gill

IT Operations Supervisor

MNIT@DNR

4.D Sustainable Design requirements

Sustainable building design can reduce energy expenditures, enhance health, well-being and productivity of building occupants, improve the quality of the natural environment, and can contribute significantly to higher-performing new State buildings with lower life cycle costs.

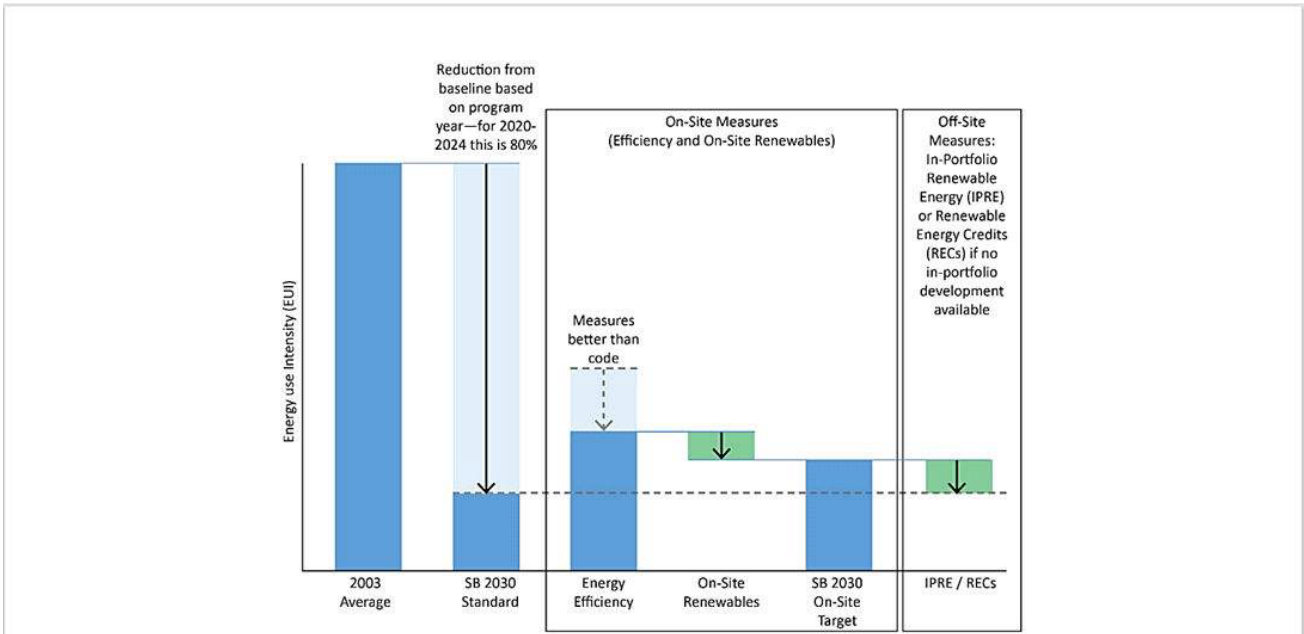
The following narrative represents the understanding and intent of the project at this preliminary stage. It is expected that the design will be refined and revised as the project continues through the construction document phase. Still, the following should allow the owner and design team to understand general scope.

This project is looking for a 90% reduction in carbon producing fuel used for building energy compared to representative building constructed in 2003. There are certain energy loads that do not count towards the EUI, such as electrical vehicle charging and “large process loads,” which could be attributed to the water treatment system. These exceptions must be sub-metered. This value must be found using the B3 Energy Standard Tool (EST).

The Energy Standards will use an Energy Use Intensity (EUI) Index in kBtu/SF/Yr that is a 90% energy reduction from a baseline building of the same type and location which is typical of the existing building stock in 2003. The goal is to use at least 2% of the SB2030 target or better for the needed energy use from onsite renewable sources.

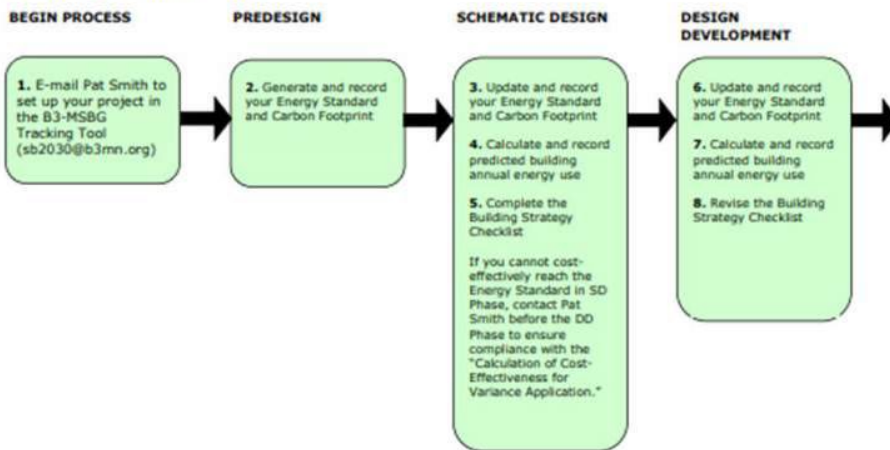
Cost-effectiveness – life expectancy to payback

In conversation with the CSBR staff, pursuing the Small Building method was recommended. Due to the nature of the building, they expect us to apply for several variances. The use of some unconditioned space (Porch) will be a factor in that. Goal for gross square feet based on program needs is approximately 4,000 square feet.



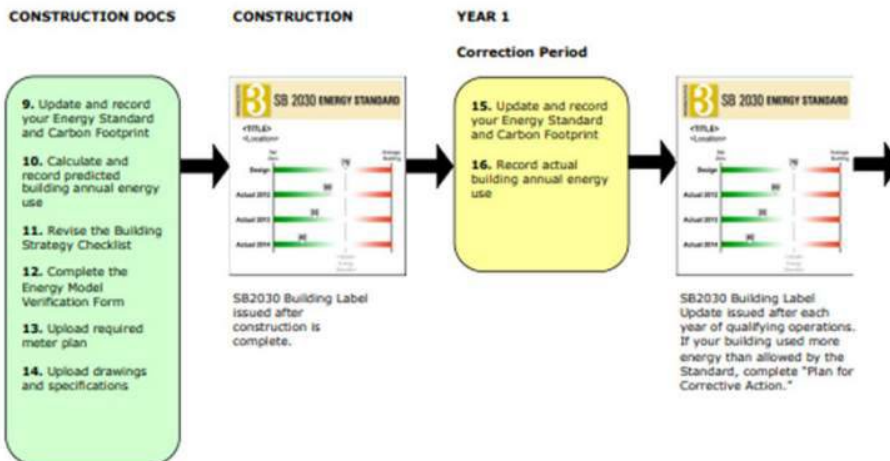
3 MEETING SB 2030 WITH ON-SITE AND OFF-SITE RENEWABLES

Design and Construction

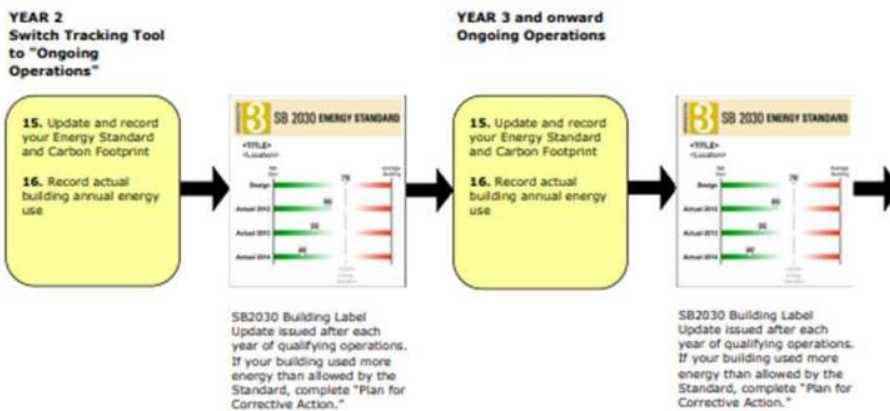


Design and Construction

Occupancy



Occupancy



Analysis of Alternative/Renewable Energy Systems

Solar photovoltaic (PV) and small wind options were investigated. Geothermal and solar are expected to be significant factors in the project. Biomass and wind are not anticipated to play a role. B3 only requires “solar ready” construction provisions (structural capacity, empty conduit). Also required is a feasibility calculation, but installation is not necessarily required. Part of the B3 strategy is driven by other energy provisions, such as geothermal, so there is flexibility.

Using the B3 Levelized Cost of Energy Calculator Pre-Design Tool, solar photovoltaic (PV) and small wind options were investigated.

Based on the analysis, solar photovoltaic (PV) would likely be a cost-effective renewable-energy strategy. The small wind option is not cost-effective and will not be considered.

The new Lake lodge interpretive Center is an above-grade structure of about 4,000 gross square feet and is being designed to meet the B3/SB2030 Guidelines. Ground-mounted grid-tied photovoltaic panels will be explored to offset building electrical demands, and ground-source heat pumps will be evaluated and for HVAC and domestic water heating, in conjunction with a heat exchanger well field.

The buildings energy systems will be predominately all-electric, which is an effective strategy to use with solar PV panels. because of the site location, wind energy is not practical. The Lodge site is located overlooking Lake Vermillion situated in a low-lying area sheltered from the prevailing winds. The surrounding terrain and vegetation make this area a poor location for harvesting wind energy as a resource.

The Lake Lodge interpretive Center site has a water treatment facility which it will incorporate as part of the design. The infrastructure in place for the water treatment facility will be utilized to help minimize site development impact. The use of a back-up generator for use during power outages will be explored.

Geothermal System -A

Six to Eight 200-foot-deep wells are estimated to be required for facility heating and cooling needs, with a water/glycol mix circulating between the well field and several indoor electric heat pumps that will generate both heating water and chilled water on a seasonal basis. The prevalence of bedrock throughout the area and how it will impact the installation of a Geothermal system will need to be explored once the well field areas have been determined. Possibilities for surface wells, or lake bottom installations will be explored. If it is not feasible more conventional options will need to be studied.

A conventional/less energy-efficient alternative system consists of LP gas-fired or pellet boilers to produce heating water and installation of outdoor air-cooled condensing units for cooling.

The net additional cost of a geothermal system (mostly due to the well field and potential bedrock issues) is approximately \$100,000 higher than an alternative boiler/condensing unit heating & cooling system. Estimated annual consumption of electricity for heating and cooling using a preferred geothermal system is about 47,000 KWH per year, with 45% (21,150 KWH) for heating and 55% (25,850 KWH) for cooling. The average cost per KWH (including demand charges) is approximately \$0.11, so an annual cost for heating and cooling is expected to be about \$5,170. (Note this cost would be offset by use of Solar PV)

Boiler/ Condensing Unit System - B (Used for annual operating cost calculation)

An alternative boiler/condensing unit system will consume approximately 40% more energy for cooling than a geothermal system: $1.4 \times 25,850 \text{ KWH/Year} \times \$0.11/\text{KWH} = \$3,980$ per year; and boilers will consume approximately 90% more energy than the geothermal system: $1.9 \times 21,150 \text{ KWH/Year} \times \$0.11/\text{KWH} = \$4,400/\text{Year}$. The total annual cost is \$8,400, which is \$3,230 per year higher than the geothermal system annual cost.

Payback for a Geothermal system is $\$100,000 / \$3,230 = \underline{31 \text{ Years}}$.

Solar Photovoltaic (PV)

The solar PV array identified in this predesign will be 40,000 KWH of electricity annually, with an estimated construction cost of about \$75,000. Using the \$0.11/KWH figure, the estimated savings is $40,000 \text{ KWH} \times \$0.11/\text{KWH} = \$4,400$ per year, with a payback period of $\$75,000 / \$4,400/\text{Year} = \underline{17 \text{ Years}}$.

Estimated payback for combined Geothermal and PV system = 23 years

4.E Operations and Maintenance Requirements

The new Lodge and its utilities will require routine maintenance to keep operating smoothly and in good condition. Maintenance requirements will not exceed those of similar park buildings throughout the state. There will be no significant impact from this project on DNR operations and budget. This facility provides adequate space to meet operational needs. Materials and finishes have been selected to minimize maintenance requirements and provide long life.

4.F Statute Requirements

State Park management is authorized under Minnesota Statute, including chapter:

84 Department of Natural Resources

85 Division of parks and recreation

86A Outdoor recreation system

Relevant Statutes

Table 1: Applicable Statutes for Projects Receiving State Bond Funding (last update: December 15, 2023)

STATUTE	STATE AGENCY
1. §16B.241 Coordinated Facility Planning	YES (required)
2. §16B.32, Subd 1 Alternative Energy Sources as needed to meet Sustainable Building 2030 energy performance standards	YES
3. §16B.32, Subd 1a Renewable Energy Sources – may not exceed 120 percent of the average annual electrical energy consumption	YES
5. §16B.325: §16B.325: Apply Sustainable Guidelines (B3- MSBG) http://www.b3mn.org/guidelines/index.html	YES

STATUTE	STATE AGENCY
§216B.241 Sustainable Building 2030 requirements Contact/support: https://www.b3mn.org/guidelines/3-0/	New Bldgs, Addns & Major Renovations
6. §16B.327 Recycle 50% of Construction & Demolition Waste (B3-MSBG requires 75%) Contact/support: http://www.b3mn.org/guidelines/index.html	YES- comply with B3 75%
7. §16B.33 State Designer Selection Board	YES
8. §16B.335, Subd 1, Predesign required Notification to House & Senate Committees	YES
8a. §16B.335, Subd. 2, Predesign required, Other Projects	YES
9. §16B.335, Subd 3 Predesign Submittal See Statute for exempted projects	YES
10. §16B.335, Subd. 3c. Consider the use of MINNCOR products www.minncor.com	YES
11. §16B.335, Subd 4 Energy Conservation Standards (Energy Code - MN Rules 1322/1323 http://www.doli.state.mn.us/CCLD/Codes.asp	YES
12. §16B.335, Subd 5 & 6 Review & letter by MN.IT	YES
13. §16B.35 % for Art when considered in original legislative request & when construction is \$500K or greater	YES
14. §177.42-44 Prevailing Wage Rates Contractor must pay prevailing wages https://www.revisor.mn.gov/statutes/?id=177	YES
15. §363A.44 Equal Pay Certificate required on contracts over \$500K (prime and subs) agency of the state, the Metropolitan Council, or an agency subject to section 473.143, subdivision 1 ; \$1M for political subdivisions	YES
16. §16C.285 Responsible Contractor	YES
17. §16C.16, Subd. 13 – Targeted Group Purchasing	YES
18. §16A.695 Bond financed property; Use/Grant Agreement	YES

4.G Specialty Requirements

Project Specific Specialty requirements

This project will be required to meet the current B3/SB230. Therefore, the project will make use of highly efficient mechanical systems such as geothermal and consider the use of renewable energy, such as photovoltaics.

4.H Project Procurement and Delivery

The proposed method for delivering this project is Best-Value Design-Bid-Build. This method has several characteristics that distinguish it from other project delivery methods and make it well suited to this project:

- Three linear phases: Design, bid, build
- Well-established and broadly documented roles (Owner, Design Professional, Builder)

- Carefully crafted legal and procedural guidelines
- The lowest responsible bid that provides a reliable market price for the project and meets Owner-defined best-value criteria
- Contract documents that are typically completed in a single package before construction begins, requiring construction-related decisions in advance of actual execution
- An opportunity for construction planning based on completed documents
- Complete specifications that produce clear quality standards allowing multiple manufacturers and suppliers to competitively bid the projects unless a single product or single source has been justified and approved

Best-value contracting is a procurement process that allows owners to consider other factors in addition to price in the award and execution of construction contracts. These key factors include qualifications, schedule, quality, and performance-based criteria, to be used in evaluation and selection. It is most useful when a project has unique objectives or challenges that may be difficult to meet using traditional low-bid procurement where final contractor selection is based solely on the lowest responsible bid.

This project has an estimated construction cost exceeding \$2,000,000. For projects greater than \$2,000,000, bidding and contract award is processed through the Department of Administration. See **Section 6. Financial Information** for a detailed construction cost breakdown.

Design professional/technical services are provided throughout all three parts of the Design-Bid-Build delivery method. See **Section 4.I Project Design Services and Additional Owner Costs** for more information about required design, project management, and construction administration services.

4.I Project Design Services and Additional Owner Costs

This project will require full professional/technical (P/T) design services. Project management will be provided by an architect in the DNR's Section of Management Resources Design and Construction (DAC) unit. Depending on DAC workloads, the architect may also be responsible for providing full design services and coordinating necessary engineering and landscape architecture consultants.

Project Design Services

Additional owner costs and fees for the project design services outlined below are estimated at \$500,000. This is based on a 12% of estimated 4.5M construction cost + a 10% contingency.

See **Section 6. Financial Information** for a more detailed breakdown.

Schematic Design (SD): 30% Complete

- Coordinate surveying, geotechnical testing, hazmat testing, and other analysis with the project manager.
- Review the Predesign Report and other background information.
- Perform site analysis and conduct research to verify zoning, code, and other jurisdictional requirements.
- Develop drawings (site plan, floor plans, elevations, typical sections, and 3D models), a preliminary construction cost estimate, and other documents to illustrate the design concept for Owner review.
- Identify B3 and SB2030 sustainable design criteria and begin integrating into the concept.

Design Development (DD): 50%-60% Complete

- Develop the initial schematic design documents and begin laying out architectural, structural, mechanical, electrical, and plumbing details for Owner review.
- Run initial energy, daylighting, building envelope, and other simulations.
- Prepare outline material specifications.
- Update the preliminary construction cost estimate.
- Document B3 and SB2030 design decisions.

Construction Documentation (CDs): 90%-95% and 100% Complete

- Produce drawings, specifications, and calculations that contain all pertinent information required for Department of Labor (DLI) Plan Review and State Historic Preservation Office (SHPO) review.
- Make final corrections to the CDs following DLI and SHPO reviews for the contractor to price and build the project.
- Run final energy, daylighting, building envelope, and other simulations.
- Prepare a final construction cost estimate.
- Complete B3 and SB2030 documentation.

Bidding (Department of Administration to facilitate bidding)

- Assist the project manager in preparing addenda by answering questions raised by contractors.
- Revise drawing and specifications as required for inclusion in addenda.
- Attend the on-site pre-bid meeting with the project manager.
- Evaluate contractor bid proposals as requested to determine best value bid for contract award.

Construction Administration

- Attend a pre-construction meeting and scheduled construction meetings with the project manager.
- Review submittals, shop drawings, samples, mock-ups, and test results for conformance with the CDs.
- Perform regular site visits to ensure project is built as specified in the CDs.
- Response to Requests for Information and Supplemental Information Requests issued by the contractor
- Assist the project manager in preparing Requests for Proposal and contractor proposals for work changes.
- Participate in a Substantial Completion inspection to review punch-list items prior to Owner taking occupancy of the building.
- Participate in a Final Inspection to verify all work has been completed in conformance with the CDs.

B3 Operations Commissioning (Post-Construction)

- Develop an Operations Management Plan.
- Implement Operations and Maintenance practices, training, and annual evaluations per the plan.
- Conduct at least two post-occupancy evaluations.

Other Design Services

- Exterior signage
- Security, A/V, and data
- Furniture, fixtures, and equipment

Professional/Technical (P/T) Services

The following is a list of different P/T services required to complete this project:

- DNR Project Manager –Set milestones and monitors consultant progress throughout the project for compliance with the articles of the contract and the services and deliverables required in the contract. Review consultant work at the end of each phase for compliance with the contract articles and the services and deliverables required in the contract before authorizing start of next phase. Also monitors the work via review documents, periodic design and /or construction progress meetings. Reviews/approves all pay requests and supplemental agreements during construction.
- Architect – responsible for overall building design and coordination with design team.
- Landscape Architect – responsible for site design including regrading, parking areas, walkways, outdoor dining areas, and plantings.
- Civil Engineer – responsible for coordinating building utilities with district water and sewer, roadway changes, and sub-grade work.
- Structural Engineer – responsible for developing the building’s structural framing system(s).
- Mechanical Engineer – responsible for heating, ventilation, and air conditioning (HVAC) requirements.
- Plumbing Engineer – responsible for designing plumbing, hot water, water filtration, and water softer systems.
- Electrical Engineer – responsible for designing power and electrical systems, lighting, and conduit for MNIT-supplied security, audio/visual, and data requirements.
- Geotechnical Engineer – responsible for soil testing and providing geotechnical reports including roadbed and foundation recommendations.
- Commissioning Consultant – responsible for running initial energy and building envelope simulations during design. Also performs commissioning and inspections during construction.
- Interior Architect or Interior Designer– responsible for specifying and ordering furniture, fixtures, equipment, and room signage. <Also serves as primary liaison with DNR MNIT.>
- Surveyor – responsible for surveying the project site and providing CAD files for design.
- MNIT– responsible for security, audio/visual, and data.
- Sign Designer – responsible for Parks and Trails signage including entry markers, kiosk information, directional signage, and exterior building signs.
- Public Artist – provides public artwork for projects when construction is \$500K or greater OR when considered in the original legislative request.

Procurement of P/T services consultants for this project will be run through the State Design Selection Board (SDSB) and coordinated through the DNR Office of Management and Budget Services (OMBS). For

Master Roster and Standard P/T Contracts, the following procedures are followed:

- 1) The project manager prepares a request for proposal (RFP) outlining the project location and description, required professional/technical services, schedule/milestones, estimated project cost, project delivery method, and performance evaluation. The RFP also includes proposal evaluation criteria. Price makes up a minimum of 30% of the proposal evaluation with the remaining 70% emphasizing a vendor's qualifications, experience, proposed workplan, and other pertinent project considerations.
- 2) The RFP is distributed to potential vendors. For projects with design consultant fees totaling less than \$200,000, the Master Roster list may be used to solicit proposals provided the RFP is sent to at least ten companies listed on the Master Roster and Equity Select vendors list. For projects with design consultant fees exceeding \$200,000 or to obtain proposals from vendors not on the Master Roster and Equity Select lists, the RFP is publicly advertised through the State's SWIFT Portal or State Register for a minimum of 21 days
- 3) Once consultant proposals have been received, they are reviewed for completeness and evaluated by a minimum of three DNR evaluators, including the project manager, using the criteria defined in the RFP. After evaluations are completed, the contracting officer tabulates the evaluations and adds points for fees and equity goals to determine which vendor will be awarded the contract.

4.J Quality Control Plan

Code required testing and the following quality control measures:

- Building Envelope Commissioning (design review commissioning and commissioning and inspections during construction).
- Building Envelope Analysis using WUFI software (performed by envelope commissioning agent). <https://wufi.de/en/> Performed during the design phase of the project.
- HVAC and Electrical Systems Commissioning (Design review commissioning and construction commissioning and inspections during construction).
- Specify mock-ups of envelope component systems and pre-installation conferences.
- Specify submittal of a quality control plan by the contractor and subcontractors.
- MN Sustainable Building Guidelines (B3) with SB2030 energy efficient design 26
- Building Information Modeling (BIM) for clash detection.
- BIM with interface with Archibus for loading installed equipment.

4.K Space Needs Inventory

See section 4.A.2 lake lodge space needs inventory for breakdown of program spaces.

4.L Programming Methodology

Goal Setting

Organize a programming team made up of designers, decision makers, and user group representatives from each department, division or component of the organizations involved.

- Review mission statements, strategic plans, operational plans, organizational charts, research, previous planning efforts and other relevant information.

-
- Gather, discuss, and analyze input from the programming team for use in the decision-making process. Key ideas put forward will give the team design and program direction.
 - Conduct workshops for the programming team to discuss the project and brainstorm ideas, themes and goal statements. Goals discussed should be comprehensive rather than detailed or narrow-focused; ideas that have system wide effects or applications.
 - Discuss goal statements with participants, consolidate similar ideas, and then prioritize or create hierarchies.
 - Include sustainability as a priority goal for the project.
 - Complete a final list of six or seven goals to achieve and formally review with management or decision makers for approval.
 - Include approved goal setting research in the pre-design document.

Inventory of Functions & Spaces

Identify functions & spaces:

- Create a “space needs inventory form” for each distinct project function.
- Make a record of activities associated with each function and note the spatial and equipment needs required to carry them out. Also include days and times activities are performed in the space.
- Indicate internal and external interactions that could take place with other functions or spaces.
- Clearly list desired objectives for each space (example: view to exterior, privacy in meetings, proximity to a printer, etc.).

Evaluate functions & spaces:

- Conduct workshops for the programming team to discuss and evaluate requirements for each functional space, using completed inventory forms and the list of desired goals.
- Include sustainability as a general requirement for spatial evaluation.
- Evaluate options for each space and document design concepts with diagrams and scale drawings.
- Summarize design concepts resulting from the evaluations and include this research in the pre-design document.

Define Spatial Relationships

Facilitate documentation that defines relationships between activities and spaces in the design concepts.

- Create spatial (bubble) relationship diagrams: Conduct workshops for the programming team to discuss and diagram relationships between activities and spaces.
- Create an activity matrix: After diagramming and determining desired relationships between activities, the designer will develop a matrix showing the relationships.
- Document this research and include in the pre-design document.

Synthesize Information for Design

Synthesize the information from the mission statement, strategic plan, operational plan, project goals,

inventory of functions and spaces, spatial relationship analysis, and workshops.

- Develop conceptual design direction options for the project and present to the team for discussion.
- Include sustainability as a criterion for design.
- Agree on a final conceptual design direction and formally review with management or decision makers for approval.
- Document this research and include in the pre-design document.

4.M Applicable Statutes for State Funded Projects

State statutes relating to the DNR

84 Department of natural resources

84A Lands dedicated for conservation

84D Invasive species

85 Division of parks and recreation

86 Federal funds for natural resources

86A Outdoor recreation system

86B Water safety and watercraft

88 Division of forestry

89 State forests; tree planting; forest roads

89A Sustainable Forest resources

92 State lands; sales, investment of proceeds

93 Mineral lands

94 State lands

97A Game and fish

97B Hunting

97C Fishing

103A Water policy and information

103B Water planning and project implementation

103C Soil and water conservation districts

103D Watershed districts

103E Drainage

103F Protection of water resources

103H Groundwater protection

103I Wells, borings, and underground uses

Statutes for Projects Receiving State Funds

Applicable Statutes-General Fund

Applicable Statutes-Bond Funds

Section 5: Site Analysis and Selection

Lake Vermilion-Soudan Underground Mine State Park

Lake Vermilion-Soudan Underground Mine State Park is positioned to become the first of Minnesota’s “Next Generation” state parks, developed and managed with the highest standards for sustainability. While still providing the experiences that *current* state park users expect, the new park will also provide outdoor recreation adventure programs and opportunities to entice *less-inclined* citizens to explore and appreciate Minnesota’s great outdoors.

The park boasts almost ten miles of pine-studded shoreline on Minnesota’s fifth-largest inland lake and is one of the very few parks with 100 percent ownership interest by the state (no private in-holdings) and minimal development (the property has some former timber management roads, but no existing facilities). This “clean slate” situation provides an opportunity to develop a park that embraces emerging technologies both to protect and interpret the park’s resources and to draw-in new participants to outdoor recreation.

Acreage: 4,356 (within statutory boundary)

Shoreline: 9.9 miles

Islands: 5

Features:

- Rocky peaks and overlooks
- Beaver-wetland complexes
- Miles of recreational trails
- Abundant camping opportunities
- Lakeside day-use opportunities
- Warm and cold season outdoor recreation, land and water based



LV-SUM SP aerial view toward Mattson/Cable/Armstrong Bay

DNR’s “Next Generation Parks”

The defining values of Next Generation parks include emphases on *sustainability, connectedness and inspiring participation*. Lake Vermilion-Soudan Underground Mine State Park will serve as a pilot park, exploring new ideas and approaches that, if successful, can be applied to other state parks over time.

Value: Sustainable Development

Lake Vermilion-Soudan Underground Mine state park will strive to become a model of sustainable development. The DNR has identified five guiding principles that will govern the emphasis on sustainability in the park:

1. New development will protect the natural, cultural and economic assets that exist with the parks and surrounding communities.
2. New development will embrace best management practices for shoreline management.

-
3. Buildings and operations will model energy efficiency by utilizing renewable energy sources whenever feasible and striving for “net zero” energy consumption and emissions on an annual basis for new development.
 4. Park development and operations will seek opportunities to provide local economic and social sustainability, such as using local resources and labor to the maximum extent possible.
 5. Park development and programs will focus on encouraging healthy, active lifestyles for both day and overnight park users.

Value: Making Connections

Lake Vermilion-Soudan Underground Mine state park will be well connected to the broader landscape, recreational and social/economic matrices in which it is situated. The park will:

4. Recognize its place within nested watersheds and Ecological Classification System (ECS) subsections and manage resources accordingly.
5. Connect users to other area outdoor recreational opportunities, acting as the hub of a recreational wheel with many spokes.
6. Support local economic and social well-being by explicitly connecting local communities with the parks’ tourism opportunities.
7. Work closely with the Bois Forte Band of Ojibwe to ensure they are represented and their values are integrated into the fabric of this project.

Value: Inspiring Participation

Lake Vermilion-Soudan Underground Mine State Park will inspire enthusiasm for outdoor recreation activities among emerging and existing parks and trails users, and The DNR has identified six key strategies for encouraging outdoor recreation participation in the park:

1. DNR Division of Parks and Trails needs to continue its research into changing perspectives on recreational use and the outdoors.
2. The park will attract the younger demographics by providing age and resource appropriate adventure and skill-building areas and programs.
3. The park will use emerging technologies to connect people with outdoor recreation and the parks’ cultural and natural resources.
4. The park will welcome emerging and existing users by providing multiple levels of experience, accessibility and programs from semi-primitive to full visitor amenities.
5. The park will seek to provide opportunities for warm and cold season recreation.
6. Lake Vermilion-Soudan Underground Mine State Park will strive to provide inspiring and unforgettable experiences that have the potential to change peoples’ lives and lifestyles.

Site Selection Process

Cooperative Master Plan Lodge Location

‘Exhibit 5: Proposed Development Areas’ in the Cooperative Master Plan shows a Lake Lodge on a geographically remote lakeside ridge between Stuntz Bay and Mattson Bay near the previous boundary of Soudan Underground Mine State Park.

Road access to the initial lodge site is provided by a new 3.2-mile two-way drive with multiple wetland crossings. The new parking area will connect with this new road.

The site itself is a narrow, treed topographic bench occupied by a wetland and small bedrock knob. The building site parallels a steep, uphill slope to the south and an equally steep downslope to the lake with a very narrow band of level, rocky shoreline. Although the site provides an island filled view of Lake Vermilion the site lacks the developable space needed to accommodate the building and site program.

Additional Analysis

During the winter of 2014 additional resources were directed at analyzing the park shoreline and adjacent upland for suitable lodge locations. The analysis included topography, wetlands, rare and endangered plants and animals, exposed bedrock, potential for acid generating rock, aquatic shoreline habitat, mine pits, and archeological resources. The analysis combined with the program for the Lodge suggested two potential lodge locations, one in Armstrong Bay and the other on the shore of Mattson Bay.

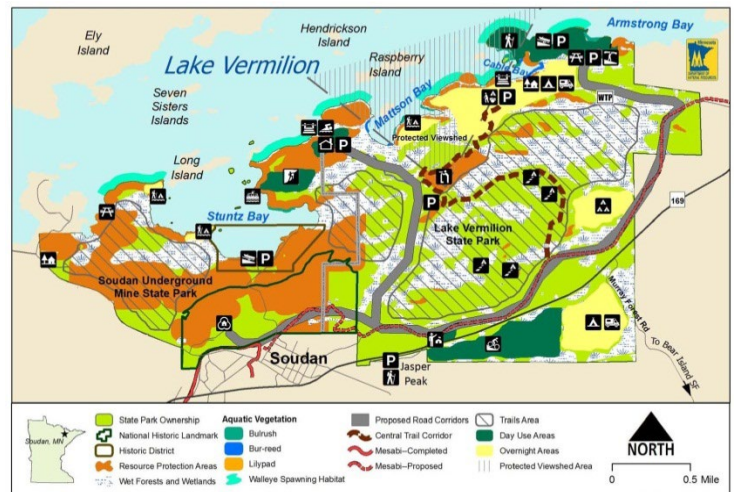


Exhibit 5 from the LVSP Master Plan

A. Mattson Bay Location (not chosen):

- Raspberry Island with its two private cabins is half a mile long and blocks the view of the larger lake basin and would make it more difficult for the boater and snowmobiler to find the Lodge
- Although road access is not as challenging as the original Lodge site it would still require a significant bridge and would route visitor traffic through a future campground
- Less opportunity for high quality, lakeside accessible trails

B. Armstrong Bay Lodge (preferred) Location - chosen for these primary reasons:

- Greater lake presence to improve intuitive wayfinding for boaters & snowmobilers
- Opportunity for panoramic views of Birch and Ely islands
- Improved shoreline access with multiple docking opportunities
- Synergy of nearby park facilities (high quality lakeside hiking trails & Armstrong Bay Day Use Area)
- Efficient use of existing and future utility infrastructure and good alignment with B3 Site criteria
- Offers a logical location in relation to future camping and day use activities.

Minnesota B3 Guidelines Version v3.2r02

The B3 Guidelines are required on all projects that receive general obligation bond funding from the State of Minnesota. Projects beginning the Schematic Design phase on or after January 1, 2020, are required to use Version v3.2r02 of the B3 Guidelines:

<http://www.b3mn.org/guidelines/index.html>



SB 2030 Energy Standard

Beginning on January 1, 2025, all Minnesota State bonded projects, new and substantially renovated that have not already started the Schematic Design Phase on January 1, 2025, will be required to meet the Minnesota Sustainable Building 2030 (SB 2030)2025 energy standards, which are incorporated into the Minnesota Sustainable Building Guidelines (B3).

B3 Tracking Tool

Specific sustainable design goals for this project will be documented using the B3 Tracking Tool:

<http://www.msbgtracking.com/Login.aspx>

Net-Zero Goals and the Master Plan 24.3 KW PV Array – Tettegouche State Park Visitor Center

“Model energy efficiency for buildings and operations by utilizing renewable energy sources whenever feasible and striving for “net zero” energy consumption and emissions on an annual basis for new development. (VS1.3)”

Lake Lodge Vision: General

The vision for the Lake Lodge is that it is a blend of a traditional State Park interpretive center and a trail center. It will be a year-round place to gather and linger; and a place that feels as “comfortable as home”:

- Campers will be able to hang out when it rains and there will be opportunities provided for quiet activities such as sipping coffee and reading the newspaper as well as space for active play both indoors and out.
- Day-use visitors will arrive by vehicle or boat and will find an abundance of activities to hold their interest so they will want to visit the park again and again. Interpretive information will be integrated into the overall building/landscape design rather than as a



separate display space. There will be changing interpretive displays and updated activities to encourage repeat visitation.

- The Lake Lodge is also conceived as a starting/ending point for outdoor recreation activities such as hiking, skiing and snowmobiling.
- The site design component of this project is as important as the architectural design and both components are important for developing the facility's personality.
- Location of lodge site should be in area that reduces impact to the land if possible overlapping and reusing existing infrastructure where feasible.
- The footprint of the building should be kept minimal to reduce impact on vegetation.
- There will be a strong connection between the Lake Lodge and Armstrong Bay day use area, and a strong connection between the Lake Lodge and Lake Vermilion itself.
- The site design component will embrace best management practices for shoreline management.
- Buildings and operations will model energy efficiency by utilizing renewable energy sources whenever feasible and striving for “net zero” energy consumption and emissions on an annual basis.
- An important goal is to make it easy for users to get around the park without vehicles. Alternative modes of transportation will be readily available will be explored.

Lake Lodge Vision: Project-Specific Design Criteria

Design issues or themes, intended to clarify criteria that a successful design solution will satisfy are summarized as follows:

Users: *For whom will this project be designed? Which customer(s) will the completed project serve? Who will it benefit?*

- Day users arriving by automobile, RV, boat, canoe, bicycle or possibly snowmobile.
- Overnight visitors (campers) looking to enhance and supplement their state park experience.
- Overnight visitors gathering with others with the same affinity toward outdoor recreation in a place that is protected from the elements but still connected to the surrounding landscape.
- Various-sized organized groups (also day users: school, community, etc.) looking for a place to gather and use as a “home base”.
- This project will be designed with The Bois Forte band of Ojibwe involvement to ensure that the project represents their values and respects the history of the land this project is on.

Unique Aesthetic Aspects: *What is special about this facility?*

- “Third place” community experience.
- Active spaces for gathering, both indoors and outdoors.
- Passive spaces for someone enjoying a cup of coffee and a book.
- Conveys the feeling of “everyone’s place at the lake.”
- Comfortable “lodge-like” feel and facilitate broad lake views from both interior and exterior spaces.
- Fits uniquely into the already-terraced landscape and provides a spectacular view of Lake Vermilion.



Key Functions: *What essential functions must the building accommodate? What benefits must it provide for the users?*

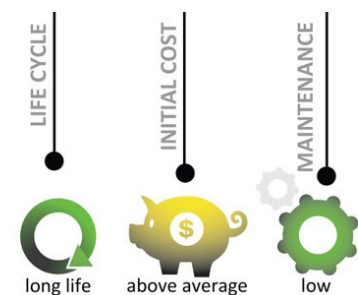
- See Preliminary Space Program and Space Needs Inventory (below).

Design Constraints: *What are the constraints on size, shape, location, orientation, material selection, internal and external organization, spatial or functional relationships that will be imposed by specific site, customer, conceptual, and/or economic parameters?*

- A wealth of wetlands, rock outcrops, woodlands, rare plants, scenic vistas, and other sensitive natural resources may limit site development options.
- Exposed bedrock limits excavation opportunities.
- Steep slopes limit development area and pose challenges for accessible design.
- The owner’s mandate to dramatically reduce overall energy consumption will impact multiple facets of the final design solution, including mechanical systems.
- Archeological constraints: Previous civilizations, remains of mining exploration etc.
- The desire to capture “free” solar energy will drive decisions on building shape and orientation, as well as the designer’s choice of materials and building components (e.g. windows, thermal mass for flooring and walls, color and reflectivity of finishes).

Life Expectancy/Durability/Quality: *What priorities will drive the cost/benefit analysis? What are the expectations for the building’s durability? What design or construction features will ensure a quality product?*

State buildings are designed and constructed to have a 50–100-year service life for structure and envelope. The DNR typically specifies materials with environmentally preferable properties and appropriate durability for service life, such as steel roofing, metal clad windows, masonry veneer (where possible), porcelain tile on walls and floors, wood interior ceiling or wall finishes, etc.



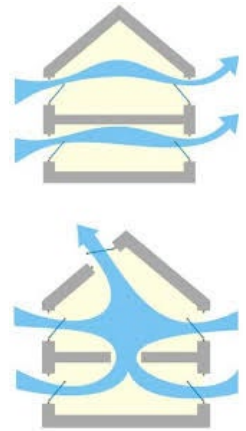
As requirements for energy performance increase, careful design and detailing of the building envelope and ventilation systems must rise to the challenge for effective management of potential moisture and indoor air quality issues.

Acceptable Cost: *What costs (financial or other) are considered acceptable to the owner?*

An overall priority is to facilitate a design solution that substantially reduces operating costs (particularly utility costs) although it's possible that construction costs will increase. Because of this, acceptable "payback" calculations for high-performance construction and energy conservation methods may be longer than for other more typical commercial clients.

Ergonomics/Usability/Practicality: *How will the final design solution relate to people's size, shape, etc.? How important is "human scale"? How easy is the building to use, to operate and maintain? Are the various systems overly complex or simple to understand?*

- A preference was indicated not to include air conditioning but instead provide natural ventilation capability (operable windows for fresh air).
- Also provide ability to leave bathroom area and other public spaces open 24/7 while securing the non-public, sensitive and office areas of the building after staffing hours.
- Provide separation between the multi-purpose space and general lobby area.
- Multi-purpose space should be designed for maximizing effectiveness (not long/skinny).
- Lake access will need to be accessible, easy and inviting for all abilities.



Interpretive Design Considerations:

Overall interpretive design should give a feeling of unexpected learning/interpretation opportunities at this site location. Interpretation should be woven in and durable enough to withstand unsupervised wear/tear. Incorporate local arts showcase local crafts - depending on security. Interpretive opportunities to be incorporated into or coordinated with architectural design may include:

- Integrating interpretive display content onto tabletops and into building and landscape elements.
- Providing books and field guides placed on bookshelves and fireplace mantle.
- Installing binoculars/spotting scopes by windows.
- Decorative pictures and augmented reality technology.
- End tables could be touch/feel tables for kids.
- Access to website use and other educational games.
- Interpretive information located in restrooms and by water fountains, etc.
- Outdoor gathering space should consider using natural terracing for seating surfaces. Seats do not have to be large or heavy duty.
- Citizen science programs could require utility space with large washtub and drying space for lake study equipment.

-
- Interpretive information and artwork should be incorporated throughout the building and be part of traditional furnishings rather than a separate space.

Storage Considerations:

Recreation equipment rental hub requires storage for snowshoes, skis, paddles, lifejackets, etc., and stored in a way that it can be readily accessible, organized, and dried. Storage should be accessible so equipment can be managed without conflict to visitor activities. The existing water treatment building will be explored as possible reuse for storage needs after it has been replaced.

Consideration will be given to locating a storage function close to the lake so that equipment does not have to be carried to and from the shore area.

Possible Lake Lodge Interpretive Themes to be explored

Note these themes should be narrowed down to focus on 1 or 2 and based on design direction that comes from the community, design team direction.

1. Lake Vermilion

Lake Vermilion sets the stage for a legacy of tradition as every Minnesotan's place at the lake.

- Lakes link Minnesotans and visitors to the outdoors and nature: fishing, boating, swimming, playing on the beach, water skiing, vacation homes, photography, relaxation, summer vacations, family traditions, harvesting rice, etc.
- Lakes and the experiences, history, and memories associated with them create a sense of place for people.

2. Cultural History

Humans have been making a living in the area for more than 7,000 years.

- Indigenous persons contribute to the culture of the area's modern community and continue to practice traditional uses in a land that has been altered by European immigrants.
- From the 1600's to the 1800's the fur trade was active in this area of Minnesota: Lake Vermilion was used as a village and fur post. The furs and goods traveled from Rainy Lake to Grand Portage while going through this region.

3. Mining & Historic Mining

People have mined in the area for thousands of years.

- Prehistoric mining sites include chert quarries used 8,000-9,000 years ago.
- This park is home to Minnesota's oldest iron ore mine.
- Mining activity was a huge draw to European immigrants and contributed to the cultural palette of the Iron Range.

4. Natural History

The landscape with rock ridges, steep bluffs, lakes, and wetlands creates habitat for diverse vegetation and wildlife.

- Forest, wetland, lake ecology can all be witnessed here.

-
- Most of the upland habitat in the park is Northern mesic mixed forest, including 342 acres of old growth forest.
 - Upwards of 10,000 bats roost in the mine at various times of the year, but the mine stands out in importance as a winter hibernaculum—perhaps the most significant in Minnesota.

5. Geology

Geological processes built a foundation for the rich cultural history and ecological diversity.

- The Soudan Iron Formation formed over 2.7 billion years ago when most of the world’s iron formations were forming – possibly due to different atmospheric or oceanic conditions that existed.
- Ely Greenstone found in the area is thought to be the result of ancient underwater lava flows during Archean time.
- Roughly 10,000 years ago, the last lobes of the Canadian glaciers melted - carving out Lake Vermilion.

6. Night Sky / Astronomy

Lake Vermilion – Soudan Underground Mine State Park offers prime viewing of the unpolluted night sky.

- The night sky is a *resource* that many people come “up north” to explore.
- This park contains some of the last remaining remnants of dark skies in Minnesota.
- Star-filled night skies can inspire wonder, invention, imagination, and stewardship.

7. Conservation and Citizen Science

Conservation messages and citizen science are important educational tools for involving the public in the stewardship of their resources.

- Citizen Science refers to projects that aim to make scientific discoveries, verify hypothesis, or gather data which can be used for scientific purposes, and which involves many people who may have no specific scientific training.
- Minnesota State Parks and trails can be a gateway to observe, understand and steward conservation messages.
- Citizens can be a valuable part of monitoring and protecting the state’s resources through Citizen Science.

8. Recreation and Outdoor Skill-Building

Lake Vermilion – Soudan Underground Mine State Park offers targeted outdoor skill-building experiences.

- Skill development programming at Lake Vermilion – Soudan Underground Mine State Park will be focused on a variety of activities or skills that can be taught in the natural or recreational environment at the park and act as “gateways” to further outdoor experiences in Minnesota.

Project Procurement and Delivery

Best Value Process

It is our intention to use the “Best Value” bid process for procuring Lake Lodge construction services (as opposed to the “Low Bid” process). Best value is a procurement process where price and other key factors can be considered in the evaluation and selection process to minimize impacts and enhance the long-term performance and value of construction.

Traditionally, price has been the sole factor considered in selection of construction contractors by state agencies. Best-value procurement allows other factors, such as qualifications, schedule, quality, and performance-based criteria, to be used in evaluation and selection.

In 2007, the Minnesota Legislature enacted a law that enables public agencies to select contractors based on best value, rather than low bid. The law applies to state agencies, cities, counties, and school districts.

Process Summary

Price = 60% as opposed to 100% for a standard bid.

Qualifications = 40%

Process Includes:

- Mandatory Pre-Proposal Meeting
- Formal Question & Answer Opportunity
- Evaluation Criteria can Include:
 - Project Approach – general approach, RFI’s & Submittals, Example Pay Applications & Progress Reports, Site Coordination, Stake Holder Communication, Closeout Timeliness.
 - Work Plan – Critical Path Schedule, Risk Assessment
 - Comparable Projects – submitted on a two page, 18 item form
 - Subcontractor Experience
 - Staff Experience – Prime Project Manager, Project Superintendent, Sub. Project Managers
 - Safety Program
 - Quality Assurance – methods, inspection, testing, reporting, recordkeeping

Considerations:

- Demands a higher level of contractor sophistication.
- Bidder pool may be reduced
- Successful bid may not be lowest cost, and the overall pool of bids might be higher. Doesn’t mean the project will cost more however
- Bidding process and evaluation take longer, however odds of contractor completing construction on schedule increase
- Increased potential for bid appeal by unsuccessful contractors

Section 6: Financial Information

6.A Capital Expenditures

PROJECT FINANCIAL DATA

Project: LV Lodge Date: 12/30/2025
 Project Number: 8P205
 Proj. Mgr. Jancis Curiskis DNR Division: PAT
 CA: N/A Project Phase: Pre-Design

AVAILABLE FUNDING				
Source	Accounting String	Total Funding	Funding Source A	Funding Source B
Source A		\$ 7,200,000.00		
Source B			\$ -	\$ -
Total		\$ 7,200,000.00	\$ -	\$ -

Notes: Source A: Source B: Source C:

1. Property Acquisition				
	Land, Easements, Buildings		\$ -	\$ -

2. PreDesign/Feasibility Costs				
	PreDesign	1%	\$ 38,200.00	\$ -
	Designer Selection Board Costs		\$ -	\$ -
	Total PreDesign Costs		\$ 38,200.00	\$ -

3. Design Consultant Costs				
	Consultant Costs	12%	\$ 458,400.00	\$ -
	Design Contingency	10%	\$ 45,840.00	\$ -
	Total Design Consultant Costs		\$ 504,240.00	\$ -

4. DNR Staff Costs				
	DNR Proj. Mgmt.: design phase	3%	\$ 114,600.00	\$ -
	DNR Proj. Mgmt.: bidding phase	1%	\$ 38,200.00	\$ -
	DNR Proj. Mgmt.: const. phase	3%	\$ 114,600.00	\$ -
	DNR Contingency	10%	\$ 26,740.00	\$ -
	Total DNR Staff Costs		\$ 294,140.00	\$ -

5. Project Management Costs				
	Special Inspections & Testing		\$ 20,000.00	\$ 20,000.00
	Survey		\$ 15,000.00	\$ -
	Geotechnical		\$ 10,000.00	\$ -
	Plan Review		\$ 12,500.00	\$ -
	Plumbing Plan Review		\$ 3,500.00	\$ -
	Contingency	10%	\$ 6,100.00	\$ 2,000.00
	Total Project Management Costs		\$ 67,100.00	\$ 22,000.00

6. Construction Costs				
	Renewable Energy Systems		\$ 200,000.00	\$ 200,000.00
	Sitework (Parking/ Plaza/ trails)		\$ 700,000.00	\$ 700,000.00
	Site Utilities- re hook up		\$ 100,000.00	\$ 100,000.00
	Demolition		\$ 20,000.00	\$ 20,000.00
	Building Construction	Lodge, Porch, Water treatment	\$ 2,800,000.00	\$ 2,800,000.00
	Construction Subtotal		\$ 3,820,000.00	\$ 3,820,000.00
	Building Permit		\$ 30,000.00	\$ 30,000.00
	County Multiplier	15%	\$ 573,000.00	\$ 573,000.00
	Construction Contingency	20%	\$ 764,000.00	\$ 764,000.00
	Total Construction Costs		\$ 5,187,000.00	\$ 5,187,000.00

8. Occupancy Costs				
	Furniture, Fixtures and Equipment		\$ 100,000.00	\$ 100,000.00
	Interpretive Exhibits		\$ 100,000.00	\$ 100,000.00
	Telecommunications Wiring		\$ 40,000.00	\$ 40,000.00
	Telecommunications Devices		\$ 40,000.00	\$ 40,000.00
	Security & Surveillance		\$ 20,000.00	\$ 20,000.00
	Contingency	20%	\$ 16,000.00	\$ 16,000.00
	Total Occupancy Costs		\$ 316,000.00	\$ 316,000.00

		Total Project Cost	Construction Only	Design+ Mgmt.
Project Costs		\$ 6,406,680.00	\$ 5,525,000.00	\$ 883,680.00

6.B Ongoing Operating Expenditures

Cost estimate is based on a typical 4,000 SF building and derived from Parks Operating Standards formulas and adjusted cost figures from the visitor center at Grand Portage State Park.

Building hours and maintenance:

- Building will be open year-round.
- Restrooms and gathering space in the building would be open 7 days a week, 24 hours a day.

Interpretive Program:

- Weekend programs and by appointment May 15 – Sept 15
- School groups as requested and as staff time allows
- Limited teacher workshops and special events (4 – 6 per year)

Costs for Staffing (includes fringe):

- Parks workers = \$35,000.00
- Bldg. & Grounds = \$25,000.00
- Naturalist = \$30,000.00

Staffing Total = \$90,000.00

Costs for Maintenance, Operations & Utilities:

- Heat (Winter) = \$4,400.00
- Electric (Summer cooling) = \$3,700.00
- Phone (business line) = \$1,500.00
- Security System = \$ 500.00
- Sewer (onsite) = \$ 500.00
- Supplies (cleaning, etc.) = \$ 500.00
- FMA fee = \$15,000.00

M&O Total = \$26,100.00

Total Estimated Costs: = \$116,100.00/Year

6.C Life Expectancy Analysis

The Lake Lodge interpretive Center is expected to last 50 years without requiring major modifications. Building elements such as roofing and mechanical equipment have shorter lifespans and will be addressed as part of normal building maintenance.

6.D Comparative Financial Analysis

Financial studies and analysis are not applicable for this project due to location and nature of the project.

6.E Risk Mitigation

Financial budget contingencies have been included in the overall project cost estimate to cover potential added costs that could be incurred due to the project location. And project is carrying a 20% construction

contingency to address potential added cost issues during construction. Site surveys and soil boring are to be done prior to design to identify and understand as much of the existing site conditions as possible. Design team will meet with Department of Labor when project is 50% through design phase to address any potential code review conflicts prior to finalizing design. This project will make use of BIM to control and coordinate the interface between varying trades. Review of HVAC and building envelope will be addressed at each design phase and B3 MN Sustainable Building Guidelines will be followed to help minimize energy dependence and control annual energy needs.

6.F Project Cost Form

6.G Construction Cost Form

6.H State Operating Costs Form

DNR Form submitted in section 6A is the DNR form used by agency to address these.

Technology Plan

Telecommunications Statement

The Lake Lodge interpretive Center will be equipped with telecommunications service per State guidelines to facilitate all internal and external park communications. Office workstations will be equipped with computers, phones and Internet connections. Office computer stations will be connected to the DNR network and will be able to access the state park information web page.

A requirement for occasional public contact, direct visual surveillance of the building and site area, and low staffing levels precludes the use of telecommuting as an option at this facility.

Wireless internet access will be available to park users at key locations, including the Lake Lodge. Necessity of installing radio communications infrastructure (antenna, repeater, etc.) at the lake lodge location is unresolved at this time (although unlikely).

Infrastructure Guidelines Summary

The Office of Enterprise Technology (OET) "Building Infrastructure Guidelines for State-Owned Buildings" document will be used in the design and construction of this project.

General Specifications include:

1. Dedicated telecommunications room to be provided per Lake Lodge program. Server room to be supplied with supply/return air and thermostat to ensure proper ventilation and ambient temperature is maintained.
2. Products and execution requirements relating to furnishing and installing telecommunications cabling infrastructure at new or remodeled State-owned buildings. Backbone and horizontal cabling are comprised of copper and fiber optic cabling, support systems and termination hardware.

3. The document addresses "telecommunications cabling." This term encompasses all types of media used for voice, data and video communications. The media includes, but is not limited to, copper wire, coaxial cable, and fiber optic cable.
4. The term "telecommunications" is defined to mean the transmission, reception and switching of signals, such as electrical or optical, by wire, fiber, or electromagnetic means.
5. The document includes basic construction and cabling recommendations designed for use on this project by the Department of Natural Resources. This does not cover the cable specifications, testing procedures, tools required, and testing documentation that will be used and required by the State vendor installing the system.

Section 7: Schedule Information

Preliminary schedule for this project: See appendix V Gantt Chart for visual.

➤ Predesign Process	June 2025 – January 2026
➤ Dept. of Admin Predesign Review	February 2026
➤ State Design Selection Board Review (SDSB)	March 2026- May 2026
➤ Consultant Contracts	June 2026
➤ Design	July 2026 – January 2027
➤ Construction Documents	February 2027 – July 2027
➤ Bidding	August 2027 – September 2027
➤ Construction Contract Award	October 2027
➤ Construction	November 2027 – March 2029
➤ Occupancy	April 2029

Section 8: Predesign Checklist

1. Minnesota Statute §16B.335 Subdivision 3 requires submittal of a Predesign Document to the Commissioner of Administration on proposed projects that have a construction cost of \$750,000 or greater (\$1,500,000 for a local government project) when State money (of any amount) is used on the project.
2. When an appropriation is made for a major construction project, Minnesota Statute §16B.335 Subdivision 1 further requires that you not prepare final plans (construction documents) until you present the program plan and cost estimates for all elements necessary to complete the project to the chair of the Senate Finance Committee and the and the Chair of the House Ways and Means Committee and they have made their recommendations and the Chair of the House Capital Investment Committee is notified.
3. The items in this checklist are a summary of the State's *Predesign Manual* (available at the Department of Administration's website www.admin.state.mn.us/recs)

Complete N/A

- 1. Review the Contents of a *Predesign Submittal* in the State's *Predesign Manual*.
weblink: <http://mn.gov/admin/government/construction-projects/manuals-guidelines-forms/index.jsp>
- 2. Structure the format of your *Predesign* submittal to contain the Components of *Predesign*. Include component tabs to readily identify and access each component. The components are:
 - 1) *Predesign Summary Statement*
 - 2) *Basis for Need – Project Background*
 - 3) *Agency/Organization Planning*
 - 4) *Project Description*
 - a) *Architectural/Engineering Program*
 - b) *Precedent Studies*
 - c) *Technology Plan*
 - d) *Sustainability, Energy Conservation, and Carbon Emissions*
 - e) *Operations and Maintenance Requirements*
 - f) *Statute Requirements*
 - g) *Specialty Requirements*
 - h) *Project Procurement and Delivery*
 - i) *Quality Control Plan*
 - 5) *Site Analysis and Selection*
 - 6) *Financial Information*
 - 7) *Schedule Information*
- 3. *Section 1 – Predesign Summary Statement*. Work with the user agency to develop the executive summary. Be brief, with a two or three paragraph scope description of the project. Below the description include costs, funding sources and schedule.
- 4. *Section 1 Predesign Summary Statement*: Complete the "*Building/Project Data Sheet*" to tabulate the pertinent data upon which the cost estimates are based. Include this sheet as a second page to the *Section 1 – Predesign Summary Statement*.
- 5. *Section 1 Predesign Summary Statement*: If the project involves remodeling of an existing building, use the "*Building Audit Sheet*" to perform an audit/survey of the building's major components, systems and their conditions. Use and amend the "*Building/Project Data Sheet*" to indicate the scope of work for the proposed project. Insert behind the *Summary Statement*.
- 6. *Section 2 Basis for Need-Project Background*: Gather the *Section 3* planning information from the *Agency/Organization* and synthesize it into the format shown in the example. Detailing the *Mission, Strategic Plan, Operational Plan and Basis for Need* for the project. At the back of this include any additional background information on the project from your work with the agency.
- 7. *Section 2 Basis for Need-Project Background*: **Verify that the scope of the predesign complies with the language of the appropriation.** (For projects that have already received a legislative appropriation).

8. *Section 3 Agency/Organization Planning*: This Section supports the *Basis for Need–Project Background*. Obtain the following from the user agency/organization:
- 1) Planning documents such as org charts, mission statement,
 - 2) Strategic plan, and
 - 3) Operational plan for the project.
- This information would include any supporting data, analysis or studies which support the proposed project and demonstrates the need for the project by linking it to the agency’s mission, strategic and operational plans, which, in turn were used to prepare Section 2.
9. *Section 3 Agency/Organization Planning*: Included a list and narrative regarding the stakeholders involved and affected by the project (i.e. other agencies, organizations, and entities). Also include issues that remain to be resolved among stakeholders along with budget and schedule impacts upon the project.
10. *Section 3 Agency/Organization Planning*: Impacts on Operations, Budget and Facility Staff are detailed.
11. *Section 4.A Architectural /Engineering Program*: (For State Agency projects) Obtain and coordinate space planning standards with the Department of Administration. Then, include a review sign-off from The Department of Administration’s Real Estate and Construction Services Division. Focus on job related functional needs and the State’s *Space Guidelines* when developing the square foot areas of spaces. (Space Guidelines are located at <http://mn.gov/admin/government/construction-projects/>).
12. *Section 4.A Architectural/Engineering Program*. Work with the user/owner to develop the space program. Employ a participatory programming methodology similar to the example) to analyze operations and activities.
- 1) Your methodology should consider Post-Occupancy Evaluation (POE).
13. *Section 4.A Architectural/Engineering Program.*: Complete the *Space Needs Inventory* sheet for each room of the project. Include these sheets in the predesign document. The Space Needs sheet should also identify special Mechanical or Electrical needs or upgrades for the space. For instance, you would state the need for special humidification for wood instrument storage in a music classroom.
14. *Section 4.A Architectural/Engineering Program.*: Prepare and include a detailed architectural space program with a Table of Spaces and their respective areas (square footages) with a total of assignable and gross square feet.
15. *Section 4.A Architectural/Engineering Program.*: Provide adjacency diagrams of all spaces and a diagrammatic/conceptual layout of spaces. Superimpose these diagrams onto the Site Plan to show building/site fit and site relationships.
16. *Section 4.A Architectural/Engineering Program.*: On state agency projects, identify potential MINNCOR Industries www.minncor.com and Minnesota State Industries products <http://stateindustries.org> for the project.
17. *Section 4.A Architectural/Engineering Program.* (for State Agency Projects): If applicable to the agency, work with the user agency to incorporate a *Telecommuting Plan* for this project. Include the *Telecommuting Plan* with the Predesign submittal document. Obtain review & response letter from MN.IT.

18. *Section 4.A Architectural/Engineering Program.* Develop the Furniture, Fixtures and Equipment (FF&E) needs and include the associated costs as a line item in the project cost estimate. Consider Interior/Exterior Signage Exterior landscaping and fixtures, Telecommunication devices, Security Camera System, Lockers, Trash compactor, Window washing equipment, phasing costs, and Moving costs. (Note: moving costs are not bondable).
19. *Section 4.B Precedent Studies:* Research the project. Visit similar building types and include *precedent* projects into the predesign document and how the precedent affects the proposed project. Include information on the facilities (name, location, size, design features); Then indicate any features that will be incorporated into the proposed project. Special attention should be paid to design features that result in efficiency of program operations and ability to reduce long term operating costs.
20. *Section 4.C Technology Program* (for State Agency Projects): Identify and document the technology needs for the project. Develop a Technology Plan for the project using the State's Technology agency (MN.IT) guidelines (“*Building Infrastructure Guidelines for State Owned Buildings*”) located at: <http://mn.gov/admin/government/construction-projects/>. Technology plan is to be reviewed by MN.IT.
21. *Section 4.C Technology Plan* (for State Agency Projects): Forward the Technology Plan to MN.IT (The State’s Information Technology Agency) for review; and obtain a written letter from MN.IT. Incorporate any changes requested by MN.IT.
22. *Section 4.D Sustainability, Energy Conservation and Carbon Emissions:* In accordance with Minnesota Statute §16B.235 identify Sustainable and High Performance goals for the project using “*The State of Minnesota Sustainable Building Guidelines*” at <http://www.b3mn.org/guidelines/index.html>. Include a summary table of goals & strategies. Also include the B3-MSBG project submittal report for the Predesign Phase that is generated by use of the B3-MSBG Tracking Tool at <http://www.b3mn.org/guidelines/index.html>. This requirement applies when the project is new building, addition, or major renovation. See the Applicability rules at the B3-MSBG website.
23. *Section 4.D Sustainability, Energy Conservation and Carbon Emissions:* Include a table of strategies to comply with Sustainable Building (SB) 2030 requirements. For SB2030 requirements, see: <http://www.mn2030.umn.edu>.
24. For the *Section 4.D Sustainability, Energy Conservation and Carbon Emissions:* In accordance with MN Statute § 16B.32, a identify alternative energy uses and associated systems. This applies to a new building or for a renovation of 50 percent or more of an existing building or its energy systems. Anticipate future designs which use active and passive solar energy systems, earth sheltered construction, and other alternative energy sources where feasible.
25. *Section 4.D Sustainability, Energy Conservation and Carbon Emissions* When the project is for a State Agency, provide a cost-benefit analysis for:
- 1) including alternative energy (wind and/or solar) sources to provide 2% of the proposed building’s energy consumption. An example of an analysis is located at: <http://mn.gov/admin/business/vendor-info/construction-projects/Guidelines/predesign.jsp>.

2) a 40 Kw “Made in Minnesota” photovoltaic solar system.

26. Section 4.D Sustainability, Energy Conservation and Carbon Emissions: For compliance with MN Statute 16B.326, provide a written plan in the predesign to consider providing Geothermal and Solar Energy Heating & Cooling Systems on new or replacement HVAC systems. An example of an analysis is located at the weblink above.
27. *Section 4.D Sustainability, Energy Conservation and Carbon Emissions:* Include a narrative in the predesign that the project specifications are to include requirements for the contractor to submit a “Waste Management and Recycling Program Plan” for both demolition and construction.
28. Section 4.D Sustainability, Energy Conservation and Carbon Emissions: Estimated yearly energy consumption and associated costs are included.
29. *Section 4.E Operations and Maintenance Requirements:* Conduct information gathering and program meetings with operations and maintenance staff. Document and include these needs into the predesign.
30. *Section 4.E Operations and Maintenance Requirements:* For Projects located on the Capitol Complex, obtain “Plant Management Preferred Equipment List”, “Capitol Complex Guidelines”, and “Signage Guidelines”. (available at <http://mn.gov/admin/government/construction-projects/manuals-guidelines-forms/index.jsp>). Include these documents in the Predesign document as instructions for the future design team.
31. *Section 4.F Statute Requirements:* See Appendix 4c for statute requirements related to all projects receiving any amount of state funding. Enter information on how the project will comply with each statute and include in the final predesign document.
32. *Section 4.F Statute Requirements:* Review the table of statutes contained in this manual. Identify the statutory requirements for the project. These are to be included in the final Predesign Document.
33. *Section 4.F Statute Requirements:* Include any design requirements or other mandated requirements.
- 1) The statute that gives authority for the operational program
 - 2) Licensing requirements. (i.e. Department of Health or other authority)
 - 3) Design requirements (i.e. American Correctional Association standards).
 - 4) Operating Standards (required State, Federal, & Industry standards)
 - 5) Federal Statutes/Laws/Requirements.
 - 6) Significant Building Code or land use/ zoning requirements.
34. *Section 4.G Specialty Requirements:* Review the need to conduct a security and/or vulnerability assessment for the project. Include the study in the predesign document along with associated costs.
35. *Section 4.G Specialty Requirements:* Include any unique requirements that are applicable to the specific project. i.e. performance requirements, unique testing requirements, environmental reports, assessments, impact statements, facility condition audits that may have been done, hazardous materials surveys, unique construction, restrictions.

36. *Section 4.G Specialty Requirements:* For renovations and demolitions, verify if the building or structure or amenity is on the register of historic places and/or within a historic district. Meet with the State Historic Preservation Office (SHPO) to determine requirements. Include all SHPO requirements in the predesign as well as all specialty consultants (historic preservationist, archeologist) required for the future design team.
37. *Section 4.H Project Procurement and Delivery:* Provide a written statement and recommendation of the proposed construction delivery method to be used on the project. Include the reasons for this selection. Options include Design-Bid-Build, Best Value, Construction Manager at Risk, Design-Build.
38. *Section 4.I- Project Design Services and other Owner Costs:* Provide a listing of all costs that will be incurred in order to build the project.
39. *Section 4.J- Quality Control Plan:* Provide a listing of all quality control services and costs that are needed and will be incurred in order to building the project.
40. *Section 5 Site Analysis and Selection:* Provide a narrative on why the preferred site was selected for the project based on the locations that best meet pre-identified site criteria. For State-owned buildings/State Agency projects, coordinate this effort with the Department of Administration, Real Estate and Construction Services.
41. *Section 5 Site Analysis and Selection:* When locating or relocating or when proposing a new building or renovation, the Predesign Document must include an analysis of the agency’s location(s) using “*Criteria for Locating State Offices and Agencies*” located at: <http://mn.gov/admin/government/construction-projects/>
42. *Section 5 Site Analysis and Selection:* If the proposed project is a new building that will be in a campus setting (i.e. school, university, prison, extended care); review location options on the campus in regard to efficient operation and programs provided on the campus. (i.e. Agency masterplanning of a campus should occur in order to give direction as to future growth and organization - Note: Masterplanning is not a bondable activity).
43. *Section 5 Site Analysis and Selection:* Verify if the project will be required to undergo a State Environmental Review. To determine this, go to: <http://www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm>. If required, the predesign will need to include all applicable information and direction to the future design team to provide assistance to the owner and responsible government unit in conducting an environmental assessment (EAW) and environmental impact statement (EIS).
Note: If the project includes federal dollars, determine the need to complete an Environmental Assessment in accordance with the National Environmental Protection Act (NEPA).
Include all applicable guidelines for EAWs and EISs into the predesign submittal document if available, if not include costs for these in the project budget. Identify required timelines in the project schedule.
44. *Section 6 Financial Information:* Compile the project costs using the Department of Minnesota Management and Budget’s *Capital Budget Request* spreadsheet form (this form is included in this manual). Complete this form and include it in the submitted Predesign document.


- ☒ 45. *Section 6 Financial Information:* Compile the projected operating costs using the *State Operating Costs* form (this form is included in this manual). Other formats/forms are also acceptable.
- ☒ 46. *Section 6 Financial Information,* review the Project Delivery Method (single prime, multiple prime, design/build) for impact on the *Cost Plan* for the project.
- ☒ 47. *Section 6 Financial Information,* include design fees for special consultants in the project costs (i.e. food service, acoustical, security, etc.).
- ☒ 48. *Section 6 Financial Information,* verify existing utility infrastructures for adequate capacity needed to support the proposed building/facility or renovation. Incorporate costs for upgrades into the budget.
- ☒ 49. *Section 6 Financial Information:* If applicable and/or desired, include percent for Art in the project cost. Statute 16B.35 Subdivision 1 applies [up to 1% of the appropriation can be allocated to art in public buildings – Detention facilities and non-public buildings are exempt.
- ☒ 50. *Section 6 Financial Information:* Assist the user agency in identifying and incorporating contingency phasing and funding plans into the predesign to anticipate questions during legislative hearings.
- ☒ 51. *Section 6 Financial Information:* When the proposed project is for an existing correctional facility, obtain the contractor security requirements for the facility and include appropriate cost and schedule adjustments. (Working in a secure facility will add approximately 15-20% cost to the project).
- ☒ 52. *Section 6 Financial Information:* On major building projects, use the predesign to develop an options-based strategy for the agency to use in approaching the governor and legislature when requesting funding. The predesign should anticipate possible questions by presenting options for varying scopes and costs. Examples are:
 - 1) It may make sense to break out options (and costs) to spread the funding over several capital bonding sessions.
 - 2) Phasing of the project.
- ☒ 53. *Section 6 Financial Information:* For renovations, a Facility Condition Assessment has been conducted on the existing building and associated upgrade costs are included in the estimate.
- ☒ 54. *Section 6 Financial Information:* Conduct an industrial hygiene investigation to determine if there are any hazardous material/asbestos abatement clean-up costs, fuel tank removal and/or contaminated soils clean-up costs for the proposed project or site.
- ☒ 55. *Section 6 Financial Information:* Provide the Life Expectancy of the major building components and building as a whole and included in the predesign document. Show comparison costs of varying construction systems/components and their life span. Indicate the selected system that was used to prepare the cost estimates.
- ☒ 56. *Section 6 Financial Information:* (For State Agency projects) State’s Design Guidelines were reviewed and associated costs accounted for.
- ☒ 57. *Section 7 Schedule Information:* Include a schedule narrative and bar chart in the submittal document. Include time for hazardous material abatement, site clean-up,

-
- fuel tank removal and soils replacement costs, project schedule phasing time, relocation/move time, and any potential long-lead material deliveries.
58. *Section 7 Schedule Information:* Include a quality control/coordination review of the construction documents by a third party. Include the cost of this in the design budget. Indicate a minimum of 2 months in the schedule for this review.
59. For State Agency projects: Complete the Technology Checklist. Insert the MN.IT letter indicating they have reviewed and approved the Technology and Telecommuting Plans.
60. This predesign document contains all the necessary requirements and costs for:
- 1) The owner to confidently pursue funding based on the cost estimates contained.
 - 2) The owner to advertise for design services and structure their contract with a design firm as to the design scope of work and fee; and,
 - 3) The future design team for all project requirements in order to carry out the proposed design.
 - 4) All owner costs required to deliver the proposed project.
61. Include the SIGNATURE sheet, with signature of the ARCHITECT (see page 1).

- 1. PREDESIGN CHECKLIST – TECHNOLOGY & TELECOMMUNICATIONS**
- | Complete | N/A | |
|-------------------------------------|-------------------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1. Obtain a copy of MN.IT’s “ <i>Building Infrastructure Guidelines for State-Owned Buildings</i> ” and review the requirements for costs to be included in the project. For future design use, should the project be funded, include the Technology Plan and guidelines in the predesign submittal. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2. In coordination with MN.IT, determine the need for and develop a Technology & Telecommunications Plan for the project. Form and convene a Predesign meeting to determine the agency’s technology needs, goals, timelines and objectives. The Predesign Team will consist of, but will not be limited to: <ul style="list-style-type: none"> <input type="checkbox"/> Agency/customer <input type="checkbox"/> Real Estate and Construction Services’ (RECS) Project Manager <input type="checkbox"/> Telecommunications Analyst (S)/Designer (if required for predesign) Note: The State’s (RECS) Project Manager will provide the MN.IT contact name. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 3. For remodeling projects, verify existing technology infrastructures for adequate capacity. Include upgrade costs in the Cost Estimate. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Identify the user agency’s short- and long-range plans for technology needs. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 5. Identify if the project is or will be a single building or campus configuration. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 6. Identify existing distribution rooms and their capacity. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 7. Identify requirements for new distribution rooms. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 8. Identify Fiber Optic requirements, existing locations, new fiber lines. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 9. Identify copper-wiring requirements, existing and new. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 10. If information technology work is to be within an existing building, identify existing conditions, i.e. floor & ceiling heights & conditions, piping and duct conditions, water problems, feeder cable limitations, equipment room limitations. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 11. Identify existing telecommunications infrastructure service to the building. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 12. Identify types of existing cable trays and requirements for new cable trays. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 13. For projects in existing buildings, identify available communications “pairs” coming into the building. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 14. Identify MPOP (Main Point of Presence), APOP (Alternate Point of Presence), Internet Point of Presence locations and needs. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 15. Forward a copy of the project Technology Plan and Telecommuting Plan to MN.IT. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 16. Obtain a written letter from MN.IT indicating acceptance of the Technology Plan and Telecommuting Plan for the project. Incorporate MN.IT’s letter into the Predesign Document. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 17. Incorporate any changes into the Technology Plan as requested by MN.IT (resulting from review of agency’s technology plan for the project). |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 18. Verify existing utility infrastructures for adequate capacity and cost upgrades needed to support the proposed building/facility or renovation. |
- a) PREDESIGN CHECKLIST**

Check off the above items as they are completed and include this checklist with your final submittal document. Completion of this checklist is **MANDATORY**.

Architect's Signature:

Signature:  _____

Printed Name: Jancis Curiskis

Agency: Minnesota Department of Natural Resources

Division: Operations Services

Title: Lake Lodge interpretive Center, Lake Vermilion-Soudan Underground Mine State Park

Project No.: 8P205

Section 9 - Appendices

- I. Geotechnical Report
- II. LVSP-SUM Masterplan Map
- III. Wetland Information
- IV. Lake Lodge Site Analysis
- V. Schedule Gantt Chart
- VI. Conceptual Site Plan and Plan Options

I. Geotechnical Report

Geotechnical Evaluation Report

Lake Vermilion State Park
Campground and Water Access
Breitung Township, Minnesota

Prepared for

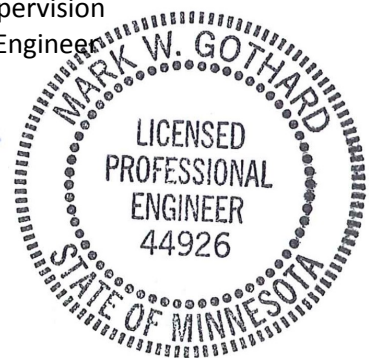
SRF Consulting Group, Inc.

Professional Certification:

I hereby certify that this plan, specification, or report
Was prepared by me or under my direct supervision
And that I am a duly Licensed Professional Engineer
Under the laws of the State of Minnesota.



Mark W. Gothard, PE
Principal Engineer
License Number: 44926
February 11, 2013



Project HB-12-01280

Braun Intertec Corporation

February 11, 2013

Project HB-12-01280

Mr. Ken Grieshaber, ASLA (MN,ND, IA)
SRF Consulting Group, Inc.
One Carlson Parkway North
Suite 150
Minneapolis, MN 55447-4443

Re: Geotechnical Evaluation
Lake Vermilion State Park
Campground and Water Access
Breitung Township, Minnesota

Dear Mr. Grieshaber:

We are pleased to present this Geotechnical Evaluation Report for the proposed Lake Vermilion State Park Campground and Water Access. A summary of our results, and a summary of our recommendations in light of the geotechnical issues influencing design and construction are presented below. More detailed information and recommendations follow.

Summary of Results

The general geologic profile encountered at the site consists of silty sand topsoil with roots and organics over glacial silty sands. Glacial lean and fat clays were encountered in Test Pits TP-33, TP-34, TP-35, TP-69, and HAB-67. The shallower test pits, ranging in depth from 1 to 3 feet, encountered numerous cobbles and boulders. These test pits also contained fractured rock pieces and/or weathered bedrock, making excavation very difficult for the backhoe. Shallow bedrock was encountered in most test pits ranging from the ground surface to depths greater than 9 feet.

Groundwater was not observed as our test pits were excavated. Given the fine-grained nature of the geologic materials encountered, however, it is likely that insufficient time was available for groundwater to seep into the pits and rise to its hydrostatic level. Piezometers or monitoring wells would be required to confirm if groundwater was present within the depths explored.

Seasonal and annual fluctuations of groundwater should also be anticipated, and would likely correspond to fluctuations of the water elevation of Lake Vermilion.

Summary of Recommendations

The geotechnical issues influencing design of the proposed park appear to be limited. The geologic materials present at anticipated structure subgrade elevations generally appear suitable for support of conventional spread footings, grade-supported slabs, and pavements.

Due to the frost susceptible nature of the silt- and clay-rich soils present at anticipated exterior slab and pavement subgrade elevations however, consideration should also be given to incorporating a granular

subbase into the pavement sections. This will enhance subgrade drainage efforts and reduce the potential for pavement subgrades to become saturated and heave upon freezing; strength loss upon thawing will also be reduced.

Grade cuts are planned over the shallow bedrock and will need to be removed to a depth to provide a minimum pavement cross-section including aggregate base and bituminous surfacing. Pavement sections can be located directly above competent, intact rock with only a cushion/drainage layer, but the rock surface should ideally be gradually sloped to promote drainage. It is essential that the rock surface be generally consistent to provide a uniform bearing surface and prevent water from being trapped in local depressions if it is within the top five feet of the pavement surface. It is assumed that a select granular borrow material will be used as fill. This material will help provide subsurface drainage of the pavement system.

A well designed subsurface drainage system will be necessary to ensure that the pavement meets its design life. Due to the relatively shallow bedrock, any water trapped within approximately five feet below the pavement could likely lead to frost heaving. Any non-uniformity in the depth to bedrock could lead to differential frost heave.

Drains could be placed directly on the rock to help remove water, but rock removal would be necessary to cause the water to flow to a collection/discharge location. It is not uncommon to have some drainage pipe in a horizontal condition that helps water flow more quickly and avoid building up on the bedrock before the water flows into collection pipes that are below the rock surface.

Where utilities will exist below the rock surface, the water will likely flow into the utility trenches. It is anticipated that underground utilities will need to be installed in rock cut trenches unless pumping stations are used.

From a construction perspective, the project team should also be aware that:

- Debris and organic soils will have to be removed from the existing material before it can be reused; this will not only limit the reusable volume, but will also increase the time required to handle the existing fill. The fill is also wet and will need to be dried to facilitate compaction.
- Bedrock will be encountered at varying elevations within the site. While the upper foot of the bedrock can be fractured and can likely be dislodged and removed using dozers equipped with ripping teeth or backhoes equipped with toothed buckets, the bedrock present throughout most of the site will have to be removed using splitters, hammers or blasting.
- The transition from soil to bedrock can be erratic and highly variable. Weathered or fresh bedrock above the subgrade elevation will need to be removed or sloped (if possible) by ripping or blasting. Contractor experience in similar conditions will be important. We recommend that Contract provisions require the Contractor and site personnel to have a minimum amount of recent experience with similar practices and similar conditions, such as blasting, within a recent time frame.

- The clays present will need to be dried to facilitate compaction. Given the anticipated depths of the building area excavations, the thickness of clay placed in an excavation will also have to be restricted to limit the amount of post-construction settlement that occurs from the excavation backfill compressing under its own weight.
- Because there are no such resources on the site, sands or gravels will have to be imported to backfill the balance of deep excavations that can only be partially backfilled with clay, and facilitate drainage behind below-grade walls and below pavements.
- Haul roads and staging areas will be particularly sensitive to disturbance and strength loss. Subexcavation and recompaction or replacement of subgrade soils can be limited if these traffic areas are protected with crushed rock.

Remarks

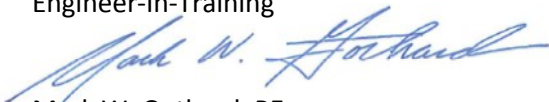
Thank you for making Braun Intertec your geotechnical consultant for this project. If you have questions about this report, or if there are other services that we can provide in support of our work to date, please contact Mark Gothard at 218.263.8869 (office) or 218.259.5500 (cell) or by email at mgothard@braunintertec.com.

Sincerely,

BRAUN INTERTEC CORPORATION



Alex J. Peritz, EIT
Engineer-In-Training



Mark W. Gothard, PE
Principal Engineer

Attachment:
Geotechnical Evaluation Report

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A. Introduction

A.1. Project Description

This Geotechnical Evaluation Report addresses the design and construction of the proposed Lake Vermilion State Park northeast of Soudan, Minnesota. SRF Consulting Group, Inc. (SRF) is the design consultant responsible for designing the roadways, utilities, and buildings throughout the park on behalf of the Minnesota Department of Natural Resources.

A.2. Purpose

The goals of our geotechnical evaluation are to characterize subsurface soil and groundwater conditions within the proposed construction area and provide geotechnical recommendations for the design and construction of the proposed buildings and roadways.

A.3. Background Information and Reference Documents

To facilitate our evaluation, we were provided with or reviewed the following information or documents:

- A boring location sketch prepared by Benchmark Engineering, Inc.
- A previous Geotechnical Engineering Report prepared by Gale-Tec Engineering, Inc. dated January 12, 2006.
- Previous evaluations Braun Intertec has performed in this area.
- A Geologic Map of Minnesota, by Howard C. Hobbs and Joseph E. Goebel, 1982.

A.3.a. Previous Exploration(s)

To facilitate our evaluation, we reviewed the Geotechnical Engineering Report prepared by Gale-Tec Engineering Inc. The report attempted to determine the potential of on-site aggregate resources for use in construction of roadways and buildings. A copy of that report is attached.

We identified other potential borrow sources in the area, including a pit owned by Breitung Township southwest of the site and a pit owned by the Minnesota Department of Transportation (MNDOT)

northeast of the site. These pit locations are shown on the attached sketch and were found on MNDOT's website describing aggregate resources throughout the state.

A.4. Site Conditions

Our referenced documents and past project experience in the general area indicate that the site is underlain with glacial sands and clays overlying shallow bedrock.

At the time of the field observations, the site was generally wooded with a rolling terrain and had several recreational trails throughout.

A.5. Scope of Services

Our scope of services for this project was originally submitted as a cost estimate to Mr. Ken Grieshaber of SRF Consulting Group, Inc., on March 12, 2012. SRF subsequently issued a professional services subconsultant agreement authorizing us to proceed. Tasks performed in accordance with our authorized scope of services and under the terms of our June 15, 2006, General Conditions included:

- Clearing exploration locations of underground utilities.
- Performing seventy (70) test pits to a depth of 10 feet, or refusal.
- Performing laboratory tests on selected test pit samples.
- Preparing this report containing a sketch, exploration logs, a summary of the geologic materials encountered, and recommendations for structure subgrade preparation and the design of the utility installation and roadways.

Due to access issues we performed hand auger borings at test pit locations 11, 31, 32, 38, 39, 40, 41, 67, and 68.

A.5.a. Reconnaissance

We attended a design meeting on October 16, 2012 and performed a reconnaissance of the site primarily to evaluate equipment access to exploration locations. We also observed and took notes regarding design and construction concerns of the design team.

A.5.b. Staking and Surveying

The desired boring locations were provided to us by SRF. The test locations were staked and the ground surface elevations at those locations were determined by Benchmark Engineering, Inc.

A.5.c. Subsurface Exploration

We performed nine hand auger borings at the locations shown on the sketch in the Appendix. The borings were extended to auger refusal.

We also observed the excavation of sixty one test pits at the locations shown on the sketch in the Appendix. The test pits were excavated by Low Impact Excavators, and extended to a maximum depth of 9 feet.

Bulk samples were taken of the geologic materials encountered at selected test pits.

Prior to commencing with our subsurface exploration activities, we cleared the exploration locations of underground utilities through Gopher State One Call.

A.5.d. Laboratory Testing

We performed moisture content, percent-passing-200-sieve, and Atterberg limits tests on the bulk samples obtained from the test pits.

B. Results

B.1. Exploration Logs

B.1.a. Log of Boring Sheets

Log of Boring sheets for our hand auger borings are included in the Appendix. The logs identify and describe the geologic materials that were penetrated, and present the results of groundwater measurements.

Strata boundaries were inferred from changes in the penetration test samples and the auger cuttings. Because sampling was not performed continuously, the strata boundary depths are only approximate. The boundary depths likely vary away from the boring locations, and the boundaries themselves may also occur as gradual rather than abrupt transitions.

B.1.b. Log of Test Pit Sheets

Log of Test Pit sheets are also included in the Appendix. The logs classify and describe the geologic materials exposed in the sidewalls and bottoms of the pits, and present the results of laboratory tests performed on bulk samples obtained from them, and groundwater measurements.

B.1.c. Geologic Origins

Geologic origins assigned to the materials shown on the logs and referenced within this report were based on: (1) a review of the background information and reference documents cited above, (2) visual classification of the various geologic material samples retrieved during the course of our subsurface exploration, (3) penetration resistance and other in-situ testing performed for the project, (4) laboratory test results, and (5) available common knowledge of the geologic processes and environments that have impacted the site and surrounding area in the past.

B.2. Geologic Profile

The general geologic profile encountered at the site consisted (proceeding down from the ground surface) of up to 6 inches of topsoil consisting of silty sand with roots and organics. Beneath the topsoil, glacial silty sand (SM) was generally encountered to the termination depth of the test pits. Test Pit TP-33, however, encountered lean clay (CL) beneath the silty sand. Test Pit's TP-34 and TP-35 encountered lean clay and fat clay (CH), respectively, beneath the surficial topsoil. Test Pit TP-69 encountered fat clay over silty sand. Hand Auger Boring HAB-67 encountered topsoil underlain by silty sand and lean clay. The shallower test pits, ranging in depth from 1 to 3 feet, encountered numerous cobbles and boulders. These test pits also contained fractured rock pieces and/or weathered bedrock, making excavation very difficult for the backhoe.

The backhoe encountered refusal at depths ranging from the ground surface to greater than 9 feet. "Refusal" means that the backhoe could not be advanced further without excessive effort. Refusal can be caused by hardpan, boulders, detached rock pieces ("floats") as well as bedrock. Test pit refusal depths are summarized in the table below.

Table 1. Bedrock Depth Summary

Location	Surface Elevation (ft)	Measured Depth Bedrock (ft)	Corresponding Bedrock Elevation (ft)
TP-1	1412.3	7	1406
TP-2	1424.5	6 1/2	1418
TP-3	1432.9	4	1429
TP-4	1437.9	4 1/2	1433 1/2
TP-5	1464.2	1	1463

Location	Surface Elevation (ft)	Measured Depth Bedrock (ft)	Corresponding Bedrock Elevation (ft)
TP-6	1458.7	1	1458
TP-7	1467.4	0	1467.4
TP-8	1469.1	0	1469.1
TP-09	1453.2	4	1449 1/2
TP-10	1461.5	5	1456 1/2
HAB-11	1469.2	1/2	1469
TP-12	1470.8	0	1470.8
TP-13	1471.9	0	1471.9
TP-14	1473.3	0	1473.3
TP-15	1468.2	0	1468.2
TP-16	1464.8	3 1/2	1461 1/2
TP-17	1464.6	3 1/2	1461
TP-18	1462.6	4	1458 1/2
TP-19	1474.0	1	1473
TP-20	1477.6	1/2	1477
TP-21	1473.1	1/2	1472 1/2
TP-22	1475.4	1/2	1475
TP-23	1471.6	1/2	1471
TP-24	1458.2	1 1/2	1456 1/2
TP-25	1453.5	2 1/2	1451
TP-26	1452.7	1 1/2	1451
TP-27	1449.3	2 1/2	1446 1/2
TP-28	1440.3	2	1438
TP-29	1452.6	0	1452.6
TP-30	1445.4	0	1445.4
HAB-31	1428	1/2	1427 1/2
HAB-32	1406	1/2	1405 1/2
TP-33	1376.4	8	1368 1/2
TP-34	1378.6	8	1370 1/2
TP-35	1376.1	7	1369
TP-36	1369.8	2 1/2	1367 1/2
TP-37	1371.6	2 1/2	1369
HAB-38	1458	1	1457
HAB-39	1448.8	1	1448
HAB-40	1460.6	0	1460.6
HAB-41	1450.8	1	1450
TP-42	1423.8	>9	NA
TP-43	1423.1	>9	NA
TP-44	1404.7	2	1402 1/2
TP-45	1407.4	2	1405 1/2
TP-46	1403.9	6 1/2	1397 1/2
TP-47	1392.2	5	1387 1/2
TP-48	1401.5	5	1396 1/2
TP-49	1407.2	8	1399

Location	Surface Elevation (ft)	Measured Depth Bedrock (ft)	Corresponding Bedrock Elevation (ft)
TP-50	1405.4	2 1/2	1403
TP-51	1406.9	3	1404
TP-52	1406.4	1 1/2	1405
TP-53	1405.0	2	1403
TP-54	1402.7	6 1/2	1396 1/2
TP-55	1418.1	2 1/2	1415 1/2
TP-56	1422.5	0	1422.5
TP-57	1410.9	4 1/2	1406 1/2
TP-58	1400.6	2 1/2	1398
TP-59	1382.4	3 1/2	1379
TP-60	1389.3	2 1/2	1386 1/2
TP-61	1393.3	3	1390 1/2
TP-62	1394.9	3	1392
TP-63	1401.5	2 1/2	1399
TP-64	1401.2	2 1/2	1398 1/2
TP-65	1396.5	1	1395 1/2
TP-66	1391.1	5 1/2	1385 1/2
HAB-67	1374.3	2	1372 1/2
HAB-68	1377.0	1 1/2	1375 1/2
TP-69	1399.4	9	1390 1/2
TP-70	1377.6	5 1/2	1372

B.2.a. Groundwater

Groundwater was not observed as our test pits were excavated. Given the fine-grained nature of the geologic materials encountered, however, it is likely that insufficient time was available for groundwater to seep into the pits and rise to its hydrostatic level. Piezometers or monitoring wells would be required to confirm if groundwater was present within the depths explored.

Seasonal and annual fluctuations of groundwater should also be anticipated, and would likely correspond to fluctuations of the water elevation of Lake Vermilion.

B.3. Laboratory Test Results

The moisture content of the silty sands varied from approximately 5.2 to 17.6 percent, indicating that the material was at or above of its probable optimum moisture content.

Our mechanical analyses indicated that the silty sands contained 17.9 to 41.5 percent silt and clay by weight.

The Liquid limit determined for the clay was 89; the plastic limit was 31. These results indicate that the clay is fat clay.

C. Basis for Recommendations

C.1. Design Details

C.1.a. Building Structure Loads

We assume the buildings will generally be supported on conventional shallow spread footing foundations and the floors will be slab-on-grade or have crawl spaces.

We assume wall loads will be less than 5 kips (5,000 pounds) per linear foot, column loads will be less than 50 kips, distributed floor slab loads will be less than 125 pounds per square foot (psf), and concentrated floor loads will be less than 2,000 pounds.

C.1.b. Pavements and Traffic Loads

We have assumed the light-duty pavement areas will have a bituminous section. We have assumed that light-duty pavements will be subjected to no more than 50,000 equivalent 18-kip single axle loads (ESALs) over an assumed design life of 20 years.

We have assumed heavy-duty pavement areas will also have a bituminous section. We have assumed that heavy-duty pavements will be subjected to no more than 100,000 ESALs over an assumed design life of 20 years.

C.1.c. Precautions Regarding Changed Information

We have attempted to describe our understanding of the proposed construction to the extent it was reported to us by others. Depending on the extent of available information, assumptions may have been made based on our experience with similar projects. If we have not correctly recorded or interpreted the project details, we should be notified. New or changed information could require additional evaluation, analyses and/or recommendations.

C.2. Design Considerations

The geotechnical issues influencing design of the park appear to be limited. The geologic materials

present at anticipated structure subgrade elevations generally appear suitable for support of conventional spread footings, grade-supported slabs, and pavements.

Due to the frost susceptible nature of the silt- and clay-rich soils present at anticipated exterior slab and pavement subgrade elevations, consideration should also be given to incorporating a granular subbase into the pavement sections. This will enhance subgrade drainage efforts and reduce the potential for pavement subgrades to become saturated and heave upon freezing; strength loss upon thawing will also be reduced.

Grade cuts are planned over the shallow bedrock and will need to be removed to a depth to provide a minimum pavement cross-section including aggregate base and bituminous surfacing. Pavement sections can be located directly above competent, intact rock with only a cushion/drainage layer, but the rock surface should ideally be gradually sloped to promote drainage. It is essential that the rock surface be generally consistent to provide a uniform bearing surface and prevent water from being trapped in local depressions if it is within the top five feet of the pavement surface. It is assumed that a select granular borrow material will be used as fill. This material will help provide subsurface drainage of the pavement system.

A well designed subsurface drainage system will be necessary to ensure that the pavement meets its design life. Due to the relatively shallow bedrock, any water trapped within approximately five feet below the pavement could likely lead to frost heaving. Any non-uniformity in the depth to bedrock could lead to differential frost heave.

Drains could be placed directly on the rock to help remove water, but rock removal would be necessary to cause the water to flow to a collection/discharge location. It is not uncommon to have some drainage pipe in a horizontal condition that helps water flow more quickly and avoid building up on the bedrock before the water flows into collection pipes that are below the rock surface.

Where utilities are located below the rock surface, the water will likely flow into the utility trenches. It is anticipated that underground utilities will need to be installed in rock cut trenches unless pumping stations are used.

C.3. Construction Considerations

From a construction perspective, the project team should also be aware that:

- Debris and organic soils will have to be removed from the existing material before it can be

reused; this will not only limit the reusable volume, but will also increase the time required to handle the existing fill. The fill is also wet and will need to be dried to facilitate compaction.

- Bedrock will be encountered at varying elevations within the site. While the upper foot of the bedrock can be fractured and can likely be dislodged and removed using dozers equipped with ripping teeth or backhoes equipped with toothed buckets, the bedrock present throughout most of the site will have to be removed using splitters, hammers or blasting.
- The transition from soil to bedrock can be erratic and highly variable. Weathered or fresh bedrock above the subgrade elevation will need to be removed or sloped (if possible) by ripping or blasting. Contractor experience in similar conditions will be important. We recommend that Contract provisions require the Contractor and site personnel to have a minimum amount of recent experience with similar practices and similar conditions, such as blasting, within a recent time frame.
- The clays present will need to be dried to facilitate compaction. Given the anticipated depths of the building area excavations, the thickness of clay placed in an excavation will also have to be restricted to limit the amount of post-construction settlement that occurs from the excavation backfill compressing under its own weight.
- Because there are no such resources on the site, sands or gravels will have to be imported to backfill the balance of deep excavations that can only be partially backfilled with clay, and facilitate drainage behind below-grade walls and below pavements.
- Haul roads and staging areas will be particularly sensitive to disturbance and strength loss. Subexcavation and recompaction or replacement of subgrade soils can be limited if these traffic areas are protected with crushed rock.

D. Recommendations

D.1. Building Subgrade Preparation

D.1.a. Excavations

We recommend removing the surficial topsoil from beneath proposed building areas. Based on our

limited site observations, excavation depths are expected to range up to 6 inches.

Portions of the excavations may also be deeper than indicated by our observations. Contractors should also be prepared to extend excavations in wet or fine-grained soils to remove disturbed bottom soils. To provide lateral support to replacement backfill, additional required fill and the structural loads they will support, we recommend oversizing (widening) the excavations 1 foot horizontally beyond the outer edges of the building perimeter footings for each foot the excavations extend below bottom-of-footing elevations.

D.1.b. Excavation Dewatering

We recommend removing groundwater from the excavations. Sumps and pumps can be considered for excavations in low-permeability silt- and clay-rich soils, or where groundwater can be drawn down 2 feet below the bottoms of excavations in more permeable sands. In large excavations, or where groundwater must be drawn down more than 2 feet, a well contractor should review our logs to determine if wells are required, how many will be required, and to what depths they will need to be installed.

In sands, we do not recommend attempting to dewater from within an excavation. Upward seepage will loosen and disturb the excavation bottom. Rather, groundwater should be drawn down at least 2 feet below the anticipated excavation bottom in advance of excavation.

D.1.c. Selecting Excavation Backfill and Additional Required Fill

We initially recommend backfilling over wet or submerged excavation bottoms with at least 2 feet of coarse sand having less than 50 percent of the particles by weight passing a #40 sieve, and less than 5 percent of the particles passing a #200 sieve. We anticipate that this material will need to be imported

On-site soils free of organic soil and debris can be considered for reuse as backfill and fill. The clays, however, being fine-grained, will be more difficult to compact if wet or allowed to become wet, or if spread and compacted over wet surfaces.

We recommend imported material needed to replace excavation spoils or balance cut and fill quantities consist of sand or sandy gravel with less than 12 percent by weight passing a number 200 sieve.

D.1.d. Rock Excavation

We recommend that rock excavation be defined according to MnDOT as follows:

- Rock excavation shall consist of all materials that cannot, in the Engineer's opinion, be

excavated without drilling and blasting or without the use of rippers, together with all boulders and other detached rock each having a volume of 1 cubic yard or more, but exclusive of those quantities that are to be paid for separately under the item of rock channel excavation.

- Blasting operations shall be controlled to produce a shattering effect on the rock that will not throw the material out of the excavation areas. Any rock blasted away from the excavation and embankment areas shall be recovered as directed.

D.1.e. Placement and Compaction of Backfill and Fill

We recommend spreading backfill and fill in loose lifts of approximately 8 inches. We recommend compacting backfill and fill in accordance with the criteria presented below in Table 2. The relative compaction of utility backfill should be evaluated based on the structure below which it is installed, and vertical proximity to that structure.

Table 2. Compaction Recommendations Summary

Reference	Relative Compaction, percent (ASTM D 698 – standard Proctor)	Moisture Content Variance from Optimum, percentage points
Below foundations	95	-1 to +3
Below slabs	95	-1 to +3
Below pavements, within 3 feet of subgrade elevations	100	-1 to +3
Below pavements, more than 3 feet below subgrade elevations	95	-1 to +3
Below landscaped surfaces	90	-1 to +3

D.2. Spread Footings

D.2.a. Embedment Depth

For frost protection, we recommend embedding perimeter footings 60 inches below the lowest exterior grade. Interior footings may be placed directly below floor slabs. We recommend embedding building footings not heated during winter construction, and other unheated footings associated with canopies, stoops or sidewalks 72 inches below the lowest exterior grade.

D.2.b. Subgrade Improvement

Based on our recent observations, it appears that footings for the proposed buildings may be supported on conventional spread footings situated on bedrock, on the native silty sand or clay soils or on structural fill if placed as described in this report. We recommend having a geotechnical engineer observe all

excavations related to subgrade preparation. The purpose of the observations is to evaluate the competence of the geologic materials exposed in the excavations, and the adequacy of required excavation oversizing.

Final preparation of the bedrock should include overexcavation and placement of a nominal 1 inch of sand. The sand serves as a bond break between the bottom of the footing and the bedrock. This break allows the concrete to shrink without adhering to the rock during the curing process. Otherwise, there is a risk that the concrete foundation element will crack. This break in bond does reduce the resistance of the concrete footings to lateral forces.

Furthermore, the bedrock is a non frost-active material. That is, it does not expand upon freezing. Thus, foundations can be placed directly atop the bedrock without the need for soil cover or insulation. The exposed footings, however, will transmit “the cold” through to the interior of a building. As a practical consideration, it may be necessary to provide insulation around the footings in occupied areas and where heat loss is a concern.

Where excavations for spread footings transition from soil to rock, we recommend a minimum transition of 4 horizontal to 1 vertical should be provided between footings that bear on rock and neighboring footings bearing upon soil.

D.2.c. Net Allowable Bearing Pressure

For foundations placed upon native sand or clay, or compacted engineered fill over the native soils, we recommend sizing footings to exert a net allowable bearing pressure up to 2,500 pounds per square foot (psf), including all transient loads.

For foundations bearing directly upon bedrock, we recommend sizing footings to exert a net allowable bearing pressure up to 10,000 psf. The geotechnical engineer should observe the footing areas to document that the rock surface has been adequately prepared. The bedrock can be leveled somewhat with the sand bond break, but the maximum thickness of sand should be no more than 6 inches. It may be necessary to level the footing with additional excavation on the high side of the footing. Footings to be constructed upon slopes steeper than 5 horizontal on 1 vertical (5:1) should be considered individually by the geotechnical engineer. Pinning of these footings to the slope is an option in some cases.

D.2.d. Settlement

We estimate that total and differential settlements among the footings will amount to less than 1 inch.

However, final settlement will be dependent upon the size of the foundation elements, the depth of fill, and the length of time the fill has been in place.

D.3. Interior Slabs

D.3.a. Subgrade Modulus

Floor slab subgrades are anticipated to consist of engineered granular fill suitable for slab support. We recommend using a modulus of subgrade reaction, k value, of 200 pounds per square inch per inch of deflection (PCI) to design the slabs.

If a minimum of 6 inches of compacted crushed aggregate base course (i.e., MnDOT Class 5) is placed immediately beneath the floor slabs, it is our opinion that the modulus may be increased by 50 PCI.

D.3.b. Moisture Vapor Protection

If floor coverings or coatings less permeable than the concrete slab will be used, consideration should be given to placing a vapor retarder or vapor barrier immediately beneath the slab. Some contractors prefer to bury the vapor retarder or barrier beneath a layer of sand to reduce curling and shrinkage, but this practice risks trapping water between the slab and vapor retarder or barrier.

Regardless of where the vapor retarder or barrier is placed, floor covering manufacturers should be consulted regarding the appropriate type, use and installation of the vapor retarder or barrier to preserve warranty assurances.

D.4. Exterior Slabs

Though not necessarily designed to accommodate dead and live load surcharges or vehicles, exterior slabs can be subjected to both. Settlement of exterior slabs on poorly compacted foundation backfill, utility backfill and other compressible naturally deposits soils or fills can also contribute to unfavorable surface drainage conditions and frost-related damage (see below) to the slabs and adjacent structures, including buildings and pavements. Subgrades supporting exterior slabs should therefore be prepared in accordance with the excavation, backfilling and compaction recommendations provided below in Section D.8. Additional commentary on the risks associated with frost, and recommendations for helping mitigate those risks, is provided in Section D.9.

D.5. Pavements

D.5.a. Pavement Subgrade Preparation

For construction of new paved areas, we recommend stripping surface vegetation, topsoil and other organic soils from below the pavement subgrade along with any cobbles and boulders encountered.

After stripping, we recommend the subgrade be surface-compacted with a large self-propelled compactor. We recommend the existing subgrade be surface compacted to a minimum of 100 percent of standard Proctor density if within 3 feet of the proposed pavement subgrade. If below 3 feet, surface compaction to 95 percent should be adequate.

To provide lateral support for the replacement backfill, additional required fill and curbs and gutters, we recommend oversizing (widening) the excavations 1 foot horizontally beyond the backs of the proposed curbs for each foot the excavations extend below the tops of the curbs. The 1:1 oversizing would also be applicable to road sideslopes, provided they are protected from erosion.

Fill and backfill below pavements should consist of non-organic, on or off-site soils with less than 10 percent by weight passing the number 200 sieve.

We recommend the initial lift of backfill over wet excavation bottoms consist of at least 2 feet of relatively coarse sand having less than 50 percent of its particles by weight passing a 40 sieve, and less than 5 percent of its particles passing a 200 sieve. We anticipate that this material will need to be imported.

We recommend spreading backfill and fill in loose lifts of approximately 12 inches. We recommend compacting backfill and fill to a minimum of 95 percent of its standard Proctor maximum dry density as determined in accordance with ASTM International Test Method D 698. In the upper 3 feet of subgrades, we recommend 100 percent.

D.5.b. Subgrade Proof-Roll

Prior to placing aggregate base material, we recommend proof-rolling pavement subgrades to determine if the subgrade materials are loose, soft or weak, and in need of further stabilization, compaction or subexcavation and recompaction or replacement. A second proof-roll should be performed after the aggregate base material is in place, and prior to placing bituminous or concrete pavement.

D.5.c. Design Sections

Laboratory tests to determine an R-value for pavement design were not included in the scope of this project. Based on our experience with similar projects in the area, however, it is our opinion that an R-value of 30 can be assumed for design purposes.

Based upon the aforementioned traffic loads and an R-value of 30, we recommend a light-duty pavement section that includes 3 inches of bituminous pavement (a 1 1/2-inch surface course over a 1 1/2-inch base course) over 8 inches of aggregate base material and 18 inches of sand sub-base material consisting of a select granular borrow.

For heavy-duty areas, we recommend 4 inches of bituminous pavement (a 2-inch surface course over a 2-inch base course) over 10 inches of aggregate base material and 2 feet of sand sub-base material. Other design sections of equivalent strength could also be considered.

Where concrete pavements may be utilized in heavy duty areas in lieu of bituminous, we recommend that at least 6 inches of aggregate base be placed over the subgrade to provide more uniform support for the concrete, and to provide a more stable working platform for construction. We recommend a minimum 7-inch thick concrete slab. These designs are based on a modulus of subgrade reaction (k) of 75 pci.

The above pavement designs are based upon a 20-year performance life. This is the amount of time before major reconstruction is anticipated. This performance life assumes maintenance, such as seal coating and crack sealing, is routinely performed. The actual pavement life will vary depending on variations in weather, traffic conditions and maintenance.

D.5.d. Materials and Compaction

We recommend specifying crushed aggregate base meeting the requirements of Minnesota Department of Transportation (Mn/DOT) Specification 3138 for Class 5. We recommend that the bituminous wear and base courses meet the requirements of Specifications 2360, Type SP. We recommend the aggregate gradations for the asphalt mixes meet Gradation B for the base course and Gradation B or A for the surface course. Gradation A contains a smaller aggregate size than Gradation B and will provide a surface with less visible aggregate which is desirable for some owners. We recommend the Performance Graded Asphalt cement be a PG 58-28. (If additional resistance to rutting, scuffing and dimpling is desired, we recommend utilizing a PG 64-28. If additional resistance to cold weather cracking is desirable, we recommend utilizing a PG 58-34.)

We recommend that the aggregate base be compacted to a minimum of 100 percent of its maximum standard Proctor dry density. We recommend that the bituminous pavement be compacted to at least 92 percent of the maximum theoretical Rice density.

We recommend specifying concrete for pavements that has a minimum 28-day compressive strength of 4,000 psi, and a modulus of rupture (M_r) of at least 600 psi. We also recommend Type I cement meeting the requirements of ASTM C 150. We recommend specifying 5 to 7 percent entrained air for exposed concrete to provide resistance to freeze-thaw deterioration. We also recommend using a water/cement ratio of 0.45 or less for concrete exposed to deicers.

D.5.e. Subgrade Drainage

We recommend installing perforated drainpipes throughout pavement areas at low points and about catch basins. The drainpipes should be placed in small trenches extended at least 8 inches below the granular subbase layer, or below the aggregate base material where no subbase is present.

A well designed subsurface drainage system will be necessary to ensure that the pavement meets its design life. Due to the relatively shallow bedrock, any water trapped within approximately five feet below the pavement could likely lead to frost heaving. Any non-uniformity in the depth to bedrock could lead to differential frost heave.

Drains could be placed directly on the rock to help remove water, but rock removal would be necessary to cause the water to flow to a collection/discharge location. It is not uncommon to have some drainage pipe in a horizontal condition that helps water flow more quickly and avoid building up on the bedrock before the water flows into collection pipes that are below the rock surface.

D.6. Frost Protection

D.6.a. General

All or some of the exterior slabs, as well as pavements, will be underlain with silty sands, which are considered to be moderately to highly frost susceptible. Soils of the type can retain moisture and heave upon freezing. In general, this characteristic is not an issue unless these soils become saturated due to surface runoff or infiltration or are excessively wet *is-situ*. Once frozen, unfavorable amounts of general and isolated heaving of the soils and the surface structures supported on them could develop. This type of heaving could impact design drainage patterns and the performance of exterior slabs and pavements, as well as any isolated exterior footings and piers. To address most of the heave related issues, we recommend that general site grades and grades for exterior surface features be set to

direct surface drainage away from buildings, across large paved areas and away from walkways to limit the potential for saturation of the subgrade and any subsequent heaving. General grades should also have enough “slope” to tolerate potential larger areas of heave which may not fully settle when thawed.

It should be noted that general runoff and infiltration from precipitation are not the only sources of water that can saturate subgrade soils and contribute to frost heave. Roof drainage and the irrigation of landscaped areas in close proximity to exterior slabs, pavements, and isolated footings and piers, contribute as well.

D.6.b. Exterior Slabs and Pavements

Even small amounts of frost-related differential movement at walkway joints or cracks can create tripping hazards. Several subgrade improvement options can be explored to address this condition. The most conservative and potentially most costly subgrade improvement option to help limit the potential for heaving, but not eliminate it, would be to remove any frost-susceptible soils present below the exterior slabs’ “footprint” down to the bottom-of-footing grades or to a maximum depth of 5 feet below subgrade elevations, whichever is less. We recommend the resulting excavation then be refilled with sand or sandy gravel having less than 50 percent of the particles by weight passing the #40 sieve and less than 5 percent of the particles by weight passing a #200 sieve. The bottom of the excavation should be sloped toward one or more collection points so that any water entering the backfill can be collected and removed. A series of perforated drainpipes will need to be installed to collect and dispose of the infiltrating water and/or groundwater that could accumulate within the backfill. The piping should be connected to a storm sewer or a sump to remove any accumulated water, or “daylighted” if grades permit. If the water is not removed, it is our opinion this option will not be effective in controlling heave.

Another subgrade improvement option would be to build in a transition zone between those soils considered to be frost-susceptible and those that are not to somewhat control where any differential movement may occur. Such transitions could exist between exterior slabs and pavements, between entry way slabs and sidewalks, and along the sidewalks themselves. For this option, the frost-susceptible soils in critical areas would be removed to a depth of at least 5 feet below grade as discussed above. The excavation below the footprint of the sidewalks or other slabs would then be sloped upward at a gradient no steeper than 3:1 (horizontal : vertical) toward the less critical areas. Provisions for draining the backfill in this case, too, would be required. If accumulating water is not removed, it is our opinion this option will also be ineffective in controlling heave.

Regardless of what is done to the walkway or pavement area subgrade, it will be critical the end-user develop a detailed maintenance program to seal and/or fill any cracks and joints that may develop during

the useful life of the various surface features. Concrete and bituminous will experience episodes of normal thermo-expansion and thermo-contraction during its useful life. During this time, cracks may develop and joints may open up, which will expose the subgrade and allow any water flowing overland to enter the subgrade and either saturate the subgrade soils or to become perched atop it. This occurrence increases the potential for heave due to freezing conditions in the general vicinity of the crack or joint. This type of heave has the potential to become excessive if not addressed as part of a maintenance program. Special attention should be paid to areas where dissimilar materials abut one another, where construction joints occur and where shrinkage cracks develop.

The on-going performance of pavements is impacted by conditions under which the pavement is asked to perform. These conditions include the environmental conditions, the actual use conditions and the level of ongoing maintenance performed. With regard to bituminous pavements in particular, because of normal thermo expansion and contraction, it is not unusual to have cracking develop within the first few years of placement and for the cracking to continue throughout the life of the pavement. A regular maintenance plan should be developed for filling cracks in bituminous pavements to lessen the potential impacts for cold weather distress due to frost heave or warm weather distress due to wetting and softening of the subgrade. It is also not unusual for bituminous pavements to require a seal coat within the first 5 to 10 years to increase the long-term performance.

D.6.c. Isolated Footing and Piers

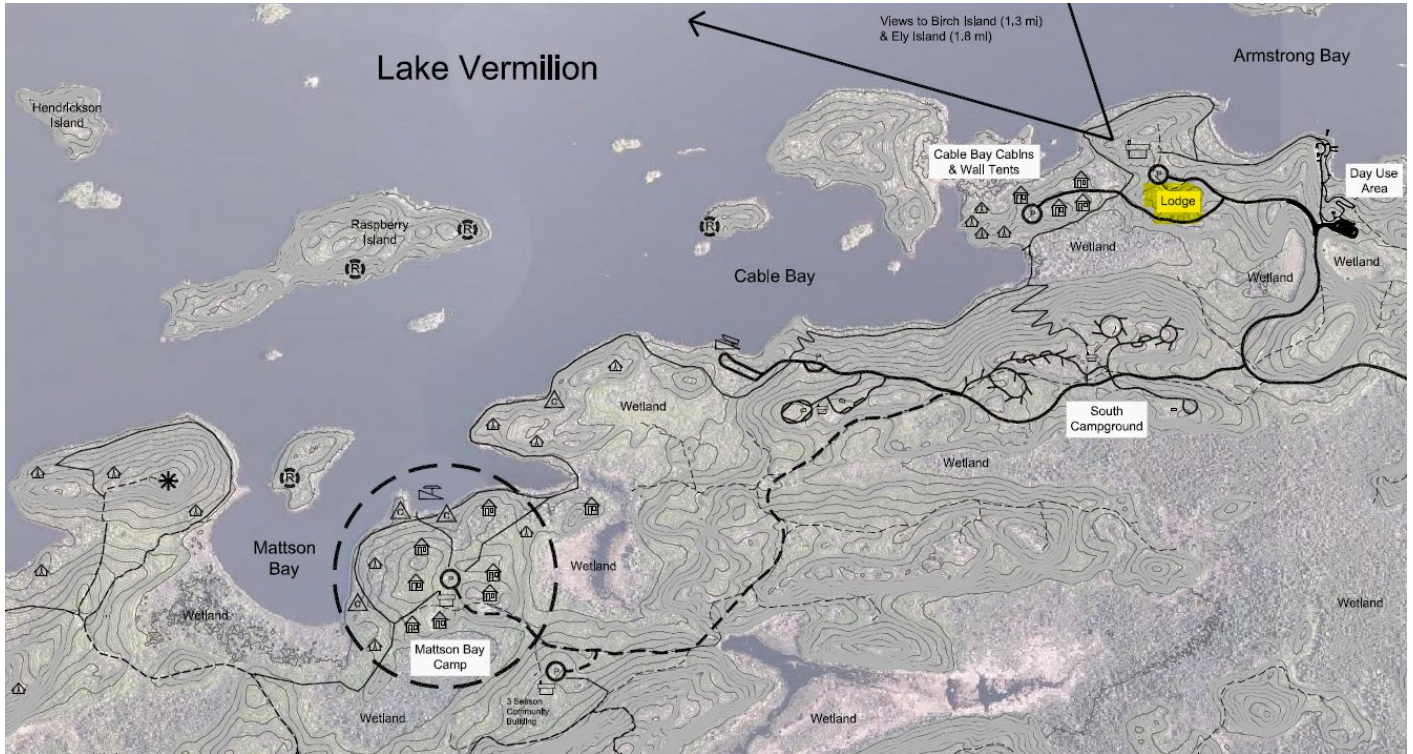
Soils classifying as “silt” (USCS symbols ML or MH), “clay” (CL or CH), or as being “silty” or “clayey” (including but not limited to SP-SM, SC-SM, SM or SC), have the potential for adhering to poured concrete or masonry block features built through the normal frost zone. In freezing conditions, this soil adhesion could result in the concrete or masonry construction being lifted out of the ground. This lifting action is also known as heave due to adfreezing. The potential for experiencing the impacts of adfreezing increases with poor surface drainage in the area of below grade elements, in areas of poorly compacted clayey or silty soils and in areas of saturated soils. To limit the impacts of adfreeze, we recommend placing a low friction separation barrier, such as high density insulation board, between the backfill and the element. Extending isolated piers deeper into the frost-free zone, enlarging the bottom of the piers and then providing tension reinforcement can also be considered. Recommendations for specific foundation conditions can be provided as needed.

D.7. Utilities

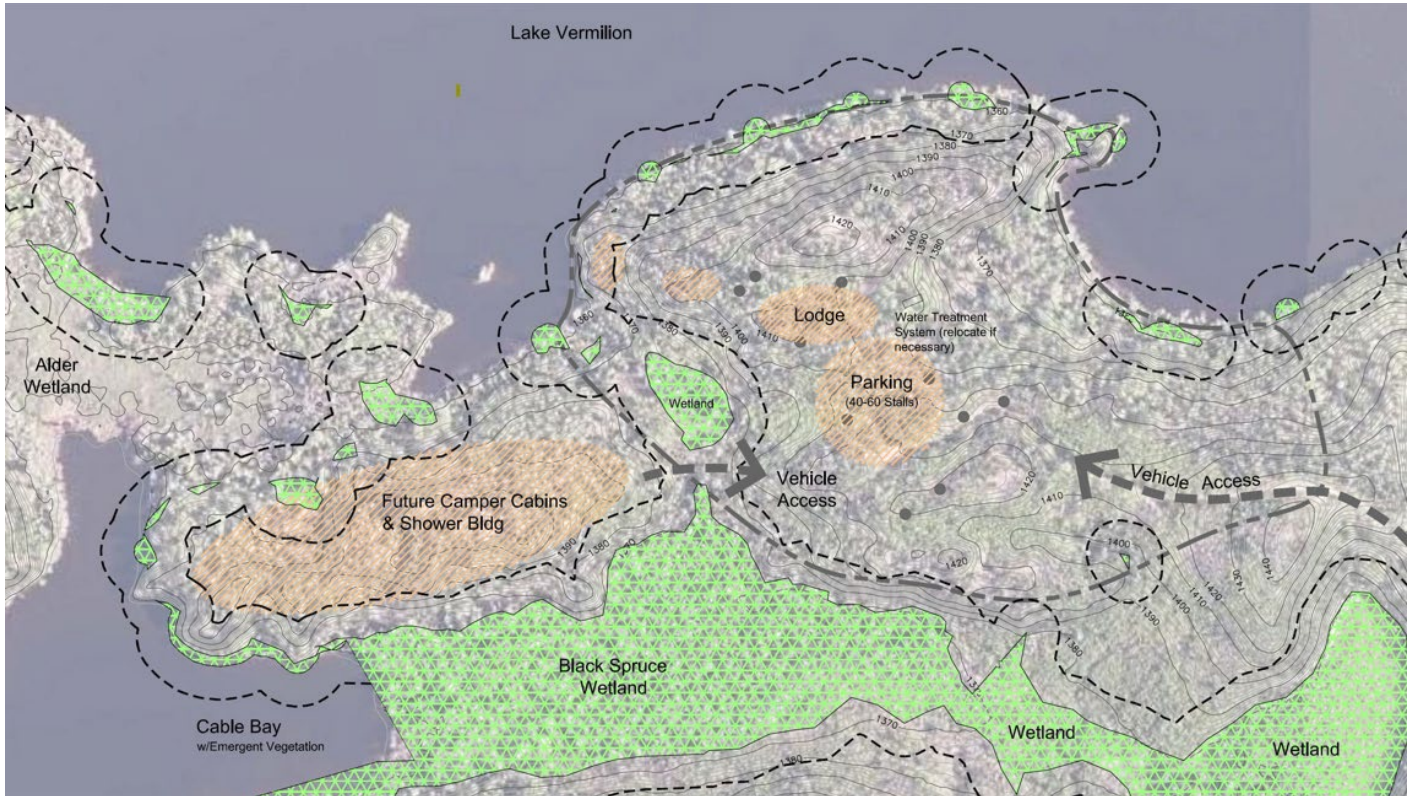
D.7.a. Subgrade Stabilization

It is anticipated that underground utilities will need to be installed in rock cut trenches unless pumping

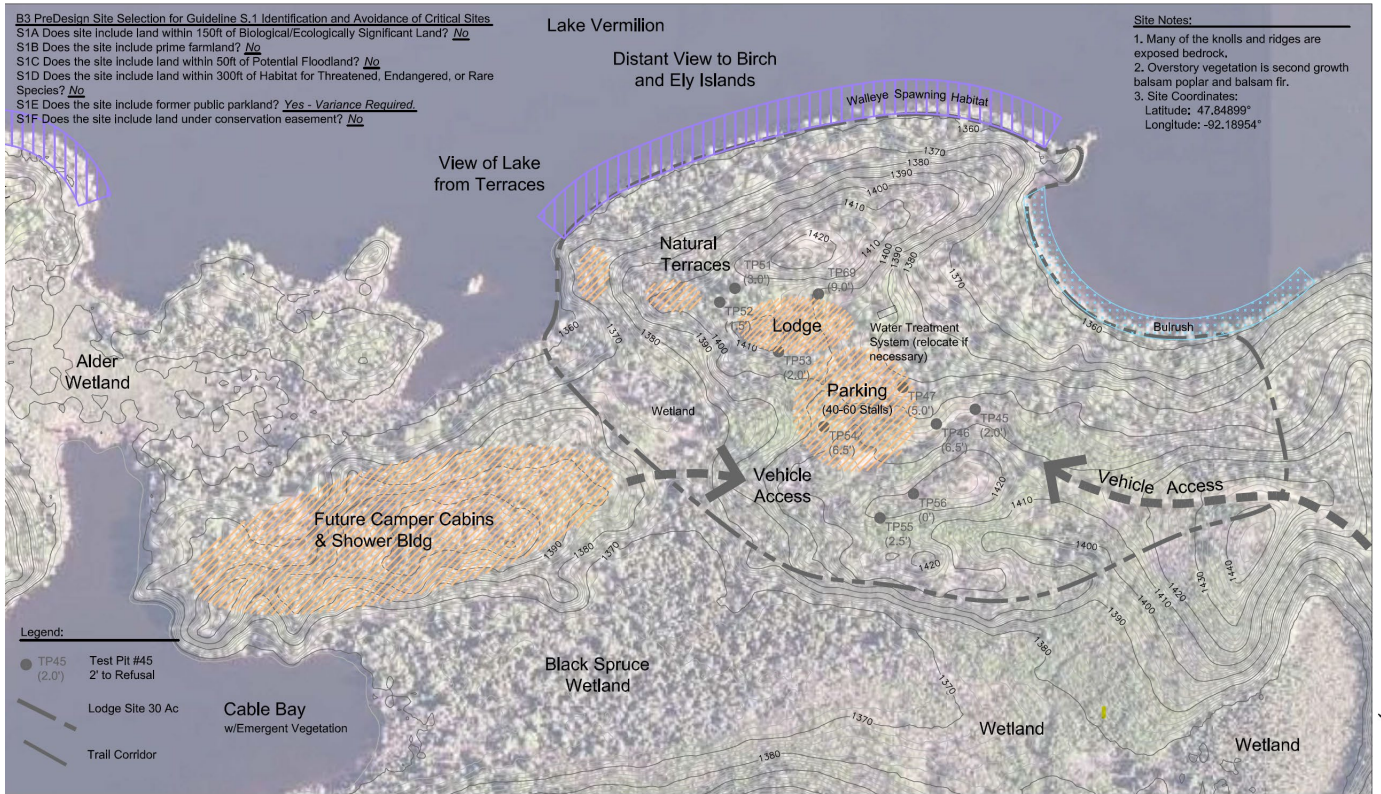
II. LVSP-SUM Masterplan Map



III. Wetland Information



IV. Lake Lodge Site Analysis



B3 PreDesign Site Selection for Guideline S.1 Identification and Avoidance of Critical Sites
 S1A Does site include land within 150ft of Biological/Ecologically Significant Land? No
 S1B Does the site include prime farmland? No
 S1C Does the site include land within 50ft of Potential Floodland? No
 S1D Does the site include land within 300ft of Habitat for Threatened, Endangered, or Rare Species? No
 S1E Does the site include former public parkland? Yes - Variance Required
 S1F Does the site include land under conservation easement? No

Site Notes:
 1. Many of the knolls and ridges are exposed bedrock.
 2. Overstory vegetation is second growth balsam poplar and balsam fir.
 3. Site Coordinates:
 Latitude: 47.84899°
 Longitude: -92.18954°

Date: January 7, 2015

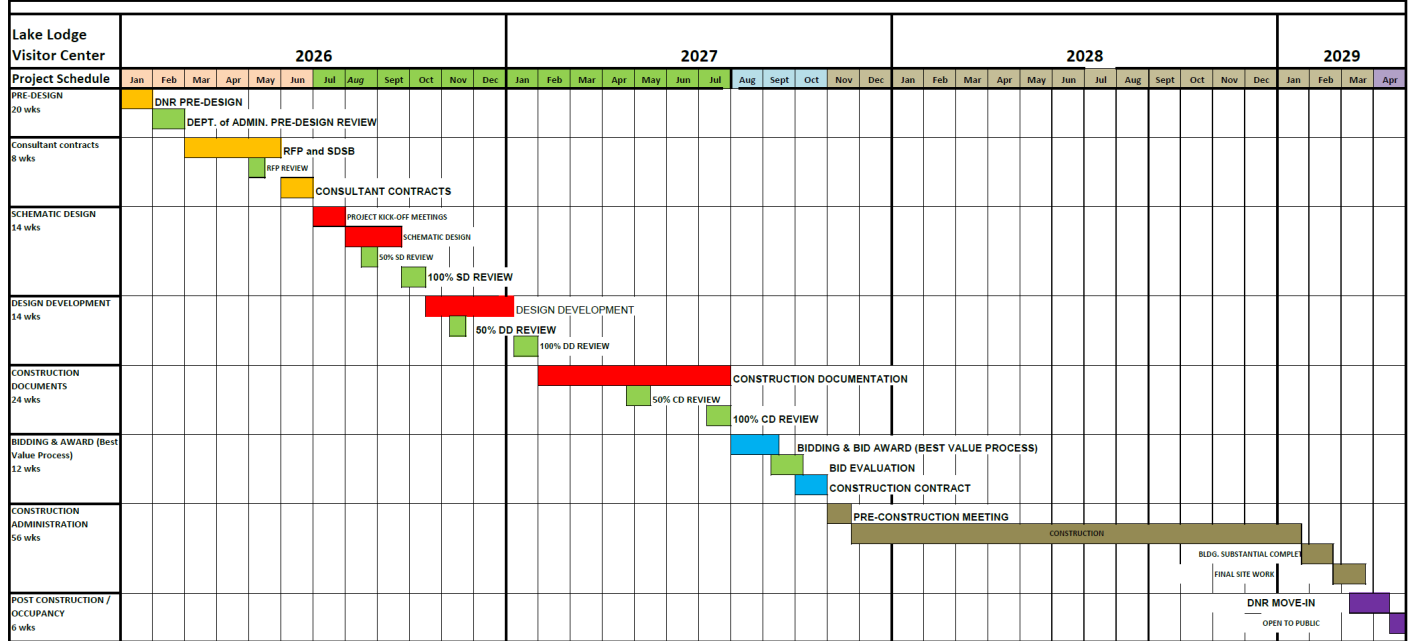
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1 Site Analysis
 SCALE IN FEET 200

	I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A QUALIFIED LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA Name: _____ Reg. Number: XXXXX Date: 1.7.2015	Operations Services Survey Facilities Materials Equipment Field Operations Information Management	DNR Division of Parks & Trails Lodge PreDesign LV-SUM State Park St. Louis County Section: xxx Township: xxx N Range: xxx W	Revisions Date By _____ _____ _____	Site Analysis PreDesign Section 5 Survey: LIDAR Designed: ss 3/08 2' Contour Intervals derived from 3 meter resolution LIDAR Horiz datum: St. Louis City N. Vert datum: NAVD 88	Sheet L1 Sub-Number: 8P205 File Number: SPK00285
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V. Schedule Gantt Chart

Minnesota Department of Natural Resources
Operations Services Division



VI. Conceptual Site Plan and Plan Options

SITE DESIGN SUMMARY

NEW LODGE SITED TO INCLUDE EXISTING WATER TREATMENT FACILITY IN BUILDING BELOW MAIN LEVEL. BUILDING IS SITED TO MAXIMIZE SOUTHERN SOLAR EXPOSURE AND GATHERING SPACES OPEN TO PROVIDE LAKE VIEW. MAIN PARKING AREA IS SAME LEVEL AS MAIN FLOOR OF BUILDING. ACCESS TO LAKE IS ACHIEVED BY MULTIPLE STAIRS AND ACCESSIBLE SLOPED PATHS. BUILDING LOCATION IS IN AREA ALREADY CLEARED OF TREES AND AN ACTIVITY AREA TERRACE WILL BE INCORPORATED AS PART OF PATH TO LAKE ACCESS. BOAT DOCK IS SHOWN AT EDGE OF SPAWNING ZONE. BUILDING SITE AND PARKING AREA WILL REQUIRE INFILLING THIS WILL ALLOW EXISTING AND PLANNED UTILITIES TO REMAIN UNDISTURBED. A STRING OF TRAILS WILL CONNECT BUILDING WITH IDENTIFIED SCENIC VIEWS AND ACTIVITY AREAS THAT WILL CONNECT TO DAY USE AREA AND OTHER NORTH LODGE DEVELOPMENTS.

EXISTING KEY NOTES

- 1 DAY USE AREA
- 2 PARK ROAD
- 3 SEPTIC FIELD
- 4 WETLAND
- 5 NORTH LODGING DEVELOPMENT
- 6 PARKING
- 7 WATER TREATMENT FACILITY
- 8 WATER & UTILITY LINE
- 9 FRESH WATER SUPPLY LINE
- 10 ARCHEOLOGICAL SITE

NEW KEY NOTES

- A NEW BOAT LANDING: SET ON EDGE OF BULL RUSH/ FISH SPAWN ZONE PROVIDE ACCESSIBLE PATH TO LODGE
- B NEW PROPOSED LODGE SITE
- C NEW RENTAL STORAGE/ CHANGE BUILDING
- D NEW PARKING
- E ACTIVITY AREA TO INCLUDE CROQUET, VOLLEY BALL ETC. TO PROVIDE ACCESSIBLE PATH TO LAKE AND PATH TO BOAT DOCK
- F POSSIBLE ACTIVITY, PICNIC, SHELTER AREAS TOBE DEVELOPED AS PART OF A OVERALL ACCESSIBLE WALKING AREA THAT WILL CONNECT NEW LODGE TO DAY USE, CAMPING, BOAT DOCKS, REGIONAL AND PARK TRAILS.

