

# **CITY OF SOUTH ST. PAUL**

## **Memorial Library Reuse**

### **Feasibility Study**

CONDITION ASSESSEMENTS

**NOVEMBER 22, 2024**



**Submitted by**  
Windsor Engineers  
Civil, Mechanical & Electrical Engineers  
500 N 3<sup>rd</sup> St  
Suite 100  
Minneapolis, MN 55401





## CIVIL ASSESSMENT

### CONDITION ASSESSMENT OF PARCEL FRONTAGES

The former South St. Paul Library has frontages along Marie Avenue to the South and 3<sup>rd</sup> Avenue North to the West. The project's northern property line borders a parking lot that currently serves the Dakota County Historical Society. The library's western property line fronts 3<sup>rd</sup> Avenue North. The northern half of the eastern property boundary is the Mississippi river bluff, which significant grade change from the existing parking area sloping down to the east. At the bottom of the bluff is the ground floor of an existing apartment building. The southern half of the eastern border is a parking lot that currently serves the apartment building. The library's southern property line fronts Marie Avenue. Windsor's onsite assessment of the Library's Marie Avenue and Third Avenue North frontages included:

- A visual analysis of the existing pavement and sidewalk conditions
- Visual identification of existing utilities (storm sewer, power utilities, hydrants, etc.)
- Visual assessment of existing signage.

### CONDITION ASSESSMENT MARIE AVENUE FRONTAGE

The existing pavement along Marie Avenue is in acceptable condition. The existing pavement appears to have been sealed at some point in the recent past but is now exhibiting minor cracking across the roadway with worse cracking around manhole and storm inlet structures. However, there do not appear to be any potholes or major cracks that would result in substandard driving conditions. Marie Avenue to the west of Third Avenue North is proposed to be improved significantly with the addition of modified on-street parking and a bike lane. Figure 1 shows the general condition of the existing asphalt throughout Marie Avenue south of the library.



**Figure 1: Typical Condition of Existing Pavement in Marie Avenue**

The existing sidewalks along Marie Avenue to the south of the library appear to be in acceptable condition. There do not appear to be any significant gaps that would impact ADA accessibility nor are



there any apparent cracks in the sidewalk panels. The image below shows the general sidewalk condition along Marie Avenue to the south of the library. There is an existing on-street ADA parking stall located immediately south of the library. The stall is accessed by an ADA ramp and handrail that leads up to the existing sidewalk. By visual inspection, it did not appear that this parking stall meets the current ADA requirements.



**Figure 2: Typical Sidewalk Condition Along Marie Avenue**

Within Marie Avenue, there appear to be stormwater sewer utilities as evidenced by the presence of storm sewer inlets. Additionally, there may be sanitary sewer utilities as evidenced by the presence of manholes along the road centerline. However, further investigation is needed to confirm the presence of sewer utilities if revisions to the library's current sewer service lateral are needed. There are overhead power lines to the southwest corner of the project site but no existing power poles within the Marie Avenue right-of-way to the south of the library.

Lastly, there are existing 2-hr parking and ADA parking signs located within the boulevard off Marie Avenue. At the intersection of Marie Avenue and Third Avenue North is a stop sign. The existing signs appear to be in acceptable condition.

#### **CONDITION ASSESSMENT OF THIRD AVENUE NORTH FRONTAGE**

The existing pavement, sidewalk, and curb and gutter condition along Third Avenue North appear to be in acceptable condition. ADA ramps at the intersection of Third Avenue North and Marie Avenue are present and appear to meet ADA requirements based upon a preliminary visual inspection. Lastly, bicycle parking is located off the sidewalk near the intersection of Marie Avenue. On-street parking is located on Third Avenue North immediately in front of the existing library. The image below shows the general condition of the existing pavement and sidewalk along Third Avenue North.



**Figure 3: Existing Pavement and Sidewalk Condition along Third Avenue North**

It appears that sanitary sewer, storm sewer, and water utilities are present in Third Avenue North based upon a visual inspection of present inlets, manholes, and hydrants. Additionally, it appears that there may be a gas main along the western half of the Third Avenue North as evidenced by gas warning posts located in the boulevard. Lastly, there are existing streetlights along Third Avenue North, which are shown in the photo above. Along the library parcel's frontage, there do not appear to be any existing road signs. There is currently an existing South St. Paul Public Library sign that is assumed to be on the library's parcel.

#### **CONDITION OF REAR PARKING / PAVED AREA**

Located in the northeast corner of the parcel is a paved area that currently provides six parking stalls and is accessed off Marie Avenue. The access off Marie Avenue is also utilized by the adjacent apartment building's parking lot. The parking stalls are not currently striped and are only discernable by the presence of wheel blocks at the head of the stall. None of the stalls are striped for ADA requirements though it does appear that the stalls may meet ADA grading requirements given the minimal slope throughout the parking area. It does not appear that there is sufficient space in the rear parking area for standard size parking stalls and an access aisle that meets current code requirements. The narrow access point between the building corner and existing curb line is narrowly wide enough for a single car to pass. There also appears to be limited space in the rear parking area for a car to turn around when all stalls are full.

The existing pavement in the library's rear parking area appears to be in acceptable condition. There are some existing cracks along the northwest corner of the paved area along the existing curb and gutter line. The asphalt cracking may be a result of poor stormwater drainage and/or issues with the asphalt's subbase.



**Figure 4: Existing Pavement Condition in Rear Parking Area**

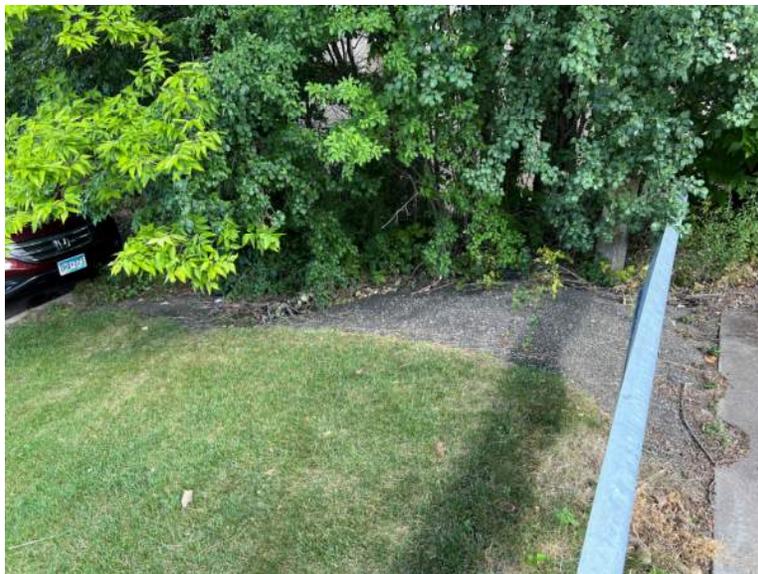
There is an existing lower-level entrance to the library off the rear parking area. Upon a visual inspection of the paved area, it does not appear that there are significant grading and drainage issues. There is an existing concrete pad in the northwest corner of the existing paved area that is currently being used to stage a single 4 – cubic yard trash container. The existing concrete appears to be in acceptable condition.

The rear parking area appears to generally slope to the northwest corner where stormwater then flows onto an asphalt path where it then flows onto the existing parking lot north of the library. There may be issues with the stormwater management through this area of the parcel. During heavy rainfall events, it seems likely that stormwater is channeled around the existing gutter line at the east edge of the paved area and then eventually flows into the parking lots to the north or down the adjacent slope. This uncontrolled stormwater flow could impact the slope's stability and could also be impacting the integrity of the existing asphalt. Figure 5 documents some cracking that was observed in the asphalt within this area. It is also possible that the existing asphalt pavement section is not suitably strong enough to withstand the frequent loadings from garbage trucks accessing the trash container.



**Figure 5: Asphalt Cracking Observed in NE Corner of Rear Parking Area**

Figure 6 shows the current paved chute that conveys stormwater from the rear parking area down to the parking lot to the north. This paved chute does not control the stormwater nor does it prevent it from spilling down the existing bluff.



**Figure 6: Existing Stormwater Conveyance Path from Rear Parking Area to North Lot**



In order to better control stormwater flowing from the rear parking area to the north lot, a catch basin and piped outfall to the north parking lot or connection to the existing storm infrastructure further north in the north parking lot may be required.

Lastly, the rear parking area is currently being used to stage the trash containers that serve the library. The access to the rear parking area is very narrow with limited clearance on either side. Garbage trucks have historically been able to access the trash container. However, there are no protections for the existing building corner and there is an adjacent steep slope just beyond the existing curb line. There do not appear to be any other suitable trash staging locations on the parcel that could remedy this limited access.



**Figure 7: Current Trash Staging and Access**

#### **GRADE CHANGE AND SLOPES AROUND LIBRARY**

There is minimal grade change along the Library Marie Avenue frontage. The finished floor elevation of the original library structure is approximately 5-feet above the existing sidewalk elevation along Third Avenue North. There is approximately 8-feet of elevation change along the building's north property line that separates the original library structure and the existing parking lot serving the Dakota County Historical Society. The grade change along the north property boundary is currently landscaped as a lawn.

The rear (northeast) parking area borders the existing river bluff where there is significant grade change. A preliminary review of the Dakota County GIS information indicates that there is approximately 20 feet of grade change from the edge of rear parking area to the ground floor of the existing apartment building to the northeast. The 20-feet of grade change occurs over approximately 38 feet, which results in an approximate 53% percent slope. The preliminary analysis into the grade change between the edge of the rear parking area and the toe of the slope confirms that this slope would be considered a bluff.

Past property assessments have documented certain areas of specific grading concern. A programming study prepared for Dakota County in 2021 noted two potential areas of drainage issues. First, the study noted an area where the grade slopes back toward the building on the west building face where the 1964 building joins the 1927 building. A preliminary review of the area notes that there appears to be backslope to that area that may be causing water to flow back towards the structure. The grade slopes to the south with approximately 1-2 feet of



grade change down to the 1964 structure's main entrance. The slope behind this area appears to show that water is likely being trapped within the building corner as was noted in the programming study prepared for Dakota County. However, it is recommended that this area be studied further at the time of a larger project and possibly regraded to help stormwater flow to the west rather than strictly south.

That same study noted another area along the northern building line where the existing grade may be causing stormwater to flow back towards the building and then east along the building face. There does not appear to be significant upstream area that causes a high amount of stormwater to flow to this area. A review of this portion of the site did not indicate a significant issue with the existing grade. Regardless, the north landscaped area could be slightly regraded to cause stormwater to flow directly north into the adjacent parking lot rather than east along the building face.

### **SETBACKS AND BUFFERS**

The Mississippi River Corridor Critical Area (MRCCA) is discussed in greater detail within the Neighborhood Context section of the report. There are setbacks associated with this critical area that impact the existing parcel. The majority of the paved parking area is within the MRCCA 40-foot structure setback and a portion of it is within the bluff impact zone. Additionally, a portion of the library addition is within the 40-foot structure setback. Given that these impervious surfaces and structure are existing, they are 'grandfathered in', but there are some limitations on what future development or work could occur in this portion of the site. First, structures within the 40-foot setback can be expanded if the expansion does not extend into the bluff impact zone or further into the setback than the building line of the existing principal structure. It appears that future building expansion into the structure setback would not be allowed given that it would be expanding the building line from where it currently sits with the library. Secondly, existing impervious surface within the bluff impact zone can be replaced but not expanded. Lastly, retaining walls can be constructed or replaced within a bluff impact zone subject to land alteration permits.

After a preliminary review, there do not appear to be any other unique setbacks or buffers on the parcel that would limit the reuse of the existing library structure.



## MECHANICAL ASSESSMENT

- **GAS FIRED HOT WATER BOILER**

The single gas-fired boiler (Raypac) is in the mechanical room in the basement of the original 1927 portion of the building. It connects to hot water distribution piping that is pumped out to serve the indoor air handling unit and hot water radiators located in the library spaces, including the adjacent basement space, on the 1st floor of the 1927 portion, and the main floor of the 1964 addition.

Combustion air for the boiler is provided through a 34inch x16inch intake louver located on the north side of the building. The louver is installed in a glass block window and could be made larger or smaller by adding or removing glass as needed depending on future HVAC needs.

This boiler is approximately 30 years old. The average life expectancy of a boiler is 15-20 years. Due to its age, it is recommended to be replaced if hot water is to be utilized for future HVAC systems.



*Figure 8: Gas Fired Boiler*

A large quantity of the hot water piping is in the ceiling of the basement and inside the plaster walls going up to serve the radiators. The quality of the piping is currently unknown, but the piping can be tested to determine its thickness. In the event of a different HVAC system being utilized in the future, one option is to abandon this piping in place due to the intrusive nature that would be required to remove the piping from behind the plaster walls and ceilings.

- **INDOOR AIR HANDLING UNIT (AHU)**

This air handling unit serves the original 1927 portion of the building, and its age was unable to be determined. Based on visual inspection of the equipment, it looks like various parts and pieces have been



replaced over the years, but this unit would not comply with current required equipment efficiencies per the 2024 MN Energy Code.



***Figure 9: Indoor Air Handling Unit***

Outside air is provided to the original 1927 building via a 48inch x34inch intake louver serving the indoor air handling unit. This louver is located on the north end of the 1927 building.

The air handling unit provides heating with a hot water hydronic coil served by the boiler heating system. Cooling for this unit is provided by a DX (direct expansion) roof mounted unit located on the 1964 addition portion of the building with refrigerant piping over to the indoor air handling unit.



***Figure 10: Roof Mounted DX Cooling Unit***

The ductwork is routed primarily through walls and ceilings. Portions of the ductwork is insulated but the insulation is damaged. Due to the location of the ductwork, it will be intrusive to modify or remove it.



The ages of the hot water coil and roof mounted DX unit are unknown. Due to the existing condition of the AHU and DX unit it is recommended to replace these pieces of equipment if the existing ductwork is going to be re-utilized.

- **ROOF TOP UNIT (RTU)**

The rooftop unit serves the 1964 portion of the building and was installed in 2006. Ductwork is routed down above the offices and out to serve the office spaces and the 1964 portion of the open library. The ductwork is largely accessible except for the portion serving the open library area.

The rooftop unit provides heating via a gas fired burner and cooling via DX refrigerant integral to the unit. Ventilation air is supplied to the 1964 addition by this RTU.



*Figure 11: Rooftop Unit*

- **EXHAUST FANS**

The building restrooms are exhausted with two exhaust fans. One exhaust fan is located on the roof of the 1964 portion of the building. The other exhaust fan is located on the south wall of the original building above the roof of the 1964 addition.



- **CONTROLS**

The building has an antiquated electronic and pneumatic control system that appears to be partially disconnected and no longer in operation.



*Figure 12: Air Compressor for Pneumatic Controls*



## PLUMBING ASSESSMENT

- **PLUMBING FIXTURES**

The building currently has (4) single-occupant restrooms and (2) janitors sinks. The single occupant restrooms each have a wall-hung toilet with a flush valve and a wall-hung lavatory sink.



*Figure 13: Restroom in 1927 Portion of Building*

- **DOMESTIC COLD WATER**

The building is currently served with a two-inch domestic cold-water supply main entering the west side of the 1964 addition. The hardness of South St. Paul water is typically 18 grains or 307 parts per million hardness, and the average water pressure in South St. Paul is 65 psi. The condition of the existing piping is unknown and will require testing to determine if it should be replaced.

- **DOMESTIC HOT WATER**

The building hot water demand is being served by a 10-gallon Rheem tank type electric water heater. The unit was manufactured in 2004 and serves the (4) lavatories in the restrooms. Currently there are no thermostatic mixing valves installed to temper the hot water at the lavatories (as required per MN plumbing code), and the domestic water and sanitary waste piping are not protected as required per ADA standards. Both items need to be addressed should these bathrooms be utilized in the future.



*Figure 14: Electric Water Heater*

- **SANITARY SEWER**

The building sanitary sewer is severed by a four-inch main entering the building on east side of the original building.

- A four-inch pipe is allowed to accept 216 drainage fixture units when sloped at  $\frac{1}{4}$  inch per foot

An exterior drain located at the exit of the basement level of the 1927 building routes back into the building and connects to the main sanitary sewer line. Due to the location of this drain and it being below grade and adjacent to the parking area this introduces debris into the sanitary sewer system that these pipes are not designed to handle. This drain will need to be divorced from the building's sanitary sewer system.

- **STORM DRAINAGE**

The storm drainage system for the original building consists of gutters and downspouts that drain to grade.

The 1964 addition storm drainage system consists of roof drains with overflow scuppers and downspouts. Heat trace has been installed on these drains and overflows to prevent ice dams from forming.

- **NATURAL GAS**

The natural gas meter is located on the north wall of the original building. The two-inch gas main goes into the building from this point.



## ELECTRICAL ASSESSMENT

### ELECTRICAL SERVICE

The South St. Paul Library is being served by (2) pole mounted transformers that enters the building overhead via weather head. The electrical service is an open delta high leg 240/120V, 3 phase, 400A system; with the high leg being 208V line to neutral. This service configuration has been discontinued by most utilities due to load balancing complications and confusion with the high leg. The service size appears adequate for the building.



*Figure 15: Pole mounted utility transformers serving the building*

### SERVICE EQUIPMENT

The electrical service equipment is a 240V, 400A, 3-pole disconnect switch. There is no indication that this disconnect is rated as an acceptable service entrance disconnect. This is not compliant with NEC 230.66(A), and 230.70(B). Additionally, there is no indication that the service is a high leg configuration. This is not compliant with NEC 110.15. It was also observed that the disconnect on/off switch mechanism is broken. A pencil has been inserted into the mechanism to keep the switch in the “on” position. See figure below. A standby generator was not observed at this facility.



*Figure 15: Service Disconnect without label or high leg indication*

#### DISTRIBUTION PANELS

In the main electrical room, the service equipment appears to feed a Kinney 240V, 200A, 3-phase distribution panel. The panel does not have any name indication or equipment label. According to the circuit directory, it has a 200A main breaker and serves most of the large mechanical equipment. The panel appears to have (6) spaces available for expansion. However, due to its age replacement breakers could be scarce and unreliable as the manufacturer discontinued these breaker types. The indication of a high leg is not present on this panel. Panel is shown below.



*Figure 17: Distribution panel with no name or high leg indicated*



In the same space, there is another distribution panel that is labeled “House” in permanent marker on the cover. According to the equipment tag, it is a 240V, 225A, 3-phase panel with a 225A main circuit breaker. The panel appears to be functioning properly; however, it is nearly at breaker space capacity as there are 3 slots available for use out of 42. The circuit directory is handwritten and only indicates circuits 1-21. Circuits 22-42 are unidentified. Additionally, there is no indication of the high leg on this panel. Panel shown below.



*Figure 1816: Panel “House”*

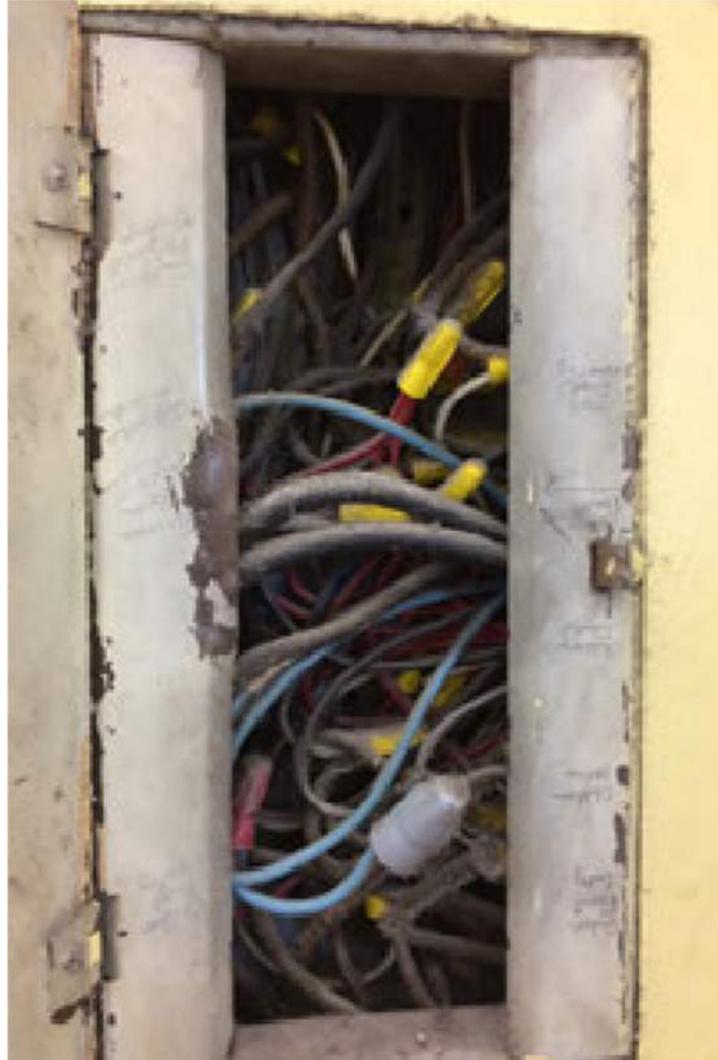


*Figure 19: “House” Panel interior*



## CONDUCTORS

It appears that panels have been replaced in the past as an existing panel enclosure is now being used as a junction box. Visual inspection of the junction box revealed that cloth insulated wire was still in use. Cloth insulated wire was a common insulation type prior to the 1960's and is no longer installed within buildings. The insulation degrades much faster than modern rubber/plastic insulation and can pose a fire hazard.



*Figure 20: Existing panel enclosure being used as a junction box housing cloth insulated wire*



## LIGHTING

The existing lighting appears to be a combination of fluorescent and incandescent fixtures. Lighting appears to be controlled by local wall switches throughout the building. Light levels throughout the building appear adequate. While the system performs adequately, fluorescent and incandescent fixtures with manual wall switches are outdated and would not meet current energy code.

Exterior lighting has several building mounted fixtures. The fixtures appear to be weathered and aged. The fixture serving a set of stairs, and a parking lot was observed to be on during the daytime; indicating that the controls are not functioning correctly. Night-time lighting was not assessed.



*Figure 21: Building mounted light serving stairs/parking*



## FIRE ALARM

The existing fire alarm system indicates that it has been installed in 2014. Upon visual inspection the fire alarm system appears to have been serviced regularly and is within its useful life expectancy. Fire alarm panel shown below.



*Figure 22: Fire alarm panel in good condition*

## IT/LOW VOLT

Low voltage systems are provided from the adjacent city hall building. Visual inspection suggests that the system is in good condition.

## SECURITY SYSTEM

An intrusion alarm system is present at exterior doors. Visual inspection shows that the system is in good condition.