SAINT PAUL PUBLIC LIBRARY HAMLINE MIDWAY

DESIGN REPORT October 28, 2022







Design Report for Hamline Midway Library 1558 West Minnehaha Avenue Saint Paul, Minnesota 55104

> Prepared for Saint Paul Public Library 90 West 4th Street Saint Paul, Minnesota 55102

Project Number 1004465

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PROJECT TEAM

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SAINT PAUL PUBLIC LIBRARY 90 West 4th Street

Saint Paul, Minnesota 55102

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MECHANICAL AND ELECTRICAL ENGINEERS

KFI ENGINEERS

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ART ENGAGEMENT

Tricia Heuring, Artist Consultant Rebekah Crisanta de Ybarra Bayou Bay Xee Reiter

PROJECT DESCRIPTION

PROJECT OBJECTIVES

Saint Paul Public Library intends to build a new library that is accessible, sustainable, and welcoming to all. Hamline Midway Library will be located at 1558 Minnehaha Avenue in Saint Paul, Minnesota.

The construction of Hamline Midway Library intends to further Saint Paul Public Library's mission to welcome all people to connect, learn, discover, and grow through:

- Safe, inviting, affirming, and comfortable libraries for people of all cultures, abilities, and communities
- Full accessibility
- Additional spaces and study rooms for communities to gather, work, study, and collaborate
- Separation of quiet and loud spaces
- Enhanced play and learn space
- Technology-rich environments

PROJECT BACKGROUND

Hamline Midway Library serves the Hamline Midway and Como neighborhoods. Sitting on a site on Minnehaha Avenue just east of Snelling Avenue, the library's location is highly walkable and adjacent to a rapid bus transit line. The project is walking distance to several schools and Hamline University.

In spring of 2022 LSE Architects issued a pre-design report with two proposed concepts, Concept A and Concept B, and with input from the community. Following months of community input, staff recommendations, and design team recommendations the Saint Paul Public Library chose Concept B which is a new construction building that reuses features from the existing building. Through schematic design LSE has studied building forms for new construction and opportunities for reuse of materials.

The library design is informed from lessons learned in the pre-design phase, new information from subsequent surveys, public listening sessions, staff listening sessions, in-library displays, artist design sessions, and meetings with other city departments.

The library aids in the streetscape transition from commercial Snelling Avenue to the residential neighborhood to the east. The L shaped reading room creates a glassy front to the street and embraces a reading garden front yard. The adult reading room features a fireplace visible from the street and the children's area has views to the reading garden through window benches. The expanded children's area has space for active play features and is adjacent to the community room allowing for large storytime readings and a flex space with operable wall into the community room provides even greater flexibility of spaces.

Project Description (CONT.)

The library will be submitted to Minnesota B3 (Buildings, Benchmarks, and Beyond) that requires meeting SB 2030 (Sustainable Buildings) that means the building will use significantly less energy than a code-standard building and an option to be net-zero carbon. This will be achieved by using high-performance enclosures, low-energy mechanical and electrical systems, and on site renewable generation.

The new library building will showcase components of the existing building such as the existing archway prominently featured in the adult reading room as well as new art pieces that connect the library to its neighborhood of makers. Opportunities for art could include casting art forms into the architectural precast, a mosaic at the entry, or artful interior and exterior bench seating.



Conceptual rendering as shared in the pre-design phase in April 2022 before Schematic Design

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SPACE AND PROGRAM

Space and Program

9,465 Gross Square feet

1,230 Gross Square feet

10,695 Gross Square feet

OVERALL GROSS SQUARE FOOTAGE

Library Level: Mechanical Penthouse: Total:

PROGRAM SUMMARY

Children

- Children's Collection
- Early Literature Collection
- Play and Learn Space
- Story Time Area
- Computers
- Comfortable Seating for Families

Teen

- Computers
- Teen Collections
- Teen Collaborative/Study Spaces
- Comfortable Seating

Adult

- Computers
- Collections
- Periodicals
- Study/Reading areas
- Comfortable Seating

Gathering

- Meeting Rooms
- Study Spaces for quiet and collaborative use
- Outdoor Reading/Programming Space

Service Space

- Service Desk
- Self Check-Out
- Printer/Copier Space
- Book Return (Interior and Exterior)
- Community Information Area
- Holds Area
- Exterior Book Drop and Pickup
- Parking

Staff

- Staff Workroom
- Staff Restroom
- Material Handling
- Breakroom
- Collaborative Work Area

Building Support

- Toilets
- Wellness Room
- Mechanical/Utility
- Data/Netcom Room
- Janitor's Closet
- Entry Vestibules

SITE AND BUILDING AREA

Site Location: Minnehaha Avenue just east of Snelling Avenue in Saint Paul, Minnesota

Site Area: 0.33 acres

Gross Building Area: 10, 695 Gross Square feet

CODE SUMMARY

Applicable Codes

2018 International Building Code
2018 International Mechanical Code
2018 National Electrical Code (NFPA 70-2017)
2020 MSBC (Minnesota State Building Code)
2020 Minnesota Fire Code
2020 Minnesota Energy Code
NFPA 13 Installation of Fire Sprinklers (Latest Edition)
2018 International Energy Conservation Code
2020 Minnesota Accessibility Code

Occupancy Classification: Assembly Group A-3, Library

Type of Construction: Type IIB

Building Area:

Allowable: 28,500 square feet base allowable area <u>+ 9,500 square feet open area increase</u> 38,000 Square feet allowable (5062.2 and 506.2.3)

Actual: 10,695 Gross Square Feet (GSF)

Occupant Load Factors	(For reference only, reflects existing cor	ditions, MNBC 1004)
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Uses	Gross Square feet	Factor	Occupancy
Library Stacks (A-3)	4,560	100	45.6
Library Reading/Study Areas (A-3)	525	50	10.5
Storage/Mechanical (S-1)	1200	300	1.8
Assembly (A-3)	800	15	80.6
Office (B)	1,275	150	8.5
Total			I 47 People

		Water Closets		Lavatories		Drinking Fountains		Service Sinks	
		Required	Provided	Required	Provided	Required	Provided	Required	Provided
Men	74	I	0	I	0				
Women	74	2	0	I	0				
Unisex		0	3		3	I	1	1	1
Total	132	3	3	2	3	I	I	I	I

ZONING SUMMARY

Zoning and Local Requirements

The site is zoned T2 (Traditional Neighborhood) and there is no need to re-zone the site.

Zoning District	Lot Size Density		Building Height Maximum		Yard Setback Minimum (feet)		
T2 - Traditional	Min	Max	Stories	Feet	Front	Side	Rear
Neighborhood	.3 FAR	2 FAR	3	35	0 (10 max)	0	0

Principal use: public library

This use is permitted in this zoning district.

Zoning District Actual	Lot Size Actual		Building Height Actual		Yard Setback (feet)		
T2 - Traditional	Area (Sq ft)	Width (ft)	Stories	Feet	Front	Side	Rear
Neighborhood	14,300	~130	I	28	2	3	3

RI Zoning Requirements:

Setbacks / Yard Requirements:

Front 10 Feet maximum

Rear 0 Feet

Side 0 Feet

Off-Street Parking Requirements:

The city of Saint Paul does not have a minimum parking requirement. Five parking spaces will remain on site and looking to petition for one additional signed handicapped spot to be on the street in front of the library.

Uses	Minimum Parking Spaces (No parking minimums)	Maximum Parking Spaces (1 per 350 Square feet)	Existing Parking	Bike Parking (1 per 5000 Square feet)
Library, Public	0 Spaces	33 Spaces	5 Spaces (I ADA)	3 Spaces

SITE WORK

LSE Architects

SITE LOCATION AND LAYOUT

The existing Hamline Midway Library site is located just east of Snelling Avenue in Saint Paul and is bounded by Minnehaha Avenue to the north and alleys on the east, south and west. There is currently 6 standard parking stalls and I ADA parking stall immediately south of the building that is accessible using the alleys. There is a landscaped area on the north side of the building that includes sidewalks and benches. The ADA access for the building is located at the southwest corner adjacent to the ADA parking stall. There is also a detached storage building at the southeast corner of the building.

The proposed improvements include the complete demolition and removal of the existing library building and storage building. A new library and supporting pedestrian connections will be constructed. The existing parking on the south side of the site will also be reconstructed.

REGULATORY/PERMITTING AGENCIES

The following entities have regulatory authority for work associated with site improvements:

- City of Saint Paul
- Capitol Region Watershed District
- Minnesota Department of Labor and Industry

SANITARY SEWER

Based on as-built maps from the city of Saint Paul, it is anticipated that there is an existing sanitary sewer located in Minnehaha Avenue. The original 1930 mechanical drawings indicate a 6" sanitary sewer service constructed from the sewer main in Minnehaha Avenue to the building west of grand staircase between the westernmost lower level windows.

The existing sanitary service should be removed per city requirements. A new 6" sanitary service will be constructed from the main in Minnehaha Avenue to the new library building.

WATER MAIN

There is an existing 12" city watermain located on the north side of Minnehaha Avenue. The original 1930 mechanical drawings indicate that the building is served by 1-1/2" domestic water service from the main in Minnehaha Avenue into the mechanical room at the northeast corner of the building. This is consistent with the record drawings from Saint Paul Regional Water Services.

The existing domestic water service should be cut and capped at the main per city requirements. A new combined domestic and fire water service will be constructed from the main in Minnehaha Avenue to the new library building.

There is an existing fire hydrant located on the intersection of Minnehaha Avenue and Snelling Avenue as well and another at the intersection of Minnehaha Avenue and Asbury Street. These hydrants are consistent with urban development and serve as the source of fire protection for the library.

STORM SEWER

Based on as-built maps from the city of Saint Paul, it is anticipated that there is existing storm sewer infrastructure located in the alley west of the library as well as in Minnehaha Avenue. A new storm service for the new library roof drains will be extended from the existing infrastructure in the alley.

TELECOMMUNICATIONS, GAS, AND ELECTRICAL

The local telecommunications provider is Centurylink. They have a telecom line that runs in the alley west and south of the existing library.

The local provider for electrical service is Xcel Energy. There is overhead electrical lines and a pole-mounted transformer in the alley south of the library. A 4-wire service is routed from the transformer to the building.

The local provider for gas service is Xcel Energy. There is a 1-1/8" polyethylene gas service to the building from the gas distribution main in Minnehaha Avenue. The existing gas meter is on the front of the building at the northeast corner. This is also consistent with the mechanical plans from the original 1930 construction drawings.

See the mechanical engineering narrative for further information regarding the adequacy of the existing gas, electric and telecommunication services.

GRADING AND DRAINAGE

A boundary and topographic survey was recently completed for the site. The new building construction and grading will be established so that runoff is directed away from the structure and towards the perimeter streets and alleys.

STORMWATER MANAGEMENT

The site is located within the City of Saint Paul and the Capitol Region Watershed District. Site development/redevelopment projects are required to meet the following standards for the city of Saint Paul:

Runoff Rate – Proposed runoff shall not exceed 1.64 cubic feet per second per acre of site.

Capitol Region Watershed District requirements apply to projects that disturb more than one acre of land. It is not anticipated that the project will exceed that threshold.

In accordance with the city of Saint Paul requirements, all site improvements that disturb over one-quarter of an acre will have to provide stormwater management. The total library property is approximately 0.33 acres, and it anticipated that the entire site will be disturbed during construction.

Current B3 stormwater management guidelines (Section S.2) are applicable for any projects

renovating more than 2,000 sq. ft. of impervious surface. The site improvements will exceed this amount and the stormwater management system(s) selected will also need to address the rate control and runoff volume requirements for B3.

The new library is proposed to expand from the existing footprint and occupy a majority of the property. As a result, the stormwater management system will likely be an underground infiltration system beneath parking. The underground system will have a connection to the existing storm infrastructure in the adjacent alley.

PAVEMENT CONDITIONS

The existing parking stalls on the south side of the existing library will need to be reconstructed as part of the project. The mill and overlay of both alleys on the east and west sides of the site should be included in the scope of work, as those will likely have noticeable deterioration from construction traffic.

New pedestrian connections to the front and rear building entries will be required along with any proposed improvements within the planned outdoor reading area.

LANDSCAPE

Site Description

The site slopes gently upward from Minnehaha Avenue to the north, hits a high point mid-way within the site, and transitions to slope downward to the southern property line. The site design seeks to meet B3 and other sustainability building goals, provide programmed exterior space, and provide accessible entry at the main building entry.

Site improvements intend to align aesthetically with the character of the new library building and take advantage of outdoor spaces to expand seasonal programming and amenities at the library. The site design will create easy and safe access to the library for the public who arrive using various transportation methods and incorporate various artistic elements to better represent the community and cultures within the library's neighborhood. The main entrance will feature a vestibule prior to entry to improve temperature control during seasonal changes and expand entry to enhance circulation. Adjacent to the main entry will be a paved concrete area with benches to provide seating for those waiting on public transit / ride share, and several bike racks for those that choose to cycle to this location.

Specific programmatic improvements include an outdoor gathering plaza approximately 1,400 square feet in size that will be added to the northeast portion of the site. This outdoor space will include a concrete and brick paver patio with benches and tables with seating to be used as an outdoor learning space, presentation space, or event space. This exterior patio will be surrounded by 8' wide min. planting bed featuring dense shrubs and perennials with a large shade tree at the center of the patio space. A 4' high decorative metal fence surrounding the patio will provide additional safety and separation from the adjacent sidewalk.

Site Work (CONT.)

Pockets of shrub and perennial beds will be installed on the western portion of the site between the building and the western alleyway, totaling around 600 square feet of plant bed to aid in runoff capture along this side of the library. The remainder of the green space on the site is limited and will be re-sodded.

CIRCULATION

Pedestrian accessibility improvements will occur on this site.

Parking is located to the south of the building. It will be bituminous surfacing with appropriate striping, and see the gutter curb reconstructed along the southern edge of the property line. The southern building entry will be located to provide easy access to the parking lot arrangement and will primarily serve as staff entry.

LANDSCAPE

Landscape improvements throughout the site include the following:

Soil amendments will occur where existing soils are evaluated and prove to require remediation or amendment to provide optimal growing conditions for trees, shrubs, perennials, and turf grass. This will be especially important at greenspace locations adjacent to hard surfaces that may see salt/sand operations in the winter.

Plant bed replacement and additions will cover approximately 800 square feet of the site. Green spaces not captured in this plant bed area will be sodded.

One (1) tree should be accounted for to add vertical interest and shade canopy to the site. Tree will be installed at minimum to meet the city's minimum caliper requirements. Tree will be added at the outdoor gathering space for shade.

Hardwood mulching will occur at all tree locations and within all plant beds. Metal edging will occur at the perimeters of all plant beds where not abutted by concrete walk.

SITE FURNISHING

All existing site furnishings will be removed. New site furnishings will include benches, tables and seating, bike racks, trash receptacles, artwork, and site lighting.

Multiple modern-style wooden benches (potentially ipe or similar hardwood) will be surfacestanding near the building main entrance to accommodate those waiting for the bus or other forms of transportation to/from the library.

Several single-hoop embed-mounted bike racks will be installed near the building main entrance.

Movable tables and seating will be placed in exterior patio space along with wooden benches to accommodate group engagement and independent reading spaces.

A trash and recycling receptacle pairing will be located in each of the following locations: main entrance, rear entry, outdoor gathering space.

The project artist will be engaged to install various pieces of artwork near the main entrance and in the exterior patio space. These art pieces will vary in size but be near human-scale.

LED lighting bollards will be installed approx. every 20' surrounding the perimeter of the northern entrance, as well as along all sidewalks leading toward the main building entrance from street and parking lot. Architecture and/or MEP may specify additional lighting packs or safety lighting attached to the building or at the building main entrance, see other's narratives.

IRRIGATION AND STORMWATER

There is an existing irrigation system throughout the site that will be removed. A new irrigation system will be installed as a high-efficiency system to accommodate the site plan layout and planting type water needs. Any plantings will be connected to the irrigation system to maintain plant health and vigor, including bubblers on trees, spray at lawns, and dripline in plant beds. The irrigation system will follow B3 guidelines regarding type of irrigation, efficiency requirements, and phase-out requirements.

CONCLUSION

The site concept design for Hamline Midway Library will increase outdoor space usage for activities, storytelling, and general programming to enjoy the exterior of the site seasonally and from a visual connection to the interior spaces. Improvements to the site will also improve access to the library, improve the visual presence of the library site within the City of Saint Paul, and allow for enhanced and growth in library programming.



ARCHITECTURE AND INTERIORS

FORM AND DESIGN

Hamline Midway Library will be a brick, cast stone, and glass building that takes inspiration from the neighboring church and the nearby Hamline Recreation Center. Its form reacts to the desire to transition from the commercial Snelling Avenue into the residential neighborhood. By pulling the reading room forward to the street edge the interior of the library is revealed to those that pass by the library and the reading garden is protected from Snelling which is loud and inhibits outdoor programming.

The form of the library aids in harvesting even light providing a light and airy interior without the glare of direct sunlight and every regularly occupied space has direct access to natural light. The roof becomes optimized for solar and the penthouse mechanical room limits distance of ductwork and gives direct access to clean air.

The reading room's tall L shaped form provides a distinct adult reading room and children's reading room provides multiple areas for study, collaboration, and play. Seating elements in the windows give reading nooks for adults and children. The rear wall of the adult reading room memorializes the archway. Salvaged woodwork from the stage is reused at the community room.

The high ceiling of the library makes a compact reading room feel larger and its shape provides opportunities for sound control between the adult and children's reading room. The form gives the service desk at the center direct views of the entire building without being transactional. Everyone from looking for individual quiet study to a large community event will find their place in Hamline Midway library.



EXTERIOR

The exterior of the building is brick in reference to the existing building and its neighborhood context and will result in a long-lasting and energy efficient building. Low E- argon filled exterior curtain wall provides a high thermal performance keeping the interior well-tempered. The façade provides opportunities for art including casting artwork into the cast stone and a mosaic at the entry. The roof is optimized for solar panels and the low roof features a green roof that will aid in the treatment of rainwater and reduce the roof's thermal gain. The diamond pattern is based off a brick pattern created by the architects in 1929 but not ultimately able to be integrated into the existing building.



INTERIORS

Creating an equitable, community-centered, environmentally-responsible interior that honors the history of the existing library while reflecting current community values and fostering learning and creativity within library users is the core objective of the new Hamline Midway library space. Elements to achieve this goal include a large, open floor plan with increased flexibility for collections and activity areas, separation of quiet and loud activities, accessible staff workspace, and increased connection to the outdoor learning and community areas. Alignment with Saint Paul's Sustainable Building policy is critical in areas of interior material selection, indoor environmental air quality, access to light and views, and overall occupant comfort.

Ceilings

To enhance the overall acoustic quality of the space, acoustic ceiling panels (ACP) will be installed in the main library space as well as the staff work areas. Varying ceiling heights and gypsum board soffits will serve to differentiate program functions as well as passively control noise levels in areas of varying activity. Preference will be given to ceiling materials that combine high noise reduction coefficients with bio-based or low-environmental-impact materials. Toilets will feature gypsum board ceilings painted with epoxy paint, while mechanical/electrical/storage rooms will have exposed ceilings.

Floor Finish

Carpet tile will be used throughout the public areas to enhance user comfort and decrease overall noise levels. Carpet with low-to-no embodied carbon, recycled content and high wear ratings will be given priority in the selection process. For ease of maintenance, staff work areas and community rooms will have hard-surface resilient flooring. Toilets are to have seamless sheet vinyl flooring with a self-coved base, while storage areas will be sealed concrete. The vestibule will have walk-off carpet and a hard surface flooring.

Wall Finish

New walls will be primarily painted gypsum board, with wallcovering and/or wall protection finishes in areas of high wear. Toilet room walls will feature full-height ceramic tile. Operable partitions facing public areas will be primarily glass with digital cloaking film to maintain digital privacy while allowing for supervision and a high-STC (Sound Transmission Class) to limit sound travel between spaces. Operable partitions in flex spaces will have markerboard surfacing to allow for greater flexibility for multiple uses.

Furnishings

New furniture in both the public areas and staff work space will be durable, easily cleaned, and flexible for multiple programmatic uses.



ACOUSTICAL TREATMENT

Being under 20,000 square feet, the project is able to meet its acoustic properties using the B3 Small Buildings Method. Most of the Library is classified as Occupancy Group A. The recommended partition Sound Transmission Class (STC) ratings required for B3 are:

Between Occupancy Groups A and B:

- STC 60 between regularly occupied spaces
- STC 55 between regularly occupied space and circulation

Within Occupancy Group A:

- STC 55 between regularly occupied spaces
- STC 50 between regularly occupied space and circulation

Within Occupancy Group B:

- STC 45 between regularly occupied spaces (offices)
- STC 40 between regularly occupied space and circulation (office/circulation)

Sound isolation requirement for mechanical spaces is STC 50.

Partition Construction

All walls to extend from floor to bottom of structural deck and sound isolation insulation.

- STC 45: standard metal stud wall, insulated
- For STC 50: metal stud wall with 2 layers of gyp on both sides
- STC 55: metal stud cwall with resilient channels on one side, 2 layers of gyp both sides
- For STC 60+ either double wall system or specialty rated system with isolation clips

Mechanical Noise Control

MN B3 Small Building Guidelines does not include requirements for library background noise levels, but the recommended max level is NC 40 (45 dBA). For state funded projects MN B3 and Minnesota Statute §16C.054 require adequate acoustic conditions of gathering spaces and accommodation for hard-of-hearing for all spaces which accommodate and are intended for gatherings of 15 or more people, and where audible communications is integral to the use of the space:

- Include audio-induction loops to provide an electromagnetic signal for hearing aids and cochlear implants if a permanent audio amplification system is present in the space.
 - The space must meet the American National Standards Institute Acoustical Performance Criteria, Design Requirements and Guidelines for Schools (public buildings) for:
 - Maximum background
 - Reverberation times

For this size assembly space the maximum background noise level requirement is 35 dBA (NC 30) and RT requirement is 0.7 seconds @ 500, 1k,and 2k Hz.

The above requirement apply to the Community room, and potentially to the flex space.

Room Acoustics

All Regularly Occupied space need to meet the B3 Reverberation Time, or average area weighted NRC-requirements. These include:

- Collections/Study/Tech
- Study
- Teen
- Children
- Community room
- Flex
- Office
- Staff Workroom

Recommended room acoustical treatments for all Regularly Occupied Spaces to meet the B3 Reverberation Time requirements (MN B3 1.6.C.2 path i) include:

- For ceiling with height up to 12' sound absorptive ceiling treatment rated minimum NRC 0.75. Options include ACT-ceiling, direct attached acoustical panels, acoustical spray-on treatment, and vertical acoustical baffles.
- For ceilings with greater than 12' height NRC 1.0 rated treatment. Options include ACTceiling, direct attached acoustical panels, acoustical spray-on treatment, and vertical acoustical baffles.
- Acoustical wall treatment in Teen and Children's area. Options include fabric wrapped acoustical wall panels, acoustical felt, and acoustically transparent material with sound absorptive material placed behind. Minimum NRC 0.8.
- Acoustical wall treatment in the Community Room. Minimum NRC 0.8.
- Acoustical wall treatment in the Collections/Study/Tech. Minimum NRC 1.0.

SUSTAINABLE DESIGN AND B3

Sustainable Design

Hamline Midway Library will be submitted under B3 (Buildings, Benchmarks, and Beyond) and meet the Saint Paul sustainable overlay and Sustainable Buildings 2030 (SB 2030).

B3's SB 2030 is a program that tailors the Architecture 2030 program to the environment of Minnesota. SB 2030 requires buildings built between 2020 and 2024 to be 80% more energy efficient than a typical baseline equivalent building. Because of this standard, Hamline Midway Library will perform significantly better than its peer buildings at reducing carbon emissions.

B3 also requires further sustainable guidelines that ensure the library will be a good neighbor and good steward of its environment. This includes bird safety, habitat restoration, stormwater management, light pollution reduction, and commissioning and monitoring.

Because of the size of Hamline Midway Library, it is eligible for the Small Buildings Method. This path does not reduce the effectiveness of B3 but better caters the guidelines to projects under 20,000 Square feet where a prescriptive approach can be used to achieve some benchmarks.

SB 2030 will be achieved through:

- Construction of new addition using better than code thermal envelopes
- Use of new high-efficiency equipment including ground source geothermal
- Replacement of lighting and electrical systems with new lower energy lighting
- Optimization of form to daylight library reducing use of electric lighting
- Optimizing roof for solar power and making a solar ready building
- On-site solar generation

Other sustainable factors include:

- Low flow fixtures
- On-site stormwater retention and treatment
- Use of low-water and native plantings
- Reuse of existing building materials when possible
- Construction waste diversion plan
- Use of carbon neutral products when available
- Bird-friendly glass

STRUCTURAL SYSTEMS

TYPICAL BUILDING FRAMING

The typical roof framing will be 1 1/2" steel roof deck supported on steel bar joists spaced at a maximum of 5 feet on-center. The joist spacing will be reduced at snow drifting locations. The bar joists will be supported on steel beam and columns.

The typical floor framing will be a composite steel system. The slab will be 3 1/2" of concrete over 2"-20 ga. Composite deck for a total slab thickness of 5 1/2" supported on steel wide flange purlins spaced at approximately 7 feet to 8 feet on-center. There will be 3/4" diameter headed studs welded to the steel beams to provide composite action between the beams and floor slab. The floor framing will be supported on steel columns.

We anticipate the columns will be 6" steel tubes at the one-story spaces and will be 8" square steel tubes at the two-story space.

EXTERIOR NON-LOAD BEARING WALLS

The typical exterior walls will be non-load bearing steel stud walls.

LATERAL SYSTEMS

The lateral system will diagonal braced frames or moment frames. Braced frames reduce the quantity of steel and labor and therefore are preferred. Where braced frames are not possible, moment frames will be required.

FOUNDATION

The existing building drawings indicate the existing building is on standard spread footings and therefore we have assumed that the foundations for the project will be shallow conventional spread footings. A Geotechnical Engineering report will be required to verify this assumption.

We anticipate a 4-inch concrete slab on ground reinforced with 6x6-W2.9xW2.9 WWF or Macrofibers in the common areas. In mechanical rooms with heavier loads the floors, the concrete slabs could be 6-inch or 8 inch thick and reinforced with a rebar mat or Macrofibers.

MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS

MEP Systems

OBJECTIVES

- Provide an energy efficient HVAC system that is easy to operate and maintain.
- Utilize solar photovoltaic panels (6,000 Square feet) on the roof for electric generation.
- Provide water efficient plumbing fixtures.
- Incorporate sustainable technologies into the MEP design that comply with Building, Benchmarking and Beyond (B3). These systems may include:
 - a. Recirculation of domestic hot water pump
 - b. Carbon dioxide occupancy sensors
 - c. Chilled beams
 - d. Energy recovery system (total energy wheel)
 - e. Variable speed drives
 - f. Provide stepped daylighting controls on lighting systems.
 - g. Utilize occupancy sensors for both ventilation and lighting controls.
 - h. Utilize LED lighting throughout.

HEATING, VENTILATING, AND AIR CONDITIONING (HVAC) SYSTEMS

Weather conditions: Minneapolis Airport, Minnesota – 2020 Minnesota Energy Code with ASHRAE 90.1-2016, referencing ASHRAE 1% cooling and 99.6% heating data. (ASHRAE is the American Society of Heating, Refrigerating and Air Conditioning Engineers, an organization that publishes energy conservation codes.)

An air handling units (AHU) will provide ventilation, heating, and cooling to the occupied spaces. This units will be located within a penthouse. The AHU will be 100% dedicated outdoor air, variable volume, with energy recovery, modulating based on occupancy, CO2 demand control, and schedules. ASHRAE 90.1 2019 will be utilized to determine required efficiencies.

- Motors will operate with variable frequency drives.
- Total energy wheel will provide both latent and sensible recovery.
- Carbon dioxide sensors will monitor levels and modulate ventilation.

Zone equipment for the library will include air valves to modulate ventilation air to the chilled beams. Each zone will contain multiple four-pipe chilled beams for space temperature control. Fin tube radiation will be installed below glazing, utilizing hot water, and space control valves.

Heating and cooling of the building will be provided by a source heat pump, approximately 30 tons of cooling and 440 MBH heating. One 10' nominal size, deep well heat exchanger will be installed (Darcy Solutions). A water source heat pump (by Water Furnace) will convert the ground source water to building hydronic hot water and chilled water loops. This heat pump has the ability to provide heating and chilled water during any season.

Restrooms will be exhausted through exhaust fans, through the roof. Exhaust heat will be captured through an energy recovery unit. Systems will be commissioned.

The building automation system will be direct digital controls and meet SPPL standards. The following requirements will be included:

- Air side economizer
- Demand control ventilation
- Boiler/heat pump/chiller system controls
- Supply air temperature reset for multizone

Metering of HVAC loads will meet guidelines listed in B3 2030. Meeting a two-percent goal for renewable energy will be evaluated and included if found to be cost effective. Air side economizer

• Systems considered are solar photovoltaic

Systems shall be commissioned.

PLUMBING AND PIPING SYSTEMS

Storm water will be routed through drains and overflow scuppered to grade.

Domestic electric tank type water heater will provide domestic hot water to lavatories and sinks. A recirculation pump will ensure hot water at each fixture.

Water fixtures shall be low flow and meet the following requirements:

- Lavatory faucets less than or equal to 1.5 gallons / minute
- Community room and break room faucets less than or equal to 2.0 gallons / minute

BUILDING AUTOMATION SYSTEM

The Building Automation System (BAS) will be web based with graphics and control points. It will be an extension of or compatible with the existing Johnson Controls Metasys system. Training for operators and staff will be provided to allow enhanced controllability and operating features for manipulation of operating schedules and temperature set points. The air-handling system will include demand-controlled ventilation (DCV) for control of outdoor air ventilation based on occupancy.

Electronic sensors and controls will be provided for heating and cooling equipment. Temperature control of the zones will be accomplished by temperature sensors. Temperature set point control for the rooms themselves will be from the BAS. Setback temperatures will be established for unoccupied periods of time.

BUILDING FIRE PROTECTION SYSTEM

The new building would be considered A-3 occupancy, not requiring an automatic sprinkler system if less than 12,000 square feet and less than 300 occupant load. However, it is recommended to have a fire protection system by Saint Paul policy and as a good standard of practice. Design shall include an overhead wet type system, with concealed heads. This building will have one (1) zone.

POWER DISTRIBUTION SYSTEMS

Provide a 120/208 volt, 3 phase, 4 wire, 600 amp Electrical Service. The service will consist of a 120/208 volt, 3 phase, 4 wire, 600 amp main service entrance distribution board and four (4) 120/208 volt, 3 phase, 4 wire 84 circuit, 200 amp branch circuit panelboards.

- Large mechanical loads will be fed from the main panelboard.
- Lighting and small loads will be fed form the four (4) branch circuit panelboards.

New general purpose tamper proof receptacles will be provided throughout the building.

BUILDING LIGHTING

LED lighting fixtures will be provided thought out the building.

- The lighting design and light fixture selections will be developed as a joint effort by LSE Architects and KFI Engineers.
- Automatic lighting controls will be provided for all spaces to meet the energy code. Lighting control will consist of:

- i. Occupancy control
- ii. Dimming control
- iii. Daylighting Control
- Emergency lighting will be provided by battery powered emergency light fixtures.
- Exterior lighting will be provided at building entrances and exits.
- Site lighting will be provided.
 - i. Exterior and site lighting will be controlled by a photocell for dusk to dawn control and dimmed by 30% on a time of day schedule.

FIRE ALARM AND TECHNOLOGY SYSTEMS

A fire alarm System will be provided. The fire alarm system will consist of the following:

- Main fire alarm control panel
- Remote annunciator at the building entrance •
- Smoke detectors
- Annunciation devices (speakers and strobes)
- The fire alarm system will be capable of supervised mass notification.

Telecommunications systems infrastructure will be provided. The telecommunications system infrastructure will consist of the following:

- A data rack/cabinet
- Voice/data jacks and Cat 6A cabling
- Wireless access points will be installed to provide coverage throughout the building.

An access control system will be provided for the building. Card readers will be provided at entrance doors, and non-public spaces.

A security system will be provided, the security system will consist of:

- Motion sensors
- Door contacts
- Security cameras will be installed to provide comprehensive coverage.

Audio visual systems will be provided in all meeting rooms. Audio visual components will include:

- Flat panel displays (projector and projector screen where needed due to size)
- HDMI Inputs where needed
- Network access



PROJECT SCHEDULE

LSE Architects

Project Schedule



Saint Paul Public Library invested in an extensive, equity-focused community engagement effort starting in 2018 with a Strategic Design process that resulted in 3,000 participants sharing their desire for library spaces that are safe, inviting, affirming, and comfort for people of all cultures, abilities, and communities.

In 2022 LSE joined SPPL's community engagement process leading open houses and listening sessions with a total of 664 attendees. Surveys were developed online and through pop-up events in the community that received 2355 responses. LSE's artist cohort developed informal engagements including in-library Dream Boards. From this outreach there was a common themes across respondents were:

- Improved accessibility
- Adding community meeting and/or program spaces and study rooms
- A space that reflects the cultures in my community



HAMLINE MIDWAY LIBRARY . DESIGN REPORT























DESIGN DRAWINGS





FLOOR PLAN HAMLINE MIDWAY LIBRARY • DESIGN REPORT







ARCHITECTURAL SITE PLAN

HAMLINE MIDWAY LIBRARY . DESIGN REPORT









ELEVATIONS HAMLINE MIDWAY LIBRARY . DESIGN REPORT







South Elevation



ELEVATIONS HAMLINE MIDWAY LIBRARY • DESIGN REPORT

















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RENDERING HAMLINE MIDWAY LIBRARY . DESIGN REPORT









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HAMLINE MIDWAY LIBRARY . DESIGN REPORT





RENDERING - READING ROOM HAMLINE MIDWAY LIBRARY • DESIGN REPORT











- CHILDREN'S AREA RENDERING HAMLINE MIDWAY LIBRARY . DESIGN REPORT

ARCHITECTS





HAMLINE MIDWAY LIBRARY • DESIGN REPORT

ARCHITECTS





RENDERING - TEEN'S AREA HAMLINE MIDWAY LIBRARY · DESIGN REPORT



