

AGENDA

1. CITY COUNCIL WORK SESSION CALLED TO ORDER
2. ROLL CALL: Murphy, Greenberg, Parisian, Wagner, Mayor Blonigan
3. DISCUSSION
 - A. Blue Line Light Rail - Municipal Consent
4. STAFF UPDATES
5. COUNCIL UPDATES
6. ADJOURNMENT



TO: Mayor and City Council
PREPARED BY: Tim Sandvik, City Manager
APPROVED BY: Tim Sandvik, City Manager
DATE: October 1, 2024
RE: Blue Line Light Rail - Municipal Consent

Background:

At the September 17, 2024 City Council meeting, Council tabled the vote on Municipal Consent, and simultaneously motioned to set a Special Work Session on October 1, 2024, at 5pm, to discuss materials requested from the Project Office.

Analysis:

Attached to this item are twelve (12) documents, including DRAFT resolutions providing Municipal Consent, denying Municipal Consent, and ten (10) documents provided by the Project Office, including an introductory letter. In summary:

- The introductory letter (BLE Robbinsdale MC letter 09252024) shares plans, goals, concepts, commitments, priorities, and other described efforts for next steps in the design process. The letter provides responses in order of the DRAFT resolution reviewed at the September 17, 2024 City Council meeting.
- Commitments include:
 - Enhanced design for safety
 - Dedication of staff to serve as a project liaison
 - A parking structure with no more than 290 spaces
 - Limit ingress/egress from parking structure to limit vehicle traffic on side streets
 - Work with North Memorial through the Supplemental Final Environmental Impact Statement
 - Support conversations between the City and County regarding the reconstruction/turnback of West Broadway
 - Design station platforms to accommodate potential future addition of turnstiles or other barricades
 - Enhanced Intersection design
 - Speed reduction on County Road 81
 - A commitment to move the station north of 40th, despite the Council only asking that it be considered if the Project Office refuses to elevate the structure over 41st and 42nd
 - A Metro Transit Police Substation within the park-and-ride structure
 - Major changes to the Lowry Ave Station would require City Approval
 - Continued discussion on Operations Agreements like Memorandums of Understanding (MOUs) and Joint Powers Agreements (JPAs)

In conclusion, staff wants to call a few things out for the Council discussion. Council was originally asked to provide Municipal Consent to design plans presented earlier this summer.

MN State Stat 473.3994, Subd. 3 states "*...the responsible authority shall submit the physical design component of the preliminary design plans to the governing body of each statutory and home rule charter city, county, and town in which the route is proposed to be located. The city, county, or town shall hold a public hearing. Within 45 days after the hearing under subdivision 2, the city, county, or town shall review and approve or disapprove the plans for the route to be located in the city, county, or town. A local unit of government that disapproves the plans shall describe specific amendments to the plans that, if adopted, would cause the local unit to withdraw its disapproval. Failure to approve or disapprove the plans in writing within 45 days after the hearing is deemed to be approval, unless an extension of time is agreed to by the city, county, or town and the responsible authority.*"

This language is cited, as a reminder, as to why municipal consent is sought, and what (specifically) is being asked. As has long been speculated, there are things the Council is wanting more information on, but doesn't fall under municipal consent (according to the project office). Further, staff would like to highlight that with one exception, items in both DRAFT resolutions are items the City has been requesting more information on for several months - so while the recent updates (including letters on September 13, 2024 and September 25, 2024) are appreciated, some answers cause more questions. With that, staff appreciates that the project office can respond to requests on a spectrum - one extreme being yes or no, the other extreme is that the request is not a part of the project. Finally, to bring it all back together, Council is being requested to provide municipal consent on materials you received this summer, while giving consideration to materials provided in recent weeks.

Recommendation:

Staff will introduce the item, including both DRAFT resolutions, and seek Council direction for Municipal Consent.

Attachments:

1. BLE Robbinsdale MC letter 09252024
2. Exhibit #2-a_R-Downtown Station_20240925
3. Exhibit #2-b_R-Park and Ride_20240925
4. Exhibit #2-d HC_West Broadway Avenue_Crystal 091924
5. Exhibit # 3-b BLRT_TravelTime_RidershipForecast_Robbinsdale_202407809
6. Exhibit #3-c JPA Safety Brooklyn Park Met Council
7. Exhibit #3-e BLE 1 Safety Security Management Plan
8. Exhibit #3-f Operations Maintenance Agreement Green Line
9. Exhibit #3-g BLE - example landscape plan from GLE
10. Exhibit #3-h Appendix-A-5-Noise-and-Vibration-Technical-Report
11. DOCS-#232831-v1-
Blue_Line_Resolution_Approving_Municipal_Consent_(Robbinsdale)_ (002)
12. DOCS-#232626-v1-
Blue_Line_Resolution_Denying_Municipal_Consent_(Robbinsdale)_2024-09-12



METRO Blue Line LRT Extension (BLE)

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September 25, 2024

Tim Sandvik
City Manager, City of Robbinsdale
4100 Lakeview Ave N
Robbinsdale, MN 55422

Dear Mr. Sandvik,

On behalf of the Blue Line Extension Light Rail Transit Project, I thank you for your continued partnership in advancing this generational transportation investment to the benefit of Robbinsdale residents and our region. I believe strongly in the power of a shared vision for how this project can best serve Robbinsdale residents and how it can support the City's goals for the future. Your collaboration on key design items to date has helped establish the foundation for this shared vision. Our continued commitment to making this project the best it can be for Robbinsdale will continue to build and realize this shared vision.

I feel we have made significant progress in recent weeks to address Preliminary Design concerns of the city. This letter and attached materials detail specific commitments of the project to address priority concerns noted by the City related to your review and approval of the Preliminary Design Plans, including:

- Project plans will be amended to greatly enhance intersection design to maximize pedestrian safety across County Road 81 and move the Downtown Robbinsdale Station north of 40th.
- The size of the Robbinsdale park-and-ride building will be no more than 290 parking spaces.
- All park-and-ride bus traffic ingress and egress will be restricted to Bottineau Boulevard, and all car ingress and egress will be restricted to Bottineau Boulevard.
- A police substation will be included in the park-and-ride to support Metro Transit Police patrols of Robbinsdale transit services.
- The project will address concerns from North Memorial Hospital through the federal environmental review process, with specific binding mitigation measures to be included in the Supplemental Final Environmental Impact Statement.
- The project will continue to work closely with North Memorial and the City through ongoing station design work of the Lowry Avenue Station to address access and safety concerns.
- The project will support conversations between the City and Hennepin County regarding the reconstruction of West Broadway outside the BLE project, as appropriate and helpful.
- The project will design and construct station platforms to accommodate the potential future addition of turnstiles or other station barricades.



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Where these commitments pertain to a change in the physical design plans for the Project, they will be fully represented in 60% Design Plans provided to the City for official comment. These plans are currently expected to be published in early 2025.

In addition to the above commitments related directly to the City's discussion of physical design elements of the project, this letter also contains information and commitments related to the City's other stated priorities.

Additionally, if it is in the City's interest, I will also commit the Project to reimbursing a new full time City staff position or consultant role to serve as official liaison between the City and project. I believe this could further increase collaboration, communication, and shared decision-making. This person could have dedicated space at the Blue Line Extension project office and would be included in key project design meetings related to all work in Robbinsdale.

To ensure the Robbinsdale City Council continues to play an active role in project development moving forward, if it is agreeable to you, I would also be happy to commit to regular workshop sessions with the council. The Project Office would be willing to help staff them and provide any supporting materials that would be useful.

I consider these written commitments to be binding and encourage you to reference them in an approval resolution. As you know, the project is only at about 30% design and much work and opportunity remains for us to build and implement a shared vision for how to make this the best project it can be for Robbinsdale. An approval resolution from the City for the major physical design elements of the Preliminary Design Plans that also lists City priorities for future phases of the project will help us continue to move the project forward together efficiently and thoughtfully to ensure optimal design that best serves Robbinsdale for generations to come.

Below are direct responses to the specific items outlined in the City's draft resolution discussed at the City Council meeting held September 17, 2024.

Intersection design and station location

City Draft Resolution #2-a:

To address concerns related to east/west travel for pedestrians and vehicle traffic, on at least 42nd Avenue North and 41st Avenue North on Highway 81 (Bottineau Boulevard), the Plans should be amended to include an elevated structure, or significantly enhanced intersection design with pedestrian safety protocols. If the elevated structure is not included in the Plans, the Plans should be modified to relocate the station currently proposed in the location south of 40th Avenue to a new location north of 40th Avenue.

Project commitment:



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The Blue Line Extension Project commits to amending project design plans to significantly enhance intersection design with robust pedestrian safety measures at the intersections of West Broadway Avenue and 40th, 41st, and 42nd avenues. The Projects also commit to relocating the Downtown Robbinsdale Station from its currently proposed location south of 40th Avenue to a new location north of 40th Avenue. These commitments will be reflected in 60% design plans.

Intersection design



Blue Line Extension Project staff remain steadfast in our commitment to providing the safest environment possible for all roadway and transit users, especially for pedestrians and bicyclists who currently experience significant safety challenges on County Road 81 through Downtown Robbinsdale. There are approximately 75 similar at-grade pedestrian crossings of signalized four lane roads on the current Light Rail Transit system, and project staff have a strong understanding of how to make these crossings as safe as possible.

While the current Preliminary Design Plans include pedestrian safety improvements, we are committed to continuing to work with you to consider and implement wherever feasible additional pedestrian safety measures up to and including continued exploration of a grade separated pedestrian crossing of County Road 81, if that is the desire of the City. While previous analysis has shown the topography to be challenging for a pedestrian bridge, project staff believe future development could make such a grade separated pedestrian crossing feasible.

Current pedestrian safety measures the project is committing to in the Preliminary Design Plans include:



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- Designing roadway for reduced speed of County Road 81 through Downtown Robbinsdale. Recent studies show roadway speed is the main factor in pedestrian safety.
- Protective pedestrian bollards and concrete curbs in the middle of the roadway at 40th, 41st, 42nd avenues provide a physical barrier between vehicles and pedestrians crossing County Road 81.
- Fencing between light rail tracks deters dangerous mid-block crossings.
- Enhancing traffic signals with visual and auditory crossing countdown timers.
- Pedestrian signal timing will allow for adequate 'walk' and flashing 'don't walk' time for pedestrians to safely cross the entire width of County Road 81 in one cycle.
- Wider 12-foot wide, hi-visibility crosswalks to more clearly delineate pedestrian space and alert drivers to the potential presence of pedestrians.
- Enhanced pedestrian lighting levels.
- Narrow lane widths reduce the amount of time pedestrians are exposed to oncoming vehicle traffic while crossing by and adding protective pedestrian refuge spaces at either end of the station.
- Removal of 5 right turn lanes through Downtown Robbinsdale reduces vehicle-pedestrian conflict points.
- Enhancing pedestrian signage to alert turning vehicles to pedestrian presence.

Please find several exhibits attached that clearly identify and illustrate the specific robust pedestrian safety measures already included in the Preliminary Design Plans. These measures will promote a safer pedestrian environment than there is today. Additionally, the light rail will deter dangerous mid-block crossings on this stretch of road by providing a physical barrier such as fencing. Similar barriers significantly reduced mid-block crossings on other local light rail projects. These measures are currently included in the plans and additional measures can be added through future input from the City as design advances.

To better educate Robbinsdale residents about train safety, the Blue Line Extension Project also commits to conducting a train safety campaign before the light rail opens to build awareness and understanding of best practices and safety protocols.

Station location

Throughout several years of robust community engagement along the alignment, moving the Downtown Robbinsdale station north of 40th Avenue has been the most common point of feedback from Robbinsdale residents of all backgrounds by a significant margin. Residents have provided ample feedback about negative impacts to single-family homes, pedestrian access and safety, and highlighted many other benefits of and strong desire to move the station North of 40th Avenue. Blue Line Extension Project staff agree there are significant benefits to relocating the proposed station, including:

- Improved connections and access
 - Provides a faster connection between the train and transit center/park-and-ride with a shorter walking distance and one less road to cross
 - Makes it easier to access Robbinsdale businesses from light rail



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- Adds an additional new pedestrian and bike crossing of County Road 81 at 40 ½ Avenue
- Provides more design flexibility for the intersection of County Road 81 at 39th Avenue, including better pedestrian crossings and improved safety
- Adds new amenity space at northeast corner of County Road 81 and 40th Avenue adjacent to the regional trail access point
- Reduced impacts to residential areas south of 40th
 - Places the station further away from single-family homes and residential neighborhoods
 - Reduces noise impacts and lighting impacts for the residential areas south of 40th Avenue
 - Reduces impact to parking lot at Robbins Landing, saving approximately 13 Parking spaces that would be otherwise eliminated with the station south of 40th
- Greater opportunities for redevelopment and tax base growth
 - Reduces need to acquire property from Elim Church, eliminating impacts to their proposed development, which the Church has characterized as making their project unfeasible
 - Enhances the potential for redevelopment north of 40th Avenue and potential growth to the tax base

For your reference, please find attached an exhibit that details amendments to be made to the Project Design Plans and officially incorporated into 60% Design plans, if the city chooses to direct the project to do so. Also attached is a letter from Elim Church's attorney communicating the inability of the Church to redevelop with the station South of 40th Avenue.

Park-and-ride

City Draft Resolution #2-b:

To address concerns related to the parking structure proposed at the northwest corner of Highway 81 and 40th Avenue North regarding the size of the structure, public safety concerns in the vicinity of the structure, and redirection of vehicle and bus traffic to adjacent residential streets, the Plans should be amended to:

- i. *right-size the structure for the projected ridership so that it is not too large and therefore partially unused;*
- ii. *direct all ingress and egress of vehicle and bus access into and out of the structure so as to limit vehicle and bus traffic on adjacent residential streets.*

Project Commitment:

The Blue Line Extension Project commits that the Downtown Robbinsdale park-and-ride and transit center building will include no more than 290 public parking spaces. The Project further commits that all bus traffic ingress and egress will be restricted to West Broadway, and all car ingress and egress



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will be restricted to Bottineau Boulevard. The Project also commits to inclusion of a Metro Transit Police substation within the park-and-ride. These commitments will be reflected in 60% design plans.

While the final design for the Park-and-Ride and Transit Center is not complete, the Blue Line Extension Project commits that it will include no more than 290 parking spaces. I believe the rationale and data presented in the letter sent September 4 justifies this number as an appropriate size, however should conditions or thinking change, we remain open to discussions about reducing the size further, if warranted. Restricting all bus access to West Broadway Avenue will provide efficient and direct service for the many bus stops on West Broadway Avenue throughout Downtown Robbinsdale, reducing unnecessary bus traffic on side streets. Similarly, restricting car access to County Road 81, which is the main arterial route through Robbinsdale, will minimize unnecessary car traffic on local side streets.

Please find attached exhibits illustrating these commitments and conceptual architectural renderings of the Park-and-Ride and Transit Center.

Lowry Avenue Station

City Draft Resolution #2-c:

To address concerns related to the Project's impact of access to and from North Memorial Hospital, which could result in delays to emergency care of patients brough (sic) by public safety personnel as well as the 20,000 individuals who arrive in private vehicles annually; and related concerns about protecting safety and accessibility in the vicinity of the Lowry Avenue Station; and related to the Project's impact on Air Care Operations, the Plans should be amended to:

- i. indicate traffic control measures to mitigate issues of interaction of emergency vehicles, private vehicles, and Air Care Operations;*
- ii. indicate modifications to the station area and platform to increase public safety and accessibility to and from North Memorial Hospital.*

Project commitment:

The project will address concerns from North Memorial Hospital through the federal environmental review process, with specific binding mitigation measures to be included in the Supplemental Final Environmental Impact Statement.

North Memorial's concerns have been officially documented in the Supplemental Draft Environmental Impact Statement. Specific mitigation measures outlining how the project will address these concerns will be documented as binding commitments in the Supplemental Final Environmental Impact Statement expected to be finalized mid-2025 after another official public comment period. The Project can not commit to specific mitigation measures at this stage, as that must be formally done through the federal environmental process. At this stage all possible options to address North Memorial concerns are on the table.



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The Project continues to be in close conversation with North Memorial Hospital related to their stated concerns with the Lowry Avenue station. The Project is leading a series of workshops to evaluate design options for this station, including traffic control measures and hospital access and safety. This work is part of a larger collaborative design process with North Memorial, Minneapolis Park and Recreation Board, the City of Robbinsdale and City of Minneapolis to continue to evaluate design options and details. This process is intended to address specific concerns and explore potential modifications or refinements to the station area and platform to increase public safety and accessibility to and from North Memorial, as well as measures to mitigate issues of interaction between emergency vehicles, private vehicles, and Air Care Operations.

If any major changes to the grade or location of the Lowry station result from this collaborative design process or environmental mitigation, the City of Robbinsdale would be required to officially approve such changes as part of final design plan review process.

West Broadway Avenue north of 42nd Avenue

City Draft Resolution #2-d:

To address concerns related to diversion of significant amounts of traffic onto West Broadway, which will increase risks to pedestrian and bicycle traffic and will accelerate the deterioration of the condition of West Broadway, the Plans should be amended to include a full reconstruct (under direction of the Robbinsdale City Engineer) of West Broadway, north of 42nd Avenue North.

Project response:

As previously communicated, reconstruction of West Broadway Avenue north of 42nd Avenue cannot be included in the Blue Line Extension Project because it is not eligible for federal transit funding. However, Hennepin County is actively collaborating with the City of Crystal about this same topic. County staff are currently completing the biennial evaluation of roadway projects as part of its five-year Transportation Capital Improvement Program, which includes the 4.2-mile segment along West Broadway Avenue between 42nd Avenue in Robbinsdale and Bottineau Boulevard, for the 2026-2030 Transportation CIP and associated Work Plan. The County has also committed to completing a feasibility study over the next 12 months of near-term multi-modal improvements for consideration between Lakeland Avenue, north of highway 100 and Welcome Avenue prior to reconstruction. County staff are exploring all options for funding, including county Road & Bridge, Transit and Mobility or Transportation Operations funding, as well as external grant opportunities. I encourage the City of Robbinsdale to reach out to Hennepin County Public Works leadership to actively participate in these ongoing discussions.

I have attached for your reference a letter sent by Hennepin County Public Works to the City of Crystal on September 19, 2024.

Turnstiles, public safety

City Draft Resolution #2-e:



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To address concerns related to public safety at the LRT Station areas, the Plans should be amended to include the installation of turnstiles and/or other ticketing mechanisms at all station platforms.

Project commitment:

The Blue Line Extension Project commits to designing and constructing station platforms to be able to accommodate the potential future addition of turnstiles or other barricade designs at a later date. These designs will be developed in collaboration with the city through the station design process in 2025.

The subject of turnstiles or other forms of barricaded entry to light rail station platforms is currently under review by Metro Transit, which will release an in-depth report on the subject later this fall. This study will inform future decisions about station design for the Blue Line Extension that will be made in partnership with each city along the corridor as part of the station design process expected to begin in early 2025. I appreciate the concerns about safety and acknowledge that other metro systems have sought to address similar concerns by retrofitting existing stations with gated entry mechanisms. Part of the Metro Transit study will evaluate the cost and effectiveness of those projects. To make it possible to add turnstiles or similar barriers either through station design or at another future date, the Blue Line Extension Project commits to designing stations that can accommodate turnstiles or be easily retrofitted to add them in the future.

Additional City Priorities

To help address additional concerns raised by the city not directly related to the physical design of the project, below are additional points and information related to the specific items highlighted in Robbinsdale's draft resolution.

City Draft resolution #3-a:

Dedication of direct resources to the City for Anti-Displacement requirements to serve residents and businesses in the immediate corridor and walkshed of the project. Such Anti-Displacement resources should reflect the City's proportionate share of the Project and should be allocated fairly among cities within the Project route.

Project response:

Funding, resources and commitments to anti-displacement that are incorporated within the scope of the Blue Line Extension Project itself will be distributed equitably between cities according to the specific needs and impacts to residents and businesses within each city. The Project's specific anti-displacement commitments will be determined through the federal environmental process and published in the Supplemental Draft Environmental Impact Statement in mid-2025. There is and will be additional funding and resources available to residents and businesses outside of and separate from the Project, such as through the State funded Blue Line Extension Anti-Displacement Community Prosperity Board. The Project does not have jurisdiction over these funds and must remain removed from decision-making about them in accordance with the National Environmental Protection Act.



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City Draft Resolution 3-b:

Provision by the Met Council to the City of rider data that was used to determine the number of parking stalls to be built in the parking structure.

Project response:

Please find attached to this memo a Powerpoint presentation previously shared with Robbinsdale staff that includes ridership data supporting a 290 stall park-and-ride. We will also provide the city with additional detailed data and ridership model reports and documentation as ridership models are refined later this year based on design plan updates resulting from Municipal Consent.

City Draft Resolution 3-c:

A Memorandum of Understanding (MOU) address Public Safety in and near the parking garage, and on and near the train(s) and station platforms. Such MOU shall include a commitment to roles and responsibilities of the Metro Transit Police Department. Such Public Safety MOU also shall include a provision that memorializes verbal representation from Project staff to the City committing to the establishment of a substation of the Metro Transit Police Department at the parking garage.

Project response:

The Project will work to develop an MOU specifically related to the Downtown Robbinsdale Park-and-Ride. I have previously shared our Metro Transit Police Department Joint Powers Agreement, as an example. We will begin to draft a new Joint Powers Agreement for this specific case to advance conversations with the City of Robbinsdale around this topic.

The Project previously committed to and is incorporating a Metro Transit Police substation in design plans for the Park-and-Ride and Transit Center in Downtown Robbinsdale. Similar substations, such as the one at the Brooklyn Center Transit Center are used by Metro Transit Police Department officers to monitor the station and complete related reports and work while on patrol. Transit police are most effective when they are actively patrolling station platforms and riding light rail vehicles. As Metro Transit Police Department continues to increase staffing, there will be opportunities to commit to more stationary beats at some facilities like the Robbinsdale Park-and-Ride. We will continue to develop specific agreements and share staffing details for the Robbinsdale Park-and-Ride and Transit Center as the project advances and as Metro Transit continues to implement its Safety and Security Action Plan that was previously shared with the City.

Before the Blue Line Extension begins revenue service, there are required operations safety steps that will be included, including safety plans, training, and coordination.

City Draft Resolution 3-d:



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An MOU outlining measures to be taken by the Met Council for ongoing communications with the City of Robbinsdale, including residents, owners, businesses, and workers in the immediate corridor, regarding all activity and impacts of the project during construction through the commencement of operations and revenue service of the line.

Project response:

The Project will share future outreach, engagement, and communications plans as requested by the City of Robbinsdale as they are developed. The Project is committed to providing robust and inclusive outreach and communications to ensure all stakeholders are well informed regarding activity and impacts of the project leading up to and during construction. The Project will work with the City to continue to develop and refine current outreach and communications efforts as the project advances.

City Draft Resolution 3-e:

An MOU outlining how Public Safety officials, including but not limited to Robbinsdale Police Department and Robbinsdale Fire Department, will receive appropriate training and equipment for calls unique to a Light Rail system.

Project response:

The Blue Line Extension will develop, in partnership with local emergency response departments, a Safety and Security Management Plan before revenue service begins. This document will detail strategies for organizing, controlling, and influencing safety and security throughout the design, construction, procurement, testing, activation and acceptance of the Blue Line Extension. It will outline specific requirements to certify the Blue Line extension is safe and secure and will describe how these requirements will be implemented and overseen, as well as the management structure. Attached for your reference is the Safety and Security Management Plan developed for the prior route of the Blue Line Extension Project in 2016.

Metro Transit has a standard practice of working closely with local emergency response offices in advance of revenue service and on a regular basis after service begins, including regular planning and safety drills. Metro Transit Police Department holds quarterly fire and life safety meetings with surrounding agencies within light rail transit corridors to discuss concerns and provide updates and resources. All Blue Line Extension cities will be added to this regular coordination.

City Draft Resolution 3-f:

A three-party MOU between the City, Met Council, and Hennepin County to address maintenance issues, including snow plowing/storage/removal.

Project response:

Maintenance agreements will be developed with the City of Robbinsdale, Hennepin County, and Metro Transit before revenue service begins. These agreement swill cover a wide variety of maintenance



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issues, including snow removal and management, landscape maintenance, traffic control devices operations and maintenance, pedestrian and bicycle facilities maintenance and other roadway elements.

We will jointly work with the county to amend existing maintenance agreements, and develop a new agreement for maintenance of transit facilities.

Attached for your reference and background is the executed maintenance agreement between Ramsey County, City of St. Paul and Metro Transit for the Green Line.

City Draft Resolution 3-g:

A three-party MOU between the City, Met Council, and Hennepin County, or a detailed landscaping plan regarding vegetation and lighting throughout the corridor. Such MOU or landscaping plan must commit Met Council and Hennepin County to practices that promote sustainability, including a no-net-loss (with a preference for increase) in vegetation near the Project, all lighting installed use LEDs, and consideration of Dark Sky Compliance where appropriate.

Project response:

The Project commits to a no-net-loss in vegetation near the Project, that all lighting installed will use LEDs and meet Dark Sky compliance. The Project will also follow all city and county ordinances and relevant plans related to practices that promote sustainability. Specific landscaping and lighting plans will be developed collaboratively with the City of Robbinsdale through Design Resolution Team meetings.

Please see attached sample landscaping and lighting plan from Green Line Extension.

City Draft Resolution 3-h:

An MOU committing to continued work to address increased intermittent noise, including options for mitigation, regardless of findings of the SEIS

Project response:

The project is committed to continued study to address noise impacts during construction and during LRT operations, following guidance from the Federal Transit Administration regarding construction and operation noise. The National Environmental Protection Act requires the Project to evaluate and identify mitigation of noise and vibration impacts where required. The Project cannot commit to any measures beyond or “regardless” of findings of the environmental impact statement before the Supplemental Final Environmental Impact Statement is published, which is expected to be mid-2025. If after this document outlining specific commitments to address noise impacts is published, the City of Robbinsdale feels there remain unaddressed impacts, we will work with the City to document those impacts and determine appropriate action, including options for mitigation.



METRO Blue Line LRT Extension (BLE)

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Please see the attached Noise and Vibration Technical Report from the Blue Line Extension SDEIS for examples of noise impacts and possible mitigation measures.

City Draft Resolution 3-i:

Project reimbursement to the City for the City's share of the cost for all right-of-way acquisition that was a part of the Highway 81 reconstruction in 2005-2008.

Project response:

The Blue Line Extension Project acknowledges the City of Robbinsdale participated in the cost of purchasing right-of-way for the reconstruction of Highway 81 in 2005-2008. Reimbursement for the City's acquisition of this land is not a project eligible cost. I encourage the City to work directly with Hennepin County and the Metropolitan Council outside the scope of the Blue Line Extension project to continue this discussion.

City Draft Resolution 3-j:

Project reimbursement to the City in the form of Payment in Lieu of Taxes (PILT) that will result from the loss of taxable property due to the parking structure being built on the northwest corner of 40th Avenue North and Highway 81, in the amount of a same or similar project along the corridor. This loss of property tax revenue would also be offset by the Project including the reconstruction of 40th Avenue North from Highway 81 to Hubbard Avenue North.

Project response:

As communicated in the letter sent September 13, the Project commits to reconstructing the 40th Avenue roadway from County Road 81 to Hubbard Avenue North.

City Draft Resolution 3-k:

The Met Council and Hennepin County agree to cover all costs for any required enhancement of existing and new utilities that have enhancement required due to the project.

Project response:

As communicated in the letter sent September 13, the Project commits to cover all costs associated with required public utility impacts and necessary improvements related to construction and operations of the Blue Line extension.

Conclusion

I'm grateful for the City of Robbinsdale's continued good faith collaboration in advancing the Blue Line Extension. I trust that the commitments made in this letter and supporting materials demonstrate our



METRO Blue Line LRT Extension (BLE)

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resolve to continue moving this project forward in close coordination with the city. I feel we have meaningfully addressed all Robbinsdale's stated concerns in your draft disapproval resolution to the highest degree possible at this early design stage. We have much work to do, and I believe a resolution approving the Preliminary Design Plans for the project will be the most efficient and effective way to advance this project for the long-term benefit of Robbinsdale and our region.

Sincerely,

A handwritten signature in blue ink, appearing to read "Nick Thompson", is written over a faint, light blue circular watermark that contains the METRO Blue Line Extension logo.

Nick Thompson
Interim Blue Line Extension Project Director
Metro Transit Deputy General Manager, Capital Projects

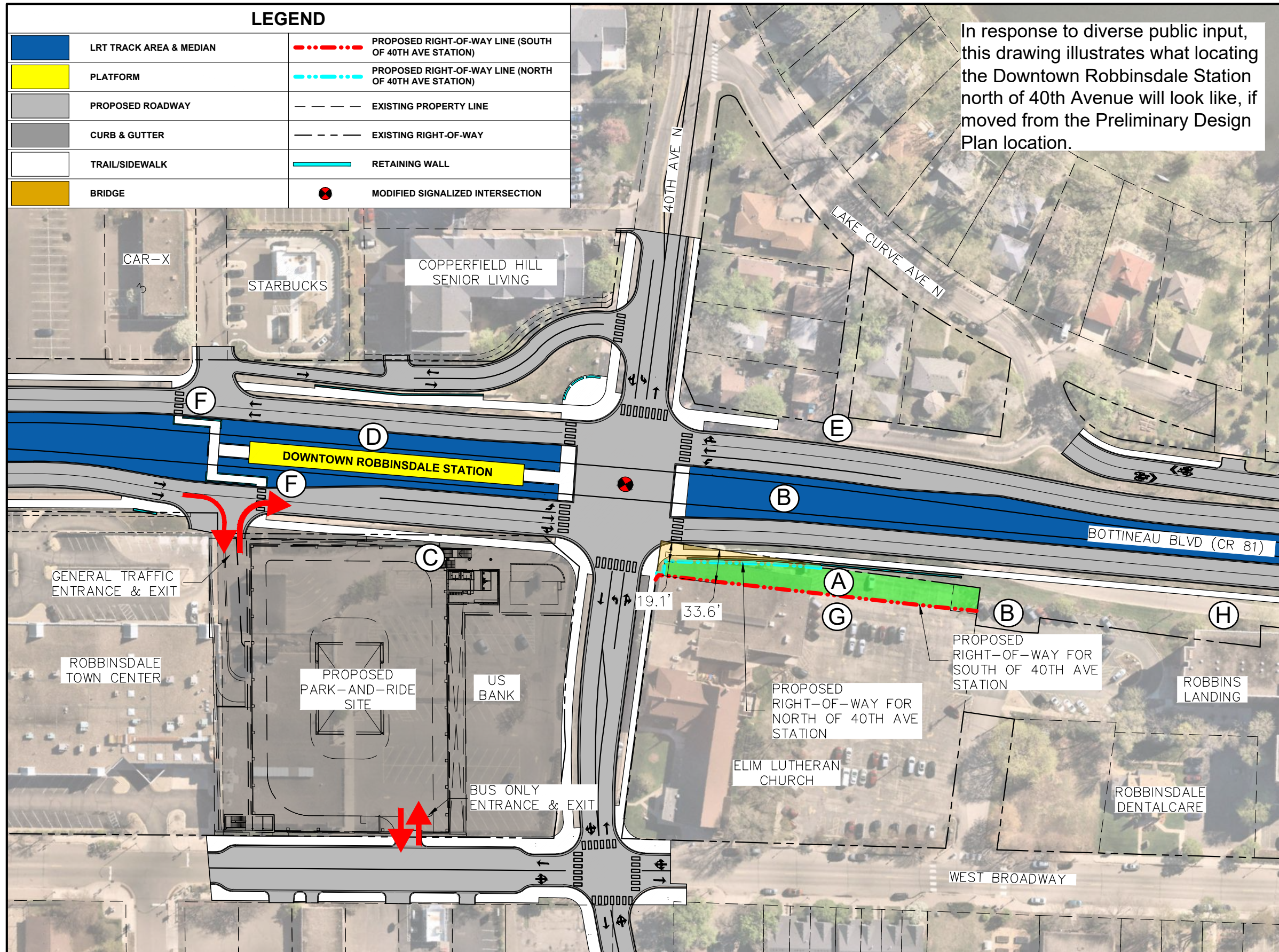


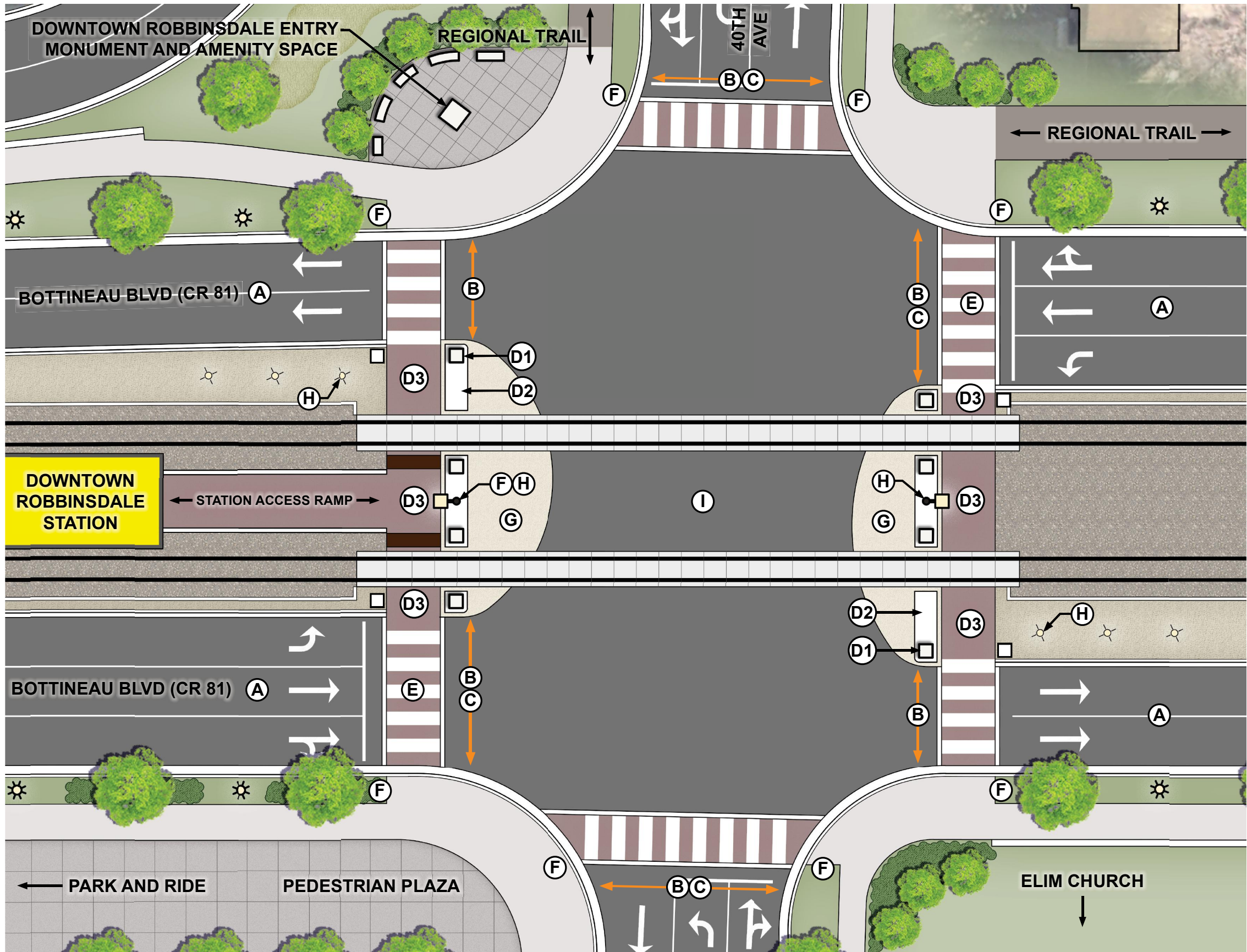
EXHIBIT #2-a (1 OF 3)

Exhibit to: Nick Thompson letter to Tim Sandvik dated September 25, 2024 regarding review and approval of the Preliminary Design Plans

September 25, 2024

Kimley»Horn





INTERSECTION ENHANCEMENTS

- (A) REDUCED CR 81 VEHICLE DESIGN SPEED**
EXISTING: 40 MPH
PROPOSED: 35 MPH
- (B) REDUCED PEDESTRIAN EXPOSURE TO VEHICLE TRAFFIC**
TRAFFIC SIGNAL TIMING WILL ALLOW FOR COMPLETE CROSSING OF ROADWAY AND GUIDEWAY
ACCESSIBLE PEDESTRIAN SIGNALS (VISUAL AND AUDIBLE COUNTDOWN TIMERS) WILL BE PROVIDED
- (C) RIGHT-TURN LANE REMOVED**
- (D) PEDESTRIAN REFUGE SPACE**
 - PEDESTRIAN PROTECTIVE BOLLARDS
 - CURB PROTECTED CROSSING
 - SPECIAL PAVEMENT TREATMENT
- (E) ENHANCED HI-VISIBILITY CROSSWALKS (ALL)**
EXISTING: 6 FT WIDE STRIPING
PROPOSED: 12 FT WIDE STRIPING
- (F) CROSSING PUSH BUTTON**
- (G) CURB APRON SPECIAL PAVEMENT TREATMENT**
- (H) ENHANCED LIGHTING LEVELS**
- (I) SIGNALIZED INTERSECTION WITH PEDESTRIAN CROSSING SIGNAGE ENHANCEMENTS**



EXHIBIT NOT TO SCALE

DRAFT - WORK IN PROCESS
SUBJECT TO CHANGE AS DESIGN ADVANCES

This drawing illustrates what significantly enhanced intersection design with pedestrian safety elements will include.

EXISTING 42ND AVE AND BOTTINEAU BLVD (CR 81) INTERSECTION



PROPOSED 42ND AVE AND BOTTINEAU BLVD (CR 81) INTERSECTION



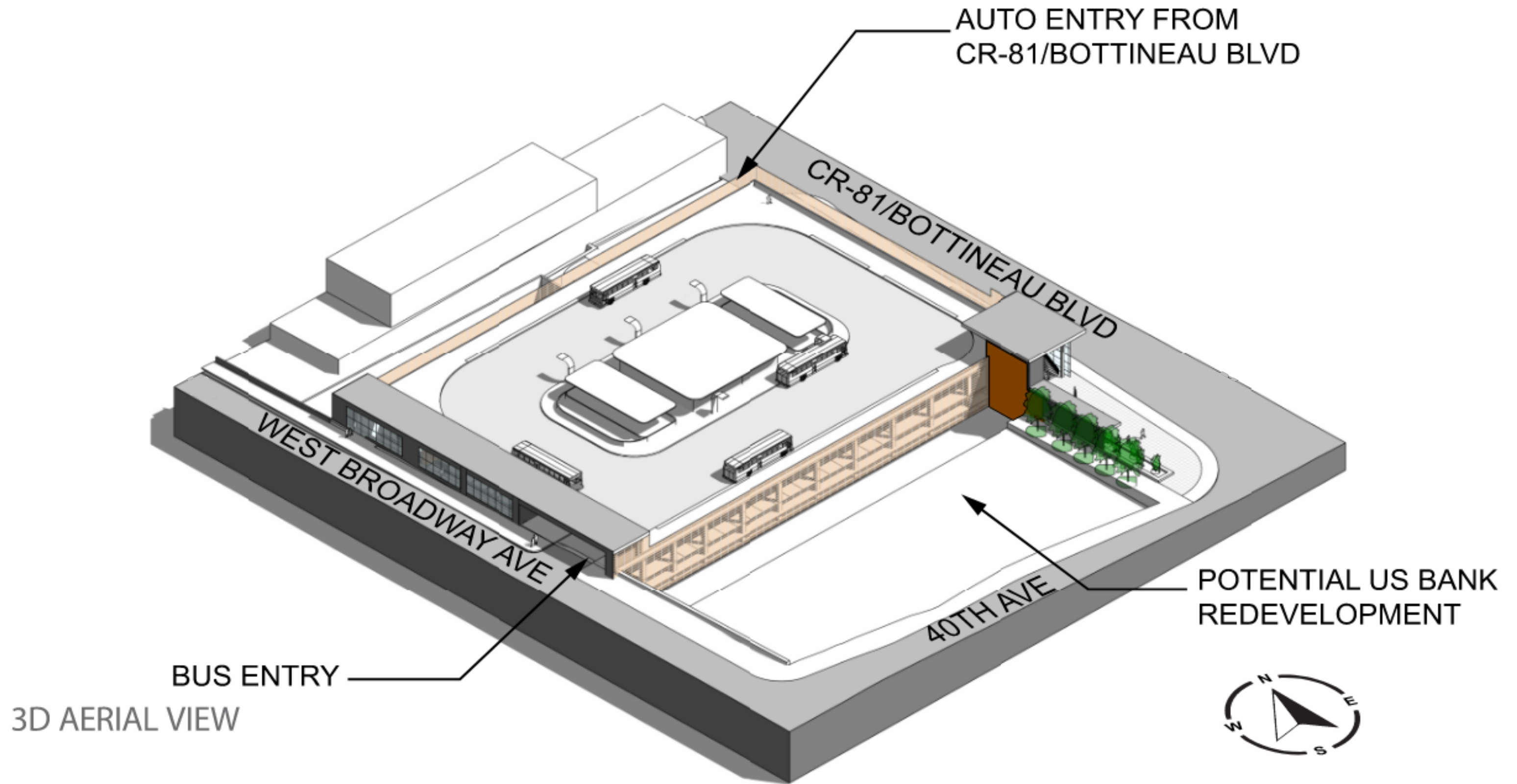
This visualization illustrates what significantly enhanced intersection design with pedestrian safety elements will include at Bottineau Blvd and 42nd Ave.

DRAFT - WORK IN PROCESS
SUBJECT TO CHANGE AS DESIGN ADVANCES



EXHIBIT #2-a (3 OF 3)
Exhibit to: Nick Thompson letter to Tim Sandvik dated September 25, 2024
regarding review and approval of the Preliminary Design Plans
September 25, 2024





DRAFT - WORK IN PROGRESS

#2-b

ROBBINSDALE PARK AND RIDE

09/25/2024

PRELIMINARY

EXHIBIT #2-b

EXHIBIT TO: NICK THOMPSON LETTER TO TIM SANDVIK DATED SEPTEMBER 25, 2024 REGARDING REVIEW AND APPROVAL OF PRELIMINARY PLANS



HENNEPIN COUNTY

MINNESOTA

September 19, 2024

Adam Bell, City Manager
Jesse Struve, P.E., Director of Public Works/City Engineer
John Sutter, Community Development Director
City of Crystal
4141 Douglas Drive N
Crystal, MN 55422

Re: Future Improvements on West Broadway Avenue (CSAH 8)

Mr. Bell, Mr. Struve, and Mr. Sutter:

Hennepin County has been collaborating with the cities of Crystal and Robbinsdale on a future jurisdictional transfer of West Broadway Avenue (CSAH 8) between Douglas Drive (CSAH 102) and 42nd Avenue (CSAH 9). We acknowledge that Crystal is most interested in understanding the timeframe for the county to make multimodal improvements and ultimately reconstruct this roadway.

The county's Asset Management System has identified the entire segment of West Broadway Avenue between Douglas Drive and 42nd Avenue as a reconstruction candidate. The oldest section of the corridor is the one-half mile section between Lakeland Avenue, north of Highway 100, and Welcome Avenue. In addition, the roadway currently lacks multimodal facilities for people walking and biking, presenting challenges for people especially those with limited mobility. One barrier of note is the BNSF railroad crossing where multimodal facilities are currently non-existent. City staff have shared their concerns with the county regarding the lack of sidewalk/multi-use facilities along the corridor, and subsequently Lisa Cerney and I participated in a field walk along the corridor on September 11, 2024 to better understand the city's concerns and opportunities for this roadway segment.

West Broadway Avenue is located adjacent to the currently proposed Metro Blue Line Extension light rail project alignment along Bottineau Boulevard (CSAH 81). It is anticipated that there will be traffic diversion during construction of the Blue Line Extension project leading to increased traffic on this roadway for an extended period of time. With the expected diversion and the county's focus on providing accessible multimodal connections, this segment is important to support first and last mile connections to the future light rail service.

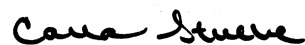
Hennepin County manages its capital road and bridge projects within its five-year Transportation Capital Improvement Program (CIP) and associated Work Plan. New capital projects are identified based on a data-driven prioritization process, which includes the condition of the roadway (pavement age, pavement treatment and maintenance history), safety (existing crashes and systemwide safety analysis), and equity (disparity reduction and usage by all modes). The scoring of these criteria is weighted as follows: 50 percent asset condition, 25 percent safety and 25 percent equity. County staff are currently completing this biennial evaluation, which includes the 4.2-mile segment along West Broadway Avenue between 42nd Avenue in Robbinsdale and Bottineau Boulevard, for the 2026-2030 Transportation CIP and associated Work Plan.

Over the next 12 months, county staff will complete a feasibility study of near-term multi-modal improvements for consideration between Lakeland Avenue, north of Highway 100 and Welcome Avenue prior to reconstruction. Once the study is completed, county and city staff will collectively select a preferred option for implementation in the near-term. Long term, we are in the process of evaluating West Broadway Avenue for reconstruction consideration. We will share more information with the city as we complete this evaluation process in the coming months. New projects for the 2026-2030 CIP will be recommended in May 2025 for Hennepin County Board approval in December 2025.

County staff are exploring all options for funding, including county Road & Bridge, Transit and Mobility or Transportation Operations funding, as well as external grant opportunities. Hennepin County will review each external funding opportunity for West Broadway Avenue and will make a determination to submit an application based on the following: timeline of funds (specifically those that are aligned with the schedule of the Blue Line LRT Extension), award amounts (specifically those with typical awards greater than \$5 Million); and evaluation criteria (specifically those suited for the reconstruction of arterial roadways in suburban areas).

We appreciate the continued collaboration with city staff and are confident that we can find opportunities to advance these improvements forward. Please reach out with any questions.

Sincerely,



Carla Stueve, P.E.

Transportation Project Delivery Director and County Engineer

Cc: Lisa Cerney, P.E., Assistant County Administrator Public Works
Dan Soler, P.E., Transit and Mobility Director
Chris Sagsveen, P.E. Transportation Operations Director



Ridership Update

07/29/2024



BROOKLYN PARK | CRYSTAL | ROBBINSDALE | MINNEAPOLIS



Ridership Forecast Timeline

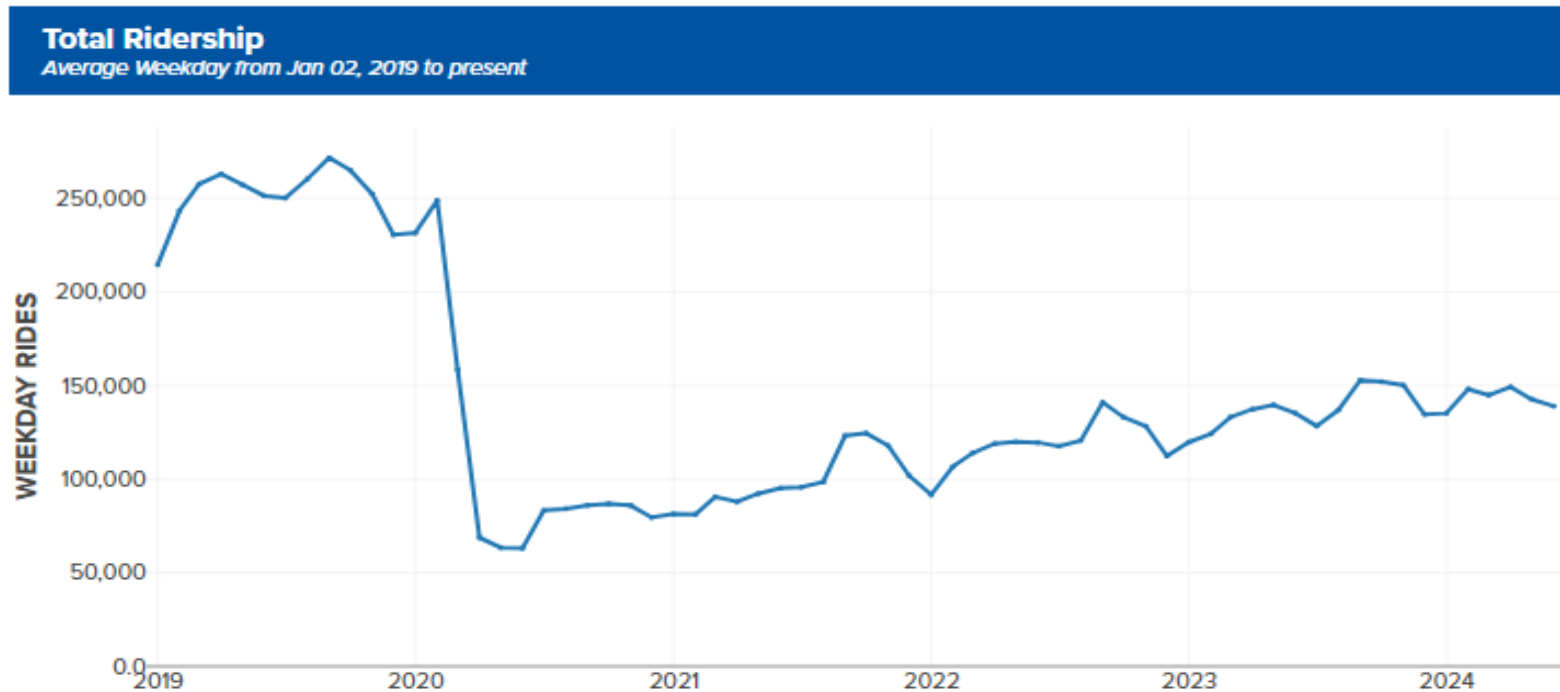
- September 2023: Preliminary 2019 model
- January-February 2024: Refined 2019 model and 2022 model
 - Included in-depth changes to BLE supporting service
 - Relocated Robbinsdale Station to south of 40th Avenue N
 - Incorporated 2022 onboard survey data
 - Forecasts made public
- Ongoing: 2023 model (in refinement)
 - Incorporated 2023 transit usage data
 - Updates to population and employment forecasts (year 2050)
 - Updated existing LRT service plan (August 2024 service increase from 15- to 12-minute)*
 - Model to be submitted to FTA for review*

*update underway, not included in today's forecasts



Ridership Trends 2019 to 2023

- Ridership has declined 45%
- The transfer rate has declined system-wide by about 30%



Ridership Trends 2019 to 2023

- Park-and-ride use is down about 75%, in 2024 use has stabilized
- Ridership has declined near Robbinsdale
 - Route 32 ridership down 40%
 - Route 717 ridership down 85%



Average Weekday Ridership Forecasts

- Total ridership on BLE remains in the previously estimated range using pre- and post-pandemic data
- Blended forecasts provided in SDEIS were:
 - Current year: 9,100
 - Horizon year: 12,700

Metric	Current Year*	Horizon Year*
Trips on Blue Line Extension	12,000	14,100
Trips from Zero-Car Households on Blue Line Extension	5,400	6,700

*Results factored using FTA guidance: 15% in current year, 25% in horizon year



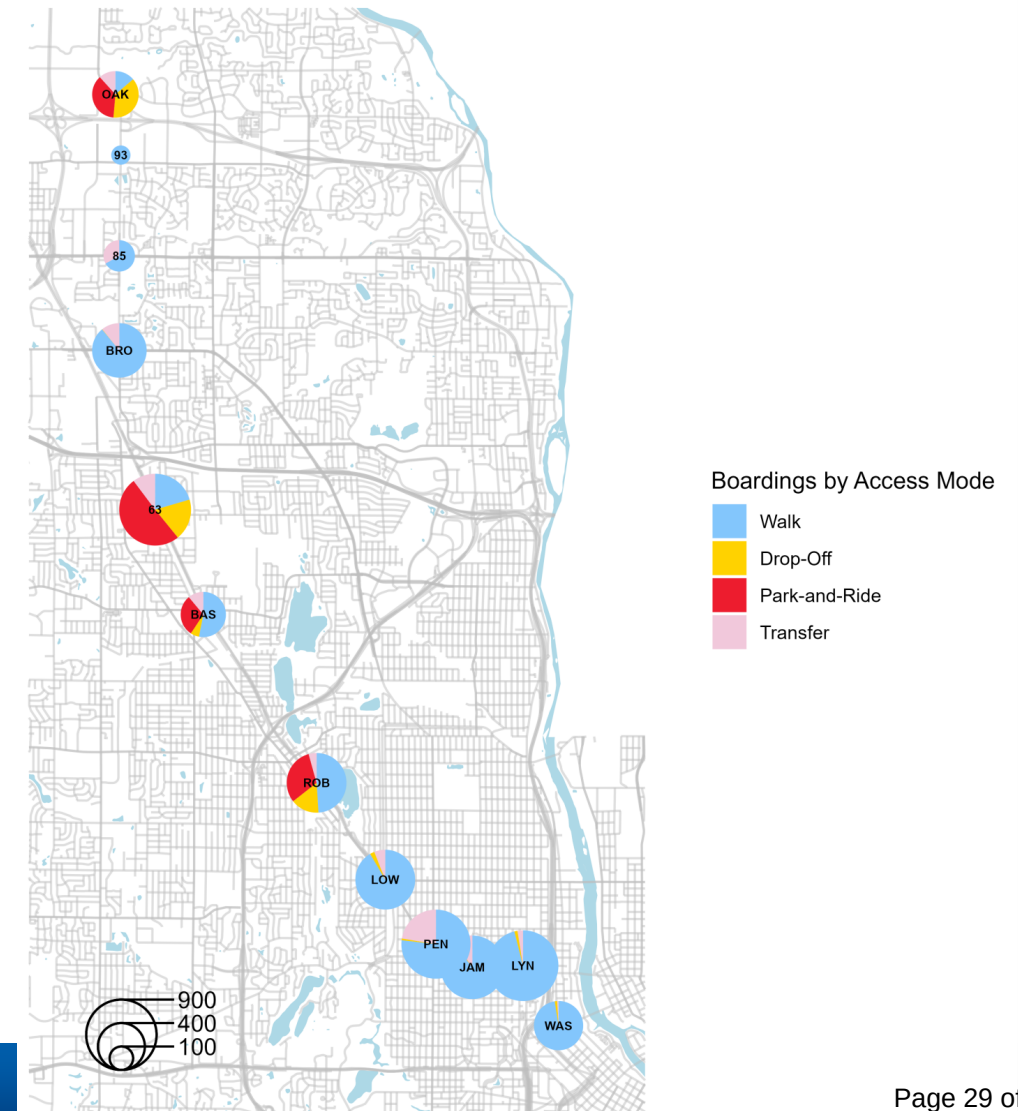
Total Daily Boardings at Robbinsdale Station

- January/February 2024 model
 - Blended Pre-Pandemic (2019) & Post-Pandemic (2022) model results
 - Horizon year boardings: 900-950
 - Includes 500 park-and-ride spaces at Robbinsdale Station
- Current model
 - 2023 Post-Pandemic model results
 - Horizon year boardings: 800-825
 - Includes 300 park-and-ride spaces at Robbinsdale Station



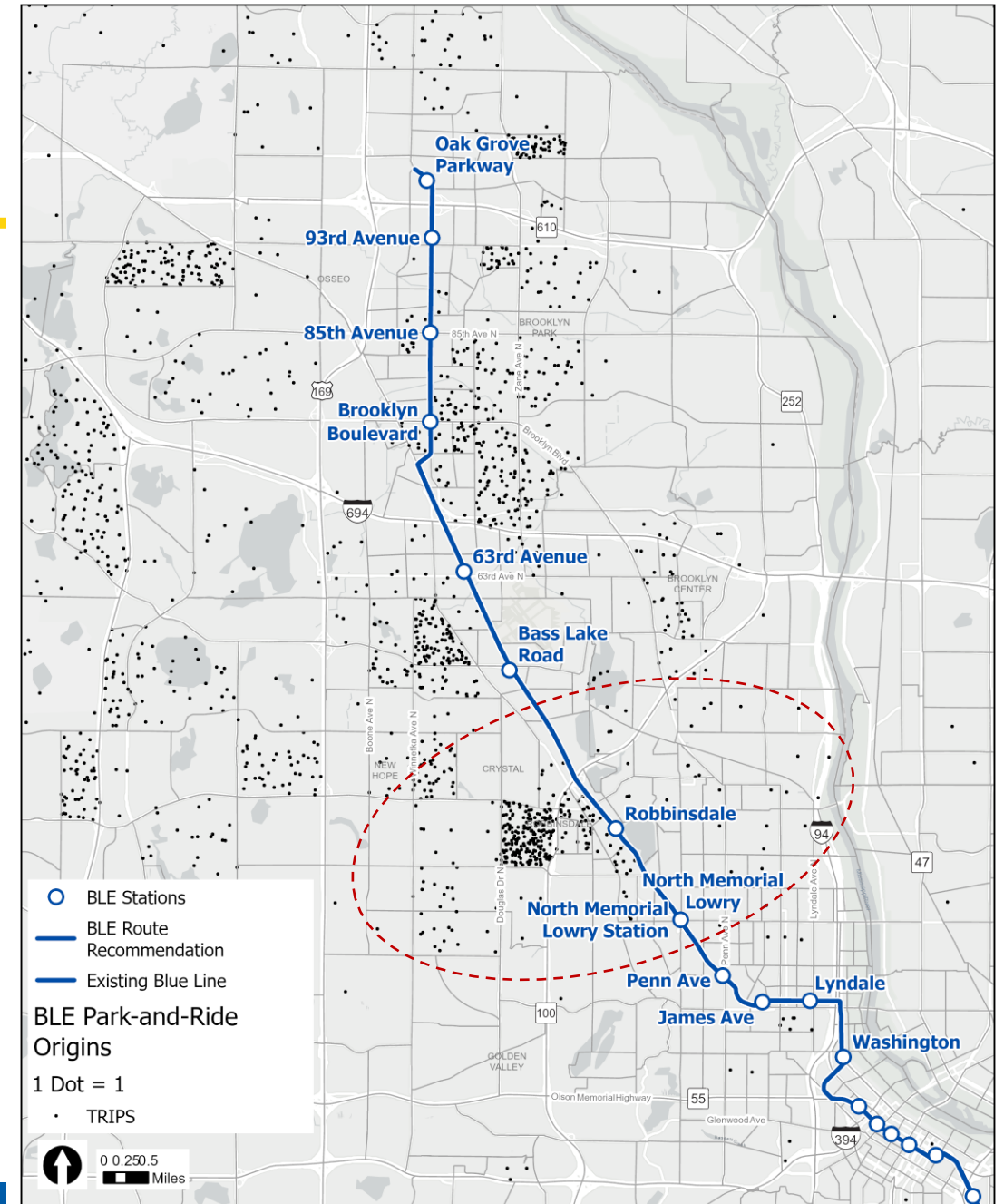
Downtown Robbinsdale Station Riders

- Current model forecasts show that of BLE riders forecast to board at the Downtown Robbinsdale Station 800-825 riders per day:
 - 39% park-and-ride trips
 - 38% walk access trips
 - 18% drop-off and bike trips
 - 5% transfers from bus and other transit services
- Total horizon year boardings at Lowry Ave Station are approximately the same as Downtown Robbinsdale



Park-and-Ride Origins

- Map shows all park-and-ride trip origins using Blue Line Extension
- Robbinsdale park-and-ride users are limited to a 6-mile radius of the station
 - Oak Grove Parkway and 63rd Avenue allow longer access distances



Next Steps for Ridership Forecasts

- Forecasts shared today to be included in the SFEIS
- One major model update remaining prior to FTA submittal (planned for winter 2025) including:
 - Modifications to 2050 population and employment forecast TAZ allocations
 - August 2024 service plan from Metro Transit (includes 20-minute Route 32 service and 12-minute light rail service)
 - Horizon year network changes based on Network Now preliminary recommendations



**JOINT POWERS AGREEMENT BETWEEN
THE CITY OF BROOKLYN PARK AND THE METROPOLITAN COUNCIL
FOR MUTUAL AID AND EMERGENCY ASSISTANCE
WITH LAW ENFORCEMENT SERVICES**

Pursuant to Minnesota Statutes sections 471.59 and 473.407, this Joint Powers Agreement (“Agreement”) is made by and between the Metropolitan Council (“Council”), a public corporation and political subdivision under the laws of the State of Minnesota, on behalf of its Metropolitan Transit Police Department (“MTPD”), and the City of Brooklyn Park, Minnesota (“City”), a Minnesota municipal corporation, on behalf of its Brooklyn Park Police Department (“BPPD”).

RECITALS

1. Pursuant to Minnesota Statutes section 473.407, the Council established the MTPD to police its transit property and transit routes, to carry out investigations, and to make arrests. The jurisdiction of MTPD is limited to offenses relating to Council transit property, equipment, employees, and passengers and includes traffic lanes designed for bus or transit use, freeway or expressway shoulders in the seven-county metropolitan area used by authorized transit buses and Metro Mobility buses, and high-occupancy vehicle lanes used by transit buses.

2. In addition, MTPD is authorized to exercise general law enforcement agency authority to assist any law enforcement agency in implementing or carrying out law enforcement activities, programs, or initiatives upon request from, or under an agreement with, any law enforcement agency and subject to the availability of MTPD’s personnel and other resources.

3. Pursuant to Section 7.03 of its City Charter and Chapter 33 of its City Code, the City has created a police department to provide for the government and good order of the City, the suppression of vice and immorality, the prevention of crime, the protection of public and private property, the benefit of residence, trade, and commerce, and the promotion of health, safety, order, convenience, and the general welfare within the geographical boundaries of the City. BPPD officers are also authorized transit representatives pursuant to Minnesota Statutes section 609.855, subd. 6(g).

4. The parties acknowledge that BPPD has primary law enforcement jurisdiction within the City, and that both police departments have concurrent jurisdiction over transit property and transit routes within the City.

5. The City is authorized to enter into this Agreement pursuant to City Resolution No. XX-XXX, approved on [Date]. The Council is authorized to enter into this Agreement pursuant to Business Item No. 2023-XX approved on [Date].

6. The City and Council desire to assist each other in providing police services and emergency police services in the City as permitted in Minnesota Statutes Chapter 12.

NOW, THEREFORE, in consideration of the terms and conditions expressed in this Agreement, the City and the Council agree as follows:

AGREEMENT

A. Law Enforcement Assistance

1. MTPD may engage in general law enforcement activities, including foot patrol, in the City related to MTPD's jurisdiction. This includes arrest authority pursuant to Minnesota Statutes Chapter 629 and City Ordinances.
2. MTPD may exercise general law enforcement agency authority with permission of BPPD or when assisting BPPD in implementing or carrying out BPPD law enforcement activities, programs, or initiatives.
3. If there is a crowd-control situation occurring on or near Metro Transit property within the City, BPPD and MTPD shall have joint command of the response.
4. If there is a suspicious package or item situation occurring on or near Metro Transit property within the City, MTPD shall coordinate the appropriate response with the BPPD.
5. If an incident occurs in the City that requires a specialized response unit, such as Special Weapons and Tactics ("SWAT"), BPPD's emergency response unit will be activated and take the lead. These types of incidents include, but are not limited to barricaded suspects, hostage incidents, active shooters, or any bomb or explosive device related call.

B. Arrests and Investigations

1. Pursuant to Minnesota Statutes section 473.407, subd. 2, the initial processing of a person arrested by MTPD for an offense within the agency's jurisdiction is the responsibility of MTPD unless otherwise directed by BPPD.
2. Persons arrested for violations which MTPD determine are not within its jurisdiction will be referred to the appropriate local law enforcement agency for further investigation or disposition.
3. Each law enforcement agency will process persons arrested under their own Originating Agency Identifier number.
4. MTPD will conduct all investigations relating to the damage or theft of Metro Transit property, including transit facilities, equipment, or any other property owned or used by Metro Transit.
5. Crimes committed on Metro Transit conveyances or in and about Metro Transit rail platforms, facilities, and other property shall be investigated by MTPD unless MTPD requests assistance.

6. All other crimes related to MTPD jurisdiction shall be investigated by mutual agreement.
7. At the request of BPPD, MTPD may assist in a subsequent investigation being carried out by BPPD.
8. BPPD crime scene technicians or other forensic personnel will be utilized when necessary to document or investigate any incident requiring extensive forensic investigation. The Bureau of Criminal Apprehension shall be the primary investigating agency in Critical Incident cases involving only MTPD officers, unless MTPD requests BPPD to assume responsibility. BPPD shall be the primary investigatory agency in all other Critical Incident cases, unless BPPD refers the investigation to another jurisdiction.
9. After initiating an investigation, either law enforcement agency may turn over cases to the other agency for investigation that fall within that agency's statutory jurisdiction by mutual agreement.
10. Evidence collected in investigations will be inventoried and retained by the investigating agency. In cases where an investigation is transferred to the other agency, all evidence will be turned over to that agency. Data from body-worn cameras will be retained by the law enforcement agency that issued the body-worn camera.
11. BPPD requests for MTPD video data will be submitted to the Real Time Information Center Unit at michael.leubner@transitpd.org or such other address as MTPD may specify in writing.
12. Both agencies will rely on their own reporting system for the completion of reports. Officers will exchange case numbers to aid in follow-up to reported incidents.
13. BPPD will provide MTPD with data on calls for service and reportable crimes on Metro Transit conveyances on at least a yearly basis.

C. Communication

1. Transit related 911 calls received at the Council Transit Control Center ("TCC") will be coordinated as follows:
 - a. MTPD will be dispatched on emergency or in-progress calls. Immediately after this step, TCC may contact BPPD dispatch for a BPPD response. In most cases, these calls will be the responsibility of MTPD.
 - b. Non-emergency calls received by TCC will be dispatched to MTPD. Responding officers may request assistance from the BPPD.
2. Transit related 911 calls received at BPPD dispatch center will be coordinated as follows:

a. BPPD will immediately contact TCC for MTPD coordination and assist as requested. In most cases, these calls will be the responsibility of MTPD.

b. Non-emergency calls received by BPPD dispatch will be transferred to TCC. MTPD will respond to and handle these calls.

3. TCC is a secondary Public Safety Answering Point (“PSAP”). As a secondary PSAP, TCC does not directly receive 911 calls. In addition to TCC, the Council operates the Rail Control Center (“RCC”). All communications should be routed through TCC as it is the secondary PSAP.

4. Both agencies are members of the ARMER Radio System and have many coordination talk groups they can access. At any time, inter-agency communication can occur using the system. The agencies’ respective dispatch centers will coordinate this connection as needed.

5. Both agencies will share information on events or activities that may require additional officers or resources (e.g. large transit events or special events that involve transit).

D. Deconfliction

1. BPPD will notify MTPD of any of any plain clothes or undercover operations on Metro Transit conveyances, or in or around Metro Transit bus stops, rail platforms, facilities, and other property prior to deployment. MTPD will notify BPPD of any plain clothes or undercover operations on Metro Transit conveyances, or in or around Metro Transit bus stops, rail platforms, facilities, and other property in the City prior to deployment.

2. MTPD will advise BPPD of the results of any proactive investigations, including, but not limited to, terrorism, vice, narcotics, gangs, and gun cases in which MTPD is the lead agency. In cases stemming from joint operations such as the Joint Terrorism Task Force, MTPD will follow the lead of the primary law enforcement agency running the investigation or operation.

E. Forfeiture

1. The City and the appropriate prosecuting authority will process any forfeiture resulting from seizures initiated by MTPD within the City. Any proceeds will be divided according to Minnesota Statutes. The law enforcement share will go to the City.

F. Emergency Assistance

1. A party may request assistance (a “Requesting Party”) from the other party (a “Providing Party”) to respond to an emergency (“Emergency Assistance”). The Requesting Party shall make a request for Emergency Assistance to a Providing Party by contacting the Chief of Police or their designee. Requests may either be verbal or in writing. Any verbal request will be followed by a written request as soon as practical or within such period of time as provided by law.
2. Requests and responses to requests for Emergency Assistance under this Agreement are limited to law enforcement personnel assistance services, equipment, supplies, and related resources.
3. In response to a request for Emergency Assistance under this Agreement, a Providing Party may authorize and direct personnel to provide aid to a Requesting Party. The Providing Party shall provide personnel who possess the required qualifications along with the equipment and supplies of the Providing Party to a Requesting Party at the discretion of the Providing Party within the scope of aid deemed necessary by a Requesting Party or the Incident Commander.
4. Each party shall be responsible for damages to, or loss of, its own equipment used to respond to an emergency or provide Emergency Assistance under this Agreement. Each party waives the right to sue the other party for any damages to or loss of its equipment, even if the damages or losses were caused wholly or partially by the negligence of the other party or its officers, employees, or volunteers.
5. A party’s decision to provide Emergency Assistance is subject to the following conditions:
 - a. Any party may withhold resources to the extent necessary to provide reasonable protection and services within its own jurisdiction.
 - b. Any Providing Party may recall Emergency Assistance at any time in the best interests of that party.
 - c. Emergency response personnel of a Providing Party shall follow the policies and procedures of the Providing Party and will be under the Providing Party’s command and control but will follow the operational direction of the Incident Commander and be subject to the incident management system of the Requesting Party.
 - d. Assets and equipment of a Providing Party shall remain under the control of the Providing Party but shall be under the operational control of the Incident Commander within the incident management system of the Requesting Party.
6. The Requesting Party and any Providing Party will each be responsible for its own costs and compensation for any Emergency Assistance that may occur during the term of the Agreement except as set forth below.

a. Unless the Emergency Assistance is eligible for reimbursement, a Providing Party shall be responsible for the costs and compensation of its personnel, equipment, and supplies. A Providing Party shall make no demand to a Requesting Party for the reimbursement of the costs or expenses of the Providing Party for Assistance rendered pursuant to this Agreement. For an emergency that is eligible for reimbursement of costs, the labor force expenses of a Providing Party will be treated as contract labor, with costs of all wages, including overtime and fringe benefits, eligible for reimbursement.

b. Notwithstanding the above paragraphs in this Section, a Requesting Party may reimburse a Providing Party that has provided Emergency Assistance pursuant to this Agreement. A Requesting Party that is willing to reimburse a Providing Party for Emergency Assistance rendered under the terms of this Agreement, may do so after receipt of an itemized bill from the Providing Party for the actual cost of any Emergency Assistance provided. The charges for Emergency Assistance provided pursuant to this Agreement will be based upon the actual costs incurred by the Providing Party, including salaries or wages, overtime, materials, supplies, and other necessary expenses, except that the parties agree that the Federal Emergency Management Agency equipment rates will be used as the basis for equipment charges whenever possible.

c. If a local, State, or Federal emergency is declared, a Requesting Party may reimburse a Providing Party for Emergency Assistance rendered under the terms of this Agreement. Any Providing Party will submit to a Requesting Party an itemized bill for the actual cost of any Assistance provided as described above. A Requesting Party is responsible to take all steps it deems necessary to seek reimbursement from the United States of America, the State of Minnesota, or other sources, to the extent that such reimbursement is available, for expenses it incurs for services provided pursuant to this Agreement. Should funding become available, a Requesting Party may reimburse a Providing Party to the extent possible under the terms of this Agreement. Any claims for reimbursement by a Providing Party must be made to a Requesting Party within 90 days after the expense is sustained or incurred.

d. In the case of an emergency for which a Requesting Party will seek reimbursement of costs from the Federal Emergency Management Agency ("FEMA") or the State of Minnesota, a Requesting Party shall make the request for Emergency Assistance to the Providing Party and the Incident Commander shall monitor and oversee the documentation of the performance of emergency work and the documentation of reasonable and reimbursable costs of a Providing Party in accordance with the FEMA Disaster Assistance Policy and will disburse the Federal share of funds owed to a Providing Party.

G. Term of Agreement and Termination

1. This Agreement remains in force and effect from the Effective Date until February 16, 2028.

2. Notwithstanding any other provision to the contrary, each party may terminate this Agreement, with or without cause, upon 30 days' written notice to the other party.

H. Liability

1. When providing Emergency Assistance:
 - a. For purposes of the Minnesota Municipal Tort Liability Act (Minnesota Statutes, Chapter 466), the employees and officers of a Providing Party are deemed to be employees (as defined in Minnesota Statutes, section 466.01, subdivision 6 of a Requesting Party.
 - b. A Requesting Party agrees to defend and indemnify a Providing Party against any claims brought or actions filed against a Providing Party or any officer, employee, or volunteer of a Providing Party for injury to, death of, or damage to the property of any third person or persons, arising from the performance and provision of Emergency Assistance in responding to a request for Emergency Assistance by the Requesting Party pursuant to this Agreement.
 - c. The intent of this subdivision is to impose on each Requesting Party a limited duty to defend and indemnify a Providing Party for claims arising within a Requesting Party's jurisdiction subject to the limits of liability under Minnesota Statutes Chapter 466. The purpose of creating this duty to defend and indemnify is to simplify the defense of claims by eliminating conflicts among defendants, and to permit liability claims against multiple defendants from a single occurrence to be defended by a single attorney.
 - d. No party to this Agreement nor any officer of any party shall be liable to any other party or to any other person for failure of any party to furnish Emergency Assistance to the other party, or for recalling Emergency Assistance.
 - e. A Providing Party shall not be responsible for any injuries, damages, or losses arising from the acts or omissions of personnel of a Requesting Party and its officers, employees, agents, and assigns.
2. In all other circumstances, each party agrees that it will be responsible for its own acts and omissions and the results thereof, to the extent authorized by the law, and shall not be responsible for the acts and omissions of the other party and the results thereof.
3. Nothing in this Agreement shall be construed as a limitation or waiver of any immunities, defenses, or other limitations on liability to which the parties are entitled by law. The provisions of the Municipal Tort Claims Act, Minnesota Statutes, Chapter 466, and other applicable laws govern liability of the parties. In the event of any claims or actions filed against any party, nothing in this Agreement shall be construed to allow a claimant to obtain separate judgments or separate liability caps from the individual parties. For purposes of determining total liability for damages, the parties are considered a single governmental unit pursuant to Minnesota Statutes section 471.59, subd. 1a.

I. General Terms

1. **Compensation for Assistance.** Each party will be responsible for its own costs and compensation for any assistance that may be provided under the terms of this Agreement except as otherwise stated under the Emergency Assistance section.
2. **Amendments.** No amendments may be made to this Agreement except in writing and approved by the City Council and the Metropolitan Council.
3. **Workers' Compensation.** Each party shall be responsible for injuries or death to its own personnel. Each party will maintain workers' compensation insurance or self-insurance coverage, covering its own personnel while they are providing services pursuant to this Agreement. Each party, and where applicable its insurer, waives the right to sue any other party for workers' compensation benefits paid to its own employee or volunteer or their dependents, even if the injuries or death were caused wholly or partially by the negligence of any other party or its officers, employees, or volunteers.
4. **Compliance with Laws.** The parties shall exercise due professional care to comply with applicable federal, state, and local laws, rules, ordinances, and regulations.
5. **Choice of Law and Venue.** This Agreement shall be governed by and construed in accordance with the laws of the State of Minnesota. Any disputes, controversies, or claims arising out of this Agreement shall be heard in the state or federal courts of Ramsey County, Minnesota, and the parties to this Agreement waive any objection to the jurisdiction of these courts, whether based on convenience or otherwise.
6. **Data Practices Act and CJIS Compliance.** The parties agree to comply with the Minnesota Government Data Practice Act, 28 C.F.R. Part 20, and the FBI CJIS Security Policy with respect to the collection, maintenance, storage, dissemination, use, and protection of law enforcement data and criminal history/criminal justice information. The parties agree not to release data except as authorized by law. These obligations survive the termination of this Agreement. Pursuant to Minnesota Statutes section 13.72, subd. 20, all data on Metro Transit customers collected by the Council through its personalized web services or the regional fare collection system is "private data" on transit customers. This classification does not prevent the exchange of information between the MTPD and the BPPD allowed under Minnesota Statutes section 13.82, subd. 24.
7. **Notice.** Any notice in connection with this Agreement will be in writing and delivered by (a) personal delivery, (b) an overnight express courier, (c) confirmed e-mail, or (d) certified or registered mail, postage prepaid and return receipt requested. Notices will be deemed to be effective upon personal delivery, 1 day after deposit with an overnight express courier, 5 days after deposit in the mail, or upon confirmation of receipt of e-mail. Notices will be sent to a party at its address set forth below or such other address as that party may specify in writing pursuant to this section:

BPPD:
Chief Mark Bruley
5400 85th Av N
Brooklyn Park, MN 55443
Mark.bruley@brooklynpark.org

MTPD:
Chief Ernest Morales III
560 6th Avenue North
Minneapolis, MN 55411
ernest.morales@transitpd.org

8. **Waiver.** No waiver of any provision or of any breach of this Agreement shall constitute a waiver of any other provisions or further breach, and no such waiver shall be effective unless made in writing and signed by an authorized representative of the party to be charged with such a waiver.
9. **Headings.** The headings contained in this Agreement have been inserted for convenience of reference only and shall in no way define, limit, or affect the scope and intent of this Agreement.
10. **Severability.** In the event that any provision of this Agreement shall be illegal or otherwise unenforceable, such provision shall be severed, and the balance of the Agreement shall continue in full force and effect.
11. **Counterparts and Electronic Communication.** This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which taken together shall constitute one and the same instrument. This Agreement may be transmitted by electronic mail in portable document format (“pdf”) and signatures appearing on electronic mail instruments shall be treated as original signatures.
12. **Effective Date.** The Agreement will become effective on the date the last party signs it.

IN WITNESS WHEREOF, the City and the Council have caused this Agreement to be executed by their duly authorized representatives in duplicate on the respective dates indicated below.

CITY OF BROOKLYN PARK, MINNESOTA

DATED: _____ BY: _____
Its: Mayor

DATED: _____ BY: _____
Its: City Manager

DATED: _____ BY: _____
Its: Chief of Police

Reviewed and approved by the City Attorney.

METROPOLITAN COUNCIL

DATED: _____ BY: _____
Its: Regional Administrator Ryan O’Connor

DATED: _____ BY: _____
Its: Chief of Police Ernest Morales III

DRAFT



METRO Blue Line LRT Extension (BLRT)



Safety and Security Management Plan

PMP 15-A | Revision 01-00 | August 2016

Prepared by the
Metropolitan Council



Blue Line Extension LRT Project
Management Signature Form

**Safety and
Security Management Plan
Rev. 01-00**

August 2016

The above referenced document is a controlled copy document, ready for circulation in accordance with Procedure TSD 80-04 – Controlled Distribution.

Management has indicated its approval of this document on the following “Management Plan Approval” form (the revision number of this document should match the revision number on the “Management Plan Approval” form).

Instructions: One of the following Project Management Team Members must approve this document: Transit System Development Projects Program Director, Deputy Program Director, Project Director, Deputy Project Director or one of the Assistant Project Directors.



Management Plan Approval

Date: 8/19/2016

Document Title: 2.10 Safety and Security Management Plan, Revision 01-00

Signature: This New Starts document / Management Plan was electronically Approved in e-Builder by Project Management Team member Dan Soler on 20160819 121657 GMT

Revisions

REVISION TABLE		
Revision	Date	Description
01-00	August 2016	Original Submittal

Contents

OVERVIEW	9
INTRODUCTION: COMMITMENT AND PHILOSOPHY TO ACTIVELY SUSTAIN SAFE AND SECURE TRANSIT OPERATIONS.....	11
2.1 Safety and Security Policy Statement.....	11
2.2 Purpose.....	12
2.3 Applicability and Scope	12
2.4 Goal	14
2.5 Objectives	15
INTEGRATION OF THE SAFETY AND SECURITY FUNCTION DURING DESIGN, TESTING AND START-UP PHASES OF THE PROJECT	16
3.1 Safety and Security Activities.....	16
3.2 Safety and Security Activities Matrix	17
3.3 Procedures and Resources	21
3.4 Interface with the Project Management Plan	21
3.5 Responsibility and Authority for Safety and Security Management Plan (SSMP).....	23
3.6 Approach to Safety Responsibilities.....	24
3.7 Approach to Security Responsibilities	25
3.8 Safety and Security Related Committees.....	25
3.8.1 LRT Fire Life Safety and Security Committee (FLSSC).....	25
3.8.2 Blue Line Extension LRT Safety and Security Review Committee (SSRC).....	26
3.8.3 Blue Line Extension LRT Rail Activation Committee (RAC)	27
3.9 Additional Security Endeavors	27
HAZARD AND THREAT MANAGEMENT.....	28
4.1 Hazard Management and the System Safety Program Plan (SSPP)	28
4.2 Threat Management and the Security and Emergency Preparedness Plan (SEPP).....	32
DEVELOPMENT OF SAFETY AND SECURITY DESIGN CRITERIA	33
5.1 Safety and Security Design Criteria Approach.....	33
5.2 Technical Specification Approach	34
5.3 Design Reviews	34
5.4 Technical Baseline	35
5.5 Deviations and Changes.....	35
5.6 Testing and Activation Planning.....	36

PROCESS FOR ENSURING QUALIFIED OPERATIONS AND MAINTENANCE PERSONNEL.....	37
6.1 Personnel Requirements.....	37
6.1.1 Operations Personnel Requirements.....	37
6.1.2 Maintenance Personnel Requirements	38
6.2 Plans, Rules and Procedures.....	38
6.3 Training Program.....	39
6.4 Emergency Preparedness.....	41
6.5 Public Awareness	41
PROCESS FOR VERIFYING CONFORMANCE AND ISSUING FINAL SAFETY AND SECURITY CERTIFICATION	
44	
7.1 Design Verification Process	45
7.2 Construction Verification Process.....	46
7.3 Testing Verification Process	46
7.4 Operational Readiness Verification Process	47
7.5 Final Safety and Security Certification and Verification Report.....	48
7.6 Endorsement by Transit Management.....	49
CONSTRUCTION SAFETY AND SECURITY MANAGEMENT ACTIVITIES.....	50
8.1 Construction Safety Management Activities	50
8.1.1 Construction Safety Required Submittals and Time Frames.....	50
8.1.2 Contractor's Site-Specific Safety Plan.....	52
8.2 Construction Security Management Activities.....	52
8.2.1 Contractor's Security Related Submittals and Timeframes	52
8.2.2 Contractor Security Plan.....	53
8.2.3 Site Security Requirements	54
8.2.4 Site Workplace Restrictions.....	54
8.3 Safety and Security Incentives.....	55
IMPLEMENTATION SCHEDULE FOR MEETING STATE SAFETY OVERSIGHT AGENCY (SSOA)	
REQUIREMENTS AND APPROVALS	56
9.1 Applicability	56
9.2 Activities	56
9.3 Implementation Schedule.....	56
9.4 Coordination.....	56
FEDERAL RAILROAD ADMINISTRATION (FRA) COORDINATION	58

DEPARTMENT OF HOMELAND SECURITY (DHS) AND TRANSPORTATION SECURITY ADMINISTRATION (TSA) COORDINATION	60
11.1 Department of Homeland Security (DHS).....	60
11.1.1 Program Activities.....	60
11.1.2 Implementation Schedule	60
11.2 Transportation Security Administration (TSA) Activities	60
11.2.1 Program Activities.....	60
11.2.2 Implementation Schedule	60
Attachment 15-A1 Referenced Management Plans	
Attachment 15-A2 BLRT Project Description	
Attachment 15-A3 BLRT Project Office Organization Chart	
Attachment 15-A4 BLRT Fire Life Safety Committee	
Attachment 15-A5 BLRT Safety and Security Committee	
Attachment 15-A6 BLRT Rail Activation Committee	
Attachment 15-A7 BLRT Preliminary Hazards Analysis	
Attachment 15-A8 BLRT Threat and Vulnerability Analysis	

Acronyms

ACRONYM	DESCRIPTION
BLRT	Blue Line Light Rail Transit Project
BPO	Blue Line Project Office
BOMA	Business Owners Management Association
CCIL	Critical/Catastrophic Items List
CCLRT	Central Corridor Light Rail Transit, Green Line
CCTV	Closed Circuit Television
DHS	Department of Homeland Security
EMS	Emergency Medical Services
EOP	Emergency Operating Procedures
EPMS	Electronic Project Management System
ESC	Engineering Services Consultant
FBI	Federal Bureau of Investigation
FFGA	Full Funding Grant Agreement
FLSSC	Fire Life Safety and Security Committee
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GSA	Government Services Administration
HA	Hazard Analysis
HCRRA	Hennepin County Regional Railroad Authority
HVAC	Heating, Ventilation and Air Conditioning
ICE	Independent Cost Estimate
LRT	Light Rail Transit
LRV	Light Rail Vehicles
Council	Metropolitan Council
MIL-STD	Military Standard
MnDPS	Minnesota Department of Public Safety
MSDS	Material Safety Data Sheets
MTPD	Metro Transit Police Department
NTSB	National Transportation Safety Board
OEMP	Operations Emergency Response Plan
OMF	Operations and Maintenance Facility
PHA	Preliminary Hazard Analysis
PHL	Preliminary Hazard List
PMP	Project Management Plan
QAP	Quality Assurance Plan
SEPP	Security and Emergency Preparedness Plan
SOP	Standard Operating Procedures
SWLRT	Southwest Light Rail Transit
SPO	Southwest LRT Project Office
SSCP	Safety and Security Certification Plan
SSMP	Safety and Security Management Plan
SSOA	State Safety Oversight Agency
SSO	State Safety Oversight
SSPP	System Safety Program Plan
SSPS	System Safety Program Standard

ACRONYM	DESCRIPTION
SSRC	Safety and Security Review Committee
TSA	Transportation Security Administration
TVA	Threat and Vulnerability Assessment

OVERVIEW

This Safety and Security Management Plan (SSMP) documents technical and management strategies for organizing, controlling, and influencing safety and security throughout the design, construction, procurement, testing, activation and acceptance of the **METRO Blue Line Extension (Bottineau LRT)**. It identifies the processes to be used by project personnel to certify the Blue Line Extension LRT is safe and secure for passenger service, including activities to:

- Conduct analyses of hazards, threats and vulnerabilities;
- Establish project safety and security design criteria that reflect applicable codes, standard regulations and recommended practices, as well as the results of the hazard and threat and vulnerability analyses;
- Verify conformance with project safety and security requirements in design, construction, integration testing, pre-revenue operations, and project acceptance;
- Monitor and maintain required construction safety and security levels;
- Ensure the selection, hiring, training and certification of qualified operations, maintenance and dispatch personnel;
- Ensure emergency response capabilities for Metro Transit and Blue Line Extension LRT operations, maintenance and dispatch personnel and for local emergency responders; and
- Address other elements required for the provision of complete safety and security systems.

This SSMP also describes how implementation of these requirements will be overseen, as well as the management structure for both implementation and oversight. This SSMP has been developed according to the most recently available Federal Transit Administration (FTA) guidance: "Safety and Security Management Guidance for Major Capital Projects," FTA C 5800.1, August 1, 2007.

This SSMP includes the following material:

- Overview
- Chapter 1: Introduction; Commitment and philosophy to actively sustain safe and secure transit operations;
- Chapter 2: Integration of the safety and security function during design, testing, and start-up phases;
- Chapter 3: Integration of the safety and security function during design, testing and start-up phases of the project and assignment of organizational safety and security responsibilities;
- Chapter 4: Hazard and Threat Management;
- Chapter 5: Development of safety and security design criteria;
- Chapter 6: Process for ensuring qualified operations and maintenance personnel;
- Chapter 7: Process for verifying conformance and issuing final safety and security certification;
- Chapter 8: Construction safety and security management activities;
- Chapter 9: Implementation schedule for meeting State Safety Oversight Agency (SSO) requirements and approvals;
- Chapter 10: Federal Railroad Administration (FRA) coordination;
- Chapter 11: Department of Homeland Security (DHS) and Transportation Security Administration (TSA) coordination; and

Blue Line Extension LRT SSMP Revision 00.00 covers safety and security activities through the Planning and the Engineering Phase. References to plans, procedures, and activities that are in process are also included in this SSMP. Additional detail on safety and security management activities to be performed during later project phases will be included in the Construction revision of this SSMP.

The following are attachments to the SSMP.

- Attachment 15-A1 Referenced Management Plans
- Attachment 15-A2 BLRT Project Description
- Attachment 15-A3 BLRT Project Office Organization Chart
- Attachment 15-A4 BLRT Fire Life Safety Committee
- Attachment 15-A5 BLRT Safety and Security Committee
- Attachment 15-A6 BLRT Rail Activation Committee
- Attachment 15-A7 BLRT Preliminary Hazards Analysis
- Attachment 15-A8 BLRT Threat and Vulnerability Assessment*

**Note this attachment is a placeholder noting the location of the actual TVA. For security reasons, the TVA is maintained in the Blue Line Extension Project Office by the Blue Line Extension LRT Director of Transit Systems Development Design and Engineering.*

INTRODUCTION: COMMITMENT AND PHILOSOPHY TO ACTIVELY SUSTAIN SAFE AND SECURE TRANSIT OPERATIONS

2.1 Safety and Security Policy Statement

It is the policy of Metro Transit and all other participating organizations, that the METRO Blue Line Extension be designed and constructed in full compliance with all requirements and regulations for safety and security established by the FTA, the DHS, the TSA and other local, state and Federal agencies and industry associations. Safety and security are top priorities in conducting all work on Blue Line Extension LRT from engineering and design through construction, integration testing, activation and final project acceptance. This SSMP explains the process and strategies to be used during Blue Line Extension LRT planning, engineering, construction, testing, and start-up to ensure safety and security in all project activities.

The Blue Line Extension LRT Project leadership is committed to making certain that applicable safety and security requirements and regulations are addressed in Blue Line Extension LRT design criteria and standards, and that a formal and verified certification process will be conducted to ensure that all construction, including procurement, installation, and testing/inspection, complies with the approved design, and that activation and integration testing also verify compliance with safety and security requirements. The Blue Line Extension LRT Project will not be placed into passenger service until it is verified to be operationally safe and secure as specified in the Blue Line Extension LRT Safety and Security Certification Program and supporting plans and procedures.

All persons assigned to conduct work on the Blue Line Extension LRT Project are required to comply with the requirements of this SSMP, as well as the plans, procedures, and instructions referenced by this SSMP. Responsibility for developing, implementing and maintaining this SSMP rests with Metro Transit's General Manager and will be carried out for safety functions by the Metro Transit Director of Rail and Bus Safety, and for security functions by the Metro Transit Police Department (MTPD) Chief of Police.

The Metro Transit Director of Rail and Bus Safety has been assigned the authority to ensure that the system safety related requirements of this plan are implemented properly by all project participants. Further, the Blue Line Extension LRT Construction Safety and Security Manager is responsible for compliance with construction safety and security on Blue Line Extension LRT. The Metro Transit Director of Rail and Bus Safety will bring any safety issues on Blue Line Extension LRT that are not being resolved in a timely or acceptable manner to the attention of the Blue Line Extension LRT Project Office (BPO) Project Director and/or project leadership for timely resolution.

Similarly, the MTPD Chief of Police will bring unresolved security issues to the attention of the Blue Line Extension LRT Project Director and/or project leadership for timely resolution.

2.2 Purpose

The primary purpose of the Blue Line Extension LRT SSMP is to document the approach to be used by Metro Transit, working through the Blue Line Extension LRT Project, to ensure that safety and security are designed and built into Blue Line Extension LRT, and that a final, formal safety and security certification is issued for Blue Line Extension LRT prior to revenue service. The SSMP defines the roles and responsibilities of Metro Transit, including Blue Line Extension LRT Project Office (BPO) staff, the Engineering Services Consultant (ESC) and contractors in developing, implementing, and complying with project safety and security requirements. This SSMP also explains how BPO expects to manage required coordination with external agencies, including FTA, Federal Railroad Administration (FRA), the State Safety Oversight Agency (SSOA), the Minnesota Department of Public Safety (MnDPS) and DHS/TSA to ensure that all required approvals, sign-offs and acceptances are in place prior to the initiation of revenue service.

The organization, procedures and processes laid out in this SSMP ensure that:

- Safety hazards and security threats/vulnerabilities are identified from high-quality data by competent individuals, and analyzed by appropriate methodologies;
- Project management personnel have accurate and timely information to support decisions when managing risk, whether it arises from hazards, vulnerabilities, cost, schedule, or performance;
- Design criteria fully address basic safety and security requirements and regulations, and additionally identify hazard resolutions and threat mitigations;
- Necessary levels of safety and security are maintained during construction;
- Safety and security elements of the operating system are constructed as designed;
- Safety and security elements are included during integration testing, project activation and acceptance;
- Blue Line Extension LRT has an acceptable and approved Safety and Security Certification Plan (SSCP); and
- Blue Line Extension LRT is addressed in the LRT System Safety Program Plan (SSPP) and the Security and Emergency Preparedness Plan (SEPP), in full compliance with the requirements of FTA's SSOA and MnDPS, before the start of revenue operations.

2.3 Applicability and Scope

The Federal Transit Administration (FTA) requires the development and implementation of a Safety and Security Management Plan (SSMP) for those capital projects under Construction Grant Agreements. This requirement is described in FTA Circular 5800.1, which became effective August 1, 2007. FTA requires grant recipients with major capital projects covered by

49 CFR Part 633, Project Management Oversight (PMO), to include “safety and security management” as an element of their Project Management Plan (PMP). This document fulfills the safety and security management element of the PMP for the Blue Line Extension project.

In addition, many of the roles and relationships among the cooperating organizations described in this plan are delineated in the state enabling legislation (Minnesota Statutes 174.35, 174.80–174.90 and 473.399–473.3998), memoranda of understanding, grant agreements, and partnership agreements.

This SSMP applies to all activities performed for this Project during the Planning, Engineering, Procurement and Construction, Inspection and Testing, and Start-up and Integrated Testing phases. This SSMP encompasses the following equipment, facilities, plans, and procedures:

- o **System-wide Elements** including the Blue Line Extension LRT Light Rail Vehicles (LRVs); track, train control, communications, and traction power systems; grade crossing and traffic control systems; voice, data, and closed circuit television (CCTV) systems; fare collection equipment; central instrument houses; fire protection and suppression systems; and auxiliary vehicles and equipment.
- o **Fixed Facilities** including the 11 Blue Line Extension LRT stations and the Blue Line Extension LRT operation and maintenance facility. Equipment installed in these fixed facilities, such as Heating, Ventilation and Air Conditioning (HVAC), escalators, elevators, lighting etc., is considered part of the facility.
- o **Safety, Security, Systems Assurance, Operations Plans, Maintenance Plans and Procedures** including controlled versions of items such as the SSMP, the Safety and Security Certification Plan (SSCP), the System Safety Program Plan (SSPP), the Security and Emergency Preparedness Plan (SEPP), Operations Emergency Response Plan (OEMP), Accident/Incident Investigation Plan, operating rules and procedures, training programs, accident/incident investigation reporting procedures, employee certification programs, emergency operating rules and procedures, emergency drills and exercises, and the results of any pre-revenue readiness assessments conducted. Existing operations encompass all of these plans and procedures; they will be updated to accommodate the Blue Line Extension LRT.

Table 2.3, Safety and Security Plans provides a short description of the function of these management plans.

Table 2.3: Safety and Security Plans

Plan Name	Acronym	Description
Safety and Security Management Plan	SSMP	Documents the processes for maintaining safety and security in Project phases up to revenue service.

Safety and Security Certification Plan	SSCP	Documents the processes and activities undertaken to ensure that the Blue Line Extension LRT is operationally safe for revenue service
Operations Emergency Management Plan	OEMP	Establishes the response process and responsibilities for various Metro Transit departments, employees, and outside agencies in the event of a rail emergency
Security and Emergency Preparedness Plan	SEPP	Documents the processes and policies for integrating security and threat mitigation into all levels and operations at Metro Transit.
System Safety Program Plan	SSPP	Documents how system safety and hazard mitigation is integrated into Metro Transit LRT revenue service operations.

This SSMP applies to all project phases established for the Blue Line Extension LRT Project. Once fully safety and security certified for revenue operations, the LRT SSPP will govern safety and security of the operating LRT system. This SSMP also provides for the revision of the existing LRT SSPP and SEPP for submission to the SSOA, MnDPS, and receipt of approval prior to the start of revenue operations on Blue Line Extension LRT.

The SSMP provides for the establishment of mechanisms to track any restrictions to full safety and security certification into revenue operations and until full resolution. Metro Transit, assisted by BPO staff, will ensure that all consultant designers and contractors comply with the requirements of this SSMP and the Blue Line Extension LRT SSCP and will review and approve key elements of the work that are conducted as specified by these plans.

Two committees that address safety and security issues; (1) the Blue Line Extension LRT Safety and Security Review Committee (SSRC) and (2) the LRT Fire Life Safety and Security Committee (FLSSC). From Planning to Revenue Operations, the Director of Rail and Bus Safety and the MTPD Chief of Police, or designees, serve as co-chairs on both committees and share information, recommendations and ideas through their shared membership.

Key managers from the BPO and Metro Transit will serve on the Blue Line Extension LRT Project SSRC, which guides, advises and assists Metro Transit's Director of Rail and Bus Safety and the MTPD Chief of Police in implementing the Blue Line Extension LRT SSCP. Metro Transit has two FLSSCs; one for light rail and one for commuter rail. Issues related to Blue Line Extension LRT will be handled in the LRT FLSSC. Membership on these committees includes personnel from all participating organizations, as well as local and county police and fire departments.

2.4 Goal

The goal of the SSMP is to ensure that safety and security are built into all project phases, and that these considerations are defined, designed, specified, and verified. This will be accomplished through a formal program of safety and security analyses, continuous risk evaluation and mitigation, and safety and certification prior to revenue service.

The SSMP will document this effort, comprising updates of existing supporting plans and development of new plans that will include the Blue Line Extension LRT.

As delivery of the Blue Line Extension LRT progresses, The FLSSC in conjunction with the Metro Transit Director of Rail and Bus Safety, the Chief of Police and BPO will determine what drills will be appropriate, given the configuration, alignment, etc. Drills and exercises conducted in the past have included collision with pedestrians, collision with automobiles, broken catenary wire, rescuing a disabled train, and single tracking operations. Specific drills and exercises will be detailed in the final year of construction and will be implemented through the LRT FLSSC. [Consider removing this paragraph, or relocating to the section that discusses emergency drills and exercises].

2.5 Objectives

The objectives of the SSMP are to define a process that applies system safety and security requirements to the design, construction, testing and inspection, and start-up of the Blue Line Extension LRT Project and to define the responsibilities for implementing this process. This process will ensure that the Blue Line Extension LRT Project achieves the goal expressed in Section 2.4 above and:

- Provides mechanisms for the formal identification, consideration, elimination or control of hazards and vulnerabilities to passengers, employees, project personnel, emergency responders, and the general public;
- Verifies that design documents, including drawings and specifications, are in conformance with the safety and security requirements contained in the Blue Line Extension LRT Project Design Criteria and Design Standards;
- Verifies that the procurement, installation, and construction, including testing and inspection, of systems and facilities comply with the design;
- Ensures adequate safety and security during all project construction, procurement, installation and testing activity;
- Verifies that the start-up test and integration test results comply with design, safety, and security requirements; and
- Certifies that the completed Blue Line Extension LRT Project meets safety and security requirements and is ready to begin revenue service.

INTEGRATION OF THE SAFETY AND SECURITY FUNCTION DURING DESIGN, TESTING AND START-UP PHASES OF THE PROJECT

3.1 Safety and Security Activities

This SSMP identifies key activities that must be performed to ensure a final, formal safety and security certification prior to beginning revenue service. The goal of this certification is to provide evidence that the rail system is operationally safe and secure to enter revenue service, and to verify that all safety and security requirements have been met. The SSMP also ensures safety and security in all activities performed for Blue Line Extension LRT, including construction, integration testing, and activation.

For Revision 01-00 of this SSMP, Blue Line Extension LRT is completing environmental impact studies and is preparing to enter the engineering phase.

Critical activities that have been performed to date include the following:

- Development of Blue Line Extension LRT Project Safety and Security Policy Statement;
- Creation of Blue Line Extension LRT Project Safety and Security Responsibilities Matrix;
- Development of draft Blue Line Extension LRT fire and life safety criteria, using the criteria for the successful and safety-certified METRO Blue Line (Hiawatha) and METRO Green Line (Central Corridor) as a starting point for Blue Line Extension LRT;
- Use of Hazard and Vulnerability Resolution and Tracking System using the approach established for the Blue and Green Lines (Green Line Project MIL-STD 882D); and

Important activities to be completed include:

- Performing safety/security management and certification during final design, construction, testing and inspections, emergency drills and exercises, operations and maintenance procedural and training updates, coordination with FTA and MnDOT, and final certification/reporting;
- Convening LRT Fire and Life Safety and Security Committee (FLSSC) meetings for the Blue Line Extension LRT Project with appropriate public safety agencies;
- Developing the Blue Line Extension PHA;
- Developing the Blue Line Extension TVA;
- Developing the Blue Line Extension LRT SSCP;
- Creating the Blue Line Extension LRT SSRC; and
- Updating the SSPP and the SEPP for Blue Line Extension LRT.

3.2 Safety and Security Activities Matrix

The Safety and Security Activity Matrix (**Table 3.2**) for Blue Line Extension LRT lists key safety and security activities by project phase. In carrying out these activities, all involved personnel including Metro Transit, BPO, contractors and consultants, are required to fully support and participation in the Blue Line Extension LRT safety and security programs.

Certain key responsibilities associated with the Construction, Integration testing and Pre-revenue Operations phases will be developed during the Engineering Phase of the project. Some of these activities are not phase-specific and may span two or more project phases, as shown in **Table 3.2** below. Key activities for each phase of the project be performed for safety and security, include:

- **Planning:** Metro Transit established the organizations to manage safety and security along with the Blue Line Extension LRT's policy statement. It will also establish key safety and security committee participants. Finally, it will identify and deliver to the design team the codes, standards, regulations and requirements necessary to ensure safety and security for Blue Line Extension LRT.
- **Engineering:** Key activities will occur to ensure that the design team adequately identifies and addresses safety and security requirements for Blue Line Extension LRT. In addition, the SSCP will be developed, including the safety certifiable items list and the data base process to be used to verify the design. Safety and security analyses will be performed, with the results incorporated into the design. Finally, design certification will be issued to confirm that contracts and technical specifications and drawings developed for Blue Line Extension LRT effectively address the identified safety and security requirements.

Activities will be performed to ensure that Blue Line Extension LRT is constructed, inspected, tested and evaluated in such a manner as to ensure compliance with contracts, technical specifications and drawings. Construction Safety and Security Plans will be developed and implemented by each contractor and will be approved by SPO. A testing program will also be developed to evaluate integration systems operations and to ensure the readiness of personnel and emergency responders.

- **Construction:** During completion of construction, final safety and security certification will be issued, and a final verification report will be prepared. Any restrictions on full safety and security certification will be tracked until they are resolved.
-

Table 3.2: Safety and Security Activities Matrix by Phase

ACTIVITY / DOCUMENT	PROJECT PARTICIPANTS												
	FTA	MnDOT SSOA	MT Safety & Security	MT Police	MT Operations & Maintenance	MT All Other Depts	BPO	ESC	Safety & Security Consultant	Construction / Manufacturing Contractors	SSRC	FLSSC	RAC
Accident/Incident Investigation Plan													
Construction Specification Conformance Checklists													
Contractor Quality Assurance/Quality Control (QA/QC) Plan													
Contractor Safety and Health Program													
Contractor Site Specific Security Plan													
Design Criteria Conformance Checklists													
Design Criteria Manual													
O&M Rule Book, Manuals, Procedures													
O&M Staffing Plan													
O&M Training Program													
Operations Emergency Management Plan (OEMP)													
Preliminary Hazard Analysis (PHA)													

ACTIVITY / DOCUMENT	PROJECT PARTICIPANTS												
	FTA	MnDOT SSOA	MT Safety & Security	MT Police	MT Operations & Maintenance	MT All Other Depts	BPO	ESC	Safety & Security Consultant	Construction / Manufacturing Contractors	SSRC	FLSSC	RAC
Project Management Plan (PMP)													
Quality Assurance Plan (QAP)													
Safety and Security Certification Plan (SSCP)													
Safety and Security Certification Verification Final Report (SSCVR)													
Safety and Security Management Plan (SSMP)													
Security and Emergency Preparedness Plan (SEPP)													
System Integration Test Plan (SITP)													
System Readiness Drills													
Threat and Vulnerability Assessment (TVA)													
Transportation Maintenance and Operations Plan (TMOP)													

Matrix Terminology:

- Perform: Responsible for implementing the activity
- Participate: Responsible for involvement in the activity
- Primary Support: Responsible for being the principal source of organizational and resource expertise for the entity performing the activity
- Support: Responsible for providing expertise to the entity performing the activity
- Facilitate: Responsible for arranging access to resources necessary to perform the activity
- Review: Responsible for assessing the activity
- Incorporate: Responsible for adopting the activity

Note: **Table 3.2** reflects current project assumptions and may be subject to change.

3.3 Procedures and Resources

Several key plans will serve as a basis for procedures, and as resources for managing safety and security activities for Blue Line Extension LRT. The latest revisions of these plans are maintained by the Director of Rail and Bus Safety and by the MTPD Chief of Police and are available upon request. These include:

- Metro Transit LRT SSPP;
- Metro Transit SEPP;
- Metro Transit LRT OEMP;
- Northstar SSCP;
- METRO Blue Line SSCP;
- METRO Green Line SSCP; and
- Southwest SSCP.

The Engineering Services Consultant (ESC) scope included services for a PHA and TVA workshop. The ESC, in coordination with the BPO, led these analyses and provided technical support under the direction of the Director of Rail and Bus Safety.

As explained in the Blue Line Extension LRT Project Management Plan (PMP) the Director of Rail and Bus Safety and the MTPD Chief of Police will coordinate safety and security resources during design. The purpose of this coordination is to support the implementation of the design guidelines and performance control processes established for the project. During construction, procurement, testing, activation, and acceptance of the Blue Line Extension LRT Project, safety and security activities will be closely associated with the Quality Assurance Program (QAP), the Construction Management Program, and the Testing Program Plan established for Blue Line Extension LRT. The resources and procedures supporting these activities are discussed in the following PMP sections:

- PMP Chapter 4: Basis of Design;
- PMP Chapter 5: Design Management;
- PMP Chapter 8: Construction Management;
- PMP Chapter 13: Quality Assurance; and
- PMP Chapter 16: Testing and Start-up Program.

3.4 Interface with the Project Management Plan

This SSMP is an extension of the Blue Line Extension LRT PMP. PMP Section 15, System Safety and Security, refers to the SSMP for details regarding Blue Line Extension LRT's implementation of requirements related to safety and security. The relationship of the SSMP to the Blue Line Extension LRT PMP and to other key project plans and procedures are illustrated in **Figure 3.4**, Project Document Hierarchy. As shown in this figure, the primary elements of Blue Line Extension LRT safety and security program are addressed in this SSMP, the Blue Line Extension

LRT SSCP (developed during the Engineering Phase), the Metro Transit SEPP, the Contractor Construction Safety and Security Plans (developed during the Engineering Phase), and in the contractor procedures and instructions referenced in these plans.

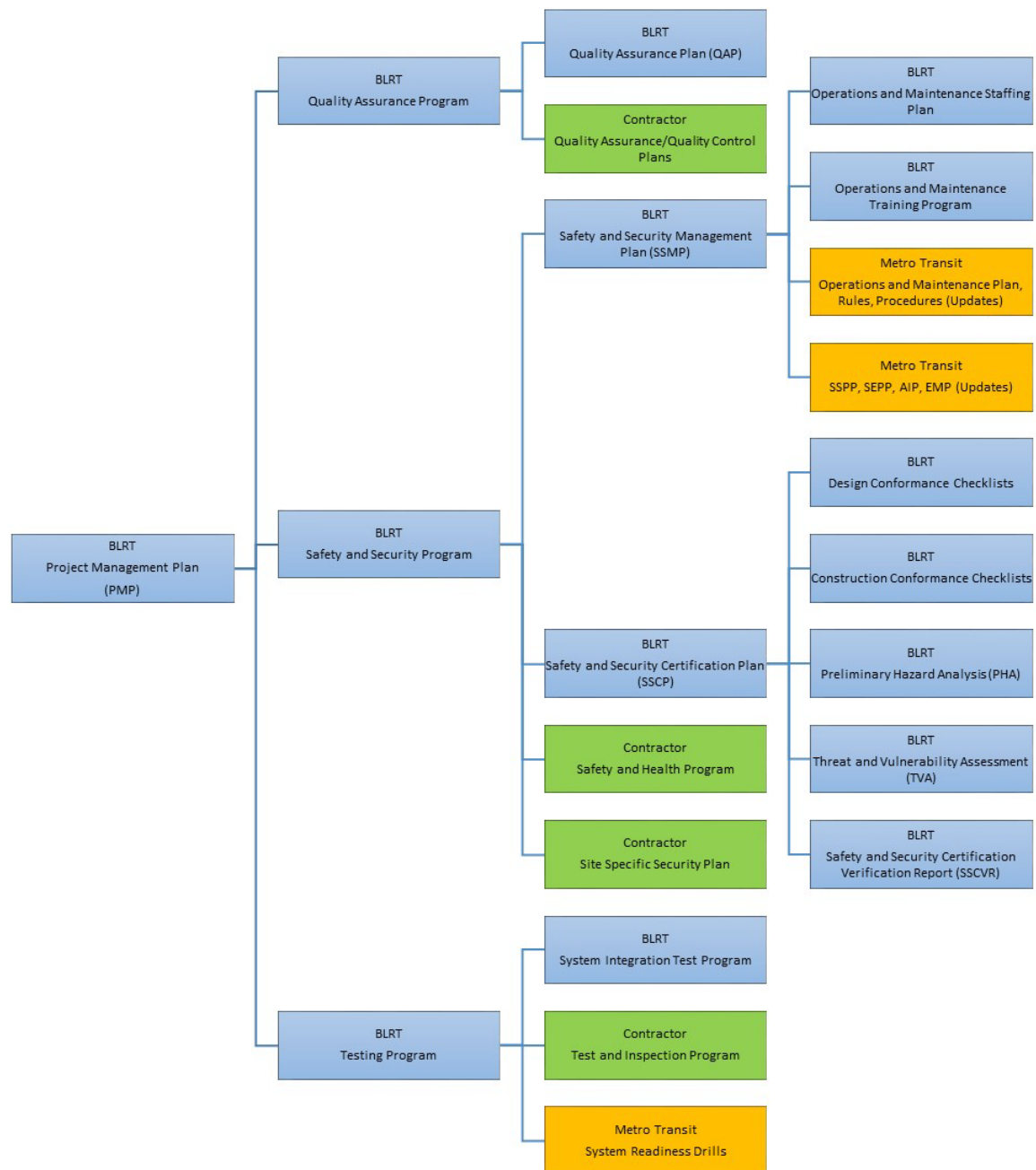
The SSMP defines the overall project safety and security program. The Safety and Security Certification Program for the Blue Line Extension LRT Service, which complies with the requirements of this SSMP, will define the specific safety and security program elements and reference appropriate procedures and instructions that define how specific tasks and activities are conducted and documented. The Contractor Construction Safety and Security Plans, also in compliance with this SSMP, will define Blue Line Extension LRT's construction safety and security program.

Plans and procedures that are closely related to and consistent with the implementation of Blue Line Extension LRT safety and security program include the Blue Line Extension LRT QAP, the Contractor QAP's, Contractor Construction Inspection and Test Plans, and the Test Program Plan. The Inspection and Test Plans define the inspections and tests that will be performed during the Construction Phase of Blue Line Extension LRT. The Test Program Plan defines the program for performing system and integration tests during the Startup and Testing Phase of Blue Line Extension LRT.

These plans will be developed during the Engineering and Construction project phases. These documents will be included or referenced in a subsequent revision of the PMP and the SSMP. The Director of Rail and Bus Safety has been assigned the authority to ensure that the safety-related requirements of this plan are implemented properly by all project participants. The Director of Rail and Bus Safety will bring any safety issues that are not being resolved in a timely or acceptable manner to the attention of the BPO Project Director and/or project leadership for timely resolution. Similarly, during the Construction Phase, the Manager of Construction Safety & Security will highlight and pursue unresolved construction safety and security issues with the BPO.

The MTPD Chief of Police will bring unresolved security issues to the attention of the Blue Line Extension LRT senior management for timely resolution.

Figure 3.4: Project Document Hierarchy



3.5 Responsibility and Authority for Safety and Security Management Plan (SSMP)

Chapter 2 of the Blue Line Extension LRT PMP (Management Organization, Approach, and Responsibilities) provides an overview of the management requirements and systems that are being used for the efficient and effective implementation of Blue Line Extension LRT.

In addition, throughout the implementation of the Blue Line Extension LRT Project, the Metro Transit Director of Rail and Bus Safety and the MTPD Chief of Police will coordinate with Blue Line Extension LRT senior management to ensure that safety and security activities are being addressed in design, construction, integration testing, activation, and acceptance, as specified in project safety and security plans and procedures as specified in the Blue Line Extension LRT PMP.

The Blue Line Extension LRT SSMP outlines coordination for safety and security issues between Blue Line Extension LRT and external agencies, such as the rail transit SSOA, and the TSA. This SSMP is intended to be a living document, much like its parent PMP, and will be updated, as appropriate, to reflect project decisions and events.

3.6 Approach to Safety Responsibilities

Director of Rail and Bus Safety

The Director of Rail and Bus Safety coordinates safety activities with BPO. While documentation will be obtained verifying that all Blue Line Extension LRT elements are safe and secure for passenger operations, the activities to be performed by the Director of Rail and Bus Safety will focus on Blue Line Extension LRT Project rolling stock, passenger stations, right-of-way, systems and the Operations and Maintenance Facility (OMF). These activities will be specified in the Blue Line Extension LRT SSCP.

The Director of Rail and Bus Safety will also be responsible for ensuring that the LRT SSPP and the OEMP are updated as necessary, and will obtain the appropriate approvals and sign-offs from the Minnesota Department of Public Safety (MnDPS).

Working with BPO, and through the SSRC and other designated committees such as the Rail Activation Committee, the Director of Rail and Bus Safety will also ensure that project safety elements are addressed in integration testing, activation, and final project acceptance. The BPO will maintain a safety and security database process in its EPMS. The database will be maintained to track the certification of individual safety and security elements and items, and the certification process will also track integration test results and pre-revenue system performance assessments.

MTPD Chief of Police

The MTPD Chief of Police is responsible for coordinating security throughout all project phases.

Safety and Security Review Committee (SSRC)

The Director of Rail and Bus Safety chairs the Blue Line Extension LRT SSRC. This Committee carries out Blue Line Extension LRT's safety and security certification process, serving as a review board for activities, analyses, and reports on safety and security issues and ultimately driving the safety and security certification process.

Fire Life Safety and Security Committee (FLSSC)

The LRT FLSSC will serve as an important means by which public safety agencies (police, fire, Emergency Medical Services) can offer comment on design, and to participate in development of interagency emergency response plans and procedures.

Rail Activation Committee (RAC)

To be developed in a future project development phase.

Construction Manager

BPO will have in its organization a Construction Safety Manager (who reports to the New Starts Program Director) to develop and implement a construction safety and security program. This manager will maintain compliance with the program including related plans developed by each of the construction contractors.

3.7 Approach to Security Responsibilities

MTPD Chief of Police

Security requirements in design are addressed using the same process specified for safety requirements. The Metro Transit Chief of Police works with BPO to determine how construction site security will be addressed.

Planning with local jurisdictions is also important as the Blue Line Extension LRT Line enters into the revenue service phase. The MTPD Chief of Police is responsible for leading and coordinating security matters on the Blue Line Extension LRT Project and will coordinate with the Metro Transit Director of Rail and Bus Safety, providing advice and otherwise ensuring that security issues are adequately addressed in the LRT SSPP and OEMP. This position is responsible for all revisions to and implementation of the SEPP.

The MTPD Chief of Police will coordinate with the Director of Rail and Bus Safety regarding all Blue Line Extension LRT Project security issues, requirements, and threat and vulnerability assessments. The MTPD Chief of Police will support all committees established by the Director of Rail and Bus Safety to address safety and security issues, and will facilitate discussions on safety and security related issues in the LRT FLSSC. As the agency senior security professional, the MTPD Chief of Police is the primary security contact, ensuring that all security issues are handled appropriately, including memoranda of understanding, community policing, fare enforcement, and contact with other police and security-related agencies.

3.8 Safety and Security Related Committees

3.8.1 LRT Fire Life Safety and Security Committee (FLSSC)

The LRT FLSSC was established in 1999 to facilitate the exchange of information, including safety and security planning to minimize the fire and life safety and security hazards to patrons, employees and property. Original efforts were directed solely

toward the METRO Blue Line. The FLSSC has evolved to include METRO Green Line, the Green Line Extension (Southwest), and as the Blue Line Extension LRT Project progresses, this forum will address Blue Line Extension LRT issues.

Although anyone serving the public in an official capacity in safety and/or security may participate in the FLSSC, members of the FLSSC typically include responsible individuals from the consultant and the public safety agencies (fire, police, and EMS) of the communities along the line. Especially noteworthy is the membership of various police and security personnel on the committee. Experienced security personnel have a rich background in safety, security and emergency response. The LRT FLSSC benefits from the active participation of the municipalities and authorities having jurisdiction in the areas where LRT lines operate and are planned to operate.

The FLSSC provides input to and comments on the fire protection, emergency preparedness plans and procedures, safety plans and security plans. The advantage of having security participation in FLSSC activities is that security professionals evaluate plans with an eye toward the potential for intentional damage or injury. Moreover, security personnel have considerable experience in all-hazards emergency response. The FLSSC will participate in the planning, performance and evaluation of emergency simulations on the system. Some of these exercises will be discussion-based (tabletop) drills, others may take the form of familiarization exercises, and yet others will be operations-based (full-scale) exercises.

The FLSSC has no enabling authority. However, membership includes fire marshals, police, and building officials, who retain such authority and so can apply this to Blue Line Extension LRT should the need arise. A complete listing of membership on the LRT FLSSC is maintained by the Director of Rail and Bus Safety.

Attachment 15-A4 provides the FLSSC member's names, titles, and affiliation, and organizational chart.

3.8.2 Blue Line Extension LRT Safety and Security Review Committee (SSRC)

The Blue Line Extension LRT SSRC will be established during the Engineering phase of the Project to support the performance of the safety and security certification process for the Blue Line Extension LRT line. This committee, which includes members from Minnesota Department of Transportation (MnDOT), SSOA, BPO, and Metro Transit, will receive, review and approve all safety/security certification documents issued for Blue Line Extension LRT, and will ensure compliance with regulations and other safety and security standards, guidelines, codes and recommended practices identified for Blue Line Extension LRT. The Director of Rail and Bus Safety chairs this committee.

The Blue Line Extension LRT Project will generally follow the process used during the safety and security certification of previous Metro Transit LRT projects. This decision

was made pursuant to readiness reviews from the FTA and SSOA that were generally complimentary of the certification process applied to LRT. The plans and procedures for the certification of the Blue Line Extension LRT Project will be included or referenced in a future revision of this SSMP.

SSRCs were active for the METRO Blue and Green Lines, as well as the Northstar project, which included commuter rail and LRT elements. The SSRC approach to safety and security certification will be applied to the Blue Line Extension LRT Project. Committee membership will include Blue Line Extension LRT design and construction management, Rail Operations management, safety management and MTPD with the Metro Transit Chief of Police as chair. Subject matter experts in safety, security, project management, operations, project engineering, and the SSOA Program Manager participate as appropriate and required.

Attachment 15-A5 provides the SSRC member's names, titles, and affiliation, and organizational chart.

3.8.3 Blue Line Extension LRT Rail Activation Committee (RAC)

The Rail Activation Committee assists the Rail Activation Manager in the administration of the Rail Activation Plan. The RAC will oversee the rail activation process and assure that all necessary elements are available as needed to facilitate a safe and timely Rail Activation Plan. The RAC develops, approves and manages the Rail Activation. It coordinates its activities of the other safety and security committees, SSRC and FLSSC, to maintain the goals and schedule of the SSMP and the Rail Activation Plan. The RAC is the core group that drives the activation tasks and schedule. The committee receives briefings from project managers and from the other committees and resolves issues of schedule and resources. The Rail Activation Manager is the head of the RAC and reports to Metro Transit's General Manager.

Attachment 15-A6 provides the RAC member's names, titles, and affiliation, and organizational chart.

3.9 Additional Security Endeavors

MTPD staff participate as a member of the Hennepin, Ramsey, Dakota and Washington County Chiefs of Police Associations. Metro Transit is also a member of the county mutual aid pacts, including Ramsey and Hennepin counties. Additionally, Metro Transit is represented on other local groups such as Minneapolis Downtown Security Council, Business Owners Management Association (BOMA) in St. Paul and the Law Enforcement Terrorism Task Force sponsored by the FBI. Mutual aid pacts are on file at the (MTPD) and available for review.

HAZARD AND THREAT MANAGEMENT

4.1 Hazard Management and the System Safety Program Plan (SSPP)

Hazard Management Process

Hazard management, in the context of the Blue Line Extension LRT Project, involves the process of defining the system, identifying hazards that affect it, evaluating those hazards, and resolving them. The approach to be used by Blue Line Extension LRT is defined in the existing LRT SSPP and follows the process described in MIL-STD 882 (which version?), which has been approved by Minnesota Department of Public Safety (MnDPS). The LRT SSPP will be updated before Blue Line Extension LRT begins revenue service, and will include this process, required by and approved by the MnDPS (according to its System Safety Program Standard which in turn complies with 49 CFR 659).

Using this process, hazard analyses (HA) performed by the technical equipment manufacturers (i.e., failure modes and effects, operating and support, etc.) as part of their program for furnishing safely operating equipment will be incorporated into the overall effort. Whenever possible, HA requirements for Blue Line Extension LRT will be identified by specification. Further, the Advanced Design Consultant in coordination with the BPO has performed a PHA that evaluates the line from an integration system perspective, drawing from industry experience. The PHA followed the qualitative-probability-and-severity HA technique: for each hazard, the probability and severity of the most credible reasonable mishap was assigned; next, the combination of probability and severity yielded a risk index; finally, this risk index was classified according to the SSPP (and MIL-STD-882) guidelines.

Whether performed by contractors, equipment manufacturers or members of the Blue Line Extension LRT Safety and SSRC, the HA approach specified for the Blue Line Extension LRT relies on the identification, categorization and resolution of hazards and vulnerabilities.

Hazard Identification

During this phase of the process, hazards are identified using methods established by BPO. Typically, identification of hazards begins with the generation of a list of top-level hazards called a Preliminary Hazards List (PHL). The PHL is the first step in the HA process, and includes a general listing of Category I and II Hazards typically found in contemporary LRT systems.

The PHL identifies generic accident scenarios that may be associated with Blue Line Extension LRT systems and sub-systems, components, procedures, and their subsequent interrelationships, providing an overview of the types of issues that must be considered in the design. It also defines requirements for additional and more detailed analysis regarding the presence of hazardous conditions and the possibility for loss. In preparing a PHL, input from operating and maintenance personnel, lessons learned from similar projects, and the assessments of design engineers and

construction specialists, is generally sufficient to create an initial listing. The PHL provides the foundation for other safety and security analyses that may be performed for Blue Line Extension LRT.

Hazard Categorization

Identifying hazards provides little assurance that they will be properly resolved unless they are adequately evaluated and highlighted to those having the decision-making responsibilities. Not all hazards are of equal magnitude, frequency, or importance. Categorization involves assessing of the severity of the scenarios identified in the PHL, should they occur, against the likelihood that the scenarios will actually occur. This may be reported in nonnumeric (qualitative) terms, or in numeric (quantitative) terms. Once each hazard is evaluated for “severity” and “probability,” these risk indices are classified using the Risk Assessment Matrix, which then yields classifications of: unacceptable, undesirable, acceptable with review, and acceptable.

As explained in the LRT SSPP, the final classification of the hazard in the matrix identifies guidelines as to acceptability of the risk. **Table 4.1** provides an example matrix. This activity then allows for comparison and prioritization.

Table 4.1: Hazard Probability

Descriptive Word	Level	PROBABILITY CATEGORIES	
		Within Specific Individual Items	Within a Fleet or Inventory
Frequent	A	Likely to occur frequently. Having a probability of occurrence greater than 10^{-1} .	Continuously experienced
Probable	B	Will occur several times in life of an item. Having a probability of occurrence less than 10^{-1} but greater than 10^{-2} .	Will occur frequently
Occasional	C	Likely to occur sometime in life of an item. Having a probability of occurrence less than 10^{-2} but greater than 10^{-3} .	Will occur several times
Remote	D	Unlikely but possible to occur in life of an item. Having a probability of occurrence less than 10^{-3} but greater than 10^{-6} .	Unlikely but can reasonably be expected to occur
Improbable	E	So unlikely it can be assumed occurrence may not be experienced. Having a probability of occurrence less than 10^{-6} .	Unlikely to occur, but possible

Table 4.2: Hazard Severity

SEVERITY CATEGORIES		
Description	Category	Definition
Catastrophic	I	Death, system loss (> 6 hr), or severe environmental damage
Critical	II	Severe injury, severe occupational illness, major system or environmental damage
Marginal	III	Minor injury/occupational illness, or minor system or environmental damage
Negligible	IV	Less than minor injury, occupational illness or environmental damage

Hazard Resolution:

The benefit of the Risk Assessment Matrix is the ability and flexibility to prioritize hazards and vulnerabilities and to assign required actions for their resolution. This prioritization allows the Director of Rail and Bus Safety to coordinate with the BPO Project Director to ensure the expenditure and allocation of critical project resources where they are most needed. Use of the Risk Assessment Matrix holds program management and technical engineering accountable for the risk of the system during design, testing and operation, and the residual risk upon delivery. The ability to adequately eliminate or control safety risk is predicated on the ability to accomplish the necessary tasks early in design. For example, it may be more cost effective and technologically efficient to eliminate a known hazard by changing the design, compared against retrofitting a rail vehicle fleet in operational use. Identified hazards and vulnerabilities are resolved through the Reduction Order of Precedence, which encompasses five categories of activities that can be performed to resolve hazards and vulnerabilities. These categories, in descending order of effectiveness, include:

- **Design Change:** Eliminate the hazard through a fundamental design change (e.g., grade separate to eliminate a railroad at-grade crossing).
- **Engineered Safety Features:** Fixed, active devices (e.g., full-time, redundant backups, interlocks, pressure relief valves, vital fail-safe circuitry).
- **Safety Devices:** Fixed, passive, protective barriers (e.g., guards, shields, suppressors, personal protective equipment. Training and discipline in use of Safety Devices, or obvious reason for their use, is necessary.)
- **Warning Devices:** Visible/audible alarms to trigger avoidance or corrective responses (e.g., signals, lights, signs, and horns).
- **Procedures and Training:** Formal or informal training, checklists, certification or experience requirements, personal protective equipment use.

When the Hazard Severity Index is combined with the Hazard Probability Index, the result is the Hazard Risk Index. Each Hazard Risk Index requires a specific level of action. Actions will be taken to eliminate identified hazards or reduce the associated risk.

Table 4.3: Hazard Risk Index

HAZARD CLASSIFICATION MATRIX				
Frequency	I Catastrophic	II Critical	III Marginal	IV Negligible
(A) Frequent	UN	UN	UN	A/R
(B) Probable	UN	UN	UD	A/R
(C) Occasional	UN	UD	UD	A
(D) Remote	UD	UD	A/R	A
(E) Improbable	A/R	A/R	A/R	A

Legend:

Risk Index:	Hazard Classification:	Decision Authority
IA, IB, IC, IIA, IIB, IIIA	Unacceptable (UN)	TBD
ID, IIC, IID, IIB, IIIC	Undesirable – decision required (UD)	TBD
IE, IIE, IIID, IIIE, IVA, IVB	Acceptable with review (A/R)	TBD
IVC, IVD, IVE	Acceptable (A)	TBD

- **Unacceptable Hazards (UN)** – Hazards with a Hazard Risk Index of 1A, 1B, 1C, 2A, 2B, 3A are “unacceptable” and must be mitigated in the most expedient manner possible to eliminate or control them prior to the project initiating service, by reducing the severity and/or probability of the hazard to an acceptable level.
- **Undesirable Hazards (UD)**– Hazards with a Hazard Risk Index of 1D, 2C, 2D, 3B, and 3C are “undesirable.” A management decision is required on the specific method of corrective action to mitigate the risk based on additional considerations such as the availability of acceptable alternative measures (workarounds), availability of resources, on a permanent or temporary basis.
- **Acceptable with Review Hazards (A/R)**– Hazards with a Hazard Risk Index of 1E, 2E, 3D, 3E, 4A, 4B are “acceptable with review” by the SSRC. This group may accept the risk associated with retaining the identified hazard in an “as is” condition with no further corrective action. Alternatively, this group may prescribe periodic tests and inspections or other preventative measures to ensure, on a continuing basis, that the original severity and probability ratings are not invalidated over time by degradation of conditions in the subject item.
- **Acceptable without Review Hazards (A)** – Hazards with a Risk Index of 4C, 4D, 4E are “acceptable” without review.

The Blue Line Project Office will manage the process to obtain the required authorized signatures for the acceptance of the risks. The Blue Line Project Office will maintain the records of hazard identification, analysis, assessment, and hazard risk acceptance for the BLRT Project through the revenue operations date. Those hazards that remain open following the initiation of revenue service will be turned over to Metro Transit for monitoring through closure.

For the Blue Line Extension LRT Project, a PHL was developed during Planning using the 30% Engineering Plans thereby providing a basis for Engineering.

Attachment 15-A7 will contain the BLRT Preliminary Hazard Analysis for the final design phase of the project.

4.2 Threat Management and the Security and Emergency Preparedness Plan (SEPP)

Threat Management Process

Threat management involves the identification, analysis and resolution of vulnerabilities associated with intent to inflict damage or injury in a transit system environment. The Metro Transit SEPP complies with the requirements set out in the revised 49 CFR 659. The process documented in the current plan has been developed according to the FTA SEPP Guide, and in compliance with the MN Rail Safety Oversight System Safety Program Standard. The current revision of the SEPP is revised annually and reviewed and approved by the SSOA.

A Threat and Vulnerability Assessment (TVA) workshop will be conducted during Engineering using the 30% Engineering Plans to assess threat levels and probabilities associated with the Blue Line Extension LRT Project. See **Attachment 15-A8** for the preliminary TVA. Output and recommendations from the TVA will be presented to project management for incorporation in design, as appropriate.

In addition to state safety oversight from MnDPS, Metro Transit interfaces with local and national law enforcement agencies and associations. Examples of local external agencies include the seven county area public safety agencies such as Minneapolis Police, Minneapolis Fire, Hennepin County Sheriff's Office, Airport Police, Airport Fire, Veterans Administration Police, Bloomington Police, Bloomington Fire and Minnesota State Patrol. Examples of national agencies include Federal Bureau of Investigation (FBI), Federal Protective Services, National Guard, National Transportation Safety Board (NTSB), Government Services Administration (GSA), International Association of Chiefs of Police, and the Joint Terrorism Task Force. MTPD and other Council staff are also active in the Regional Transit Security Working Group.

Threat Identification, Analysis, and Resolution

The Threat identification, categorization, assessment, and resolution process are discussed in detail in the BLRT SSCP.

Attachment 15-A8 will contain the BLRT Threat and Vulnerability Assessment for the final design phase of the project.

DEVELOPMENT OF SAFETY AND SECURITY DESIGN CRITERIA

5.1 Safety and Security Design Criteria Approach

The design criteria developed for the METRO Blue Line were revised for the METRO Green Line. BPO, with the participation of major Metro Transit stakeholders, revised the design criteria further to support the Blue Line Extension LRT Project. The design criteria benefited from various hazard and threat analyses, industry best practices, as well as comprehensive multidisciplinary design reviews that were conducted for the Blue Line and Green Line projects.

The purpose of the Design Criteria Manual is to provide basic design criteria for the Blue Line Extension Project. In addition, the Design Criteria Manual requires that standard and directive drawings are prepared during preliminary engineering and final design to standardize and guide the design activities and preparation of procurement and construction documents. The manual further stipulates that design be directed toward optimizing the design including considerations such as costs for design, construction, capital facilities; operating expense; compatibility with future development plans; energy consumption; and minimizing disruption of local facilities and communities; and meeting aesthetics, community, and local agency standards. Design should also be consistent with passenger safety, system reliability, service comfort, mode of operation, type of LRT vehicle to be used and maintenance considerations.

The performance and design criteria relate to the following Blue Line Extension LRT facility and system elements:

- Fire/Life Safety;
- Track Geometry and Trackwork;
- Utilities;
- Landscaping and Urban Design;
- Stations;
- Tunnel Alignment Structures;
- Light Rail Vehicles;
- Operations and Maintenance Facilities;
- Traction Electrification System;
- Signal System;
- Communications and Central Control;
- Fare Collection;
- Civil Engineering;
- Traffic Engineering; and
- Structural Engineering.
- Pedestrian Bridges and Tunnels

BPO will identify the applicable safety and security criteria and corresponding design and construction conformance checklists. These checklists will serve as tools for verifying and documenting that the design and construction of the project have incorporated all safety and security criteria, standards, codes, and regulations.

5.2 Technical Specification Approach

In addition to the design criteria discussed in the previous section, the Designer must comply with all other applicable engineering codes and standards, including those of the various federal, state, and local jurisdictions. Specific codes, manuals, standards and specifications include, but are not limited to those published by AASHTO, ACI, AISC, ANSI, AREMA, ASHRAE, ASME, ASTM, AAR, AWS, IEEE, ITE, MnDOT, NFPA, NEC, OSHA, USDOT, FHWA and FTA.

5.3 Design Reviews

Design review occurs throughout the Engineering phase. Participants evaluate and compare design deliverables (i.e., plans, specifications, schedules, and cost estimates) against the applicable design criteria and project configuration. The objective of design reviews is to obtain concurrence and/or comments by affected stakeholders prior to completing the documents for construction contract bidding. Safety and security elements are assessed during these reviews.

During the Planning Phase, numerous BPO working sessions have been held with stakeholders. Those participating in the review include MnDOT, MTPD and Metro Transit departments including Safety, Vehicle Maintenance, Rail Operations, Bus Operations, Engineering and Facilities and Service Development. These personnel bring experience in operations and maintenance and lessons learned from similar projects to ensure that engineering of project facilities and equipment will satisfy operational, maintainability, and safety considerations. Several of these sessions include attendance and participation of the System Safety Oversight Agency (SSOA) Manager. Topics for discussion include various safety and security for grade crossings, station areas, and other employee and public facilities along the system. The EPMS is used to track comments, responses and action items that result from these reviews. Ongoing reviews will be performed by the BPO project team and the Blue Line Extension LRT SSRC to ensure that comments are appropriately incorporated into the construction bid packages.

In a parallel activity, the LRT FLSSC is participating in the Blue Line Extension LRT process. The LRT FLSSC provides input and comments on the fire protection, emergency preparedness plans and procedures, safety plans and security aspects of the LRT operation. This committee also reviews design specifications, drawings and other relevant documentation for Metro Transit facilities and system elements with an eye toward established criteria, Federal, State and local regulations, codes and standards relating to fire/life safety and security. BPO staff are invited to LRT FLSSC meetings to provide overall design and other project updates, as has been done with the Blue Line, Northstar and Green Line projects. Recommendations and comments are submitted to BPO through committee minutes as well as by direct dialogue with Blue Line Extension LRT design team during committee meetings.

The Director of Rail and Bus Safety coordinates with BPO on appropriate agenda items as they apply to the Blue Line Extension LRT Project, and especially as they affect safety and security of LRT operations in the metro region.

5.4 Technical Baseline

BPO has a change control process that requires the evaluation, coordination, and approval or disapproval of changes in the configuration of an item after establishment of a configuration baseline. The engineering configuration management records for the Blue Line Extension LRT Project are included in the types of documents that are controlled and managed according to the Document Management and Control Plan (Rev. 1). The baseline consists of approved or conditionally approved technical documentation for an item as set forth in drawings and associated lists, specifications, and referenced documents. Characteristics of the technical baseline include:

- o Drawings are uniquely numbered and specifications follow a standard format;
- o Specification paragraphs are numbered and identified;
- o Complete drawing lists are established and the total number of drawings, the titles of drawings, the revision status, and the drawing approval dates are recorded;
- o Changes to approved drawings or specifications are required to be made in accordance with established procedures;
- o Permanent files are maintained of contract documents which include historical information relating to project changes; and
- o As Blue Line Extension LRT is implemented, the change control process will evolve to include the documentation of the completed changes reflected in “as-built drawings”.

5.5 Deviations and Changes

Changes to project configuration and standards may be identified during the course of Blue Line Extension LRT implementation. BPO has established procedures for the identification, documentation, review, and approval of all changes and modifications to the design. (Revise SSMP to include reference for the procedure that defines the design changes/modifications process).

During the Engineering and Construction phases, ultimate authority for making changes resides with the BPO. This responsibility extends to BPO’s consultants and construction contractors. Final “as-built” documents will be prepared by the BPO’s ESC based on information provided during construction. Chapter 8 of the Blue Line Extension LRT PMP describes this process in detail.

Generally, changes will be controlled to maintain integrity with Blue Line Extension LRT’s original design configuration developed during Planning. During Engineering, change control procedures will be established to ensure that potential design changes are reviewed and

responded to by appropriate personnel. Proposed changes will be evaluated in terms of impact to budget, schedule, system operation, safety and security, and will be properly documented as to rejection or incorporation in Blue Line Extension LRT. Independent cost estimates (ICE) will be developed for all changes as a check and balance. Change orders will be tracked in BPO's EPMS.

5.6 Testing and Activation Planning

Planning for management of LRT Integration Testing and Revenue Service Start-up Phases, including operations and maintenance, will be conducted prior to the end of Construction. Planning for the implementation of Integration Testing and System Start-up Phases will be completed prior to the end of Construction (considering updated site conditions or design revisions). The resultant testing and start-up program is discussed in Chapter 16 of the Blue Line Extension LRT PMP. The Director of Rail and Bus Safety, MTPD Chief of Police, and the Blue Line Extension LRT SSRC will support this activity through meetings, workshops, participation in testing as might be appropriate, and the submission of formal comments.

PROCESS FOR ENSURING QUALIFIED OPERATIONS AND MAINTENANCE PERSONNEL

6.1 Personnel Requirements

Staffing requirements for operating the Blue Line Extension LRT Project will be developed during the Construction Phase of Blue Line Extension LRT. Titles, responsibilities of each title, and qualification and training requirements for each title will be established in conformance with project requirements.

A start-up schedule for the Blue Line Extension LRT service will be prepared during Engineering. The LRT Operations and Maintenance organization will be enhanced such that it is staffed with personnel to meet key milestones described as follows:

- Delivery and acceptance of the first Light Rail Vehicle (LRV);
- Completion of all construction and procurement contracts;
- Start of system verification testing;
- Start of pre-revenue operations testing; and
- Start of the training program.

For Blue Line Extension LRT, the staffing of operators and supervisors will be consistent with the new train service. Similarly, the maintenance personnel staffing will be developed considering the additional maintenance load based upon the number of LRV's purchased for this project, the number of track miles and associated systems, and the stations. The existing operations management for the current LRT will remain intact (perhaps with some enhancements) and will assume management of new personnel.

Position description and qualification statements are available for each Metro Transit position. They specify core competencies and qualifications for each job classification. Metro Transit recognizes that the importance of consistency of staffing (in how they are trained and evaluated as well as in how they respond) is especially important in front line personnel.

6.1.1 Operations Personnel Requirements

The table below specifies the number of personnel, job classification, qualifications, and core competencies, for key operations personnel:

# of Personnel	Job Classification	Core Competencies	Training, Education, Experience	Licenses	Special Needs

6.1.2 Maintenance Personnel Requirements

The table below specifies the number of personnel, job classification, qualifications, and core competencies, for key maintenance personnel:

# of Personnel	Job Classification	Core Competencies	Training, Education, Experience	Licenses	Special Needs

6.2 Plans, Rules and Procedures

From a system safety perspective, it is critical that the same rules, signals, and procedures govern train movement and wayside/train operator interaction for all LRT alignments. The Blue Line Extension LRT will use the existing operations and maintenance plans, rules and procedures developed for the Blue Line Extension. These documents are available to FTA for review.

Given the need for consistency among Metro Transit LRT lines, Blue Line Extension LRT will also be designed and built commensurate with the concepts outlined in the Metro Transit Light Rail Transportation Maintenance and Operations Plan. This plan:

- Defines the service and operating characteristics;
- Defines the operating and maintenance policies and objectives;
- Provides a general overview of operations from which rules and procedures will be prepared;
- Includes normal and emergency operations, describes system equipment to be used for controlling operations;
- Describes a maintenance philosophy; and
- Outlines interaction between LRT operating and maintenance functions.

The following documents will be updated for Blue Line Extension LRT operations, for implementation during integration testing:

- Rulebook;
- Standard Operating Procedures (SOPs) (includes emergency procedures);
- Maintenance Manuals;
- Operations and Maintenance training programs;

- Rail Fleet Management Plan;
- System Integration Testing Plan and procedures.

All operating and maintenance plans, rulebooks, SOPs, etc. are maintained by Metro Transit Rail Operations. Maintenance of the conformed documents and configuration thereof is accomplished under the direction of the Deputy Chief of Operations – Rail. The library of LRT operating documents is located at the Franklin Avenue Operations and Maintenance Facility (OMF).

The LRT OEMP, the LRT Accident/Incident Investigation Plan, SSPP, and SEPP will be updated for submittal to the State Safety Oversight Agency (SSOA) for revenue service implementation. These plans are required by the SSOA through its System Safety Program Standard (SSPS) which in turn complies with 49 CFR 659, the State Safety Oversight Rule.

6.3 Training Program

6.3.1 Training Overview

At a minimum, training for each group (groups to be determined at a future phase of the project) will cover the following topics:

- Operators and supervisory personnel;
- Rulebook;
- SOPs/Emergency Operating Procedures (EOPs);
- Vehicle operation;
- System characteristics;
- Maintenance personnel;
- Operations and maintenance manuals;
- Systems layouts and controls;
- Work safety requirements;
- Emergency procedures;
- Simulated service.

The detailed staffing organization and training schedule, and the staffing budget based on the schedule, will be subject to adjustment as the system startup plan is finalized. A complete training plan will be developed during the Construction Phase that will more fully outline these training requirements. A schedule for implementation of the plan will be prepared that provides for timely completion of functions necessary for the successful start of revenue service.

The Green Line training program will be used as a basis for the Blue Line Extension LRT training program. Training curriculums are maintained by the manager of the department responsible for giving the training and are reviewed and updated as conditions warrant. Training, licensing, and certification requirements for each title are identified in the individual title descriptions. Employee files contain evidence that each employee has the appropriate qualifications, licenses, certifications, and training for his/her title and responsibilities. Copies of training materials for operations and maintenance personnel are available to FTA for review.

In addition to training required by title, all employees, consultants, and contractor personnel who will be authorized to work within fouling distance of the track must receive LRT On Track Safety training and have evidence of this training on their person (or have their name in the training database) when they are within any Blue Line Extension LRT Right of Way (ROW).

6.3.2 Training Plan

Training plan to be developed at a future phase of the project.

6.3.3 Training Course Guidelines

Training course guidelines to be developed at a future phase of the project.

6.3.4 Planned Courses and Schedule

The following table summarizes the operations and maintenance training courses

Table 6.3.4 Operations and Maintenance Training Courses

Course Number	Course Title	Course Duration (Hrs)	Anticipated Delivery Schedule

Course Number	Course Title	Course Duration (Hrs)	Anticipated Delivery Schedule

6.4 Emergency Preparedness

Metro Transit conducts drills on its existing LRT system and will extend them to cover the Blue Line Extension LRT Project.

For the Blue Line Extension LRT Project, Metro Transit will perform the following prior to the initiation of the project into revenue service:

- Annual emergency preparedness drill (scenario and location varies each year);
- Tabletop drill exercises; and
- Emergency field training procedure exercises.

Formal reviews (After Action Reviews) follow each drill and lessons learned are incorporated into improvements in incident response and resolution procedures. These lessons learned are incorporated into operations and status is tracked through the corrective action process. All corrective action plans are submitted to the SSOA and updated monthly.

Discussions by the FLSSC will form the basis for emergency drills and exercises conducted for Blue Line Extension LRT. This plan will be documented in an OEMP for Blue Line Extension LRT. In accordance with FTA emergency preparedness guidelines, the Plan will include exercises designed to drill those emergencies that are more probable to occur along this particular alignment. Familiarization for local Fire Departments and Police Departments will also be conducted for Blue Line Extension LRT. Drills exercising the training of these personnel will be incorporated into the emergency preparedness program for the Blue Line Extension LRT Project.

6.5 Public Awareness

Metro Transit will partner with local communities and lead or participate in the following public safety and awareness programs:

- **Transit Watch:** Metro Transit's Transit Watch Program (See Something, Say Something), is ongoing and provides the public a conduit to report suspect activities in and around the LRT system. The program will be expanded to include the Blue Line Extension LRT service. Metro Transit Police have partnerships with other law enforcement agencies and community organizations. Officer deployment is based upon citizen and operator input as well as crime data. This program includes a tip line.
- **Operation Lifesaver:** Metro Transit has a strong partnership with Operation Lifesaver. Operation Lifesaver is a non-profit, international continuing education program established to end collisions, deaths and injuries at places where roadways cross train tracks, and on rail road ROW. This public education program will be an important vehicle for public awareness and training for new Blue Line Extension LRT service, and will be enhanced by the techniques that have been in place since before the revenue operating date of the Blue Line.
- **Targeted Outreach:** Metro Transit's targeted communication and outreach during the project will be coordinated under the direction of the BPO Assistant Director for Administration, Communication and Outreach. Outreach for Metro Transit generally is coordinated by Metro Transit's Department of Customer Service and Marketing. These staff members regularly engage the public and employees on issues of safety relative to light rail. BPO will engage the community on design related issues and will continue to work with the community during construction, testing and start of revenue operations. After revenue service begins, communication and outreach will transition to Metro Transit's Department of Customer Service and Marketing in partnership with Metro Transit safety staff.

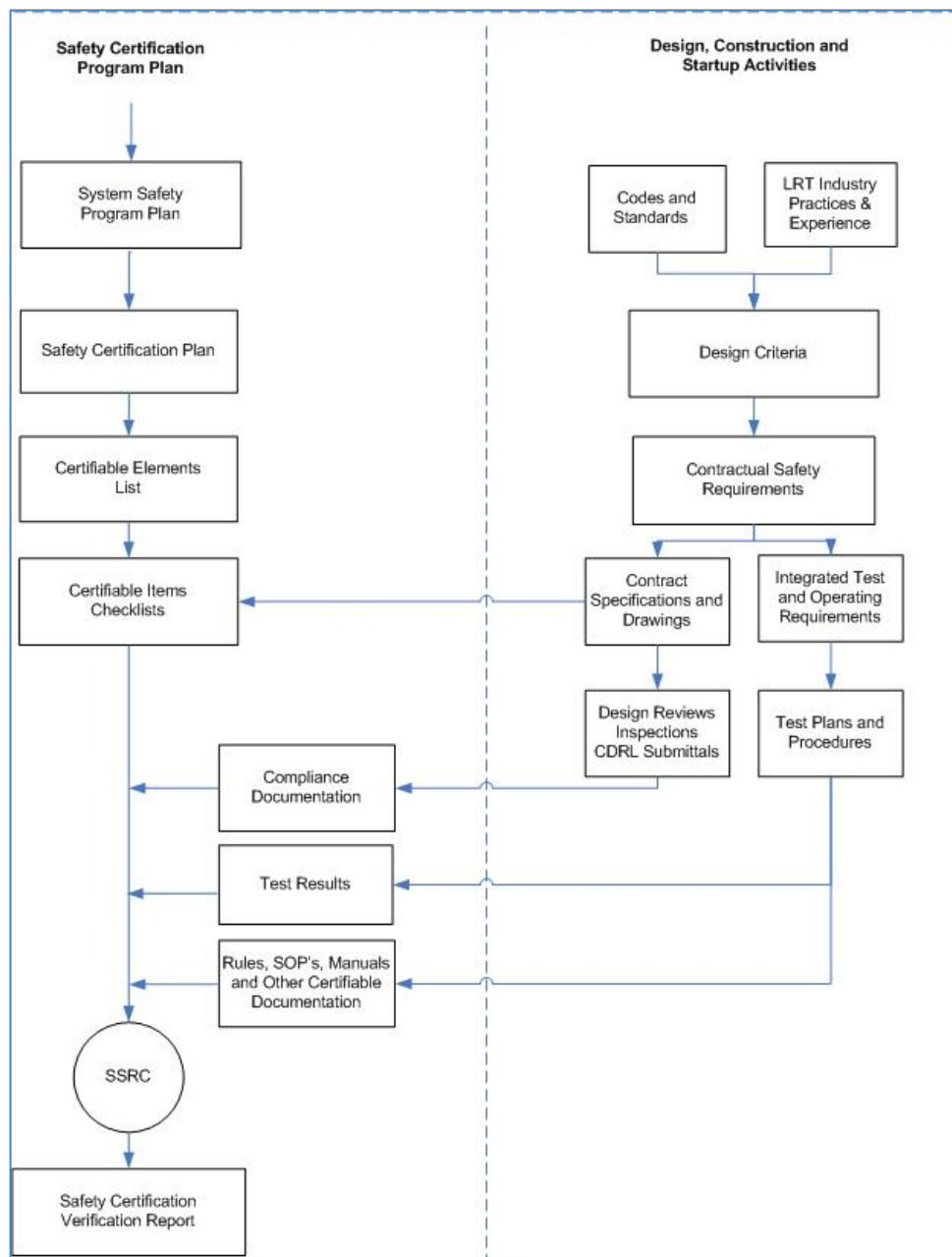
Construction communication will focus on informing people about construction activities, responding to concerns and educating the public and employees on issues of safety relative to light rail construction and operations. Audiences include, as appropriate, transit riders, businesses, employees, residents, youth and the general public. BPO will seek advice from the Council's Transportation Accessibility Advisory Committee on communicating construction and safety issues to the numerous service agencies and non-profits that work with persons with disabilities. Examples of outreach activities include:

- Youth outreach through presentations to schools and youth centers and brochures focusing on safe crossing of tracks, etc.;
- General adult outreach through brochures, videos and attendance at community fairs and festivals, etc.; and
- Accessible transportation safety outreach to promote safety for persons with disabilities with particular focus on the large number of agencies meeting the needs of this community located along Blue Line Extension LRT.

PROCESS FOR VERIFYING CONFORMANCE AND ISSUING FINAL SAFETY AND SECURITY CERTIFICATION

Details regarding the application of safety and security requirements during the Engineering, Construction, Integration Testing and Activation Phases of the Blue Line Extension LRT Project will be addressed in the Blue Line Extension LRT Safety and Security Certification Plan (SSCP). **Figure 7.1** provides a visual representation of this process.

Figure 7.1: Safety and Security Certification Process



7.1 Design Verification Process

Design verification began in the Engineering Phase; risks have been effectively identified, evaluated and controlled. During the latter part of Engineering, the Advanced Design Consultant will finalize the Critical/Catastrophic Items List (CCIL).

As explained in Chapter 6 of this SSMP, the CCIL is a composite tracking system that will be used to verify that all aspects of the construction work, from design and construction through integration testing, have met the safety and security standards of Blue Line Extension LRT that are defined in the design criteria and that are considered necessary for safe and secure operations.

Based on the CCIL, the Advanced Design Consultant will work with BPO to integrate the list into a database. In addition to identifying the specific safety and security requirements, the database enables tracking of references to the contract documents, specifications, manuals, criteria or other verification means including the item, and where, in the larger design, testing, inspection, assurance, and acceptance process, the critical safety and security requirements for each CCIL are referenced.

To complete the design verification process, the Advanced Design Consultant, working cooperatively with the BPO, the SSRC and the quality assurance staff, will populate the database with the relevant design verification information. Methods to accomplish this activity include document reviews, contract deliverable reviews, audits, inspections, and random sampling to ensure verification of the final specification with the safety and security requirements. The database will reflect certifiable elements and items, the requirements, the method of verification, the date, and the individual performing the verification. Also, the database will identify if the verification was audited or reviewed.

This database will enable the Blue Line Extension LRT Project to:

- Verify that an acceptable safety and security level is designed in all project elements;
- Document that the design and specifications require compliance with all applicable safety codes and regulations; and
- Certify projects in a consistent manner.

Additionally, this process ensures that all safety and security related design deviations and exceptions have been reviewed and accepted by management, and that the results of safety and security analysis have been appropriately addressed. Upon completion of the verification, the Director of Rail and Bus Safety reviews the completed conformance checklists and related supporting documentation, and will present the checklists for review and approval by the SSRC.

7.2 Construction Verification Process

During the Construction Phase, the Advanced Design Consultant, working with the BPO Construction Management Team, the SSRC and BPO quality assurance staff, will manage the construction specification conformance process. The purpose of this process is to verify that the as-built facilities, installed systems, and acquired vehicles and equipment conform to the safety and security related requirements contained in specifications and other contract documents, including changes approved during the Engineering Phase.

A database will track construction verification in a manner consistent with that applied during design verification. It will provide the “other half” of the CCIL conformance, because it (1) identifies the tests and verification methods necessary to ensure that the as-built configuration contains the safety and security-related requirements identified in the applicable specifications and other contract documents, and (2) provides documentation that the delivered project meets those requirements.

For facilities and systems, certifications, inspector reports, job photos, or other evidence may be submitted as documentation. Any contractor submittal used for verification needs to be approved, typically by the resident engineer. Representatives of the SSRC and/or the Advanced Design Consultant and BPO agency staff may also conduct final walk-through inspections of all as-built facilities. Additional walk-throughs and inspections may be performed by local fire department and city officials (i.e., fire marshals and building officials).

Safety and security requirements that are not verified by available documentation or demonstration are tracked to resolution by the Director of Rail and Bus Safety through the SSRC. As appropriate, additional safety and security analysis may be performed. Throughout this verification process, the Blue Line Extension LRT BPO will use a database reporting system to produce conformance checklists that describe the status of deviations from the approved design, non-conformances, change orders, and other incomplete or in progress certification items.

Upon completion of the verification process, the Blue Line Extension LRT SSRC will consider for approval the status provided by the BPO and, if appropriate, issue the Certificates of Compliance for the appropriate certifiable elements.

7.3 Testing Verification Process

During the Construction and Integration Testing phases, a comprehensive test program will be followed to ensure that all elements of Blue Line Extension LRT provided under construction, procurement and installation contracts conform to the specifications. As explained in Section 16 of the Blue Line Extension LRT PMP, this program will be documented in a Test Program Plan, developed by the BPO in coordination with Rail Operations and the

Director of Rail and Bus Safety. The test plan will comprise all the requirements for final testing, verification of system readiness, and verification that the system is in compliance with all applicable regulations and requirements for revenue operations.

The BPO in coordination with the Director of Rail and Bus Safety and Metro Transit Rail Operations will verify that integration tests, acceptance tests, and other inspections are conducted to ensure that safety and security requirements have been effectively addressed. As documented in the CCIL and supporting database information, safety and security design criteria may require specific performance tolerances, reliability measures, or installation techniques which must be verified through testing, inspection or other means.

Working with BPO, Rail Operations will also coordinate the review of test plans, test procedures, and the results of all tests including design verification, technical operational evaluation, technical data and requirements validation and verification. As far as possible, the BPO with assistance from the Advanced Design Consultant, and members of the Blue Line Extension LRT SSRC (or appropriate representatives) will participate in system integration and pre-revenue testing activities where the safety and security of passengers and/or employees may be affected. In this capacity, these safety and security team members will review the implementation of integration test plans and procedures for system verification and demonstration for both acceptance and system-level tests for safety and security features, such as: sprinkler systems, alarms, emergency management panels, fire management panels, ticket vending machines and CCTV systems.

Open items identified during testing will be documented and tracked to resolution by the Director of Rail and Bus Safety through the SSRC. Aspects of Blue Line Extension LRT that deviate from the design configuration and standards will be reviewed to identify hazards and vulnerabilities along with any other hazards and vulnerabilities identified during the course of design, construction, and testing activities. All identified hazards and vulnerabilities will be documented, evaluated and tracked to resolution by the SSRC.

Upon completion of the testing/inspection process, the Blue Line Extension LRT SSRC, using established procedures, will review and issue the Testing/Inspection Certificates of Compliance for the appropriate certifiable elements.

7.4 Operational Readiness Verification Process

7.4.1 Internal Operational Readiness Verification

Metro Transit (specific department to be determined at as part of a future project phase) will verify the functional capability and operational readiness prior to revenue service. During this Phase, all aspects of the system will be assessed including the operations, maintenance, safety/security plans, programs, and procedures for their

effectiveness under simulated operating conditions for normal, abnormal, and emergency situations.

The operations and maintenance plans, rules, procedures and other related documents assessed during this phase will be verified as meeting the safety and security requirements or recommended for revision or modification.

[Typically this is documented in a Pre-Revenue Operations or Start Up Plan and is a task implemented by the Rail Activation Committee. Are there any available from previous projects for use by BPO?].

7.4.2 External Operational Readiness Verification

Prior to the Operational Readiness date, the BPO will support readiness reviews conducted by oversight agencies, including the FTA and the SSOA. Details related to the performance of these reviews, including associated activities such as development of operations and maintenance plans and procedures, training of personnel, and performance of emergency drills will be added to this Section of the SSMP in a future revision. The aim of the readiness reviews is to measure compliance with documented plans as well as to confirm that there are no unacceptable hazards or threats.

7.5 Final Safety and Security Certification and Verification Report

Upon completion of the activities required to verify the design, construction, testing and operational readiness of the project, the Blue Line Extension LRT SSRC will have received, reviewed and approved the issuance of Certificates of Compliance. The Director of Rail and Bus Safety, with support from the SSRC and BPO, will package these certificates together. Based on a complete set of required certificates, the Director of Rail and Bus Safety will prepare a Certification Letter to the Metro Transit General Manager stating that Blue Line Extension LRT is safe and secure for revenue operations. Upon the receipt of supporting evidence from the Director of Rail and Bus Safety, the General Manager will transmit a letter to the SSOA stating that Blue Line Extension LRT is operationally safe and secure for revenue service. Copies of this letter will be provided to BPO, and to FTA as appropriate.

Prior to revenue operations, the results of the Blue Line Extension LRT safety and security certification process will be documented in a Safety & Security Certification Verification Report, prepared under the direction of the Director of Rail and Bus Safety. This report will summarize the safety and security readiness of Blue Line Extension LRT for revenue service, and identify any exceptions and/or operational mitigations and the schedule and responsibility for addressing them. Before revenue service begins, all certifiable elements must be verified, or mitigations documented and communicated in writing to all affected

parties. Mitigations include engineering modifications, rules or procedures that must be in place to ensure safe operations until the certifiable element can be completed.

At the current time, it is anticipated that this report will include the following elements:

- Letter of Safety and Security Certification;
- Executive Summary;
- Introduction;
- Design;
- Construction;
- Integration Testing;
- Contractor Training;
- Operations and Maintenance Manuals;
- Operations and Maintenance Training;
- Public Safety Agency Familiarization;
- Emergency Drills;
- Passenger Vehicles;
- Certificates of System Safety and Security; and
- Safety and Security Certification Audits.

This report will be submitted to the Minnesota Department of Public Safety (MnDPS), BPO and FTA.

7.6 Endorsement by Transit Management

It is the policy of Metro Transit to ensure that the Blue Line Extension LRT Line is operationally safe for revenue service. Further, these detailed and comprehensive BPO processes will be verified using the safety and security process established for Blue Line Extension LRT and documented in the Blue Line Extension LRT SSCP.

CONSTRUCTION SAFETY AND SECURITY MANAGEMENT ACTIVITIES

Blue Line Extension LRT PMP Chapter 8 describes the approach to be taken for Blue Line Extension LRT construction management. The focus on safety and security begins at the start of each Blue Line Extension LRT design and construction contract. The specifications for each contract issued for bid relating to construction (or design and construction) will include a section requiring a Contractor Safety Plan and a Contractor Security Plan. The contractor may combine these plans into a single safety and security plan containing the required elements for both areas. The plan(s) must be approved by the BPO Manager of Construction Safety or designee prior to the issuance of a Notice to Proceed (NTP) with the contract.

8.1 Construction Safety Management Activities

For Blue Line Extension LRT contracts, the Council will create a contract specification similar to Green Line Specification Section 01 35 29, “Health, Safety, and Emergency Response,” which delineates the safety requirements that a contractor must comply with if awarded the contract for work. It states that the contractor or subcontractor “shall comply with all provisions, regulations and recommendations issued according to the Occupational Safety and Health Administration (OSHA), and with law, rules, regulations of other authorities having jurisdiction, with regard to all matters relating to the safety and health of workers and the general public.”

The Blue Line Extension LRT Construction Phase is vastly different from operations and, as such, is governed by different rules, procedures, and policies. Construction sites are especially hazardous. Each contractor must submit a single or joint plan for how the work will be accomplished while preserving safety and security.

The contractor is required to prepare a project safety and health program along with a Site-Specific Safety Plan to ensure that, while on the work site and in the conduct of construction activities, contractor and subcontractor personnel comply with the specified safety practices, codes, and regulations. Blue Line Extension LRT may involve several separate contracts. Each contract will require the contractor to address safety and security in a plan prior to the start of construction activities. The contractor may choose to address safety and security in a single plan or in separate plans.

8.1.1 Construction Safety Required Submittals and Time Frames

As required by Metro Transit’s contract requirements **Section 01 35 29**, Health, Safety, and Emergency Response, construction contractors are responsible for submitting a corporate safety and health program and contractor safety plan to Metro Transit’s authorized representative. In addition to describing the content

requirements for the contractor safety plan, accident/incident and hazardous substances reporting, this specification requires the contractor to implement the safety program in coordination with the contractor's security personnel in accordance to **Section 01 35 53**, Security Procedures. The security procedures detail the persons responsible, plans, and activities required to protect the work site from theft, vandalism, and unauthorized entry. The security procedures itemize items prohibited from the work site as well as minimum fencing, facility, gate, locks, barriers and signage requirements. The security procedures also establish the security incident reporting requirements.

The Metro Transit Director of Rail and Bus Safety has the responsibility for reviewing all contractor safety plan submittals, monitoring and assessing construction activities, and reporting findings to the SSRC regarding the compliance of contractor's activities and plans. Similarly, the MTPD Chief of Police is responsible for reviewing the contractor security program plan submittals, overseeing and monitoring the contractors' security plans.

Following the award of a contract but prior to the start of construction activities, the contractor shall submit the following to the BPO Construction Manager or designee:

- Contractor's Safety and Health Program;
- Contractor's Site-Specific Safety Plan;
- Contractor's principal point of contact for safety issues, including the contractors designated competent person based on the work being performed.

The contractor will be required to submit the following to the BPO Construction Manager on a regular basis during the course of construction:

- Accident reports – immediately orally, and in writing no later than 24 hours after each occurrence;
- Inspection reports – weekly;
- Minutes and attendance sheets of safety training, meetings and related communications – biweekly;
- Notices from public authorities – as soon as possible but no later than 24 hours after receipt by the contractor.
- A compilation of accidents on a monthly basis; and
- Material Safety Data Sheets (MSDS) for all substances as received by the contractor.

Whenever construction operations encounter or expose an abnormal condition that may indicate the presence of a hazardous substance, the contractor shall immediately

discontinue construction activities near the abnormal condition and notify the Construction Manager or designee.

8.1.2 Contractor's Site-Specific Safety Plan

The contractor's Site-Specific Safety Plan shall contain a commitment to and responsibility for providing a safe and healthful project. It must also include, at a minimum:

- Training of site supervision;
- Emergency evacuation of employees, including hospital routes and tornado shelters;
- Cold and hot weather work;
- Weekly toolbox meetings;
- Safety and health project orientation for workers;
- Ongoing safety and health training for workers;
- Providing safety and health information to the general public;
- Specific assignments of safety and health-related roles and responsibilities;
- Safety and health inspections;
- Accident-related record keeping, investigation and surveillance;
- Disciplinary action;
- Schedule of safety related meetings and training;
- General work rules addressing hazards common to all types of construction and site-specific work rules addressing the hazards of the work at hand;
- An Emergency Action Plan addressing all types of emergencies with that the contractor may reasonably expect to encounter; and
- A procedure for identifying how and under what circumstances job hazard analyses shall be conducted.

8.2 Construction Security Management Activities

For Blue Line Extension LRT contracts, the Council will create a specification similar to Green Line Specification Section 01 35 53, "Security Procedures," which delineates the requirements that a contractor must comply with regard to security. Compliance with the site security portion of the Contractor's Safety Plan will require the contractor to develop and submit a Site Security Plan to BPO prior to contract commencement. The Site Security Plan shall accommodate the following requirements and must be amended as needed to resolve BPO objections.

8.2.1 Contractor's Security Related Submittals and Timeframes

The contractor shall be responsible for the security of the site and work, from the date of contract commencement to contract completion. This shall include protection of offices, workshops, equipment, materials and work from damage by vandalism, fire, and theft.

MTPD police will be available for occasional consultation and security audits for security activities on Council property.

The contractor will be required to submit a Security Report with each Application for Payment, including the following, at a minimum:

- Documentation of security issues discussed at safety meetings during the most recent period;
- Security incidents, including date, time, location, and contractor and Project personnel involved with theft, vandalism, trespassing, and emergency services calls; and
- List of security staff working on the site during the most recent period.

BPO will require that the contractor update the Security Plan and submit to the Construction Manager or designee for review every six months to reflect changes in security procedures.

8.2.2 Contractor Security Plan

The contractor's Security Plan shall be submitted to and reviewed by the Blue Line Extension LRT Construction Manager or designee prior to commencement of work at the site. The Security Plan will include at a minimum:

- Contractor's principal point of contact concerning security issues;
- Emergency telephone numbers for police, fire, ambulance, and private security companies involved in Blue Line Extension LRT, including non-emergency numbers, and phone numbers for key contractor and subcontractor personnel;
- Requirement that security issues be discussed at each safety meeting; agenda item list to be included in all safety meetings, including toolbox meetings;
- Procedures for enforcing compliance with security requirements and plan for discipline and corrective action for violation of workplace restrictions listed below;
- Rules for access to offices, staging and storage areas, and vehicles, and sign-in requirements for offices and checkpoints, including classification of personnel authorized for access to restricted areas;
- Descriptions of security signage, fencing, and electronic security systems;

- Diagrams of staging areas, storage areas, and office space to be equipped with security systems or to be observed by security staff;
- Procedures for quality assurance audits by Metro Transit police; and
- Documentation of closeout procedures.

8.2.3 Site Security Requirements

BPO may require the contractor to properly secure construction areas including temporary office buildings, storage, staging and parking areas.

MTPD, the Construction Manager or designee, and BPO quality personnel will periodically inspect and audit site security to confirm compliance with requirements of the contract documents. The contractor shall provide access to the Site for MTPD officers, law enforcement officials, and emergency responders.

8.2.4 Site Workplace Restrictions

The following items or actions are prohibited while on the Site or on the Council property:

- Firearms or lethal weapons;
- Alcoholic beverages, illegal depressant or stimulant drugs, and being under the influence thereof;
- Sabotage, vandalism, or negligently operating equipment or vehicles;
- Fighting;
- Theft or unauthorized removal of tools or materials;
- Failure to use sanitary facilities;
- Entering unauthorized areas;
- Violating safety rules;
- Making false statements or falsifying records or reports;
- Horseplay;
- Littering;
- Negligently damaging property of the Council, contractor, or subcontractor; and
- Failure to submit to security inspection.

Failure to comply with the above restrictions will be cause for dismissal or denial of access.

8.3 Safety and Security Incentives

At this time, Blue Line Extension LRT does not anticipate providing safety or security incentives during construction.

IMPLEMENTATION SCHEDULE FOR MEETING STATE SAFETY OVERSIGHT AGENCY (SSOA) REQUIREMENTS AND APPROVALS

9.1 Applicability

This section of the SSMP addresses Blue Line Extension LRT's activities to coordinate with the Minnesota State Safety Oversight Agency (SSOA) to ensure compliance with 49 CFR Part 659 requirements with the initiation of revenue service. This section is only required for rail fixed guideway systems meeting the definition specified in § 659.5:

"Any light, heavy, or rapid rail system, monorail, inclined plane, funicular, trolley, or automated guideway that:

- is not regulated by the FRA; and
- is included in the FTA's calculation of fixed guideway route miles or receives funding under FTA's formula program for urbanized areas (49 U.S.C. 5336); or
- has submitted documentation to FTA indicating its intent to be included in FTA's calculation of fixed guideway route miles to receive funding under FTA's formula program for urbanized areas (49 U.S.C. 5336)."

The Blue Line Extension LRT Project falls under the jurisdiction of the SSOA. The State Safety Oversight Program has been in place since the early stages of the Blue Line project, and Metro Transit maintains an active and collaborative relationship with the SSOA.

9.2 Activities

Metro Transit activities to comply with MnDOT submittal requirements for system extensions.

9.3 Implementation Schedule

Metro Transit implementation schedule to comply with MnDOT submittal requirements for system extensions.

9.4 Coordination

The SSOA resides in the Minnesota Department of Public Safety (MnDPS), coordinated by the Office of State Safety Oversight. MnDPS is assisted by an independent contractor that

provides technical advice and carries out various tasks including audits and pre-revenue assessments.

MnDPS has been part of the system safety and safety certification process at Metro Transit since 2002, including the grand openings of the Blue Line and the Green Line. MnDPS receives agendas and minutes for the LRT FLSSC and the SSRC and participates as appropriate. The SSOA receives periodic updates from BPO staff on design and construction. It also participates in FTA monthly and quarterly meetings as appropriate. The SSOA is also notified of and receives reports on accidents or incidents that have occurred on the Blue Line and Green Line. This same level of rigor, participation and collaboration will be applied to the Blue Line Extension LRT Project.

FEDERAL RAILROAD ADMINISTRATION (FRA) COORDINATION

At the project level, the Blue Line Extension LRT Project falls under State Safety Oversight Agency (SSOA) jurisdiction. Although the FRA and SSOA are typically mutually exclusive jurisdictional authorities, there are some cases where FRA has an interest.

In the case of a transit system located on dedicated tracks adjacent to active freight trackage, FRA's concern is that the operations of a freight railroad in close proximity to a heavy or LRT line (i.e., common corridor operations) could present risks for each. For example, a freight train derailment that encroaches on the transit line or an LRV evacuation of passengers near freight rail track. In addition, workers on the freight railroad might not realize the need to protect against transit vehicles, and vice versa.

Common corridors are transportation corridors carrying both general freight railroad traffic and passenger trains of non-FRA-compliant equipment (heavy or LRT). FRA-compliant commuter rail equipment is not included in this study, since it is covered by existing regulations. The FRA has defined three types of common corridors:

1. **Shared track**, in which the heavy rail or transit vehicles operate on the same tracks used by freight trains. FRA has written regulations governing this type of operation, in which temporal separation (no simultaneous operation) is required in most cases. This condition does not apply to Blue Line Extension LRT Project
2. **Shared right-of-way (ROW)**, in which the transit vehicles run on separate tracks, but separation between the centerline of the freight track and the centerline of the passenger track is less than 25 feet. Tracks separated by less than 25 feet are defined as "adjacent" by FRA, and certain worker protection rules apply on adjacent tracks. FRA also defines "less than 30 feet" as the distance at which tracks are "non-insular" and operators are therefore subject to certain railroad regulations. This condition applies to the Blue Line Extension LRT Project in a very limited occasion.
3. **Shared corridor**, in which transit and freight operators share a transportation corridor, but tracks are separated by at least 25 feet and no more than 200 feet. FRA believes that intrusion by derailed freight or transit cars onto a parallel railroad track is unlikely beyond 200 feet. This condition applies to the Blue Line Extension LRT Project.

In addition, FRA defines "shared minor facilities" as follows:

- Rail/highway crossings where transit line and general railroad system share crossing protection;
- Level crossings (diamonds) between transit tracks and general railroad system tracks; and

- Shared movable bridges.

Also, where transit operations share highway-rail grade crossings with conventional railroads, FRA expects both systems to observe its signal rules.

The BPO is coordinating with the FRA and the FRA has provided the BPO with a preliminary jurisdiction determination indicating that the Blue Line Extension LRT will be an urban rapid transit operation.

The FRA identified the shared crossings with freight rail that will fall under its purview:

- 41st Ave
- 42nd Ave
- 45 ½ Ave
- West Broadway
- Corvallis Ave
- Bass Lake Road
- 63rd Ave
- 71st Ave

The FRA identified certain regulations set forth in 49 CFR Part 211 that Metro Transit's operations must follow. Metro Transit may petition the FRA for a waiver of these FRA regulations. FRA will seek FTA's views whenever an urban rapid transit operation petitions FRA for a waiver of its safety rules. In granting or denying any such waiver, FRA will make clear whether its rules do not apply to any segments of the operation so that it is clear where FTA's rules do apply.

The BPO will continue to coordinate with the FRA for the shared success of this common corridor interface, including implementation of required mitigations and obtaining FRA waivers.

DEPARTMENT OF HOMELAND SECURITY (DHS) AND TRANSPORTATION SECURITY ADMINISTRATION (TSA) COORDINATION

11.1 Department of Homeland Security (DHS)

11.1.1 Program Activities

BPO anticipates that, similar to current practice, interface with DHS will be managed by the MTPD Chief of Police, and supported by the security participants in the FLSSC. Currently, Metro Transit Police are members of the Hennepin, Ramsey, Dakota and Washington County Chiefs of Police Associations. Metro Transit Police also participate on Law Enforcement Terrorism Task Force sponsored by the Federal Bureau of Investigation (FBI).

11.1.2 Implementation Schedule

Submittal schedule for the DHS program activities will be developed as part of a future project phase.

11.2 Transportation Security Administration (TSA) Activities

11.2.1 Program Activities

The LRT FLSSC includes TSA participation through the TSA Lead Inspector, Surface Transportation, and Security Inspection. TSA has been represented at LRT and Northstar FLSSC meetings as well as at Threat and Vulnerability Assessment (TVA) workshops and emergency preparedness exercises.

As noted earlier in this SSMP, the FLSSC facilitates emergency response exercises. LRT FLSSC members will participate in the planning, performance and evaluation of emergency simulations on the system. Some of these exercises will be discussion-based (tabletop) drills, others may take the form of familiarization exercises, and yet others will be operations-based (full-scale) exercises. Some scenarios will have a safety (accidental injury or damage) perspective, while others will have a security (intentional injury or damage) perspective. Some will accommodate both perspectives.

11.2.2 Implementation Schedule

Submittal schedule for the TSA program activities will be developed as part of a future project phase.

ATTACHMENT 15-A1

REFERENCED MANAGEMENT PLANS

The chart below lists the acronym, date and revision number for management plans referenced in this SSMP. These plans are revised on an as-needed basis. Staff should always use the most recent revision as a guide.

Plan	Acronym	Date	Revision
Central Corridor Safety and Security Certification Plan	Central Corridor SSCP	October 2012	Rev 2
LRT Accident/Incident Investigation Plan		April 2014	Rev. 9
Metro Transit Security and Emergency Preparedness Plan	SEPP	January 2014	Rev.12
Rail Transit Operations Emergency Management Plan	OEMP	February 2014	Rev. 9
Safety and Security Preparedness Plan	SSPP	April, 2014	Rev. 11
Blue Line Extension LRT Project Management Plan	PMP	November 2014	Rev. 01.00
Transportation Maintenance and Operations Plan	TMOP	March 2009	Rev 18

ATTACHMENT 15-A2

BLRT Project Description

The planned METRO Blue Line Extension would operate on approximately 13.5 miles of new double track from downtown Minneapolis to the northwest serving the communities of Minneapolis, Golden Valley, Robbinsdale, Crystal and Brooklyn Park. See Figure 1-1. The light rail transit (LRT) is anticipated to serve a broader area to the northwest, including the communities of New Hope, Brooklyn Center, Plymouth, Maple Grove, Osseo, Champlin, and Dayton.

As currently planned, the proposed line will serve 11 new stations. The line will begin revenue service in 2021 and is expected to have 27,000 average weekday riders by 2040. When complete, the Blue Line Extension will connect to the existing Blue Line at Target Field Station from the northern terminus at Oak Grove Parkway Station in Brooklyn Park. The line will connect major activity centers, including downtown Minneapolis, Theodore Wirth Regional Park, downtown Robbinsdale, the Crystal Shopping Center, the Brooklyn Park commercial strip, North Hennepin Community College and the Target North Corporate Campus. The line will provide a one-seat ride to activity centers on the METRO Blue Line, including the VA Medical Center, Minneapolis-St. Paul International Airport and Mall of America.

Passengers will be able to connect to the greater METRO system, including METRO Blue Line (Hiawatha LRT), METRO Green Line (Central Corridor), Northstar Commuter Rail, METRO Red Line (Cedar Ave BRT), the planned METRO Green Line Extension (Southwest LRT), and METRO Orange Line (I-35W BRT), as well as planned Arterial Bus Rapid Transit lines connecting at multiple locations on the METRO system. See Figure 1-2.

The Blue Line Extension will operate primarily at-grade and with structures providing grade separation of LRT crossings, roadways and water bodies at specified locations. The northernmost station on the line will be located at Oak Grove Parkway in Brooklyn Park. From Target Field Station south through downtown Minneapolis, the Blue Line Extension will be interlined/through-routed with the existing Green Line, sharing tracks on South 5th Street in downtown Minneapolis.

The 11 planned stations along the Blue Line Extension line, from south to north, are: Penn Avenue and Van White Boulevard stations in Minneapolis; Golden Valley Road and Plymouth Avenue stations in Golden Valley; Robbinsdale Station in Robbinsdale; Bass Lake Road Station in Crystal; 63rd Avenue, Brooklyn Boulevard, 85th Avenue, 93rd Avenue, and Oak Grove Parkway stations in Brooklyn Park. See Figure 1-1 for station locations. The line will be served by five park and ride facilities near the Golden Valley Road, Robbinsdale, Bass Lake Road, 63rd Avenue and Oak Grove Parkway stations.

An additional 28 light rail vehicles (LRVs) will be added to Metro Transit's fleet for the operation of the Blue Line Extension. These LRVs will be stored and maintained in a new Operations and Maintenance Facility (OMF) to be located in Brooklyn Park. See Figure 1-1 for general location.

Additional project requirements include approximately 16 traction power substations (TPSS) to supply electrical power to the LRVs and signal bungalows housing equipment needed to operate and monitor train signals. The Council will identify specific sites for TPSS and signal bungalows during the Engineering phase of the Project.

The Council is the FTA grantee and will serve as the owner-operator of the completed Blue Line Extension Line.

Figure 1-1: Proposed METRO Blue Line Extension Project Route and Stations

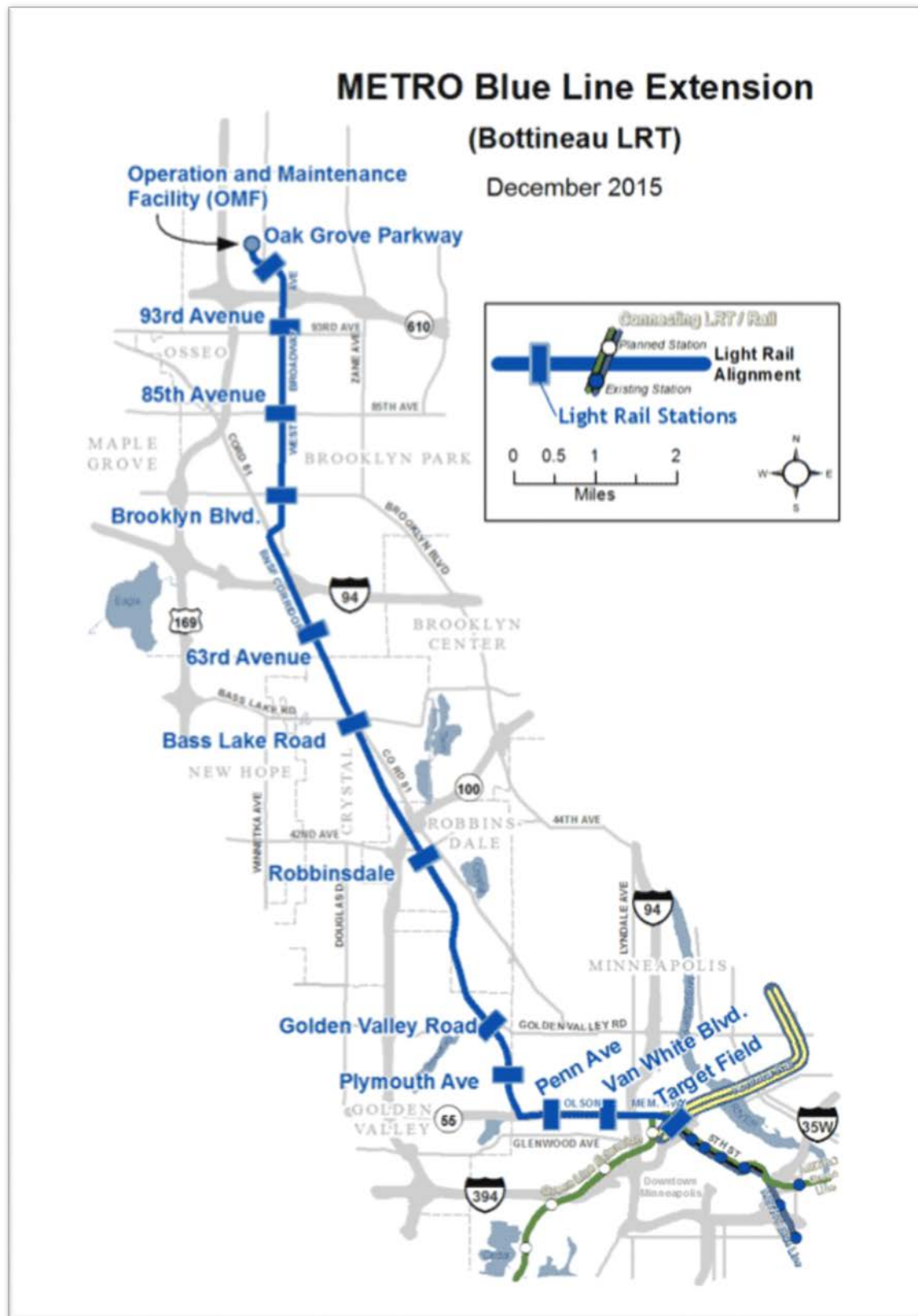
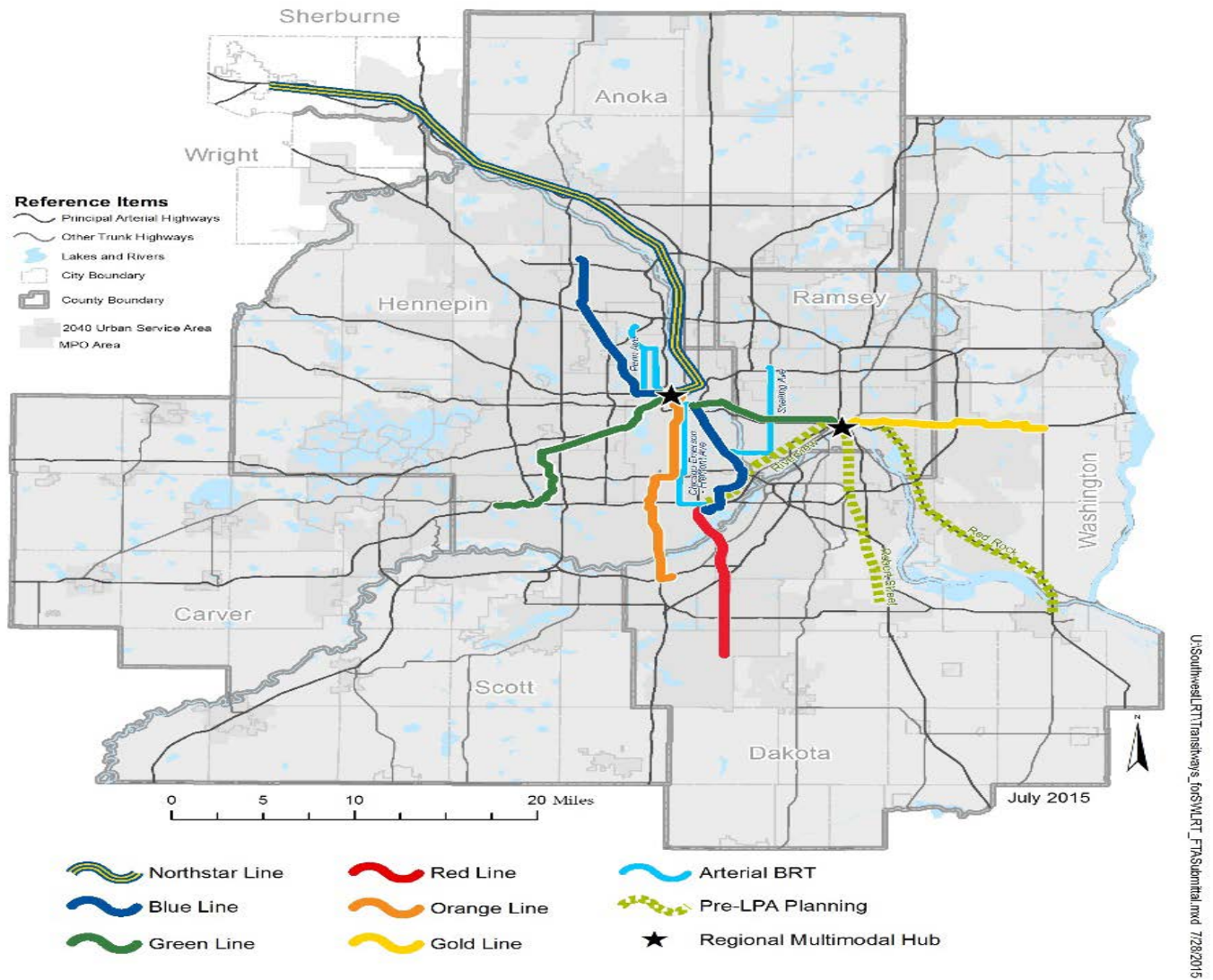
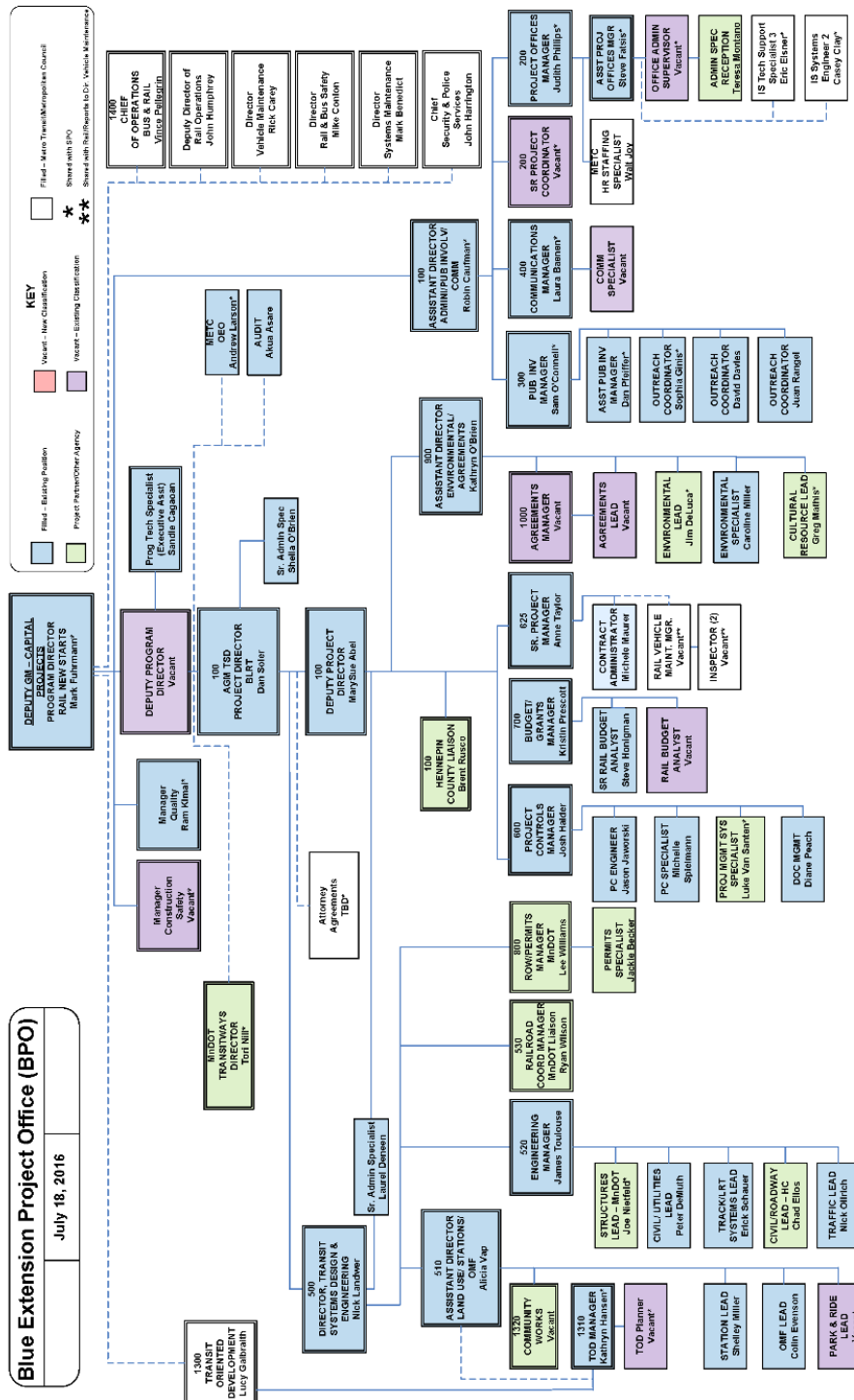


Figure 1-2: METRO System Map





ATTACHMENT 15-A4

BLRT Fire Life Safety Committee

To be completed during Engineering

ATTACHMENT 15-A5

BLRT Safety and Security Committee

To be completed during Engineering

ATTACHMENT 15-A6

BLRT Rail Activation Committee

To be completed during Engineering

ATTACHMENT 15-A7

BLRT Preliminary Hazards Analysis



METRO Blue Line LRT Extension (BLRT)



Preliminary Hazard Analysis (PHA)

Revision 01-00 | August 2016



Prepared by the
Metropolitan Council

METROPOLITAN
COUNCIL

Blue Line Extension LRT Project
Management Signature Form

Preliminary Hazard Analysis (PHA)
Rev. 01-00

August 2016

The above referenced document is a controlled copy document, ready for circulation in accordance with Procedure TSD 80-04 – Controlled Distribution. Management has indicated its approval of this document on the following “Management Plan Approval” form (the revision number of this document should match the revision number on the “Management Plan Approval” form).

Instructions: One of the following Project Management Team Members must approve this document: Transit System Development Projects Program Director, Deputy Program Director, Project Director, Deputy Project Director or one of the Assistant Project Directors.

REVISIONS

REVISION TABLE		
Revision	Date	Description
01-00	August 2016	Original Submittal

DEFINITIONS

Asset	People, information, and property owned and controlled by the rail transit agency.
Contractor	A private sector enterprise engaged to provide services or products within agreed limits specified by a procuring activity.
Contractual Acceptance	An action by an authorized representative of the transit agency by which the transit agency assumes full or partial ownership of the delivered project as complete or partial performance of a contract.
Hazard	Any real or potential condition that can cause injury, death, damage to, or loss of equipment or property.
People	Any person who is considered a passenger, employee or part of the general public.
Property	Any physical entity that is owned by the rail transit agency in whole or in part which includes: stations, vehicles, wayside facilities, shops, track electrification system, bridges, and on-board fare collection equipment.
Revenue Service	The transportation of fare-paying passengers.
Risk	An expression of possible loss over a specific period of time or number of operational cycles. It may be indicated in terms of hazard severity and probability.
Safety	Freedom from unintentional danger.
Safety and Security Certification	The process of addressing conditions that could result in harm -- whether unintentional (safety) or intentional (security) -- and verifying satisfactory compliance with appropriate codes, guidelines, standards, and safety and security-related design criteria and technical provisions.
Security	Freedom from intentional danger.
System	A composite of people (employees, passengers, others), property (facilities and equipment), environment (physical, social, institutional), and procedures (standard operating, emergency operating, and training) which are integrated to perform a specific operational function in a specific environment.
System Safety	The application of engineering and management principles, criteria, and techniques to optimize safety within constraints of operational effectiveness, time, and cost throughout all phases of the system life cycle.
System Security	The application of operating, technical, and management techniques and principles to the security aspects of a system throughout its life to reduce threats and vulnerabilities to most practical level through the most effective use of available resources.
Threat	Any action with potential to cause harm.
Vulnerability	Anything that can be taken advantage of to carry out a threat.

ACRONYMS

ACRONYM	DESCRIPTION
BPO	Blue Line LRT Project Office
CCTV	Closed Circuit Television
CIL	Certifiable Items List
C/CIL	Catastrophic/Critical Items List
FLSC	Fire / Life Safety Committee
FTA	Federal Transit Administration
LRT	Light Rail Transit
OCS	Overhead Contact System
PHA	Preliminary Hazard Analysis
PMP	Project Management Plan
SSCP	Safety and Security Certification Plan
SSCVR	Safety and Security Certification Verification Report
SSMP	Safety and Security Management Plan

CONTENTS

SECTION 1: INTRODUCTION	5
1.1 Purpose.....	5
1.2 Scope.....	6
1.3 Monitoring, Tracking, and Reporting.....	8
SECTION 2: PROJECT DESCRIPTION	10
2.1 Project Description	10
2.2 Project Schedule.....	12
SECTION 3: HAZARD MANAGEMENT PROCESS.....	15
3.1 Overview	15
3.2 Responsibility	15
3.3 Hazard Management Process	17
3.4 Hazard Assessment Results	30
SECTION 4: POTENTIAL HAZARD SCENARIOS.....	31
4.1 Overview	31
4.2 Hazard Scenarios.....	31

LIST OF TABLES

Table 1.1 Safety and Security Certifiable Elements List.....	7
Table 1.2 PHA Summary Table	9
Table 2.1 Milestones Schedule.....	12
Table 3.1 Incident Data (2011-2015)	21
Table 3.2 Hazard Severity Index.....	23
Table 3.3 Hazard Probability Index.....	25
Table 3.4 Hazard Risk Index.....	26
Table 3.4 Hazard Acceptance Criteria	28

LIST OF FIGURES

Figure 2.1 Proposed METRO Blue Line Extension Project Route and Stations.....	13
Figure 2.2 METRO System Map.....	14
Figure 3.1 Hazard Identification and Resolution Process.....	17

SECTION 1: INTRODUCTION

1.1 Purpose

A lengthy and rigorous process is involved in planning, designing, programming, and implementing a transit capital project. As the BLRT Project approaches the end of the project development phase, it is subject to Federal Transit Administration (FTA) requirements designed to provide assurances that issues of project management, including safety and security, have been properly addressed and resolved. In accordance with these guidelines, Metro Transit has prepared a Project Management Plan (PMP), Safety and Security Management Plan (SSMP), and other related project documents that demonstrate that Metro Transit has the technical capacity and capability to implement and maintain this new project together with its existing transit system.

A critical component of the project is the Safety and Security Certification Plan (SSCP). The goal of the SSCP is to ensure that when revenue service begins, the light rail project is safe and secure for passengers, employees, public safety personnel, and the general public through a formal program of safety and security certification and hazard and security threat / vulnerabilities management.

In addition, the SSCP establishes the safety and security objectives that will be considered during all phases and activities of the project. Among these objectives are the following:

- Establish a formalized process that is sufficiently documented to verify compliance with system safety and security requirements;
- Ensure that system safety and security is an integral part of design;
- Ensure that system safety and security decisions are made by appropriate Project Managers, committees and responsible contractors;
- Ensure that any system safety and security hazards and vulnerabilities that become apparent during reviews, audits, inspections or system testing are resolved, either by redesign, use of safety / warning devices or by implementation and enforcement of special procedures.

To accomplish these objectives, the SSCP describes the methods that may be used for the BLRT Project to identify, evaluate, and resolve hazards, threats, and vulnerabilities in a systematic manner.

The purpose of this report is to describe the process to identify a preliminary list of potential hazards of the BLRT Project at the 30% Design Phase, to demonstrate how they will be eliminated through design, mitigated by control measures, or deemed acceptable as-is, and to document those measures, as appropriate. This report meets the requirements of the *Final Interim Policy Guidance Federal Transit Administration Capital Investment Grant Program* (June 2016). Within this guidance, FTA explains that during the Project Development phase, FTA requires project sponsors to complete a number of program management, design, and engineering activities including those related to safety. The specific safety requirements include the completion of the following of a Preliminary Safety Hazard Analysis (PHA),

Preliminary Threat and Vulnerability Analysis (TVA), and the initiation of the development of project safety and security design criteria. This report represents the PHA that meets this requirement.

The PHA will be updated as appropriate through each project phase including design, construction, testing, and start-up and will be finalized prior to the initiation of revenue service.

1.2 Scope

The scope of the analysis presented in this report applies to the potential hazards associated with the system and facilities certifiable elements for the BLRT Project. **Table 1.1** below lists the systems and facilities certifiable elements for the BLRT Project.

Table 1.1 Safety and Security Certifiable Elements List

Systems Elements

- Light Rail Vehicle
- Traction Power Substations
- OCS
- Electrical System
- Signal System
- Communications
- Stray Current and Corrosion Control
- Fare Collection

Facilities Elements

- Track
- Utilities
- Landscaping
- Stations and Facilities
- Operations and Maintenance Facility
- Civil
- Traffic Engineering
- Structures

Safety Elements

- System Safety Program Plan
- Accident Incident Investigation Plan
- Emergency Management Plan

Security Elements

- System Security Plan
- Fare Collection Procedures

Operations and Maintenance Readiness Elements

- Operations and Maintenance Plan
- Operations Manuals, Policies and Procedures
- Maintenance Manuals, Policies and Procedures
- Operations & Maintenance Training Plan and Certifications
- Rule Book

System Integration Testing Elements

- Start Up and Testing – Plan and Procedures
- Start Up and Testing – Test Results
- System Readiness Drills

Hazard and Threat/Vulnerability Management Elements

- Preliminary Hazard Analysis – Resolutions
- Threat and Vulnerability Assessment – Resolutions

1.3 Monitoring, Tracking, and Reporting

The resolutions to the identified hazards included in this report will be monitored and reviewed by the appropriate members of the Metro Transit senior management team, project committees, and internal and external oversight agencies. The status of the implementation of the resolutions / mitigation measures will be reported to the SSRC as required, and tracked by the Safety and Security Certification Consultant using the worksheets included in the Appendix.

Table 1.2 PHA Summary Table

PRELIMINARY HAZARD ANALYSIS EXECUTIVE SUMMARY					
Element	Total Items	Total Closed	Total Open	Approved Temporary Mitigation	Schedule
Track					
Utilities					
Landscaping					
Stations and Facilities					
Light Rail Vehicle					
Operations and Maintenance Facility					
Traction Power Substations					
Overhead Contact System					
Electrical System					
Signal System					
Communications					
Stray Current / Corrosion Control					
Fare Collection					
Civil					
Traffic Engineering					
Structures					
TOTALS					

SECTION 2: PROJECT DESCRIPTION

2.1 Project Description

The planned METRO Blue Line Extension would operate on approximately 13.5 miles of new double track from downtown Minneapolis to the northwest serving the communities of Minneapolis, Golden Valley, Robbinsdale, Crystal and Brooklyn Park. The Light Rail Transit (LRT) is anticipated to serve a broader area to the northwest, including the communities of New Hope, Brooklyn Center, Plymouth, Maple Grove, Osseo, Champlin, and Dayton.

As currently planned, the proposed line will serve 11 new stations. The line will begin revenue service in 2021 and is expected to have 27,000 average weekday riders by 2040. When complete, the Blue Line Extension will connect to the existing Blue Line at Target Field Station from the northern terminus at Oak Grove Parkway Station in Brooklyn Park. The line will connect major activity centers, including downtown Minneapolis, Theodore Wirth Regional Park, downtown Robbinsdale, the Crystal Shopping Center, the Brooklyn Park commercial strip, North Hennepin Community College and the Target North Corporate Campus. The line will provide a one-seat ride to activity centers on the METRO Blue Line, including the VA Medical Center, Minneapolis-St. Paul International Airport and Mall of America.

Passengers will be able to connect to the greater METRO system, including METRO Blue Line (Hiawatha LRT), METRO Green Line (Central Corridor), Northstar Commuter Rail, METRO Red Line (Cedar Ave BRT), the planned METRO Green Line Extension (Southwest LRT), and METRO Orange Line (I-35W BRT), as well as planned Arterial Bus Rapid Transit lines connecting at multiple locations on the METRO system.

The Blue Line Extension will operate primarily at-grade and with structures providing grade separation of LRT crossings, roadways and water bodies at specified locations. The northernmost station on the line will be located at Oak Grove Parkway in Brooklyn Park. From Target Field Station south through downtown Minneapolis, the Blue Line Extension will be interlined/through-routed with the existing Green Line, sharing tracks on South 5th Street in downtown Minneapolis.

The 11 planned stations along the Blue Line Extension line, from south to north, are: Penn Avenue and Van White Boulevard stations in Minneapolis; Golden Valley Road and Plymouth Avenue stations in Golden Valley; Robbinsdale Station in Robbinsdale; Bass Lake Road Station in Crystal; 63rd Avenue, Brooklyn Boulevard, 85th Avenue, 93rd Avenue, and Oak Grove Parkway stations in Brooklyn Park. The line will be served by five park and ride facilities near the Golden Valley Road, Robbinsdale, Bass Lake Road, 63rd Avenue and Oak Grove Parkway stations.

An additional 28 light rail vehicles (LRVs) will be added to Metro Transit's fleet for the operation of the Blue Line Extension. These LRVs will be stored and maintained in a new Operations and Maintenance Facility (OMF) to be located in Brooklyn Park.

Additional project requirements include approximately 16 traction power substations (TPSS) to supply electrical power to the LRVs and signal bungalows housing equipment needed to operate and monitor train signals. The Council will identify specific sites for TPSS and signal bungalows during the Engineering phase of the Project.

The Council is the FTA grantee and will serve as the owner-operator of the completed Blue Line Extension Line.

2.2 Project Schedule

The tentative projected revenue service date is **October 2021**. A general project schedule has been developed to illustrate the major activities and milestones for the project that are related to the safety and security program.

Table 2.1 Milestones Schedule

Milestone	Estimated Completion Date
Project Start	August 22, 2014 (FTA approval to enter PD)
Project Management Plan (PMP)	February 2016 (Rev 01-00) Update – Rev 02-00 to be completed August 2016
Safety and Security Management Plan (SSMP)	August 2016 (Rev 01-00)
Safety and Security Certification Plan (SSCP)	November 2016 (Rev 01-00)
Certifiable Elements / Certifiable Items List	May 2017
30% Engineering Plans	August 22, 2016
New Starts Grant Application Submittal – End of Project Development Phase	September 29, 2016
Preliminary Hazard Analysis	June 2017
Threat and Vulnerability Assessment	June 2017
Design Criteria Update / Revisions (if required)	June 2015 (Rev 4.0)
Design Criteria Conformance Checklists	December 2017
100% Engineering Design / End of Engineering Phase	December 2017
New Starts Grant Application Submittal – End of Engineering Phase	June 2017 (submittal of FFGA Application)
Vehicle Selection and Procurement	October 2016 (SWLRT w/BLRT Options)
Easements and Rights-of-Way Acquisitions	April 2018
Contracts and Bid Awards	April 2018
Construction	April 2018 through October 2021
Start Up Testing and Commissioning	October 2021
Revenue Service Begins	October 2021

Figure 2.1 Proposed METRO Blue Line Extension Project Route and Stations

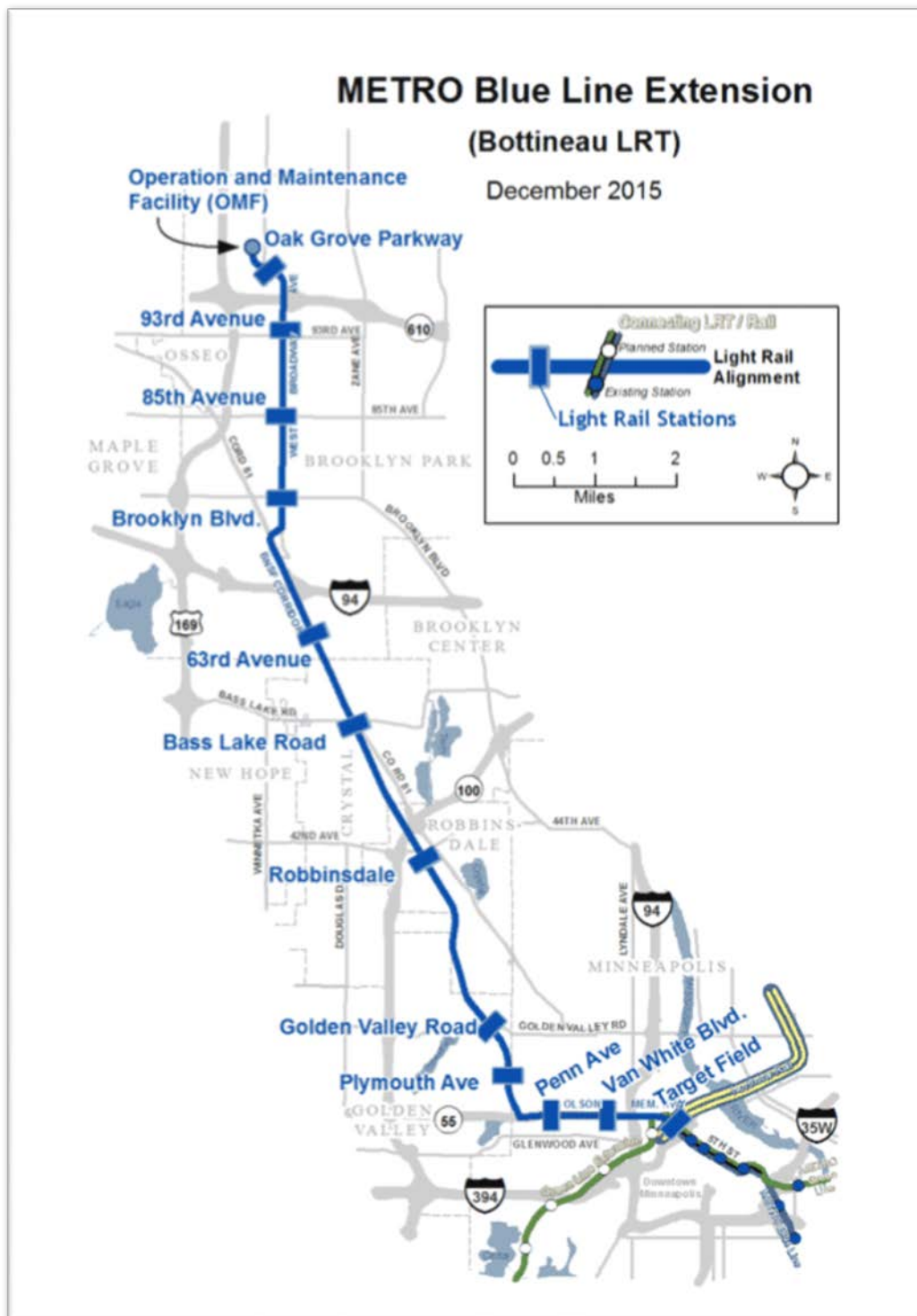
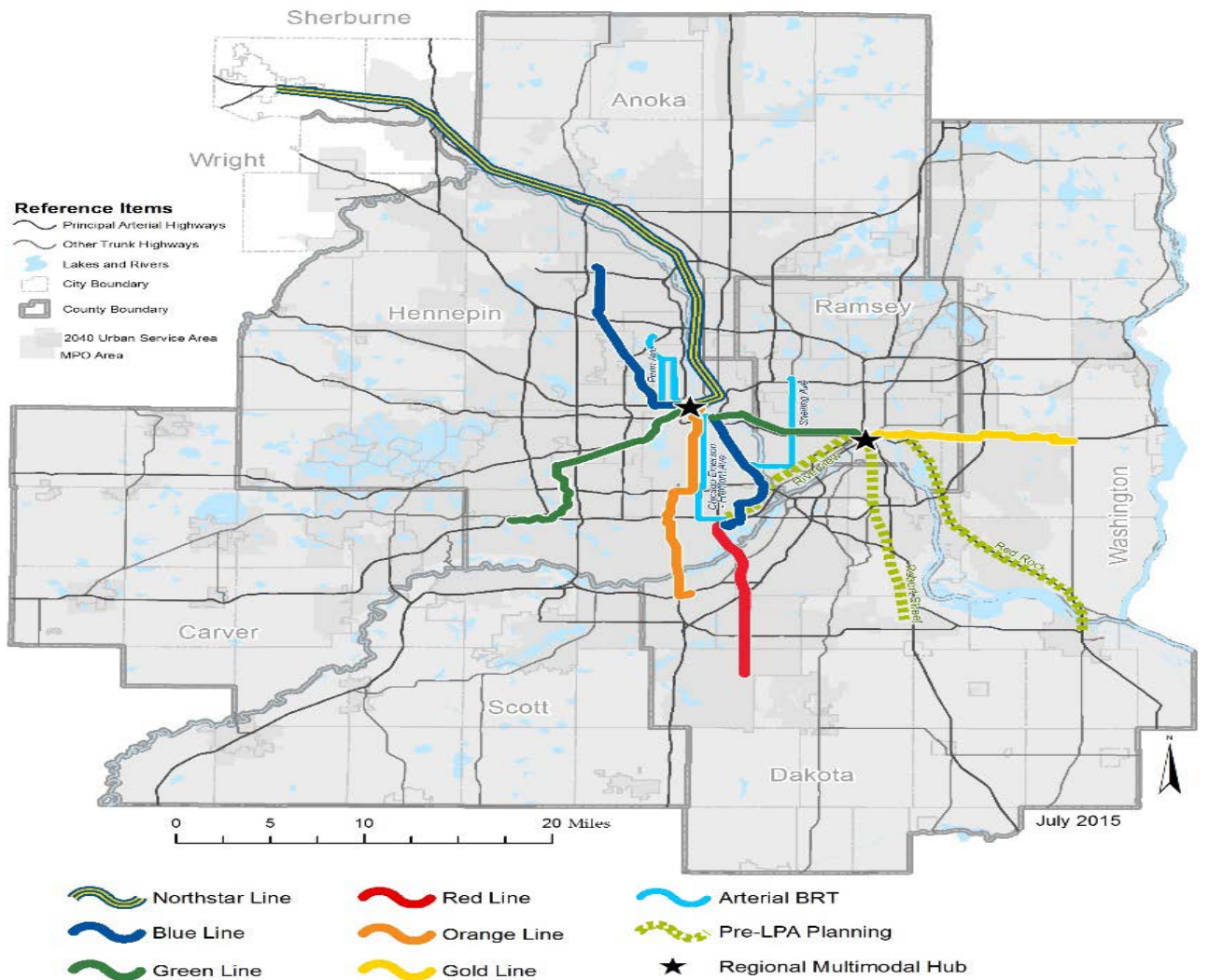


Figure 2.2 METRO System Map



SECTION 3: HAZARD MANAGEMENT PROCESS

3.1 Overview

The implementation of the SSCP promotes an informed management decision-making process in project design, construction, testing, and initiation into revenue service. The system safety and security program enables the management of hazards throughout the life cycle of the BLRT Project, where:

- A hazard is any real or potential condition that can cause injury, death, or damage to or loss of equipment or property, and
- A risk is an expression of possible loss over a specific period of time or number of operational cycles. It may be indicated in terms of hazard severity and probability.

The BLRT Project uses a formal process for the management of safety hazards. The purpose of the process is to:

- Identify potential hazards and determine their impact (e.g., fatalities, injuries, damage) on the safety of overall system, customers and the general public, employees and contractors, vehicular and pedestrian traffic, property and equipment, and the environment;
- Provide timely notification of identified hazards to the Designer of Record who is responsible for identifying and evaluating design based mitigation measures to eliminate or control the identified hazards; and
- Document the safety concepts incorporated and used during design in a clear and concise manner, and provide the basis for developing procedures to either complement the design safety concepts or resolve the hazard if the design did not provide full resolution.

Managing hazards through identification, assessment, resolution, and tracking is an essential function of Metro Transit's BPO from design through system start-up. The safety hazard management process is most effective when applied early in the project life cycle during the Project Development phase. An effective hazard management program also provides a crucial tool in later project phases for determining safety impacts of engineering change proposals, construction change orders, temporary mitigations, and the issuance of temporary permits and certificates. The BLRT Project adhered to these principles by initiating the hazard management process during the Project Development (at 30% Design).

3.2 Responsibility

For the BLRT Project, the hazard management process was developed and implemented by the Blue Line Project Office (BPO) with support from the Safety and Security Certification Consultant, and coordinated through the Safety and Security Review Committee (SSRC). In conjunction with the SSRC, the BPO and the Safety and Security Certification Consultant,

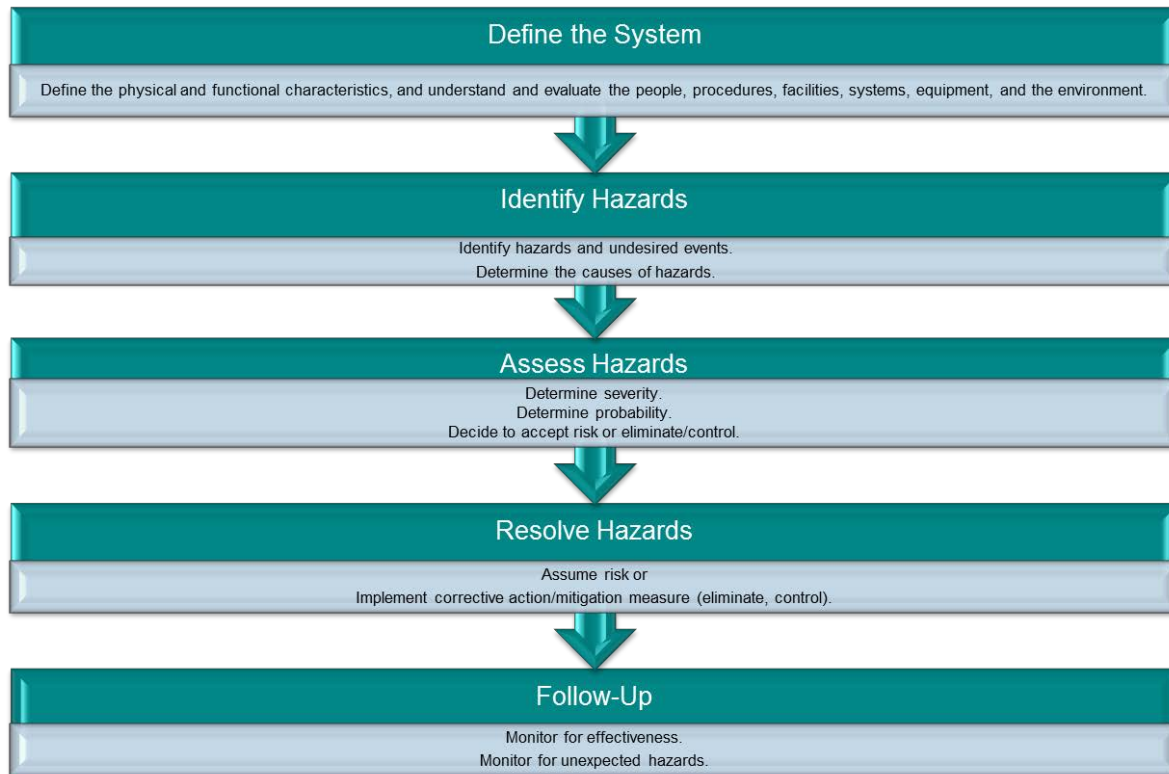
performed a Preliminary Hazard Analysis (PHA). The BPO was required to identify potential hazardous events and reduce the likelihood and severity of the events to an acceptable level to Metro Transit. The objective of hazard identification was to identify as many potential hazards as possible and enter them into the Hazard Resolution process. The PHA was initiated at the completion of the Project Development phase (30% Design Submittal) for the BLRT Project.

The SSRC is responsible for reviewing all hazard analyses to assure that all significant safety hazards are identified and that the proposed mitigation measures adequately resolve the issues. The Safety and Security Certification Consultant will track the identified hazards on the Hazard Tracking Log from the initial identification phase through final resolution. The Hazard Tracking Log will be reviewed at each SSRC meeting and will be examined in light of the Safety and Security Certification Checklists for each element in order to monitor the status of each identified hazard through closure. Sensitive security issues will be tracked on a separate log.

As the project progresses, more in depth hazard analyses will be performed by the BPO, manufacturers of critical systems, and selected designers, and construction personnel. In-depth system hazard analyses are required as part of the technical specifications for route selectors, transit vehicles, traction power, communication, wayside signals and other safety critical systems. The SSRC will determine which systems may require more in depth analysis.

3.3 Hazard Management Process

Figure 3.1 Hazard Identification and Resolution Process.



Step 1. Define the System

The first step in the hazard resolution process is to define the physical and functional characteristics of the system to be analyzed. These characteristics are presented in terms of the major elements, which make up the system: facilities, systems, equipment, procedures, people and environment. A knowledge and understanding of how the individual system elements interface with each other is essential to the hazard identification effort. The system elements subject to safety and security certification are discussed in **Section 1.2** of this document. A full description of the project is presented in **Section 2** of this document.

Step 2. Identify Hazards

The second step in the hazard resolution process involves the identification of hazards and the determination of their causes. This section discusses the methods used on the BLRT Project to identify potential hazards which included operating experience of the existing system, hazard / security

scenario development and expert opinion, established hazard checklists for similar systems, formal hazard analysis techniques, and design data and drawings.

To identify hazards for this project, the following analysis and events have or are planned to occur prior to entry into the Engineering Phase:

Safety and Security Review Committee (SSRC) Meetings

Designers will participate in a series of “round table” analyses with members of the BPO, Safety and Security Review Committee, and individual internal and external project stakeholders throughout the design effort for the BLRT Project. The committee approach will provide an early and ongoing forum for discussion, consideration, and decision-making associated with the identification and mitigation of potential hazards and other issues arising as the design develops. The committee approach to hazard analysis is important because historical data and experience do not always reflect all potential safety hazards and their effects; therefore, maintaining an open dialogue for safety and security analysis will allow all the various hazard scenarios to be envisioned and refined as the design progresses.

Safety and Security Design Criteria Development

The BPO serves as the Designer of Record and continues to define the safety and security design requirements, to identify the design requirement source and applicability, and to assign the specific certification responsibility for the Certifiable Items List (CIL)C/CIL. The C/CIL will be provided as part of the SSCP to the SSRC for review and Metro Transit for approval.

PHA / TVA Alignment Site Visits and Work Sessions

To facilitate the identification of potential hazards and threats for the BLRT Project, the Safety and Security Certification Consultant completed an initial drive/walk-through of the entire alignment, prepared a preliminary list of potential hazards and threats. Using aerial photos and drawings, the Safety and Security Certification Consultant identified the light rail vehicle movements and potential hazards and threats associated with the preliminary project design. The Safety and Security Certification Consultant raised questions and clarified potential hazards and threats in discussions with BPO. The results of these discussions will be reflected in the PHA checklists that will be included as **Appendix A** of this report.

Preliminary Hazard Analysis (PHA)

The BPO and the Safety and Security Certification Consultant prepared this report as the initial formal analysis techniques applied during the Project

Development phase of BLRT Project. The PHA was and will continue to be used to identify safety critical areas within the system, to evaluate hazards and to consider and validate the project safety design criteria. The purpose of the PHA is to provide an early assessment of the potential hazards associated with the light rail system design. The PHA identifies critical areas, hazards, and criteria being used. The PHA also considers hazardous components, interfaces, environmental constraints, as well as operating, maintenance, and emergency procedures. The PHA technique used to identify hazards for the BLRT Project will be an inductive analysis technique. This “top down” approach (e.g., define the system, define the hazards, then resolve the hazards) determines the effects of a system event or system malfunction. This process will also consider hazards commonly experienced with contemporary LRT operation. The PHA verifies that corrective and/or preventive measures and/or procedures were considered in the design process and in the development of specifications. The PHA also verifies that policies and procedures were generated to eliminate, minimize, or control hazards. The PHA format provides an organized, systematic framework to follow when presenting potential hazards, potential causes and effects, and recommended controlling measures.

Design Review Process

A formal design review process will be performed at the 30%, 60%, 90%, and the 100% submittal stages of design. This formal reviews provide the senior management of Metro Transit and project stakeholders with opportunities to review and comment on all aspects of the design, including matters related to safety and security. The resolution of all issues raised during the design review process is well documented in comment / response forms, drawings, and other correspondence and submittals. Design data and drawings will be formally and informally reviewed and associated operational hazards and threats will be identified. Potential hazards and threats resulting from design exceptions or non-conformances will be considered and assessed as part of the formal hazard / threat analyses.

Expert Opinion / Scenario Development

Expert opinion from the BPO, including civil and systems engineers and safety / security specialists, will provide guidance throughout the design process for strategies to mitigate through design the types of triggering events or “unacceptable hazards” that may occur with the BLRT Project. Hazard scenarios will be frequently discussed and analyzed. These scenarios will outline potential situations and equipment malfunctions that may impact the safety of the light rail system. Scenarios will include a selected range of unacceptable and undesirable events (e.g. fire, collision) and a summary of possible causes and results. The scenarios examined, both general and specific, will be representative of potential real-world events.

Accident Analysis Reports

To develop informed hazard probability and hazard severity assessments for potential light rail vehicle, road vehicle, pedestrian, and bicyclist incidents that may occur along the alignment, the Project Team will review accident analysis reports from the City of Minneapolis - Transportation Data Management System and the Minnesota Department of Transportation - Crash Mapping for the five-year period, 2010 through 2015:

Table 3.1 Incident Data (2011-2015)

Grade Crossing	Adjacent Intersection	Total Incidents for the 5-Year Period (2011-2015)	Total Fatalities for the 5-Year Period (2011-2015)	Total Injuries for the 5-Year Period (2011-2015)	% Injuries / Fatalities of Total Incidents
Park Access	N/A	N/A	N/A	N/A	N/A
Sumter Ave	N/A	N/A	N/A	N/A	N/A
Oak Grove Parkway	N/A	N/A	N/A	N/A	N/A
99 th Ave	Oak Grove Parkway / West Broadway Ave	2	0	0	0%
98 th Ave	N/A	N/A	N/A	N/A	N/A
97 th Ave	Future 97 th Ave / West Broadway Ave	0	0	0	0%
94 th Ave	94 th Ave / West Broadway Ave	1	0	0	0%
93 rd Ave	93 rd Ave / West Broadway Ave	17	0	9	53%
Setzler Parkway	Setzler Parkway / West Broadway Ave	3	0	1	33%
Maplebrook Parkway	Maplebrook Parkway N / West Broadway Ave	4	0	2	50%
85 th Ave	85 th Ave / West Broadway Ave	27	0	9	33%
College Park Dr	College Park Dr / West Broadway Ave	1	0	1	100%
Candlewood Dr	Candlewood Dr / West Broadway Ave	8	0	3	38%
Brooklyn Blvd	Brooklyn Blvd / West Broadway Ave	57	0	25	44%
76 th Ave	76 th Ave / West Broadway Ave	10	0	4	40%
75 th Ave	75 th Ave / West Broadway Ave	14	0	7	50%
West Broadway Ave SB	N/A	N/A	N/A	N/A	N/A
73 rd Ave	73 rd Ave / Bottineau Blvd	24	0	9	38%
Bottineau Blvd	Segment: Bottineau Blvd	1	0	0	0%
71 st Ave	71 st Ave / Railroad Track	2	0	0	0%
63 rd Ave	63 rd Ave / Railroad Track	0	0	0	0%
Bass Lake Rd	Bass Lake Rd / Railroad Track	3	0	0	0%
Corvallis Ave N	Corvallis Ave / Railroad Track	0	0	0	0%
West Broadway Ave	West Broadway Ave / Railroad Track	4	0	2	50%
45 th Ave	45 th Ave / Railroad Track	0	0	0	0%
42 nd Ave	42 nd Ave / Railroad Track	4	0	1	25%
41 st Ave	41 st Ave / Railroad Track	1	0	0	0%
Thomas Ave N	Olson Memorial Highway N / Thomas Ave N (ID: 17051)	11	0	8	73%
Penn Ave N	Olson Memorial Highway N / Penn Ave N (ID: 17040)	54	0	26	48%
N Morgan Ave	Olson Memorial Highway N / Morgan Ave N (ID: 17032)	11	0	6	55%
N Humboldt Ave	Olson Memorial Highway N / Humboldt Ave N (ID: 17021)	11	0	4	36%
Van White Memorial Blvd	Olson Memorial Highway N / Van White Memorial Blvd N (ID: 17056)	16	0	6	38%
N Bryant Ave	Olson Memorial Highway N / Bryant Ave N (ID: 17016)	20	1	8	45%
West Lyndale Ave N	Olson Memorial Highway N / West Lyndale Ave N (ID: 17031)	140	0	51	36%
East Lyndale Ave N	Olson Memorial Highway N / East Lyndale Ave N (ID: 17028)	117	0	47	40%
6 th Ave / 7 th Ave	Olson Memorial Highway N / 7 th St N (ID: 17013)	20	0	6	30%
6 th Ave	N 6 th Ave / N 6 th Ave (ID: 18003)	0	0	0	0
TOTALS		583	1	235	40%

Based on these results, the Project Team will consider the frequency of incidents involving fatalities and/or injuries and use this information to identify areas where extra caution should be taken in both design plans, operating and safety procedures.

Threat and Vulnerability Assessment (TVA)

This process is discussed in detail in a separate report.

Step 3. Assess Hazards

The third step in the hazard resolution process is to assess the identified hazards in terms of the severity or consequence of the hazard and the probability of occurrence of each type of hazard. The hazard analysis methodology has four steps: evaluating hazard severity (categorizing the hazard), evaluating hazard probability (likelihood of occurrence), determining the level of risk, and applying the risk acceptance criteria.

Hazard Severity

The BPO assigns a hazard severity rating based on the definitions in MIL-STD-882C. It is a subjective determination of the worst case that could be anticipated to result from design inadequacies, human error, or component failure / malfunction. The ratings are:

- **Category 1, Catastrophic** - Operating conditions are such that design deficiencies, human error, element, sub-system / component failure, or procedural deficiencies may cause death or major system loss and require immediate termination of the unsafe activity or operation.
- **Category 2, Critical** - Operating conditions are such that design deficiencies, human error, element, sub-system / component failure, or procedural deficiencies may cause severe injury, severe occupational illness or major system damage and require immediate corrective action.
- **Category 3, Marginal** - Operating conditions are such that they may result in minor injury, occupational illness, or system damage and are such that human error or subsystem / component failures can be counteracted or controlled.
- **Category 4, Negligible** - Operating conditions are such that human error, subsystem / component failure, or procedural deficiencies will result in less than minor injury, occupational illness or system damage.

Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel error, environmental conditions, design inadequacies, and procedural deficiencies for a system, subsystem / component failure or malfunction. It reflects the principle that not all hazards pose an equal amount of risk to personnel safety. **Table 3.2** summarizes the hazard severity categories.

Table 3.2 **Hazard Severity Index**

HAZARD SEVERITY		
Category	Severity	Characteristics
1	Catastrophic	Death, system loss (> 6 hr), or severe environmental damage
2	Critical	Severe injury, severe occupational illness, major system or environmental damage
3	Marginal	Minor injury/occupational illness, or minor system or environmental damage
4	Negligible	Less than minor injury, occupational illness or environmental damage

Hazard Probability

The probability that a hazard will occur during the planned life expectancy of the system element, subsystem, or component can be described subjectively in potential occurrences per unit time, event, population, items or activity. A qualitative hazard probability may be derived from research, analysis and evaluation of historical safety data from the same or similar system. The BPO will assign a probability rating to a particular event or a specific hazard occurring during the planned life expectancy of the operating system. Supporting rationale for assigning a hazard probability will be documented in future hazard analysis reports.

The assessment of the probability of occurrence will consider the actual size of the fleet inventory or items in the specific system under consideration, based on the current system configuration. Frequency of occurrence will also be evaluated for operating and maintenance employee safety-related activities. The hazard probability will assume the likelihood of the hazardous conditions being experienced in the performance of specific employee duties and will consider the periodicity and total population of similar activities performed. Additionally, frequency of human-induced fault conditions will be estimated based on systematic review of task and procedure complexity, man-machine interfaces, employee proficiency, and historical data of human-induced error rates in similar operations. **Table 3.3** shows the hazard probability ranking.

Table 3.3 Hazard Probability Index

HAZARD PROBABILITY			
Description	Level	Specific Individual Event	Fleet/Inventory
Frequent	A	Likely to occur frequently. Having a probability of occurrence greater than 10^{-1}	Continuously experienced
Probable	B	Will occur several times in life of an item. Having a probability of occurrence less than 10^{-1} but greater than 10^{-2}	Will occur frequently
Occasional	C	Likely to occur sometime in life of an item. Having a probability of occurrence less than 10^{-2} but greater than 10^{-3}	Will occur several times
Remote	D	Unlikely but possible to occur in life of an item. Having a probability of occurrence less than 10^{-3} but greater than 10^{-6}	Unlikely, but can be expected to occur
Improbable	E	So unlikely it can be assumed occurrence may not be experienced. Having a probability of occurrence less than 10^{-6}	Unlikely to occur, but possible

Hazard Risk Index

The BPO will assess the level of risk for each identified hazard to determine what action(s) must be taken to correct or document the hazard risk. This risk assessment system is incorporated into the formal system safety analysis which enables the SSRC and other project stakeholders to understand the amount of risk involved in accepting the hazard in relation to the cost (schedule, dollars, operations, etc.) to reduce the hazard to an acceptable level. When the Hazard Severity Index is combined with the Hazard Probability Index, the result is the Hazard Risk Index. The Hazard Risk assesses the risk based upon hazard category and probability and the criteria for defining further actions based upon the index. Each Hazard Risk Index requires a specific level of action. Actions will be taken to eliminate identified hazards or reduce the associated risk. A hazard with a risk index of "Unacceptable" is not permitted and must be redesigned or modified to eliminate or minimize and control the hazard to a more acceptable level. **Table 3.4** shows the Hazard Risk Index

Table 3.4 Hazard Risk Index

HAZARD RISK INDEX				
Frequency of Occurrence	1 Catastrophic	2 Critical	3 Marginal	4 Negligible
(A) Frequent	1A	2A	3A	4A
(B) Probable	1B	2B	3B	4B
(C) Occasional	1C	2C	3C	4C
(D) Remote	1D	2D	3D	4D
(E) Improbable	1E	2E	3E	4E

Hazard Acceptance Criteria

The BPO, with support from the Safety and Security Certification Consultant, will manage the process to obtain the required authorized signatures for the acceptance of the risks. In conjunction with the Metro Transit and the BPO, the Safety and Security Certification Consultant will maintain the records of hazard identification, analysis, assessment, and hazard risk acceptance for the BLRT Project through the revenue operations date. Those hazards that remain open following the initiation of revenue service will be monitored by Metro Transit through closure.

There are four categories of hazard risk acceptance criteria:

- **Unacceptable Hazards** – Hazards with a Hazard Risk Index of 1A, 1B, 1C, 2A, 2B, 3A are “unacceptable” and corrective action must be taken to eliminate or control them, by reducing the severity and/or probability of the hazard to an acceptable level.
- **Undesirable Hazards** – Hazards with a Hazard Risk Index of 1D, 2C, 2D, 3B and 3C are “undesirable.” A management decision is required on the specific method of corrective action based on additional considerations such as the availability of acceptable alternative measures (workarounds), on a permanent or temporary basis, to mitigate the risk.
- **Acceptable with Review Hazards** – Hazards with a Hazard Risk Index of 1E, 2E, 3D, 3E, 4A, 4B are “acceptable with review”. This group may accept the risk associated with retaining the identified hazard in an “as is” condition with no further corrective action. Alternatively, this group may prescribe periodic tests and inspections or other preventative measures to ensure, on a continuing basis, that the original severity and probability ratings are not invalidated over time by degradation of conditions in the subject item.
- **Acceptable Hazards** – Hazards with a Risk Index of 4C, 4D, 4E are “acceptable”.

Table 3.4 Hazard Acceptance Criteria

HAZARD ACCEPTANCE CRITERIA			
	Hazard Risk Index	Hazard Classification	Decision Authority
	1A, 1B, 1C, 2A, 2B, 3A	Unacceptable	TBD
	1D, 2C, 2D, 3B, 3C	Undesirable	TBD
	1E, 2E, 3D, 3E, 4A, 4B	Acceptable with Review	TBD
	4C, 4D, 4E	Acceptable	TBD

The BPO is scheduled to meet with the SSRC in 3rd quarter 2016 to finalize the decision making process for hazards assessed as unacceptable, undesirable, and acceptable with review for the BLRT project.

Step 4. Resolve Hazards

After the hazard assessment is completed, the fourth step is to resolve hazards by deciding to either assume the risk associated with the hazard or to eliminate / control the hazard. The BLRT Project will follow the Hazard Resolution and Control process as described below. The process involves analysis and implementing corrective actions to reduce the risk of a hazard to the lowest practical level.

Order of Precedence

It may be impossible or impractical at times to achieve elimination of potential system hazards – the best method of resolution. Therefore, a number of different means will be employed to resolve identified hazards of the BLRT Project. These methods include design changes, the installation of controls and warning devices, and the implementation of special procedures. The order of precedence for satisfying system safety requirements and resolving identified hazards is as follows:

- **Design for Minimum Risk.** Design new facilities and equipment to eliminate hazards. If an identified hazard cannot be eliminated, its associated risks must be reduced to an acceptable level (see Risk Assessment Criteria) through the design selection.
- **Utilization of Safety Devices.** In the event that an identified hazard cannot be eliminated or its associated risk cannot be reduced through design selection, that risk must be reduced to an acceptable level through the use of protective safety features or devices. Provision is made and procedure is issued for periodic

inspection and functional checks of safety devices.

- **Warning Devices.** When neither design nor safety devices can effectively eliminate identified hazards or reduce risk to an acceptable level, warning devices are used to detect the condition and produce an adequate warning signal to alert individuals to the hazard. Warning devices are standardized to minimize the probability of incorrect reaction of personnel to these warning signals.
- **Develop Special Procedures and Training.** When it is impossible or impractical to eliminate hazards through design selection or adequately reduce its associated risks through safety or warning devices, then approved procedures and special training programs are used. Procedures may include requiring the use of personal protective equipment. Precautionary notations and warning signs are standardized. Metro Transit employees who perform critical tasks require certification of personnel proficiency.

Warning, caution, and other forms of written advisories must and will not be used as the **only** method of risk reduction for Category 1 (Catastrophic) and Category 2 (Critical) hazards for this project.

Facility and system contract documents will require that contractors and/or suppliers to resolve hazards in accordance with this list, in order of precedence. Specifications will include the requirement for contractors and/or suppliers who provide system, subsystem or equipment during construction to establish and maintain a safety program. These programs, at a minimum, will define objectives, tasks, procedures, schedules, and data submittal for the safety activities that are performed by the contractor and/or supplier. The safety program and supporting documentation will be subject to review and approval by Metro Transit.

Hazards identified within the system will be evaluated by the SSRC, FLSC, and other appropriate staff and other consultants. Hazards will be eliminated and controlled to an acceptable level. As part of the hazard resolution process, reports summarizing status of safety issues and concerns will be prepared and distributed to Metro Transit management and other project participants for review and comment, as required.

Step 5. Hazard Tracking and Reporting

The BPO will work with the SSRC to spearhead the hazard resolution process for safety hazards that must be resolved through various Metro Transit departments responsible for engineering, construction, operations,

maintenance, procurement, public communications, safety and security, etc. The BPO, with support from the Safety and Security Certification Consultant, will prepare PHA checklists, distribute them to the SSRC who will review the recommended strategies to resolve the open hazards and bring them to a close. If required, the Safety and Security Certification Consultant will coordinate with the responsible personnel to resolve issues / obstacles and make the necessary changes to the PHA checklists. Once approved, the Safety and Security Certification Consultant will prepare a PHA Approval Package. Each Approval Package will include an approval page for authorized signatures, the completed PHA checklists, and supporting documentation (if any). Hazard resolutions are safety and security certifiable items and will be tracked by Metro Transit through closure. Those PHA items that remain open following the initiation of revenue service for the BLRT Project will be monitored through closure by Metro Transit.

For the BLRT Project, the BPO will manage, monitor, document, and report the resolutions of all identified hazards to Metro Transit and the SSRC. The PHA checklists will be the primary mechanism for tracking and reporting the status of hazards (identification, assessment, and resolutions).

3.4 Hazard Assessment Results

The results of the Preliminary Hazard Assessment for the Project Development Phase for the BLRT Project are included as **Appendix A** of this report.

SECTION 4: POTENTIAL HAZARD SCENARIOS

4.1 Overview

As discussed in **Section 3** of this report, expert opinion from the BPO, including civil and systems engineers and safety / security specialists, will provide guidance throughout the design process and contribute to the identification of strategies to mitigate the types of triggering events (fire, equipment failure, etc.) that may occur with BLRT Project. Potential hazard scenarios will be frequently discussed and analyzed through work sessions and individual analysis undertaken by discipline leaders, safety / security specialists, the Safety and Security Review Committee, the Metro Transit senior management staff, as well as external public agencies and stakeholders. These scenarios will outline the potential unsafe situations, such as equipment failures and malfunctions that may impact the safety of the BLRT Project. The scenarios illustrated in this chapter will be the primary hazards that rise to the risk assessment level requiring Metro Transit management and SSRC review and consideration.

When performing the scenario analysis, the design team will create location-specific scenarios for the entire BLRT alignment that emphasize the worst credible scenario at specific operating locations. The scenarios examined, both general and specific, will be representative of potential real-world events. The results of the scenario analysis will also produce recommended mitigation measures that are appropriate for the size and operational characteristics of the BLRT Project.

4.2 Hazard Scenarios

Prior to the completion of the Engineering Phase, the BPO will develop and analyze a series of potential hazard scenarios for the BLRT Project. A narrative discussion of the hazards associated with each scenario will be discussed below. The scenarios will describe each maneuver of the Operator along the BLRT alignment. The details associated with the potential cause and effect and recommended controlling measures for each identified hazard will be included in the checklists provided in **Appendix A**. Selected photographs of potential hazard areas from the alignment walkthrough will be provided in **Appendix B**.

APPENDIX A

PHA CHECKLISTS

As the project progresses from engineering through construction, testing and start up, the BPO will populate and update the status of the hazards using the table below:

PRELIMINARY HAZARD ANALYSIS EXECUTIVE SUMMARY					
Element	Total Items	Total Closed	Total Open	Approved Workaround	Schedule
Track					
Utilities					
Landscaping					
Stations and Facilities					
Light Rail Vehicle					
Operations and Maintenance Facility					
Traction Power Substations					
Overhead Contact System					
Electrical System					
Signal System					
Communications					
Stray Current / Corrosion Control					
Fare Collection					
Civil					
Traffic Engineering					
Structures					
TOTALS					

TRACK

TRACK

TRACK													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards.

- Broken or deficient rail
- Broken or deficient rail weld or joint
- Broken or damaged crosstie
- Broken or damaged switch point
- Broken or damaged rail fasteners
- Defective electrical isolation system for embedded track
- Excessive rail wear
- Improper frog guard rail
- Loose rail fasteners
- Improper rail cant
- Improper horizontal track alignment
- Improper track cross level
- Improper vertical track alignment
- Defective manual switch
- Defective powered switch
- Defective switch point detection
- Tight track gauge
- Wide track gauge

UTILITIES

UTILITIES													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards.

- Degraded or incompatible utility system for the LRV
- Subsurface conditions cannot support load of LRV

LANDSCAPING

LANDSCAPING													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards:

- Operator has a blocked view of pedestrians due to vegetation
- Operator has a blocked view of pedestrians due to station appurtenances

STATIONS / FACILITIES

STATIONS / FACILITIES													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards:

- Electric shock from ticket vending machines (TVM)
- Electrical hazard at stations from wiring that is improperly insulated, grounded, covered, or protected, or is exposed
- Excessive gap (height or width) between platform and LRV
- Exhaust from automobiles collecting at stations with waiting passengers
- Extreme cold / ice / snow conditions due to region’s weather
- Fire / smoke at stations
- Lightning strikes at stations
- Loss or degradation of the station’s AC power
- Obstacles with sharp protruding edges in or adjacent to stations and station entries
- Operator has blocked view of pedestrians at station due to appurtenances
- Operator has blocked view of pedestrians due to vegetation
- Patron entry into rail fixed guideway
- Patrons using TVM queue into walkways
- Sharp edges on TVM
- Slippery surface at stations
- Static electricity at stations
- Uneven, cracked, irregular, protruding surfaces such as walkways, ramps, steps and approaches to stations
- Unsafe LRV to road vehicle interaction at stations
- Unsafe patron to handrail interaction at stations
- Unsafe patron to switch interaction at stations
- Unsafe pedestrian to pedestrian interaction at stations
- Unsafe pedestrian to vehicle interaction at stations
- Unsafe vehicle to vehicle interaction at stations

LIGHT RAIL VEHICLE

LIGHT RAIL VEHICLE

LIGHT RAIL VEHICLE													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards:

- Articulated section pinches object or person in interior of car
- Bicycles too close to LRV at intersections
- Coupler not centered
- Door opens during LRV movement
- Door opens during LRV movement
- Door opens on wrong side of LRV
- Doorway or aisle slippery
- Edge of stop platform to LRV doorway drop-off
- Excessive acceleration rate
- Excessive deceleration rate
- Exterior component of LRV comes loose, breaks, or falls off
- Failure of braking system
- Fire / on board LRV
- Insufficient braking rate
- Lack of communication with LRV operator
- Lack of hand holds for standing passengers
- Loss of LRV power
- Loss or lack of interior / exterior lighting
- LRV / pantograph comes into contact with fixed facility
- LRV body to ground potential above acceptable limits
- LRV braking system slips on grade
- LRV collides with another LRV
- LRV collides with another LRV
- LRV collides with fixed facility
- LRV collides with pedestrian
- LRV collides with pedestrian who is struck by coupler or dragged under vehicle
- LRV collides with road vehicle
- LRV collides with road vehicle, e.g. automobile, motorcycle, bicycle
- LRV couples at too high of speed
- LRV creeps on grade while door open
- LRV derails
- LRV not indicating braking on rear unit
- LRV not level at passenger station
- LRV not level at station platform
- LRV not visible from front
- LRV not visible from rear
- LRV not visible from side
- LRV suspension fails
- LRV suspension fails beyond limit stops
- LRV uncouples while moving
- LRV wheels not trued to proper tolerances
- Operator closes door on passenger
- Operator unaware of equipment problem
- Pantograph breaks loose
- Pantograph comes into contact with fixed facility
- Pantograph entangled with OCS
- Passenger or other distraction/disturbance to LRV operator
- Passenger trapped in door
- Poor interior lighting
- Resistor bank exceeds heat or current carrying capability
- Resistor bank shorts to car body
- Roof-mounted equipment shorts
- Sharp edges on LRV
- Side and tip lights of LRV not illuminating or visible

OPERATIONS & MAINTENANCE FACILITY

OPERATIONS & MAINTENANCE FACILITY													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards:

- Industrial safety hazards associated with OMF
- Contact wire within the OMF is energized while employees / contractors are working in contact with LRV high voltage system
- Contact wire within the OMF is energized when LRV is lifted off track
- No load switch operated under load
- Switch explodes in service
- DC shorts to shop DC switchgear enclosures
- Excessive voltage on shop rails

TRACTION POWER

TRACTION POWER

TRACTION POWER													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards:

- AC supply current damages breaker
 - AC supply current damages cable
 - AC supply current damages switchgear
 - AC supply flashes or shorts to transformer enclosure
 - AC supply overvoltage damages AC breaker
 - AC supply overvoltage damages AC switchgear
 - AC supply overvoltage damages feeder
 - AC supply overvoltage damages feeder cable
 - AC supply overvoltage damages transformer windings
 - Battery acid splashes
 - Breaker closed or tripped while under maintenance or testing
 - Breaker remotely closed or tripped remotely while under maintenance or testing.
 - DC Feeder cable contacts accessible metal part
 - DC Shorts to enclosure
 - DC voltage energizes AC switchgear enclosure
- DC voltage energizes transformer enclosure
 - Difference of potential between grounds for service power to other equipment
 - Difference of potential between surge arrester grounding or drain of communications
 - Excessive negative or rail voltage to ground
 - Ground clamp device explodes in service
 - Ground Voltage Monitoring explodes in service
 - Loss of DC control power
 - Negative disconnect switch operated under load
 - Negative return open while rectifier positive is connected to system
 - No load DC disconnect operated under load
 - Potential step and touch potential to objects in proximity to TPSS (i.e. chain link fence)
 - Rectifier door opened while rectifier is energized
 - Rectifier overheats
 - Switch explodes in service
 - Transformer overheats
 - Transformer-rectifier overheats
 - Working on DC bus while energized

OVERHEAD CONTACT SYSTEM

OVERHEAD CONTACT SYSTEM													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards:

- Catenary wires and feeder cables damaged by high voltage transient
- Contact wire and/or messenger wire outside of pantograph dynamic envelope
- Contact wire comes into contact with fixed facility
- Contact wire comes into contact with passengers, employees, contractors
- Contact wire or messenger come into contact with fixed facility
- Contact wire or messenger come into contact with personnel
- Contact wire outside of pantograph dynamic envelope
- Failure of down guy
- Foundation fails to support pole moments and loads
- Foundation hit by LRV or motor vehicle
- Insulation on support arm breaks down
- Messenger fail to support contact wire
- No ground to structural steel and / or pole and pole comes into contact an electrical source (i.e. overhead contact system)
- OCS conductors anneal due to excessive thermal loading
- OCS Support Assembly fail to support contact wire, or cause contact wire to sag (single contact wire)
- OCS Support Assembly fail to support messenger
- Pole fails to support loads
- Pole succumbs to rotational moments
- Span wire supports fail to support contact wire
- Span wire supports fail to support contact wire or cause contact wire to sag (single contact wire)
- Tree branches come in contact with OCS
- Wire fails and breaks
- Wire height too high
- Wire height too low

ELECTRICAL SYSTEM

ELECTRICAL SYSTEM

ELECTRICAL SYSTEM													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards:

- Improper design and equipment standards for lighting
- Improper design and equipment standards for Heating, Ventilation and Air Conditioning (HVAC) equipment
- Improper design and equipment standards for signage
- Improper design and equipment standards for fire pumps
- Improper design and equipment standards for elevators
- Improper design and equipment standards for escalators
- Improper design and equipment standards for maintenance receptacles
- Improper design and equipment standards for emergency lighting and power system

SIGNAL SYSTEM

Signal System													
Hazard Identification / Resolution				Hazard Source		Hazard Cause / Effect		Hazard Risk Index		Hazard Status			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of potential hazards:

- Audio and/or visual warning system fails
- Crossing gate arm fails to operate when LRV present
- Crossing warning system fails to operate when LRV present
- Crossing gate arm is down and delays LRV
- Dark signal
- Dark signal at grade crossing
- Electric switch in wrong position or not in correspondence with a clear signal
- Electric switch moves under LRV
- False clear signal
- False permissive signal aspect at grade crossing
- Gate preview time greater than acceptable limits
- Operator disregards and/or confuses traffic signal and/or LRV signal aspect at grade crossing
- Loss of LRV detection
- Road vehicle confuses LRV signals for traffic signals at grade crossing
- Route is changed and switch moves without sufficient time for LRV to stop
- Signal system clears route into another LRV
- Operator violates stop signal into occupied route
- Motorist confuses LRV signal for traffic signal

COMMUNICATIONS

COMMUNICATIONS													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards:

- Control Center telephone system fails
- Radio system fails
- Insufficient radio coverage (dark zones)
- Maintenance of way phone fails
- No direct link to control center
-
- Pedestrian and road vehicle traffic not monitored
- SCADA system fails
- SCADA system provides false indication and controls
- TWC fails to communicate with signaling system
- TWC gives false indication to signaling system
- Weak signal

STRAY CURRENT / CORROSION CONTROL

STRAY CURRENT / CORROSION CONTROL													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards:

- Piping and conduit are metallic
- Piping and conduits are exposed
- Lack of access to soil corrosion control provisions
- Improper soil corrosion materials
- Corrosive effects of stray earth traction currents from LRV operations on TPSS
- Corrosive effects of stray earth traction currents from LRV operations on OCS
- Corrosive effects of stray earth traction currents from LRV operation on trackwork
- Lack of dielectric materials in switch machines, signaling devices, and train to wayside communication systems
- Lack of appropriate rail joint bonds, impedance bonds, or continuously welded rail
- Free-standing water accumulates on rails and rail appurtenances
- Leakage current from contact wire
- Loss of corrosion control measure / loss of grounding

FARE COLLECTION

FARE COLLECTION													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards:

- Improper design of physical infrastructure that does support depth of anchor bolts
- Improper design of electrical infrastructure for ticket vending machines and rail smart card validators
- Improper design of communications system that supports the needs of the fare collection system

CIVIL

CIVIL													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards:

- Inadequate / improper clearance for the passage of LRVs through the mainline track
- Inadequate / improper clearance for the passage of LRVs through the switches
- Inadequate / improper clearance for the passage of LRVs through the special trackwork
- Inadequate / improper clearance for the passage of LRVs through the stations
- Inadequate / improper clearance for the passage of LRVs through the yard
- Inadequate / improper clearance for the passage of LRVs through the operations facilities
- Unauthorized/unsafe access to dynamic envelope
- Inadequate / improper drainage facilities
- Improper curb height
- Slippery walking surface

Unsafe action by bicyclist in/around the flangeway

TRAFFIC ENGINEERING

TRAFFIC ENGINEERING

TRAFFIC ENGINEERING													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards:

- Road vehicle breaks crossing gate arm and fouls track
- Road vehicle collides with LRV at intersection
- Road vehicle drives around crossing gate arm
- Road vehicle hits OCS pole foundation or other fixed facility
- Road vehicle running parallel with LRV guideway makes illegal right or left turn at intersection
- Road vehicle stopped on track blocks LRV guideway
- LRV collides with road vehicle at grade crossing
- LRV collides with road vehicle at signalized intersection
- Pedestrian not crossing track at designated crosswalk
- Pedestrian too close to LRV at intersections
- Pedestrian too close to LRV at mid-block
- Pedestrians trespass on dedicated rail fixed guideway right of way

STRUCTURES

STRUCTURES													
HAZARD IDENTIFICATION / RESOLUTION				HAZARD SOURCE		HAZARD CAUSE / EFFECT		HAZARD RISK INDEX		HAZARD STATUS			
ID Number	Recommended Controlling Measures	Controlling Measures Type	Hazard Description	Date Identified	Source	Potential Cause	Potential Effect on System/ Subsystem	Recommended Initial Assessment	Recommended Final Assessment	Party Responsible for Implementation	Proposed Completion Date	Actual Completion Date	Status
TOTAL ITEMS								TOTAL CLOSED		TOTAL OPEN			

Prior to the completion of the Engineering phase, the BPO will update the table above with the hazard controlling measures, hazard source, hazard cause/effect, hazard risk index, and hazard status. At the completion of the Project Development Phase, the BPO has identified the following preliminary list of hazards:

- Fire/smoke condition on elevated structure on which rail fixed guideway operates
- Foreign object on track on elevated structure
- Ice / snow condition on elevated structure on which rail fixed guideway operates
- LRV derails and collides with fixed facility on elevated structure
- Road vehicle collides with LRV on elevated structure
- Pedestrian collides with LRV on elevated structure
- Structural failure of elevated structure on which rail fixed guideway operates
- Structural failure of elevated structure over rail fixed guideway

APPENDIX B

ALIGNMENT OBSERVATIONS

ATTACHMENT 15-A8

BLRT Threat and Vulnerability Assessment

For security reasons, the TVA is maintained in the Blue Line Extension Project Office by the Blue Line Extension LRT Director of Transit Systems Development Design and Engineering.

**CENTRAL CORRIDOR (GREEN LINE)
LIGHT RAIL TRANSIT PROJECT
OPERATIONS AND MAINTENANCE AGREEMENT
CITY OF SAINT PAUL, RAMSEY COUNTY
AND METROPOLITAN COUNCIL**

This Operations and Maintenance Agreement ("Agreement") is entered into by and among the Metropolitan Council, a public corporation and political subdivision of the State of Minnesota ("Council"), Ramsey County, a municipal corporation ("County"), and City of Saint Paul, a Minnesota home rule charter city ("City"), hereinafter referred to as "Parties".

WHEREAS, the Council has constructed the Central Corridor Light Rail Transit (LRT) Project ("Green Line LRT") running between Downtown Minneapolis and Downtown St. Paul, generally via Washington and University Avenues; and,

WHEREAS, pursuant to Minn. Stat. § 473.411, the Council owns and operates the LRT on City and County Infrastructure; and

WHEREAS, the County and the City have jurisdiction over roadways adjacent to and /or within the LRT area; and

WHEREAS, the County and the City have an existing joint powers agreement for roadway maintenance; and,

WHEREAS, this Agreement will define the Parties' roles and responsibilities with respect to the operations and maintenance of the LRT on the City and County Infrastructure in the City of St. Paul subject to existing agreements; and

WHEREAS, Minnesota Statutes Chapters 471 and 473 and other applicable statutes, authorize the Parties to enter into this Agreement.

NOW, THEREFORE, for mutual and valuable consideration, the sufficiency of which has been agreed to by the Parties, the Council, the County and the City agree as follows:

ARTICLE 1 - DEFINITIONS

The following terms shall have the following meanings for purposes of this Agreement.

"City" shall mean the City of Saint Paul, its employees, agents or contractors.

"City Infrastructure" shall mean City infrastructure that includes but is not limited to City streets including pavement, curbs and gutters; sidewalks; sanitary and storm sewer systems; street lights and traffic signals and the associated conduits, cables and wires; and communication conduits, fiber optics, and cables.

“Council” shall mean Metropolitan Council, its employees, agents or contractors.

“County” shall mean Ramsey County, its employees, agents or contractors.

“County Infrastructure” shall mean County roadways including pavement, curbs and gutters; sidewalks; storm systems, catch basins, catch basin leads; street lights and traffic signals and the associated conduits, cables, and wires; water infiltration system; and retaining walls.

“Emergency Vehicle Preemption” or “EVP” shall mean systems that interrupt the normal traffic signal cycle to provide a green light for the emergency vehicle at or approaching the signal so the emergency vehicle can pass through the intersection safely.

“Fence” shall mean the fences which parallel and are located on one or both sides of the LRT System tracks, or are located on retaining walls.

“Field Contacts” shall mean the Rail Control Center – 612-341-5710, the City of St. Paul Public Works 24-hour number - 651-266-9700, and Ramsey County – 651-266-7100.

“Headway” shall mean the time between train arrivals in a single direction at a specific point.

“Joint Use Poles” shall mean overhead catenary system (OCS) poles that also include a streetlight or traffic signal equipment.

“Landscaping” shall mean plants, irrigation systems, and planter walls within the LRT Area.

“LRT Area” shall mean the area that includes the area within the LRT Work Zone, LRT System and LRT Stations as those terms are defined below, and the real property or easements owned by the Council that will be used for the operation and maintenance of the LRT Systems.

“LRT Sanitary Sewer System” shall mean the sanitary sewer pipe filled with sand near the Lexington station platforms, and remaining embedded.

“LRT Signals” shall mean the signals used to govern movement of light rail vehicles and provide light rail specific information to roadway vehicles (such as flashers, bar signals, train approaching blank out signs, signs governing bus movements within the LRT System and no right hand/left hand turn blank out signs, etc.).

“LRT Station” shall mean the passenger loading facilities for the LRT System, including but not limited to platforms, canopies and railings, pedestrian access walkways, special handicap access facilities, and all functional and architectural features.

“LRT Storm Drain System” shall mean the embedded track and ballast drains, including all pipe, manholes, clean-outs, and related facilities that drain the LRT track and track-bed. This includes any storm sewer facilities that are within or below the LRT Area for purposes of draining the

LRT Area. The LRT Storm Drain System ends at the point at which the LRT Storm Drain System connects to either a City or County owned catch basin or manhole. The connection of the LRT Storm Drain System to the City owned system is part of the LRT Storm Drain System.

“LRT System” shall mean all equipment and facilities owned by the Council and associated with the operation of Green Line LRT including but not limited to the tracks, raised curb, stations, transit operating systems equipment, flashing lights, warning devices, LRT system signage, LRT train control equipment, overhead catenary system (OCS), LRT traction power substations, LRT gate crossing houses, LRT signal/communication houses, Council owned artwork, and LRT vehicles.

“LRT Work Zone” shall mean the LRT Work Zone is defined as the area where work is performed within twelve (12) feet on each side of the center line of each track.

“LRT Work Zone Access Procedures” shall mean the Council’s procedures, as updated and amended, for working in, on, or around the LRT System, including track allocation procedures, work scheduling requirements, notification procedures and work permit procedures. A current copy of the Council’s LRT Work Permit Procedure is attached hereto as **Exhibit H**.

“Major Maintenance” shall mean expenditures made beyond regular and general upkeep. Work of this type would typically involve excavation of some sort of the ground surface.

“Overhead Catenary System” or “OCS” shall mean all facilities for overhead traction power distribution to the light rail system, including, but not limited to, OCS poles, overhead wires, underground wires, hardware and appurtenances.

“OCS Pole” shall mean a component of the OCS, which supports the overhead power supply wire of the light rail system. An OCS pole may or may not be a “joint use pole”.

“OCS Shield” shall mean a component of the OCS, which shields the overhead supply wire at the Cedar Street Bridge.

“Routine Maintenance” shall mean activities associated with regular and general upkeep of infrastructure or equipment against normal wear and tear. This type of work would not involve excavation or disturbance of the ground surface.

“Traffic Control Signal” or “Traffic Signal” shall mean any traffic signal by which traffic is alternatively directed to stop and permitted to proceed.

“Transit System Priority” or “TSP” shall mean the operational improvements that use technology to reduce dwell time at traffic signals for transit vehicles by modifying signal timing to accommodate transit vehicle movements.

“Water Infiltration System” shall mean the use of perforated pipe, crushed granite, and geotextile fabric creating a system for the infiltration of storm water, and shall include all

structures, cleanouts, and any connecting pipe up to the point of connection with a County catch basin or City mainline pipe or manhole.

ARTICLE 2 – PURPOSE AND GENERAL RESPONSIBILITIES

2.1 Purpose. The purpose of the Agreement is to define the operational and maintenance responsibilities of each Party with respect to the LRT System located within the City and County Infrastructure subject to the agreements identified in Section 2.5. **Exhibit A** depicts the geographic limits to which this Agreement pertains.

2.2 General City and County Responsibilities. Except as otherwise provided in this Agreement, the City is responsible for all operations and maintenance including snow and ice control related to City Infrastructure; the County is responsible for all operations and maintenance including snow and ice control related to County Infrastructure.

2.3 General Council Responsibilities. Except as otherwise provided in this Agreement, the Council is responsible for LRT Systems maintenance activities including track maintenance, snow and ice control, and any other activity required to keep the LRT system in good operating condition.

2.4 Annual Meeting. The Parties shall meet annually on or before June 1 of each year during the term of this Agreement, or as needed to resolve any operation or maintenance issues related to the LRT System. The meeting shall be chaired by Metro Transit's Deputy Chief Operation Officer for Rail, or his or her designee, the City Engineer and the County Engineer, or their designees.

2.5 The Parties acknowledge the existence of other agreements that govern other portions of this jurisdiction. These agreements include:

A. Agreement Between The State of Minnesota, Department of Transportation, and Metropolitan Council for Maintenance of LRT Systems (**Exhibit B**). The operations and maintenance for the Highway 280 and Cedar Street bridges, I-94 right of way, Signal Bungalow on 12th Street, Minnesota Street (between 11th Street and 12th Street), and the Snelling Avenue intersection, are under the jurisdiction of the Minnesota Department of Transportation.

B. Agreement for Maintenance of Existing Tunnels and Construction and Maintenance of New Tunnel Under Ramsey County State Aid Highway 34 (University Avenue) in the Capitol Area (**Exhibit C**). The operations and maintenance for the tunnel under University Avenue in the Capitol Area, covered under an agreement between the County, Council, and State of Minnesota.

C. Cost Sharing Agreement for the Vertical Access Tower Operation and Maintenance (**Exhibit D**). The operations and maintenance for the stair and elevator tower next to the Central Station on 5th Street, which is covered under an agreement between the City and Council.

D. Letter agreement between State Department of Administration and Metropolitan Council (**Exhibit E**). The operations and maintenance for the medians and other facilities along University Avenue from Rice Street to Robert Street, Robert Street from University Avenue to 12th Street and 12th Street from Robert Street to Cedar Street.

ARTICLE 3 –OPERATION OF LRT SYSTEM

3.1 Operation of the LRT System in City Infrastructure and County Infrastructure
Pursuant to its powers under Minnesota Statutes 473.4051, and in accordance with this Agreement the Council will operate the LRT System on and across County roads and City streets.

3.2. Work within the LRT Work Zone

A. Standard Council Permit for 3rd Parties

Because of safety concerns, any 3rd party looking to work within or encroaching upon the Green Line LRT Work Zone, including City or County if the work is outside of its Annual Permit as defined below, must obtain a permit from the Council. The 3rd Party shall make a written request for right of entry according to the Council's LRT Work Zone Access Procedures. The Council shall not grant permission to work within or encroach into the Green Line LRT Work Zone unless authorized by the County and/or the City, and the Council. No party shall unreasonably withhold such permission in this area. The Council shall not disallow work, encroachment, or other activities within the Green Line LRT Work Zone unless the Council can demonstrate that such activities are in direct conflict with the safe and efficient operation of the Green Line LRT System. The Council agrees to waive permit fees and costs for the County and City and/or its contractors when work is associated with a reconstruction project or maintenance activity.

B. Annual Council Permit for the City and County

Each year, the County and City shall obtain from the Council annual work permits for anticipated work occurring within or near the LRT Work Zone. These annual permits shall provide a comprehensive listing of all work activities that will be conducted under the permit and shall specifically identify work having the potential to encroach within the LRT Work Zone area. This work includes, but is not limited to bucket trucks, snow plows, street sweeping, litter picking and median maintenance or any other type of equipment or activity that may potentially encroach within the LRT Work Zone. For work identified by the County or City in the annual permit as having no potential to encroach within the LRT Work Zone, the County or City will provide advance notice to the Rail Control Center of the commencement of the activity and its anticipated duration. This work will not require obtaining a standard permit from the Council. Snow plowing activities performed by the City or County are exempt from this notification requirement.

For work identified by the County or City in the annual permit as having the potential to encroach within the LRT Work Zone, the County or City will be required to provide advance notice (no less than 24 hours) to the Rail Control Center of the commencement of the activity and its anticipated duration. The Council agrees to waive permit fees and costs for the County and City and/or its contractors when work is associated with a reconstruction project or maintenance activity.

C. Emergency Access to LRT Work Zone for City and County.

In the case the City or County need access to the LRT Work Zone for emergency work, the County and/or City must contact the Rail Control Center at 612-341-5710 prior to commencement of the work.

D. County or City Permits

In addition to obtaining a permit from the Council to work within the LRT Work Zone, a County and/or City permit(s) may be required. Such permits may include obstruction permits, encroachment permits, utility permits, and the like.

The County and the City both have permitting processes, which the Council agrees to follow when a permit is required. The County and the City agree to waive permit fees and costs for the Council and/or its contractors when work is associated with an LRT System reconstruction project or maintenance activity with the exception of permits issued by the St. Paul Department of Safety and Inspections office. The fee or cost waiver does not apply to or include land use development related street or utility work regardless if funded by the Council.

E. LRT Work Zone Considerations

The Council acknowledges that, from time to time, routine maintenance work activities proposed by the County or City or contractors working for the County or City may require the Council to adjust train operations, de-energize power lines, or temporarily remove the Green Line LRT System equipment. In such cases, the Council shall not charge the County or City and/or its contractors for revenue lost and cost due to these work activities. Nor shall the County or City charge the Council for County or City work required to be conducted outside of normal working hours. County or City staff shall confer with Council staff in planning work required to operate and maintain the Parties' respective infrastructure so as to minimize the potential disruption occurring from routine activities. The County and City shall ensure that its employees and contractors performing maintenance in close proximity to the LRT tracks have completed, before working in such areas, an On Track Safety training program, which shall be provided by the Council without charge to the County, the City, or its contractors. In cases of major maintenance, the Parties agree to enter a separate cooperative funding agreement, which will identify the Parties' roles and financial responsibilities relative to such work.

3.3 Work Outside the LRT Work Zone

A. The Parties recognize that it may be necessary, from time to time, to close the vehicular lanes adjacent to the LRT guideway in order to conduct maintenance or other activities or during emergency events. Recognizing the potential disruption caused by closing roads or streets to vehicular traffic, the Parties agree to the following procedures providing notification to each other for such closures:

1. Anticipated Closures by the Council: If the Council requires a closure of the vehicular lanes, the Council will notify in writing the County and City no less than 10 working days in advance of the closure. County or City permits will be required.
2. Emergency Closures: If an emergency situation requires closure of the vehicular lanes, the Parties shall use the following notification procedures.

- a. County or City Emergency: The County or City shall contact the Rail Control Center at 612-341-5710. If the emergency situation involves intrusion of a vehicle or any other object within the LRT Area, this notification will be given immediately upon its detection. Upon resolution of the emergency situation, the County or City shall notify the Council in writing as to the nature of the situation and the recovery actions taken to resolve it.
 - b. Council Emergency: The Council shall contact the County at 651-266-7100 or City at 651-266-9700 immediately upon the detection of any situation requiring emergency closure of the vehicular traffic lanes. Upon resolution of the emergency situation, the Council shall notify the County or City in writing as to the nature of the situation and the recovery actions taken to resolve it.
3. Incidental closures. If a situation requires the incidental closure of the vehicular lanes for periods of time not exceeding 30 minutes, there is no obligation between the Parties to provide advance notice or to notify the other after the fact. Incidental lane closures will not be allowed between 6:00 AM and 9:00 AM and 3:00 PM and 6:00 PM Monday through Friday.

3.4 Traffic, LRT Signals and TSP System

A. General Operations. The County, City, and Council recognize the importance of a well managed transportation system, and support the goal to provide quality regional transportation. When competing needs or priorities develop, the County, City, and Council will work collectively in developing infrastructure and/or operating practices that best serves the public and meets the interests of the Parties. The County, City, and Council shall continue to jointly explore methods, means, and modifications, and technologies to meet these goals and to implement the appropriate actions.

B. The County may appoint the City as its agent or representative as responsible for the traffic signals on County Roadways. The County and City periodically enter into an agreement authorizing the City to operate and maintain County traffic signals, including those comprehended by this Agreement.

C. The City, through its City Engineer or designated representatives, or County agent if it is not the City responsible for County signals, will discuss and coordinate with the Council prior to making changes to the TSP, LRT signals, or EVP system that may impact LRT operations.

D. The Council shall discuss and coordinate with the City and County prior to making changes to the LRT operations that may impact traffic signal operations.

E. The County and City understand and support the Council's goal to accommodate large crowd events (sporting events, etc.) and may, from time to time, meet to review large crowd event planned services prior to implementation, will monitor event impacts, and will discuss any mitigation needs.

F. The Council understands and supports the City's goal to host special events. These events may involve activities such as parades, runs, bicycle races or other events that cross or are adjacent to the LRT System. Council will cooperate with the City to modify rail operations as reasonable to accommodate the special events.

G. The City has a traffic emergency call out list that prioritizes level of service for emergency signal repair and/or maintenance, and the Council acknowledges the City will use this list.

3.5 County or City Infrastructure Emergencies. The County Engineer and City Engineer or their designee shall have the authority to contact the Rail Control Center and order a stoppage of LRT operations if they believe a situation exists which threatens public safety. LRT operations shall not resume until the threat to public safety has been resolved or mitigated to the satisfaction of the person making the call in coordination with the Council's designee for Rail Operations.

ARTICLE 4 –Maintenance of LRT System

4.1 Snow and Ice Control

- A. All Parties agree that they will use their best efforts when performing snow and ice control operations, and agree to cooperate to ensure safe and efficient removal of snow and ice during inclement weather for the safety and mobility of the constituencies we all serve. All parties also understand there are finite resources and multiple needs that require each agency to set priorities for service. Each agency agrees to respect those priorities.
- B. The Council is responsible for snow and ice control in the LRT Area on 4th Street from Wacouta Street to Broadway Street. The Council and the City agree to work together to assure that the street and LRT Area are kept passable, and both parties agree that whichever agency arrives to provide service to this area first will plow the area the full width of the LRT Area and the street to the curb.
- C. If snow accumulation becomes a problem for adjacent property owners. The Council will be responsible for accumulated snow removal along the sidewalk/LRT Area on the east side of Cedar Street from 10th to 5th Streets and the south side of 4th Street from Minnesota Street to Wacouta Street. The area is immediately adjacent to the LRT Area where snow from sidewalks and the LRT Area generally gets pushed or plowed to.
- D. The Council shall be responsible for snow and ice control connected to the station platforms and the access points to the stations.
- E. The Council shall be responsible for snow and ice control of all portions of crosswalks within the LRT Area, including the crosswalks on Cedar Street at Exchange Street that service Central Presbyterian Church. Crosswalk portions outside of the LRT Area will be the responsibility of the City and/or County consistent with City and County policy and agreements. The City and County will cooperate and assist the Council as resources are available.

- F. The County and City shall be responsible for snow and ice control related to County and City infrastructure.

4.2 Fences, Railings, Walls, and Bike Racks

A. The Council is responsible for maintenance of fences, railings, and walls located in the LRT System.

B. The County or City is responsible for maintenance of fences, railings, and walls located in their respective rights of way not within the LRT Area. **Exhibit F** depicts the railings to which this Agreement pertains.

C. The Council shall own and maintain bike racks located within the LRT Area, and constructed within County or City rights of way as part of Green Line construction.

4.3 Maintenance of Traffic, Pedestrian, and LRT Signs

A. The County may appoint the City as its agent or representative as responsible for the traffic signs on County Roadways. The County and City periodically enter into an agreement authorizing the City to maintain County traffic signs including those comprehended in this Agreement.

B. The Council shall be responsible for the repair, replacement and maintenance of all signs related to the operation of the LRT System.

4.4 Maintenance of Traffic Control Signals, LRT Signals, and EVP System

A. The County and City shall own and maintain their respective infrastructure for the vehicular and pedestrian traffic signals and sign system, including but not limited to all traffic signals, mast arms, pedestrian and vehicle detection, traffic signal interconnects, transit system priority, emergency vehicle preemption system equipment, battery backup, traffic signal controllers and associated conduits and cables.

B. The Council shall own and maintain the LRT System that is connected to the Traffic Control Signal system, including but limited to LRT signal heads (bar signals), poles, blank out signs, rail detection equipment, LRT detectors, and associated conduit and cables. The Council shall complete Gopher State One Call locating for the LRT System.

C. The Council shall maintain the wiring including conduits of the LRT System up to the Traffic Control Signal system. The City shall maintain the LRT wire terminations within the Traffic Control Signal controller cabinets.

4.5 Maintenance of Pavement Marking

A. The City shall maintain all pavement markings located on City Infrastructure. The County shall also maintain all crosswalks, stop bars, and locally desired pavement markings on county highways. The primary purpose of such markings is to direct vehicle, bicycle and/or pedestrian traffic for the purpose of street use.

4.6 Graffiti Removal

A. The Council shall be responsible for graffiti removal within the LRT System. Graffiti removal shall be done pursuant to City Ordinance.

4.7 Lighting

A. The Council shall be responsible for the lighting located within the LRT System.

B. The City shall be responsible for the lighting located on City Streets and University Avenue and Robert Street, in accordance with City policy.

C. Maintenance of lighting on traffic signals shall be in accordance with existing joint powers agreements for traffic signal maintenance.

4.8 Sewer Maintenance

A. Council shall own the LRT Sanitary Sewer System and shall maintain these systems.

. The City shall be responsible for the maintenance of all Sewer Systems owned by the City including those located within the LRT Area.

4.9 Stormwater Maintenance

A. The County shall own and maintain all catch basins located on county roadways.

B. The City shall own and maintain City owned Stormwater System, including those located within the LRT Area.

C. The Council shall own and maintain the LRT Stormwater System located in the LRT Area.

4.10 Coordination of Routine Track and Roadway Maintenance to Minimize Disruption

A. The County, City and Council will coordinate their maintenance efforts to minimize disruption to the other Party and to the general public.

B. The Council designates the Rail Control Center for the coordination of track, roadway and utility maintenance to minimize disruption to the general public.

C. The County designates the County Engineer and the City designates the City Engineer for the coordination of track, roadway and utility maintenance to minimize the disruption to the general public.

4.11 Landscaping in the LRT Guideway

A. The City is responsible for maintaining landscaping and maintaining the planter wall separating the plantings from the roadway in the LRT Area (see **Exhibit G**). This will include the day-to-day maintenance of landscaping and irrigation as well as any non-routine maintenance, such as replacement of plants, maintenance of irrigation, and maintenance of the planter wall. The City is also responsible for payment of water for irrigation services.

B. Each party is responsible for plants damaged by their forces.

4.12 OCS Shield

A. The Council is responsible for maintaining the OCS shields on the Cedar Street bridge on University Avenue.

4.13 Water Infiltration/Tree Trench System

A. The water infiltration/tree trench system located under the sidewalk is owned by the County. The County will be responsible for Gopher State One Call locating of water infiltration/tree trench system.

B. Major maintenance of the water infiltration/tree trench system located under the sidewalk will be coordinated between the County and the Council at least two years in advance of the maintenance. Major maintenance includes the removal and replacement of portions of the infiltration tree trench, including structural soil and infiltration pipe.

C. The County will pay for 75 percent of the costs of major maintenance.

D. The Council will pay for 25 percent of the costs of major maintenance.

E. The County is responsible for routine maintenance. Routine maintenance consists of periodic inspection, removal of obstructions, flushing/jetting of the infiltration pipe, and sediment removal at sump manholes.

4.14 Steel Plates at Cedar Street and 7th Street

A. The steel plates in the intersection of Cedar and 7th Streets in downtown St. Paul are owned by the Council and shall be maintained by the Council.

ARTICLE 5 – PAYMENT OF ELECTRICAL POWER COSTS; LIABILITY

5.1 City and County Payment. The City and the County shall pay the electrical power costs for the traffic control signals, streetlight fixtures and EVP System attached to joint use poles and standard poles on City Streets and County Roadways as per City/County joint powers maintenance agreement for traffic signal maintenance.

5.2 Council Payment. The Council shall pay the electrical power costs for the electricity used to power the LRT, and the LRT related devices, such as flashing lights, warning devices with the exception of those powered through the traffic control signals, train control equipment, and gate arms.

5.3 Liability. Each Party agrees that it will be responsible for its own acts and the results thereof, to the extent authorized by the law, and shall not be responsible for the acts of the other party and the results thereof. The Council's liability is governed by the provisions of Minnesota Statutes Chapter 466 and the Council's obligation under this paragraph shall not be construed to negate or abridge or otherwise waive, with respect to the Council's liability limits of Minnesota Statutes Chapter 466. The County's and City's liability is governed by provisions of Minnesota Statutes chapter 466 and the County's and City's obligation under this paragraph shall not be construed to negate or abridge or otherwise waive, with respect to the City and County, the liability limits of Minnesota Statutes chapter 466.

ARTICLE 6 – OTHER PROVISIONS

6.1 Employees. All employees of each Party and all persons engaged by each Party in the performance of any work or services required or provided for herein to be performed by each Party shall not be considered employees of any other Party and that any and all claims that may or might arise under the Worker's Compensation Act or the Unemployment Compensation Act of the State of Minnesota on behalf of said employees while so engaged, and any and all claims made by any third parties as a consequence of any act or omission on the part of said employees while so engaged, on any work or services provided to be rendered herein, shall in no way be the obligation or responsibility of any other Party.

6.2 Applicable Provisions of Law. The Parties agree to comply with applicable provisions of Minnesota state law, federal law, and any applicable local ordinances which shall be considered a part of this Agreement as though fully set forth herein.

6.3 Entire Agreement. It is understood and agreed that the entire Agreement between the Parties is contained herein and that this Agreement supersedes all oral agreements and negotiations between the Parties relating to the subject matter hereof. All items referred to in this Agreement are incorporated or attached and are deemed to be part of this Agreement. Any alterations, variations, modifications, or waivers of provisions of this Agreement shall only be valid when they have been reduced to writing as an amendment to this Agreement signed by the Parties hereto.

6.4 Severability. The provisions of this Agreement shall be deemed severable. If any part of this Agreement is rendered void, invalid or unenforceable, such rendering shall not affect the validity and enforceability of the remainder of this Agreement unless the parts which are void, invalid or otherwise unenforceable shall substantially impair the value of the entire Agreement with respect to the Parties. One or more waivers by said Party of any provision, term, condition or covenant shall not be construed by the other Parties as a waiver of a subsequent breach of the same by other Parties.

6.5 Governing Law. This Agreement is entered into in and under the laws of the State of Minnesota and shall be interpreted in accordance therewith.

6.6 Liability. Each Party agrees that it will be responsible for its own acts and the results thereof to the extent authorized by law, and shall not be responsible for the acts of the other parties and the results thereof.

Should any Party contract for the services required by this agreement, then such Party shall require the following of its contractor(s):

Contractor shall save and protect, hold harmless, indemnify, and defend the Council, County and City (for the purposes of this section, "Indemnitees") and their respective members, agents, and employees against any and all claims, expenses (including, but not limited to, legal expense paid or incurred to enforce the provisions of this Section), losses, damages, or lawsuits for damage or injury that are alleged to arise out of, result from, or attributable to, whether in whole or in part, the Contractor's Work, including acts or omissions of its employees, subcontractors, representatives, or agents, or anyone else for whom Contractor may be liable.

Contractor shall maintain commercial general liability (CGL) on an occurrence form (ISO CG 00 01 12 04, or its equivalent, with a limit of not less than \$1,000,000 each occurrence and a general aggregate limit of not less than \$2,000,000. Indemnitees shall be listed as an additional insured (utilizing ISO CG 20 26 07 04, or its equivalent), on a primary and non-contributory basis. Policy must also be endorsed with ISO CG 24 17, or its equivalent, removing any exclusion for contractual liability within 50' of a railroad.

Contractor shall, and shall require its insurers to, waive any right of subrogation that may exist against Indemnitees.

6.7 Notices. Any notice or demand, which may or must be given or made by a Party hereto, under the terms of this Agreement or any statute or ordinance, shall be in writing and shall be sent certified mail or delivered in person to the Parties as follows:

City of Saint Paul:
Public Works Operations Engineer
891 North Dale Street
Saint Paul, MN 55103

Ramsey County:
County Engineer
1425 Paul Kirwold Drive
Arden Hills, MN 55112

Metropolitan Council:
Regional Administrator
390 Robert Street North
St. Paul, MN 55101

6.8 Contract Administration. In order to coordinate the activities of the Parties as to accomplish the purposes of this Agreement, the following individuals, or their designees or successors shall manage this Agreement on behalf of the Parties:

City of Saint Paul:
City Engineer
800 CHA
25 W Fourth Street
Saint Paul, MN 55102

Ramsey County:
County Engineer
1425 Paul Kirwold Drive
Arden Hills, MN 55112

Metropolitan Council
General Manager
Metro Transit
560 Sixth Avenue North
Minneapolis, MN 55411-4398

6.9 Availability of Financial Records. The Parties agree that each Party hereto, the Legislative Auditor, the State Auditor, or any of their duly authorized representatives at any time during normal business hours, and as often as they reasonably deem necessary, shall have access to and the right to examine, audit, excerpt, and transcribe any books, documents, papers, or records which are pertinent to the accounting practices and procedures of the other Party hereto and involve transactions relating to this Agreement. **The parties shall retain such documents for a minimum of six years from the last date they were effective or applicable to operation of the LRT System (whichever is last) or any part thereof.**

6.10 Data Privacy. The Parties agree to abide by all applicable state and federal laws and regulations and confidential information concerning individuals and/or data including but not limited to information made non-public by such laws or regulations.

6.11 Term. This Agreement shall take effect upon execution by all Parties hereto, and shall remain in effect for twenty-five (25) years unless terminated pursuant to Section 6.14 below. At each annual meeting held by the Parties pursuant to Article 2 of this Agreement, the Parties shall review and determine whether significant changes to the LRT system require amendment to this Agreement. If the representatives of the Parties as provided in Article 2 of this Agreement determine that an amendment to this Agreement is warranted due to significant changes in the LRT System, the respective representatives shall work collaboratively on developing the terms of the amendment. Such amendment shall not be effective until agreed to in writing and signed by the authorized representatives of the parties to this agreement.

6.12 Recitals. The Recitals are incorporated into and made part of this Agreement.

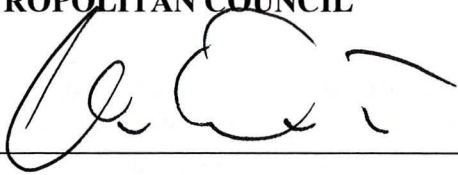
6.13 Counterparts. This Agreement may be executed in two or more counterparts, each of which will be deemed to be an original, but all of which shall constitute one and the same instrument.

6.14 Termination. This agreement may be terminated by any party to this Agreement for any reason by providing the other parties written notice of such termination at least two (2) years prior to the effective date of such termination.

6.15 Assignment. This Agreement may not be assigned by any Party without the other Parties express written consent, such consent not to be unreasonably withheld.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be duly executed by their respective duly authorized representatives on the dates indicated.

METROPOLITAN COUNCIL

By: 

Title: Regional Administrator

Date: 07/06/2018

RAMSEY COUNTY

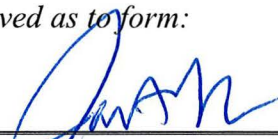
DW By: 

Name: JULIE KLEINSCHMIDT

Title: County Manager

Date: 5/30/18

Approved as to form:

By: 

Title: County Attorney

Date: 5/23/18

Recommended for Approval by:

By: 

Name: Ted Schoenecker

Title: County Engineer

Date: 5/21/18

CITY OF SAINT PAUL

By: 

for Title: Mayor

Date: 6/25/18

Approved as to form:

By: 

Title: City Attorney

Date: 6/18/18

By: 

Title: Director, Office of Financial Services

Date: 6/19/18

List of Exhibits

- A. Geographic Limits
- B. Agreement Between the State of Minnesota, Department of Transportation, and Metropolitan Council for Maintenance of LRT Systems
- C. Agreement for Maintenance of Existing Tunnels and Construction and Maintenance of New Tunnel Under Ramsey County State Aid Highway 34 (University Avenue) in the Capitol Area
- D. Cost Sharing Agreement for the Vertical Access Tower Operation and Maintenance
- E. Letter Agreement Between State Department of Administration and Metropolitan Council
- F. Fencing/Railings/Walls
- G. LRT Area of Responsibility
- H. LRT Work Permit Procedure



City of Saint Paul

Certified Copy

Resolution: RES 18-488

City Hall and Court
House
15 West Kellogg
Boulevard
Phone: 651-266-8560

File Number: RES 18-488

Authorizing the City to enter into an Operations and Maintenance Agreement 171079 related to the Central Corridor (Green Line) Light Rail Transit Project with the Metropolitan Council and Ramsey County.

This Operations and Maintenance Agreement ("Agreement") is entered into by and among the Metropolitan Council, a public corporation and political subdivision of the State of Minnesota ("Council"), Ramsey County, a municipal corporation ("County"), and City of Saint Paul, a Minnesota home rule charter city ("City"), hereinafter referred to as "Parties".

WHEREAS, the Council has constructed the Central Corridor Light Rail Transit (LRT) Project ("Green Line LRT") running between Downtown Minneapolis and Downtown St. Paul, generally via Washington and University Avenues; and,

WHEREAS, pursuant to Minn. Stat. § 473.411, the Council owns and operates the LRT on City and County Infrastructure; and

WHEREAS, the County and the City have jurisdiction over roadways adjacent to and /or within the LRT area; and

WHEREAS, the County and the City have an existing joint powers agreement for roadway maintenance; and,

WHEREAS, this Agreement will define the Parties' roles and responsibilities with respect to the operations and maintenance of the LRT on the City and County Infrastructure in the City of St. Paul subject to existing agreements; and

WHEREAS, Minnesota Statutes Chapters 471 and 473 and other applicable statutes, authorize the Parties to enter into this Agreement.

NOW, THEREFORE BE IT RESOLVED, that the proper City Officials are authorized to execute the Agreement and any amendments to the Agreement.

I, Shari Moore, City Clerk of the City of Saint Paul, Minnesota, do hereby certify that I have compared the attached copy of RES 18-488 as adopted by the City Council on 4/4/2018 and approved by the Mayor with the original thereof on file in my office.

Attest:



Shari Moore

June 14, 2018

Date Certified

Green Line LRT Operations and Maintenance Agreement St Paul, Ramsey County, Metropolitan Council

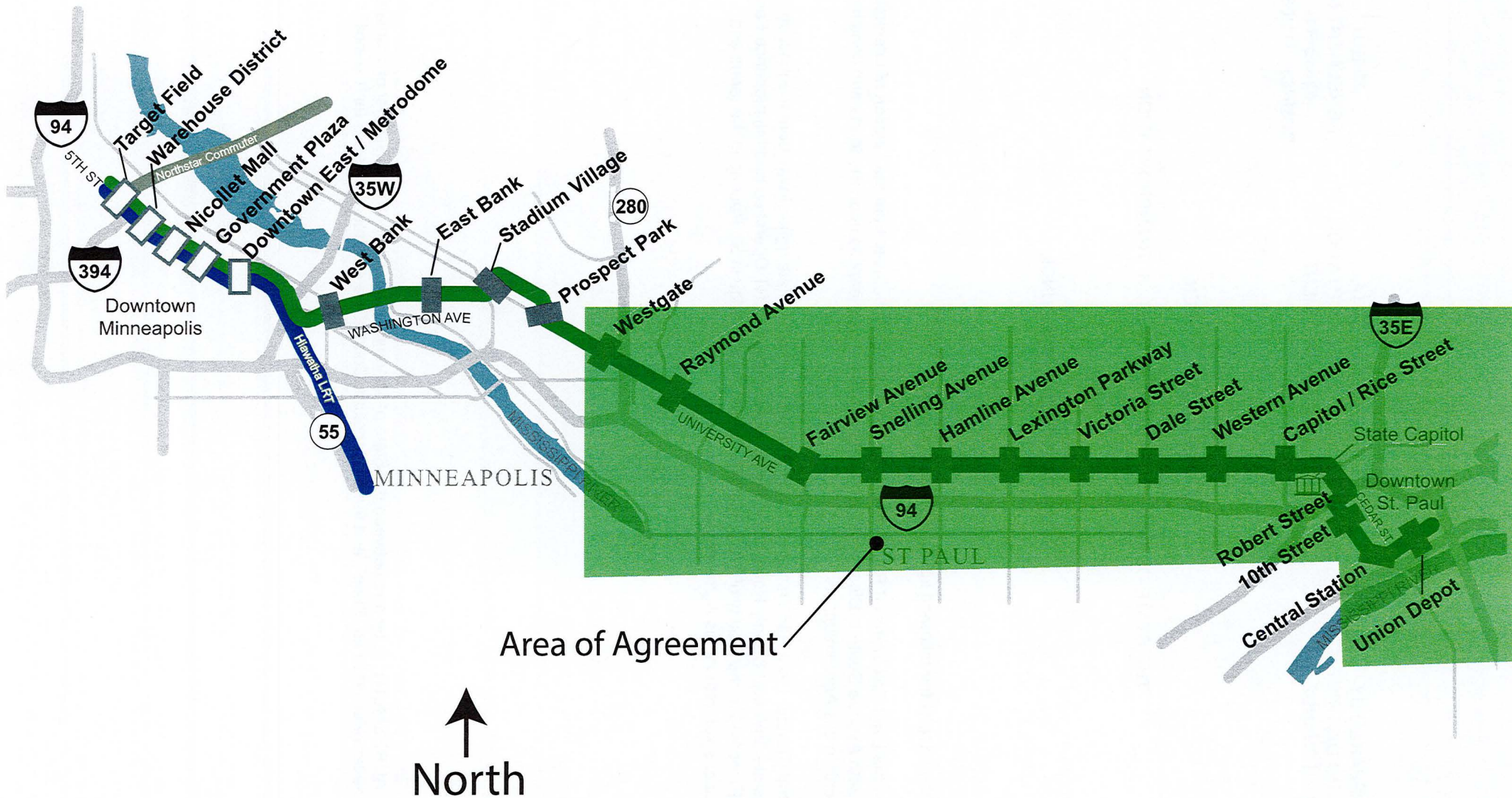


Exhibit A

PREPARED BY
METRO DISTRICT
MAINTENANCE

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
MAINTENANCE AGREEMENT

MnDOT
AGREEMENT NO.
~~86665-R1~~ 00911
COUNCIL #111062

AGREEMENT BETWEEN

THE STATE OF MINNESOTA, DEPARTMENT OF TRANSPORTATION

AND

THE METROPOLITAN COUNCIL

FOR

Maintenance of the following light rail transit systems:

Hiawatha Light Rail Transit (LRT) System located on State right-of-way from the junction of Interstate 494 and 34th Avenue South in Bloomington to Interstate 394 in Minneapolis upon the terms and conditions set forth in this Agreement; and

Central Corridor Light Rail Transit (CCLRT) System located on State right-of-way from the junction of Interstate 35W and County Road 122 in Minneapolis to the CCLRT Operation and Maintenance Facility (OMF) located in the vicinity of Trunk Highway 52/Lafayette Bridge in St. Paul upon the terms and conditions set forth in this Agreement.

THIS AGREEMENT, is by and between the State of Minnesota through its Commissioner of Transportation, hereinafter referred to as "State", and the Metropolitan Council, hereinafter referred to as "Council".

WHEREAS, State and Council are empowered to enter into agreements pursuant to Minnesota Statutes Section 471.59; and

WHEREAS, pursuant to the Hiawatha Corridor Light Rail Transit Master Project Cooperation Agreement (MnDOT Agreement 79883), the Northstar Corridor Project Master Cooperation and Delegation Agreement (MnDOT Agreement 90799), and Minnesota Statutes Section 471.59, the parties desire to enter into an agreement relating to the maintenance of the Hiawatha Light Rail Transit (LRT) System located on State right-of-way from the junction of Interstate 494 and 34th Avenue South in Bloomington to Interstate 394 in Minneapolis upon the terms and conditions set forth in this Agreement;

WHEREAS, pursuant to the Central Corridor Project Master Cooperation Agreement (MnDOT Agreement 90965), and Minnesota Statutes Section 471.59, the parties desire to enter into an agreement relating to the maintenance of the CCLRT System located on State right-of-way from the junction of Interstate 35W and County Road 122 in Minneapolis to the CCLRT OMF located in the vicinity of Trunk Highway 52/Lafayette Bridge in St. Paul. This includes the CCLRT crossings of Interstate 35W, Trunk Highway 280, Trunk Highway 51 (Snelling Avenue), Interstate 94, Trunk Highway 5 (7th Street East), and US Highway 952A (Robert Street) upon the terms and conditions set forth in this Agreement; and

WHEREAS, the Trunk Highway 52/Lafayette Bridge and CCLRT OMF area is covered by a separate agreement (MnDOT Agreement #96665); and

WHEREAS, it is in the interest of both parties to work cooperatively in delivering these services; and

WHEREAS, State and Council have an existing Maintenance Agreement No. 86665 executed June 13, 2005; and

WHEREAS, this Maintenance Agreement is intended to supersede Maintenance Agreement No. 86665 in its entirety, pursuant to the provisions hereof.

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

I. DUTIES OF THE COUNCIL

- A. Council will provide maintenance as defined in Section I, Paragraph B on those portions of the Light Rail Transit System located on State right-of-way as indicated on the map, marked Exhibit A, which is attached and incorporated into this Agreement, and particularly described in Table 1:

TABLE 1 Ownership and Maintenance Responsibilities

Location Description	Structure Number	Structure Ownership	Structure Maintenance Responsibility	Right-of-Way Ownership	Right-of-Way Maintenance Responsibility	Exhibit Sheet
LRT crossing at 34th under I-494 bridge in Bloomington	27765	State	State	State	Council	1
LRT bridge over TH 62 in Bloomington	27264	Council	Council	State	State	2
LRT Hiawatha Tunnel crossing (LRT barrel only)	27191A	Council	Council	State	Council	3

TABLE 1 Ownership and Maintenance Responsibilities (continued)

Location Description	Structure Number	Structure Ownership	Structure Maintenance Responsibility	Right-of-Way Ownership	Right-of-Way Maintenance Responsibility	Exhibit Sheet
Portion of LRT bridge over SB TH 55 off-ramp to Lake Street in Minneapolis	27262	Council	Council	State	State	4
LRT bridge over TH 55 near 28th Street in Minneapolis	27262	Council	Council	State	State	4
LRT crossing under I-94 bridges	27859 27861 27862	State	State	State	Council	5
LRT bridge over I-35W south of 5th Street South in Minneapolis	27878	Council	Council	State	State	6
LRT portion of bridge over TH 394 in Minneapolis	27706	Council	Council	State	State	7,8
5 th Street North portion of bridge over TH 394 in Minneapolis	27706	State	State	State	State	7,8
LRT bridge over I-35W in Minneapolis	27B63	Council	Council	State	State	9
LRT portion of bridge over TH 280 in St. Paul	9472	Council	Council	State	State	10
University Avenue portion of the bridge over TH 280 in St. Paul	9472	State	State	State	State	10
LRT Portion of bridge over I-94 in St. Paul	62889	Council	Council	State	State	11

All State right-of-way in this agreement will remain State right-of-way and is not part of any property transfer currently underway between the Council and the State at the time of signature of this agreement; provided however, that the Council will operate the Light Rail Transit Systems on and across the State right-of-way identified in this Agreement pursuant to the Council's powers under Minnesota Statutes 473.411, subd. 5 without any compensation and the State agrees that such use does not interfere unreasonably with public use of maintenance of the road or appurtenances or entail any substantial additional costs for maintenance.

The bridge structure includes piers and substructure.

All portions of the Light Rail Transit (LRT) systems identified in this agreement are owned, operated, and maintained by the Council.

- B. Council will provide all maintenance on the Light Rail Transit systems, Council-owned bridges, and at-grade crossings on State right-of-way and maintain the State right-of-way as shaded in Exhibit A and as

described in Section 1, Paragraph A, Table 1 of this agreement in accordance with the standards and guidelines Council uses to routinely maintain the Light Rail Transit systems, and will include, but not be limited to the following:

1. Maintain the Light Rail Transit systems and Council-owned bridges so as to keep the same in good repair and free from obstructions and impediments that may unreasonably interfere with the passage of vehicle, bicycle, and pedestrian traffic at designated crossings. Maintenance will include all necessary maintenance to preserve the Light Rail Transit systems, crossing roadways, Council-owned bridges, LRT systems drainage structures, ditches, sidewalks, and right-of-way in their present condition, including, but not limited to, patching of the surface, joint and crack sealing of the surface, slope repair, drainage structure cleaning and repair, fence repair, ditch cleaning, erosion control and repair, sweeping, and debris clearance. These maintenance activities and replacement of same, if necessary, will cover the State right-of-way as shown in Exhibit A; and
 2. Perform maintenance to preserve the Light Rail Transit Council-owned bridges as defined in Section 1, Paragraph A, Table 1 of this agreement in good condition and according to industry standards, including, but not limited to, the proper and timely cleaning and flushing of bridge deck drains and other superstructure areas that do not require lane closures on the roadway below the bridge, necessary deck spall patching according to MnDOT Specifications, bridge railing/coping/fence repair, proper and timely sealing of cracks in the bridge deck, removal of graffiti and all painting repairs, proper and timely repair or replacement of expansion joint glands, replacement of light fixtures and all associated lighting components, slope paving maintenance, maintenance of the Light Rail Transit tracks, ballasts, concrete ties, overhead lines and all associated utilities, maintenance of drainage from the bridges and repair of slope erosion; and
 3. Keep the Light Rail Transit systems, LRT roadway crossings, bridges and pedestrian walkways reasonably free and clear from ice and snow and undertake proper and timely cleaning and ice and snow control measures when necessary. Bridge ice and snow removal will cover the entire bridge width without pushing ice or snow onto any roadway, railroad, trail, path, or walkway located below the bridge; and
 4. Maintain the highway signing, traffic control devices, and safety devices, such as guardrail, attenuators (including at the west end of the concrete railing on Bridge #27706, 5th Street N roadway portion and at I-35W due to the construction of Bridge 27B63 (new or the cost of the upgrade if existing rail needed to be upgraded due to pier protection) as highlighted in Exhibit A, Sheet 9 of 11), signals, and lighting systems, associated with the Light Rail Transit Systems (with the exception of signal systems owned and/or maintained by the cities of Minneapolis, St. Paul, and Bloomington) and within the State right-of-way as described in Section 1, Paragraph A. Pay all associated utility bills, and provide such roadway markings and lane striping associated with the Light Rail Transit Systems as may be necessary on the trunk highways or cross streets; and
 5. Perform all maintenance of vegetation and landscaping, including necessary and regular mowing, tree trimming, litter or debris collection and disposal, and noxious weed control within the State right-of-way as shaded in Exhibit A; and
 6. Perform all maintenance of the Light Rail Transit rail systems; include necessary inspections and repair of the track, rails, ballasts, concrete ties, overhead lines and all associated utilities, and all other maintenance associated with the rail systems.
- C. Council will operate and provide maintenance for the Light Rail Transit Hiawatha Tunnel located between Forty-Sixth Street and Fiftieth Street, south of Minnehaha Parkway and adjacent to the Trunk Highway 55 corridor, in accordance with the following:
1. All responsibilities of Section I, Paragraph B of this agreement will apply to the Light Rail Transit Hiawatha Tunnel. It is hereby agreed that this agreement covers the one westerly barrel of the

Hiawatha Tunnel associated with Light Rail Transit train traffic. The two easterly barrels of the Hiawatha Tunnel associated with Trunk Highway 55 vehicular traffic are maintained by the City of Minneapolis and are not covered by this agreement; and

2. Operate and maintain Light Rail Transit system Hiawatha Tunnel lighting systems. Operation and maintenance of said systems shall be coordinated with the City of Minneapolis and is not part of this agreement; and Maintenance will include payment of all utility bills; and
 3. Council will be responsible for washing and removing graffiti from the barrel of the Light Rail Transit Hiawatha Tunnel; and
 4. Council will be responsible for maintenance and operation of the lighting, roadbed, LRT system drainage structures, and all other entities, appurtenances, and LRT systems associated with the interior of the Hiawatha Tunnel and not covered in the following item #5; and
 5. Council shall coordinate with the City of Minneapolis the payment of all utility bills and all necessary maintenance to preserve in good working condition: alarms, HVAC, equipment room, fire protection systems, and electronic control equipment associated with the Hiawatha Tunnel.
- D. Council is responsible for any and all bridge inspections, extraordinary maintenance, betterments, construction, or reconstruction of the Council-owned bridges described in Section I, Paragraph A, Table 1. If Council desires State to perform any such work, the parties must enter into a separate agreement therefore.
- E. Any repair or replacement of any component of the Light Rail Transit Systems, including bridges and structures owned by the Council on State right-of-way, will be the responsibility of the Council.
- F. Council and State agree to cooperate during major maintenance or reconstruction of Bridges #27706, 9472, and 62889. These bridges have a separate superstructure for the LRT portion and a separate superstructure for the 5th Street North roadway portion, but they have shared substructure (piers and abutments). Costs of major maintenance or reconstruction will be shared equally by both parties for the substructure (piers and abutments) and costs for the superstructure will be at the expense of the party designated as the owner in Section 1, Paragraph A, Table 1 of this agreement. The parties will enter into a separate agreement as needed.
- G. Council will furnish all labor, equipment, materials, supplies, tools, and other items necessary for the performance of the services to be provided for by Council under this Agreement.
- H. All materials used by Council in the performance of the work under this Agreement for State-owned appurtenances must conform to the requirements of the current edition of the Minnesota Department of Transportation Standard Specifications for Construction and to any subsequent amendments thereto.
- I. If there is a change in the routing of the Light Rail Transit Systems within State right-of-way, Council will maintain the new alignment in accordance with this Agreement.
- J. When the State must access State-owned bridges over the LRT line as described in Section I, Paragraph A (including Bridge Numbers 27765, 27861, 27859, and 27862) to perform inspections and maintenance, Council shall provide Council-owned equipment and reasonable access to said bridges from the LRT line. Council will not be responsible for renting equipment to assist the State in the State-owned bridge access, only in providing equipment already owned by the Council. If State desires Council to provide any such labor and/or equipment, the parties must enter into a separate agreement therefore.
- K. Council will retain its authority to administer, issue, and regulate sign advertising permits, on LRT trains and at LRT stations located on the State right-of-way in conjunction with DOT sign regulations described in Section I, Paragraph A.

- L. Construct, maintain, and repair any wall for the purpose to support any LRT structure or to retain from any LRT structure. In particular, but not limited to, the retaining walls identified in Exhibit A – Sheet 9 of 11.

II. DUTIES OF STATE

- A. State will retain its authority to administer, issue, and regulate access permits, sign advertising permits, drainage permits, and permits to install utilities on the State right-of-way described in Section I, Paragraph A, provided that prior to issuing such permits, the State will submit such permits to the Council for review and comment. The State will not approve permits when the requested use would unreasonably interfere with the operation or maintenance of the Light Rail Transit system. This Agreement will not be construed as a relinquishment by the State of any powers or control it may have over the bridges and trunk highway right-of-way covered under this Agreement. In addition, this Agreement will not be construed to create any leasehold, easement, or other interest in real property in favor of the Council.
- B. State will provide maintenance on the State-owned bridges and State right-of-way as described in Section 1, Paragraph A, Table 1 of this agreement in accordance with the standards and guidelines State uses to routinely maintain State bridges and right-of-way, and will include, but not be limited to the following:
 - 1. Maintain the State-owned bridges and right-of-way so as to keep the same in good repair and free from obstructions and impediments that may unreasonably interfere with the passage of vehicle, bicycle, and pedestrian traffic at designated crossings. Maintenance will include all necessary maintenance to preserve the Light Rail Transit system, crossing roadways, State-owned bridges, drainage structures, ditches, sidewalks, and right-of-way in their present condition, including, but not limited to, patching of the surface, joint and crack sealing of the surface, slope repair, drainage structure cleaning and repair, fence repair, ditch cleaning, erosion control and repair, sweeping, and debris clearance. These maintenance activities and replacement of the same, if necessary, will cover the State right-of-way as shown in Exhibit A; and
 - 2. Perform maintenance to preserve the State-owned bridges as defined in Section 1, Paragraph A, Table 1 of this agreement in their present existing condition, including, but not limited to, the proper and timely cleaning and flushing of bridge deck drains and other substructure areas, necessary deck spall patching according to MnDOT Specifications, bridge railing/coping repair, proper and timely sealing of cracks in the bridge deck, removal of graffiti and all painting repairs, proper and timely repair or replacement of expansion joint glands, replacement of light fixtures and all associated lighting components, slope paving maintenance, and all associated utilities, maintenance of drainage from the bridges and repair of slope erosion; and
 - 3. Keep the State-owned roadways and bridges reasonably free and clear from ice and snow and undertake proper and timely cleaning and ice and snow control measures when necessary. Bridge ice and snow removal will cover the entire bridge width without pushing ice or snow onto any roadway, railroad, trail, path, walkway, or Light Rail Transit crossing located below the bridge; and
 - 4. Maintain the highway signing, traffic control devices, and safety devices, such as guardrail, attenuators, signals, and lighting systems, located within the State right-of-way and maintained by the State as described in Section 1, Paragraph A, pay all associated utility bills, and provide such roadway markings and lane striping as may be necessary on the trunk highways or cross streets; and
 - 5. Perform all maintenance of vegetation and landscaping, including necessary and regular mowing, tree trimming, litter or debris collection and disposal, and noxious weed control within the State right-of-way.
- C. State is responsible for any and all bridge inspections, extraordinary maintenance, betterments, construction, or reconstruction of the State-owned bridges described in Section I, Paragraph A, Table 1.

- D. State will furnish all labor, equipment, materials, supplies, tools, and other items necessary for the performance of the services to be provided for by the State under this Agreement.
- E. All materials used by the State in the performance of the work under this Agreement must conform to the requirements of the current edition of the Minnesota Department of Transportation Standard Specifications for Construction and to any subsequent amendments thereto.

III. INSPECTIONS

Authorized Representatives of State and Council will coordinate the inspection of the Light Rail Transit Line right-of-way, bridges, and Light Rail Transit Hiawatha Tunnel as described in Section 1, Paragraph A and meet on an as needed basis to review the adequacy of the maintenance work being performed, and to determine if any extraordinary maintenance, betterments, construction, or reconstruction are required.

For structures with adjoining features Council shall be responsible for the inspection of the LRT portion and MnDOT shall be responsible for the inspection of the roadway portion.

Bridge inspections shall be performed in accordance with all state and federal standards including, but not limited to the National Bridge Inspection Standards and the AASHTO Manual for Bridge Evaluation 2nd Edition 2011.

IV. LANE CLOSURES AND TRAFFIC CONTROL

- A. The Council may partially block the trunk highways and bridges for a period of time necessary for the performance of the services covered under this Agreement **with prior approval from the State**. In cases of emergency, such trunk highways and bridges may be wholly blocked and the passage of traffic thereon prevented by the Council. At no time, however, will the Council continue to obstruct the free passage of traffic on the trunk highways or bridges for a longer period of time than is reasonably required for performing the necessary work thereon. In the event of the total blocking or closing of any such trunk highway or bridge, Council must provide a suitable detour during such time, with the assistance of State, as needed.
- B. Council may close the bridge or tunnel at such time as it is necessary for the emergency repair of utilities and infrastructure. However, Council will not cause any portions of trunk highways and bridges to be closed to traffic for any reasons other than those above set forth, and in no event for a time longer than reasonably necessary to complete authorized work.
- C. All partial and total closures of the trunk highways and bridges covered under this Agreement must be in conformance with the current Minnesota Manual on Uniform Traffic Control Devices, and Council must provide at least a 24 hour notice of these closures to the MnDOT Dispatch Center at 651-582-1550 and to the Assistant District Engineer, Maintenance at 651-234-7500, or their designee or successor.

V. CONSIDERATION AND TERMS OF PAYMENT

Each party shall perform its responsibilities under this agreement without cost or expense to the other party.

VI. TERM OF AGREEMENT

This Agreement will be in effect for the above-described right-of-way, bridges and the Light Rail Transit Hiawatha Tunnel until superseded by another agreement between State and Council or until such time that bridges and/or Light Rail Transit Hiawatha Tunnel is removed.

If in the future the State or Council needs to modify the right-of-way, bridges and tunnel described in Section I, Paragraph A, the State and Council will enter into a new maintenance agreement.

VII. AUTHORIZED REPRESENTATIVE

- A. State's Authorized Representative for the purposes of the administration of this Agreement Assistant District Engineer - Maintenance, Minnesota Department of Transportation, Metro District, 1500 West County Road B2, Roseville, Minnesota 55113, (651) 234-7500, or their designee or successor.
- B. Council's Authorized Representative for the purposes of the administration of this Agreement is Regional Administrator, Metropolitan Council, 390 Robert S, St. Paul, MN 55101, Phone: 651-602-1000, or their designee or successor.
- C. State's Authorized Representative will have final authority for acceptance of Council's services.

VIII. ASSIGNMENT / SUBCONTRACTS

- A. Neither party will assign or transfer any rights or obligations under this Agreement, in whole or in part, without prior written consent of the other.
- B. All contracts and agreements made by either party with third parties for the performance of any work to be done under this Agreement must be made in accordance with the terms of this Agreement and State of Minnesota law.

IX. MERGER/AMENDMENTS

This Agreement contains all negotiations and agreements between the State and Council. No other understanding regarding this agreement, whether written or oral, may be used to bind either party. Any amendments to this Agreement must be in writing, and must be executed by the same parties who executed the original Agreement, or their successors in office.

X. LIABILITY

- A. The employees and agents of a party will not be deemed to be employees of the other party for any reason.
- B. Each party will be solely responsible for its own acts and omissions, the acts and omissions of its employees, and results thereof to the extent authorized by law. The parties will not be responsible for the acts of any others and the results thereof. Liability of State will be governed by the provisions of the Minnesota Tort Claims Act, Minnesota Statutes Section 3.736, and the liability of Council will be governed by Minnesota Statutes Chapter 466. This clause will not be construed to bar any legal remedies each party may have for the other party's failure to fulfill its obligations pursuant to this Agreement.
- C. Each party to this Agreement will defend at its sole cost and expense any action or proceeding commenced for the purpose of asserting any claim of whatsoever character arising in connection with or by virtue of performance of its own work as provided herein.

XI. WORKERS' COMPENSATION

Each party will be solely responsible for its own employees for any workers compensation claims.

XII. CIVIL RIGHTS

The Council must comply with the provisions of Minnesota Statutes Section 181.59, and any applicable local ordinance relating to civil rights and discrimination.

XIII. STATE AUDITS

The books, records, documents, and accounting procedures and practices of Council, relevant to this Agreement, may be subject to examination by the MnDOT auditor, and the Legislative Auditor, or the State Auditor, as appropriate, for no less than six years following the expiration of this Agreement.

XIV. DATA PRACTICES

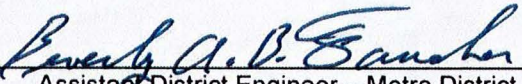
The State and the Council must comply with the Minnesota Government Data Practices Act, Minnesota Statutes Chapter 13, as it applies to any information provided to or by a party to this agreement.

[the remainder of this page has been intentionally left blank]

IN TESTIMONY WHEREOF the parties have executed this Agreement through their duly authorized officials:

DEPARTMENT OF TRANSPORTATION

Recommended for approval:

By 
Assistant District Engineer – Metro District Maintenance

Date 3-9-12

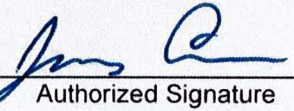
Approved

COMMISSIONER OF TRANSPORTATION

By 
Metro District Authorized Signature

Date 3/14/12

COMMISSIONER OF ADMINISTRATION

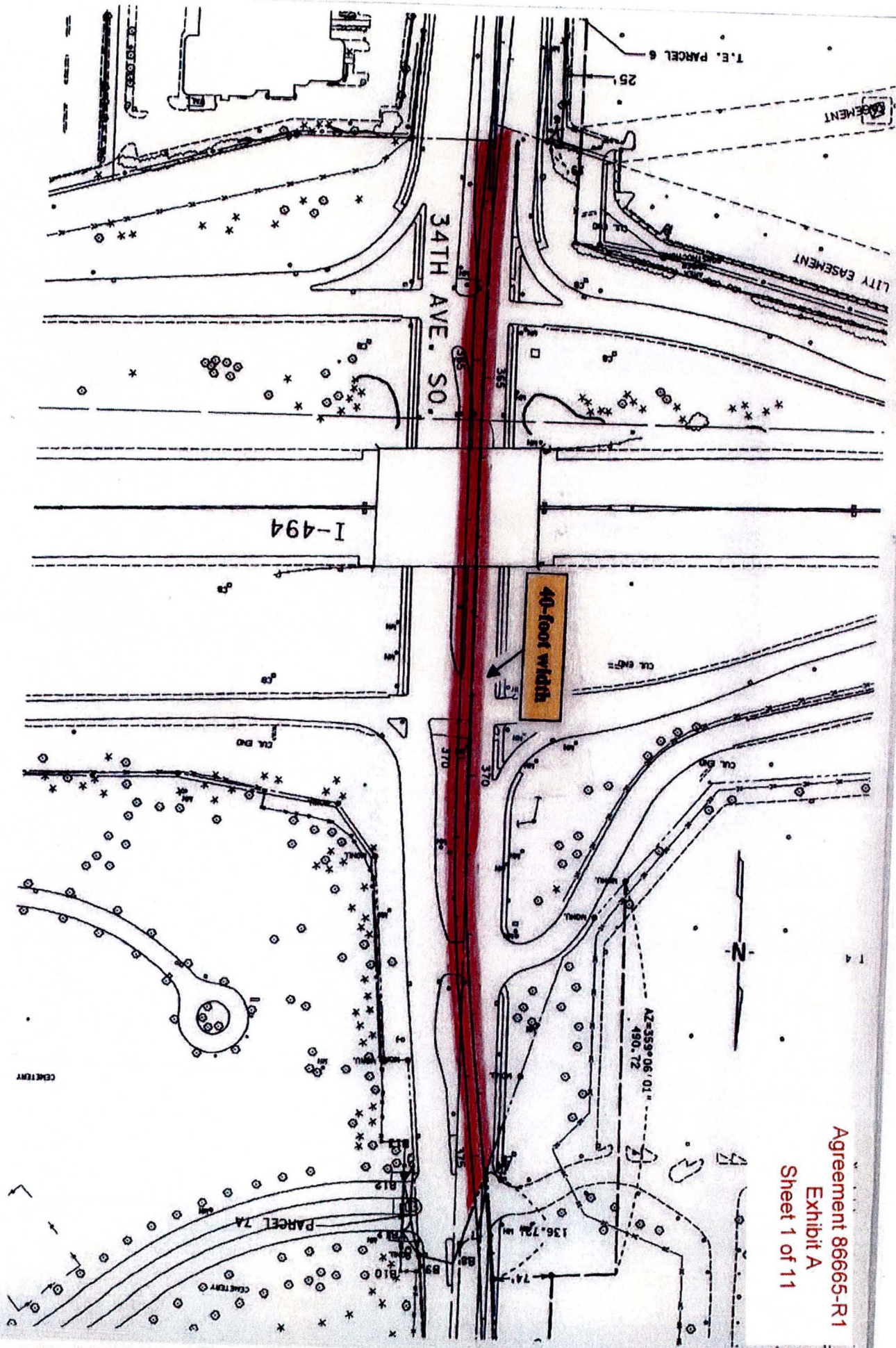
By 
Authorized Signature

Date 3-22-2012

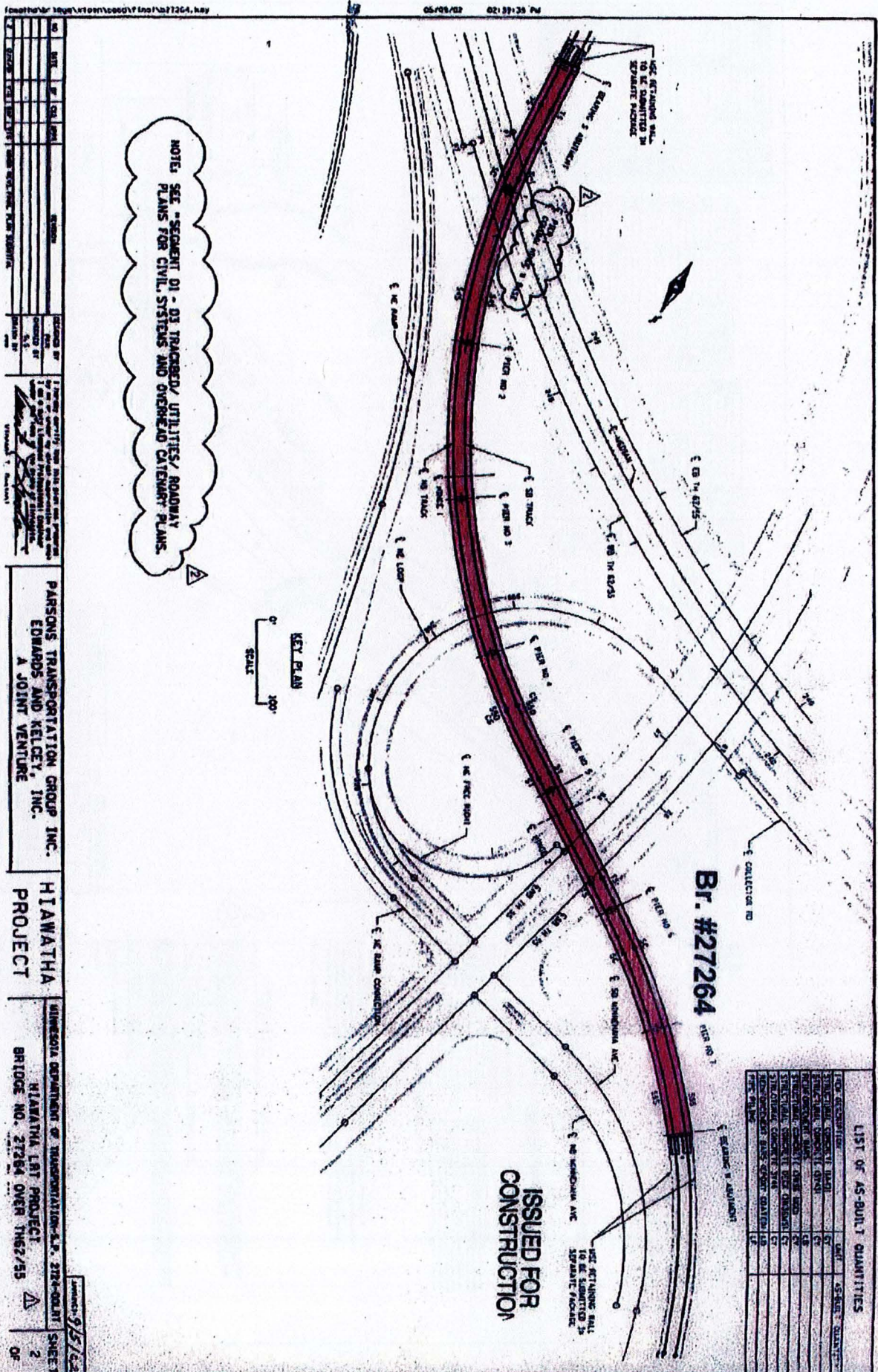
METROPOLITAN COUNCIL

By 
Regional Administrator
Metropolitan Council

Date: 2.8.2012



Agreement 86665-R1
Exhibit A
Sheet 1 of 11



CONTROL SECTION NO. 2124635-016302
IN GOVERNMENT LOT 2, SECTION 18, T. 28 N., R. 23 W. AND
IN SECTION 18 OF THE MAP OF MILITARY RESERVATION OF FORT SNELLING
HEDENFEN COUNTY, MINNESOTA

THE COMMISSIONER OF TRANSPORTATION IS HEREBY DESIGNATING THE DEFINITE LOCATION OF THIS HIGHWAY NO. 35 FROM 50TH STREET EAST TO MIDWAY PARKWAY

as shown on this and prepared by the State of Tennessee Department of Transportation is hereby certified as
 the official record of the State of Tennessee. Witness my hand and seal of office this 1st day of October, 1993.

It is further urged that it is necessary to complete all work pending, and to complete the report on any of said work stopped, and to keep the same the subject of report.

RECEIVED
JAN 10 1964
U.S. DEPARTMENT OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535

Certified a
Carol Quinn
Comptroller of Transportation

By John E. Shaw Date 11/1/68
Director, Office of Land Management

I hereby certify that this map was approved by me or under my direct supervision and that I am a duly
 authorized representative of the Bureau of Land Management, U.S. Department of the Interior.

Approved: _____
Special Agent in Charge

DECLASSIFIED BY: 6032
DATE: 10/10/2001

 Licensed Land Surveyor License No. Date

UNITED STATES DEPARTMENT OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D. C. 20535

SURVEY STANDARDS

1. The one-reason, six-month, and duration are based on the project control survey system.
2. The boundary amounts shown on this map have been field checked for accuracy. The structure

2. The hourly contribution shown on this statement are based on time to perform control elements.

CONVENTIONAL SYMBOLS

Section Line	_____	2/27 Signal Master	_____
Barber Line	_____	Account Number	_____
Station Line	_____	Account Description	_____
Station Line	_____	Account Description	_____

100% ☐ 90% ☐ 80% ☐ 70% ☐ 60% ☐ 50% ☐ 40% ☐ 30% ☐ 20% ☐ 10% ☐ 0%

Temporary Contract _____
 Building Removal Contract _____
 DISTANCE FROM TO FUEL CO. OR CIG. 1 MILE EAST WHEEL.

STANDARD ORIENTATION AND GRID COORDINATES
 Map elements are oriented to the center. Coordinates begin with a degree
 of latitude & extend to the "EAST" point. Map elements are placed together.

DOC. NO.

OFFICE OF REGISTRATION OF
COUNTY
I HEREBY CERTIFY THAT THIS
HAS BEEN FILED IN THIS OFFICE
ON _____ 20 _____ AT _____

IN CASE OF _____
REGISTERED OFFICE _____

DOC. NO. _____
OFFICE OF COUNTY RECORDS
COUNTY OF _____
I HEREBY CERTIFY THAT THE

ON 20 MAY 1964
IN CAB.

CONTRACTANCE PLAT NO. 41-52
C.S. 2724155-11071902

Page 221 of 467

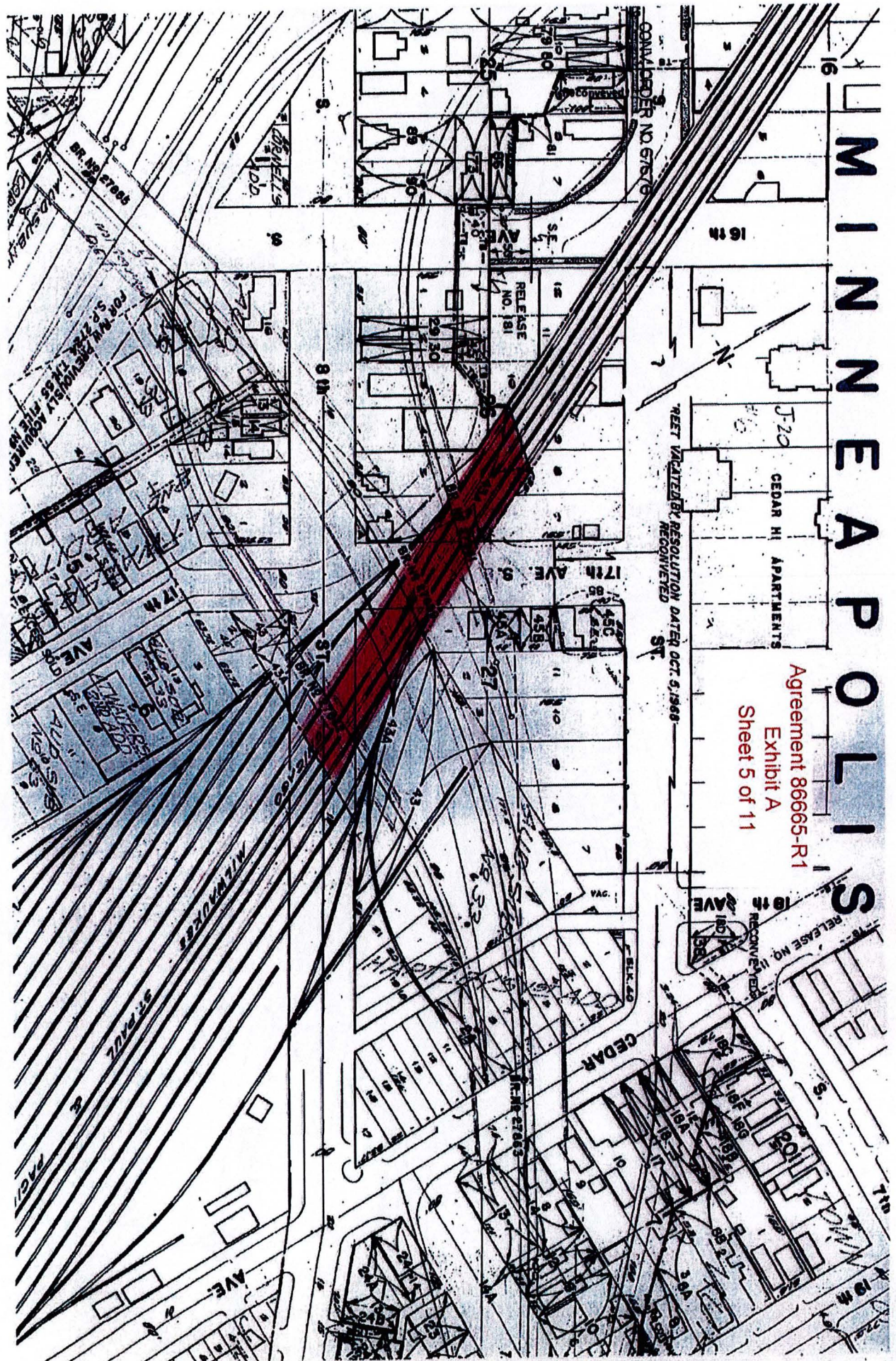


MINNEAPOLIS

Agreement 86665-R1
Exhibit A
Sheet 5 of 11

J20 CEDAR HI APARTMENTS
STREET VACATED BY RESOLUTION DATED OCT. 5, 1968
RECONVEYED

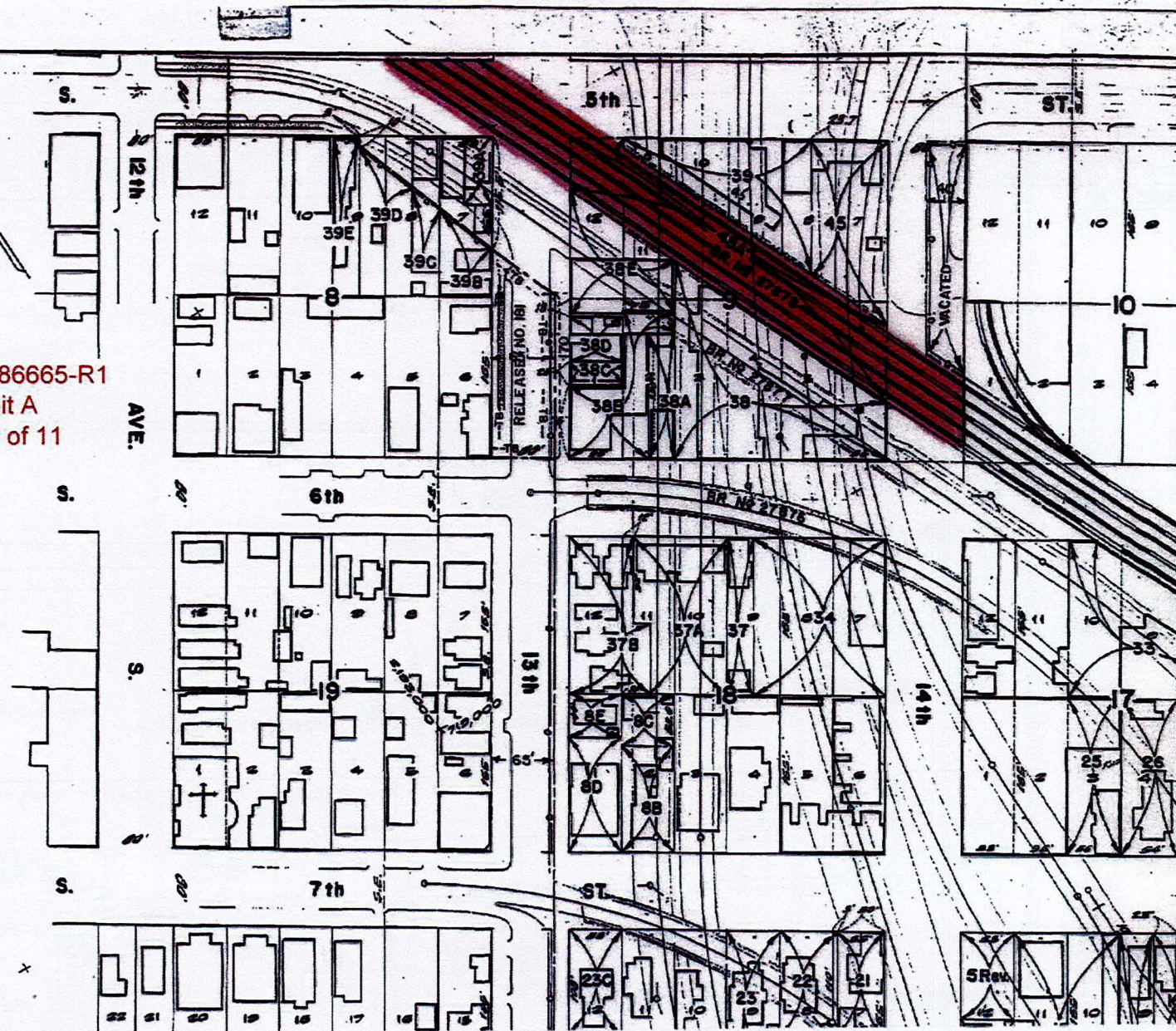
RELEASE NO. 11-113
RECONVEYED



BLK.	SQ.FT.	TAKEN	SAL.
2	5902	All	None
2	2836	All	None
2	725	All	None
2	2844	All	None
2	2419	All	None
2	1781	All	None
2	1344	All	None
1			
1	2063	All	None
1	2063	All	None
1	10,174	All	None
1	7150	All	None
1	7150	All	None
1	7150	All	None
1	1925	All	None
1	1925	All	None
1	1650	All	None
1	1650	All	None
1	8420	All	None
2	31,650	All	None

SQ.FT.	TAKEN	SAL.
10,755	All	None
5963	All	None
6520	All	None
6448	All	None
6075	All	None
7950	All	None
4125	All	None
7025	All	None
6500	All	None
2748	All	None
338	All	None
1014	All	None

Agreement 86665-R1
Exhibit A
Sheet 6 of 11





PROPOSED TRANSVERSE SECTION THRU RECONSTRUCTED BRIDGE DECK

LEGEND

Plan view of the proposed bridge deck. The total length is 100'-4". Key dimensions and features include:

- Left sidewalk: 1'-0" wide.
- First section: 20'-0" wide.
- Second section: 28'-0" wide.
- Third section: 1'-6" wide.
- Fourth section: 2'-6" wide.
- Barrier section: 11'-6" wide, containing a "TEMPORARY PORTABLE PRECAST CONCRETE BARRIER" and "EXISTING 6th STREET".
- Barrier section: 11'-6" wide.
- Barrier section: 11'-6" wide.
- Barrier section: 2'-6" wide.
- Right sidewalk: 8'-0" wide.
- Final section: 1'-0" wide.
- Labels: "SALVAGE WIRE FENCE" on the left, "EXISTING CONDUIT SYSTEM TO BE ABANDONED PRIOR TO CONSTRUCTION" on the left, and "EXISTING 6th STREET" in the barrier section.
- Grades: .015' / 4, .015' / 4, .02' / 4, and .01' / 4 are indicated along the deck profile.

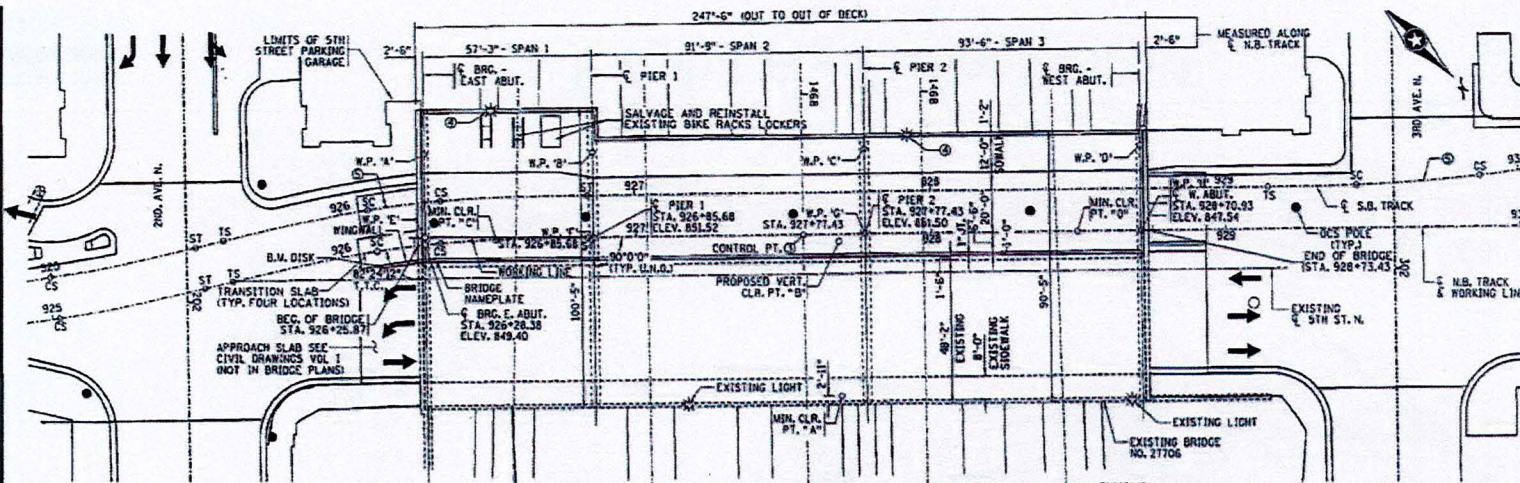
SCALE 0 (SPAN 1) 1

LTK
LTK Engineering Services

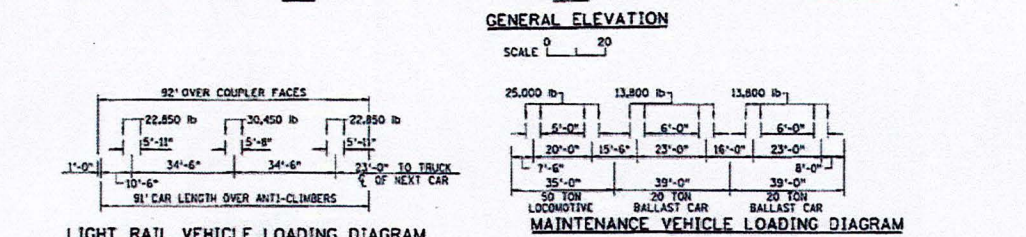
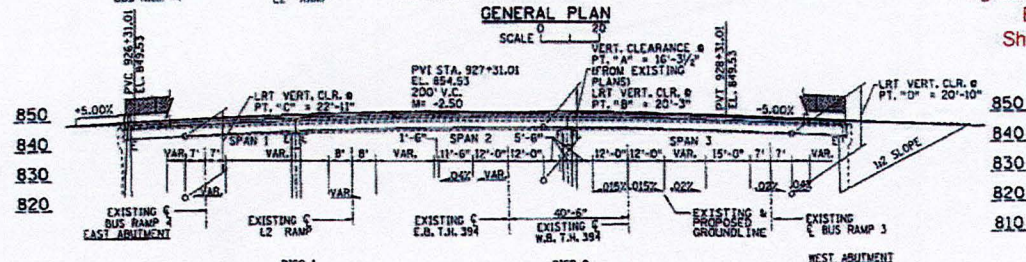
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A duly LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MONTANA.



BR. # 27706
SHEET 1 OF 2
SHEET NO. BRG- 100



- NOTES:**
1. SEE SHEET NO. 344 FOR EXISTING & RECONSTRUCTED BRIDGE EXISTINGS.
 2. FOR EXISTING RAMP & T.J. 394 ELEVATIONS, REFERENCE ATTACHED SURVEY SHEET.
 3. CONTROL POINT: C.N.B. TRACK STA. 927+56.38 E.B. T.J. 394 STA. 926+46.59 STA. 927+77.43 X = 527924.771 Y = 169471.125
 4. REMOVE & SALVAGE LUMINAIRE & POLE. REINSTALL ON PROPOSED CONCRETE PARAPET (TYPE P-1).
 5. FOR CURVE INFORMATION SEE TRACKWORK DRAWINGS VOL. I, SHEET ALN-010 THRU ALN-011.
 6. PAID FOR UNDER BID ITEM "BRIDGE APPROACH PAVEMENT".
 7. ONLY LOW FRICTION TRACK CLIPS ALLOWED ON BRIDGE 27706. DIRECT FIXATION FASTENERS ARE LOCATED OFF BOTH ENDS OF THE BRIDGE. SEE TRACKWORK DRAWINGS VOLUME I.
 8. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".



- NOTES:**
1. THE LIGHT RAIL TRAIN SHALL CONSIST OF EITHER ONE, TWO OR THREE CARS, WHICH EVER PRODUCES THE MAXIMUM LOAD FOR THE ELEMENT UNDER CONSIDERATION.
 2. AXLE LOAD IN POUNDS.

- NOTES:**
1. THE MAINTENANCE VEHICLE SHALL CONSIST OF EITHER ONE, TWO, THREE OR FOUR BALLAST CARS WHICH EVER PRODUCES THE MAXIMUM LOAD FOR THE ELEMENT UNDER CONSIDERATION.
 2. AXLE LOAD IN POUNDS.
 3. WEIGHT OF EMPTY BALLAST CAR IS 15,000 POUNDS.

Agreement 86665-R1
Exhibit A
Sheet 8 of 11

FOR DESIGN CHECK OF EXISTING BR. 27706:
2002 AND CURRENT INTERIM A.A.S.M.T.O. DESIGN SPECIFICATIONS.
LOAD FACTOR DESIGN METHOD
DESIGN LOADING HS20 LIVE LOAD
DEAD LOAD INCLUDES 17 PSF ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS.

FOR NEW LRT SUPERSTRUCTURE & EXISTING SUBSTRUCTURE SUPPORTING LRT BRIDGE:
2000 ARMA MANUAL FOR RAILWAY ENGINEERING AS SUPPLEMENTED BY MINNAPOLIS CORRIDOR LRT PERFORMANCE SPECIFICATIONS, 2002 AND CURRENT INTERIM A.A.S.M.T.O. DESIGN SPECIFICATIONS.
LOAD FACTOR DESIGN METHOD
DESIGN LOADING - CONTROLLING LOAD CASE OF:
- LIGHT RAIL VEHICLE OR
- MAINTENANCE VEHICLE OR
- 8500# PEDESTRIAN OR
- 15-25 TRUCK LOADING

SIDEWALK LOADING = 85 psf.

ASSUME 200 lbs. PER LIN. FT. FOR TRACK RAILS, INSIDE GUARDRAILS AND FASTENERS FOR ONE TRACK.

DERAILMENT:
LRT AXLE LOAD + 100% IMPACT FACTOR

REINFORCED CONCRETE
f_c = 4000 PSI, n = 8
f_y = 60,000 PSI (REINFORCEMENT)

STRUCTURAL STEEL
f_y = 50,000 PSI 3309 STEEL (PAINTED)

MAXIMUM ALLOWABLE DESIGN STRESSES:
REINFORCED CONCRETE:
f_c = 4000 psi, n = 8
f_y = 60,000 psi REINFORCEMENT

LIMIT DEFLECTION TO 1/1000 OF SPAN LENGTH (LRT & IMPACT)

APPROXIMATE DECK AREA = 10,665 s.f.

LRT DESIGN SPEED = 35 MPH

DESIGN SPEED:
OVER = 30 mph UNDER = T.J. 394 = 55 mph

CONSTRUCTION NOTES

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

BRIDGE SEAT REINFORCEMENT SHALL BE CAREFULLY PLACED TO AVOID INTERFERENCE WITH DRILLING HOLES FOR ANCHOR RODS. THE SUPERSTRUCTURE BEAMS SHALL BE CREATED IN FINAL POSITION PRIOR TO DRILLING HOLES FOR AND PLACING ANCHOR RODS.

THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR NUMBER WHICH APPROXIMATES THE NOMINAL DIAMETER OF THE BAR IN MILLIMETERS (mm).

BAR MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED.

ALL REINFORCEMENT SHALL BE 2 IN. CLEAR, UNLESS SHOWN OR NOTED OTHERWISE.

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 27706 MODIFICATION

T.J.394 AND RAMP UNDER 5TH STREET N.
0.8 MILES N.E. OF JCT. OF T.J.394 AND
T.J.394 IN MINNEAPOLIS
BRIDGE I.D. NO. 401
SEC. 22, TWP. 29N, R24W,
MINNEAPOLIS TWP., HENNEPIN COUNTY

APPROVED: _____ DATE: _____
STATE BRIDGE ENGINEER

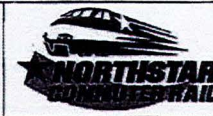
No.	Date	Revisions	App.	DRAWING NAME
				6-180004.dgn
				DESIGNED BY: PLR
				DRAWN BY: VM
				CHECKED BY: PLR
				DATE: 12-15-06
				PROJECT NO. SP 9901-02

LTK
LTK Engineering Services

SRE CONSULTING GROUP, INC.

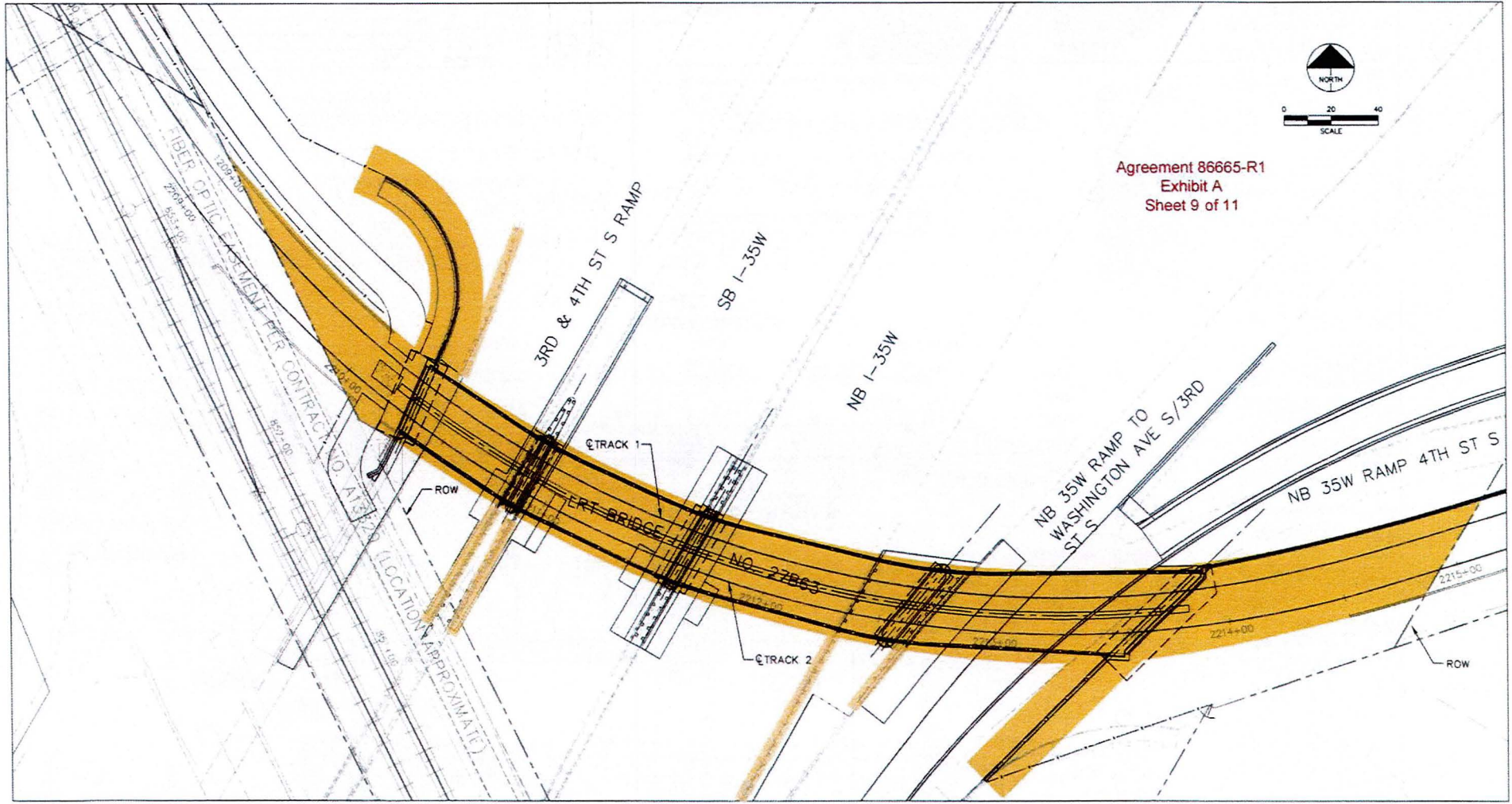
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY CLOSE SUPERVISION AND THAT I AM A duly LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Patrick L. Revord
PATRICK L. REVORD
DATE: 12-15-06 MY LIC. NO. 27168



MINNESOTA DEPARTMENT OF TRANSPORTATION
SP 9901-02
NORTHSTAR CORRIDOR COMMUTER RAIL
STRUCTURAL
GENERAL PLAN AND ELEVATION

SHEET 1 OF 1
SHEET NO.
BRG-004



Agreement 86665-R1
Exhibit A
Sheet 9 of 11

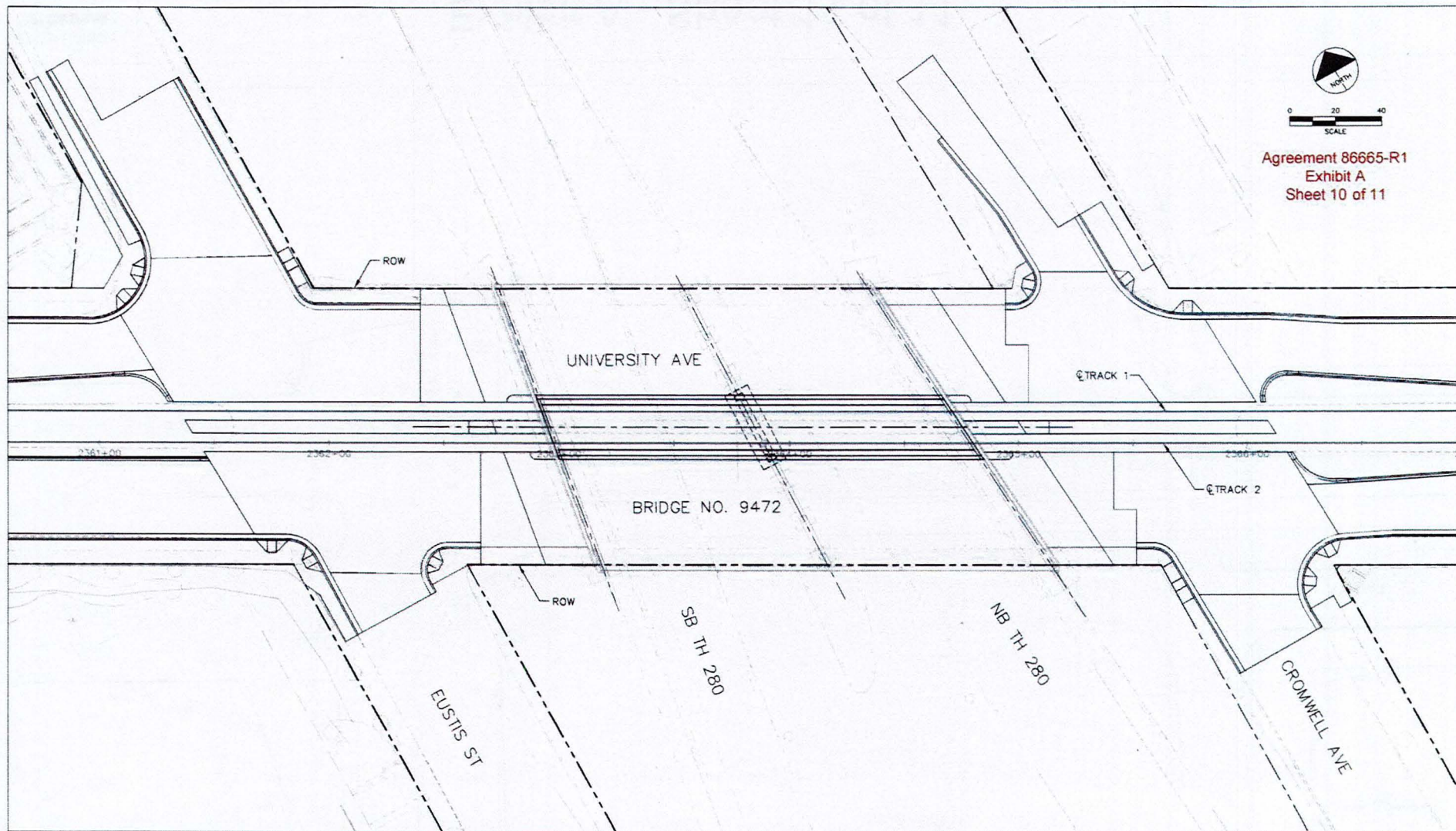
Central Corridor
Light Rail Transit
Metropolitan Council

Exhibit A - Sheet 9 of 11

Agreement 86665 - R1

AECOM
Kimley-Horn and Associates, Inc. RANI engineering

\\000-CAD\\DESIGN\\MAN\\BOW\\MandOT_Agreement Exhibit\\ART Bridge over TH 280.dwg December 06, 2010 - 11:16am



Agreement 86665-R1
Exhibit A
Sheet 10 of 11

Central Corridor
Light Rail Transit

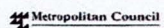


Exhibit A - Sheet 10 of 11

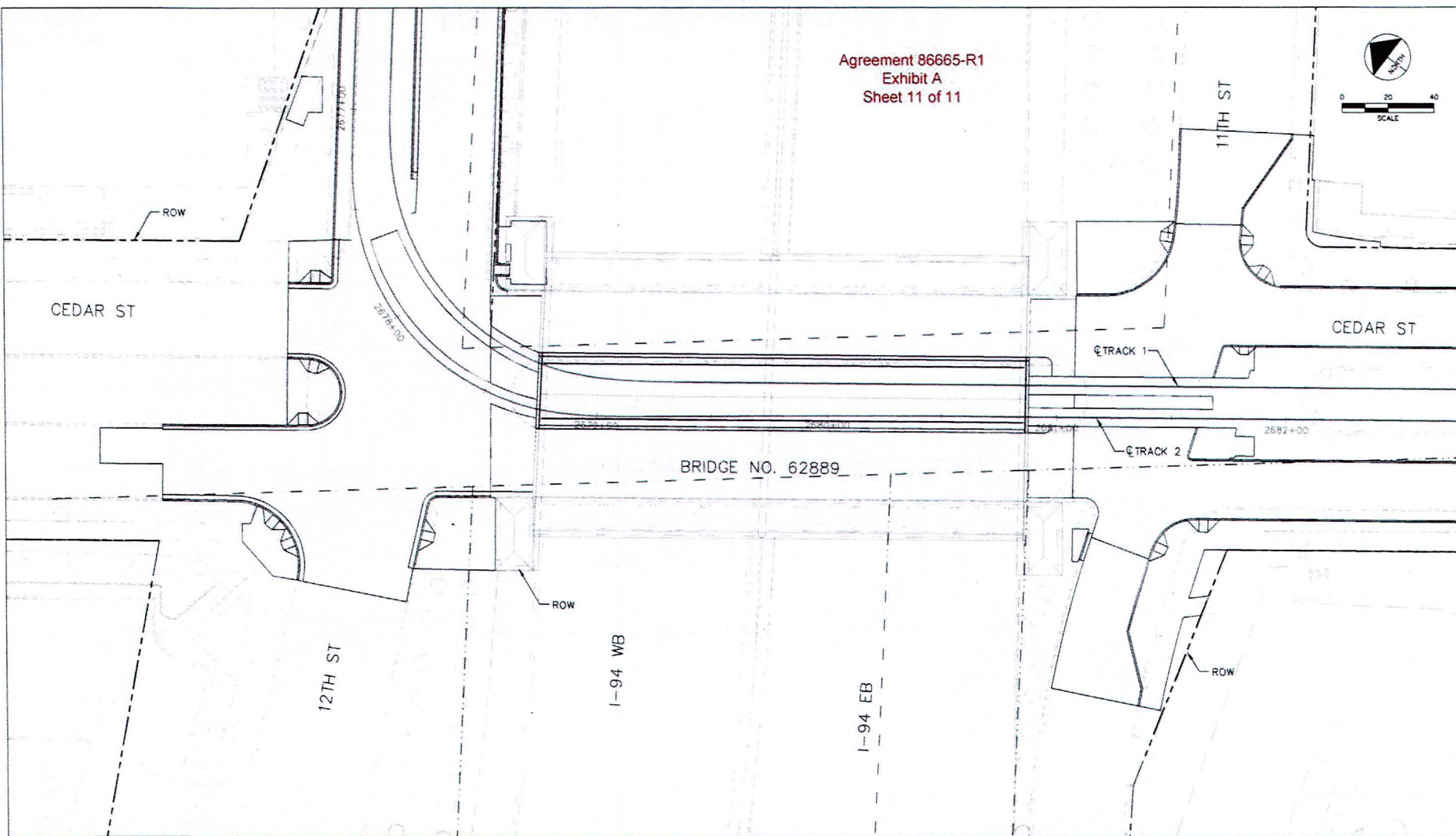
AECOM



Kimley-Horn
and Associates, Inc.



U:\900_CAD\DESIGN\WAK\WAK001 Agreement Exhibit\RT bridge over I-94.dwg December 06, 2010 - 11:4am



Central Corridor
Light Rail Transit



Exhibit A - Sheet 11 of 11

AECOM



Kimley-Horn
and Associates, Inc.



**AGREEMENT FOR MAINTENANCE
OF EXISTING TUNNELS AND CONSTRUCTION
AND MAINTENANCE OF NEW TUNNEL
UNDER RAMSEY COUNTY STATE AID HIGHWAY 34
(UNIVERSITY AVENUE)
IN THE CAPITOL AREA**

THIS AGREEMENT is made and entered into by and between the State of Minnesota, acting by and through the Department of Administration, hereinafter "State", Ramsey County, a public corporation and political subdivision of the State of Minnesota, acting through the Ramsey County Department of Public Works, hereinafter "County", and the Metropolitan Council, a public corporation and political subdivision of the State of Minnesota, hereinafter "Met Council" (collectively, the "Parties").

Witnesseth:

WHEREAS, the County has jurisdiction over Ramsey County State Aid Highway 34, which is known as University Avenue; and

WHEREAS, the State owns real estate situated in the City of St. Paul, County of Ramsey, which abuts the north and south right of way lines of University Avenue, consisting of office buildings, parking facilities, and grounds located in the Capitol Area; and

WHEREAS, the State owns and utilizes two existing tunnels beneath University Avenue, located between the Admin Ramp and the Minnesota State Capitol Building and between the Ford Building and Leif Erikson Park (hereinafter "Existing Tunnels") as shown on **Exhibit A**, attached hereto and made a part hereof thereby; and

WHEREAS, subject to availability of funding for this purpose, the State desires to design, construct, utilize and maintain a pedestrian and materials handling delivery tunnel beneath University Avenue to connect the State Capitol Building on the south side of University Avenue with a parking lot on the north side of University Avenue (hereinafter "New Tunnel"), as shown on **Exhibit B**, attached hereto and made a part hereof thereby (collectively Existing Tunnels and New Tunnel hereinafter "University Avenue Tunnels"); and

WHEREAS, the Met Council is responsible for design, construction and operation of the Central Corridor Light Rail Transit (hereinafter "CCLRT") Project, which will be located in part on University Avenue; and

WHEREAS, University Avenue will be, in part, reconstructed by the Met Council as part of the CCLRT Project; and

WHEREAS, in letter agreement dated October 11, 2010, the Met Council has agreed with the State to design and construct structural supports to protect the Existing Tunnels beneath University Avenue as part of the CCLRT Project; and

WHEREAS, in letter agreement dated October 11, 2010, the State and Met Council have agreed to coordinate the design and construction of the New Tunnel with the design and construction of the CCLRT Project; and

WHEREAS, in letter agreement dated October, 11 2010, the State has agreed to issue a notice to proceed to its contractor to undertake construction of the New Tunnel on or before June 2012, subject to the availability of funds; and

WHEREAS, the Parties desire to work cooperatively to facilitate the construction of the New Tunnel, minimize the impacts of the construction and maintenance activities for the New Tunnel, and minimize the impacts of maintenance activities for the Existing Tunnels, CCLRT and University Avenue as set forth herein.

NOW, THEREFORE, IT IS AGREED AS FOLLOWS:

1. The foregoing recitals are hereby incorporated by reference.

2. **Construction of New Tunnel.**

A. The State shall submit design plans and specifications for construction of the New Tunnel to the County and Met Council for approval at each of the following stages: Schematic Design, Design Development and Final Design. The County and Met Council shall have approval authority over the design at each of the three phases. However, the Met Council's approval authority over the design is limited to impacts that the New Tunnel might have on CCLRT operations or the maintenance and repair of the CCLRT facilities. The State shall not undertake construction of the New Tunnel until the County and the Met Council have reviewed and approved the design plans and specifications at each design phase. The State's submission shall be deemed approved by the County and Met Council unless disapproved in writing by the County or Met Council within twenty (20) days after its receipt. If the State's submission is rejected, any rejection is to be made for a reason and the reason(s) shall be stated in writing. If either the County or the Met Council rejects a submission in whole or in part, the State may submit a revised submission. The provisions herein regarding approval, rejection and resubmission shall continue to apply until the State's submission is approved by both the County and the Met Council. Both the County and Met Council shall act reasonably with respect to its obligations under this Section. Elements of the design that have been approved in one design phase cannot be disapproved by the County or the Met Council in a later design phase unless the State has made a material modification to a design element that has been previously approved.

B. The State will construct the New Tunnel in accordance with the approved plans and specifications. Notwithstanding the foregoing, during the course of construction, the State may order field changes to the design to meet site conditions, provided that the field change does not negatively impact CCLRT operations or CCLRT facilities or University Avenue operations.

C. The State will obtain all permits necessary to construct the New Tunnel, including permits from the City of St. Paul.

3. Maintenance of University Avenue Tunnels.

A. Upon reasonable notice, the State will grant to the County the right to enter the University Avenue Tunnels, as necessary for inspection, at the discretion of the County Engineer.

B. All costs of maintaining or modifying the University Avenue Tunnels shall be borne by the State, subject to availability for funding for this purpose.

C. Any maintenance of or modifications to the University Avenue Tunnels that unreasonably interfere with traffic on or utilities beneath University Avenue right of way shall be approved by the County prior to commencing. Said approval shall be provided in a timely manner and in the sole discretion of the County Engineer shall not be unreasonably withheld. The County shall act reasonable with respect to its obligations under this section.

D. Any construction, maintenance or repair work conducted by the State or the County that is within twelve (12) feet from the centerline of either set of CCLRT tracks, two feet below the top of the CCLRT rail and above (the "LRT Work Area") must be approved by Met Council prior to the State's commencement of the work. Any construction, maintenance or repair work conducted by the County or the State within the LRT Work Area shall be conducted in accordance with the Met Council's written work permit procedures, as determined and reasonably applied by the Met Council from time to time, the purpose of which is to ensure that there are no safety hazards or service impacts to the Met Council's operations (the "Work Permit Procedures"). A true and complete copy of the Work Permit Procedures in effect on the effective date is attached hereto as **Exhibit C**. Met Council shall promptly deliver to the County and the State notice of any amendment or other modification to the Work Permit Procedures, along with a true and complete copy of the amendment or other modification. Met Council shall not unreasonably withhold, condition or delay the issuance of permits required under the Work Permit Procedures; and the Met Council's denial of any work permit must be based on specific and identifiable safety and operational concerns. The State and/or County shall be required to attend an on-track right-of-way safety training program (as referred to in the Work Permit Procedures) before commencing work. Met Council agrees that said training program shall be offered and available within five (5) business days after a permit request without charge.

Notwithstanding anything to the contrary, in no event shall the State or County be required to obtain or comply with the Work Permit Procedures for work done outside of the LRT Work Area or for routine maintenance of improvements, including, without limitation, care and maintenance of landscaping and snowplowing, if the persons performing the maintenance work have gone through the on-track right-of-way safety training program for that particular activity. The County and Met Council intend to enter into a separate operations and maintenance agreement addressing, in more specificity, maintenance issues along University Avenue.

Structural modifications to the University Avenue Tunnels must be approved in accordance with Section 2 A.

E. Non-standard maintenance of or material modifications to CCLRT facilities or traffic on or utilities beneath University Avenue that interfere with the University Avenue

Tunnels shall be approved by State, which approval shall not be unreasonably, conditioned, delayed or withheld.

F. Should the State determine excavation of any portion of University Avenue becomes necessary to perform maintenance of the University Avenue Tunnels or to modify said tunnels in any way, all costs of traffic control and restoration of University Avenue to substantially the same condition as existed prior to such maintenance of or modification to the University Avenue Tunnels shall be borne by the State, and the work shall be done in accordance with the Ramsey County Public Works Right of Way Ordinance, 2001-287 and as amended by Ordinance 2010-044, attached hereto as **Exhibit D**.

G. Should the State determine to close any of the University Avenue Tunnels permanently, the method of closure shall be approved by the County. Said approval shall be provided in a timely manner and in the sole discretion of the County Engineer with input from the Met Council.

H. Should the State determine to remove any of the University Avenue Tunnels, all costs of removal, traffic control, and restoration of University Avenue shall be borne by the State and the work shall be done in accordance with the standards of the Ramsey County Public Works Right of Way Ordinance, 2001-287 and as amended by Ordinance 2010-044, attached hereto as **Exhibit D**. Any removal plan must be reviewed and approved by the County and the Met Council consistent with the process outlined in Section 2 A.

I. Should any maintenance of or modifications to the University Avenue Tunnels unreasonably interfere with or damage the CCLRT facilities, the State shall restore, at its cost, the CCLRT facilities to substantially the same condition as existed prior to such maintenance of or modification to the University Avenue Tunnels, as determined by the Met Council.

J. Should any maintenance of or modifications to CCLRT unreasonably interfere with or damage the University Avenue Tunnels, the Met Council shall restore, at its cost, the University Avenue Tunnels to substantially the same condition as existed prior to such maintenance of or modifications to CCLRT as determined by the State.

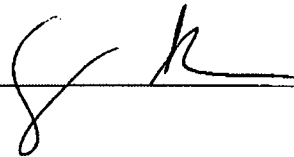
K. Each party shall be responsible for its own acts and the results thereof. The State's liability shall be governed by Minn. Stat. 3.736. The Met Council and Ramsey County's liability shall be governed by Minn. Stat. Chapter 466.

-The remainder of this page has been intentionally left blank -

IN WITNESS THEREOF, the parties have caused this agreement to be executed by their duly authorized officers on the dates set for below.

STATE OF MINNESOTA

In the presence of:

By:  _____

Its: COMMISSIONER, ADMINISTRATION

Date: 6.28.12

By: _____

Its: _____

Date: _____

IN WITNESS THEREOF, the parties have caused this agreement to be executed by their duly authorized officers on the dates set for below.

METROPOLITAN COUNCIL

By: 

Its: RA

Date: 8-22-12

LIST OF EXHIBITS

Exhibit	Description
A	Existing Tunnels
B	New Tunnel
C	Work Permit Procedures
D	Ordinance 2010-044

Exhibit A
Existing Tunnels

Contract No. 101042

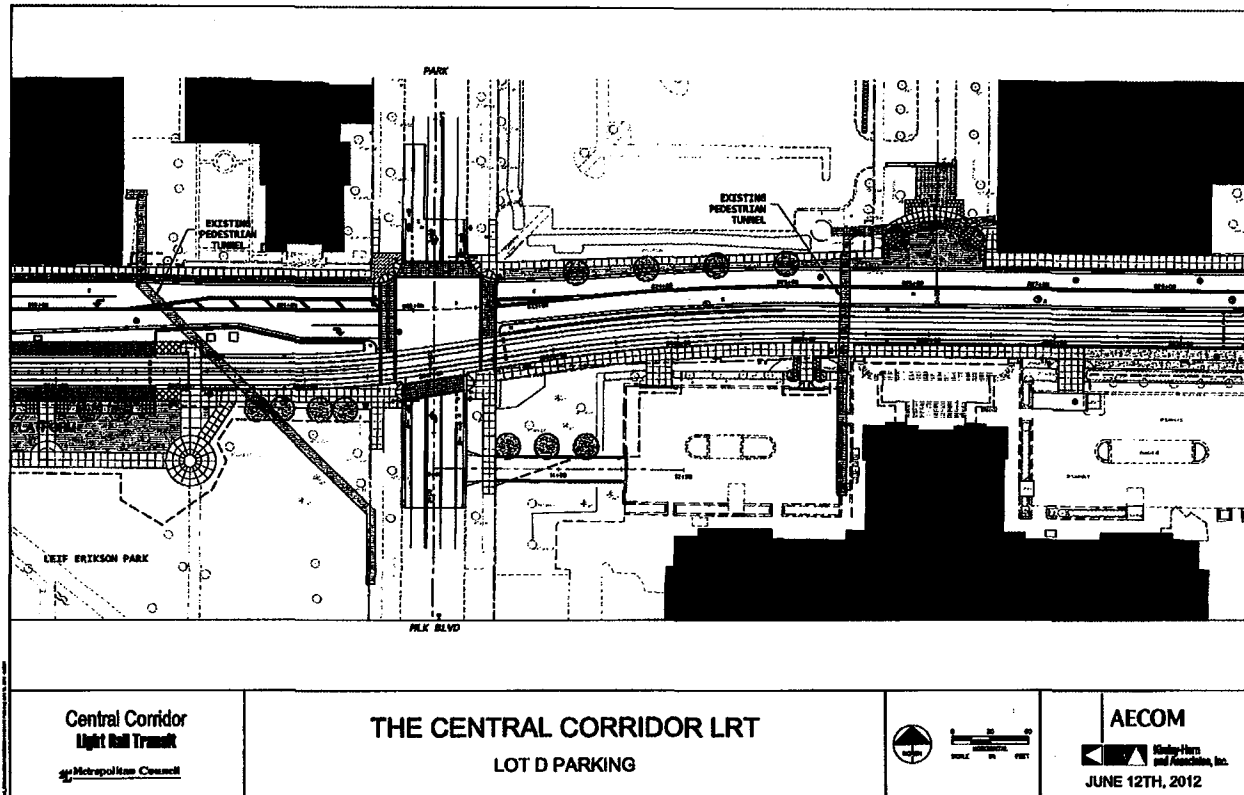


Exhibit A
1 of 1



Light Rail SOP

Standard Operating Procedure: Rail Operations	Publication # 100.12 Reviewed 5-2009	Revision #2 Date: 5-2009	Page 1 of 2
Title: Work Permit Procedure			
Distribution: All Rail Operations, Maintenance, and Rail Facility Employees			
Issued by: Standard Operating Procedures Committee		Approved by: Vince Pellegrin Chief Operations Officer Metro Transit	
Supersedes: Standard Operating Procedures 2007 Edition			

PURPOSE

To obtain authorization to perform work on Metro Transit Light Rail Right-of-Way, Metro Transit Light Rail has a set protocol to ensure the safety of employees, workers, and passengers.

WHEN TO USE IT

This procedure is to be used anytime:

- Scheduled work will occur within 12-feet of centerline of the rails
- Scheduled work will occur within the adjacent roadway travel lane or the berthing lane
- Scheduled work occurs within any structure/premise that can affect train service (e.g. substation, communication signal house, passenger platforms)
- Scheduled work will affect the movement of passengers to or from trains

PROCEDURE AND RESPONSIBILITIES

The Metro Transit Light Rail Right-of-Way Allocation Request form (Work Permit) is to be completed by any Metro Transit employee or outside contractor desiring to do work, as described above, on Metro Transit Light Rail Right-of-Way.

Before work begins, any persons requesting Metro Transit Light Rail Right-of-Way access, must first attend the On-Track Right-of-Way safety training program. After completion of the Training Program the requestor must attend the Right-of-Way Track Allocation meeting and be prepared to discuss the work in full detail. In most instances approval will be given to the requestor at this meeting.

CONTRACTOR MUST

- Produce proof of insurance and the Metro Transit Light Rail Right-of-Way training card or certificate at the Track Allocation Meeting
- Not begin work on the Metro Transit Light Rail Right-of-Way until the request has been approved and a Right-of-Way Permit has been issued
- The Right-of-Way training card must be in the possession of all persons entering Metro Transit Light Rail Right-of-Way

Printed: 7/8/2009 9:47:33 AM © Metropolitan Council 20072009

Exhibit C
Work Permit Procedures

Contract No. 10I042

Publication Number: 100.12	Revision #2 Date:5-2009	Page: 2 of 2
Title: Work Permit Procedure		

— Understand the methods of worker protection

Internal departments must complete the form and attend the meeting one-week in advance of the work being requested.

Before work commences, on a daily basis, the On-Scene-Supervisor/Coordinator must call the Rail Control Center (612-341-5710) for daily activation of the Work Permit and notification on the Metro Transit Light Rail Right-of-Way.

The Metro Transit Light Rail Right-of-Way Track Allocation meetings will be held, unless otherwise specified, every Thursday at 2:00 pm, in the Operations and Maintenance Building (O & M) 3rd Floor, Conference Room. Completed forms should be faxed to 341-5677, Attention: Manager Rail Transportation.

Printed: 7/8/2009 8:47:33 AM © Metropolitan Council 2009

RAMSEY COUNTY RIGHT-OF-WAY ORDINANCE FOR THE MANAGEMENT OF UTILITIES
IN THE PUBLIC RIGHT-OF-WAY

SECTION	PAGE
<u>Sec. 1.01. Findings, Purpose, and Intent</u>	1
<u>Sec. 1.02. Election to Manage the Public Right of Way</u>	1
<u>Sec. 1.03. Definitions</u>	2
<u>Sec. 1.04. Administration</u>	5
<u>Sec. 1.05. Utility Coordination Committee</u>	6
<u>Sec. 1.06. Registration and Right of Way Occupancy</u>	6
<u>Sec. 1.07. Registration Information</u>	6
<u>Sec. 1.08. Reporting Obligations</u>	7
<u>Sec. 1.09. Permit Requirement</u>	8
<u>Sec. 1.10. Permit Applications</u>	9
<u>Sec. 1.11. Issuance of Permit: Conditions</u>	9
<u>Sec. 1.12. Permit Fees</u>	10
<u>Sec. 1.13. Right of Way Patching and Restoration</u>	10
<u>Sec. 1.14. Joint Applications</u>	11
<u>Sec. 1.15. Supplementary Applications</u>	11
<u>Sec. 1.16. Other Obligations</u>	12
<u>Sec. 1.17. Denial of Permit</u>	12
<u>Sec. 1.18. Installation Requirements</u>	12
<u>Sec. 1.19. Inspection</u>	13
<u>Sec. 1.20. Work Done Without a Permit</u>	13
<u>Sec. 1.21. Supplementary Notification</u>	13
<u>Sec. 1.22. Revocation of Permits</u>	14
<u>Sec. 1.23. Mapping Data</u>	15
<u>Sec. 1.24. Location and Relocation of Facilities</u>	16
<u>Sec. 1.25. Pre-excavation Facilities Location</u>	17
<u>Sec. 1.26. Damage to Other Facilities</u>	17
<u>Sec. 1.27. Right of Way Vacation</u>	17
<u>Sec. 1.28. Indemnification and Liability</u>	17
<u>Sec. 1.29. Abandoned or Unusable Facilities</u>	18
<u>Sec. 1.30. Appeal</u>	18
<u>Sec. 1.31. Reservation of Regulatory and Police Powers</u>	18
<u>Sec. 1.32. Severability</u>	18
<u>Sec. 1.33. Penalty for Violation</u>	18

**RAMSEY COUNTY RIGHT-OF-WAY ORDINANCE FOR THE MANAGEMENT OF UTILITIES
IN THE PUBLIC RIGHT-OF-WAY OF ROADS UNDER THE COUNTY'S JURISDICTION**
An ordinance to administer and regulate utilities in the public right-of-way in the public interest,
and to provide for the issuance and regulation of Right of Way permits, pursuant to the powers
granted under Minnesota Statutes sections 237.16 through 237.163, Minnesota Statutes Ch.
375, and the Ramsey County Home Rule Charter.

Right of Way Management Ordinance

Sec. 1.01. Findings, Purpose, and Intent.

To provide for health, safety and welfare of its citizens, and to ensure the integrity of its roads and streets and the appropriate use of the rights of way, the County strives to keep its right of way in a state of good repair and free from unnecessary encumbrances.

Accordingly, the County hereby enacts this new ordinance relating to right of way permits and administration. This ordinance imposes regulation on the placement and maintenance of facilities and equipment currently within its right of way or to be placed therein at some future time. It is intended to complement the regulatory roles of state and federal agencies. Under this ordinance, persons excavating and obstructing the right of way will bear financial responsibility for their work. Finally, this ordinance provides for recovery of out-of-pocket and projected costs from persons using the public right of way.

This ordinance shall be interpreted consistently with 1997 Session Laws, Ch. 123, substantially codified in Minnesota Statutes sections 237.16, 237.162, 237.163, 237.79, 237.81, and 238.086 (the "Act") and the other laws governing applicable rights of the County and users of the right of way. This ordinance shall also be interpreted consistently with Minnesota Rules 7819.0050 to 7819.9950 where possible. To the extent any provision of this ordinance cannot be interpreted consistently with the Minnesota Rules, that interpretation most consistent with the Act and other applicable statutory and case law is intended. This ordinance shall not be interpreted to limit the regulatory and police powers of the County to adopt and enforce general ordinances necessary to protect the health, safety, and welfare of the public.

Sec. 1.02. Election to Manage the Public Right of Way.

Pursuant to the authority granted to the County under state and federal statutory, administrative and common law, the County hereby elects pursuant Minnesota Statutes section 237.163, subd. 2(b), to manage right of way under its jurisdiction.

"Manage the Right of Way," means the authority of the County to do any or all of the following:

1. require registration;
2. require construction performance bonds and insurance coverage;
3. establish installation and construction standards;
4. establish and define location and relocation requirements for equipment and facilities;
5. establish coordination and timing requirements;
6. require right of way users to submit henceforth required by the County project data reasonably necessary to allow the County to develop a right of way mapping system including GIS system information;
7. require right of way users to submit, upon request of the County, existing data on the location of user's facilities occupying the public right of way within the County. The data may be submitted in the form maintained by the user in a reasonable time after receipt of the request based on the amount of data requested;
8. establish right of way permitting requirements for excavation and obstruction;
9. establish removal requirements for abandoned equipment or facilities, if required in

conjunction with other right of way repair, excavation or construction; and
10. Impose reasonable penalties for unreasonable delays in construction.

Sec. 1.03. Definitions.

The following definitions apply in this ordinance. References hereafter to "sections" are unless otherwise specified references to sections in this ordinance. Defined terms remain defined terms whether or not capitalized.

"Abandoned Facility" means a facility no longer in service or physically disconnected from a portion of the operating facility, or from any other facility, that is in use or still carries service. A facility is not abandoned unless declared so by the right of way user.

"Applicant" means any Person requesting permission to install any utility or to excavate or obstruct a right of way.

"Commission" means the Minnesota Public Utilities Commission.

"Congested Right of Way" means a crowded condition in the subsurface of the public right of way that occurs when the maximum lateral spacing between existing underground facilities does not allow for construction of new underground facilities without using hand digging to expose the existing lateral facilities in conformance with Minnesota Statutes section 216D.04, subd. 3, over a continuous length in excess of 500 feet.

"Construction Performance Bond" means any of the following forms of security provided at permittee's option:

- A. Individual project bond;
- B. Cash deposit;
- C. Security of a form listed or approved under Minnesota Statutes section 15.73, subd. 3;
- D. Letter of Credit, in form acceptable to the County;
- E. Self-insurance in form acceptable to the County;
- F. Blanket bond for projects within the County or construction bond for a specified time and in a form acceptable to the County.

"County" means the County of Ramsey, Minnesota. For purposes of section 1.28 Indemnification and Liability, County means its elected and appointed officials, officers, employees and agents.

"Degradation" means a decrease in the useful life of the right of way caused by excavation in or disturbance of the right of way, resulting in the need to reconstruct such right of way earlier than would be required if the excavation did not occur.

"Degradation Cost" subject to Minnesota Rules 7819.1100 means the cost to achieve a level of restoration as determined by the County at the time the permit is issued, not to exceed the maximum restoration shown in plates 1 to 13, set forth in Minnesota Rules 7819.9900 to 7819.9950.

"Degradation Fee" means the estimated fee established at the time of permitting by the County to recover costs associated with the decrease in the useful life of the right of way caused by the excavation, and which equals the Degradation Costs.

"Delay Penalty" is the penalty imposed as a result of unreasonable delays in right of way excavation, obstruction, patching, or restoration as established by permit.

"Department" means the Ramsey County Department of Public Works.

"Department Inspector" means any person authorized by the Director to carry out inspections related to the provisions of this ordinance.

"Director" means the County Engineer or Director of the Department of Public Works, as appropriate, or designee.

"Emergency" means a condition that (1) poses danger to life or health, or of a significant loss of property; or (2) requires immediate repair or replacement of facilities in order to restore service to a customer.

"Equipment" means any tangible asset used to install, repair, or maintain facilities in any right of way.

"Erosion controls" means measures taken to inhibit soils from eroding from a site and may include soil stabilization practices, limited grading, mulch, temporary erosion protection or permanent cover, and construction phasing.

"Excavate" means to dig into or in any way remove or physically disturb or penetrate any part of a public right of way.

"Excavation Permit" means the permit which, pursuant to this Chapter, must be obtained before a Person may excavate in a Right-of-Way. An Excavation Permit allows the holder to Excavate that part of the Right-of-Way described in such permit.

"Excavation Permit Fee" means money paid to the County by an applicant to cover the costs as provided in section 1.12.

"Facility or Facilities" means any tangible asset in the right of way required to provide utility service.

"Five-year project plan" shows projects adopted by the County for construction within the next five years.

"High Density Corridor" means a designated portion of the public right of way within which telecommunications right of way users having multiple and competing facilities may be required to build and install facilities in a common conduit system or other common structure.

"Hole" means an excavation in the pavement, with the excavation having a length less than the width of the pavement. **"Local Representative"** means a local person or persons, or designee of such person or persons, authorized by a registrant to accept legal notice

or service and to accept communications and to make decisions for that registrant regarding all matters within the scope of this ordinance.

"Management Costs" means the actual costs the County incurs in managing its public rights of way, including such costs, if incurred, as those associated with registering applicants; issuing, processing, and verifying right of way permit applications; inspecting job sites and restoration projects; maintaining, supporting, protecting, or moving user equipment and facilities during public right of way work; determining the adequacy of right of way restoration; restoring work inadequately performed after providing notice and the opportunity to correct the work; and revoking right of way permits. Management costs do not include payment by a telecommunications right of way user for the use of the right of way, the fees and cost of litigation relating to the interpretation of 1997 Minnesota Laws, Ch. 123; Minnesota Statutes sections 237.162 or 237.163 or any ordinance enacted under those sections, or the County fees and costs related to appeals taken pursuant to section 1.31 of this ordinance.

"Obstruct" means to place any tangible object in a public right of way so as to hinder free and open passage over that or any part of the right of way.

"Obstruction Permit" means the permit which, pursuant to this Chapter, must be obtained before a Person may Obstruct any part of a Right-of-Way, allowing the holder to hinder free and open passage over the specified portion of that Right-of-Way by placing any tangible object therein for the duration specified therein.

"Obstruction Permit Fee" means money paid to the County by a Permittee to cover the costs as provided in section 1.12 and required to obtain the permit.

"Patch or Patching" means a method of pavement replacement that is temporary in nature. A patch consists of (1) the compaction of the subbase and aggregate base, and (2) the replacement, in kind, of the existing pavement for a minimum of two feet beyond the edges of the excavation in all directions. A patch is considered full restoration only when the pavement is included in a project programmed by the County, or as approved by the Director.

"Pavement" means any type of improved surface that is within the public right of way and that is paved or otherwise constructed with bituminous, concrete, aggregate, or gravel.

"Permit" has the meaning given "right of way permit" in Minnesota Statutes section 237.162.

"Permittee" means any person to whom a permit to install a utility or to excavate or obstruct a right of way has been granted by the County under this ordinance.

Exhibit D
Right of Way Ordinance

Contract No. 101042

"Person" means an individual or entity subject to the laws and rules of this state, however organized, whether public or private, whether domestic or foreign, whether for profit or nonprofit, and whether natural, corporate, or political.

"Probation" means the status of a person that has not complied with the conditions of this ordinance.

"Probationary Period" means one year from the date that a person has been notified in writing that they have been put on probation.

"Public Right of Way" means the area on, below, or above a public roadway, highway, street, cartway, bicycle lane and public sidewalk in which the County has an interest, including other dedicated rights of way for travel purposes and utility easements of the County. A public right of way does not include the airwaves above a right of way with regard to cellular or other nonwire telecommunications or broadcast service.

"Registrant" means any person who (1) has or seeks to have its equipment or facilities located in any right of way, or (2) in any way occupies or uses, or seeks to occupy or use, the right of way or place its facilities or equipment in the right of way.

"Restoration Cost" means the amount of money paid to the County by a permittee to achieve the level of restoration according to Minnesota Rules 7819.9900 to 7819.9950.

"Restore or Restoration" means the process by which an excavated public right of way and surrounding area including pavement foundation and turf/vegetation are returned to the same condition (and life expectancy) that existed before excavation.

"Right of Way Permit" means a permit to perform work in a public right-of-way, whether to obstruct or excavate the right of way.

"Right of Way User" means (1) a telecommunications right of way user as defined by Minnesota Statutes section 237.162, subd. 4; or (2) a person owning or controlling a facility in the right of way that is used or intended to be used for providing utility service, and who has a right under law, franchise, or ordinance to use the public right of way; or (3) hazardous liquid or natural gas pipeline facilities.

"Sediment controls" means measures put in place to capture or contain sediment to prevent it from leaving the site. Sediment controls include silt fences, sediment traps, earth dikes, drainage swales, check dams, storm drain inlet protection, and temporary or permanent sediment basins.

"Service" or "Utility Service" includes (1) those services provided by a public utility as defined in Minnesota Statutes section 216B.02, subds. 4 and 6; (2) services of a telecommunications right of way user, including transporting of voice or data information; (3) services of a cable communications system as defined in Minnesota Statutes Ch. 238; (4) natural gas or electric energy or telecommunications services provided by the city; (5) services provided by a cooperative electric association organized under Minnesota Statutes Ch. 308A; and (6) water, sewer, steam, cooling or heating services.

"Supplementary Application" means an application made to excavate or obstruct more of

the right of way than allowed in, or to extend, a permit that had already been issued.

"SWPPP" means Stormwater Pollution Prevention Plan to include the erosion and sediment controls to be implemented to reduce erosion, sediment and pollutants in stormwater discharge.

"Telecommunication Rights-of-Way User" means a person owning or controlling a facility in the right of way, or seeking to own or control a facility in the right of way that is used or is intended to be used for transporting telecommunication or other voice or data information. For purposes of this ordinance, a cable communication system defined and regulated under Minnesota Statutes Ch. 238, and telecommunication activities related to providing natural gas or electric energy services whether provided by a public utility as defined in Minnesota Statutes section 216B.02, a municipality, a municipal gas or power agency organized under Minnesota Statutes Chapters 453 and 453A, or a cooperative electric association organized under Minnesota Statutes Ch. 308A, are not telecommunications right of way users.

"Temporary Surface" means the compaction of subbase and aggregate base and replacement, in kind, of existing pavement only to the edges of the excavation. It is temporary in nature except when the replacement is of pavement included in the County's two-year project plan, in which case it is considered full restoration.

"Trench" means an excavation in the pavement, with the excavation having a length equal to or greater than the width of the pavement. "Two Year Project Plan" shows projects adopted by the County for construction within the next two years.

Sec. 1.04. Administration.

The Director is the principal County official responsible for the administration of the rights of way, right of way permits, and the ordinances related thereto. The Director may delegate any or all of the duties hereunder.

Sec. 1.05. Utility Coordination Committee.

The County may create an advisory utility coordination committee. Participation on the committee is voluntary. It will be composed of any registrants that wish to assist the County in obtaining information and by making recommendations regarding use of the right of way, and to improve the process of performing construction work therein. The Director may determine the size of such committee and shall appoint members from a list of registrants that have expressed a desire to assist the County.

Sec. 1.06. Registration and Right of Way Occupancy.

Subd. 1. Registration. Each person who occupies, uses, or seeks to occupy or use the right of way or place any equipment or facilities in the right of way, including persons with installation and maintenance responsibilities by lease, sublease or assignment, must register with the County. Registration will consist of providing application information and paying a

registration fee. Registration fees shall be set by the County Board.

Subd. 2. Registration Prior to Work. No person may construct, install, repair, remove, relocate, or perform any other work on, or use any facilities or any part thereof in any right of way without first being registered with the County.

Subd. 3. Exceptions. Nothing herein shall be construed to repeal or amend the rights of persons to plant or maintain boulevard plantings or gardens in the area of the right of way between their property and the street curb. Persons planting or maintaining boulevard plantings or gardens shall not be deemed to use or occupy the right of way, and shall not be required to obtain any permits or satisfy any other requirements for planting or maintaining such boulevard plantings or gardens under this ordinance. However, plantings must not violate applicable clear zone requirements nor obstruct visibility on the roadway, and the County may remove such plantings, if necessary for maintenance, safety, or construction purposes, with no compensation due the property owner.

Irrigation systems shall be allowed in the right of way without a permit and installers shall be exempt from registration. There shall be no compensation for removal necessary for any permitted utility project. No compensation shall be paid for any irrigation system if removal is required or if it is damaged by any County or municipal activity or by any permitted utility activity.

Resident owned sewer and water service lines to a city main and resident owned drain tile lines shall not be required to register, unless requested by the County, but shall be required to obtain permits for excavation and obstruction.

Nothing herein relieves a person from complying with the provisions of the Minnesota Statutes Ch. 216D ("One Call Excavation Notice System").

Sec. 1.07. Registration Information.

Subd. 1. Information Required. The information provided to the Director at the time of registration shall include, and be on the form approved by the County or this ordinance, but not be limited to:

- (a) Each registrant's name, Gopher One-Call registration certificate number, address and e-mail address if applicable, and telephone and facsimile numbers.
- (b) The name, address and e-mail address, if applicable, and telephone and facsimile numbers of a local representative. The local representative or designee shall be available at all times. Current information regarding how to contact the local representative in an emergency shall be provided at the time of registration.
- (c) A certificate of insurance or self-insurance:
 - (1) Verifying that an insurance policy has been issued to the registrant by an insurance company licensed or otherwise authorized to do business in the State of Minnesota, or a form of self insurance acceptable to the Director;
 - (2) Verifying that the registrant is insured against claims for bodily and personal injury, including death, as well as claims for property damage arising out of the

- (i) use and occupancy of the right of way by the registrant, its officers, agents, employees and permittees, and
- (ii) placement and use of facilities in the right of way by the registrant, its officers, agents, employees and permittees, including, but not limited to, protection against liability arising from completed operations, damage of underground facilities and collapse of property;

(3) Naming the County as an additional insured as to whom the coverage required herein are in force and applicable and for whom defense will be provided as to all such coverage;

(4) Requiring that the Director be notified thirty (30) days in advance of cancellation of the policy or material modification of a coverage term;

(5) Indicating comprehensive liability coverage, automobile liability coverage, workers compensation and umbrella coverage established by the Director in amounts sufficient to protect the County and the public and to carry out the purposes and policies of this Ordinance.

(d) The County may require a copy of the actual insurance policies.

(e) If the person is a corporation, a copy of the certificate required to be filed under Minnesota Statutes section 302A.105 as recorded and certified to by the Secretary of State.

(f) A copy of the person's order granting a certificate of authority from the Minnesota Public Utilities Commission or other applicable state or federal agency, where the person is lawfully required to have such certificate from said Commission or other state or federal agency.

Subd. 2. Notice of Changes. The registrant shall keep all of the information listed above current at all times by providing to the Director information as to changes within fifteen (15) days following the date on which the registrant has knowledge of any change.

Sec. 1.08. Reporting Obligations.

Subd. 1. Operations. Each registrant that provides utility service shall, at the time of registration and by December 1 of each year, file a construction and major maintenance plan for underground facilities with the Director. Such plan shall be submitted using a format designated by the Director and shall contain the information determined by the Director to be necessary to facilitate the coordination and reduction in the frequency of excavations and obstructions of rights of way. The County shall maintain in the file a copy of the County's construction plan for construction projects. The utility facility plans shall be kept up-to-date by the registrant. The plans shall be on file and available for public inspection.

The plan shall include, but not be limited to, the following information:

(a) The locations and the estimated beginning and ending dates of all projects to be commenced during the next calendar year (in this section, a "Next-Year Project");

(b) How the registrant will accommodate the County plan;

(c) To the extent known, the tentative locations and estimated beginning and ending dates for all projects contemplated for the five years following the next calendar year (in this section, a "Five-Year Project"). It is the registrant's responsibility to keep informed on available plans.

The term "project" in this section shall include both Next-Year Projects and Five-year Projects but does not include individual service line hookups and minor maintenance unless they are part of an area wide program.

Subd. 2. Additional Next-year Projects. Notwithstanding the foregoing, the Director will not deny an application for a right of way permit for failure to include a project in a plan submitted to the County if the registrant has used commercially reasonable efforts to anticipate and plan for the project.

Sec. 1.09. Permit Requirement.

Subd. 1. Permit Required. Except as otherwise provided in this Code, no person may obstruct, or excavate any right of way without first registering and having obtained the appropriate right of way Excavation or Obstruction permit from the County to do so.

(a) Excavation Permit. An Excavation Permit is required by a Registrant to Excavate that part of the Right of Way described in such permit and to hinder free and open passage over the specified portion of the Right of Way by placing Facilities described therein, to the extent and for the duration specified therein.

(b) Obstruction Permit. An Obstruction permit is required by a Registrant to hinder free and open passage over the specified portion of Right of Way by placing Equipment described therein on the Right of Way, to the extent and for the duration specified therein. An Obstruction Permit is not required if a person already possesses a valid Excavation Permit for the same project.

Subd. 2. Permit Extensions. No person may excavate or obstruct the right of way beyond the date or dates specified in the permit unless such person (i) makes a supplementary application for another right of way permit before the expiration of the initial permit, and (ii) a new permit or permit extension is granted.

Subd. 3. Delay Penalty. In accordance with Minnesota Rules 7819.1000 subp. 3 notwithstanding subd. 2 of this section, the County shall establish and may impose a delay penalty for unreasonable delays in right of way excavation, obstruction, patching, or restoration. The delay penalty shall be established from time to time by County Board resolution and shall include any delays or damages charged by the County's construction contractor and may include liquidated damages consistent with the contract. A delay penalty will not be imposed if the delay in project completion is due to circumstances beyond the control of the applicant including, without limitation, inclement weather, acts of God, or civil strife.

Subd. 4. Permit Display. Permits issued under this Ordinance shall be conspicuously displayed or otherwise available at all times at the indicated work site and shall be available for inspection by the County.

Sec. 1.10. Permit Applications.

Application for a permit is made to the Director. Right of way permit applications shall contain, and will be considered complete only upon compliance with the requirements of, the following provisions:

- (a) Registration with the County pursuant to this ordinance;
- (b) Submission of a completed permit application form, including all required attachments, and scaled drawings showing the location and area of the proposed project and the location of all known existing and proposed facilities.
- (c) Submission of SWPPP for all Excavation Permit applications.
- (d) Payment of money due the County for:
 - (1) permit fees, estimated restoration costs and other management costs;
 - (2) prior obstructions or excavations;
 - (3) any undisputed loss, damage, or expense suffered by the County because of applicant's prior excavations or obstructions of the right of way or any emergency actions taken by the County;
- (e) Payment of disputed amounts due the County for prior disputed fees, penalties or other charges by posting security or depositing in an escrow account an amount equal to at least 110% of the amount owing.
- (f) Posting an additional or larger construction performance bond for additional facilities when applicant requests an excavation or obstruction permit to install additional facilities and the County deems the existing construction performance bond inadequate under applicable standards.

Sec. 1.11. Issuance of Permit; Conditions.

Subd. 1. Permit Issuance. If the applicant has satisfied the requirements of this ordinance, the County shall issue a permit.

Subd. 2. Conditions. The Director may impose reasonable conditions upon the issuance of the permit and the performance of the applicant thereunder to protect the health, safety and welfare or, when necessary, to protect the right of way and its current and future use.

Sec. 1.12. Permit Fees.

Subd. 1. Excavation Permit Fee. The County shall establish an Excavation right of way permit fee schedule specifying fees that are adequate to recover the following costs. Permit fees shall be established by the County Board and may be amended at any public meeting.

- (a) the County Management Costs;
- (b) Degradation Costs, if applicable;

(c) Mapping Costs;

Subd. 2. Payment of Permit Fees. No right of way permit shall be issued without payment of any and all applicable permit fees unless the County allows applicants to pay such fees within thirty (30) days of billing.

Subd. 3. Non refundable. Permit fees that were paid for a permit that the Director has revoked for a breach as stated in section 1.23 are not refundable. Permit fees paid for work that is subsequently cancelled are not refundable.

Sec. 1.13. Right of Way Patching and Restoration.

Subd. 1. Timing. The work to be done under the excavation permit, and the patching and restoration of the right of way as required herein, must be completed within the dates specified in the permit, increased by as many days as work could not be done because of extraordinary circumstances beyond the control of the permittee or when work was prohibited as unseasonable or unreasonable under section 1.17

Subd. 2. Temporary Surfacing, Patch and Restoration. Permittee shall patch its own work.

(a) County Restoration. If the County restores any part of the right of way, permittee shall pay the costs thereof within thirty (30) days of billing. If the County restores only the surface of the right-of-way and during the twenty-four (24) months following such restoration, the pavement settles due to improper backfilling, the permittee shall pay to the County, within thirty (30) days of billing, all costs related to restoring the right of way or associated with having to correct the defective work, which may include removal and replacement of any or all work done by the permittee, provided, however, that the County will first give the permittee notice of the pavement defect and reasonable opportunity to correct the defect. These costs shall include administrative overhead, mobilization, material, labor, and equipment.

(b) Permittee Restoration. If the permittee restores the right of way itself, it shall, at the time of application for a permit, post a Construction Performance Bond in an amount determined by the Director to be sufficient to cover the cost of restoration. If, within twenty-four (24) months after completion of the restoration of the right of way, the Director determines that the right of way has been properly restored, the surety on the Construction Performance Bond shall be released.

(c) Degradation Fee and Patching in Lieu of Restoration to PUC Standards. In lieu of right of way restoration, a right of way user may elect to pay a degradation fee. However, the right of way user shall remain responsible for patching and the degradation fee shall not include the cost to accomplish these responsibilities.

Subd. 3. Standards. The permittee shall perform temporary surfacing, patching and restoration including backfill, compaction, and landscaping according to the standards and with the materials specified by the Director. The Director shall have the authority to prescribe the manner and extent of the restoration, and may do so in written procedures of general application or on a case-by-case basis. The Director in exercising this authority shall comply with PUC standards for right of way restoration and require conformance to MN/DOT standard specifications.

Subd. 4. Guarantees. The permittee guarantees its work and shall maintain it for twenty-four (24) months following its completion. During this 24-month period it shall, upon notification from the Director, correct all restoration work to the extent necessary, using the method required by the Director. Said work shall be completed within five (5) business days of the receipt of the notice from the Director, not including days during which work cannot be done because of circumstances constituting force majeure or days when work is prohibited as unseasonable or unreasonable under section 1.17.

Subd. 4(a). Duty to Correct Defects. The permittee shall correct defects in patching, or restoration performed by permittee or its agents. Permittee, upon notification from the County, shall correct all restoration work to the extent necessary, using the method required by the County. Said work shall be completed within five (5) business days of the receipt of the notice from the County, not including days during which work cannot be done because of circumstances constituting force majeure or days when work is prohibited as unseasonal or unreasonable under section 1.17.

Subd. 5. Failure to Restore. If the Permittee fails to restore the right of way in the manner and to the condition required by the Director, or fails to satisfactorily and timely complete all restoration required by the Director, the County, at its option, may do or sub-contract such work. In that event the permittee shall pay to the County, within thirty (30) days of billing, the cost of restoring the right of way. If permittee fails to pay as required, the County may exercise its rights under the Construction Performance Bond.

Sec. 1.14 Storm Water Pollution Prevention Plan (SWPPP).

Subd. 1. Site Plan. Include a site plan for the project area identifying the erosion controls and sediment controls to be used and their location,

Subd. 2. Sediment Controls. The permittee shall implement and maintain sediment controls.

- (a) **Timing.** Perimeter sediment controls shall be installed prior to beginning work.
- (b) **Installation.** Sediment controls shall be installed to applicable industry standards.
- (c) **Maintenance and Replacement.** Sediment controls shall be maintained. The permittee shall inspect sediment controls weekly and within 24 hours of a rain event exceeding 0.5 inch. Sediment controls shall be repaired and/or replaced within 24 hours of discovery.
- (d) **Removal.** Perimeter sediment controls shall not be removed until 70% permanent vegetative cover has been established.
- (e) **Tracking of sediment off the site shall be minimized.** Tracked sediment shall be removed from the road surface on a daily basis to the satisfaction of the County.

Subd. 3. Erosion Controls. The permittee shall implement erosion controls.

- (a) Open soil areas shall be minimized in the phasing of construction activities.
- (b) Storm water drainage originating off-site shall be directed away from the work area.

- (c) Disturbed soil areas will be seeded and mulched or blanketed, or sod will be placed, immediately upon final grading.

Subd. 4. Failure to Implement Erosion and Sediment Controls. If the Permittee fails to implement or maintain required erosion and sediment controls, the County, at its option, may do or sub-contract such work. In that event, the permittee shall pay to the County, within thirty (30) days of billing, the cost of the work. If permittee fails to pay as required, the County may exercise its rights under the Construction Performance Bond.

Subd. 5. Dewatering. The permittee shall not discharge off the site sediment during dewatering activities, including pump discharges and trench/ditch cuts for drainage,

- (a) Temporary sediment basins or other practices shall be used to ensure sediment-laden water is not discharged downstream.
- (b) Discharge points shall be protected from erosion through the use of rock-riprap, sand bags, plastic sheeting or other accepted energy dissipation measures.

Subd. 6. Site Waste Controls. The permittee shall control waste that may negatively impact water quality.

- (a) Solid wastes including asphalt, millings, paper and other wastes must be disposed of properly.
- (b) Oil, gasoline and any hazardous substance must be stored properly to prevent spills or leaks.
- (c) All solid or liquid wastes from concrete washout activity must be contained in a leak-proof containment structure or impermeable liner.

Sec. 1.15. Joint Applications.

Subd. 1. Joint Application. Registrants may jointly apply for permits to excavate or obstruct the right of way at the same place and time.

Subd. 2. Shared Fees. Registrants who apply for permits for the same obstruction or excavation may share in the payment of the permit fee. Registrants must agree among themselves as to the portion each will pay and indicate the same on their applications.

Subd. 3. With County Construction Projects. Registrants who join in a scheduled utility installation or obstruction or excavation coordinated with a County construction project by the Director, whether or not it is a joint application by two or more registrants or a single application, are not required to pay the obstruction and degradation portions of the permit fee, but a permit is still required.

Sec. 1.16. Supplementary Applications.

Subd. 1. Limitation on Area. A right of way permit is valid only for the area of the right of way

specified in the permit. No permittee may do any work outside the area specified in the permit, except as provided herein. Any permittee which determines that an area greater than that specified in the permit must be obstructed or excavated must, before working in that greater area, (1) make application for a permit extension and pay any additional fees required thereby, and (2) be granted a new permit or permit extension.

Subd. 2. Limitation on dates. A right of way permit is valid only for the dates specified in the permit. No permittee may begin its work before the permit start date or, except as provided herein, continue working after the end date. If a permittee does not finish the work by the permit end date, it must apply for a new permit for the additional time it needs, and receive the new permit or an extension of the old permit before working after the end date of the previous permit. This supplementary application must be done before the permit end date. Permits for non-emergency work shall be submitted at least three business days prior to the planned start of work.

Sec. 1.17. Other Obligations.

Subd. 1. Compliance with Other Laws. The applicant must notify and obtain a permit from any township or city through which it passes if said township or city so requires. Obtaining a right of way permit does not relieve permittee of its duty to obtain all other necessary permits, licenses, and authority and to pay all fees required by the County or other applicable rule, law or regulation. Permittee shall comply with other local codes and with road load restrictions. A permittee shall comply with all requirements of local, state and federal laws, including Minnesota Statutes Ch. 216D ("One Call Excavation Notice System"). A permittee shall perform all work in conformance with all applicable codes and established rules and regulations, and is responsible for all work done in the right of way pursuant to its permit, regardless of who does the work.

Subd. 2. Prohibited Work. Except in an emergency, and with the approval of the County, no right of way obstruction or excavation may be done when seasonally prohibited or when conditions are unreasonable for such work.

Subd. 3. Interference with Right of Way. A permittee shall not so obstruct a right of way that the natural free and clear passage of water through the gutters, culverts, ditches, tiles or other waterways shall be interfered with. Private vehicles of those doing work in the right of way may not be parked within or next to a permit area, unless parked in conformance with County or applicable township or city parking regulations. The loading or unloading of trucks must be done solely within the defined permit area unless specifically authorized by the permit.

Traffic control shall conform to the Minnesota Manual on Uniform Traffic Control Devices, including the Temporary Traffic Control Zones Field Manual and any directions of the County Engineer.

Sec. 1.18. Denial of Permit.

The County may deny a permit for failure to meet the requirements and conditions of this ordinance or if the County determines that the denial is necessary to protect the public health, safety, and welfare or when necessary to protect the right of way and its current and future use.

The County may deny a permit if the applicant has failed to comply with previous permit conditions. The County may withhold issuance of a permit until conditions of previous permit(s) are complied with.

Sec. 1.19. Installation Requirements.

The excavation, backfilling, patching and restoration, and all other work performed in the right of way shall be done in conformance with Minnesota Rules 7819.1100 and 7819.5000 and shall conform to MN/DOT standard specifications and other applicable local requirements, in so far as they are not inconsistent with Minnesota Statutes sections 237.162 and 237.163.

Sec. 1.20. Inspection.

Subd. 1. Notice of Completion. When the work under any permit hereunder is completed, the permittee shall furnish a Completion Certificate in accordance with Minnesota Rules 7819.1300.

Subd. 2. Site Inspection. Permittee shall make the work-site available to the County and to all others as authorized by law for inspection at all reasonable times during the execution of and upon completion of the work.

Subd 3. Authority of County.

- (a) At the time of inspection the Director may order the immediate cessation and correction of any work which poses a serious threat to the life, health, safety or well being of the public.
- (b) The Director may issue an order to the permittee to correct any work which does not conform to the terms of the permit or other applicable standards, rules, laws, conditions, or codes, so long as the nonconformance constitutes a "substantial breach" as set forth in Minnesota Statutes section 237.163, subd. 4(c)(1)-(5). The order shall state that failure to correct the violation will be cause for revocation of the permit. Within ten (10) days after issuance of the order, the permittee shall present proof to the Director that the violation has been corrected. If such proof has not been presented within the required time, the Director may revoke the permit pursuant to section 1.23.
- (c) The cost of any action required by the County shall be paid by the permittee.

Sec. 1.21. Work Done Without a Permit.

Subd. 1. Emergency Situations. Each registrant shall immediately notify the Director of any event regarding its facilities that it considers to be an emergency. The registrant may proceed to take whatever actions are necessary to respond to the emergency. Within two business days after the occurrence of the emergency the registrant shall apply for the necessary permits, pay the fees associated therewith and fulfill the rest of the requirements necessary to bring itself into compliance with this Ordinance for the actions it took in response to the emergency.

If the County becomes aware of an emergency regarding a registrant's facilities, the County will attempt to contact the local representative of each registrant affected, or

potentially affected, by the emergency. In any event, the County may take whatever action it deems necessary to correct the emergency, the cost of which shall be borne by the registrant whose facilities occasioned the emergency.

Subd. 2. Non-Emergency Situations. Except in an emergency, any person who, without first having obtained the necessary permit, obstructs or excavates a right of way must subsequently obtain a permit, pay double the normal fee for said permit, pay double all the other fees required by this ordinance, and deposit with the County the fees necessary to correct any damage to the right of way and comply with all of the requirements of this Ordinance.

Sec. 1.22. Supplementary Notification.

If the obstruction or excavation of the right of way begins later or ends sooner than the date given on the permit, permittee shall notify the County of the accurate information as soon as this information is known.

Sec. 1.23. Revocation of Permits.

Subd. 1. Substantial Breach. The County reserves its right, as provided herein, to revoke any right of way permit, without a fee refund, if there is a substantial breach of the terms and conditions of any statute, ordinance, rule or regulation, or any material condition of the permit including a threat to the safety of workers, or the right of way user or the utility users. A substantial breach by permittee shall include, but shall not be limited to, the following:

- (a) The violation of any material provision of the right of way permit;
- (b) An evasion or attempt to evade any material provision of the right of way permit, or the perpetration or attempt to perpetrate any fraud or deceit upon the County or its citizens;
- (c) Any material misrepresentation of fact in the application for a right of way permit;
- (d) The failure to complete the work in a timely manner; unless a permit extension is obtained, or unless the failure to complete work is due to reasons beyond the permittee's control, or failure to relocate existing facilities as specified in section 1.25;
- (e) The failure to correct, in a timely manner, work that does not conform to a condition indicated on an order issued pursuant to section 1.20;
- (f) Failure of the utility to pay any required costs, fees, or charges billed by the County; or
- (g) Failure to provide traffic control that conforms to the provisions of the Minnesota Manual on Uniform Traffic Control Devices, including the Temporary Traffic Control Zones Field Manual.

Subd. 2. Written Notice of Breach. If the County determines that the permittee has committed a substantial breach of a term or condition of any statute, ordinance, rule, regulation or any condition of the permit the County shall make a written demand upon the permittee to remedy such violation. The demand shall state that continued violations may be cause for revocation of the permit. A substantial breach, as stated above, will allow the County, at its discretion, to place additional or revised conditions on the permit to mitigate and remedy the breach.

Subd. 3. Response to Notice of Breach. Within three (3) business days of receiving notification of the breach, permittee shall provide the County with a plan, acceptable to the County, that will cure the breach. Permittee's failure to so contact the County, or the permittee's failure to submit an acceptable plan, or permittee's failure to reasonably implement the approved plan, shall be cause for immediate revocation of the permit. Further, permittee's failure to so contact the County, or the permittee's failure to submit an acceptable plan, or permittee's failure to reasonably implement the approved plan, shall automatically revoke the permit and may include placing the permittee on probation for one (1) full year. No plan will be unreasonably rejected.

Subd. 4. Cause for Probation. From time to time, the County may establish a list of conditions of the permit, which if breached will automatically place the permittee on probation for one full year, such as, but not limited to, working out of the allotted time period or working on right of way grossly outside of the permit authorization.

Subd. 5. Reimbursement of County Costs. If a permit is revoked, the permittee shall also reimburse the County for the County's reasonable management costs, including restoration costs and the costs of collection and reasonable attorneys' fees incurred in connection with such revocation.

Subd. 6. Revoked Permit. If the County revokes a utility's permit for breach of this ordinance, the utility will not be allowed to install any utility or to obstruct or excavate within the County right of way until the breach situation is corrected to the satisfaction of the Director and the permit is reissued.

Sec. 1.24. Mapping Data.

Subd. 1. Information Required. Each registrant and permittee shall provide mapping information required by the County in accordance with Minnesota Rules 7819.4000 and 7819.4100.

Subd. 2. Information. The County requires as part of its permit application the filing of all the following information:

A. location and approximate depth of applicant's mains, cables, conduits, switches, and related equipment and facilities, with the location based on:

(1) offsets from property lines, distances from the centerline of the public right of way, and curb lines as determined by the County;

(2) coordinates derived from the coordinate system being used by the County; or

(3) any other system agreed upon by the right of way user and County;

B. the type and size of the utility facility;

C. a description showing above ground appurtenances;

D. a legend explaining symbols, characters, abbreviations, scale, and other data shown on the map; and

E. any facilities to be abandoned, if applicable, in conformance with Minnesota Statutes, section 216D.04, subd. 3.

Subd. 3. Changes and corrections. The application must provide that the applicant agrees to submit "as built" drawings, reflecting any changes and variations from the information provided under subd. 2, items A to E.

Subd. 4. Additional construction information. In addition, the right of way user shall submit to the County at the time the project is completed a completion certificate according to Minnesota Rules 7819.1300.

Subd. 5. Manner of conveying permit data. A right of way user is not required to provide or convey mapping information or data in a format or manner that is different from what is currently utilized and maintained by that user. A permit application fee may include the cost to convert the data furnished by the right of way user to a format currently in use by the County. These data conversion costs, unlike other costs that make up permit fees, may be included in the permit fee after the permit application process.

Subd. 6. Data on existing facilities. At the request of the County, a right of way user shall provide existing data on its existing facilities within the public right of way in the form maintained by the user at the time the request was made, if available.

Sec. 1.25. Location and Relocation of Facilities.

Subd. 1. Placement, Location, and Relocation. Placement, location, and relocation of facilities must comply with the Act, with other applicable law, and with Minnesota Rules 7819.3100, 7819.5000, and 7819.5100, to the extent the rules do not limit authority otherwise available to cities and Home Rule Charter counties. By submitting a request for a permit the person recognizes they must conform to the existing ordinances and codes of other units of government related to underground placement regardless of how the application is written or permit granted.

Utility poles and guy anchors, and any other equipment, shall conform to NCHRP 350 standards for crashworthiness or must be located outside of applicable clear zones. Any installation that does not conform to Minnesota Department of Transportation clear zone standards must be approved by the Director and the facility owner shall indemnify and hold harmless the County.

Subd. 2. Relocation of Facilities. A registrant must promptly and at its own expense, with due regard for seasonal working conditions, permanently remove and relocate its facilities in the right of way whenever the Director for good cause requests such removal and relocation, and shall restore the right of way consistent with PUC standards, local regulations, and MN/DOT standard specifications. The Director may make such request to prevent interference by the company's equipment or facilities with (i) a present or future County use of the right of way, (ii) a public improvement undertaken by the County, (iii) an economic development project in which the County has an interest or investment, (iv) when the public health, safety and welfare require it, or (v) when necessary to prevent interference with the safety and convenience of ordinary travel over the right of way.

Relocation Notification Procedure: The Director shall notify the utility owner at least six (6) months in advance of the need to relocate existing facilities so the owner can plan the relocation. The Director shall provide a second notification one (1) month before the owner needs to begin the relocation. The utility owner shall begin relocation of the facilities within one (1) week of the expiration of the six (6) month notice. All utilities shall be relocated within one (1) month of the expiration of the six (6) month notice. When emergency, natural disaster, or unforeseen changes to a programmed project necessitate relocation of a facility, the County shall notify the utility owner as soon as possible, but shall be exempt from the notification schedule described above.

In the event that emergency work by the County or by a municipality in the County right of way requires relocation of a utility, the notification requirements above are waived. The County and utility shall coordinate efforts to minimize delay. The Director may allow a different schedule if it does not interfere with the County's project.

Delay to County Project: The Director shall notify the utility owner if the owner's progress will not meet the relocation schedule. If the owner does not take action to insure the relocation will be completed in accordance with the above schedule and the Director determines this delay will have an adverse impact on a County project, the Director may hire a competent contractor to perform the relocation. In that event, the County may charge the utility owner all costs incurred to relocate the facility. The County may charge the utility owner for all costs incurred and requested by a contractor working for the County that is delayed because the relocation is not completed in the scheduled timeframe and for all other additional costs incurred by the County due to the delay.

Notwithstanding the foregoing, in accordance with PUC rules, a person shall not be required to remove or relocate its facilities from any right of way that has been vacated in favor of a non-governmental entity unless and until the reasonable costs thereof are first paid to the person. However, this does not exempt the utility company from paying for the value of any taking of said property by occupation without compensation.

Sec. 1.26. Pre-excavation Facilities Location.

In addition to complying with the requirements of Minnesota Statutes Ch. 216D ("One Call Excavation Notice System") before the start date of any right of way excavation, each registrant that has facilities or equipment in the area to be excavated shall mark the horizontal placement of all said facilities. Any registrant's facilities or equipment that are in the area of work shall notify and work closely with the excavation contractor to establish the exact location of its facilities and the best procedure for excavation to protect the safety of workers and right of way users and other utility users. If the utility is not at the approved location, it shall be exposed at the permittee's expense or by the County upon written notice to the permittee. The County may, upon said notice, locate said utility at the permittee's expense.

Sec. 1.27. Damage to Other Facilities.

When the County does work in the right of way and finds it necessary to maintain, support, or move a registrant's facilities to protect it, the Director shall notify the local representative as early

as is reasonably possible. The costs associated therewith will be billed to that registrant and must be paid within thirty (30) days from the date of billing. Each registrant shall be responsible for the cost of repairing any facilities in the right of way that it or its facilities damage. When the registrant does damage to County facilities in the right of way, such as, but not limited to, culverts, road surfaces, curbs and gutters, or tile lines, it shall correct the damage immediately. If it does not, the County may make such repairs as necessary and charge all of the expenses of the repair to the registrant, which shall be paid within 30 days of billing. Each registrant shall be responsible for the cost of repairing any damage to the facilities of another registrant caused during the County's response to an emergency occasioned by that registrant's facilities.

Sec. 1.28. Right of Way Vacation.

Reservation of Right. If the County vacates a right of way that contains the facilities of a registrant, the registrant's rights in the vacated right of way are governed by Minnesota Rules 7819.3200 and other applicable laws.

Sec. 1.29. Indemnification and Liability.

By registering with the County, or by accepting a permit under this Ordinance, a registrant or permittee agrees to defend and indemnify the County in accordance with the provisions of Minnesota Rules 7819.1250. All permits are granted subject to the ownership rights the County may have in the property involved and to the extent that state, federal local laws, rules, and regulations allow and said permit is subject to all such laws and rules.

Sec. 1.30. Abandoned or Unusable Facilities.

Subd. 1. Discontinued Operations. A registrant who has determined to discontinue all or a portion of its operations in the County must provide information satisfactory to the County that the registrant's obligations for its facilities in the right of way under this Ordinance have been lawfully assumed by another registrant.

Subd. 2. Removal. Any registrant that has abandoned or unusable facilities in any right of way shall remove them from that right of way if required in conjunction with other right of way repair, excavation, or construction, unless the County waives this requirement.

Sec. 1.31. Appeal.

A right of way user that: (1) has been denied registration; (2) has been denied a permit; (3) has had permit revoked; or (4) believes that the fees imposed are invalid, may have the denial, revocation, or fee imposition reviewed, in accordance with the provisions of the Ramsey County Administrative Ordinance relating to the suspension or revocation of a license.

Sec. 1.32. Reservation of Regulatory and Police Powers.

A Permittee's or Registrant's rights are subject to the regulatory and police powers of the County

to adopt and enforce general ordinances necessary to protect the health, safety and welfare of the public.

Sec. 1.33. Severability.

If any portion of this Ordinance is for any reason held invalid by any court of competent jurisdiction, such portion shall be deemed a separate, distinct, and independent provision and such holding shall not affect the validity of the remaining portions thereof. Nothing in this Ordinance precludes the County from requiring a franchise agreement with the applicant, as allowed by law, in addition to requirements set forth herein.

Sec. 1.34. Penalty for Violation.

Violation of this ordinance shall result in the assessment of a penalty of \$500 per occurrence per site per mile per day as long as may be applicable unless a penalty or fine is otherwise specifically designated in this ordinance.

DOCUMENT EXECUTION COVER SHEET

DATE: 8/8/2012
TO: Patrick Born, Regional Administrator
FROM:  Micky Gutzmann, Director, Contracts and Procurement
THROUGH:  Mark Fuhrmann, New Starts Program Director; Brian Lamb, GM, Metro Transit 
SUBJECT: Contract 10I042, Agreement for Maintenance of Existing Tunnels and Construction and Maintenance of New Tunnel Under Ramsey County State Aid Highway 34 (University Avenue) in the Capitol Area.

I recommend and request that you execute the attached document on behalf of the Metropolitan Council. If you require further information please contact:

Name: Auburn Dees
Phone/extension: 1346

TYPE OF DOCUMENT:

Construction and Maintenance Agreement between the Council, Ramsey County and the State of Minnesota

FISCAL COMMITMENT

None

DELEGATION

The Regional Administrator is authorized to enter into contracts with other governmental entities for the expenditure of amounts not exceeding \$250,000.

COUNCIL BOARD ACTION

None Required.

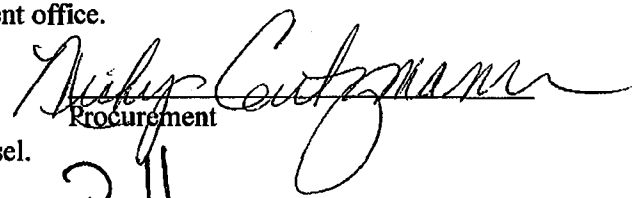
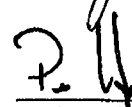
AUTHORIZATION

The Regional Administrator is authorized to execute agreements up to \$250,000.00.

DOCUMENT PREPARATION

☒ This document was prepared and reviewed by the Procurement office.
(Box will be checked by Procurement upon final review)

☒ This document was reviewed by the Office of General Counsel.
(Box will be checked by OGC upon final review)


Procurement

Office of General Counsel

RETURN ROUTING

Please return the executed document to: Auburn Dees, Robert Street

Date: July 10, 2012

To: Pat Born, Regional Administrator

Via: Brian Lamb, General Administrator

From: Mark Fuhrmann, Program Director
Dan Soler, Director Transit Systems Design and Construction

Subject: CCLRT Maintenance of Tunnel Agreement – University Avenue Tunnels

Purpose:

Approve the Agreement for maintenance of existing tunnels and construction and maintenance of new tunnel under Ramsey County State Aid Highway 34 (University Avenue) in the Capitol Area – University Avenue Tunnels with Ramsey County (RC) and Department of Administration (DOA) for maintenance of the existing and new tunnels under University Avenue.

Discussion:

RC and DOA have worked closely with the Central Corridor Project Office (CCPO) on various activities regarding the development of the Central Corridor Light Rail Transit (CCLRT) Project, specifically Civil East Construction which includes the work along University Avenue.

During the course of University Avenue reconstruction, the State desires to design, construct, utilize and maintain a pedestrian and materials handling delivery tunnel beneath University Avenue to connect the State Capitol Building on the south side of University Avenue with a parking lot on the north side of University Avenue.

The agreement outlines the responsibilities for each of the parties of the new tunnel under University Avenue. The agreement also outlines the maintenance responsibilities for each of the parties for the new and existing tunnels.

Council action is not required as the agreement is a no cost agreement.

Alternatives/Impacts:

Do nothing. Not recommended as the tunnels are required as part the construction.

Funding Sources:

No funding source needed. No cost agreement.

Recommendation/Conclusion:

Staff recommends approving the Agreement as submitted.

Dees, Auburn

From: Lessard, Stephanie
Sent: Wednesday, August 08, 2012 8:32 AM
To: Dees, Auburn
Subject: FW: Tunnel Maintenance Agreement

FYI... We can proceed.

From: Waslaski, Wayne (ADM) [<mailto:wayne.waslaski@state.mn.us>]
Sent: Wednesday, August 08, 2012 8:31 AM
To: Lessard, Stephanie
Cc: Soler, Dan
Subject: RE: Tunnel Maintenance Agreement

Stephanie,

No other state signatures are required to have a legally binding contract.

Wayne

From: Lessard, Stephanie [<mailto:Stephanie.Lessard@metc.state.mn.us>]
Sent: Wednesday, August 08, 2012 8:30 AM
To: Waslaski, Wayne (ADM)
Cc: Soler, Dan
Subject: RE: Tunnel Maintenance Agreement

Wayne,

There are spaces for another signature and a witness on the signature block page for the State of MN. Do you know if these are required for the State to consider the contract legally binding or were the spaces left in in error? I just want to make sure before we receive our final signature.

Thank you,
Stephanie

From: Waslaski, Wayne (ADM) [<mailto:wayne.waslaski@state.mn.us>]
Sent: Friday, June 29, 2012 6:26 AM
To: Lessard, Stephanie; 'Lux, Joseph'
Cc: Soler, Dan
Subject: RE: Tunnel Maintenance Agreement

Commissioner Cronk has signed three signature pages, which we will forward to Stephanie.

Thanks, Wayne

From: Lessard, Stephanie [<mailto:Stephanie.Lessard@metc.state.mn.us>]
Sent: Thursday, June 28, 2012 2:08 PM
To: 'Lux, Joseph'; Waslaski, Wayne (ADM)

Cc: Soler, Dan
Subject: RE: Tunnel Maintenance Agreement

This change is okay with the Council. Attached is a revised agreement for signature. Let me know if you have any questions.

Thank you,
Stephanie

From: Lux, Joseph [<mailto:Joseph.Lux@CO.RAMSEY.MN.US>]
Sent: Thursday, June 28, 2012 12:59 PM
To: Waslaski, Wayne (ADM); Lessard, Stephanie
Cc: Soler, Dan
Subject: RE: Tunnel Maintenance Agreement

No objections here.

Joe Lux

Joseph Lux
Planning Specialist
Ramsey County Public Works
1425 Paul Kirkwold Drive
Arden Hills, MN 55112-3933
651-266-7114



From: Waslaski, Wayne (ADM) [<mailto:wayne.waslaski@state.mn.us>]
Sent: Thursday, June 28, 2012 11:54 AM
To: Stephanie Lessard; Lux, Joseph
Cc: Soler, Dan
Subject: RE: Tunnel Maintenance Agreement

Joe and Dan,

Would you be open to the following technical correction on the first page, fourth whereas clause, last parenthesis:

- Insert "Existing Tunnels and New Tunnel" so it would read: (collectively Existing Tunnels and New Tunnel hereinafter "University Avenue Tunnels")

This is consistent with the intent, which wasn't clear to those that reviewed the document on this end.

If ok, I would propose the Met Council make the change and insert a new page 1.

Thanks, Wayne

From: Lessard, Stephanie [<mailto:Stephanie.Lessard@metc.state.mn.us>]
Sent: Friday, June 15, 2012 8:05 AM
To: 'Joseph.Lux@co.ramsey.mn.us'; Waslaski, Wayne (ADM)
Cc: Soler, Dan
Subject: Tunnel Maintenance Agreement

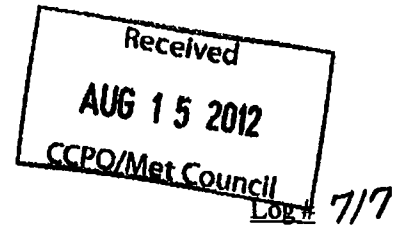
Joe and Wayne,

Attached is the final tunnel maintenance agreement for your signatures. Please print three copies, sign, and return to my attention. Send additional copies, if you need more than one original. Let me know if you have any questions.

Thank you,
Stephanie Lessard
Central Corridor Project Office
540 Fairview Avenue North
Suite 200
St. Paul, MN 55104

612-272-7424
stephanie.lessard@metc.state.mn.us

This email is intended to be read only by the intended recipient. This email may be legally privileged or protected from disclosure by law. If you are not the intended recipient, any dissemination of this email or any attachments is strictly prohibited, and you should refrain from reading this email or examining any attachments. If you received this email in error, please notify the sender immediately and delete this email and any attachments.



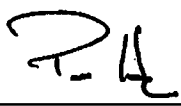
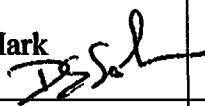
**DOCUMENT ROUTING
CONTRACTS AND PROCUREMENT**

DATE: 8/8/2012

**RE: Agreement for Maintenance of Existing Tunnels and Construction and Maintenance of New Tunnel
Under Ramsey County State Aid Highway 34 (University Avenue) in the Capitol Area**

TYPE OF DOCUMENT: Contract 10I042

Please route to the staff members below:

NAME	ACTION	INITIAL/DATE
Micky Gutzmann	Sign DECS 	8/8/12
Peter Hanf	Sign DECS 	8/13/12
Dan Soler (CCPO)	Hand carry to Mark 	8/15/12
Mark Fuhrmann	Initial DECS 	8.17.12
Brian Lamb	Initial DECS 	8/20/12
Pat Born	Sign Agreement (3 copies) 	8.22.12

PLEASE RETURN TO: Auburn Dees, Contracts and Procurement, Robert Street (x1346)

**COST SHARING AGREEMENT FOR
VERTICAL ACCESS TOWER OPERATION AND MAINTENANCE
Central Station Block in Downtown Saint Paul
METRO Green Line**

THIS AGREEMENT ("Agreement") is made and entered into by the Metropolitan Council ("Council") and the City of Saint Paul ("City").

Recitals

WHEREAS, the Council completed construction of its Central Corridor Light Rail Transit line as part of its METRO Green Line and has commenced METRO Green Line revenue service along the Central Corridor on June 14, 2014; and

WHEREAS, one of the METRO Green Line stations is located in downtown Saint Paul ("Central Station") on the city block bounded by 5th Street on the north, Minnesota Street on the east, 4th Street on the south, and Cedar Street on the west ("Central Station Block"); and

WHEREAS, construction of the Central Station as originally designed did not include stair or elevator access ("Vertical Access Tower") to the pedestrian skyway that extends over the Central Station Block, a portion of which skyway was constructed and is owned by the Council; and

WHEREAS, 2013 Minnesota Laws chapter 127, section 61 requires the Council and the City to "include construction or establishment of access to a pedestrian skyway system" at the Central Station as part of the initial METRO Green Line construction project; and

WHEREAS, connecting the Central Station Block to the downtown pedestrian skyway system benefits persons who visit Saint Paul, persons who live and work in downtown Saint Paul and transit customers who use the METRO Green Line and connecting bus service; and

WHEREAS, the Council, the City and the Housing and Redevelopment Authority of the City of Saint Paul, Minnesota ("Saint Paul HRA") entered into a Memorandum of Understanding ("MOU"), identified as Council Agreement No. 13I018, which memorializes the City's, the Saint Paul HRA's and the Council's common or shared goals and objectives for the redevelopment and future use of the Central Station Block; and

WHEREAS, one of the shared goals and objectives of the City, the Saint Paul HRA and the Council is "to find a mutually acceptable method for covering the ongoing costs of operating and maintaining the Vertical Access Tower until the Central Station Block is redeveloped, after which time the operation and maintenance costs should be borne by the owner(s) of the redevelopment"; and

WHEREAS, the City proposed and took the proposed Vertical Access Tower through initial design development but the original specifications for the Vertical Access Tower did not include a public art component; and

WHEREAS, the City, at its own expense, elected to incorporate public art into the Vertical Access Tower; and

WHEREAS, the Council secured or provided funding for the construction of the Vertical Access Tower, the cost of which was estimated to exceed \$1.94 million; and

WHEREAS, the City, the Saint Paul HRA and the Council also expressed in the MOU their intention to enter into a separate binding agreement that addresses in detail ongoing responsibilities for the operation and maintenance costs of the Vertical Access Tower until the Central Station Block is redeveloped and this Agreement will serve as that agreement; and

WHEREAS, the governing bodies of the City and the Council authorized the execution of this Agreement at their respective meetings on May 22, 2013.

NOW, THEREFORE, in reliance on the statements in the recitals and in consideration of the mutual promises and covenants contained in this Agreement, the City and the Council agree as follows:

1. **Vertical Access Tower.** The City and the Council will share the costs of operating and maintaining the Vertical Access Tower as follows:
 - (a) **Construction.** The Council provided the funding for and was responsible for constructing the Vertical Access Tower on Council-owned property on the Central Station Block. At the City's request the Council included public art through a change order to the Vertical Access Tower construction contract. For the purposes of this Agreement, the Vertical Access Tower generally is defined as: the stair and elevator tower (constructed under Metropolitan Council Contract No. 13P094) that connects 5th Street between Cedar Street and Minnesota Street in downtown Saint Paul and the Central Station to that part of the pedestrian skyway system extending over the Central Station Block.
 - (b) **Annual Operation and Maintenance Costs.** The Council is solely responsible for operating and maintaining the Vertical Access Tower and maintaining the public art. The Council and the City will share the annual operating costs of the Vertical Access Tower as provided in this paragraph, and all costs unique to the maintenance of the public art will be paid by the City as provided in Paragraph 2(b) below. The estimated annual cost of operating and maintaining the Vertical Access Tower is \$75,000. The City is responsible for one-half of the annual operation and maintenance costs of the Vertical Access Tower, subject to the following conditions: (i) the City will reimburse the Council for fifty percent (50%) of the actual annual cost of operating and maintaining the Vertical Access Tower or \$37,500, whichever amount is lesser, and (ii) the City's responsibility for its share of the annual operation and maintenance costs commences on June 15, 2014. The Council is responsible for annual operations and maintenance costs not reimbursed by the City. The City and the Council will remain responsible for their respective shares of the annual operation and maintenance costs as long as the Council is responsible for operating and maintaining the Vertical Access Tower. Typical operation and maintenance costs (both parts and labor) for a stair and elevator access tower include, but are not limited to: electricity and other utilities; general cleaning and dusting; carpet or

floor mat cleaning and replacement; replacement of broken or cracked standard glass components; repair or replacement of lighting components; repair or replacement of worn or broken doors; repair or replacement of worn or broken elevator components; repair or replacement of surveillance equipment; routine elevator maintenance and inspection; glass cleaning; garbage removal; and graffiti removal. The Council is solely responsible for the costs of operating and maintaining the Council-owned pedestrian skyway extending over the Central Station Block.

- (c) ***Maintenance Contract(s).*** If the Council does not elect to maintain the Vertical Access Tower with its own Metro Transit staff, the Council may enter into one or more contracts for maintenance services. If the Council elects to use outside maintenance services, the Council will be solely responsible for procuring and managing the maintenance services contract(s) and will be solely responsible for approving invoices submitted under any maintenance services contract(s).
- (d) ***Initial and Annual Invoices and Payments.*** Within 30 days after this Agreement is fully executed, the Council will submit to the City an itemized written invoice for the City's share of the costs of operating and maintaining the Vertical Access Tower for the last six months of 2014 and calendar years 2015 and 2016. By March 1 of 2018 and March 1 of each succeeding year, the Council will submit to the City an itemized written invoice for the City's share of the annual costs of operating and maintaining the Vertical Access Tower. The annual invoices will: (i) cover operating and maintenance costs incurred during the preceding calendar year; (ii) cover costs for maintenance unique to the public art (including the cost of storing an inventory of colored glass panels) that were incurred during the preceding calendar year; and (iii) provide sufficient detail to ensure the City is invoiced only for costs directly related to the operation and maintenance of the Vertical Access Tower, costs for storing an inventory of colored glass panels and costs for maintenance that is unique to the public art, and not to any part of the Council-owned skyway system. The City will make its annual reimbursement payments to the Council within thirty (30) days after the City receives a written invoice. Invoices from the Council should be sent to:

City of Saint Paul
Attn: Real Estate Division
City Hall Annex Suite 1000
25 West Fourth Street
Saint Paul, Minnesota 55102

Annual and other reimbursement payments by the City should be sent to:

Metro Transit Engineering & Facilities
Attn: Assistant Director, Facilities Maintenance
560 Sixth Avenue North
Minneapolis, Minnesota 55411

2. **Public Art.** The City is responsible for the costs of design, fabrication and installation of the public art (all of which have been paid for); and maintenance costs that are unique to the public art.

- (a) **Description of Public Art.** The public art comprises: colored exterior glass panels; colored glass curtainwall on the elevator hoistway; mirrored bird images applied to certain glass panels; and artist-selected colors for the terrazzo floor. The artist-selected colors for the terrazzo floor are intended to complement the colored glass panels.
- (b) **Maintenance of Public Art.** While the Council will perform all maintenance work for the public art, the City is solely responsible for the costs of all maintenance that is unique to the public art. For the purposes of Paragraphs 2(b) and 1(d) "the cost of maintenance that is unique to the public art" means the cost of storing an inventory of colored glass panels, maintaining, repairing, replacing or protecting the public art as designed, including any additional labor or shipping costs associated with the maintenance, repair, replacement or protection of the public art, that would not have been incurred if the items were not public art components. The Council will submit to the City itemized written invoices for the Council's actual reasonable and necessary cost of performing public art maintenance work. The City will reimburse the Council the difference between the cost of maintaining, repairing, replacing or protecting public art components and the cost of maintaining, repairing, replacing or protecting those same items if those items were not components of the public art. The maintenance costs that are unique to the public art are excluded from, and are in addition to, the Vertical Access Tower operation and maintenance costs for which the City assumes responsibility in Paragraph 1(b) of this Agreement, and will be included in the Annual Invoices and Payments described in Paragraph 1(d). The following is an illustrative example of the cost allocation described in this paragraph: If the actual cost of purchasing and installing a replacement clear glass panel is \$500 and the actual cost of purchasing and installing a replacement colored glass panel is \$600, the City's total share of this maintenance cost is \$350: 50% of \$500 (pursuant to Paragraph 1(b)) plus 100% of the additional \$100 cost associated with the colored glass panel (pursuant to this Paragraph 2(b)).
- (c) **Public Art Component Inventory.** The Council will, at the City's expense, maintain and store an inventory of colored glass panels so the public art can be timely maintained as designed. The inventory will include at least one glass panel of each size and color of the exterior glass panels and colored glass curtainwall. When a colored glass panel is removed from the inventory or is damaged during storage the Council will purchase and place into inventory an identical colored glass panel to replenish the stock. The City will pay all reasonable and necessary costs associated with the Council's purchasing and placing into inventory an identical colored glass panel to replenish the stock. The Council will periodically (but not less than every two years) review with the City any contracts the Council has relating to the storage and maintenance of the colored glass panels for purposes of determining the reasonableness of such costs. The City has the option but not the obligation to physically repair or replace any damaged or destroyed mirrored bird images.
- (d) **Removal of Colored Glass Panels.** The City has the right at any time to elect to remove the colored glass panels (and mirrored bird images) in the Vertical Access Tower. If the City exercises this right, the City will, at its expense, decommission the public art and the Council will remove the colored glass panels and replace them with tempered glass panels. The City will reimburse the Council for the actual costs of (i) removing the colored glass panels and mirrored bird images; (ii) purchasing and installing tempered glass panels; and (iii) permits, LRT service disruptions and road, sidewalk and skyway

closures. Council will not be responsible for any damage to the colored glass panels or mirrored images resulting from their removal.

The City will coordinate its decommissioning work with the Council. The decommissioning, removal, and replacement costs are excluded from, and are in addition to, the Vertical Access Tower operation and maintenance costs for which the City assumes responsibility in Paragraph 1(b) of this Agreement. Upon removal of the colored glass panels, there will no longer be any costs for maintenance that is unique to the colored glass panels as described in Paragraph 2(b).

- (e) ***Ownership of Public Art and Signage.*** The Council has sole ownership and possession of the public art. The City's contract with the artist for the public art, as amended by a first amendment ("Artist Contract"), is hereby assigned to the Council, and the Council hereby assumes and agrees to perform all of the City's duties and obligations under the Artist Contract. A copy of the Artist Contract is attached to and made a part of this Agreement. Signage has been installed and will be maintained in the Vertical Access Tower acknowledging the title of the public art piece, the name of the public artist, copyright notice and year of completion, and the City's financial assistance for the public art. Subject to the City's rights under Paragraph 2(d), as long as the City performs its obligations under this Agreement and as long as the Council owns the Vertical Access Tower the public art shall remain in the Vertical Access Tower and be maintained and repaired by the Council. Provided, however, if in the reasonable judgment of the Council's Director of Engineering and Facilities, and after consultation with the City and the Artist, it is determined that any future alterations to the public art are needed to address any future material public safety or operational considerations, then the Council may make such alterations at its own cost. If there exists any conflicts between the provisions of this Agreement and the Artist Contract, the provisions of this Agreement shall control.

3. **Future Responsibility for Vertical Access Tower and Public Art.** The City and the Council agree that the operation and maintenance of the Vertical Access Tower and the maintenance of the public art should be the responsibility of the developer/owner who redevelops the Central Station Block and that the City's and the Council's responsibilities for operating and maintaining the Vertical Access Tower and maintaining the public art should terminate when a third party assumes responsibility for the Vertical Access Tower. The City's and the Council's respective operation and maintenance obligations under this Agreement will continue until a third party assumes responsibility for the operation and maintenance costs. The City and the Council will work cooperatively and collaboratively to transfer Vertical Access Tower and public art ownership and operation and maintenance responsibilities to the developer/owner of the Central Station Block.
4. **Transit Advertising.** Pursuant to Minnesota Statutes section 473.449, the Council reserves the right to place advertising on or in the Vertical Access Tower provided that any such advertising does not unreasonably block the view of the public art. Advertising (if any) placed on or in the Vertical Access Tower will be subject to the Council's *Policies and Standards for Advertising on Metro Transit Properties and Other Council Transit Assets* (adopted Nov. 18, 2015), as the policies and standards may be amended from time to time.

5. **Amendments.** This Agreement may be amended by mutual agreement of the City and the Council. Any amendment must be in writing and signed by the City's and the Council's authorized representatives.
6. **Notices.** Notices from the Council and Council invoices should be sent to the following person, or this person's designee:

City of Saint Paul
Attn: Real Estate Division
City Hall Annex Suite 1000
25 West Fourth Street
Saint Paul, Minnesota 55102

Notices from the City and reimbursement payments to the Council should be sent to the following person, or this person's designee:

Metro Transit Engineering & Facilities
Attn: Assistant Director, Facilities Maintenance
560 Sixth Avenue North
Minneapolis, Minnesota 55411

Or such other person or address as either party may designate in writing to the other party.

7. **Contract Managers.** The City's and the Council's contract managers are:

For the City: Real Estate Manager
City Hall Annex, Suite 1000
25 West Fourth Street
Saint Paul, Minnesota 55102

For the Council: Assistant Director, Facilities Maintenance
Metro Transit Engineering & Facilities
560 Sixth Avenue North
Minneapolis, Minnesota 55411

The City's and the Council's contract managers are not authorized to execute amendments to this Agreement or terminate this Agreement unless prior approval of the governing body of each party is first given.

8. **Liability.** The City and the Council are not liable for the acts or omissions of the other party and neither the City nor the Council waives any immunities or liability limitations conferred on them by any applicable state or federal law, including without limitation the immunities and liability limitations conferred on them by the Municipal Tort Claims Act, Minnesota Statutes Chapter 466. Nothing in this Agreement creates any partnership, joint venture, or agency relationship between the City and the Council.
9. **Termination.** This Agreement will terminate: (i) when ownership and the operation and maintenance responsibilities of the Vertical Access Tower and the public art have been

transferred to a third party; or (ii) when the City and the Council mutually agree in writing to terminate this Agreement.

IN WITNESS WHEREOF, the City and the Council have caused this Agreement to be executed by their authorized representatives. This Agreement is effective on the date when this Agreement has been signed by both the City's and the Council's authorized representatives.

METROPOLITAN COUNCIL

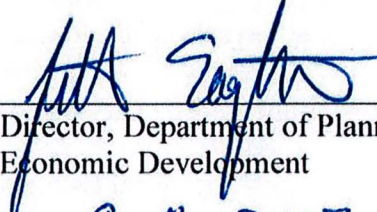
By 
 Its: Regional Administrator

Date 05/02/2017

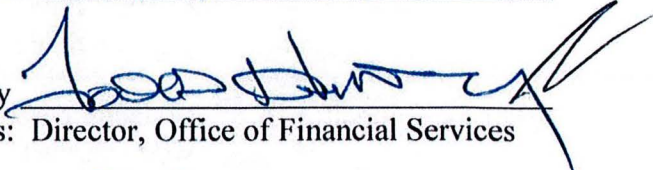
CITY OF SAINT PAUL

By Nancy P. Horner
 Its: Mayor

Date 9-13-2017

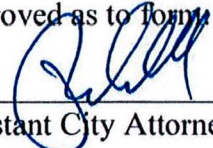
By 
 Its: Director, Department of Planning and
 Economic Development

Date 9-8-2017

By 
 Its: Director, Office of Financial Services

Date 9-13-17

Approved as to form


 Assistant City Attorney

ATTACHMENT

Metropolitan Council No. 171028

**COST SHARING AGREEMENT FOR
VERTICAL ACCESS TOWER OPERATION AND MAINTENANCE**

**Central Station Block in Downtown Saint Paul
METRO Green Line**

This Attachment comprises: (1) a copy of the Public Art Final Design Phase Agreement between the City of Saint Paul and JoAnn Verburg for Design of Public Artwork (May 1, 2013); and (2) a copy of the First Amendment to and Assignment and Assumption of Public Art Final Design Phase Agreement.

PUBLIC ART FINAL DESIGN PHASE AGREEMENT

02-

Between the City of Saint Paul and JoAnn Verburg for Design of Public Artwork

THIS AGREEMENT, made and entered into this 1st day of May, 2013, by and between the City of Saint Paul, Minnesota, a municipal corporation under the laws of the State of Minnesota, hereinafter referred to as "CITY," and JoAnn Verburg (referred to in this Agreement as "ARTIST;"), whose permanent address is 901 South 2nd Street, No. 303, Minneapolis, MN 55415, phone # is 651-398-4455, email address is verbsite@aol.com and Social Security Number is on record.

WHEREAS, funds have been allocated or otherwise made available by the CITY for public art design under PART III – ADMINISTRATIVE CODE, Title 1 – General Provisions, Chapter 12. – Public Art hereinafter referred to as "Public Artwork," for the Central Station Vertical Connection building ("Project"); and

WHEREAS, the Project will be constructed and owned by the Metropolitan Council, a public corporation and political subdivision of the State of Minnesota (the "Council"); and

WHEREAS, the Project has been fully designed, and bid out to a general contractor by the Council, without a public art component; and

WHEREAS, the Council is prepared to allow the City to install the Public Artwork into the Project, subject to Council approval on final design, and with the understanding that all additional costs associated with the installation and maintenance of the Public Artwork will be paid for by the CITY; and

WHEREAS, the CITY would like for the Project to have a public art component; and

WHEREAS, the ARTIST has completed a Preliminary Design Concept for the Public Artwork under Contract #02-16385-C, and the Preliminary Design Concept was acceptable to the City; and

WHEREAS, the Preliminary Design Concept involved colored exterior glass panels, colored glass curtainwall on the elevator hoistway, mirrored bird images applied to certain glass panels, and colors chosen for the terrazzo floor which complement the colored glass panels, all architectural elements that would be installed under the general contractor's construction contract with the Council; and

WHEREAS, the CITY wants to proceed with the final design ("Final Design") of Public Artwork for the Central Station Vertical Connection building to determine: a) how much the Public Artwork will cost as a change order to the general contractor's construction contract; b) how the Public Artwork will integrate into the building and/or site improvements with regard to structural support, electrical connections and general design; and c) whether, based on this information, to proceed with installation of the Public Artwork; and

WHEREAS, the budget for the Final Design Phase is \$21,000, and these funds shall cover all expenses incurred by the ARTIST for the Final Design Phase, including but not limited to fees; materials; applicable State and/or city sales taxes; labor of the ARTIST and the ARTIST's assistants and technical sub-consultants including conservators; studio and operating costs applicable to this Project; insurance; travel costs for the ARTIST to visit and research the site and participate in meetings and public presentations; the presentation of the design proposal to the CITY; and all materials necessary for the Project's lead designer to prepare a biddable change order for the Project's general contractor; and

WHEREAS, the ARTIST has indicated a desire to design for the CITY an original Public Artwork in a timely and professional manner; and

WHEREAS, the ARTIST acknowledges that the CITY has indicated that there are likely to be budgetary limitations on what the CITY will be willing to spend on incorporating the Public Artwork into the Project through the change-order process, but at the time of execution of this contract the CITY has not yet indicated the magnitude of those budget limitations; and

WHEREAS, the CITY will provide information on the aforementioned budget limitations to the ARTIST as soon they can be determined; and

WHEREAS, the ARTIST will be as flexible as is reasonably possible in designing the Final Design for the Public Artwork in a way that fits within the budget limitations; and

WHEREAS, all parties wish the integrity and clarity of the ARTIST's ideas and statements in the Public Artwork to be maintained to the greatest extent possible.

NOW THEREFORE, the CITY and ARTIST, in consideration of the mutual terms and conditions, promises, covenants, and payments hereinafter set forth, agree as follows:

SECTION 1: Scope of Services.

It is the intent of the parties that the CITY and the ARTIST shall establish a cooperative consultation throughout the duration of this Agreement. Therefore, the ARTIST is requested to meet and communicate with representatives of the CITY including committees or groups convened by the CITY, and also with the Project Manager, Martin Schieckel, and Theresa Olsen of TKDA Architects, Project Architect, during Final Design Phase of the Public Artwork. Upon completion of Final Design Phase and acceptance of the concepts expressed in the Final Design

Phase deliverables, the process may proceed to the production of change order documents and the actual implementation of the proposed Public Artwork.

The specific tasks, deliverables, timelines, etc. that make up the design services are as follows:

Deliverables. The Final Design Phase proposal shall include the following deliverables:

- [X] Location of Public Artwork(s) as shown on scaled annotated plans, or site plans, with potential relationships and connections to other sites.
- [X] Scaled or dimensioned drawings showing color, or documentation as required to present a meaningful representation of the proposed Public Artwork, and materials samples and specifications as necessary.
- [X] Complete Public Artwork Statement describing design intention; relationship to project goals and criteria; and description of Public Artwork materials, dimensions, and finish.
- [X] Outline of proposed installation, and the ongoing operations and maintenance that will be required including cost estimate.
- [X] Recommendations regarding site preparation, including but not limited to appropriate lighting, electrical and mechanical systems connections, and the structural support necessary for the Public Artwork.
- [X] Images and materials specifications that will allow Project Architect to prepare change order documents suitable for bidding and installation by the Council's contractor.

SECTION 2: Time for Completion.

The Final Design Phase deliverables shall be submitted to the CITY by **August 1, 2013.**

All work shall be completed by **August 1, 2013.**

In the event that there are delays caused by actions of the CITY, or which may be reasonably requested by the ARTIST which can change the completion date, the ARTIST shall request an extension of time for completion of the project. The Project Manager will review the request and with approval of the department head may grant to the ARTIST such extensions of contract time as may be reasonable.

The CITY may require the ARTIST to make such revisions to the Final Design Phase proposal as are necessary for the Public Artwork to comply with applicable statutes, ordinances, or regulations of any governmental regulatory agency having jurisdiction over the Project. The CITY may also request revisions for other practical (non-aesthetic) reasons.

SECTION 3: Title and Copyright.

The ARTIST expressly reserves every right available to the ARTIST in common law or under the Federal Copyright Act and the Visual Artists Rights Act of 1990 (VARA) except ownership and possession and any such rights as those limited by this Agreement. All right, title and interest

in all copyrightable material which the ARTIST shall conceive or originate, either individually or jointly with others, and which arises out of the performance of this Agreement during the Design Phase, will be the property of the ARTIST, and by this Agreement assigned to the ARTIST, along with ownership of any copyrights and copyrightable materials. Upon completion and installation of the Public Artwork, ownership and possession rights of the Public Artwork shall transfer to and vest in the Council.

SECTION 4: Final Design Phase Approval

The CITY shall have final approval of the Final Design Phase proposal. Other named parties upon delegation by the CITY, shall have the right to review and comment on the Final Design Phase proposal. Prior to the completion of Final Design Phase, the ARTIST agrees not to release, transmit, or otherwise disseminate any information associated with or generated as a result of the work performed under this Agreement without prior knowledge and written consent of the CITY.

SECTION 5: Billings and Payment.

That for ARTIST'S faithful performance of this Agreement, the CITY hereby agrees to compensate ARTIST in the amount of **\$21,000**. Payment of \$19,500 shall be made to ARTIST within 30 days after her delivery of the six "Deliverables" specified in Section 1 above and of an invoice for same; the balance of \$1,500 shall be paid to ARTIST upon installation of the Public Artwork, and ARTIST furnishing the Documents and Records specified in Sections 7 and 8 below and of an invoice for same.

The specified amount shall fully compensate ARTIST for all work and associated costs. The Owner will honor no claim for services and/or costs submitted by the ARTIST not specifically authorized in this Agreement. Total reimbursement for the project shall not exceed \$21,000.

ARTIST shall submit an itemized invoice. Upon receipt of the invoice and verification of the charges by the Project Manager, the CITY shall make payment to ARTIST within thirty (30) days.

SECTION 6: Termination of Design Phase Agreement.

In the event the ARTIST fails to comply with any terms or conditions of the Agreement or to provide in any manner the work or services as agreed to herein, the CITY reserves the right to withhold any payment until the CITY is satisfied that corrective action has been taken or completed. This option is in addition to and not in lieu of the CITY'S right to termination as provided in the sections of this Agreement.

If the Final Design Phase proposal is accepted by CITY, the proposal may be incorporated into a change order for possible incorporation into the construction of the Project. If the Final Design Phase proposal is not accepted by the CITY, at the CITY's sole discretion, the ARTIST may be given one of the following options: A) to present a second proposal, or B) to disengage from the project.

If the ARTIST is given the choice of option A (to present a second proposal), and if the second proposal is accepted, the proposal may be incorporated into a change order for possible incorporation into the construction of the Project. If the Final Design Phase proposal is not accepted at the second presentation, then the ARTIST's involvement with the project will be terminated, and the ARTIST'S fee will be paid in the amount of \$19,500 as full and final compensation for the Final Design Phase. If the ARTIST or the CITY chooses option B (to disengage from the project), then the ARTIST's fee will be paid as full and final reimbursement for the Final Design Phase, and this Agreement shall be terminated with no further payments to ARTIST.

Should the ARTIST's participation be concluded under either option A or B, the ARTIST shall retain all rights to the Final Design proposal produced by the ARTIST. It is specifically understood that the ARTIST retains all intellectual property rights, defined to mean copyright, and all rights under the Visual Artist Rights Act of 1990. In the event the CITY elects not to proceed with installation of the Public Artwork, the CITY does not have the right to take the Final Design Phase proposal to a third party for further design development. If the CITY proceeds with the installation of the Public Artwork, then the Council shall acquire all ownership rights to the Public Artwork defined to mean physical possession and all property rights except intellectual property.

SECTION 7: Public Notice.

Upon request by the CITY, the ARTIST agrees to design, fabricate, install and pay for a notice which is satisfactory to the CITY and which includes the title of the Public Artwork, identification of the ARTIST, copyright notice and year of completion as well as notice of the CITY's ownership of the Public Artwork. The public notice shall be installed by the ARTIST prior to the completion of the Project. Subject to Council approval, the CITY agrees to the public display of this notice on or near the Public Artwork.

SECTION 8: Documentations and Records.

Upon installation of the Public Artwork the ARTIST shall furnish the CITY with: a) complete documentation of the Public Artwork including a written technical description to enable an inspection and the preparation of an initial Condition Report by the City; b) a detailed operations and maintenance plan including cost estimate addressing the ongoing care for the Public Artwork, and c) ten to twenty slides or digital images of the Public Artwork during production, and after installation, for archival records.

SECTION 9: Waiver And Termination Of Rights.

The ARTIST agrees to notify the OWNER of any changes in the ARTIST's email address within ninety (90) days of that change. Failure to do so shall be deemed a waiver of those ARTIST's rights expressed in Section 11. The ARTIST agrees that upon the ARTIST's death, all of the Artist's rights expressed in Section 11 shall terminate.

SECTION 10: Owner's Authorized Agent/Project Management.

The CITY's authorized agent for the purpose of administration of this Agreement is the CITY's Department Director who shall have final authority for acceptance of the ARTIST's services and the Public Artwork, and if such services and Public Artwork are accepted as satisfactory, shall so certify within fourteen working days on each invoice submitted pursuant to Section 5 of this Agreement. Acceptance shall not be withheld unreasonably.

The CITY has designated Martin Schieckel as the Project Manager for this Agreement, and the individual to whom all communications pertaining to the Agreement shall be addressed. The Project Manager shall have the authority to transmit instructions and receive information, and in consultation with and approval by the CITY's Department Director shall authorize amendments or changes to the Agreement and interpret and define the CITY's policies and decisions pertinent to the work covered by this Agreement.

SECTION 11: Amendment or Changes to Agreement.

CITY or ARTIST may request changes that would increase, decrease, or otherwise modify the Scope of Services. Such changes and method of compensation must be authorized in writing in advance by the City.

Any alterations, amendments, deletions or waivers of the provisions of this Agreement shall be valid only when reduced to writing and duly signed by the parties.

Modifications or additional schedules shall not be construed to adversely affect vested rights or causes of action which have accrued prior to the effective date of such amendment, modification, or supplement. The term "this Agreement" as used herein shall be deemed to include any future amendments, modifications, and additional schedules made in accordance herewith.

SECTION 12: Artist as Independent Contractor.

The ARTIST agrees to perform all Public Artwork under this Agreement as an independent contractor and not as an agent or employee of the CITY. Any and all employees of the ARTIST engaged in the performance of any Public Artwork or services required by the ARTIST under this Agreement are employees of the ARTIST only. No statement contained in this Agreement shall be construed so as to find ARTIST an employee of the CITY or Council, and ARTIST shall be entitled to none of the rights, privileges, or benefits of CITY or Council employees. The ARTIST shall furnish all supervision, labor, supplies, materials, insurance, and other incidentals needed to complete this Agreement.

SECTION 13: Subcontracting/Assignment of Public Artwork.

The Public Artwork and services required of the ARTIST under this Agreement are personal and shall not be assigned, sublet, or transferred without prior written consent of the CITY.

SECTION 14: Indemnity, Liability and Insurance.

The ARTIST agrees to indemnify and save and hold the CITY, its officers, its agents and employees harmless and protect and defend the CITY from any and all claims or causes of action brought for or on account of any claimed or alleged injuries or damages received by any person or property, including the CITY, arising from the performance of this Agreement by the ARTIST or ARTIST's agents or employees.

The ARTIST is furthermore advised of the following special precautions:

Damage to CITY Property: The ARTIST must take all reasonable precautions to protect CITY property from damage. In addition to any other available remedies, the CITY may deduct from its payments to the ARTIST the amount necessary to repair any damage.

ARTIST shall be required to carry insurance of the kind and in the amounts shown below for the duration of this Agreement. Insurance certificates should state that the Metropolitan Council and the City of Saint Paul, and their officials, employees, agents and representatives are named as Additional Insureds.

1. Public Liability Insurance

- a) Bodily Injury \$ 1,000,000 each occurrence
 \$ 2,000,000 aggregate
- b) Property Damage \$ 1,500,000 each accident
 \$ 2,000,000 aggregate
- c) Policy must include an "all services, products, or completed operations" endorsement.

2. Workers Compensation and Employer's Liability

- a) Worker's Compensation per Minnesota Statute
- b) Employer's Liability shall have minimum limits of \$500,000 per accident; \$500,000 per employee; \$500,000 per disease policy limit.
- c) Contractors (Providers) with 10 or fewer employees who do not have Worker's Compensation coverage are required to provide the CITY with a letter verifying their number of employees.

3. General Insurance Requirements

- a) The policy is to be written on an occurrence basis or as acceptable to the CITY. Certificate of insurance must indicate if the policy is issued on a claims-made or occurrence basis. All certificates of insurance shall provide that the CITY's Division of Contract and Analysis Services be given written notice of cancellation, non-renewal or any material changes in the policy in accordance with the terms of the policy, including, but not limited to, coverage amounts.

Agent must state on the certificate if policy includes errors and omissions coverage.

- b) The ARTIST shall not commence work until a Certificate of Insurance covering all of the insurance required for this Project is approved and the project manager has issued a notice to proceed. Insurance must remain in place for the duration of the original contract and any extensions periods.
- c) The CITY reserves the right to review ARTIST's insurance policies at any time, to verify that CITY requirements have been met.
- d) Satisfaction of policy and endorsement requirements for General Liability and Auto Insurance, of "each occurrence" and "aggregate" limits, can be met with an umbrella or excess policy with the same minimum monetary limits written on an occurrence basis, providing it is written by the same insurance carrier.

SECTION 15: Equal Opportunity Employment.

EQUAL OPPORTUNITY EMPLOYMENT: The ARTIST will not discriminate against any employee or applicant for employment for work under this Agreement because of race, creed, religion, color, sex, sexual or affectional orientation, national origin, ancestry, familial status, age, disability, marital status, or status with regard to public assistance and will take affirmative steps to ensure that applicants are employed and employees are treated during employment without regard to the same. The ARTIST agrees to be bound by and comply with the requirements of Section 183.04 of the Saint Paul Legislative Code and the Rules Governing Affirmative Requirements in Employment adopted by the Saint Paul Human Rights Commission.

This provision shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment advertising, layoff or termination; rates of pay or their forms of compensation; and, selection for training, including apprenticeship.

SECTION 16: Business Records and Data Practices.

The ARTIST agrees to maintain all business records in such a manner as will readily conform to the terms of this Agreement and to make such records available at its office at all reasonable times during the Agreement period and for six (6) years from the date of the final payment under the contract for inspection or audit by the CITY, the State Auditor, or other duly authorized representative.

ARTIST agrees to abide strictly by Chapter 13, Minnesota Government Data Practice Act, and in particular Minn. Stat. § 13.05, subd. 6 and 11; and 13.37, subd. 1(b) and Minn. Stat. §§ 138.17 and 15.17. All of the data created, collected, received, stored, used, maintained, or disseminated by the ARTIST is subject to the requirements of the Minnesota Government Data Practices Act and the ARTIST must comply with these requirements as if it were a governmental entity. The remedies in Section 13.08 apply to the ARTIST. If any provision in this Agreement is in conflict with the Minnesota Government Data Practices Act or other Minnesota state laws, state law shall control.

SECTION 17: Compliance with Applicable Law.

ARTIST agrees to comply with all federal, state, and local laws or ordinances, and all applicable rules, regulations, and standards established by any agency of such governmental units, which are now or hereafter promulgated insofar as they relate to the ARTIST's performance of the provisions of this Agreement.

SECTION 18: Conflict of Interest.

The ARTIST will not contract for or accept employment for the performance of any work or services with any individual, business, corporation, or governmental unit that would create a conflict of interest in the performance of the obligations pursuant to this Agreement with the CITY.

The ARTIST's acceptance of this Agreement indicates compliance with Chapter 24.03 of the Saint Paul Administrative Code: "Except as permitted by law, no CITY official or employee shall be a party to or have a direct financial interest in any sale, lease, or contract with the CITY."

The ARTIST agrees that should any conflict or potential conflict of interest becomes known, ARTIST will advise the Project Manager of the situation so that a determination can be made about ARTIST's ability to continue performing services under the Agreement.

SECTION 19: Warranties.

The ARTIST warrants that the Public Artwork is the original product of the ARTIST's own creative efforts and does not infringe on any copyright. The ARTIST also warrants that the Public Artwork is unique and that the Public Artwork, or a duplicate thereof, has not been accepted for sale elsewhere, unless, as stipulated to the CITY as one of a limited edition of Public Artworks. The ARTIST expressly warrants that no pre-existing Agreements with an ARTIST's agent shall be the cause for any breaches of this Agreement or render this Agreement impracticable by the ARTIST.

The ARTIST additionally represents and warrants that: a) the Public Artwork as designed is appropriate to its location; and b) reasonable maintenance of the Public Artwork shall not require procedures in excess of those described in the statement of maintenance requirements submitted by the ARTIST.

SECTION 20: Default by ARTIST: Remedy Of CITY.

In the event ARTIST fails or neglects to comply with any term or condition of this Agreement or to provide the services as stated herein, CITY shall have the right, after five days written notice and failure to cure by ARTIST, to cease payment hereunder and pursue a cause of action for damages. This remedy shall be in addition to any other remedies, including termination, available to the CITY in law or equity. The CITY shall be entitled to recover reasonable attorney's fees and costs of collection associated with enforcing its rights hereunder.

SECTION 21: Default by CITY: Limited Remedy by ARTIST.

In the event CITY fails or neglects to comply with any term or condition of this Agreement including but not limited to a violation of Federal Copyright Act or the Visual Artists Right Act of 1990 (VARA), , ARTIST shall have the limited right and remedy, after five days written notice to CITY and failure to cure by CITY, to: 1) terminate this Agreement; and/or 2) to bring an action for specific performance and/or action to recover any payments for services due under this Agreement. The ARTIST shall have no right to any consequential or other damages of any kind or any other remedy.

SECTION 22: Right to Exhibit.

The CITY reserves the right to request temporary possession of any drawings, models, photographic negatives, digital files, displays, and similar materials produced during the Design Phase.

SECTION 23: Dispute Resolution.

This Agreement shall be interpreted and construed according to the laws of the State of Minnesota. All litigation related to this Agreement shall be venued in the District Court of the County of Ramsey, Second Judicial District, State of Minnesota. The ARTIST shall complete the Public Artwork during any proceedings unless otherwise agreed by the ARTIST and the CITY in writing.

Mediation. All claims, disputes or other matters in question between the parties to this Agreement arising out of or relating to this Agreement or breach thereof, shall be referred to non-binding mediation before, and as a condition precedent to, the initiation of any legal action hereof, provided for herein. Each party agrees to participate in up to four hours of mediation. The mediator shall be selected by the parties, or if the parties are unable to agree on a mediator then any party can request the administrator of the Ramsey County District Court Civil ADR Program and/or similar person, to select a person from its list of qualified neutrals. The mediation shall be attended by employees or agents of each party having authority to settle the dispute. All expenses related to the mediation shall be borne by each party, including without limitation, the costs of any experts or legal counsel. All applicable statutes of limitations and all defense based on the passage of time are tolled while the mediation procedures are pending, and for a period of 30 days thereafter.

SECTION 24: Notices.

Except as otherwise stated in this Agreement, any notice or demand to be given under this Agreement shall be delivered in person or deposited in United States Certified Mail, Return Receipt Requested. Any notices or other communications shall be addressed as follows:

To CITY:

Martin Schieckel

To ARTIST:

JoAnn Verburg

Planning & Economic Development
25 West 4th Street; Suite 1300
St. Paul, MN 55102
Martin.schieckel@ci.stpaul.mn.us

901 South 2nd Street; No. 303
Minneapolis, MN 55415
651-398-4455
verbsite@aol.com

SECTION 25: Waiver.

Any failure of a party to assert any right under this Agreement shall not constitute a waiver or a termination of that right, this Agreement, or any of this Agreement's provisions.

SECTION 26: Survival of Obligation.

A. The respective obligations of the CITY and ARTIST under these terms and conditions, which by their nature would continue beyond the termination, cancellation, or expiration hereof, shall survive termination, cancellation or expiration hereof.

B. If a court or governmental agency with proper jurisdiction determines that this Agreement, or a provision herein is unlawful, this Agreement or that provision, shall terminate. If a provision is so terminated but the parties legally, commercially, and practicably can continue this Agreement without the terminated provision the remainder of this Agreement shall continue in effect.

SECTION 27: Force Majeure.

Neither the CITY nor the ARTIST shall be held responsible for performance if its performance is prevented by acts or events beyond the party's reasonable control including, but not limited to: severe weather and storms, earthquake or other natural occurrences, strikes and other labor unrest, power failures electrical power surges or current fluctuations, nuclear or other civil military emergencies, or acts of legislative, judicial, executive, or administrative authorities.

SECTION 28: Entire Agreement.

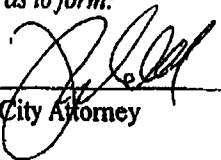
It is understood and agreed that this entire Agreement supersedes all oral agreements and negotiations between the parties relating to the subject matters herein.

IN WITNESS WHEREOF, the parties hereto are authorized signatories and have executed this Agreement, the day and year first above written.

For the CITY:

For the ARTIST: (If corporation,
two officers must execute)

Approved as to form:



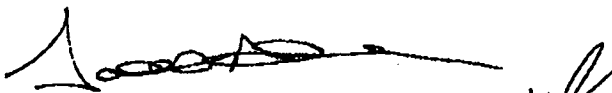
Assistant City Attorney

By: JoAnn Verberg^M

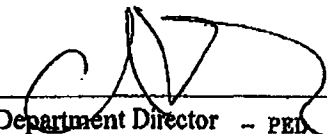
By: 

Social Security or MN Tax ID

Executed:



Director, Office of Financial Services



Department Director -- PED

Funding: DIRECTOR OF PUBLIC WORKS
Activity #
C10-28270

*** NOTICE TO ARTISTS:** You are required by Minnesota law to provide your social security number or Minnesota Tax Identification numbers if you do business with the CITY. This information may be used in the enforcement of federal and state laws. Supplying these numbers could result in action to require you to file state tax returns and pay delinquent state tax liabilities. This Agreement will not be approved unless these numbers are provided. These numbers will be available to federal and state tax authorities and city personnel involved in the payment of city obligations.

Originals to (1) ARTIST and (2-3) CITY.

Prepared by: CAS/ ___ / ___ -20 ___

Req. #: _____

**FIRST AMENDMENT
TO
and
ASSIGNMENT AND ASSUMPTION OF
PUBLIC ART FINAL DESIGN PHASE AGREEMENT**

THIS FIRST AMENDMENT ("First Amendment") is made and entered into this ____ day of 29 March, 2014, by and among the City of Saint Paul, Minnesota, a municipal corporation ("City"), JoAnn Verburg ("Artist") and the Metropolitan Council ("Council").

RECITALS:

A. City and Artist executed a Public Art Final Design Phase Agreement dated May 1, 2013 ("Agreement") in connection with the Central Station Vertical Connection Building ("Project").

B. Artist has completed the Public Artwork under the Agreement and has been compensated for such Public Artwork.

C. City and Artist desire to amend the Agreement with respect to certain rights of the Artist as set forth in this First Amendment.

D. City desires to assign the Agreement to the Council and the Council desires to assume and perform all of the City's duties and obligations under the Agreement.

NOW, THEREFORE, in consideration of the foregoing Recitals and the mutual covenants and promises set forth in this Agreement and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree to amend the Agreement as follows:

1. Section 3 of the Agreement is deleted and amended to read as follows:

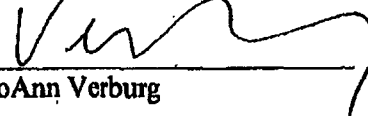
The ARTIST expressly reserves those rights under the Federal Copyright Act and the Visual Artists Rights Act of 1990 described as follows: a) the right to claim authorship of the Public Artwork; b) the right to prevent use of one's name on the Public Artwork that has been substantially distorted or modified; c) the right to create derivative works of the original Public Artwork; and d) upon decommissioning and removal of the Public Artwork from the Vertical Access Tower, the ARTIST has the first right to receive ownership and possession of the Public Artwork. The ARTIST disclaims any other statutory or common law rights to the Public Artwork.

The parties acknowledge that because the Public Artwork has been installed, the ownership and possession rights of the Public Artwork have transferred to and is now vested in the Council, which rights include but are not limited to the following: a) the right to a non-exclusive perpetual and royalty free license to have the Public Artwork in the Vertical Access Tower; b) the right to make photographs and prints of the Public Artwork ~~for nonecommercial purposes~~; c) the right in consultation with the City and ARTIST to make future alterations to the Public Artwork to address any future material public safety or operational considerations; and d) the right to transfer the Vertical Access Tower and its rights, duties and obligations under the Agreement to a successor owner of the Vertical Access Tower with or without the Public Artwork .

2. The City hereby assigns all right, title and interest of its interest in the Agreement to the Council and the Council hereby accepts, assumes and agrees to perform all of the City's duties and obligations under the Agreement. The ARTIST hereby releases the City from all liabilities and obligations under the Agreement.
3. All other terms and conditions of the Agreement remain the same and in full force and effect.

IN WITNESS WHEREOF, the parties have executed this First Amendment as of the date first above written.

ARTIST:


JoAnn Verbarg

CITY:

CITY OF SAINT PAUL, MINNESOTA

By: _____
Its: PED Director

Approved as to form:

Assistant City Attorney

By: _____
Its: Director, Office of Financial Services

COUNCIL:

METROPOLITAN COUNCIL

By: _____
Its: Regional Administrator

October 11, 2010

Sheila M. Reger
Commissioner of Administration
200 Administration Building
50 Sherburne Avenue
St. Paul, MN 55155

Re: Cooperation Letter Agreement - CCLRT Construction

Dear Commissioner Reger:

The purpose of this letter is to memorialize the agreement that the State of Minnesota, Department of Administration ("State") and the Metropolitan Council ("Met Council") have reached regarding the construction of the Central Corridor Light Rail Transit ("CCLRT") project in and around the Capital Area (defined below).

The following represents the parties' agreement with respect to the above:

Article 1 Construction

On or before twenty (20) days prior to beginning construction in the Capitol Area, (for purposes of this letter agreement, "Capitol Area" is defined to mean the area under Capitol Area Architectural and Planning Board jurisdiction), the Met Council agrees to provide a detailed project schedule to the State for work to be completed in the Capitol Area and weekly detailed updates thereafter until completion of the project. The Met Council agrees to conduct all excavation, utility relocation and construction related to the CCLRT, in the Capitol Area in a manner that minimizes the disruption of state operations. The Met Council agrees to ensure that utility service will be continuously maintained to state facilities except during momentary "cut over" periods that the Met Council and State have jointly coordinated and which, to the fullest possible extent, will be conducted outside of normal business hours and/or on weekends. If utilities are to be relocated to accommodate the CCLRT, the Met Council will ensure that adequate provisions are made to supply all necessary, suitable and uninterrupted substitute utilities to state facilities to permit state government to continue its operations without interruption. Moreover, during periods of excavation, utility relocation and construction in the Capitol Area, the Met Council agrees to coordinate work schedules reasonably in advance with the State, and to cause its contractors and suppliers to stage and schedule work and deliveries so that the duration, and the noise and vibration impacts, of such work are minimized, with respect to state government facilities, to the full extent practical. In addition, the Met Council agrees to provide the State with as much advance notice of impending excavation, utility relocation and construction work as reasonable and practical to allow the State to appropriately schedule its operations.

To the extent reasonably practical, the Met Council agrees to use its best efforts to minimize disruptive construction (e.g. earth work, site preparation, etc.) in the Capitol Area between January 1 and May 31 in each of the years beginning 2010 and continuing until construction is complete.

Article 2

Vibration

The Met Council assessed vibration impacts to state government facilities and existing sensitive equipment contained within such properties adjacent to CCLRT and concluded that there should be no adverse impacts to equipment, operations or state government facilities in the Capitol Area resulting from vibration due to CCLRT construction or operations. The State is relying upon the Met Council's conclusion.

The Met Council agrees to complete a pre-construction and post-construction survey and will monitor vibration impacts periodically during the construction, pre-revenue testing and revenue operations of the CCLRT for the Minnesota State Capitol Building, 691 Robert/Powerhouse, Freeman, Stassen, MDA/MDH Laboratory Building, National Guard Armory and Andersen Building.

The Met Council has included in its Civil East contract specifications requirements to monitor vibration at the following properties, the Minnesota State Capitol Building, 691 Robert Street / State Capitol Power Plant, Freeman, Stassen, MDA/MDH Laboratory Building, National Guard Armory, and the Andersen Building. One of the requirements of these specifications is development of a Vibration Control Plan that would identify all properties being monitored, and describe methods to monitor and control for vibration generated during the performance of the work. A copy of the Vibration Control Plan for construction work completed within the Capitol Area will be transmitted to the State. Weekly vibration control reports will be generated by the Met Council's Contractor as part of implementing the Civil East Vibration Control Plan. Upon request, copies of such reports generated for work in the Capitol Area will be transmitted to the State within three (3) days of such requests.

In the event vibration impacts due to CCLRT construction or operations adversely impact, as determined by the State, any state government facilities, or equipment or operations in state government facilities, the Met Council agrees to promptly meet with State representatives to develop reasonable mitigation measures and at its full cost promptly address those adverse impacts to the State's reasonable satisfaction in a timely manner.

Article 3

Noise

The Met Council assessed noise impacts to operations in state government facilities adjacent to CCLRT and concluded that there should be no adverse impacts to operations in state government facilities in the Capitol Area resulting from noise due to CCLRT construction or operations. The State is relying upon the Met Council's conclusion.

The Met Council will ensure that the tracks at University Avenue/Robert Street; Robert Street/12th Street; and 12th Street/Cedar Avenue are sufficiently designed, maintained and trains operated to avoid excessive squealing as trains turn corners, including but not limited to installation of track technology to provide lubricant in the rails at the above mentioned corners.

The Met Council will establish train operation procedures that prohibit LRT vehicles from sounding horns adjacent to state government facilities, except in emergencies.

The Met Council agrees to set LRT bells in the Capitol Area to ring at levels no higher than the levels, and for durations no longer than allowed under CCLRT's adopted operating procedures, which shall be consistent with those levels and durations required in the MPR Mitigation Plan.

In the event noise impacts due to CCLRT construction or operations adversely impact, as determined by the State, any state government facilities, or equipment or operations in state government facilities, the Met Council agrees to promptly meet with State representatives to develop reasonable mitigation measures and at its full cost promptly address those adverse impacts to the State's reasonable satisfaction in a timely manner.

Article 4 EMI

The Met Council assessed electromagnetic interference ("EMI") impacts to properties and existing sensitive equipment contained within such properties adjacent to CCLRT and concluded that there should be no adverse impacts to equipment or operations in state facilities in the Capitol Area resulting from EMI or Radio Frequency Interference (RFI) due to CCLRT construction or operations. The State is relying upon the Met Council's conclusion. Nonetheless, should CCLRT construction or operations later be shown to produce EMI or RFI that interferes with, as determined by the State, state operations in the Capitol Area,, the Met Council agrees to promptly meet with State representatives to develop reasonable mitigation measures and at its full cost promptly address those adverse impacts to the State's reasonable satisfaction in a timely manner.

Article 5 Traffic

The Met Council assessed traffic impacts in the Capitol Area and concluded that there should be no adverse impacts to traffic in the Capitol Area resulting from CCLRT. The State is relying upon the Met Council's conclusion. Nonetheless, should CCLRT operations later be shown to have an adverse safety impact for pedestrians or vehicular travel or a greater adverse impact than reasonably expected by the State on the efficient vehicular travel in the Capitol Area, as determined by the State, the Met Council agrees to promptly meet with State representatives to develop reasonable mitigation measures and at its full cost promptly address those adverse impacts to the State's reasonable satisfaction in a timely manner.

Article 6 Signal Bungalow

A. Signal Bungalow - 12th Street. Under a CCLRT Mitigation Agreement between MPR and the Met Council, the Met Council agreed to move the planned crossover switch from a location near MPR to a new location north of I-94, removing another source of CCLRT-generated vibration adjacent to MPR facilities.

The State is concerned with additional vibration adjacent to state facilities, including the MDA/MDH Laboratory Building. As noted in Article 3, the Met Council has concluded that there should be no adverse impacts to equipment, operations or state government facilities in the Capitol Area.

In the event vibration impacts due to CCLRT construction or operations adversely impact, as determined by the State, any state government facilities, or equipment or operations in state government facilities the Met Council agrees to promptly meet with State representatives to develop reasonable mitigation measures and at its full cost promptly address those adverse impacts to the State's reasonable satisfaction in a timely manner.

The signal bungalow will be located on the south side of 12th Street between Robert Street and Minnesota Street on property under the custodial control of the Minnesota Department of Transportation.

The Met Council agrees to minimize the visual and aesthetic impact from location of the signal bungalow in the Capitol Area in accordance with the design approved by the Capitol Area Architectural and Planning Board.

B. Signal Bungalow - University Avenue. The Met Council agrees to minimize the impact on future redevelopment and the visual and aesthetic impact of the crossover switch bungalow in accordance with the design approved by the Capitol Area Architectural and Planning Board.

Article 7 Existing Tunnels

The Met Council agrees to design and construct structural supports to protect the existing tunnel beneath University Avenue between the Admin Ramp and the Minnesota State Capitol Building, the cost of which shall be included in the project baseline budget.

The Met Council agrees to design and construct structural supports to protect the existing tunnel beneath University Avenue between the Ford Building and Leif Erikson Park, the cost of which shall be included in the project baseline budget.

Article 8 Betterments

A. Future University Avenue Pedestrian/Materials Handling Tunnel. In accordance with the requirements of M.S. 16A.695 and 16C, and other applicable statutes, the State shall oversee and manage the planning, design and construction of the pedestrian and

materials handling delivery tunnel in the Capitol Complex, subject to the availability of State funds for this purpose.

In 2009 the Met Council received an appropriation from the State of Minnesota, Chapter 93-H.F. No. 855, Sec. 12, Subd. 2, (9), (c), in the amount of “\$313,000 for the purpose of preliminary engineering and final design for betterments in the State Capitol areas related to the Central Corridor Light Rail Transit Project”.

On or before ten business days following execution of this Agreement, the Met Council and State shall execute a Joint Powers agreement in a form approved by the Office of the Attorney General, Minnesota Management and Budget and the Met Council, to complete an appropriation transfer in the amount of Three Hundred Thirteen Thousand and No/100 dollars (\$313,000.00) to the State.

On or before ten business days following the execution of this Agreement, the Met Council shall request Minnesota Management and Budget (MMB) to complete an appropriation transfer in the amount of Three Hundred Thirteen Thousand and No/100 Dollars (\$313,000) to the Department of Administration for the purpose of designing and engineering the University Avenue Pedestrian / Materials Handling Tunnel as authorized in the 2009 state bonding bill. The State shall utilize these funds for the purposes authorized in the appropriation.

The Met Council and State agree to coordinate construction activities related to the CCLRT Civil East construction phasing and University Avenue Pedestrian and Materials Handling Tunnel construction phasing to minimize impact on vehicular traffic on University Avenue.

The Met Council will apply for and receive a construction permit at its expense from Ramsey County to undertake CCLRT construction work on Ramsey County Right-of-Way. The Met Council expects to grant Limited Notice to Proceed to its Civil east contractor in July 2010 for construction work to begin along Robert Street and 12th Street. Full notice to proceed to the Civil East contractor is expected on or about January 1, 2011 with heavy construction work expected to begin in the reach between Rice Street and Cedar Street upon completion of the 2012 regular legislative session in May 2012. The State will apply and receive a construction permit at its expense from Ramsey County to undertake University Avenue Pedestrian / Materials Handling Tunnel construction work on Ramsey County Right-of-Way.

The Met Council agrees to request the Commissioner of Minnesota Department of Transportation to issue Notice and Orders to private utilities to relocate their private utilities related to CCLRT per the CCLRT Civil East Bid Package dated March 4, 2010 at private utility expense by October 30, 2011. The Met Council agrees to relocate all public utilities related to CCLRT per the CCLRT Civil East Bid Package dated March 4, 2010 as part of the reconstruction of the University Avenue segment between MLK/Park and Robert Street scheduled for May 2012 to November 30, 2012 at project expense.

The State agrees to relocate any utilities not related to CCLRT but related to the University Avenue Pedestrian / Materials Handling Tunnel at its expense in coordination with the reconstruction of the University Avenue segment between MLK/Park and Robert Street scheduled

for May 2012 to November 30, 2012, subject to the availability of funding for this purpose. If in the event the Met Council or the State is unable to satisfactorily complete its respective utility relocations they are responsible for by November 30, 2012, either party may engage the other to consider change order(s) work under the other parties' contract.

The Met Council agrees to coordinate with the State design and construction necessary for structural support under the CCLRT embedded track for the University Avenue Pedestrian / Materials Handling Tunnel.

The Met Council will enter into an Operations and Maintenance Agreement with Ramsey County for the purposes of operating CCLRT on Ramsey County Right-of-Way. The State will enter into an Operations and Maintenance Agreement with Ramsey County for the purposes of operating its University Avenue Pedestrian / Materials Handling Tunnel on Ramsey County Right-of-Way.

Subject to the availability of funding as determined by the State, the State agrees to issue notice to proceed to its contractor to undertake construction of the University Avenue Pedestrian / Materials Handling Tunnel on or before June 2012.

B. Aesthetic Elements. The Met Council will fund from its own capital fund resources \$392,000 for the approved Capitol Area Architecture Planning Board betterments as presented to the Board October 16, 2009. The Met Council will include in its Civil East contractor scope these same elements for construction.

Article 9 State-owned Real Estate

The Met Council has concluded that access is being eliminated to the three properties shown on the attached map (hereinafter "Attachment 1") that border the state-owned Lot AA (collectively "University Avenue Properties").

The Met Council is currently completing appraisals of three properties that border the state-owned Lot AA, which will determine if a total or partial taking of the University Avenue Properties is required for the CCLRT project. In the event it is determined to be a total taking and the properties are acquired for the CCLRT project, the Met Council agrees to declare the University Avenue Properties surplus consistent with Federal surplus property regulations set forth in the Federal Transit Administration Circular 5010.1.D. If no federal agencies acquire the real estate, the Met Council will immediately notify the State upon expiration of the option for federal agencies to acquire the real estate. Upon such notice, the Met Council will provide reasonable access to the University Avenue Properties to the State for purposes of conducting Phase I and Phase II Environmental Site Assessments. The State will have no less than 150 days from the date of such notice to request the Met Council to convey fee title to the University Avenue Properties to the State. Upon the request of the State, the Met Council agrees to convey fee title to the University Avenue Properties to the State at no cost to the State.

All buildings, including below-grade foundations, will be abated, demolished and removed by the Met Council, at its costs, prior to conveyance of fee title of the University Avenue Properties to the State. Any hazardous materials required to be removed as part of demolition activities under Federal or Minnesota Pollution Control Agency guidelines, rules, regulations or directives shall be removed by the Met Council, at its costs, prior to conveyance of fee title to the State.

Article 10

Pedestrian Safety/Building Access

The Met Council recognizes that the location of the CCLRT tracks are in close proximity from the main pedestrian access for several state facilities including the Minnesota State Capitol Building, Freeman Office Building, Stassen Building, MDA/MDH Laboratory Building and Andersen Building. The Met Council has represented that the CCLRT design, as proposed, will not adversely affect pedestrian mobility, building access, snow removal/storage and pedestrian safety. If the State determines, after completion of construction and implementation of CCLRT operation, that such issues have not been satisfactorily designed, the Met Council will take the steps necessary to design, test and implement, at its full cost, all necessary changes required to address the adverse impacts related to pedestrian mobility, building access, snow removal/storage and pedestrian safety to the State's reasonable satisfaction in a timely manner.

Article 11

Maintenance

The Met Council acknowledges that a rigorous program of LRT vehicle, rail and rail bed maintenance is essential for the CCLRT to operate at peak levels of efficiency and safety. The Met Council further acknowledges that wheel flats, corrugated rail and other elements of a deteriorated rail system, including poorly maintained rail beds, can exacerbate the effects of CCLRT-caused vibration and ground-borne noise. The Met Council hereby agrees to maintain its vehicle fleet and infrastructure, including the rails and rail bed in the Capitol Area, in excellent condition, implementing all manufacturer maintenance and operation criteria, on a preventative maintenance frequency as defined by the manufacturers.

The State will continue to be responsible for the maintenance of the existing state-owned land and improvements currently maintained by the State.

The Met Council is responsible for maintenance of all improvements related to CCLRT, unless otherwise agreed to in writing by the parties.

Article 12

Easements

The Met Council shall provide the State drawings of all proposed easement areas, temporary and permanent, of state owned property under the custodial control of the Department of Administration for the purpose of construction and operation of the CCLRT project. The Met Council shall include the applicable plans and specifications, as amended, for improvements to be

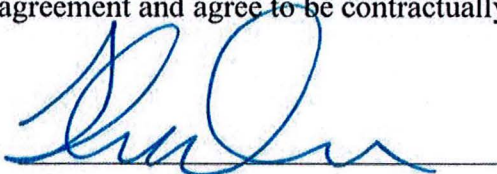
constructed in the easement areas and a description of all work to be completed on the easement areas.

The State shall provide any required changes in writing to the Met Council within ten business days of receipt of drawings, applicable plans and specifications, and the description of work to be completed in the easement areas. Upon approval by the State, such approval will not be unreasonably be withheld, the Met Council shall prepare and provide to the State a certificate of survey and legal description for each easement area. Upon receipt, the State shall provide an easement agreement(s) to the Met Council for execution within ten business days following the execution of this Agreement.

Article 13 Power Plant Building

Upon request by the State, the Met Council agrees, at no cost to the State, to de-energize the overhead catenary system (OCS) and suspend operation of the Central Corridor Light Rail Transit line in order to provide the State access for replacement of cooling chiller equipment located south of University Avenue and west of Robert Street. Operations will be suspended on a weekend, and an additional weekend if necessary, agreed to by both the Met Council and the State. Notwithstanding the foregoing, the State shall notify the Met Council of any event requiring immediate access for emergency replacement of cooling chiller equipment. Upon such notice, the Met Council agrees to suspend evening/overnight operations to facilitate such emergency replacement.

By signing this letter the parties agree that they have the requisite authority to enter into this letter agreement and agree to be contractually bound by the above-referenced terms and conditions.



Thomas H. Weaver
Regional Administrator

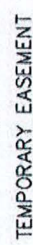
10-12-10
Date

Agreed to by:



Sheila Reger
Commissioner of Administration

12/16/10
Date



ATTACHMENT 1

Vap, Alicia

From: Peach, Diane
Sent: Wednesday, September 13, 2017 8:48 AM
To: Vap, Alicia
Subject: Summary of landscaping meeting regarding Capitol Area

From: Vap, Alicia
Sent: Wednesday, April 23, 2014 1:35 PM
To: Chris Guevin (chris.guevin@state.mn.us); (joe.dinnebier@state.mn.us); John Maczko; Paul Mandell (paul.mandell@state.mn.us)
Cc: Sorensen, Greg; O'Brien, Kathryn; CCPODMC
Subject: 4/16/14 Landscaping Meeting re Capitol Area Summary

Summary of April 17 Landscaping Meeting re Capitol Area

Attendees:

Chris Guevin, Joe Dinnebier, Sandia O'Brien, Department of Administration
Paul Mandell, Capitol Area Architectural and Planning Board
John Maczko, City of St. Paul
Alicia Vap, Kathryn O'Brien, Greg Sorensen, CCPO

Landscaping Maintenance

Four areas remain outstanding in terms of who would maintain the landscaping--east of Rice Street station, at Robert and University, north/south of the Robert Street station, and at Robert and 12th. Admin agreed to maintain these areas, but would like CCPO to review the corner of Robert and University. This corner has experienced trucks jumping the curb and damaging the landscaping. CCPO will review. Department of Administration (Admin) would also like irrigation record drawings of this area; CCPO will provide.

Other/Outstanding Issues:

12th Street Plantings

During CCLRT construction, trees on the south side of 12th St from Robert to Minnesota were removed. The state would like to replant, but would like asbuilts to see what they can plant—there may be conduit, etc., in the area that may prohibit much plantings. CCPO will provide.

Maintenance Staircase

Admin brought up an issue regarding access to the Maintenance Building. Employees are access this building from the south via the maintenance road as there is no longer a sidewalk to the building after CCLRT construction and they are concerned regarding safety--this issue has been reviewed previously by CCPO. Admin requested CCPO review the constructing a staircase to the west of TPSS 11 with access from the Judicial Parking Lot. CCPO expressed concern regarding accessibility as there would not be adequate slope for a companion accessible path. Admin indicated the building is not an accessible building, and they discuss this issue with State Disability Council prior to additional review.

Snow maintenance

Admin requested a meeting with Metro Transit to discuss snow maintenance. CCPO to schedule.

Outstanding plantings

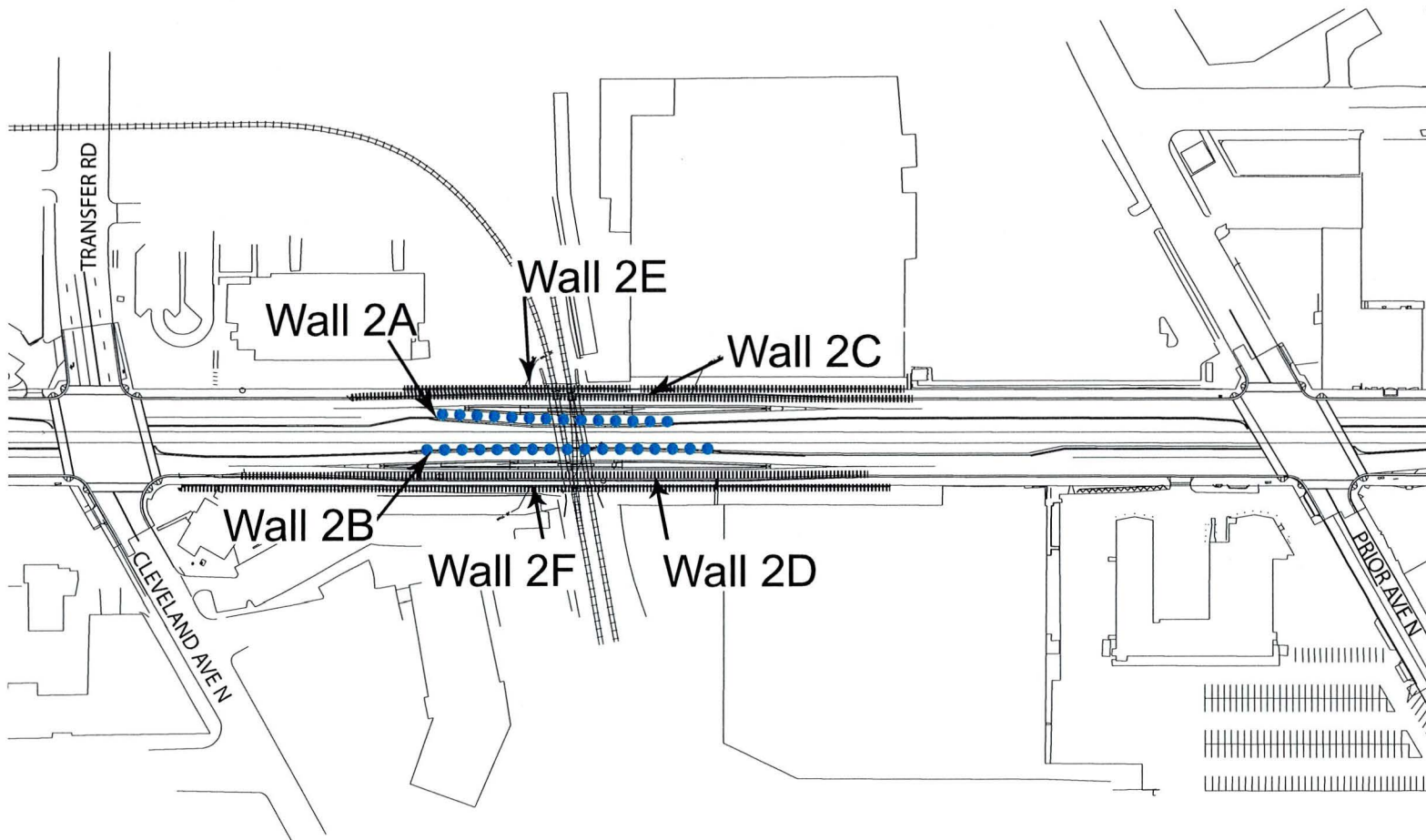
Admin has additional areas of plantings that need to be restored. They will share that information with CCPO.

Action Items:

- CCPO to provide Admin with Metro Transit safety training information. **UPDATE: AV EMAILED to JD 4/16/14**
- CCPO to provide irrigation record drawings.

- CCPO to provide asbuilts of underground conduit, of 12th Street from Robert to Minnesota.
- CCPO to review Robert/University corner.
- Admin will meet with State Disability Council to discuss access to the Maintenance Building.
- CCPO to schedule a snow maintenance meeting with Admin staff. **UPDATE: MEETING SCHEDULED FOR 4/24/14**
- Admin to share planting areas to be restored with CCPO.

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alicia.vap@metc.state.mn.us



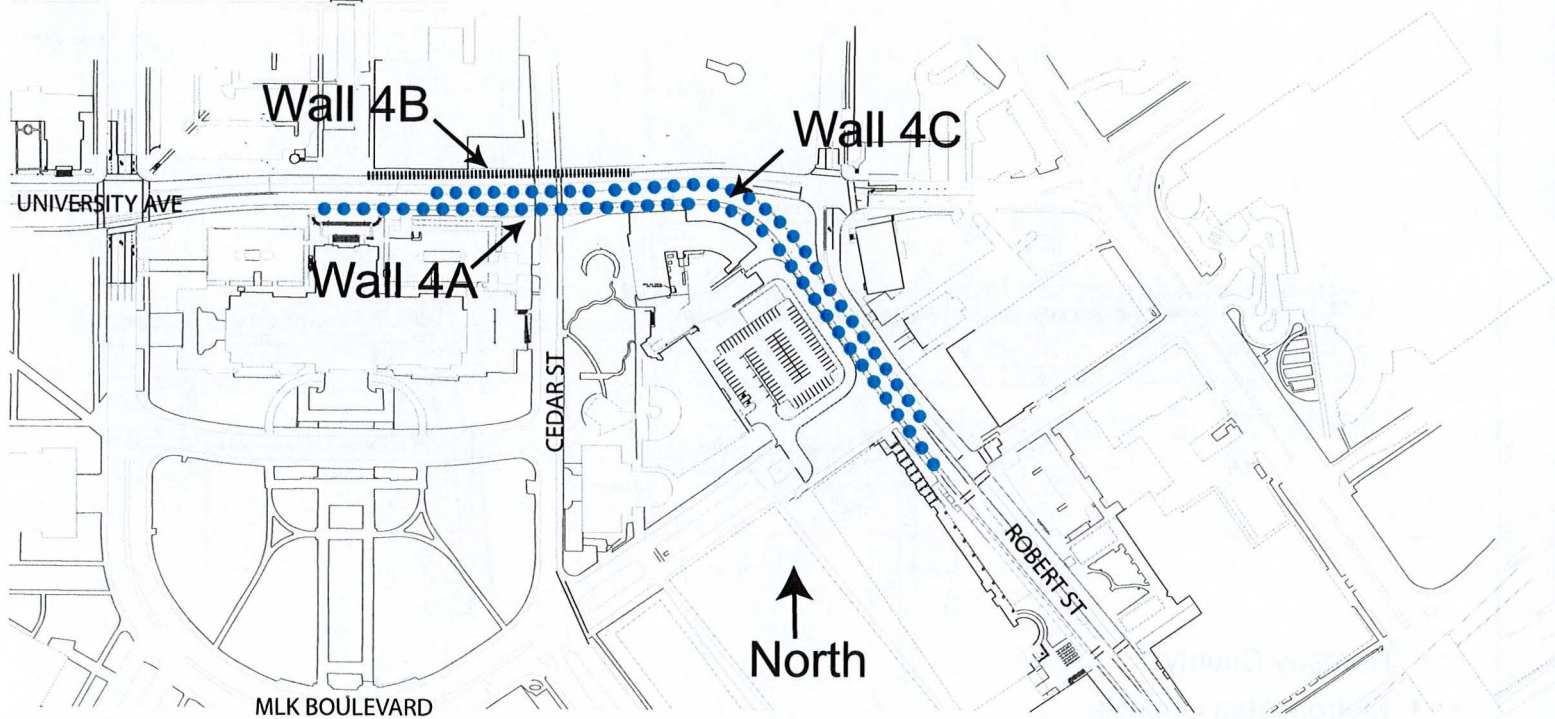
..... Ramsey County

.... Metropolitan Council

North

Retaining Walls

Exhibit F



- Ramsey County
- Metropolitan Council

Retaining Walls/Fences

Exhibit F

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- Ramsey County
- ... Metropolitan Council

Retaining Walls/Fences

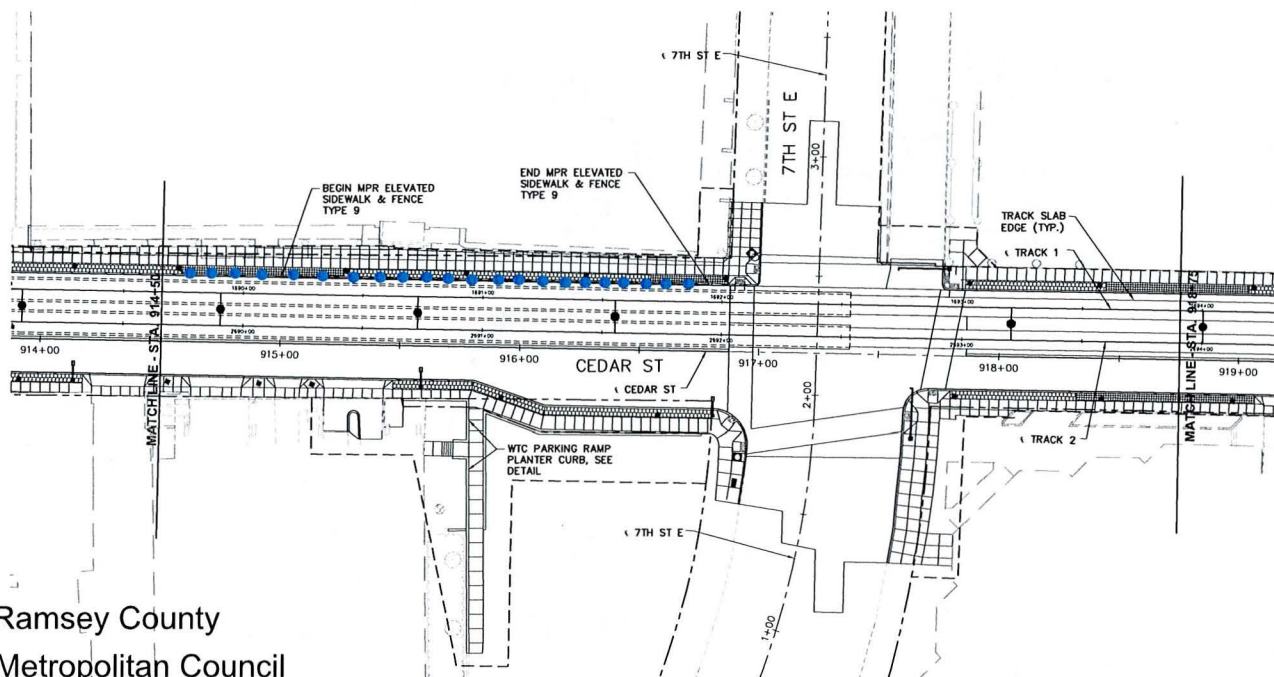
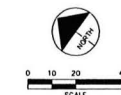
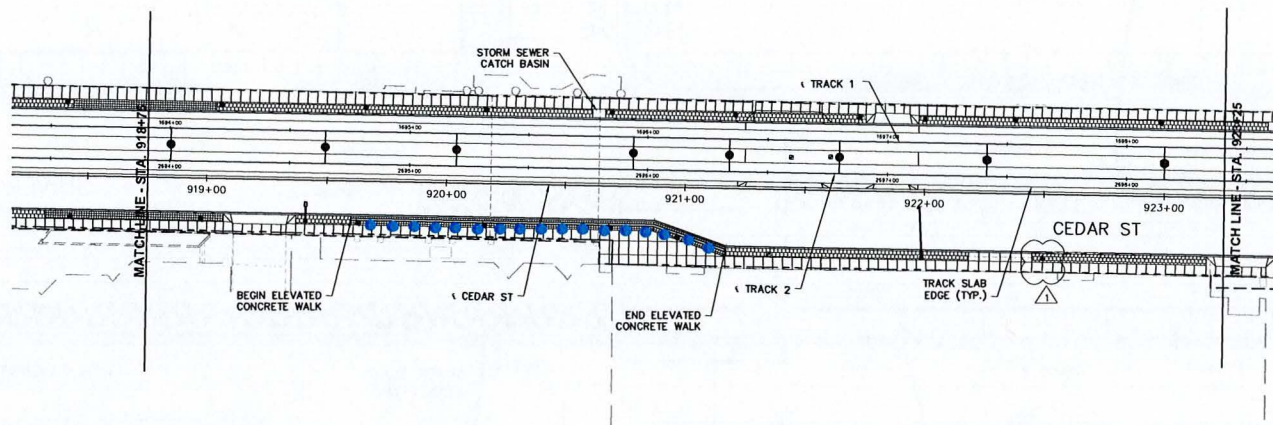


Exhibit F

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									URBAN DESIGN PLAN			2711
A	07/30/10	BRG	TPH	TPH	AS-BUILT SHEET					OF		
2	04/06/10	ALA	TPH	TPH	ADJUSTED PAVEMENT BAND FOR TURN LANE					4851		
3	03/01/10	ALA	TPH	TPH	ADDENDUM NO. 2 - SIDEWALK JOINTS							
4	03/04/10	ALA	TPH	TPH	ISSUED FOR BID							
						DISCIPLINE: LANDSCAPE ARCH		SHEET NAME: URD-E-PLN-076				

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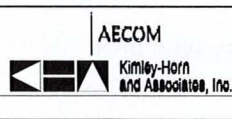
■■■■■ Ramsey County
●●● Metropolitan Council

Retaining Walls/Fences

Exhibit F

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1	03/01/09	ALA	TPH	TPH	AS-BUILT SHEET
2	03/01/09	ALA	TPH	TPH	ADDENDUM NO. 2: TRASH RECEPTACLE ADDED
3	03/01/09	ALA	TPH	TPH	ISSUED FOR BID

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CIVIL EAST CONSTRUCTION - VOLUME 7	
URBAN DESIGN PLAN	
CEDAR ST 918+75 - 923+25	
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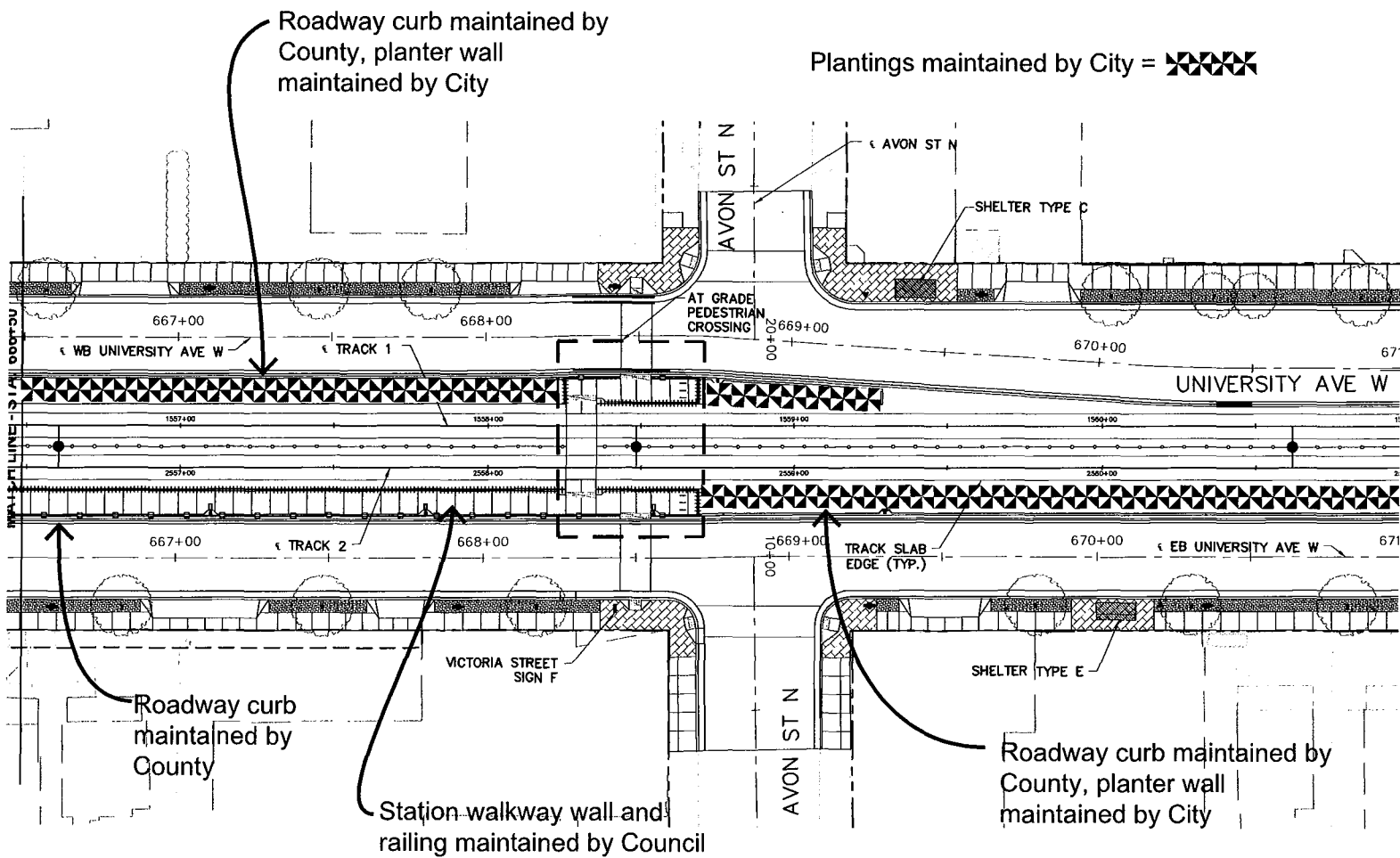
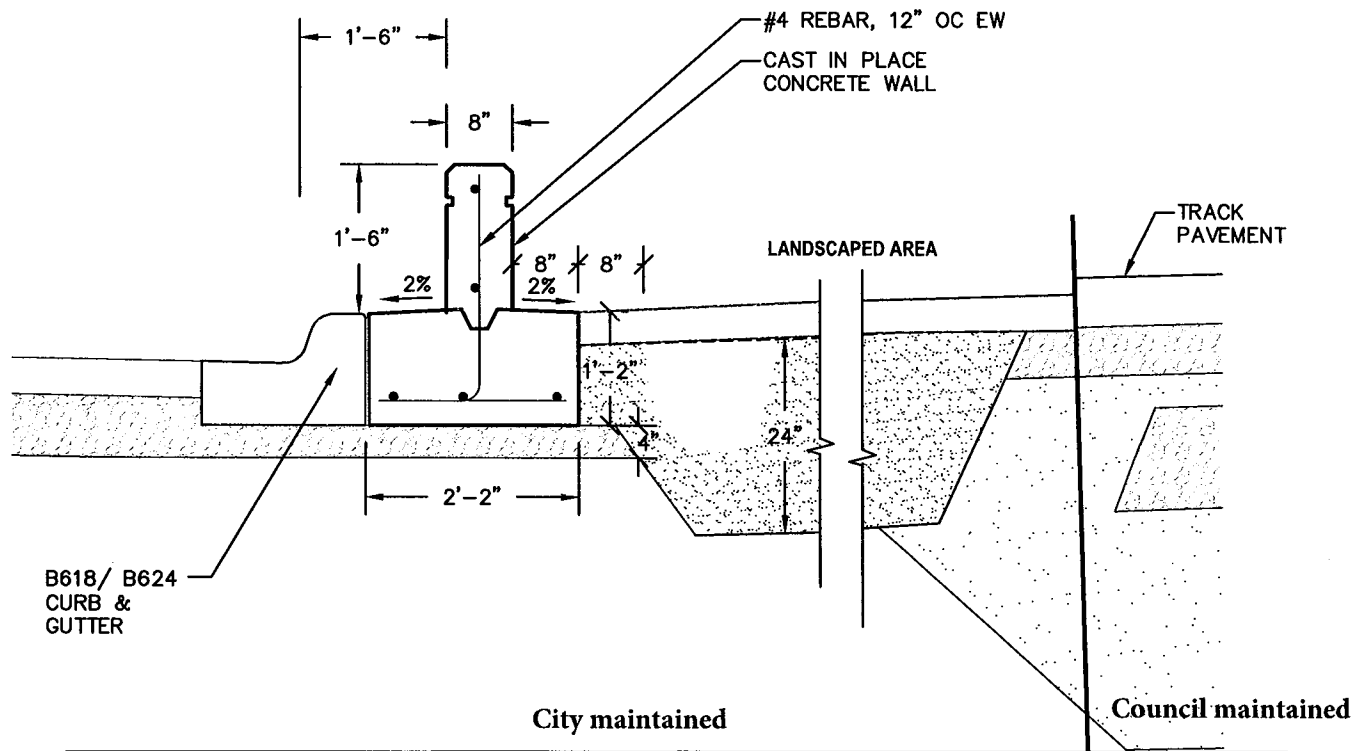


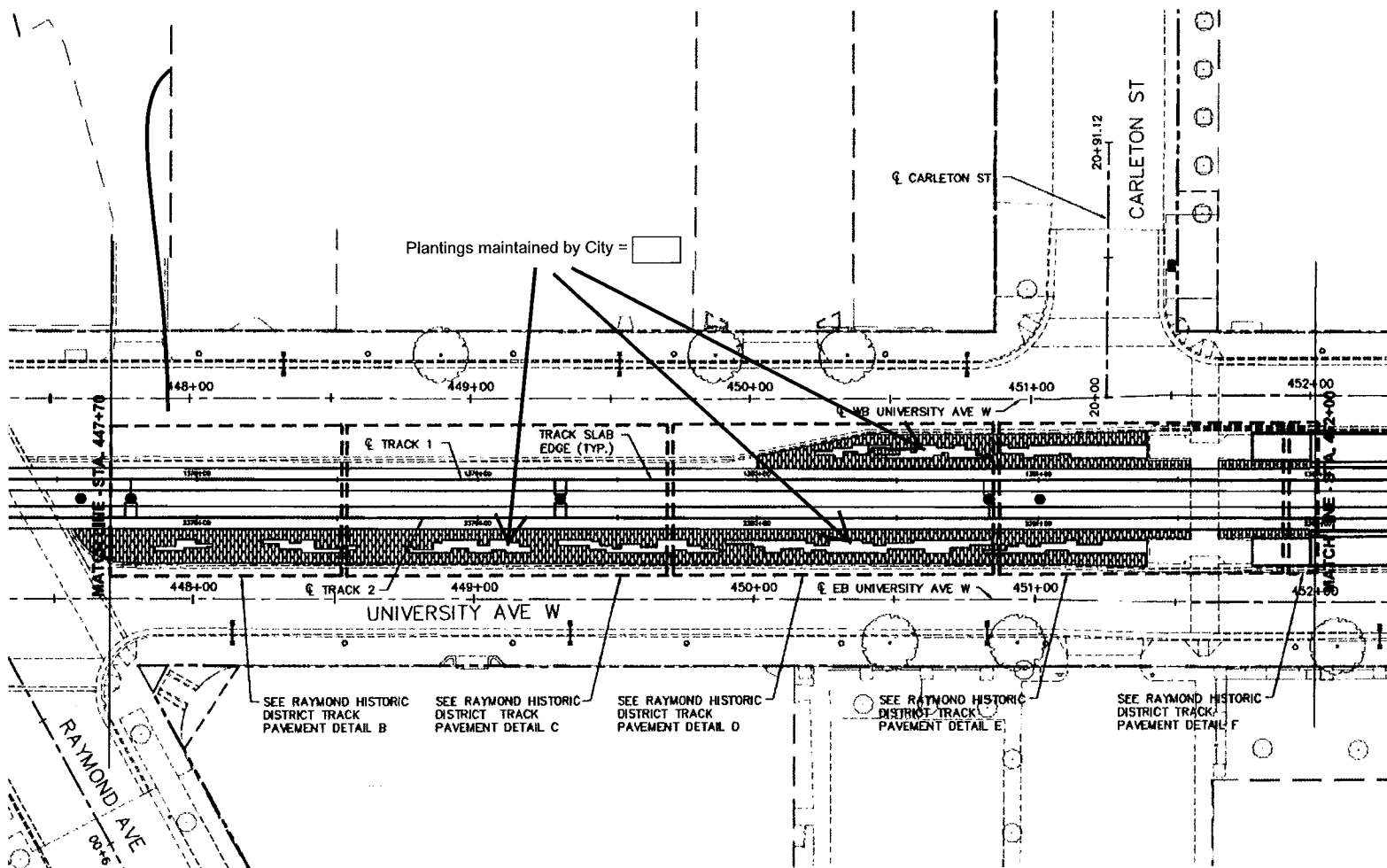
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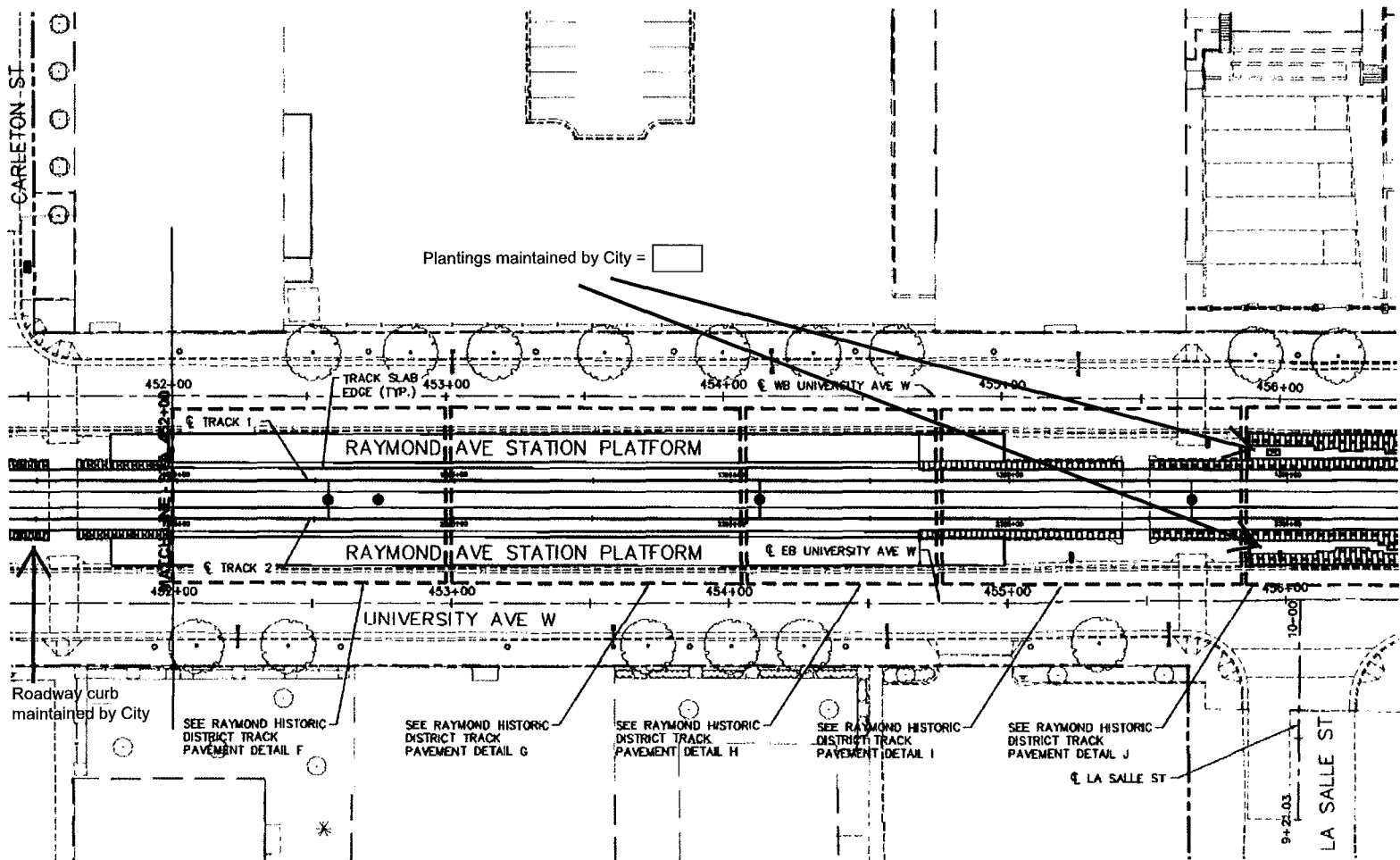


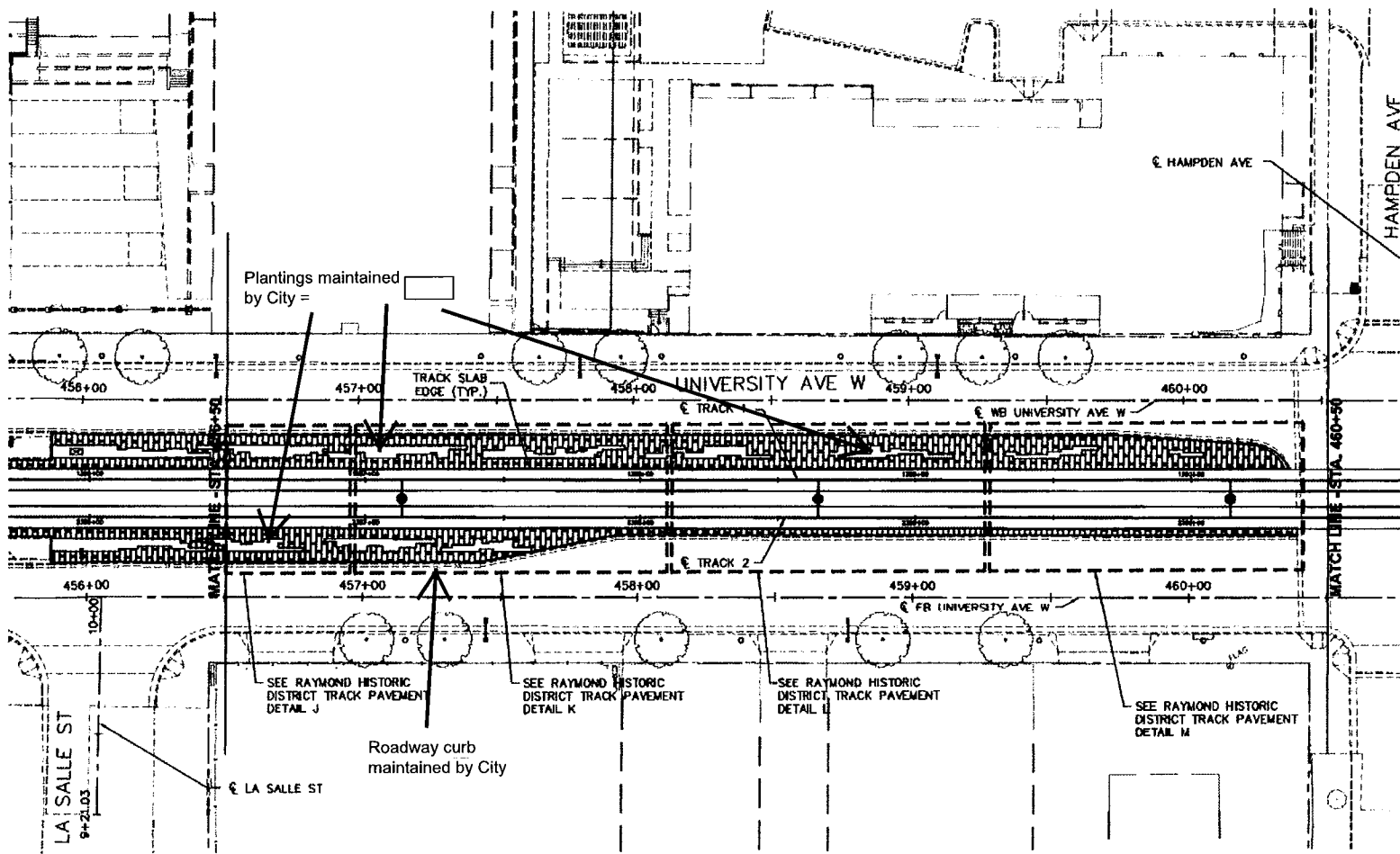
MEDIAN PLANTER WALL



Exhibit G









Light Rail SOP

Standard Operating Procedure: Rail Operations	Publication # 100.12	Revision #5 Date: 8-2013	Page 1 of 2
Title: Work Permit Procedure			
Distribution: All Rail Operations, Maintenance, and Rail Facility Employees			
Issued by: Standard Operating Procedures Committee		Approved by: Vince Pellegrin Chief Operations Officer Metro Transit	
Supersedes: Standard Operating Procedures May, 2011 Edition			

PURPOSE

To obtain authorization to perform work on Metro Transit Light Rail Right-of-Way, Metro Transit Light Rail has a set protocol to ensure the safety of employees, workers, and passengers.

WHEN TO USE IT

This procedure is to be used anytime:

- Scheduled work will occur within 12-feet of centerline of the rails
- Scheduled work will occur within the adjacent roadway travel lane or the berthing lane
- Scheduled work occurs within any structure/premise that can affect train service (e.g. substation, communication signal house, passenger platforms)
- Scheduled work will affect the movement of passengers to or from trains
- Scheduled work will occur within 20-feet of the Over Head Catenary System that requires the use of a Crane or Derrick

PROCEDURE AND RESPONSIBILITIES

The Metro Transit Light Rail Right-of-Way Allocation Request form (Work Permit) is to be completed by any Metro Transit employee or outside contractor desiring to do work, as described above, on Metro Transit Light Rail Right-of-Way.

Before work begins, any persons requesting Metro Transit Light Rail Right-of-Way access, must first attend the On-Track Right-of-Way safety training program. After completion of the Training Program the requestor must attend the Right-of-Way Track Allocation meeting and be prepared to discuss the work in full detail. In most instances approval will be given to the requestor at this meeting.

CONTRACTOR MUST

- Produce proof of insurance and the Metro Transit Light Rail Right-of-Way training card or certificate at the Track Allocation Meeting
- Not begin work on the Metro Transit Light Rail Right-of-Way until the request has been approved and a Right-of-Way Permit has been issued
- The Right-of-Way training card must be in the possession of all persons entering Metro Transit Light Rail Right-of-Way

Publication Number: 100.12	Revision #4 Date: 8-2013	Page: 2 of 2
Title: Work Permit Procedure		

- Establish a Stationary Work Zone prior to the start of work (SOP #400.02)
- Ensure compliance with all OSHA regulations

Internal departments must complete the form and attend the meeting one-week in advance of the work being requested.

Before work commences, on a daily basis, the On-Scene-Supervisor/Coordinator must call the Rail Control Center (612-341-5710) for daily activation of the Work Permit and notification on the Metro Transit Light Rail Right-of-Way.

The Metro Transit Light Rail Right-of-Way Track Allocation meetings will be held, unless otherwise specified, every Thursday at 2:00 pm, in the Operations and Maintenance Building (O & M) 3rd Floor, Conference Room. Completed forms should be faxed to 341-5677, Attention: Manager Rail Operations.

EMPLOYEE RESPONSIBILITY

Employee responsibilities are outlined in training and the applicable Metro Transit Light Rail Operating Rules (current version).

REFERENCE

Metro Transit Rail Operations Rule Book (current version).

GENERAL LEGEND

	ROADWAY $\oslash$
	TRACK $\odot$
	CONCRETE CURB AND GUTTER
	RETAINING WALL
	BALLAST CURB
	TUNNEL WALL
	EX ROW
	PROP ROW
	PROP TCE
	PROP PE
	DELINEATED WETLAND
	WATER EDGE
	CROSSWALK
	TRAIL (WIDTH VARIES)
	DRIVEWAY (DESIGN VARIES)
	PEDESTRIAN RAMP (DESIGN VARIES)
	AUTOMATIC GATE
	PEDESTRIAN FLASHER
	OCS POLE
	TPSS BUILDING (TPSS-SW###)
	SIGNAL OR INTERMEDIATE OR PLATFORM OR XING OR TUNNEL HOUSE OR ANY COMBINATION OF THESE

CORRIDOR PLAN AND OFF-SITE ROADWAY PLAN LEGEND

	CONCRETE WALK
	FENCE TYPE A, D
	FENCE TYPE B, C, E
	PLATFORM ACCESS RAILING – SEE VOL. 11E
	BUS SHELTER TYPE C (BY OTHERS)
	BUS SHELTER TYPE E (BY OTHERS)
	SOUTHWEST TRANSIT BUS SHELTER
	BENCH
	BICYCLE LOOP
	TRASH AND RECYCLING RECEPTACLE
	BOLLARD
	WAYFINDING SIGN
	WETLAND BUFFER SIGN
	OVERSTORY DECIDUOUS TREE
	OVERSTORY DECIDUOUS TREE IN TREE GRATE
	ORNAMENTAL DECIDUOUS TREE
	CONIFEROUS TREE
	SHRUB
	PERENNIAL/ORNAMENTAL GRASS
	SOD
	SEED TYPE 1 – SEED MIX #25–151 (HIGH MAINTENANCE TURF)
	SEED TYPE 2 – SEED MIX #35–241 (MESIC PRAIRIE)
	SEED TYPE 3 – SEED MIX #33–261 (STORMWATER SOUTH & WEST)
	SEED TYPE 4 – SEED MIX #34–181 (EMERGENT WETLAND)
	ROCK MULCH
	AGGREGATE PATH
	LANDSCAPE (BY OTHERS)

SITE PLAN URBAN DESIGN LEGEND

	CONCRETE WALK
	WALK – SPECIAL PAVEMENT
	FENCE TYPE A, D
	FENCE TYPE B, C, E
	PLATFORM ACCESS RAILING – SEE VOL. 11E
	BUS SHELTER TYPE C (BY OTHERS)
	BUS SHELTER TYPE E (BY OTHERS)
	SOUTHWEST TRANSIT BUS SHELTER
	BENCH
	BICYCLE LOOP
	TRASH AND RECYCLING RECEPTACLE
	BOLLARD
	WAYFINDING SIGN
	WETLAND BUFFER SIGN
	OVERSTORY DECIDUOUS TREE
	OVERSTORY DECIDUOUS TREE IN TREE GRATE
	ORNAMENTAL DECIDUOUS TREE
	CONIFEROUS TREE

GENERAL NOTES

1. THE LINEWORK OR HATCH PATTERN SHOWN ON THE SIDEWALK IS PROVIDED TO HELP DELINEATE SIDEWALK LOCATIONS AND IS NOT INTENDED TO REPRESENT A JOINTING LAYOUT, UNLESS DIMENSIONED IN PLANS. SEE SPECIFICATIONS FOR REQUIREMENTS.
2. WHERE REQUIRED, ALL METAL URBAN DESIGN ELEMENTS INCLUDING FENCES, RAILINGS, AND BIKE RACKS ADJACENT TO TRACKWAY SHALL BE GROUNDED.
3. FENCES WITHIN 15'-0" OF THE CENTER LINE OF THE LRT TRACKS SHALL BE GROUND PER SPECIFICATION 26 05 26 GROUNDING SYSTEMS.
4. SEE PLANS FOR LOCATION OF MAN AND VEHICLE GATES FOR TYPE B AND C FENCE. PLANS INDICATE DIRECTION OF GATE SWING.
5. BUS SHELTERS C AND E ILLUSTRATED WITHIN THE PLANS WILL BE FURNISHED AND INSTALLED BY METRO TRANSIT AND ARE NOT INCLUDED IN THIS CONTRACT. THE SHELTER DESIGNATIONS (TYPE C OR E) SHOWN IN PLANS REFER TO THE TYPE OF SHELTER THAT WILL BE INSTALLED BY LOCATION. CONTRACTOR TO COORDINATE METRO TRANSIT'S INSTALLATION OF THESE SHELTERS.

[illegible]

AECOM Kimley»Horn

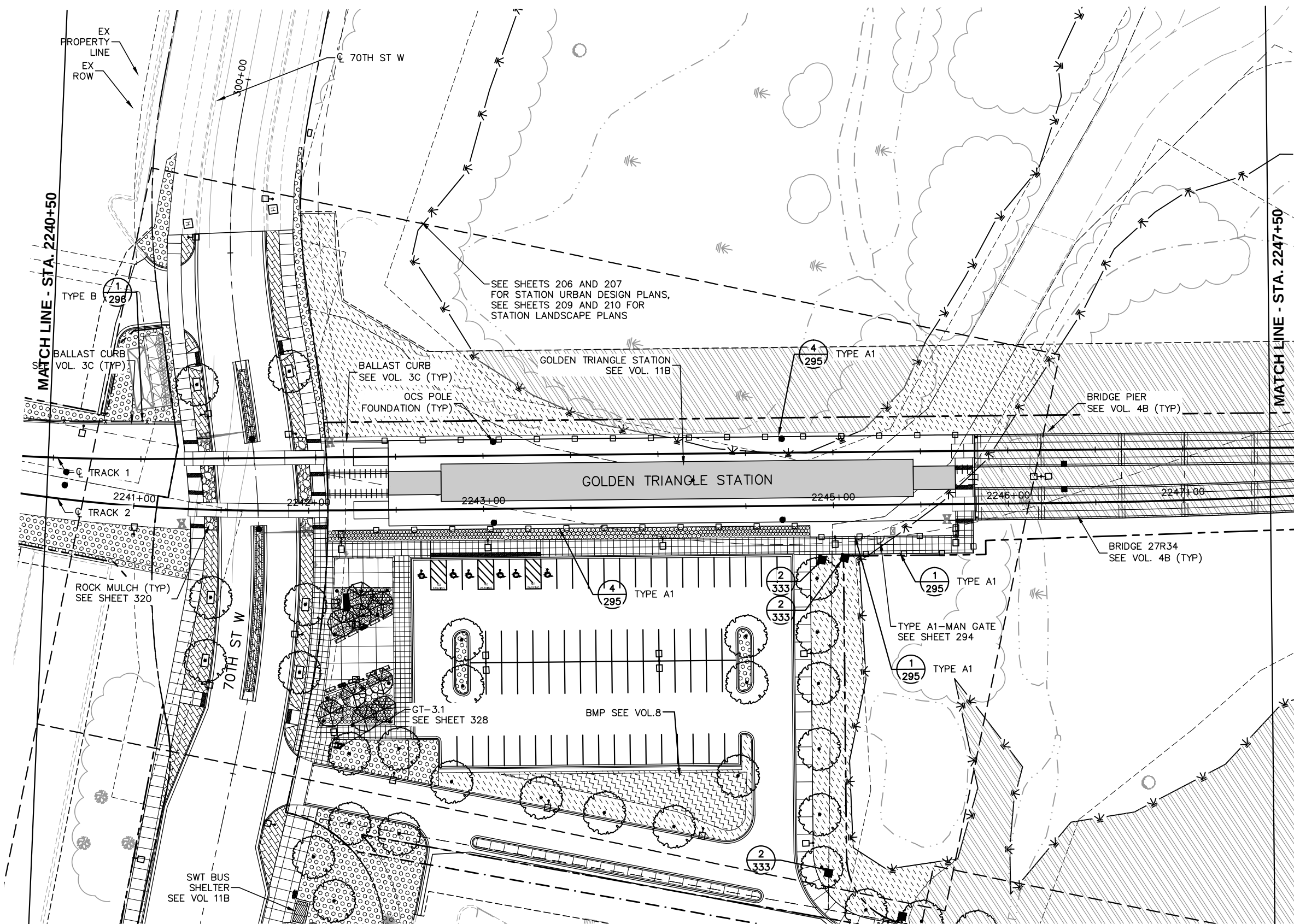


CIVIL - VOLUME 9
URBAN DESIGN
NOTES, ABBREVIATIONS, & SYMBOLS

DISCIPLINE: **LANDSCAPE ARCH**

SHEET NAME:	E0-URD-LGD-001
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SHEET
21
OF
340



SHEET
54
OF
340

METRO Blue Line Light Rail Extension Project Noise and Vibration Technical Report

To: Kelcie Young Environmental Project Manager and Neha Damle Environmental Project Manager

From: Lance Meister, Cross-Spectrum Acoustics, Inc.
Joelle Suits, Cross-Spectrum Acoustics, Inc.

Date: February 22, 2024

Subject: Draft Noise and Vibration Technical Report for Metro Blue Line Light Rail Extension Project Supplemental Draft EIS

Contents

1	Introduction	5
2	Summary of Assessment Results	5
2.1	Noise.....	5
2.2	Vibration	6
3	Regulatory Context	6
3.1	Noise.....	6
3.1.1	Noise Basics.....	6
3.1.2	Noise Impact Criteria	7
3.2	Vibration	11
3.2.1	Vibration Impact Criteria.....	13
4	Impact Assessment Methodology	18
4.1	Noise.....	18
4.2	Vibration	19
4.3	Construction Noise Assessment Methodology	21
4.4	Construction Vibration Assessment Methodology	22
5	Affected Environment.....	23
5.1	Noise.....	23
5.1.1	Noise Sensitive Land Use	23
5.1.2	Existing Noise Measurements	24
5.2	Vibration	30
5.2.1	Vibration Sensitive Land Use.....	30
5.2.2	Existing Vibration Measurements	30



6	Environmental Consequences	34
6.1	Project Noise	35
6.1.1	Capri Theater	49
6.1.2	Stations	50
6.1.3	Operations and Maintenance Facility	50
6.1.4	Construction Noise	50
6.2	Project Vibration	52
6.2.1	Project Vibration	52
6.2.2	Stations	59
6.2.3	Operations and Maintenance Facility	59
6.2.4	Construction Vibration	59
7	Mitigation Measures	60
7.1	Noise	60
7.1.1	Metro Transit Noise Mitigation Approach	60
7.1.2	Noise Mitigation Methods	61
7.1.3	Project Noise Mitigation	62
7.1.4	Construction Noise Mitigation	63
7.2	Vibration	63
7.2.1	Vibration Mitigation Methods	63
7.2.2	Project Vibration Mitigation	64
7.2.3	Construction Vibration Mitigation	64
8	References	65
	Appendix A Existing Outdoor Noise Measurement Location Photographs	66
	Appendix B Noise Measurement Data	76
	Appendix C Vibration Measurement Location Photographs	84
	Appendix D Vibration Measurement Data	87
	Appendix E Project Noise Analysis from Project Alignment and Design Options Evaluated	94
	Appendix F Project Vibration Analysis from Other Project Alignment and Design Options Evaluated	123

List of Figures

Figure 3-1 Cumulative Noise Levels from Transit Sources	7
Figure 3-2 FTA Noise Impact Criteria	9
Figure 3-3 Vibration Levels from Typical Sources.....	12
Figure 3-4 Detailed Vibration Criteria.....	16
Figure 4-1 Force Density Levels at 40 mph	20
Figure 5-1 Existing Noise Measurement Locations	28
Figure 5-2 Vibration Propagation Measurement Schematic.....	31
Figure 5-3 Vibration Propagation Measurement Locations.....	33
Figure 5-4 Line Source Transfer Mobility Results at 50 feet	34
Figure 6-1 Project Noise Impacts in the City of Brooklyn Park.....	38
Figure 6-2 Project Noise Impacts in the City of Crystal.....	41
Figure 6-3 Project Noise Impacts in the City of Robbinsdale	44
Figure 6-4 Project Noise Impacts in the City of Minneapolis	48
Figure 6-5 Project Vibration Impacts in the City of Minneapolis along the 21st Ave N and Washington Ave Option	58

List of Tables

Table 3-1 Land Use Categories and Metrics for Transit Noise Impact Criteria	8
Table 3-2 Land Use Categories and Metrics for Transit Noise Impact Criteria	10
Table 3-3 FTA Construction Noise Criteria	11
Table 3-4 Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for General Assessment.....	14
Table 3-5 Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for Special Buildings.....	15
Table 3-6 FTA Construction Vibration Criteria	17
Table 3-7 FTA Vibration Damage Criteria from Construction	18
Table 4-1 Blue Line Reference Noise Levels.....	19
Table 4-2 Construction Equipment Noise Emission Levels	21
Table 4-3 Construction Equipment Vibration Source Levels.....	23
Table 5-1 Summary of Existing Noise Level Measurements	25
Table 5-2 Summary of Existing L10 and L50 Noise Levels at Long-Term Noise Measurement Locations	29
Table 6-1 Summary of Noise Impacts for Residential Land Use in the City of Brooklyn Park.....	36
Table 6-2 Summary of Noise Impacts for Institutional Land Use in the City of Brooklyn Park	37
Table 6-3 Summary of Noise Impacts for Residential Land Use in the City of Crystal.....	39
Table 6-4 Summary of Noise Impacts for Institutional Land Use in the City of Crystal	40
Table 6-5 Summary of Noise Impacts for Residential Land Use in the City of Robbinsdale	42
Table 6-6 Summary of Noise Impacts for Institutional Land Use in the City of Robbinsdale	43
Table 6-7 Summary of Noise Impacts for Residential Land Use in the City of Minneapolis	45
Table 6-8 Summary of Noise Impacts for Institutional Land Use in the City of Minneapolis	47
Table 6-9 FTA Noise and Vibration Criteria for the Capri Theater.....	49
Table 6-10 Summary of Project Noise and Vibration Levels for the Capri Theater.....	50
Table 6-11 Typical Construction Noise Levels	51
Table 6-12 Summary of Historic and Cultural Resources Noise Assessment.....	52
Table 6-13 Summary of Vibration Impacts for Residential Land Use in the City of Brooklyn Park	53



Table 6-14 Summary of Vibration Impacts for Institutional Land Use in the City of Brooklyn Park	54
Table 6-15 Summary of Vibration Impacts for Residential Land Use in the City of Crystal	54
Table 6-16 Summary of Vibration Impacts for Institutional Land Use in the City of Crystal	55
Table 6-17 Summary of Vibration Impacts for Residential Land Use in the City of Robbinsdale	55
Table 6-18 Summary of Vibration Impacts for Institutional Land Use in the City of Robbinsdale.....	55
Table 6-19 Summary of Vibration Impacts for Residential Land Use in the City of Minneapolis for the Build Alternative	56
Table 6-20 Summary of Vibration Impacts for Institutional Land Use in the City of Minneapolis (21st Ave N to Washington Ave).....	57
Table 6-21 Summary of Potential Construction Vibration Impacts.....	59
Table E-1 Summary of Residential Noise Impacts by Project Cities and Option	94
Table E-2 Summary of Noise Impacts for Residential Land Use in the City of Minneapolis (21st Ave to East of I- 94)	96
Table E-3 Summary of Noise Impacts for Institutional Land Use in the City of Minneapolis (21st Ave to East of I-94)	99
Table E-4 Summary of Noise Impacts for Residential Land Use in the City of Minneapolis (21st Ave N to Lyndale Ave)	103
Table E-5 Summary of Noise Impacts for Institutional Land Use in the City of Minneapolis (21st Ave N to Lyndale Ave)	106
Table E-6 Summary of Noise Impacts for Residential Land Use in the City of Minneapolis (W Broadway Ave to East of I-94).....	110
Table E-7 Summary of Noise Impacts for Institutional Land Use in the City of Minneapolis (W Broadway Ave to East of I-94).....	112
Table E-8 Summary of Noise Impacts for Residential Land Use in the City of Minneapolis (W Broadway Ave to Lyndale Ave)	116
Table E-9 Summary of Noise Impacts for Institutional Land Use in the City of Minneapolis (W Broadway Ave to Lyndale Ave)	118
Table F-1 Summary of Vibration Impacts by Project Cities and Option.....	123
Table F-2 Summary of Vibration Impacts for Residential Land Use in the City of Minneapolis (21st Ave N to East of I-94).....	124
Table F-3 Summary of Vibration Impacts for Institutional Land Use in the City of Minneapolis (21st Ave N to East of I-94).....	126
Table F-4 Summary of Vibration Impacts for Residential Land Use in the City of Minneapolis (21st Ave N to Lyndale Ave)	130
Table F-5 Summary of Vibration Impacts for Institutional Land Use in the City of Minneapolis (21st Ave N to Lyndale Ave)	131
Table F-6 Summary of Vibration Impacts for Residential Land Use in the City of Minneapolis (W Broadway Ave to East of I-94)	135
Table F-7 Summary of Vibration Impacts for Institutional Land Use in the City of Minneapolis (W Broadway Ave to East of I-94).....	136
Table F-8 Summary of Vibration Impacts for Residential Land Use in the City of Minneapolis (21st Ave N to East of I-94).....	138
Table F-9 Summary of Vibration Impacts for Institutional Land Use in the City of Minneapolis (21st Ave N to East of I-94).....	139



1 Introduction

Cross-Spectrum Acoustics Inc. (CSA) conducted a noise and vibration impact assessment for the proposed METRO Blue Line Light Rail Extension Project (Project) Supplemental Draft Environmental Impact Statement (EIS). Noise and vibration have been assessed in accordance with guidelines specified in the Federal Transit Administration's (FTA's) Transit Noise and Vibration Impact Assessment guidance manual (FTA, 2018). The objective of the assessment was to document the noise and vibration impacts at sensitive locations and identify mitigation measures as a part of the Project.

The noise and vibration analysis for the Build Alternative is presented in the main body of this technical report, the analysis for Project alignment and design options is presented in Appendix E and F. A summary of the assessment results is described below in Section 2. Section 3 provides a discussion of the regulatory context, including noise and vibration basics and details regarding the noise and vibration criteria used to assess impact. Section 4 describes the methodology used to assess noise and vibration impact. Section 5 discusses the existing conditions, including a description of the noise and vibration sensitive land uses and the measurements conducted to determine the existing noise and vibration conditions. Section 6 includes the results of the noise and vibration impact assessment. Mitigation measures are discussed in Section 7. Appendices A and B contain detailed information on the noise measurements conducted for the Project. Appendices C and D contain detailed information on the vibration measurements conducted for the Project.

Based on the screening distances provided in Chapters 4 and 9 of the FTA guidance manual, the noise and vibration study area included the area 350 feet from the center line of the Project Alignment.

2 Summary of Assessment Results

2.1 Noise

This section contains a summary of the noise impacts by city and sensitive land use type. Most of the impacts are due to the proximity of the tracks (wheel/rail interaction) to the sensitive land use, grade crossing bells, and the location of the crossover.

Table 2-1 Summary of Noise Impacts by Municipality

Building Type	# of Properties Affected (# of Dwelling Units [DU])		Cause of Impact
	Moderate Impact	Severe Impact	
City of Brooklyn Park			
Single-family	1	0	Expansion of County Road (CR) 103 and LRV bells.
Multi-family	3 (12 DUs)*	0	
Institutional	1	0	
City of Crystal			
Single-family	4	0	Wheel/rail interaction and speed of train.
Multi-family	1 (14 DUs)*	0	
Institutional	0	0	
City of Robbinsdale			
Single-family	2	0	Wheel/rail interaction and speed of train.
Multi-family	0	0	



Building Type	# of Properties Affected (# of Dwelling Units [DU])		Cause of Impact
	Moderate Impact	Severe Impact	
Institutional	0	0	
City of Minneapolis			
Single-family	11	10	Wheel/rail interaction, LRV bells.
Multi-family	5 (200 DUs)*	5 (163 DUs)*	
Institutional	1	0	

Source: *Noise and Vibration Technical Report*. Cross-Spectrum Acoustics, Inc. 2023.

*Includes total number of DUs at the affected properties. Additional noise measurements and analysis will be performed to determine potential impacts at each dwelling unit and the reasonable and feasible mitigation measures that would be implemented.

2.2 Vibration

The detailed vibration analysis identified 28 vibration impacts in the City of Minneapolis. These impacts are due to proximity of sensitive receptors to the Project Alignment.

3 Regulatory Context

3.1 Noise

3.1.1 Noise Basics

Sound is defined as small changes in air pressure above and below the standard atmospheric pressure and noise is usually considered to be unwanted sounds. The three parameters that define noise include:

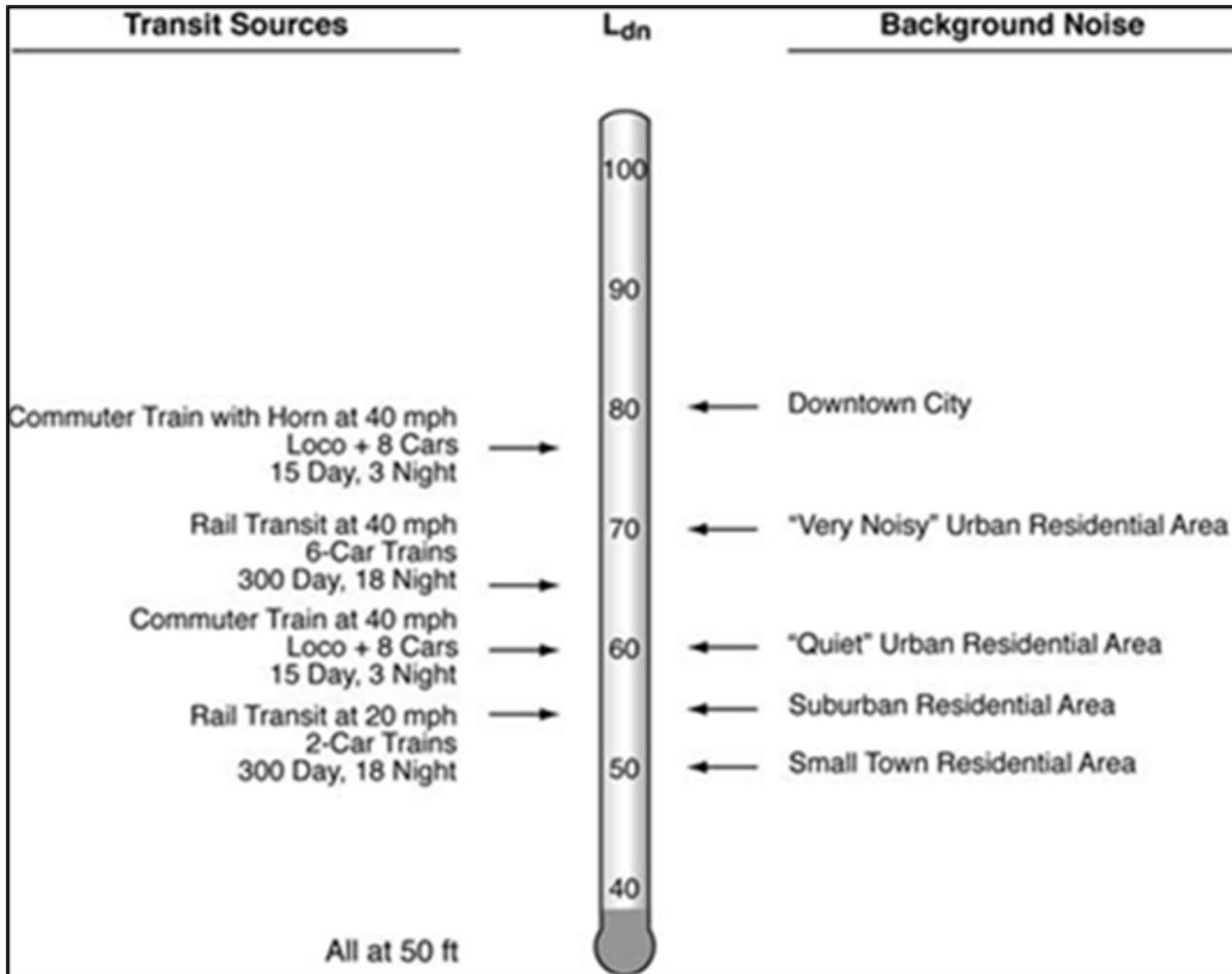
- **Level:** The level of sound is the magnitude of air pressure change above and below atmospheric pressure and is expressed in decibels (dB). Typical sounds fall within a range between 0 dB (the lower limits of human hearing) and 120 dB (the highest sound levels experienced in the environment). A 3 dB change in sound level is perceived as a barely noticeable change outdoors and a 10-dB change in sound level is perceived as a doubling (or halving) of the sound level.
- **Frequency:** The frequency (pitch or tone) of sound is the rate of air pressure changes and is expressed in cycles per second, or Hertz (Hz). Human ears can detect a wide range of frequencies from around 20 Hz to 20,000 Hz; however, human hearing is not effective at high and low frequencies, and the A-weighting system (dBA) is used to correlate with human response to noise. The A-weighted sound level has been widely adopted by acousticians as the most appropriate descriptor for environmental noise.
- **Time Pattern:** Because environmental noise is constantly changing, it is common to condense all this information into a single number, called the equivalent sound level (Leq). The Leq represents the changing sound level over a period of time, typically 1 hour or 24-hours in transit noise assessments. For light rail transit (LRT) and freight rail projects, the day-night sound level (Ldn) is the common noise descriptor used, and it has been adopted by most agencies as the best way to describe how people respond to noise in their environment. Ldn is a 24-hour cumulative A-weighted noise level that includes all noises that happen within a day, with a 10 dB penalty for nighttime noise (10 p.m. to 7 a.m.). This nighttime penalty means that any noise events at night are equivalent to 10 similar events during the day.

Typical Ldn values for various transit operations are shown on Figure 3-1.



The operations shown in the figure represent typical operations for transit systems. For example, the second entry in the left column of the figure represents a light rail system with six car trains, traveling at 40 miles per hour (mph), with 300 operations during the daytime and 18 operations during the nighttime, at 50 feet from the tracks. The actual noise level would depend on the specific project factors and the distance from the receiver to the tracks.

Figure 3-1 Cumulative Noise Levels from Transit Sources



Source: CSA, 2023.

3.1.2 Noise Impact Criteria

3.1.2.1 Federal Transit Administration Transit Noise Criteria

The noise impact criteria used for the Project are based on the information contained in Section 4 of the FTA noise and vibration guidance manual.¹ The FTA noise impact criteria are based on well-documented research on

¹ FTA, "Transit Noise and Vibration Impact Assessment Manual." FTA Report No. 0123, September 2018.

community response to noise and are based on both the existing level of noise and the change in noise exposure due to a project. The FTA noise criteria compare the project noise with the existing noise (not the noise associated with the No-Build Alternative).

The FTA noise criteria are based on the land use category of the sensitive receptor and use Ldn for locations where people sleep (Category 2) and Leq for locations with daytime and/or evening use (Category 1 or 3), as shown in Table 3-1.

The noise impact criteria are defined by the two curves shown in Figure 3-2, which allow increasing Project noise as existing noise levels increase, up to a point at which impact is determined based on Project noise alone. The FTA noise impact criteria include three levels of impact, as shown on Figure 3-2. The three levels of impact include:

- **No Impact:** Project-generated noise is not likely to cause community annoyance. Noise projections in this range are considered acceptable by FTA and mitigation is not required.
- **Moderate Impact:** Project-generated noise in this range is considered to cause impact at the threshold of measurable annoyance. Moderate impacts serve as an alert to Project planners for potential adverse impacts and complaints from the community. Mitigation should be considered at this level of impact based on project specifics and details concerning the affected properties.
- **Severe Impact:** Project-generated noise in this range is likely to cause a high level of community annoyance. The Project sponsor should first evaluate alternative locations/alignments to determine whether it is feasible to avoid severe impacts altogether. In densely populated urban areas, evaluation of alternative locations may reveal a trade-off of affected groups, particularly for surface rail alignments. Projects that are characterized as point sources rather than line sources often present greater opportunity for selecting alternative sites. This guidance manual and FTA's environmental impact regulations both encourage Project sites which are compatible with surrounding development when possible. If it is not practical to avoid severe impacts by changing the location of the Project, mitigation measures must be considered.

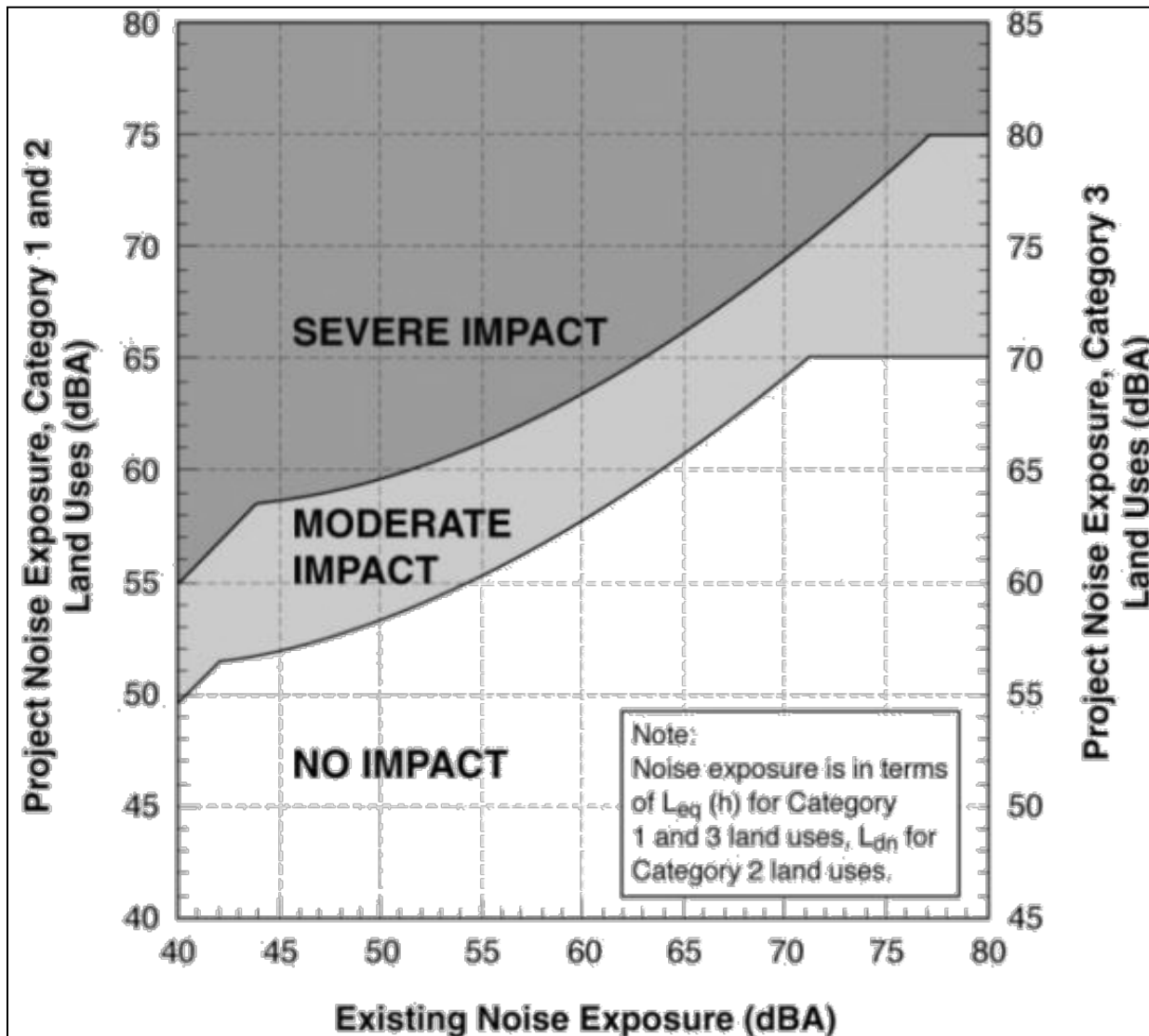
Table 3-1 Land Use Categories and Metrics for Transit Noise Impact Criteria

Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor Leq(h) ^a	Land where quiet is an essential element of its intended purpose. Example land uses include preserved land for serenity and quiet, outdoor amphitheaters and concert pavilions, and national historic landmarks with considerable outdoor use. Recording studios and concert halls are also included in this category.
2	Outdoor Ldn	This category is applicable all residential land use and buildings where people normally sleep, such as hotels and hospitals.
3	Outdoor Leq(h) ^a	This category is applicable to institutional land uses with primarily daytime and evening use. Example land uses include schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities are also included in this category.

Source: FTA, 2018.

^a Leq for the noisiest hour of transit-related activity during hours of noise sensitivity.

Figure 3-2 FTA Noise Impact Criteria



Source: FTA, 2018.

3.1.2.2 Cultural Resources

Under FTA guidance, historic sites are designated as noise sensitive depending on the land use of the site, not their designation as historic. Sites of national significance with considerable outdoor use required for site interpretation would be in Category 1. Historic sites that are currently used as residences would be in Category 2. Historic buildings with indoor use of an interpretive nature involving meditation and study would be in Category 3. These include museums, significant birthplaces, and buildings in which significant historical events occurred.

Most downtown areas have buildings which are historically significant because they represent a particular architectural style or are prime examples of the work of a historically significant designer. If the buildings or structures are used for commercial or industrial purposes and are located in busy commercial areas, they are not considered noise sensitive, and the impact criteria do not apply.



Similarly, historical transportation structures, such as terminals and railroad depots, are not considered noise sensitive land uses. These buildings or structures may however be afforded special protection under Section 4(f) of the United States Department of Transportation (USDOT) Act and Section 106 of the National Historic Preservation Act.

In the Section 106 process protecting historic and cultural properties, noise may or may not be considered an “adverse effect” depending on the individual circumstances and whether the use is noise sensitive, because, as previously noted, historic and cultural properties are only noise sensitive based on how they are used. The regulatory processes stemming from these statutes require coordination and consultation with agencies and organizations having jurisdiction over these resources. Their views on the Project’s impact on protected resources are given careful consideration by FTA and the project sponsor, and their recommendations may influence the decision to adopt noise reduction measures.²

3.1.2.3 Minnesota Pollution Control Agency Noise Standards

The Minnesota Pollution Control Agency (MPCA) has an established set of Noise Standards (Minnesota Rules ch. 7030), which provide limits on environmental noise using the L10 and L50 descriptors, which represent the noise level exceeded 10 percent (6 minutes) and 50 percent (30 minutes) of the time during an hour, respectively. The standards include both daytime and nighttime limits for three different categories of land use or noise area classification, with residential lands included in noise area classification 1. Classifications 2 and 3 are generally for commercial and industrial land uses, respectively. The standards are shown in Table 3-2.

Table 3-2 Land Use Categories and Metrics for Transit Noise Impact Criteria

Noise Area Classification	Daytime L10 (dBA)	Daytime L50 (dBA)	Nighttime L10 (dBA)	Nighttime L50 (dBA)
1	65	60	55	50
2	70	65	70	65
3	80	75	80	75

Source: MPCA

Because of the time limit component of the MPCA noise standards, the Project will not exceed the standards under the proposed operating conditions. Light-rail vehicles (LRVs) will pass by a location for approximately 10 seconds 12 times an hour (based on the operating assumptions of 10-minute headways in each direction) for a total of 120 seconds, or 2 minutes. Because the duration of exposure to LRT noise does not exceed the L10 (6 minutes) and L50 (30 minutes) time components, there is no potential for the Project to exceed MPCA thresholds. Because the

² For historic or cultural resources, the following two circumstances are considered in assessing impacts and mitigation measures: 1) The noise sensitivity of the property. While Table 1 gives a comprehensive list of noise sensitive land uses, there can be differences in noise sensitivity depending on individual circumstances. For example, a historic park or recreational area could vary in its sensitivity to noise depending on the type of use of the park (active versus passive recreation) and the settings in which it is located. 2) Special protection provided by law. Section 106 of the National Historic Preservation Act and Section 4(f) of the USDOT Act (which protects historic sites, as well as publicly owned parks, recreation areas, wildlife, and waterfowl refuges) come into play frequently during the environmental review of transit projects. See pages 3-12 and 3-13 of the FTA Transit Noise and Vibration Impact Assessment for additional information on considerations given to resources that have special protection provided by law.



Project does not exceed the MPCA thresholds, the FTA noise impact criteria described previously are more protective than the MPCA standards and have been used to assess and mitigate noise impacts identified within this Supplemental Draft EIS.

Information regarding existing L10 and L50 noise levels is described in Section 5.1.2.3.

3.1.2.4 FTA Construction Noise Criteria

The FTA's construction noise criteria, summarized in Table 3-3, were used for the short-term noise impact analysis. The FTA construction noise criteria provide adequate protection for short-term noise impacts and allow for reasonable mitigation measures to be applied to the Project. Additionally, MPCA noise criteria were evaluated for the Project, and the Metropolitan Council (Council) will work with local jurisdictions to ensure that reasonable measures are taken to limit construction noise.

Table 3-3 FTA Construction Noise Criteria

Land Use Category	8-hour Leq, dBA Day	8-hour Leq, dBA Night	Noise Exposure, dBA 30-day Average
1	80	70	75
2	85	85	80
3	90	90	85

Source: FTA, 2018

3.2 Vibration

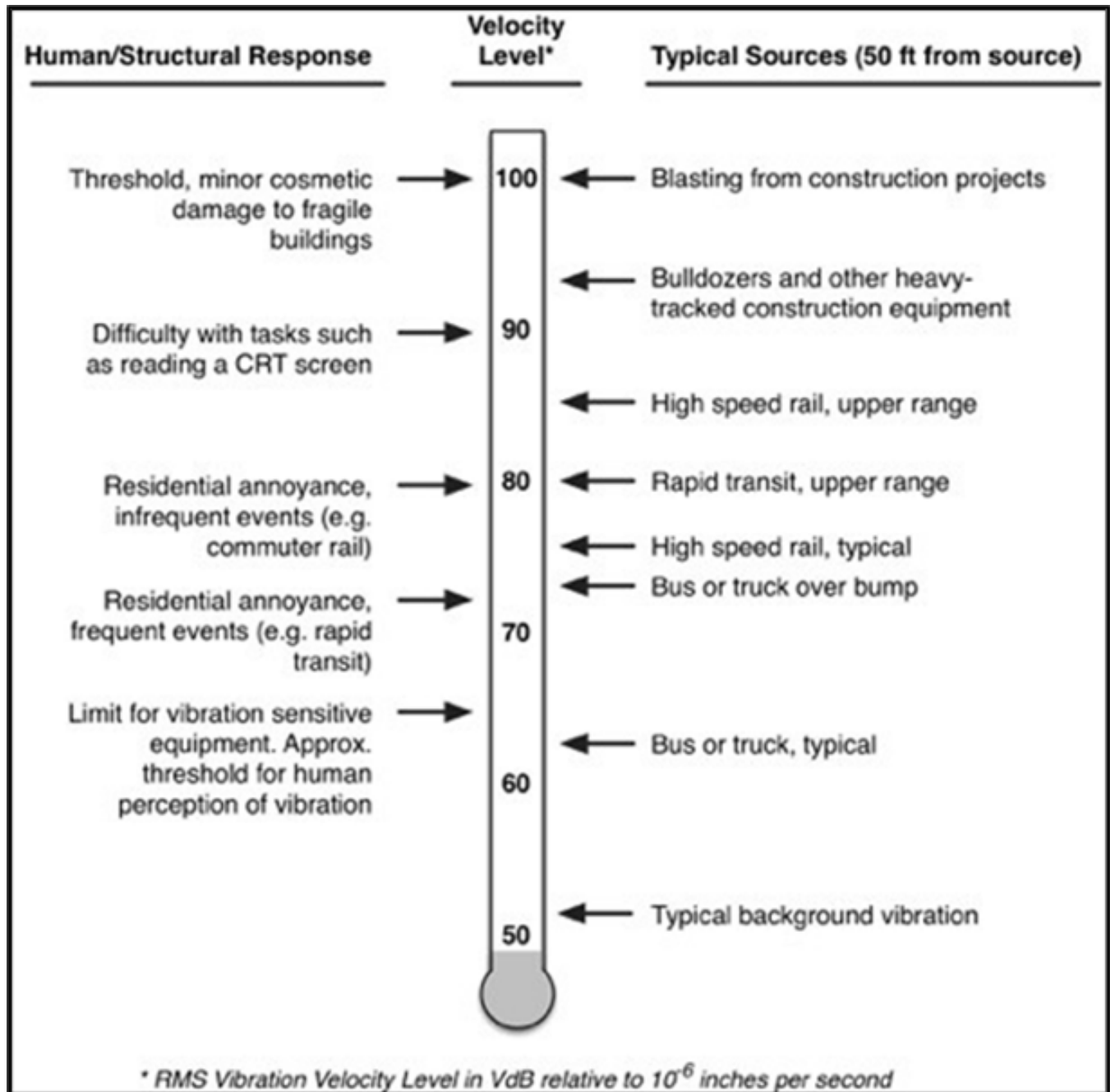
Ground-borne vibration is the motion of the ground transmitted into a building that can be described in terms of displacement, velocity, or acceleration. Vibration velocity is used in transit and freight rail and is defined by the following:

- **Level:** Vibration is expressed in terms of vibration velocity level, using vibration decibels (VdB), with a reference of one micro-inch per second. The level of vibration represents how much the ground is moving. The threshold of human perception to transit and freight rail vibration is approximately 65 VdB and annoyance begins to occur for frequent events at vibration levels over 70 VdB.
- **Frequency:** Vibration frequency is expressed in Hertz. Human response to vibration is typically from about 6 to 200 Hz.
- **Time Pattern:** Environmental vibration changes all the time and human response is roughly correlated to the number of vibration events during the day. The more events that occur, the more sensitive humans are to the vibration.

Figure 3-3 shows typical ground-borne vibration levels for typical sources as well as the corresponding human and structural responses to vibration.

Ground-borne vibration can lead to ground-borne noise, which is a low-volume, low-frequency rumble inside buildings that occurs when ground vibration causes the flexible walls of the buildings to resonate and generate noise. Ground-borne noise is normally not a consideration when trains are elevated or at grade. In these situations, the airborne noise usually overwhelms ground-borne noise, so that the airborne noise level is the major consideration. However, ground-borne noise becomes an important consideration where sensitive interior spaces are well-isolated from the airborne noise. In these situations, the airborne noise path is impeded, and ground-borne noise dominates inside buildings. In rare situations, ground-borne noise may also need to be considered where the airborne noise from a Project is substantially mitigated by a sound wall.

Figure 3-3 Vibration Levels from Typical Sources



Source: CSA, 2023.



3.2.1 Vibration Impact Criteria

3.2.1.1 FTA Transit Vibration Criteria

The vibration impact criteria used for the Project are based on the information contained in Section 6 of the FTA noise and vibration guidance manual. The criteria for a general vibration assessment are based on land use and LRV frequency, as shown in Table 3-4. Some buildings, such as concert halls, recording studios, and theaters, can have a higher sensitivity to vibration (or ground-borne noise) but do not fit into the three categories listed in Table 3-4. Because of the sensitivity of these buildings, special attention is paid to these buildings during the environmental assessment of a project. Table 3-5 shows the FTA criteria for acceptable levels of vibration for several types of special buildings.

Table 3-4 and Table 3-5 include additional criteria for ground-borne noise, which is a low-frequency noise that is radiated from the motion of room surfaces, such as walls and ceilings in buildings due to ground-borne vibration. Ground-borne noise is defined in terms of dBA, which emphasizes middle and high frequencies, which are more audible to human ears. The criteria for ground-borne noise are much lower than for airborne noise to account for the low-frequency character of ground-borne noise; however, because airborne noise typically masks ground-borne noise for above ground (at-grade or elevated) transit systems, ground-borne noise is only assessed for operations in tunnels, where airborne noise is not a factor, or at locations such as recording studios, which are well insulated from airborne noise.



Table 3-4 Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for General Assessment

Land Use Category	Ground-Borne Vibration Impact Levels for Frequent Events (VdB re 1 micro-inch/sec) ^a	Ground-Borne Vibration Impact Levels for Occasional Events (VdB re 1 micro-inch/sec) ^b	Ground-Borne Vibration Impact Levels for Infrequent Events (VdB re 1 micro-inch/sec) ^c	Ground-Borne Noise Impact Levels for Frequent Events (dBA re 20 micro Pascals) ^a	Ground-Borne Noise Impact Levels for Occasional Events (dBA re 20 micro Pascals) ^b	Ground-Borne Noise Impact Levels for Infrequent Events (dBA re 20 micro Pascals) ^c
Category 1: Buildings where vibration would interfere with interior operations.	65 ^d	65 ^d	65 ^d	N/A ^e	N/A ^e	N/A ^e
Category 2: Residences and buildings where people normally sleep.	72	75	80	65	38	43
Category 3: Institutional land uses with primarily daytime use.	75	78	83	40	43	48

Source: FTA, 2018

^a "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.^b "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.^c "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.^d This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.^e Vibration-sensitive equipment is generally not sensitive to ground-borne noise.



Table 3-5 Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for Special Buildings

Type of Building or Room	Ground-Borne Vibration Impact Levels for Frequent Events (VdB re 1 micro-inch/sec) ^a	Ground-Borne Vibration Impact Levels for Occasional or Infrequent Events (VdB re 1 micro-inch/sec) ^b	Ground-Borne Noise Impact Levels for Frequent Events (dBA re 20 micro Pascals) ^a	Ground-Borne Noise Impact Levels for Occasional Events (dBA re 20 micro Pascals) ^b
Concert Halls	65	65	25	25
TV Studios	65	65	25	25
Recording Studios	65	65	25	25
Auditoriums	72	80	30	38
Theaters	72	80	35	43

Source: FTA, 2018

Note: If the building will rarely be occupied when the trains are operating, there is no need to consider impact. As an example, consider locating a commuter rail line next to a concert hall. If no commuter trains will operate after 7 p.m., it should be rare that the trains interfere with the use of the hall.

^a "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.

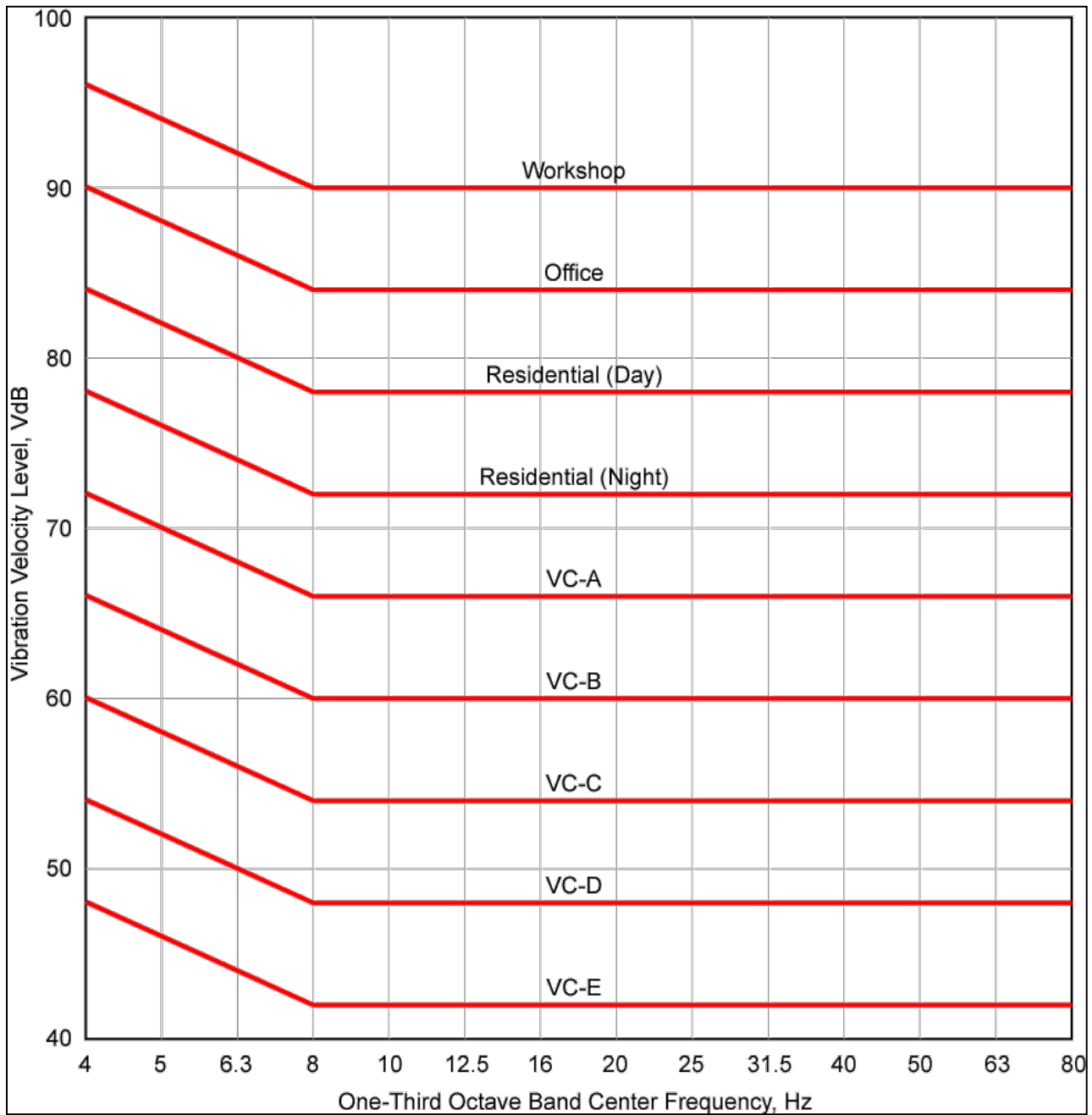
^b "Occasional or Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.

The criteria for a detailed vibration assessment are shown in Figure 3-4 and descriptions of the curves are shown in Table 3-6. The curves in Figure 3-4 are applied to the projected vibration spectrum for the Project. If the vibration level at any one frequency exceeds the criteria, there is impact. Conversely, if the entire proposed vibration spectrum of the Project is below the curve, there will be no impact.

For the Project, the general vibration assessment criteria will be used at special buildings. The detailed vibration assessment criteria will be used to assess LRT ground-borne vibration.



Figure 3-4 Detailed Vibration Criteria



Source: FTA, 2018.

**Table 3-6 FTA Construction Vibration Criteria**

Criterion Curve (See Figure 2-4)	Max Level (VdB) ^a	Description of Use
Workshop	90	Distinctly feelable vibration. Appropriate to workshops and non-sensitive areas.
Office	84	Feelable vibration. Appropriate to offices and non-sensitive areas.
Residential Day	78	Barely feelable vibration. Adequate for computer equipment and low-power optical microscopes (up to 20X).
Residential Night, Operating Rooms	72	Vibration not feelable, but ground-borne noise may be audible inside quiet rooms. Suitable for medium-power optical microscopes (100X) and other equipment of low sensitivity.
VC-A	66	Adequate for medium- to high-power optical microscopes (400X), microbalances, optical balances, and similar specialized equipment.
VC-B	60	Adequate for high-power optical microscopes (1000X), inspection and lithography equipment to 3 micron line widths.
VC-C	54	Appropriate for most lithography and inspection equipment to 1 micron detail size.
VC-D	48	Suitable in most instances for the most demanding equipment, including electron microscopes operating to the limits of their capability.
VC-E	42	The most demanding criterion for extremely vibration-sensitive equipment.

Source: FTA, 2018

^a As measured in 1/3-octave bands of frequency over the frequency range 8 to 80 Hz.

3.2.1.2 Cultural Resources

Under FTA guidance, historic sites are designated as vibration sensitive depending on the land use of the site, not their designation as historic. Historical sites that are currently used as residences will be in Category 2. Historic buildings with indoor use of an interpretive nature involving meditation and study will be in Category 3. These include museums, significant birthplaces, and buildings in which significant historical events occurred. One difference between noise and vibration is that outdoor land uses are not considered vibration sensitive. Only indoor land uses are considered vibration sensitive.

Most downtown areas have buildings which are historically significant because they represent a particular architectural style or are prime examples of the work of a historically significant designer. If the buildings or structures are used for commercial or industrial purposes and are located in busy commercial areas, they are not considered vibration sensitive, and the impact criteria do not apply.

Similarly, historical transportation structures, such as terminals and railroad depots, are not considered vibration-sensitive land uses. These buildings or structures may however be afforded special protection under Section 4(f) of the USDOT Act and Section 106 of the National Historic Preservation Act.

In the Section 106 process protecting historic and cultural properties, vibration may or may not be considered an “adverse effect” depending on the individual circumstances and whether the use is vibration sensitive, because, as previously noted, historic and cultural properties are only vibration sensitive based on how they are used. The regulatory processes stemming from these statutes require coordination and consultation with agencies and organizations having jurisdiction over these resources. Their views on the Project's impact on protected resources are



given careful consideration by FTA and the project sponsor, and their recommendations may influence the decision to adopt vibration reduction measures.

3.2.1.3 FTA Construction Vibration Criteria

In addition to the vibration criteria for human annoyance and interference with equipment and spaces described above, there are also vibration criteria for damage from construction activities. Typical transit operations do not have the potential for damage, so only certain construction activities are assessed for damage.

The thresholds for damage to structures are typically several orders of magnitude above the thresholds for human response to vibration. Table 3-7 shows the FTA criteria for vibration damage to structures. This is based on the structure and construction type (and not a designation as historic). Table 3-7 includes criteria in both VdB and peak particle velocity (PPV).

Table 3-7 FTA Vibration Damage Criteria from Construction

Building Category	PPV (in/sec)	Approximate Lv ^a
I. Reinforced-concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

Source: FTA, 2018

PPV = peak particle velocity; Lv = vibration level

^a Root Mean Square (RMS) velocity in VdB re 1 micro-inch/second.

4 Impact Assessment Methodology

This section describes the methodology for assessing the potential noise and vibration impact due to the Project.

4.1 Noise

This section describes the methodology for assessing the potential noise impact due to the Project.

Projected noise levels for the Supplemental Draft EIS Detailed Noise Analysis are based on noise measurements of the existing METRO Blue Line LRVs, which were conducted for the Central Corridor Project, and the operating characteristics and current design of the proposed Project. Specific inputs used in the noise impact assessment include the following:

- LRV speeds will generally range from 15 to 55 mph for revenue operations, except for entry and exit from station areas. LRV speeds are based on modeled speed profiles in both directions (i.e., inbound and outbound) that reflect LRV operating characteristics, track geometry, and station locations.
- LRVs will be comprised of three rail cars during hours of operation.
- The operating hours and headways will be as follows:
 - Early morning hours (12:15 to 2 a.m.): 60-minute headways
 - Morning hours (4 to 5:30 a.m.): 30-minute headways
 - Early peak morning operating hours (5:30 to 6:30 a.m.): 15-minute headways
 - Peak operating hours (6:30 a.m. to 9 p.m.): 10-minute headways



- Evening hours (9 to 10:15 p.m.): 20-minute headways
 - Late evening hours (10:15 p.m. to 12:15 a.m.): 30-minute headways
- The reference noise levels are shown in Table 4-1.

Table 4-1 Blue Line Reference Noise Levels

Noise Source	Sound Exposure Level ^a , 50 ft (dBA)
LRT on embedded track	84
LRT on ballast-and-tie track	81
Crossing bells	76 ^b
LRT bells	86/87 ^c

Source: CSA, 2023

^a The sound exposure level is the cumulative noise from a single event, considering both the level and duration of the sound.

^b The maximum noise level from crossing bells is 77 dBA at 10 feet. Crossing bells will be sounded for 20 seconds for each LRV at an at-grade crossing.

^c The maximum noise level from LRT bells is 80 dBA at 50 feet. LRT bells will be sounded three times when entering and exiting stations (sound level exposure of 86 dBA) and will be sounded for 5 seconds at each at-grade crossing (sound level exposure of 87 dBA).

- Locations of elevated structures, crossovers, and embedded track were identified based on plan and profile maps provided by the engineering team.
- Crossovers increase the noise levels by up to 6 dB for nearby sensitive receptors due to the gap in the track.
- Elevated structures increase the noise levels by 4 dB for nearby sensitive receptors due to structure-borne noise.
- Anticipated use of bells at each at-grade crossing and station was determined by Metro Transit Operations and Project staff based on the following considerations:
 - LRV bells will be sounded three times when entering and exiting station platforms
 - LRV bells will be sounded at at-grade crossings.
 - Grade crossing bells will be used at at-grade crossings for 20 seconds for each LRV where there will be flashing lights and gates at the crossing.
- Light rail bells or horns will be sounded in the following manner for locations with stations directly adjacent to at-grade crossings:
 - For the side opposite the station, vehicles will sound their horns or bells in accordance with the procedures above for a grade crossing. No additional sounding will occur upon entering the station.
 - For the side with the station, vehicles will sound their bells in accordance with the procedure above upon entering the station. The LRV will then sound the bell upon exiting the station until the front of the LRV passes through the far side of the crossing.

4.2 Vibration

This section describes the methodology for assessing the potential vibration impact due to the Project. Specific inputs used in the vibration impact assessment include the following:

- Projected LRT operating speeds will range from approximately 15 to 55 mph for LRT revenue operations, except for entry and exit from station areas. LRV speeds are based on modeled speed profiles in both directions (i.e., inbound and outbound) that reflect LRV operating characteristics, track geometry, and station locations.



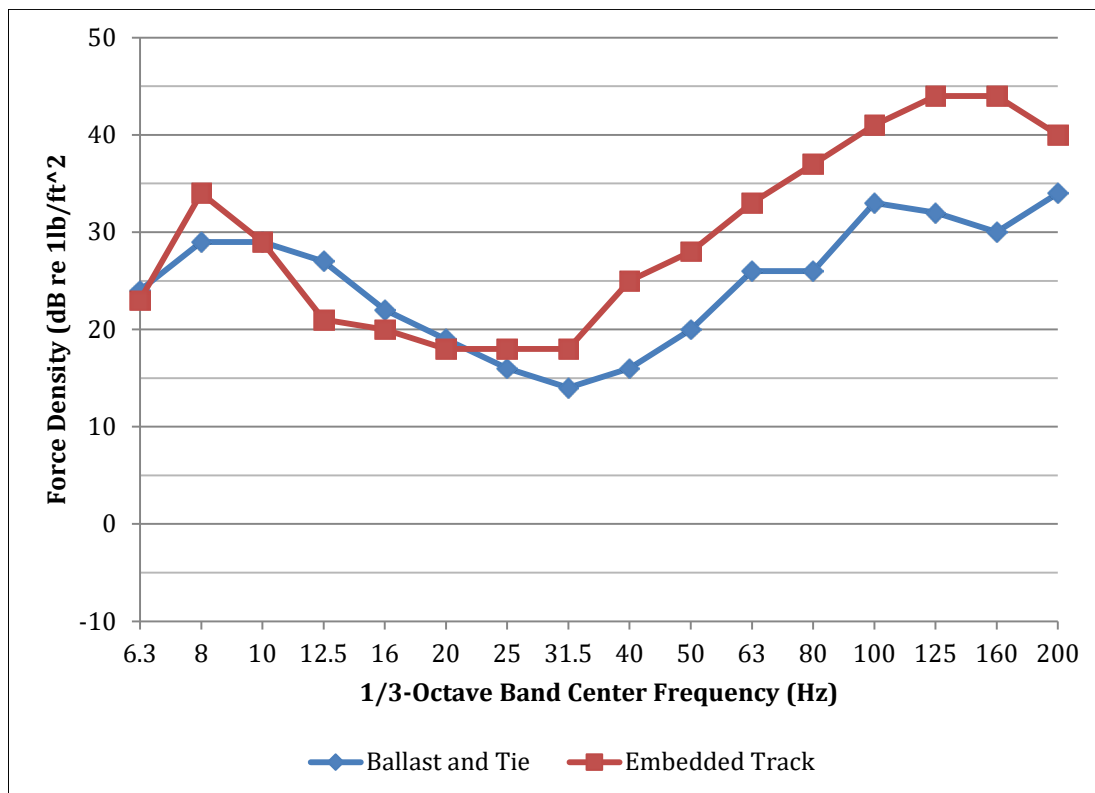
- All LRVs will consist of three cars during hours of operation.
- The operating hours and headways are described in Section 4.1, which will result in “frequent” events, as defined in the vibration criteria section.
- Locations of elevated structures, crossovers, and embedded track were identified based on plan and profile maps provided by the engineering team.
- Crossovers increase the vibration levels by up to 10 dB for nearby sensitive receptors due to the gap in the track.
- Elevated structures decrease the vibration levels by 10 dB for nearby sensitive receptors.
- Future vibration levels from LRT operations were based on a combination of the force density (vehicle) and propagation (soil) data at sensitive locations. The procedure for projecting future vibration levels is to measure the vibration propagation characteristics of the soil (line source transfer mobility [LSTM]) and combine that information with the LRV information independent of the soil (force density [FD]). The formula for calculating the future vibration levels is:

$$Lv = FD + LSTM$$

Where: Lv is the projected LRV vibration level, FD is the LRV force density, and LSTM is the line source transfer mobility at a site.

- LRV FD levels were based on measurements conducted for the Central Corridor LRT Project (ATS Consulting, 2008) for both ballast-and-tie and embedded track. Representative FD spectra for both ballast-and-tie and embedded track are shown on Figure 4-1.

Figure 4-1 Force Density Levels at 40 mph



Source: ATS, 2008.



4.3 Construction Noise Assessment Methodology

Construction noise and impacts are assessed using a combination of the methods and construction source data contained in the FTA guidance manual and the Federal Highway Administration (FHWA) Roadway Construction Noise Model from the FHWA Construction Noise Handbook (Final Report FHWA-HEP-06-015, August 2006). Typical noise levels generated by representative pieces of equipment are listed in Table 4-2. The noise exposure at a receiver location may be calculated using decibel addition of all operating construction equipment using the following equation:

$$Leq(n) = L_{max} + 10 \times \log(U.F.) - 20 \times \log(D/50) - A_{shielding}$$

where:

$Leq(n)$ = noise exposure at a receiver resulting from the operation of a single piece of equipment over n hours,

L_{max} = noise emission level of the particular piece of equipment at the reference distance of 50 feet (taken from Table 4-2),

$A_{shielding}$ = shielding provided by barriers, building, or terrain,

D = distance from the receiver to the piece of equipment in feet, and

$U.F.$ = usage factor that accounts for the fraction of time that the equipment is in use over the specified time period. For $Leq(1)$ assume a $U.F.$ equal to 100 percent, and for 8 hours or more use the values in Table 4-2.

The combination of noise from several pieces of equipment operating during the same time period is obtained from decibel addition of the Leq of each single piece of equipment calculated using the above equations.

Table 4-2 Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 feet	Usage Factor (%)
Air Compressor	80	40
Backhoe	80	40
Ballast Equalizer	82	50
Ballast Tamper	83	50
Compactor	82	20
Concrete Mixer	85	40
Concrete Pump	82	20
Crane, Derrick	88	16
Crane, Mobile	83	16
Dozer	85	16
Generator	82	50
Grader	85	40
Impact Wrench	85	50
Jack Hammer	88	20
Loader	80	40
Paver	85	50



Equipment	Typical Noise Level (dBA) 50 feet	Usage Factor (%)
Pile Driver (Impact)	101	20
Pile Driver (Vibratory)	95	20
Pneumatic Tool	85	50
Pump	77	50
Rail Saw	90	20
Rock Drill	85	20
Roller	85	20
Saw	76	20
Scarifier	83	20
Scraper	85	40
Shovel	82	40
Spike Driver	77	20
Tie Cutter	84	20
Tie Handler	80	20
Tie Inserter	85	20
Truck	84	40

Source: FTA, 2018 and FHWA, 2006

4.4 Construction Vibration Assessment Methodology

Construction vibration is assessed for areas where there is potential for impact from construction activities. Such activities include blasting, pile driving, demolition, and drilling or excavation near sensitive structures. Typical vibration levels generated by representative pieces of equipment are listed in Table 4-3. For damage assessment, the following equation is used:

$$PPV_{\text{equip}} = PPV_{\text{ref}} \times [(25/D)]^{1.5}$$

where:

PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for distance,

PPV_{ref} = the reference vibration level in in/sec at 25 feet from Table 4-3, and

D = the distance from the equipment to the receiver in feet.

For annoyance assessment, the following equation is used:

$$Lv(D) = Lv(25 \text{ ft}) - 30 \times \log(D/25)$$

where:

$Lv(D)$ = RMS vibration level at distance D ,

$Lv(25 \text{ ft})$ = RMS vibration level at 25 feet from Table 4-3, and

D = the distance from the equipment to the receiver in feet.

**Table 4-3 Construction Equipment Vibration Source Levels**

Equipment		PPV at 25 feet (in/sec)	Approximate Level* at 25 feet (VdB)
Pile Driver (impact)	upper range	1.518	112
	typical	0.644	104
Pile Driver (vibratory)	upper range	0.734	105
	typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	in soil	0.008	66
	in rock	0.017	75
Vibratory roller		0.210	94
Hoe ram		0.089	87
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Source: FTA, 2018

*RMS velocity in decibels (VdB) re 1 micro-inch/second

5 Affected Environment

5.1 Noise

5.1.1 Noise Sensitive Land Use

Noise-sensitive land use for the Project was identified based on aerial photography, Project drawings, and a site survey. Based on the information from these sources, the noise-sensitive land use, from north to south by city is as follows.

5.1.1.1 City of Brooklyn Park

The noise-sensitive land uses for the City of Brooklyn Park include Ebenezer Community Church, Berean Baptist Church, Brooklyn Park Library, Fire International Embassy, North Hennepin Community College, Revive Church, Children's Music Academy of Brooklyn Park, Hampton Inn Brooklyn Park, and a mixture of single-family and multi-family residences. The dominant existing noise sources are occasional freight trains and traffic on Bottineau Blvd and W Broadway Ave.

5.1.1.2 City of Crystal

The noise-sensitive land uses for the City of Crystal include Crystal Medical Center, North Star Inn and Suites, and single-family and multi-family residences. The dominant existing noise sources are occasional freight trains, traffic on Bottineau Blvd, and flight operations at the Crystal Airport.



5.1.1.3 City of Robbinsdale

The noise-sensitive land uses for the City of Robbinsdale include North Memorial Health Hospital, Elim Lutheran Church, and a mixture of single-family and multi-family residences. The dominant existing noise source is traffic on Bottineau Blvd.

5.1.1.4 City of Minneapolis

The noise-sensitive land uses for the City of Minneapolis include Parkway United Church of Christ, Good News Minneapolis Church, True Vine Missionary Baptist Church, Kipp Legacy School, St Anne-St Joseph Hien Church, Morning Star Assembly of God, All Nations Seventh-day Adventist Church, PYC Arts & Technology Alternative High School, Capri Theater, KMOJ radio station, Star Child Development Center LLC, St. Andrews Episcopal Church, Shiloh Temple International Ministries, Real Believers Faith Center Church, Episcopal Church in Minnesota, Full Proof Ministry COGIC, Liberty Community Church, United Deliverance Temple, Sanctuary Covenant Church, Faith Tabernacle Gospel Fellowship International, Masjid An-Nur Mosque, United Faith Pentecostal Church, Metro Schools College Prep, MN International Middle Charter School, Lundstrom Performing Arts, and a mixture of single-family and multi-family residences. The dominant existing noise sources are traffic on Interstate 94 (I-94), W Broadway Ave, Washington Ave, and Lyndale Ave.

5.1.2 Existing Noise Measurements

5.1.2.1 Noise Measurement Procedures and Equipment

Noise measurements were conducted during the week of April 3, 2023, on May 2, 2023, and on Sept. 6, 2023, at 18 locations along the Project Alignment.

Because the thresholds for impact in the FTA noise criteria are based on the existing noise levels, measuring the existing noise and characterizing noise levels at sensitive locations along the Project Alignment is an important step in the impact assessment. The noise measurements included both long-term (24-hour) and short-term (1-hour) monitoring of the A-weighted sound level at noise-sensitive locations near the Project.

The noise measurements were performed with NTi Audio model XL2 noise monitors and Larson Davis LD831-C noise monitors that conform to American National Standards Institute standards for Type 1 (precision) sound measurement equipment. Calibrations, traceable to the National Institute of Standards and Technology were conducted before and after each measurement. The noise monitors were set to continuously monitor and record multiple noise level metrics, as well as obtain audio recordings during the measurement periods.

In all cases, the measurement microphone was protected by a windscreen and supported on a tripod at a height of 4 to 6 feet above the ground and was positioned to characterize the exposure of the site to the dominant noise sources in the area. For example, microphones were located at the approximate setback lines of the receptors from adjacent roads and were positioned to avoid acoustic shielding by landscaping, fences, or other obstructions.

5.1.2.2 Noise Measurement Locations and Results

Table 5-1 summarizes the results of the existing noise measurement program, and Figure 5-1 shows the location of the 13 long-term noise monitoring sites (designated by LT in the site number) and five short-term noise monitoring sites (designated by ST in the site number) for the Project. The long-term noise measurements were used to characterize the existing noise at residential locations, and the short-term noise measurements were used to characterize the existing noise at non-residential locations.



At each site, the noise measurement was conducted at the approximate set back of the building or buildings relative to the Project location. The results of the existing noise measurements program are used to determine the existing noise levels for all the noise-sensitive locations. The noise measurement results at each location are described below.

Table 5-1 Summary of Existing Noise Level Measurements

Site No.	City	Measurement Location	Measurement Start Date	Measurement Start Time	Meas. Dur. (hrs)	Noise Level Ldn (dBA)	Noise Level Leq (dBA)
LT-13	Minneapolis	1020 N 3rd St	Sept. 6, 2023	2 p.m.	24	69.5*	67.5*
LT-12	Brooklyn Park	8819 Oregon Ave	April 4, 2023	4 p.m.	24	62.0	59.0
LT-11	Brooklyn Park	7431 78th Ct	April 4, 2023	4 p.m.	24	65.3	59.4
LT-10	Brooklyn Park	7013 Dutton Ave	April 4, 2023	5 p.m.	3**	56.4	58.8
LT-9	Crystal	5906 Elmhurst Ave	April 3, 2023	3 p.m.	24	63.4	61.1
LT-8	Crystal	5257 Xenia Ave	April 3, 2023	3 p.m.	24	58.7	57.5
LT-7	Robbinsdale	4536 Regent Ave	April 3, 2023	4 p.m.	24	60.5	58.6
LT-6	Robbinsdale	3369 W Broadway Ave	April 4, 2023	11 a.m.	24	70.2	68.6
LT-5	Minneapolis	2741 N Upton Ave	April 4, 2023	noon	24	69.3	68.1
LT-4	Minneapolis	2239 W Broadway Ave	April 5, 2023	5 p.m.	24	69.1	67.6
LT-3	Minneapolis	1931 N Morgan Ave	May 2, 2023	3 p.m.	24	64.9	61.6
LT-2	Minneapolis	2117 Dupont Ave	April 5, 2023	1 p.m.	24	54.7	53.5
LT-1	Minneapolis	626 Harry Davis Ln	April 5, 2023	10 a.m.	24	62.0	59.7
ST-5	Brooklyn Park	Prince of Peace Lutheran Church	April 6, 2023	10:06 a.m.	1	63.9***	65.9
ST-4	Robbinsdale	3978 W Broadway Ave	April 3, 2023	4 p.m.	1	56.7***	56.7
ST-3	Minneapolis	1127 W Broadway Ave	April 6, 2023	10:30 a.m.	1	66.3***	68.3
ST-2	Minneapolis	277 N 12th Ave	April 5, 2023	2:19 p.m.	1	63.8***	65.8
ST-1	Minneapolis	Element Minneapolis Downtown	April 5, 2023	11:48 a.m.	1	64.5***	66.5

Source: CSA, 2023

LT = long-term; ST = short-term

*The reported existing noise levels were adjusted down by approximately 2 dB to account for the different traffic volumes in the area due to local construction.

** The sound level meter's battery failed prior to completion of 24-hour measurement. Ldn estimated using methods described in Appendix E of the FTA guidance manual.

*** Ldn estimated using methods described in Appendix E of the FTA guidance manual.



City of Brooklyn Park

LT-12: 8819 Oregon Ave, City of Brooklyn Park – The Ldn measured at this location was 62.0 dBA, and the measured peak hour Leq was 59.0 dBA. This location is representative of all noise-sensitive land uses between 85th Ave and Trunk Highway (TH) 610. The ambient noise levels were dominated by traffic on W Broadway Ave.

LT-11: 7431 78th Ct, City of Brooklyn Park – The Ldn measured at this location was 65.3 dBA, and the measured peak hour Leq was 59.4 dBA. This location is representative of all noise-sensitive land uses between N 73rd Ave and 85th Ave. The ambient noise levels were dominated by traffic on W Broadway Ave.

LT-10: 7013 Dutton Ave, City of Brooklyn Park – The Ldn calculated at this location was 56.4 dBA, and the measured peak hour Leq was 58.8 dBA. This location is representative of all noise-sensitive land uses between 62nd Ave and I-94. The ambient noise levels were dominated by traffic on Bottineau Blvd. This measurement was conducted behind an existing noise barrier. The sound level meter's battery failed prior to completion of 24-hour measurement. The Ldn was estimated using methods described in Appendix E of the FTA guidance manual.

ST-5: Prince of Peace Lutheran Church, City of Brooklyn Park – The hourly Leq measured at this location was 65.9 dBA, and the calculated Ldn was 63.9 dBA. This location is representative of all noise-sensitive land uses along W Broadway Ave between I-94 and 73rd Ave including the Prince of Peace Lutheran Church. The ambient noise levels were dominated by traffic on W Broadway Ave and freight traffic.

City of Crystal

LT-9: 5906 Elmhurst Ave, City of Crystal – The Ldn measured at this location was 63.4 dBA, and the measured peak hour Leq was 61.1 dBA. This location is representative of all noise-sensitive land uses between Bass Lake Rd and 62nd Ave. The ambient noise levels were dominated by traffic on Bottineau Blvd, flight operations at Crystal Airport, and trains on the freight line to the west.

LT-8: 5257 Xenia Ave, City of Crystal – The Ldn measured at this location was 58.7 dBA, and the measured peak hour Leq was 57.5 dBA. This location is representative of all noise-sensitive land uses between the Canadian Pacific Kansas City (CPKC) rail line and Bass Lake Rd. The ambient noise levels were dominated by traffic on Bottineau Blvd and TH 100.

City of Robbinsdale

LT-7: 4536 Regent Ave, City of Robbinsdale – The Ldn measured at this location was 60.5 dBA, and the measured peak hour Leq was 58.6 dBA. This location is representative of all noise-sensitive land uses between Lake Dr and the CPKC rail line. The ambient noise levels were dominated by traffic on Bottineau Blvd. This measurement was conducted behind an existing noise barrier.

LT-6: 3369 W Broadway Ave, City of Robbinsdale – The Ldn measured at this location was 70.2 dBA, and the measured peak hour Leq was 68.6 dBA. This location is representative of all noise-sensitive land uses along W Broadway Ave between Lowry Ave and Lake Ave. The ambient noise levels were dominated by traffic on W Broadway Ave.

ST-4: 3978 W Broadway Ave, City of Robbinsdale – The hourly Leq measured at this location was 56.7 dBA, and the calculated Ldn was 56.7 dBA. This location is representative of the noise at Elim Lutheran Church. The ambient noise levels were dominated by traffic on Bottineau Blvd.



City of Minneapolis

LT-13: 1020 N 3rd Street, City of Minneapolis – The Ldn estimated at this location was 69.5 dBA, and the estimated peak hour Leq was 67.5 dBA. The measured noise levels at this location were adjusted down by approximately 2 dB to account for differences in traffic volumes due to local construction. This location is representative of the residential noise-sensitive land use along N 10th Ave and N Washington Ave. The ambient noise levels were dominated by traffic on N 10th Ave and the I-94 on- and off-ramps to the south.

LT-5: 2741 N Upton Ave, City of Minneapolis – The Ldn measured at this location was 69.3 dBA, and the measured peak hour Leq was 68.1 dBA. This location is representative of all noise-sensitive land uses along W Broadway Ave between 26th Ave and Lowry Ave. The ambient noise levels were dominated by traffic on W Broadway Ave.

LT-4: 2239 W Broadway Ave, City of Minneapolis – The Ldn measured at this location was 69.1 dBA, and the measured peak hour Leq was 67.6 dBA. This location is representative of the residential noise-sensitive land uses along W Broadway Ave between N Logan Ave and 26th Ave. The ambient noise levels were dominated by traffic on W Broadway Ave.

LT-3: 1931 N Morgan Ave, City of Minneapolis – The Ldn measured at this location was 64.9 dBA, and the measured peak hour Leq was 61.6 dBA. This location is representative of the residential noise-sensitive land uses along W Broadway Ave between I-94 and N Logan Ave. The ambient noise levels were dominated by traffic on W Broadway Ave.

LT-2: 2117 Dupont Ave, City of Minneapolis – The Ldn measured at this location was 54.7 dBA, and the measured peak hour Leq was 53.5 dBA. This location is representative of the residential noise-sensitive land uses along N 21st Ave. The ambient noise levels were dominated by local traffic on N 21st Ave.

LT-1: 626 Harry Davis Ln, City of Minneapolis -- The Ldn measured at this location was 61.0 dBA, and the measured peak hour Leq was 59.7 dBA. This location is representative of all noise-sensitive land uses along N Lyndale Ave between I-94 and N 18th Ave. The ambient noise levels were dominated by local traffic and traffic on I-94.

ST-3: 1127 W Broadway Ave, City of Minneapolis – The hourly Leq measured at this location was 68.3 dBA, and the calculated Ldn was 66.3 dBA. This location is representative of the institutional noise-sensitive land uses along 21st Ave N and W Broadway Ave between James Ave and I-94. The ambient noise levels were dominated by traffic on W Broadway Ave.

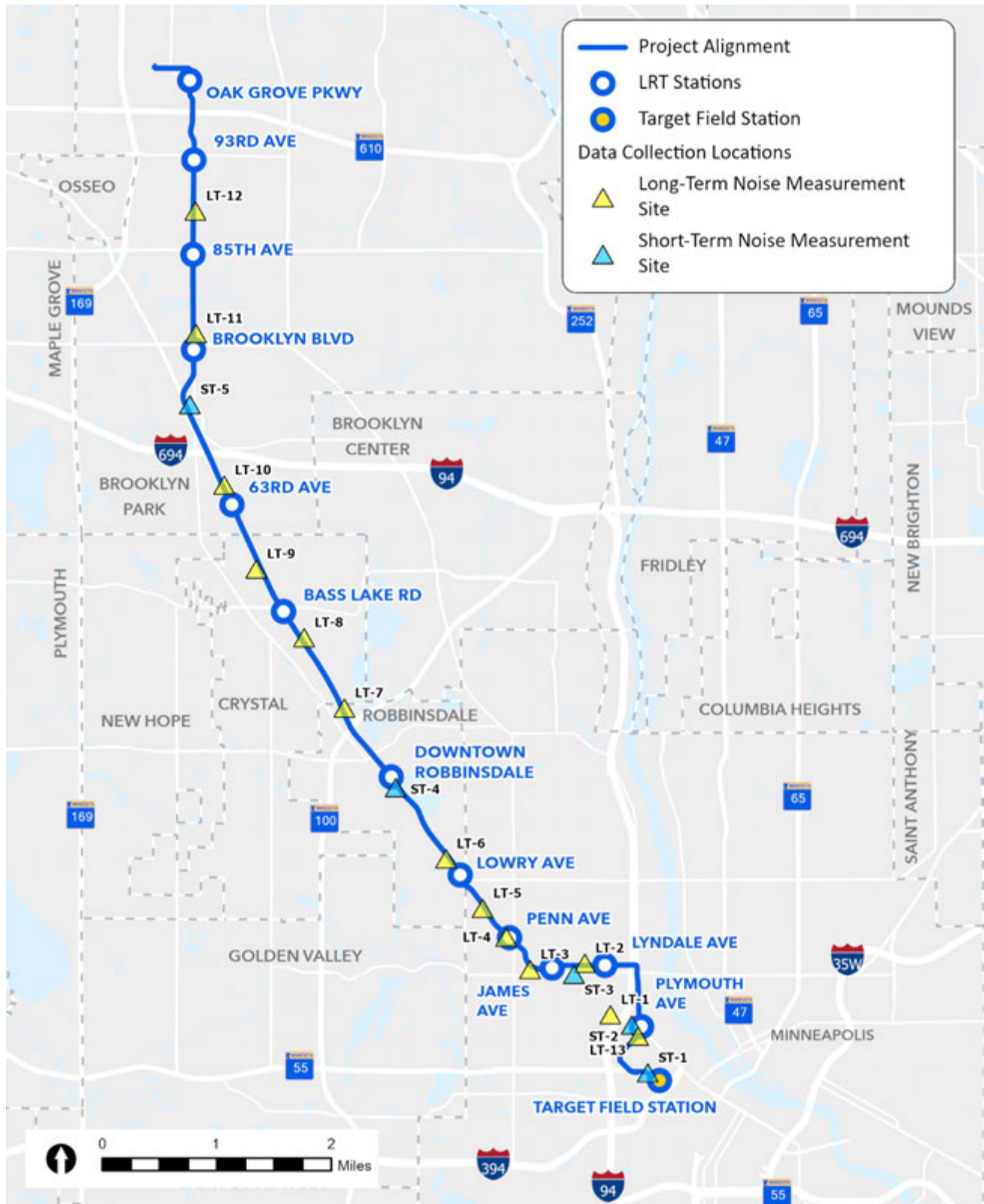
ST-2: 277 N 12th Ave, City of Minneapolis – The hourly Leq measured at this location was 65.8 dBA, and the calculated Ldn was 63.8 dBA. This location is representative of the noise-sensitive land uses on the east side of I-94 north of 7th Ave. The ambient noise levels were dominated by traffic on Plymouth Ave and 3rd St.

ST-1: Element Minneapolis Downtown, City of Minneapolis – The hourly Leq measured at this location was 66.5 dBA, and the calculated Ldn was 64.5 dBA. This location is representative of noise-sensitive land uses along 6th Ave and 7th St between 5th St and Lyndale Ave.

Detailed information regarding the noise measurement results is contained in Appendix A, and photographs of noise measurement sites are contained in Appendix B.



Figure 5-1 Existing Noise Measurement Locations





For the Capri Theater, sound insulation testing was conducted to determine the interior noise levels in sensitive spaces inside the building due to LRV operations. The testing was conducted in accordance with the American Society for Testing and Materials (ASTM) Standard Guide for Field Measurements of Airborne Sound Attenuations of Building Facades and Façade Elements (ASTM E966-10). The sound insulation measurements were conducted with equipment that conforms to American National Standards Institute standards for Type 1 (precision) microphones. Predicted interior Project noise levels were calculated in accordance with ASTM Standard Classification for Rating Outdoor-Indoor Sound Attenuation (ASTM E1332-10a) using a reference source spectrum of a typical LRV passby.

5.1.2.3 MPCA Noise Standards Analysis

Using the noise measurement data gathered at the long-term noise measurement sites described above, an analysis was also conducted using the MPCA L10 and L50 noise standards. At each location where a long-term noise measurement was conducted, the hourly L10 and L50 for both daytime and nighttime over a 24-hour period were calculated.

The results, shown in Table 5-2, show the range of existing (without the Project) L10 and L50 values for both daytime and nighttime. At most locations along the Project Alignment, the L10 and L50 standards are already being exceeded by existing noise sources during many hours of the day. Most of the existing exceedances of the thresholds are due to exempt noise sources, such as roadway noise and aircraft overflights. The higher existing L10 and L50 noise levels are at locations close to major roadways along the Project Alignment. At locations further from roadways, the L10 and L50 noise levels are lower.

Table 5-2 Summary of Existing L10 and L50 Noise Levels at Long-Term Noise Measurement Locations

Site No.	City	Measurement Location	Max L10 (dBA) ^a	Max L50 (dBA) ^b
LT-13	Minneapolis	1020 N 3rd Street	73.5	69.7
LT-12	Brooklyn Park	8819 Oregon Ave	65.1	60.6
LT-11	Brooklyn Park	7431 78th Court	63.9	59.4
LT-10	Brooklyn Park	7013 Dutton Ave	61.8	59.3
LT-9	Crystal	5906 Elmhurst Ave	68.4	64.4
LT-8	Crystal	5257 Xenia Ave	61.7	58.5
LT-7	Robbinsdale	4536 Regent Ave	61.0	58.9
LT-6	Robbinsdale	3369 W Broadway Ave	73.8	69.5
LT-5	Minneapolis	2741 N Upton Ave	73.7	67.8
LT-4	Minneapolis	2239 W Broadway Ave	72.1	66.3
LT-3	Minneapolis	1931 N Morgan Ave	65.9	62.2
LT-2	Minneapolis	2117 Dupont Ave	58.1	53.2
LT-1	Minneapolis	626 Harry Davis Ln	64.4	59.1

Source: CSA, 2023

LT = long-term

^a The L10 descriptor represents noise levels exceeded 10 percent (6 minutes) of the time during an hour (60 minutes). This standard includes both daytime and nighttime limits.

^b The L50 descriptor represents noise levels exceeded 50 percent (30 minutes) of the time during an hour (60 minutes). This standard includes both daytime and nighttime limits.



5.2 Vibration

5.2.1 Vibration Sensitive Land Use

Vibration-sensitive land use for the Project was identified based on aerial photography, Project drawings, and a site survey. Based on the information from these sources, the vibration-sensitive land use, from north to south by city is as follows.

5.2.1.1 City of Brooklyn Park

The vibration-sensitive land uses for the City of Brooklyn Park includes Ebenezer Community Church, Berean Baptist Church, Brooklyn Park Library, Fire International Embassy, North Hennepin Community College, Revive Church, Children's Music Academy of Brooklyn Park, Hampton Inn Brooklyn Park, and a mixture of single-family and multi-family residences.

5.2.1.2 City of Crystal

The vibration-sensitive land uses for the City of Crystal includes Crystal Medical Center, North Star Inn and Suites, and single-family and multi-family residences.

5.2.1.3 City of Robbinsdale

The vibration-sensitive land uses for the City of Robbinsdale includes North Memorial Health Hospital, Elim Lutheran Church, and a mixture of single-family and multi-family residences.

5.2.1.4 City of Minneapolis

The vibration-sensitive land uses for the City of Minneapolis includes Parkway United Church of Christ, Good News Minneapolis Church, True Vine Missionary Baptist Church, Kipp Legacy School, St Anne-St Joseph Hien Church, Morning Star Assembly of God, All Nations Seventh-day Adventist Church, PYC Arts & Technology Alternative High School, Capri Theater, KMOJ radio station, Star Child Development Center LLC, St. Andrews Episcopal Church, Shiloh Temple International Ministries, Real Believers Faith Center Church, Episcopal Church in Minnesota, Full Proof Ministry COGIC, Liberty Community Church, United Deliverance Temple, Sanctuary Covenant Church, Faith Tabernacle Gospel Fellowship International, Masjid An-Nur Mosque, United Faith Pentecostal Church, Metro Schools College Prep, MN International Middle Charter School, Lunstrum Performing Arts, and a mixture of single-family and multi-family residences.

5.2.2 Existing Vibration Measurements

5.2.2.1 Vibration Measurement Procedures and Equipment

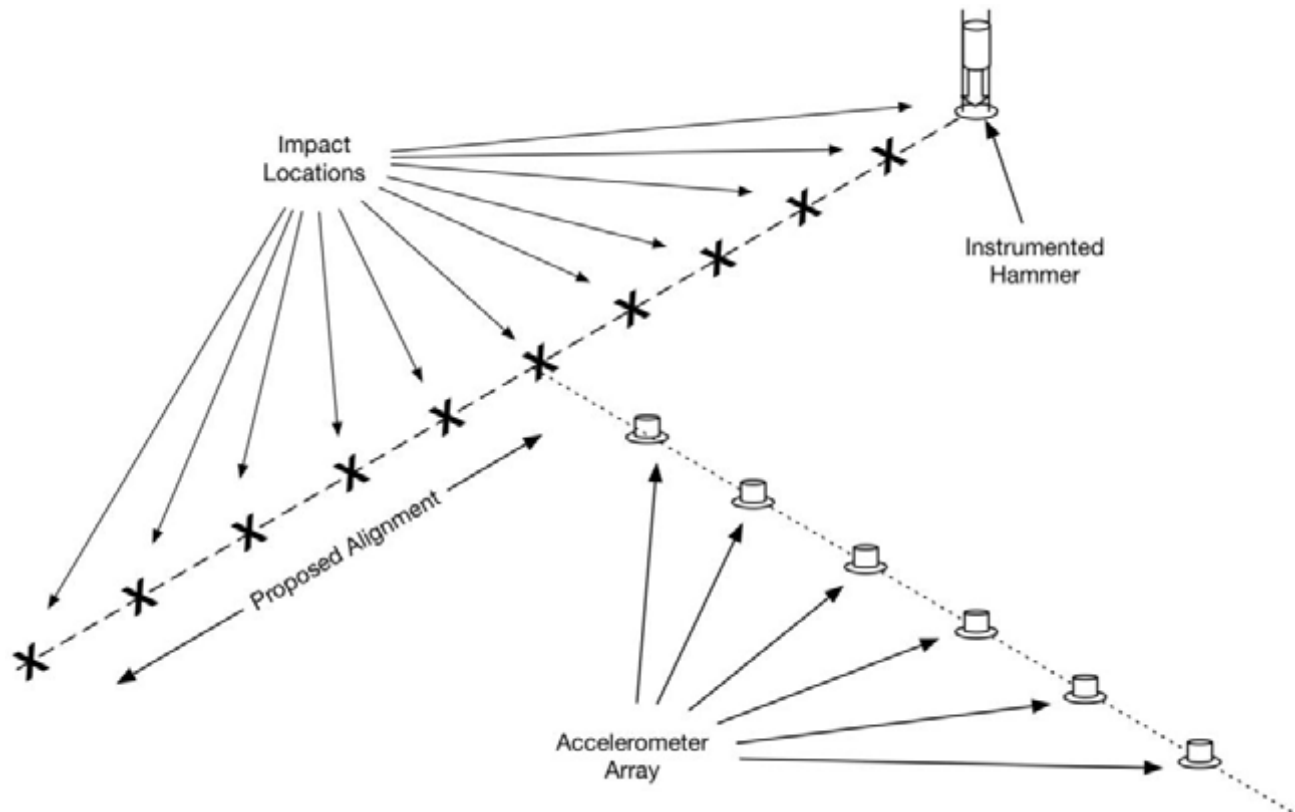
The vibration measurements conducted were used to characterize the response of the soil at locations within the Project Alignment. At each site, vibration propagation tests were conducted by impacting the ground with an instrumented weight and measuring the response of the soil and/or building foundations at various distances (LSTM). The results of the vibration propagation tests were combined with the FD (LRV input force) to Project vibration levels from LRT operations at locations along the Project Alignment.

A custom-built instrumented hammer was used to impart an impulsive force to the ground to determine the ground response. The magnitude of the force was calculated based on the acceleration and mass of the falling hammer. The resulting vibration signals were measured using high-sensitivity accelerometers (PCB Model 393B05) mounted in a vertical direction magnetically adhered to washers on bricks. The signals from the hammer and accelerometers were

recorded using Data Translation DT 9837A digital Acquisition hardware. DATA translation's QuickDAQ software, running on a laptop computer, was used to review the measurement data.

The vibration propagation test procedure is shown schematically in Figure 5-2. The instrumented hammer was used to generate impulses at specific locations spaced 15 feet apart along a line on or parallel to the Project Alignment. A line of accelerometers was placed perpendicular to the line of impacts as shown in Figure 5-2. The relationship between the input force and the resulting vibration measured by the accelerometers, called the transfer mobility, was calculated using proprietary software in the CSA laboratory. The transfer mobility represents the vibration propagation characteristics of the ground at the measurement site and along the alignment options.

Figure 5-2 Vibration Propagation Measurement Schematic



5.2.2.2 Vibration Measurement Locations and Results

Existing vibration measurements were conducted to supplement the measurements made during the initial Draft EIS for the Project. Because portions of the current Project at the northern end of the Project Alignment are the same as those studied during the Draft and Final EIS for the Project, the vibration measurements conducted in these areas are still valid for use in this assessment.

A series of vibration propagation measurements was conducted during the week of April 3, 2023, at five locations along the Project Alignment.



The locations of the seven vibration propagation measurement sites used in the assessment are shown in Figure 5-3. The location of vibration measurement V-A was selected to be representative of all the alignment options considered between Target Field Station and Lyndale Station. Additional vibration testing for the Build Alternative would be completed for the Supplemental Final EIS. The results of the LSTM tests are shown in Figure 5-4. Detailed information regarding the vibration measurement results for the tests conducted as a part of the Supplemental Draft EIS are contained in Appendix C and photographs of vibration measurement sites are contained in Appendix D.

An additional set of vibration testing was conducted at the Capri Theater to determine specific vibration and ground-borne noise levels in sensitive spaces inside the building. Outdoor-to-indoor vibration measurements were conducted to measure the effect that the building foundation and structure has on vibration levels inside the building.



Figure 5-3 Vibration Propagation Measurement Locations

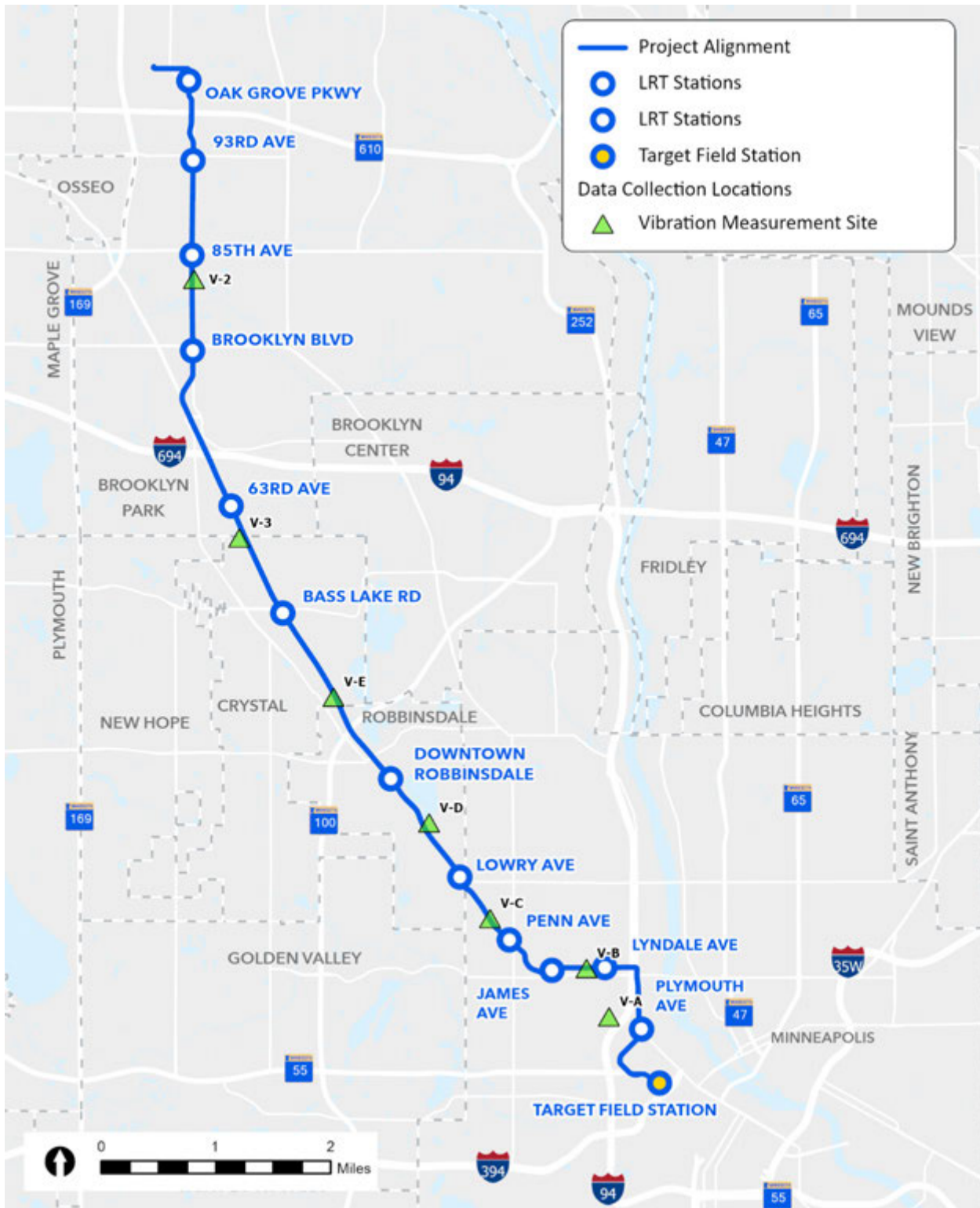
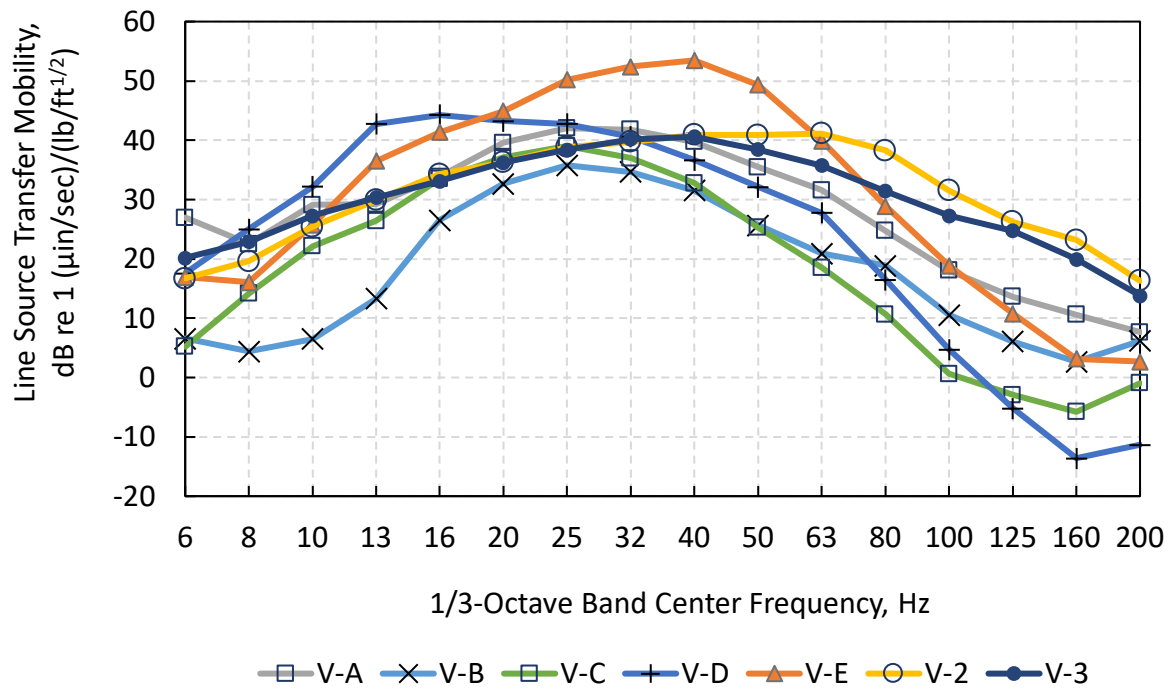




Figure 5-4 Line Source Transfer Mobility Results at 50 feet



6 Environmental Consequences

The FTA noise and vibration guidance manual is the primary source for the noise methodology. Noise impact has been evaluated using the Detailed Noise Assessment methodology contained in Section 6 of the FTA guidance manual. The noise assessment includes the following steps:

- Identified noise-sensitive land uses in the Project Alignment using aerial photography, graphic information system (GIS) data, and field surveys, typically within 350 feet of the alignment.
- Measured the existing noise levels in the Project Alignment at sensitive receptors (See Affected Environment – Section 4.1).
- Projected Project noise levels from transit operations, using Project drawings provided by the engineering team, and information on speeds, headways, track type, LRV type, and at-grade-crossing operations.
- Assessed the impact from transit by comparing the Project noise with the FTA noise impact criteria in Section 4 of the FTA guidance manual.
- Recommended mitigation at locations where Project noise levels exceed the impact criteria.



6.1 Project Noise

This section describes the noise impacts for the Project. Most of the impacts are due to proximity of the tracks (wheel/rail interaction) to sensitive land use, grade crossing bells, and location of crossovers. The detailed results of the noise assessment for Project alignment and design options evaluated in the City of Minneapolis are presented in Appendix E of this report.

Table 6-1 through Table 6-8 present the results of the noise impact assessment for residential and institutional (e.g., churches and schools) land uses for each city. The sources of Project noise are described in Section 3.1 and the specific source of noise for each impact location is described in the text below each table. The results include a tabulation of location information for each sensitive receptor group, the existing noise levels, the Project noise levels, the impact criteria, and whether there will be noise impacts. The tables also show the total number of properties and DUs with moderate and severe noise impacts for each location. Because the Project would never exceed the MPCA standards, the FTA criteria are more protective in assessing impacts from the Project. A summary of each location that will experience noise impacts follows the respective tables.

The moderate and severe noise impact criteria for the noise assessment are determined by the existing noise level, as described in Section 2.1.2.1 and shown in Figure 2.2. The Project noise level is compared to the moderate and severe impact thresholds at each location to determine the potential for noise impact from the Project. If the Project noise level is above the criteria, there would be either a moderate or severe noise impact. If the Project noise level is below the moderate impact criterion, there would be no noise impact.



Table 6-1 Summary of Noise Impacts for Residential Land Use in the City of Brooklyn Park

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Ldn (dBA)	Project Noise Level Ldn (dBA)	FTA Mod Impact Noise Level Ldn (dBA)	FTA Sev Impact Noise Level Ldn (dBA)	Noise Level Increase (dB)	Mod Noise Impacts # of properties /DUs	Sev Noise Impacts # of properties /DUs
93rd Ave N to TH 610	Brooklyn Park	NB	272	35	62	47	59	64	0.1	0	0
93rd Ave N to TH 610	Brooklyn Park	SB	*	*	*	*	*	*	*	*	*
85th Ave N to 93rd Ave N	Brooklyn Park	NB	107	50	62	59	59	64	1.8	1/ 1	0
85th Ave N to 93rd Ave N	Brooklyn Park	SB	91	55	62	60	59	64	2.1	3/12	0
Shingle Creek to 85th Ave N	Brooklyn Park	NB	*	*	*	*	*	*	*	*	*
Shingle Creek to 85th Ave N	Brooklyn Park	SB	88	45	65	59	61	66	1.0	0	0
Brooklyn Blvd to Shingle Creek	Brooklyn Park	NB	98	55	65	60	61	66	1.1	0	0
Brooklyn Blvd to Shingle Creek	Brooklyn Park	SB	*	*	*	*	*	*	*	*	*
N 73rd Ave to Brooklyn Blvd	Brooklyn Park	NB	86	40	65	59	61	66	0.9	0	0
N 73rd Ave to Brooklyn Blvd	Brooklyn Park	SB	169	40	65	52	61	66	0.2	0	0
I-94 to N 73rd Ave	Brooklyn Park	NB	*	*	*	*	*	*	*	*	*
I-94 to N 73rd Ave	Brooklyn Park	SB	271	45	56	49	56	62	0.7	0	0
N 63rd Ave to I-94	Brooklyn Park	NB	109	50	56	52	56	62	1.2	0	0
N 63rd Ave to I-94	Brooklyn Park	SB	226	50	56	52	56	62	1.3	0	0
N 60th Ave to N 63rd Ave	Brooklyn Park	NB	121	50	63	56	60	65	0.7	0	0
N 60th Ave to N 63rd Ave	Brooklyn Park	SB	204	50	63	52	60	65	0.3	0	0

Source: CSA, 2023

Notes:

Predicted noise levels shown for each location are highest for each location. Projected noise levels at other receptors within each location are lower.

The reported noise levels are rounded to the nearest decibel.

Includes the total number of DUs at the affected properties. Additional noise measurements and analysis will be performed to determine potential impacts at each DU and the reasonable and feasible mitigation measures that would be implemented.

Mod = moderate; Sev = severe.

*No noise sensitive land uses.



- **85th Ave N to 93rd Ave N (NB):** There is one single-family residence on the northbound side of the Project Alignment between 85th Ave N and 93rd Ave N predicted to have a moderate noise impact. This impact is due to the speed of the LRV and the grade crossing bells at 89th Ave N and Maplebrook Pkwy N.
- **85th Ave N to 93rd Ave N (SB):** There are three residential properties, each with four dwelling units on the southbound side of the Project Alignment between 85th Ave N and 93rd Ave N predicted to have moderate noise impacts. These impacts are due to the LRV bells in the area and the expansion of County State Aid Highway (CSAH) 103.

Table 6-2 Summary of Noise Impacts for Institutional Land Use in the City of Brooklyn Park

Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impact Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Noise Level Increase (dB)	Type of Impact
Ebenezer Community Church	Brooklyn Park	NB	136	20	59	47	62	68	0.3	--
Berean Baptist Church	Brooklyn Park	SB	88	50	59	63	62	68	5.7	Moderate
Brooklyn Park Library	Brooklyn Park	NB	99	40	59	53	62	68	1.0	--
Fire International Embassy	Brooklyn Park	SB	333	20	59	34	62	68	0.0	--
North Hennepin Community College	Brooklyn Park	NB	215	45	59	54	62	68	1.1	--
Revive Church	Brooklyn Park	SB	162	55	59	52	62	68	0.8	--
Children's Music Academy of Brooklyn Park	Brooklyn Park	NB	295	35	66	50	66	72	0.1	--

Source: CSA, 2023

Note: The reported noise levels are rounded to the nearest decibel.

Mod = moderate; Sev = severe.

- **Berean Baptist Church:** The Berean Baptist Church is predicted to have a moderate noise impact. This impact is due to the LRV bells in the area and the expansion of CSAH 103.

The locations of the noise impacts for the City of Brooklyn Park are shown in Figure 6-1.



Figure 6-1 Project Noise Impacts in the City of Brooklyn Park

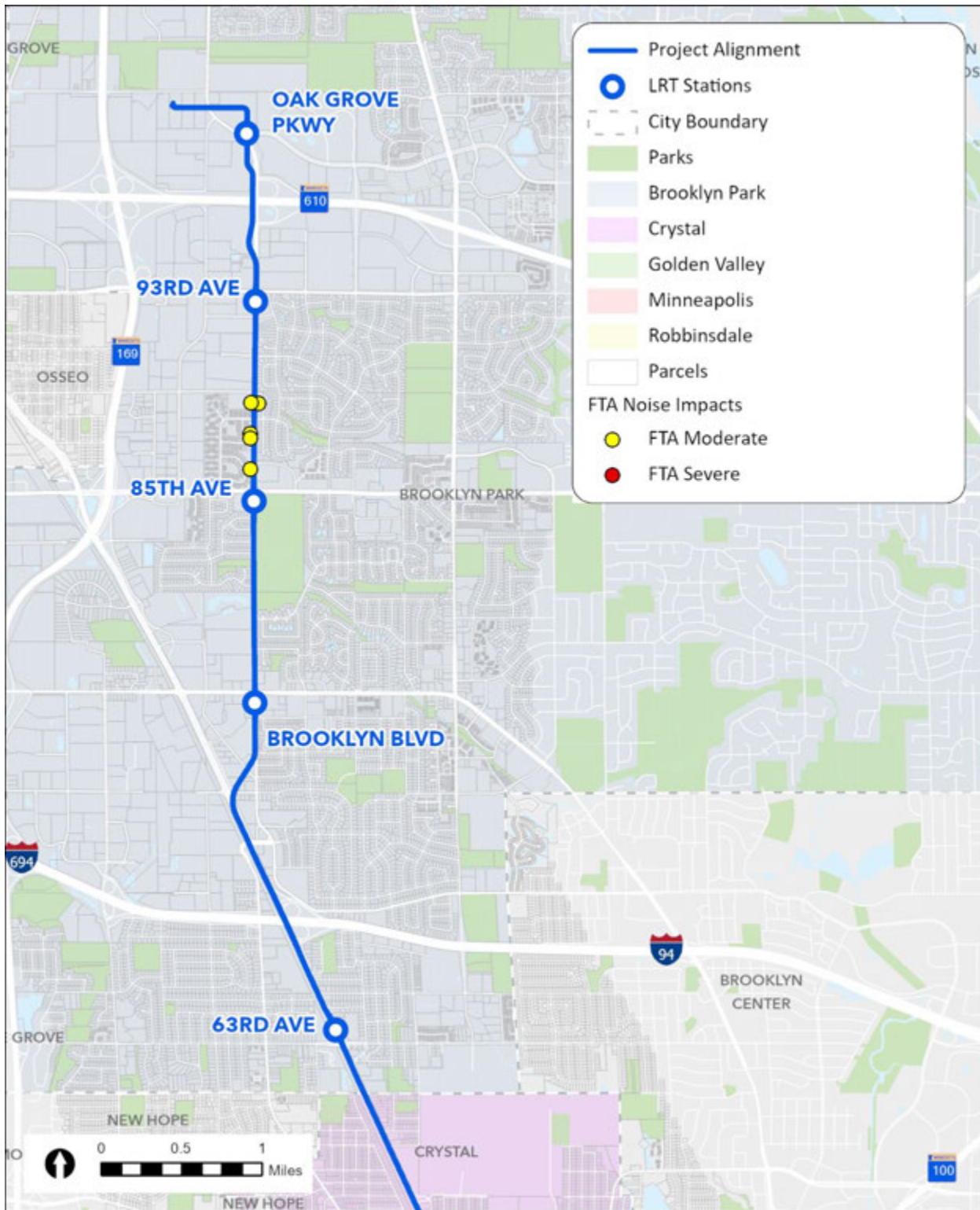




Table 6-3 Summary of Noise Impacts for Residential Land Use in the City of Crystal

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph) ^a	Exist Noise Level Ldn (dBA)	Project Noise Levels Ldn (dBA)	FTA Mod Impact Noise Level Ldn (dBA)	FTA Sev Impact Noise Level Ldn (dBA)	Noise Level Increase (dB)	Mod Noise Impacts # of properties /DUs	Number of Sev Noise Impacts
N 56th Ave to N 60th Ave	Crystal	NB	349	25	63	38	60	65	0.0	0	0
N 56th Ave to N 60th Ave	Crystal	SB	227	55	63	52	60	65	0.3	0	0
CPKC Rail Line to N 56th Ave	Crystal	NB	146	20	59	57	57	63	2.8	1/14	0
CPKC Rail Line to N 56th Ave	Crystal	SB	280	20	59	53	57	63	1.0	0	0
N 47th Ave to CPKC Rail Line	Crystal	NB	135	55	59	56	57	63	1.9	0	0
N 47th Ave to CPKC Rail Line	Crystal	SB	93	50	59	59	57	63	3.3	4/4	0

Source: CSA, 2023

^a LRV speed varies within the segment. Speed (mph) listed here reflects noise analysis assumptions.

Notes:

Predicted noise levels shown for each location are highest for each location. Projected noise levels at other receptors within each location are lower.

The reported noise levels are rounded to the nearest decibel.

Includes the total number of DUs at the affected properties. Additional noise measurements and analysis will be performed to determine potential impacts at each DU and the reasonable and feasible mitigation measures that would be implemented. Mod = moderate; Sev = severe.

*No noise sensitive land use.

- **CPKC Rail Line to N 56th Ave (NB):** There is one residential property with 14 dwelling units on the northbound side of the Project Alignment between the CPKC Rail Line and N 56th Ave predicted to have moderate noise impacts. These impacts are due to the proximity of the tracks (wheel/rail interaction) and the bells at Bass Lake Rd and Bass Lake Rd Station.
- **N 47th Ave to the CPKC Rail Line (SB):** There are four single-family residences on the southbound side of the Project Alignment between N 47th Ave and the CPKC Rail Line predicted to have moderate noise impacts. These impacts are due to the proximity of the tracks and the speed of the train.



Table 6-4 Summary of Noise Impacts for Institutional Land Use in the City of Crystal

Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impact Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Noise Level Increase (dB)	Type of Impact
Crystal Medical Center	Crystal	NB	104	42	61	53	63	69	0.7	--

Source: CSA, 2023

Note: The reported noise levels are rounded to the nearest decibel.

Mod = moderate; Sev = severe.

The locations of the noise impacts for the City of Crystal are shown in Figure 6-2.



Figure 6-2 Project Noise Impacts in the City of Crystal

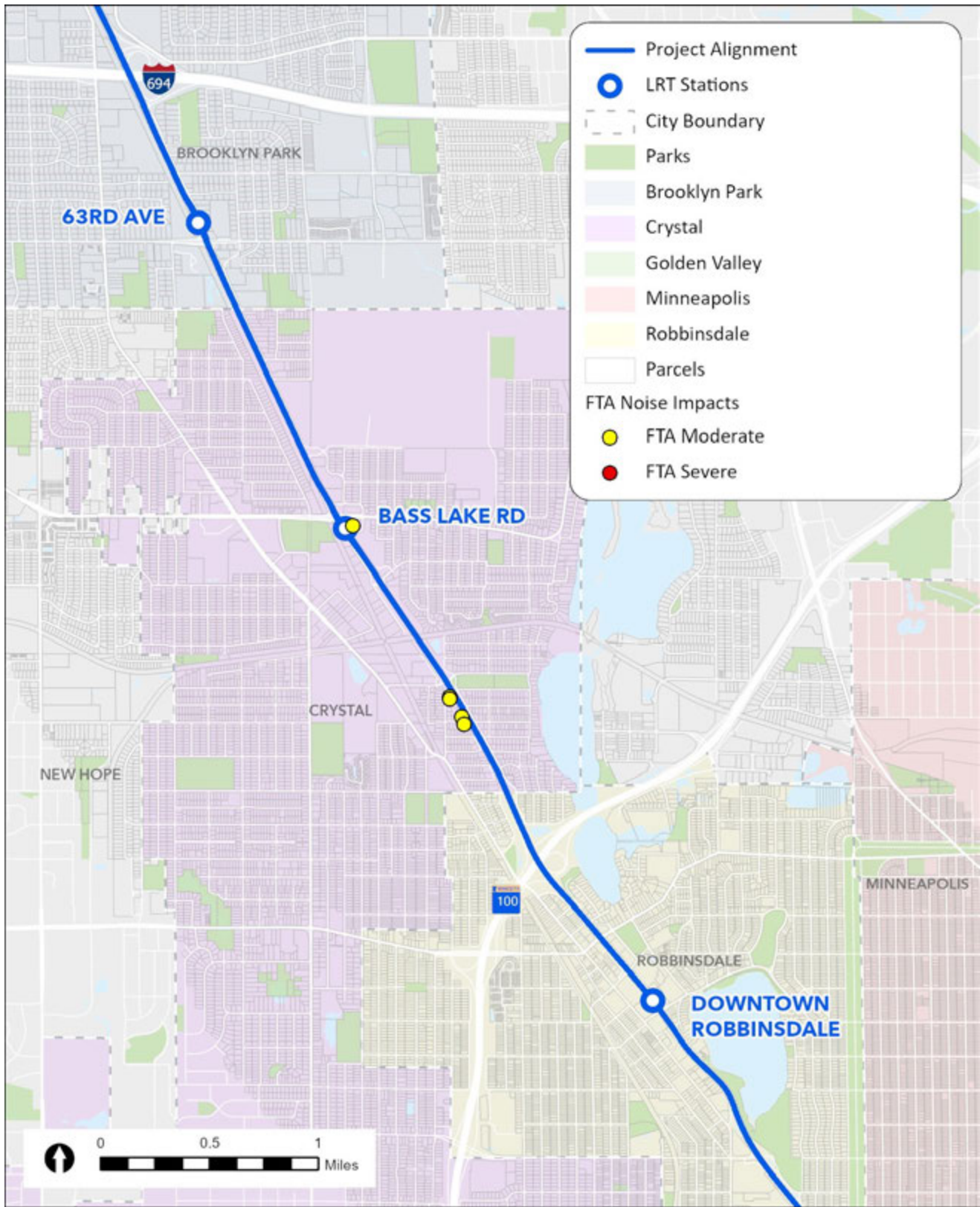




Table 6-5 Summary of Noise Impacts for Residential Land Use in the City of Robbinsdale

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Ldn (dBA)	Project Noise Levels Ldn (dBA)	FTA Mod Impact Noise Level Ldn (dBA)	FTA Sev Impact Noise Level Ldn (dBA)	Noise Level Increase (dB)	Mod Noise Impacts # of properties /DUs	Sev Noise Impacts # of properties /DUs
TH 100 to N 47th Ave	Robbinsdale	NB	139	40	61	54	58	64	0.9	0	0
TH 100 to N 47th Ave	Robbinsdale	SB	254	40	61	50	58	54	0.4	0	0
N 42nd Ave to TH 100	Robbinsdale	NB	89	50	61	59	58	64	2.4	2/2	0
N 42nd Ave to TH 100	Robbinsdale	SB	119	50	61	57	58	64	1.9	0	0
N 40th Ave to N 42nd Ave**	Robbinsdale	NB	112	40	70	57	64	70	0.2	0	0
N 40th Ave to N 42nd Ave**	Robbinsdale	SB	*	*	*	*	*	*	*	*	*
N 36th Ave to N 40th Ave**	Robbinsdale	NB	97	40	70	58	64	70	0.3	0	0
N 36th Ave to N 40th Ave**	Robbinsdale	SB	73	50	70	62	64	70	0.6	0	0
N Lowry Ave to N 36th Ave	Robbinsdale	NB	138	40	70	58	64	70	0.3	0	0
N Lowry Ave to N 36th Ave	Robbinsdale	SB	109	50	70	57	64	70	0.2	0	0

Source: CSA, 2023

Notes:

Predicted noise levels shown for each location are highest for each location. Projected noise levels at other receptors within each location are lower.

The reported noise levels are rounded to the nearest decibel.

Includes the total number of DUs at the affected properties. Additional noise measurements and analysis will be performed to determine potential impacts at each DU and the reasonable and feasible mitigation measures that would be implemented.

Mod = moderate; Sev = severe.

*No noise sensitive land use.

**There are no differences in the predicted noise levels or impacts for the three options for the Downtown Robbinsdale Station.

- **N 42nd Ave to TH 100 (NB):** There are two single-family residences on the northbound side of the Project Alignment between N 42nd Ave and TH 100 predicted to have moderate noise impacts. These impacts are due to the proximity of the tracks and speed of the train.



Table 6-6 Summary of Noise Impacts for Institutional Land Use in the City of Robbinsdale

Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impacts Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Noise Level Increase (dB)	Type of Impact
Elim Lutheran Church	Robbinsdale	SB	177	40	57	46	61	67	0.3	--

Source: CSA, 2023

Note: The reported noise levels are rounded to the nearest decibel.

Mod = moderate; Sev = severe.

The locations of the noise impacts for the City of Robbinsdale are shown in Figure 6-3.



Figure 6-3 Project Noise Impacts in the City of Robbinsdale

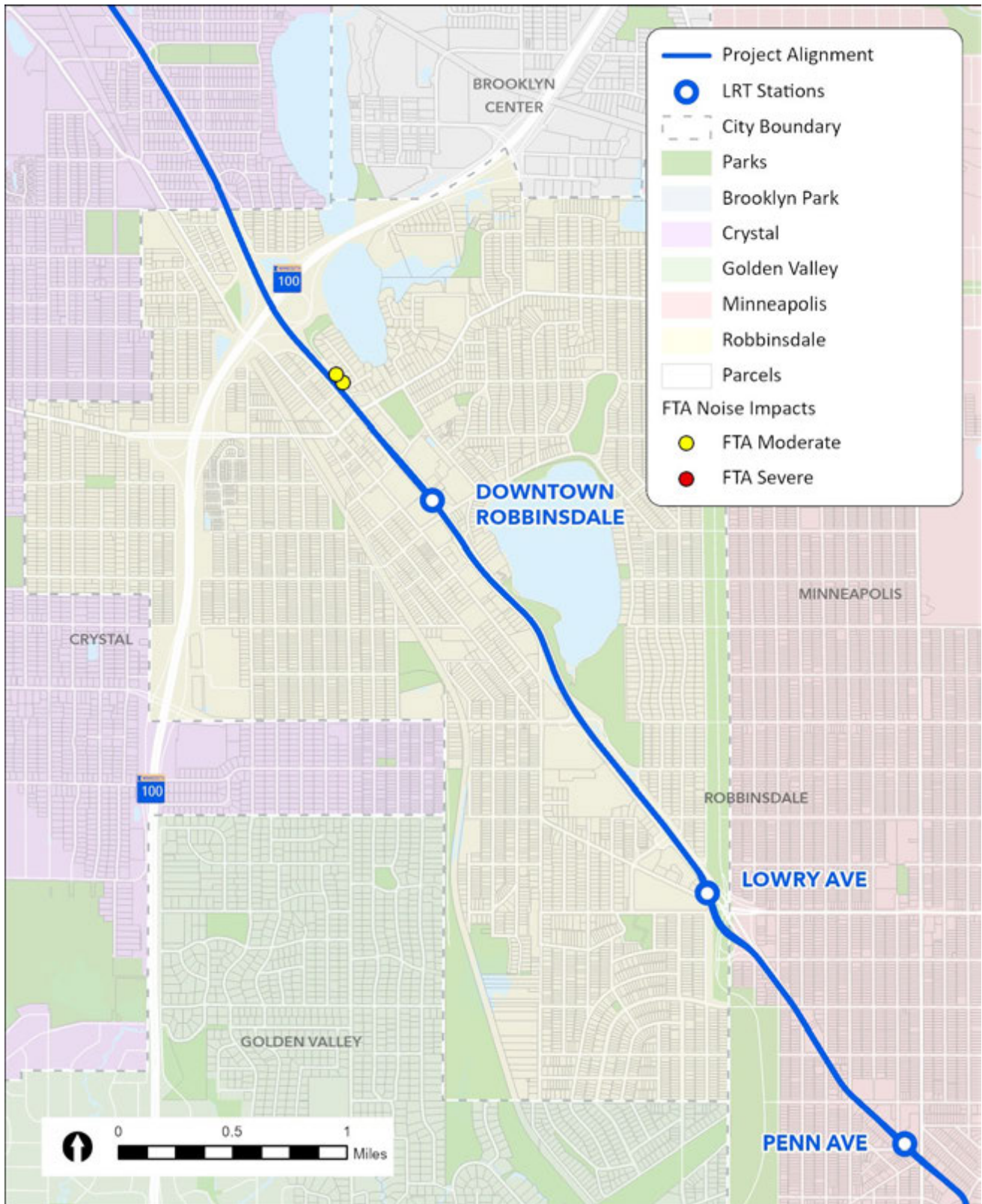




Table 6-7 Summary of Noise Impacts for Residential Land Use in the City of Minneapolis

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Ldn (dBA)	Project Noise Levels Ldn (dBA)	FTA Mod Impact Noise Level Ldn (dBA)	FTA Sev Impact Noise Level Ldn (dBA)	Noise Level Increase (dB)	Mod Noise Impacts # of properties /DUs	Sev Noise Impacts # of properties /DUs
N 26th Ave to N Lowry Ave	Minneapolis	NB	43	45	69	70	64	69	3.6	2/2	2/2
N 26th Ave to N Lowry Ave	Minneapolis	SB	40	45	69	70	64	69	3.6	6/51	1/1
N Knox Ave to N 26th Ave	Minneapolis	NB	56	20	69	64	64	69	1.1	1/104	0
N Knox Ave to N 26th Ave	Minneapolis	SB	53	35	69	60	64	69	0.5	0	0
N Emerson Ave to N Knox Ave	Minneapolis	NB	51	35	55	65	55	61	10.7	1/1	3/4
N Emerson Ave to N Knox Ave	Minneapolis	SB	21	35	55	73	55	61	18.7	0	4/15
Lyndale Ave to N Emerson Ave	Minneapolis	NB	33	35	55	68	55	61	13.3	2/2	2/31
Lyndale Ave to N Emerson Ave	Minneapolis	SB	18	15	55	59	55	61	5.7	1/18	0
I-94 to Lyndale Ave	Minneapolis	NB	52	15	55	62	55	61	7.8	2/3	1/1
I-94 to Lyndale Ave	Minneapolis	SB	*	*	*	*	*	*	*	*	*
I-94 to Plymouth Ave N	Minneapolis	SB	*	*	*	*	*	*	*	*	*
I-94 to Plymouth Ave N	Minneapolis	NB	*	*	*	*	*	*	*	*	*
N 8th Ave to Plymouth Ave N	Minneapolis	NB	29	40	69	67	64	69	2.1	1/30	0
N 8th Ave to Plymouth Ave N	Minneapolis	SB	26	40	69	71	64	69	3.7	0	2/119
Target Field Station to N 8th Ave	Minneapolis	NB	50	15	65	51	60	66	0.2	0	0
Target Field Station to N 8th Ave	Minneapolis	SB	*	*	*	*	*	*	*	*	*

Source: CSA, 2023

Notes:

Predicted noise levels shown for each location are highest for each location. Projected noise levels at other receptors within each location are lower.

The reported noise levels are rounded to the nearest decibel.

Includes the total number of DUs at the affected properties. Additional noise measurements and analysis will be performed to determine potential impacts at each DU and the reasonable and feasible mitigation measures that would be implemented.

Mod = moderate; Sev = severe.

*No noise sensitive land use.



Based on FTA criteria, moderate impacts would occur at 16 residential properties, and severe impacts would occur at 15 residential properties, as summarized:

- **Between N Lowry Ave and N 26th Ave:** Based on FTA criteria, the Council identified seven moderate noise impacts and three severe noise impacts at single-family residences, and a moderate noise impact at an apartment building with 46 units. Compared to existing conditions, outdoor noise levels would increase by up to 3.6 dB at these residences due to the proximity of the tracks (wheel/rail interaction), the speed of the train, and a nearby crossover.
- **Between N 26th Ave and N Knox Ave:** Based on FTA criteria, the Council identified one moderate noise impact at an apartment building with 104 dwelling units. Compared to existing conditions, outdoor noise levels would increase by up to 1.1 dB at this residential property, due to the proximity of the tracks (wheel/rail interaction) and LRV bells at Penn Ave Station.
- **Between N Knox Ave and N Emerson Ave:** Based on FTA criteria, the Council identified one moderate noise impact at a single-family home and severe noise impacts at seven properties, including one two-family and five single-family homes and an apartment building with 12 dwelling units. Compared to existing conditions, outdoor noise levels at these residences would vary, increasing between 5 and 15 dB depending on the location. Existing noise is relatively low along this segment – recorded at 55 dBA – and the proximity of the tracks (wheel/rail interaction) and bells at N Girard Ave, N Fremont Ave, and N Emerson Ave would cause the noise increase.
- **Between N Emerson Ave and N Lyndale Ave:** Based on FTA criteria, the Council identified three moderate noise impacts – two at single-family homes and one at a multi-story building with 18 apartments. The Council identified two severe noise impacts – one at a single-family home and one at a multi-story building with 30 dwelling units. Compared to existing conditions, the increase in outdoor noise levels at these residences would vary, increasing between 3 and 15 dB depending on the location. Existing noise is relatively low along this segment – recorded at 55 dBA – and the proximity of the tracks (wheel/rail interaction) and bells at Bryant Ave and Lyndale Ave would cause the noise increase.
- **Between I-94 and N Lyndale Ave:** Based on FTA criteria, the Council identified two moderate impacts – at a single-family and two-family residence – and one severe noise impact at a single-family residence. Compared to existing conditions, outdoor noise levels at these residences would vary, increasing between 3 and 15 dB depending on the location. Existing noise is relatively low along this segment – recorded at 55 dBA – and the proximity of the tracks (wheel/rail interaction) and the bells at Lyndale Ave would cause the noise increase.
- **Between Plymouth Ave N and N 8th Ave:** Based on FTA criteria, the Council identified one moderate and two severe noise impacts at three apartment buildings with 30, 10, and 109 dwelling units, respectively. Compared to existing conditions, outdoor noise levels at these residential properties would increase by up to 3.7 dB due to the proximity of the tracks and bells at N 3rd Street and N 5th Street.

Additional noise monitoring and analysis will be performed as the design advances to determine potential impacts at each dwelling unit within multi-family properties and whether mitigation measures would be cost effective based on noise mitigation criteria (see Section 5.6.4).

In addition to the noise impacts at residential properties, a moderate noise impact would occur at the Faith Tabernacle Gospel Fellowship International, where outdoor noise levels would increase by 5.1 dB due to the proximity of the tracks (wheel/rail interaction).

The locations of the noise impacts for the City of Minneapolis along the 21st Ave N and east of I-94 to Washington Ave are shown in Figure 6-4



Table 6-8 Summary of Noise Impacts for Institutional Land Use in the City of Minneapolis

Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impact Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Noise Level Increase	Type of Impact
Parkway United Church of Christ	Minneapolis	NB	338	25	68	46	68	73	0.0	--
Good News Minneapolis Church	Minneapolis	NB	139	25	68	52	68	73	0.4	--
True Vine Missionary Baptist Church	Minneapolis	SB	111	45	68	63	68	73	1.1	--
KIPP Legacy	Minneapolis	NB	200	35	68	51	68	73	0.1	--
St Anne-St Joseph Hien Church	Minneapolis	NB	323	35	68	42	68	73	0.0	--
All Nations Seventh-day Adventist Church	Minneapolis	SB	182	20	68	41	68	73	0.0	--
PYC Arts & Technology Alternative High School	Minneapolis	SB	53	20	62	58	64	69	1.6	--
Capri Theater*	Minneapolis	SB	40	20	62	63	64	69	--	--
Star Child Development Center LLC	Minneapolis	SB	40	20	62	63	64	69	3.7	--
Real Believers Faith Center Church	Minneapolis	SB	236	35	68	43	68	73	0.0	--
Liberty Community Church	Minneapolis	NB	44	35	62	64	64	69	4.1	--
United Deliverance Temple Inc	Minneapolis	NB	250	15	62	36	64	69	0.0	--
Sanctuary Covenant Church	Minneapolis	SB	16	15	62	59	64	69	1.9	--
Faith Tabernacle Gospel Fellowship International	Minneapolis	SB	17	25	68	72	68	73	5.1	Moderate
Metro Schools College Prep	Minneapolis	SB	166	10	67	46	67	72	0.0	--
Lundstrum Performing Arts	Minneapolis	NB	279	40	66	45	66	72	0.1	--
Minnesota International Middle Charter School	Minneapolis	NB	358	40	66	47	66	72	0.0	--

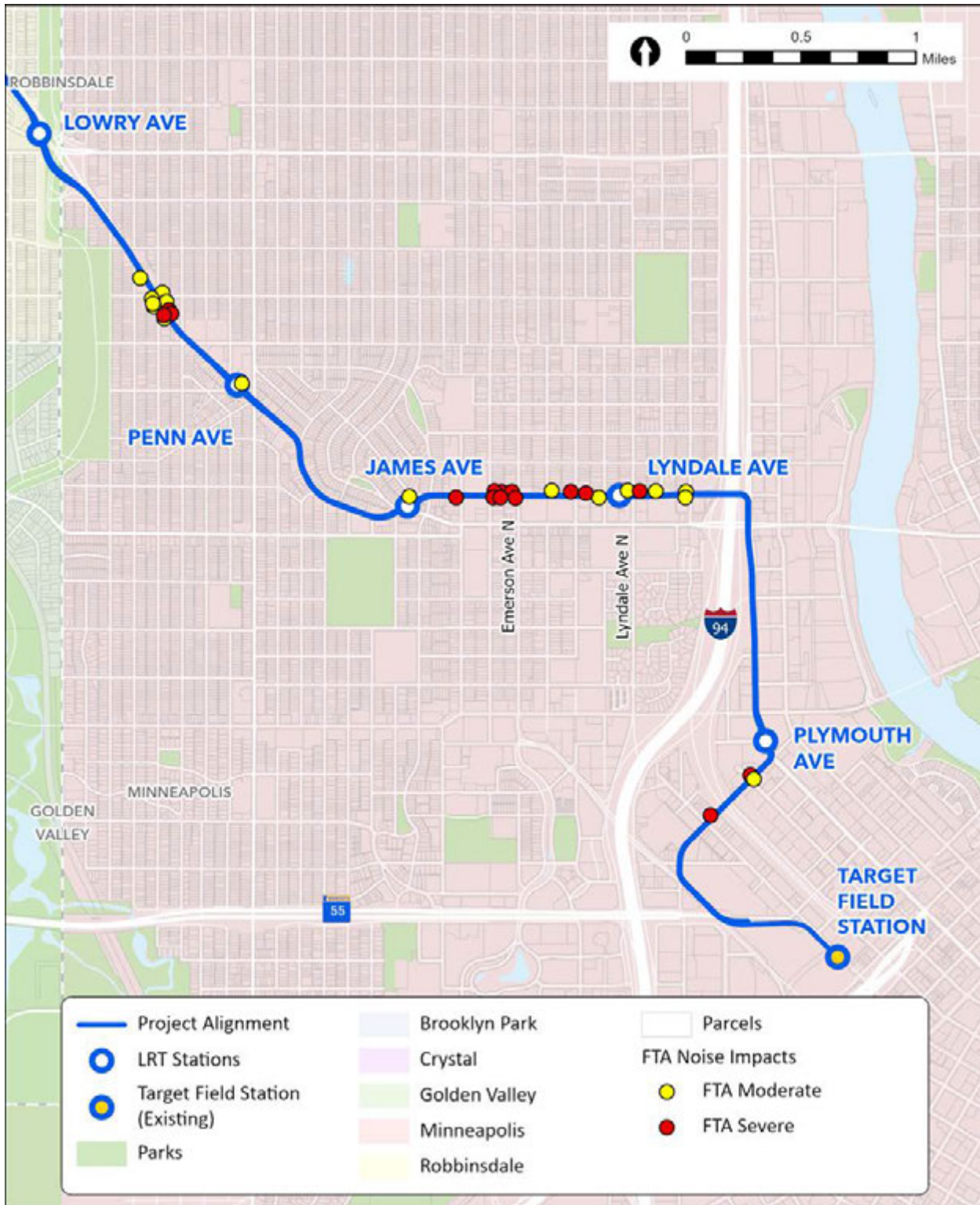
Source: CSA, 2023

The reported noise levels are rounded to the nearest decibel.

*This represents the results for non-special use spaces in the Capri Theater.



Figure 6-4 Project Noise Impacts in the City of Minneapolis



6.1.1 Capri Theater

The Capri Theater is a special use building that contains several different noise and vibration sensitive spaces, including a theater, recording studio, community hall, dance studio, and classrooms. The community hall, dance studio, and classrooms are all Category 3 (institutional) receivers. The noise and vibration assessments for the Category 3 uses at Capri Theater are discussed in Sections 6.1 and 6.2.1, respectively. No noise or vibration impacts are projected for any of the Category 3 uses.

The theater and the recording studio are considered separately from the rest of the building and require site-specific measurements to determine the potential for noise and vibration impact. The FTA Guidance manual includes specific vibration and ground-borne noise criteria for both spaces. For the noise assessment, the calculated indoor Project noise levels in the theater, which has an outer wall facing the Project Alignment, were compared to the measured ambient noise level to determine the potential for impact. Because the recording studio is located in the interior of the building, a noise assessment was not conducted because there is no path for outdoor noise to affect the space. The criteria used in the assessment for both spaces are shown in Table 6-9.

Table 6-9 FTA Noise and Vibration Criteria for the Capri Theater

Location	Existing Noise Level (dBA)	FTA Vibration Criteria (VdB)	FTA Ground-Borne Noise Criteria (dBA)
Theater	46.2	72	35
Recording Studio	--	65	25

Source: CSA, 2023

The outdoor-to-indoor noise measurements conducted for the theater focused on the southeast façade of the building, which is an outer wall for the theater. The northeast façade of the building includes an atrium, and an additional wall and doors between the outside of the building and the theater space. The light rail noise levels inside the theater would be much lower through that façade than the outer wall on the southeast side. The results of the noise measurements inside the theater indicate that noise levels from LRV passbys would be 5 dB below the existing noise levels in the theater. Therefore, there would be no noise impacts from light rail operations.

The results of the vibration and ground-borne noise measurements inside the theater indicate that both the vibration and ground-borne noise levels are well below the impact thresholds and no impacts are projected.

The results of the vibration and ground-borne noise assessment for the recording studio indicate that the vibration levels are below the impact threshold, but the ground-borne noise levels are above the impact threshold. The vibration and ground-borne noise measurements for the recording studio were conducted on the second story of the building, and there was substantial background noise and vibration from sources inside the building interfering with the measurements. The projected ground-borne noise levels would be expected to be similar to or lower than those measured in the theater. Additional investigation will explore potential for ground-borne noise impacts resulting from vibration and results will be presented in the Supplemental Final EIS.

A summary of the noise and vibration impact assessment for the Capri Theater is shown in Table 6-10.

Table 6-10 Summary of Project Noise and Vibration Levels for the Capri Theater

Location	Project Noise Level (dBA)	Project Vibration Level (VdB)	Project Ground-Borne Noise Level (dBA)
Theater	40.9	57	24
Recording Studio	--	58	35

Source: CSA, 2023

6.1.2 Stations

The major noise source at stations, other than LRT operations, is the sounding of the LRT bells as the trains enter and exit the stations. The noise from the LRT bells has been captured in the Project noise assessment detailed above.

6.1.3 Operations and Maintenance Facility

The Operations and Maintenance Facility is located more than 1,000 feet from any noise-sensitive receptors; therefore, no noise impact is projected.

6.1.4 Construction Noise

Elevated noise levels from construction activities are, to a degree, unavoidable for this type of project. Construction noise levels are subject to local noise ordinances and noise rules administered by the MPCA (Minnesota Rules ch. 7030). MPCA administers these noise rules to establish maximum allowable noise levels; where applicable, MPCA procedures allow for the issuance of noise variances. The Council will require that construction equipment used by contractors be properly muffled and in proper working order. Advanced notice will be provided to affected communities of any planned abnormally loud construction activities. In general, construction will occur within daytime hours. However, night construction may sometimes be required, for example to minimize traffic impacts or to improve safety. If nighttime construction is deemed necessary, during the Project's final design and construction stages, a nighttime construction mitigation plan will be developed.

For most construction equipment, diesel engines are typically the dominant noise source. For other activities such as impact pile driving and jackhammering, noise generated by the actual process dominates. Short-term noise during construction of the Project can be intrusive to residents near the construction sites. Most of the construction will consist of site preparation and laying new tracks, and should occur primarily during daytime hours, except when required and within City noise ordinance procedures for a waiver. At some locations, more extensive work will occur, such as pile driving for elevated structures and retaining walls.

Table 6-11 shows noise levels of typical construction equipment from the FTA guidance manual, in terms of the maximum levels at 50 feet. Construction noise predictions at noise-sensitive locations depends on the amount of noise during each construction phase, the duration of the noise, and the distance from the construction activities to the sensitive receptor. Conducting a construction noise impact assessment requires knowledge of the equipment likely to be used, the duration of its use, and the way it will be used by a contractor. The Leq for a particular set of assumptions is estimated using typical noise levels from Table 6-11.

Table 6-11 Typical Construction Noise Levels

Equipment Type	Typical Noise Level (dBA) 50 ft
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Grader	85
Loader	85
Paver	89
Pump	76
Roller	74
Truck	88

Source: FTA, 2018

Table 6-12 provides an example of a construction noise projection for typical at-grade track construction. Using these assumptions, an 8-hour Leq of 88 dBA would be projected at a distance of 50 feet from the construction site.

Using the criteria in Section 2.1.2 and the example for at-grade construction in Table 6-11, screening distances for at-grade track construction noise impact can be determined. For residential land use, the potential for short-term at-grade track construction noise (Table 6-12) impact could extend to approximately 120 feet from the Project Alignment; however, if nighttime construction is conducted, the potential for short-term noise impact from at-grade construction could extend to approximately 380 feet from the Project Alignment.

Typically, a contractor will provide this information as a part of a noise control plan for construction. See Section 7.1.4 for more information regarding the approach to mitigating construction noise.

**Table 6-12 Summary of Historic and Cultural Resources Noise Assessment**

Equipment Type	Typical Noise Level (dBA)	Equipment Utilization	Leq (dBA)
	50 ft	Factor (%)	
Grader	85	50	82
Backhoe	80	40	76
Compactor	82	20	75
Loader	85	20	78
Roller	74	20	67
Truck	88	40	84
Crane, Mobile	83	20	76
Total 8-hour workday Leq at 50 ft			88

Source: CSA, 2023

6.2 Project Vibration

The FTA guidance manual on noise and vibration (FTA, 2018) is the primary source for the vibration methodology. The assessment uses the Detailed Vibration Assessment methodology, as described in Section 6 of the FTA guidance manual.

The vibration assessment steps employed includes the following:

- Identified vibration-sensitive land uses in the Project Alignment using aerial photography, GIS data, and field surveys, typically within 350 feet of the alignment.
- Measured vibration-propagation characteristics of the soil in the Project Alignment at sensitive receptors (See Affected Environment – Section 5.2).
- Projected Project vibration levels from transit operations, using Project drawings provided by the engineering team, and information on speeds, headways, track type, and LRV vibration characteristics.
- Assessed the impact from transit by comparing the Project vibration with the FTA vibration impact criteria in Section 6 of the FTA guidance manual.
- Recommended mitigation at locations where Project vibration levels exceed the impact criteria.

6.2.1 Project Vibration

This section describes the vibration impacts for the Project Build Alternative. The detailed results of the vibration assessment for other Project alignment and design options evaluated in the City of Minneapolis are presented in Appendix F of this report.

Table 6-13 through Table 6-20. includes a tabulation of location information for each sensitive receptor group, Project vibration levels, the impact criteria, and whether there will be vibration impacts. The tables also show the total number of dwelling units with vibration impacts for each location.

**Table 6-13 Summary of Vibration Impacts for Residential Land Use in the City of Brooklyn Park**

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Number of Impacts
93rd Ave N to TH 610	Brooklyn Park	NB	272	35	48	72	0
93rd Ave N to TH 610	Brooklyn Park	SB	*	*	*	*	*
85th Ave N to 93rd Ave N	Brooklyn Park	NB	110	55	55	72	0
85th Ave N to 93rd Ave N	Brooklyn Park	SB	90	55	58	72	0
Shingle Creek to 85th Ave N	Brooklyn Park	NB	*	*	*	*	*
Shingle Creek to 85th Ave N	Brooklyn Park	SB	83	45	59	72	0
Brooklyn Blvd to Shingle Creek	Brooklyn Park	NB	81	55	60	72	0
Brooklyn Blvd to Shingle Creek	Brooklyn Park	SB	*	*	*	*	*
N 73rd Ave to Brooklyn Blvd	Brooklyn Park	NB	87	45	59	72	0
N 73rd Ave to Brooklyn Blvd	Brooklyn Park	SB	169	40	50	72	0
I-94 to N 73rd Ave	Brooklyn Park	NB	*	*	*	*	*
I-94 to N 73rd Ave	Brooklyn Park	SB	271	45	48	72	0
N 63rd Ave to I-94	Brooklyn Park	NB	109	50	56	72	0
N 63rd Ave to I-94	Brooklyn Park	SB	226	50	53	72	0
N 60th Ave to N 63rd Ave	Brooklyn Park	NB	121	50	56	72	0
N 60th Ave to N 63rd Ave	Brooklyn Park	SB	204	50	53	72	0

Source: CSA, 2023

Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

*There are no vibration sensitive receivers at this location.

**Table 6-14 Summary of Vibration Impacts for Institutional Land Use in the City of Brooklyn Park**

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Impact
Ebenezer Community Church	Brooklyn Park	NB	136	20	48	75	--
Berean Baptist Church	Brooklyn Park	SB	88	50	58	75	--
Brooklyn Park Library	Brooklyn Park	NB	99	40	56	75	--
Fire International Embassy	Brooklyn Park	SB	333	20	43	75	--
North Hennepin Community College	Brooklyn Park	NB	215	45	50	75	--
Revive Church	Brooklyn Park	SB	162	55	53	75	--
Children's Music Academy of Brooklyn Park	Brooklyn Park	NB	295	35	38	75	--

Source: CSA, 2023

Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

Table 6-15 Summary of Vibration Impacts for Residential Land Use in the City of Crystal

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Number of Impacts
N 56th Ave to N 60th Ave	Crystal	NB	349	25	48	72	0
N 56th Ave to N 60th Ave	Crystal	SB	227	55	54	72	0
Freight Tracks to N 56th Ave	Crystal	NB	211	55	54	72	0
Freight Tracks to N 56th Ave	Crystal	SB	280	20	47	72	0
N 47th Ave to Freight Tracks	Crystal	NB	135	55	58	72	0
N 47th Ave to Freight Tracks	Crystal	SB	89	55	63	72	0

Source: CSA, 2023

Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

**Table 6-16 Summary of Vibration Impacts for Institutional Land Use in the City of Crystal**

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Impact
Crystal Medical Center	Crystal	NB	104	42	54	75	--

Source: CSA, 2023

Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

Table 6-17 Summary of Vibration Impacts for Residential Land Use in the City of Robbinsdale

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Number of Impacts
TH 100 to N 47th Ave	Robbinsdale	NB	139	40	60	72	0
TH 100 to N 47th Ave	Robbinsdale	SB	205	30	54	72	0
N 42nd Ave to TH 100	Robbinsdale	NB	188	50	63	72	0
N 42nd Ave to TH 100	Robbinsdale	SB	126	50	66	72	0
N 40th Ave to N 42nd Ave	Robbinsdale	NB	112	40	58	72	0
N 40th Ave to N 42nd Ave	Robbinsdale	SB	*	*	*	*	*
N 36th Ave to N 40th Ave	Robbinsdale	NB	96	40	65	72	0
N 36th Ave to N 40th Ave	Robbinsdale	SB	73	50	69	72	0
N Lowry Ave to N 36th Ave	Robbinsdale	NB	146	50	46	72	0
N Lowry Ave to N 36th Ave	Robbinsdale	SB	109	50	49	72	0

Source: CSA, 2023

Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

*There are no vibration sensitive receivers at this location.

Table 6-18 Summary of Vibration Impacts for Institutional Land Use in the City of Robbinsdale

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Impact
Elim Lutheran Church	Robbinsdale	SB	177	40	61	75	--

Source: CSA, 2023

Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

**Table 6-19 Summary of Vibration Impacts for Residential Land Use in the City of Minneapolis for the Build Alternative**

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Number of Impacts
N 26th Ave to N Lowry Ave	Minneapolis	NB	43	45	60	72	0
N 26th Ave to N Lowry Ave	Minneapolis	SB	54	45	66	72	0
N Knox Ave to N 26th Ave	Minneapolis	NB	41	20	60	72	0
N Knox Ave to N 26th Ave	Minneapolis	SB	36	20	62	72	0
N Emerson Ave to N Knox Ave	Minneapolis	NB	34	15	61	72	0
N Emerson Ave to N Knox Ave	Minneapolis	SB	21	35	71	72	0
Lyndale Ave to N Emerson Ave	Minneapolis	NB	33	35	63	72	0
Lyndale Ave to N Emerson Ave	Minneapolis	SB	18	15	73	72	18 (1)
I-94 to Lyndale Ave	Minneapolis	NB	51	25	54	72	0
I-94 to Lyndale Ave	Minneapolis	SB	*	*	*	*	*
N 8th Ave to Plymouth Ave N	Minneapolis	NB	29	40	71	72	0
N 8th Ave to Plymouth Ave N	Minneapolis	SB	26	40	73	72	10 (1)
Target Field Station to N 8th Ave	Minneapolis	NB	50	15	63	72	0
Target Field Station to N 8th Ave	Minneapolis	SB	*	*	*	*	*

Source: CSA, 2023

Notes:

The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

The impact numbers outside the parentheses represent the total number DUs impacted (including apartments and other multi-family buildings), and the numbers inside the parentheses represent the total number of buildings impacted.

*There are no vibration sensitive receivers at this location.

- **Lyndale Ave to N Emerson Ave (SB):** There are 18 multi-family residences, representing one building, along the southbound side of the Project Alignment between Lyndale Ave and N Emerson Ave predicted to have a vibration impact. These impacts are due to the proximity of the tracks.
- **N 8th Ave to Plymouth Ave (SB):** There are 10 multi-family residences, representing one building, along the southbound side of the Project Alignment between N 8th Ave and Plymouth Ave predicted to have a vibration impact. These impacts are due to the proximity of the tracks.

**Table 6-20 Summary of Vibration Impacts for Institutional Land Use in the City of Minneapolis (21st Ave N to Washington Ave)**

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Impact
Parkway United Church of Christ	Minneapolis	NB	338	25	27	75	--
Good News Minneapolis Church	Minneapolis	NB	139	25	35	75	--
True Vine Missionary Baptist Church	Minneapolis	SB	111	45	52	75	--
KIPP Legacy	Minneapolis	NB	200	35	42	75	--
St Anne-St Joseph Hien Church	Minneapolis	NB	323	35	39	75	--
All Nations Seventh-day Adventist Church	Minneapolis	SB	182	20	40	75	--
PYC Arts & Technology Alternative High School	Minneapolis	SB	53	20	54	75	--
Capri Theater*	Minneapolis	SB	40	20	60	75	--
Star Child Development Center Ilc	Minneapolis	SB	40	20	59	75	--
Real Believers Faith Center Church	Minneapolis	SB	236	15	33	75	--
Liberty Community Church	Minneapolis	NB	41	35	60	75	--
United Deliverance Temple Inc	Minneapolis	NB	250	15	35	75	--
Sanctuary Covenant Church	Minneapolis	SB	16	15	74	75	--
Faith Tabernacle Gospel Fellowship International	Minneapolis	SB	17	25	74	75	--
Metro Schools College Prep	Minneapolis	SB	166	10	50	75	--
Minnesota International Middle Charter School	Minneapolis	NB	358	40	56	75	--
Lundstrum Performing Arts	Minneapolis	NB	279	40	56	75	--

Source: CSA, 2023

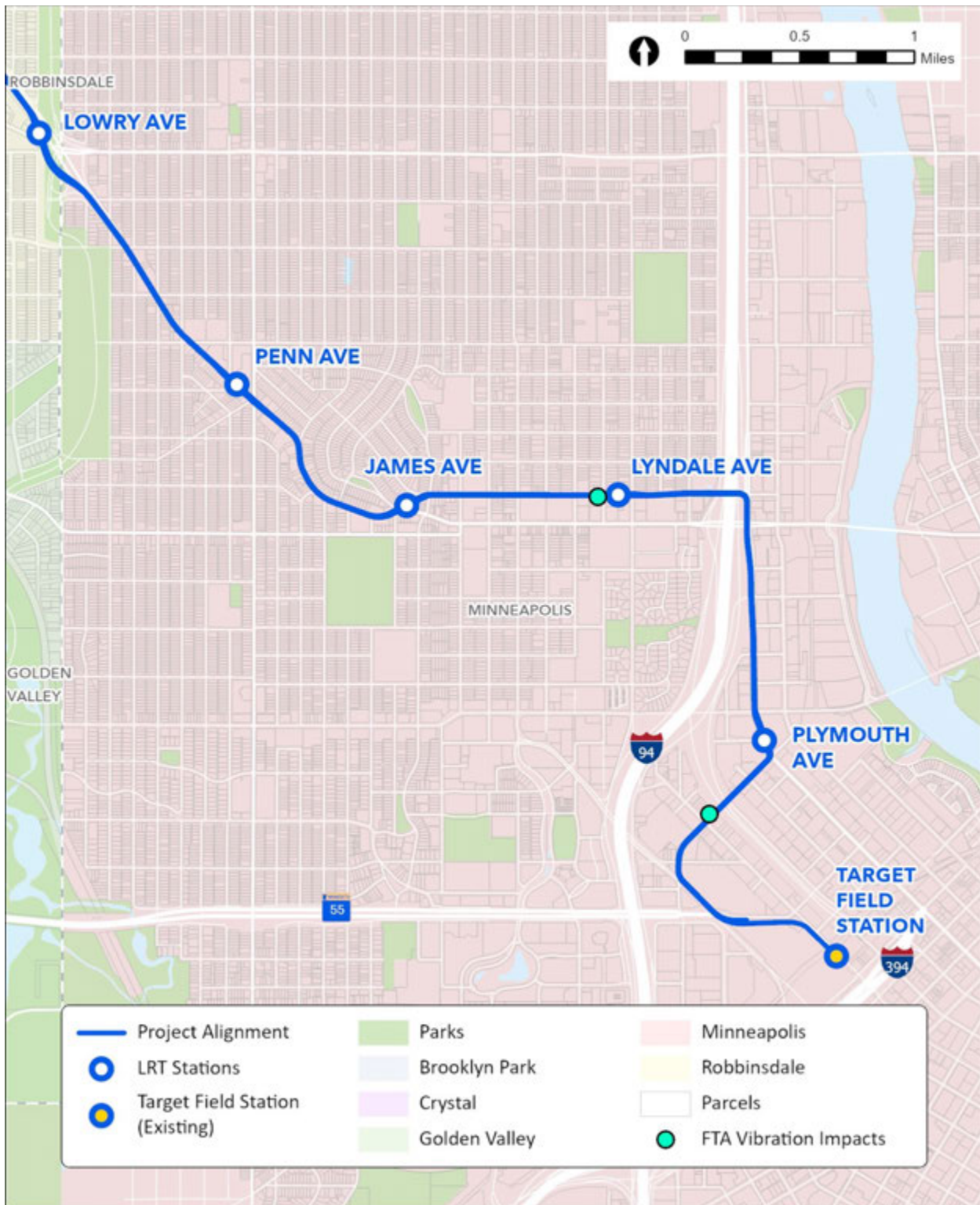
Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

*This level represents the non-special use spaces in the Capri Theater.

The location of the vibration impacts for the City of Minneapolis along the 21st Ave N and east of I-94 to Washington Ave alignment options are shown in Figure 6-5.



Figure 6-5 Project Vibration Impacts in the City of Minneapolis along the 21st Ave N and Washington Ave Option





6.2.2 Stations

There is no additional vibration associated with stations, and no vibration assessment for stations has been conducted.

6.2.3 Operations and Maintenance Facility

The Operations and Maintenance Facility is located more than 1,000 feet from any vibration-sensitive receptors; therefore, no vibration impact is projected.

6.2.4 Construction Vibration

Unlike typical LRT operations, there is the potential for damage to nearby structures at close distances due to construction vibration from activities such as pile driving, hoe rams, vibratory compaction, and loaded trucks. Most limits on construction vibration are based on reducing the potential for damage to nearby structures. Although construction vibrations are only temporary, it is still reasonable to assess the potential for human annoyance and damage.

Because most of the buildings in the study area are typical engineered concrete and masonry or reinforced concrete, steel, or timber construction, a vibration criterion of 98 VdB has been used to assess potential damage impact and 72 VdB has been used to assess potential vibration annoyance from construction activities. Vibration source levels at 25 feet and the distances to potential residential annoyance and potential damage are shown in Table 6-21. Except for impact pile driving, the potential for damage is limited to within 20 feet of construction activities. For impact pile driving, the distance for the potential for damage is up to 40 feet.

Because the exact location of construction equipment is important in projecting vibration levels, a more detailed assessment of potential vibration damage will be performed during final design when more accurate equipment locations are known. It is important to note that this assessment does not address potential damage to structures due to soil settlement or displacement due to construction activities.

Table 6-21 Summary of Potential Construction Vibration Impacts

Equipment	Vibration Level at 25 ft (VdB)	Distance to Potential Damage (98 VdB), ft	Distance to Potential Annoyance (72 VdB), ft
Impact Pile Driving	104	40	300
Push Piling	84	8	62
Hoe Ram	87	10	80
Caisson Drilling	87	10	80
Loaded Trucks	86	10	75
Clam Shovel	94	20	135
Vibratory Roller	94	20	135

Source: CSA, 2023



7 Mitigation Measures

7.1 Noise

FTA guidance states that severe noise impacts should be mitigated unless there are no feasible or practical means to do so (FTA, 2018). For moderate impacts, discretion should be used, and project-specific factors should be included in the consideration of mitigation. The project-specific factors can include both the existing noise levels and the projected increase in noise levels; the types and number of noise-sensitive land uses with impacts; existing sound insulation of buildings; and the cost-effectiveness of providing noise mitigation. Metro Transit has adopted a mitigation approach that details which moderate impacts will qualify for mitigation. This approach is detailed in Section 7.1.1 below.

7.1.1 Metro Transit Noise Mitigation Approach

7.1.1.1 Noise Mitigation Thresholds (Part A)

Per FTA guidance, noise mitigation will be provided for all “Severe” impacts that meet the criteria for reasonableness, feasibility, and cost effectiveness, as defined under Part B below.

At the “Moderate” impact level, FTA guidance requires the project sponsor to consider mitigation based on several factors, as defined in the FTA guidance manual. For the Project, noise mitigation will be provided for all “Moderate” impacts, caused by the Project, that meet the criteria for reasonableness, feasibility, and cost effectiveness, as defined under Part B below, and at locations where the Project has a “Moderate” impact and one of the following thresholds are exceeded:

1. Location(s) where the existing noise levels without the Project are already 65 dBA Ldn or greater (see Exhibit 2.1-1).³
2. Location(s) where there is an increase of 3 dB or more in the Ldn over the existing level due to the Project.⁴
3. The predicted increase in the Ldn over the existing level is less than 3 dB, the location is adjacent to an area with either “Severe Impact” or “Moderate Impact” with an increase in the Ldn of 3 dB or greater, and the inclusion of the adjacent properties will provide a logical and equitable terminus to the mitigation.

³ A noise level of 65 dBA or greater is considered a “normally unacceptable” noise environment by United States Department of Housing and Urban Development. This threshold is also used by Federal Aviation Administration for compatible land use.

⁴ An increase in noise of 3 dB is generally considered the threshold for a noticeable change in noise in an outdoor setting and falls roughly at the midpoint of the “Moderate” impact range. This is a common threshold used in transit agency noise mitigation policies for an increase requiring mitigation.



7.1.1.2 Noise Mitigation Criteria (Part B)

Criteria for reasonableness, feasibility, and cost effectiveness as included in FTA guidance are described below.

1. Reasonableness: For noise mitigation to be considered reasonable, it must provide at least a 5 dB reduction in Project noise.⁵
2. Feasibility:
 - a. For noise mitigation to be considered feasible it must be practical from engineering, operations, and safety standpoints.
 - b. Other Project factors may need to be considered in determining feasibility of mitigation. These could include community input, visual impacts, and other Project features that might limit mitigation.
3. Cost Effectiveness: For noise mitigation to be considered cost effective, the cost per benefited receptor must not exceed \$43,500.

7.1.2 Noise Mitigation Methods

Several options exist for providing noise mitigation at the source, path, or receiver. The most common noise mitigation measures are described below.

7.1.2.1 Source

Resilient or Damped Wheels: Using either resilient or damped wheels can achieve approximately a 2 dB reduction in wheel/rail noise from transit vehicles on typical track sections.

Track Dampers: Using damping materials on tracks can achieve an approximately 1 to 3 dB reduction in noise radiated from the tracks on typical track sections.

LRV Design: Certain design features of transit vehicles can provide some shielding and/or absorption of the noise generated by the vehicle. Acoustical absorption under the car can provide up to a 5 dB reduction in wheel/rail noise and propulsion-system noise on rapid transit trains. Similarly, LRV skirts (which the existing METRO transit vehicles have) over the wheels can provide up to 5 dB of reduction in noise.

Special Trackwork: Gaps in the rails at crossovers and turnouts generate around 6 dB of increased noise for locations close to the track. If crossovers are located in sensitive areas and cannot be moved, one approach is to use special trackwork, such as spring-rail, moveable point, or flange bearing frogs to eliminate the gap in the rail at the crossover.

7.1.2.2 Path

Noise Barriers: This is the most common approach to reducing noise impacts from transit and rail projects. For noise barriers to be effective, they must break the line-of-sight between the source of the noise and the receiver. Additionally, the barrier must be made of a material that has a minimum surface density of 4 pounds/square foot and not have any gaps or holes that could degrade the performance of the barrier. Noise

⁵ Five dB is a typical minimum reduction used by many agencies for mitigation to be considered an effective and reasonable mitigation measure.



barriers can be made of virtually any material that meets these requirements and can typically provide between 5 and 10 dB of reduction, depending on the design of the barrier. Project features, such as retaining walls or crash walls can act as effective noise barriers.

Berms: Berms are another approach to mitigating noise at the path. Berms work in much the same way as barriers and need to block the line of sight between the source and the receiver to be effective. Berms can also provide between 5 and 10 dB of reduction but are not commonly used in transit applications due to the space requirements (a berm typically must be twice as wide as it is tall).

7.1.2.3 Receiver

Building Sound Insulation: When other noise mitigation measures are not feasible, the only practical noise mitigation measure may be to provide sound insulation for individual buildings. This mitigation only treats the indoor sound level and is not recommended for places that rely on outdoor use. Depending on the original construction, sound insulation can improve noise reduction by 5 to 20 dB. However, due to the nature of modifying buildings, this is one of the least cost-effective mitigation measures.

7.1.3 Project Noise Mitigation

There are few locations where source or path mitigation is feasible along the Project Alignment. The projected noise impacts are due to a combination of speed, proximity to the tracks, LRV bells, and crossovers. Per the Metro transit noise mitigation policy, severe noise impacts are required to be mitigated if they meet the feasibility criteria, and certain moderate impacts should be mitigated as well. However, in all locations where noise mitigation thresholds are met, noise barriers would not be effective due to gaps at cross streets nor would barriers meet the cost effectiveness threshold.

Because noise barriers would not be feasible, other methods of noise mitigation would potentially be required. There are two locations with moderate and severe impacts due to crossovers. The two locations where crossovers are generating severe noise impacts are:

- W Broadway Ave between Thomas Ave and Upton Ave. This crossover is causing noise impact at up to 56 single and multi-family receivers.
- Lyndale Ave between 18th St and W Broadway Ave. This crossover is causing noise impact at the Masjid An-Nur Mosque and a nearby multi-family building.

The two mitigation options are relocating the crossovers to non-sensitive areas (which may not be feasible operationally) or to use special crossovers, such as spring rail frogs, as discussed above. With either of these options, all the severe impacts would be reduced to moderate impacts and all but one of the moderate impacts would be eliminated.

The severe noise impacts along 21st Ave and moderate noise impacts that meet the Metro transit mitigation criteria at other locations along the Project Alignment could be mitigated by sound insulation depending on the effectiveness and cost of the insulation. Sound insulation would be explored during engineering design. Sound insulation testing would be conducted during the Supplemental Final EIS stage of the Project.

Sound insulation programs are developed to reduce the interior noise levels in sleeping and living quarters in residential and institutional uses to within the guidelines set by the United States Department of Housing and Urban Development. Under these guidelines, interior noise levels for residential land uses should not exceed an Ldn of 45 dBA and a form of fresh air exchange must be maintained. Sound insulation is normally only typically



used on older dwellings with single-paned windows or in buildings with double-paned windows that are no longer effective because of leakage. Sound insulation would not reduce exterior noise levels. Additional monitoring and analysis will be performed to identify the specific number of dwelling units that may be subject to moderate or severe impacts.

7.1.4 Construction Noise Mitigation

The primary means of mitigating noise from construction activities is to require the contractors to prepare a detailed Noise Control Plan. A noise control engineer or acoustician will work with the contractor to prepare a Noise Control Plan in conjunction with the contractor's specific equipment and methods of construction. Key elements of a Plan include:

- Contractor's specific equipment types
- Schedule and methods of construction
- Maximum noise limits for each piece of equipment with certification testing
- Prohibitions on certain types of equipment and processes during the nighttime hours without local agency coordination and approved variances
- Identification of specific sensitive sites where near construction sites
- Methods for projecting construction noise levels
- Implementation of noise control measures where appropriate
- Methods for responding to community complaints

7.2 Vibration

Vibration and ground-borne noise impacts that exceed the FTA criteria are considered significant and should be mitigated unless there are no feasible or practical means to do so. Vibration mitigation is primarily applied at the source, generally the track structure, and is dependent on the frequency content of the vibration and any resonances of the materials. The most common vibration mitigation measures are described below.

7.2.1 Vibration Mitigation Methods

Ballast Mats: A ballast mat is a pad made of rubber or other material placed underneath the ballast and mounted on top of an asphalt or concrete base. Ballast mats provide a modest reduction in vibration levels at frequencies above 40 Hz.

Tire Derived Aggregate: Tire Derived Aggregate, or shredded tires, consists of a layer of tire shreds wrapped in geotechnical fabric placed underneath the ballast and placed on hard packed ground. This is a low-cost, but still unproven, mitigation option that provides a reduction in vibration levels at frequencies above 25 Hz.

Resilient Rail Fasteners: Resilient fasteners are typically used on direct fixation track on aerial structures or in tunnels. They include a resilient component in the fastener to provide vibration isolation. Resilient rail fasteners provide a reduction in vibration at frequencies above 40 Hz.

Resiliently Supported Concrete Ties: Resiliently supported concrete ties, or undertie pads, consist of a rubber pad mounted on the bottom of a concrete tie. The pads provide vibration isolation at frequencies above 25 Hz.

Floating Slabs: Floating slabs consist of thick concrete slabs mounted on rubber or steel springs pads on a concrete foundation. Floating slabs can provide vibration isolation at very low frequencies but are expensive to build and maintain.



Special Trackwork: Gaps in the rails at crossovers and turnouts generate around 10 dB of increased vibration for locations close to the track. If crossovers are located in sensitive areas and cannot be moved, one approach is to use special trackwork, such as spring-rail, moveable point, or flange bearing frogs to eliminate the gap in the rail at the crossover.

7.2.2 Project Vibration Mitigation

There are four locations where vibration mitigation is recommended, three along 21st Ave and one along 10th Ave. The first location is a 300-foot section starting approximately 30 feet west of Fremont Ave and stretching east for all alignment options except the Washington Ave alignment option. The second location is a 300-foot section centered between Aldritch Ave and the alley between Aldritch Ave and Bryant Ave for the one station option and the Washington Ave design option. The third location is a 500-foot section centered on Aldritch Ave for the two station design option. The fourth location is a 200-foot section on 10th Ave stretching north for the Washington Ave design option. The specific mitigation method would need to be determined during design, but a ballast mat would be effective at eliminating the impacts.

7.2.3 Construction Vibration Mitigation

The most effective methods for minimizing the impact from construction vibration are to limit the use of high-vibration activities such as impact pile driving and vibratory rolling and to include vibration limits in the construction specifications. To mitigate potential vibration impact from construction activities, the following measures will be applied where feasible:

- **Limit Construction Hours:** Prohibit high-vibration activities at night.
- **Construction Specifications:** Include limits on vibration in the construction specifications, especially at locations where high-vibration activities such as impact pile driving may occur.
- **Alternative Construction Methods:** Minimize the use of impact and vibratory equipment, where possible and appropriate. Use low vibration alternatives, such as push piling or pre-drilled holes for piling.
- **Truck Routes:** Use truck haul routes that minimize exposure to sensitive receptors and minimize damage to roadway surfaces, where appropriate.
- **Pre-Construction Survey:** Perform pre-construction surveys to document the existing conditions of all structures in the vicinity of sites where high-vibration construction activities will be performed.
- **Vibration Monitoring:** If a construction activity has the potential to exceed the damage criteria at any building, the contractor is required to conduct for vibration monitoring and, if the vibration exceeds the limit, the activity must be modified or terminated.



8 References

Federal Transit Administration (FTA), 2018, *Transit Noise and Vibration Impact Assessment* guidance manual (FTA, 2018)

Vibration Measurements and Predictions for Central Corridor LRT Project, ATS Consulting, 2008

Bottineau Transitway Draft EIS, Noise and Vibration Technical Report, HMMH, 2012.

West Broadway Ave (CSAH 103) Reconstruction Project Environmental Assessment Worksheet, Hennepin County, 2015



Appendix A Existing Outdoor Noise Measurement Location Photographs

Figure A-1 Long-Term Noise Measurement Location LT-13: 1020 N 3rd St



Figure A-2 Long-Term Noise Measurement Location LT-12: 8819 Oregon Ave



Figure A-3 Long-Term Noise Measurement Location LT-11: 7431 78th Ct



Figure A-4 Long-Term Noise Measurement Location LT-10: 7013 Dutton Ave



Figure A-5 Long-Term Noise Measurement Location LT-9: 5906 Elmhurst Ave





Figure A-6 Long-Term Noise Measurement Location LT-8: 5257 Xenia Ave



Figure A-7 Long-Term Noise Measurement Location LT-7: 4536 Regent Ave



Figure A-8 Long-Term Noise Measurement Location LT-6: 3369 Broadway Ave



Figure A-9 Long-Term Noise Measurement Location LT-5: 2741 Upton Ave





Figure A-10 Long-Term Noise Measurement Location LT-4: 2239 W Broadway Ave



Figure A-11 Long-Term Noise Measurement Location LT-3: 1927 N Morgan Ave



Figure A-12 Long-Term Noise Measurement Location LT-2: 2117 Dupont Ave



Figure A-13 Long-Term Noise Measurement Location LT-1: 626 Harry Davis Ln



Figure A-14 Short-Term Noise Measurement Location ST-5: Prince of Peace Lutheran Church



Figure A-15 Short-Term Noise Measurement Location ST-4: 3978 W Broadway Ave





Figure A-16 Short-Term Noise Measurement Location ST-3: 1127 W Broadway Ave



Figure A-17 Short-Term Noise Measurement Location ST-2: 277 N 12th Ave





Figure A-18 Short-Term Noise Measurement Location ST-1: Element Minneapolis Downtown



Appendix B Noise Measurement Data

Figure B-1 Long-Term Noise Measurement Location LT-13: 1020 N 3rd St

Site LT-13: 1020 N 3rd St., Minneapolis; Wed -- Sept 6, 2023 to Thurs -- Sept 7, 2023;
Ldn: 72 dBA

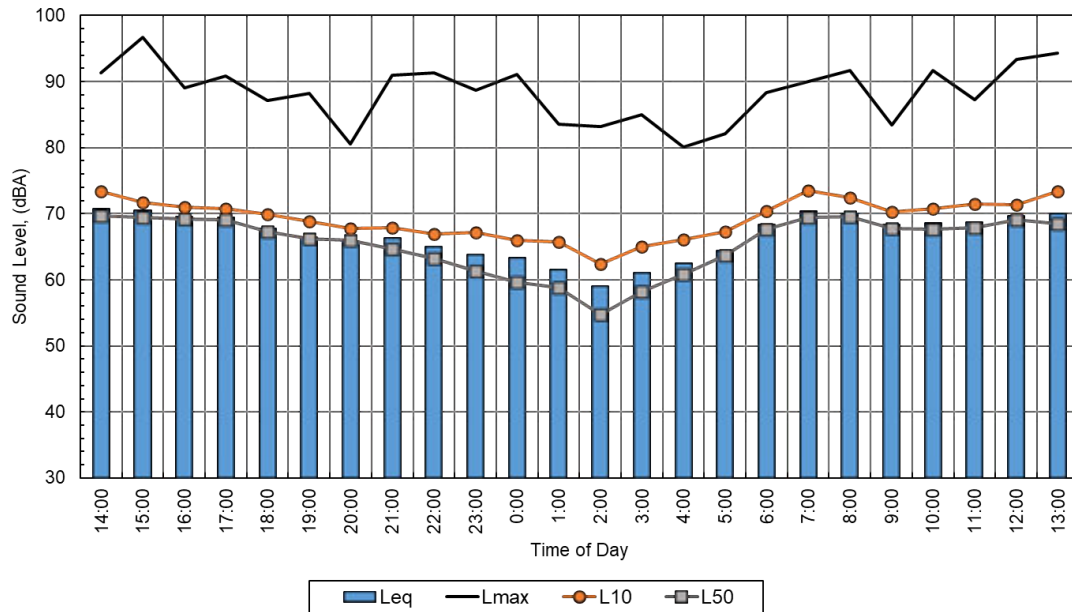


Figure B-2 Long-Term Noise Measurement Location LT-12: 8819 Oregon Ave

Site LT-12: 8819 Oregon Ave. N., Minneapolis; Tues -- April 4, 2023 to Wed
-- April 5, 2023; Ldn: 62 dBA

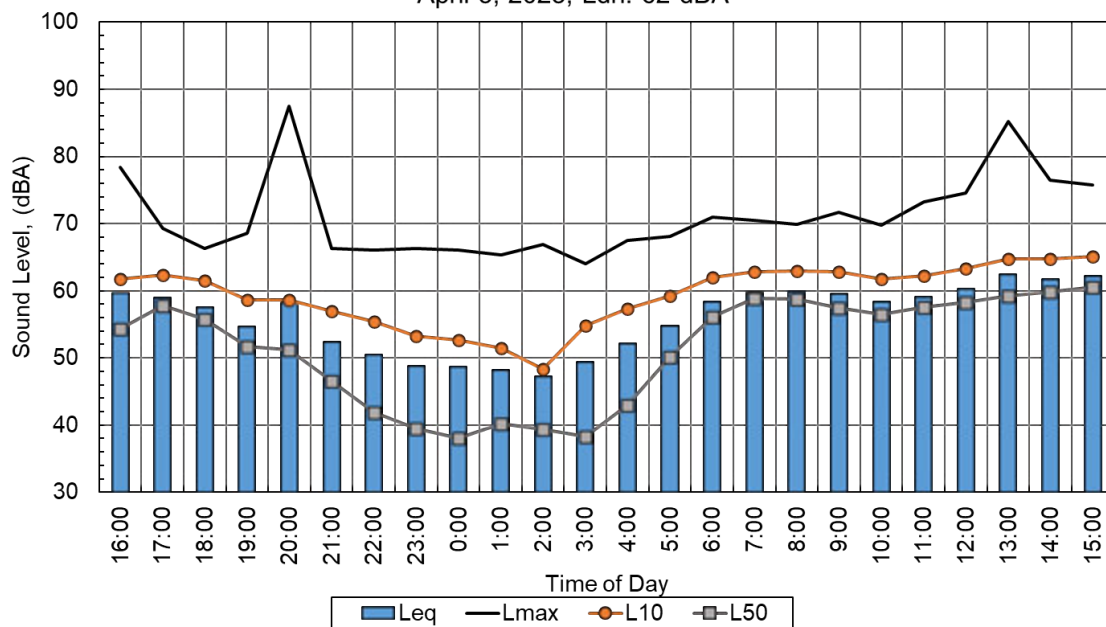




Figure B-3 Long-Term Noise Measurement Location LT-11: 7431 78th Ct

Site LT-11: 7431 78th Ct. N., Minneapolis; Tues -- April 4, 2023 to Wed -- April 5, 2023 Ldn: 65 dBA

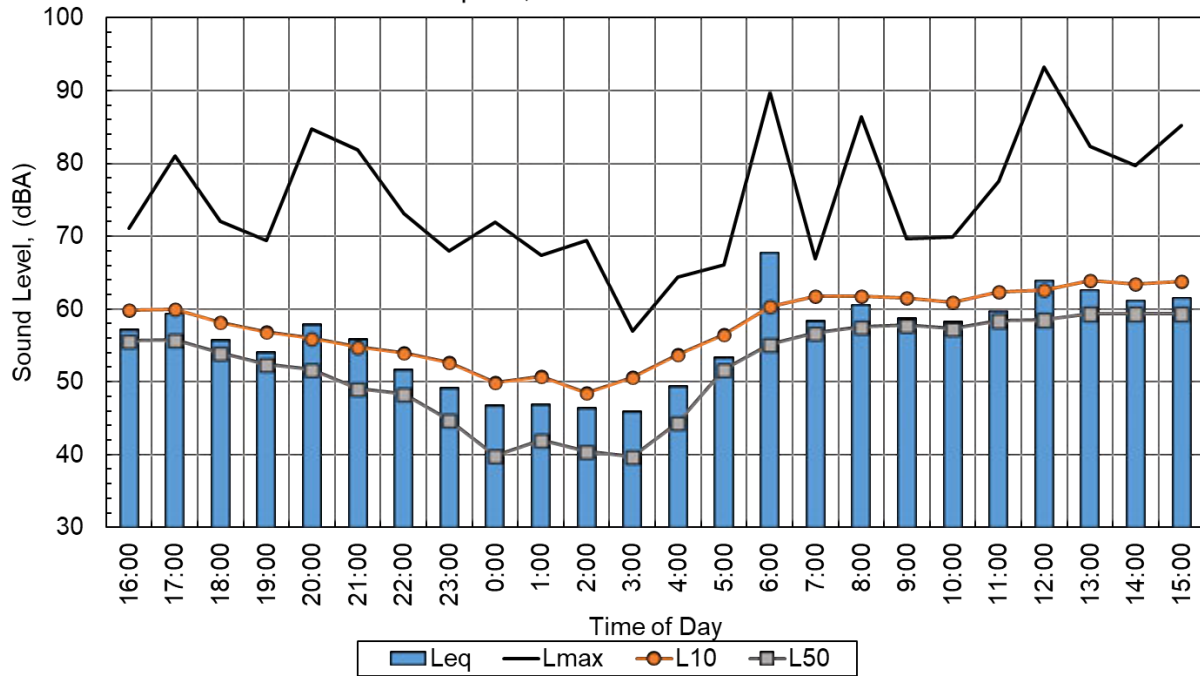
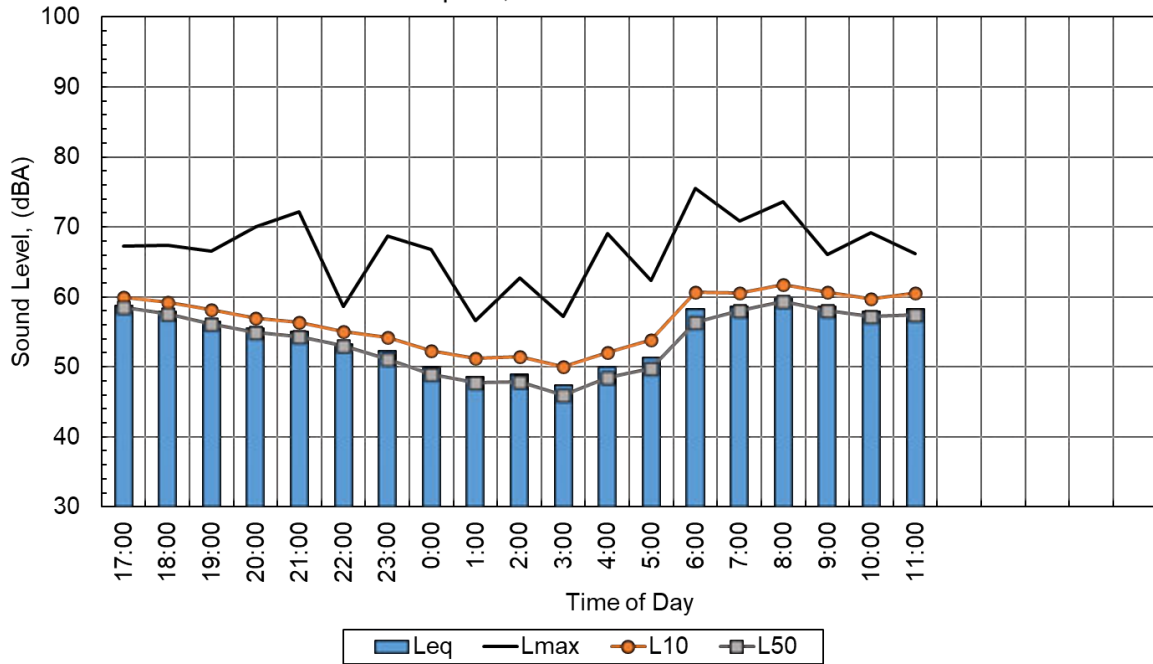




Figure B-4 Long-Term Noise Measurement Location LT-10: 7017 Dutton Ave⁶

Site LT-10: 7013 Dutton Ave, Brooklyn Park; Tues -- April 4, 2023 to Wed -- April 5, 2023 Ldn: 60 dBA



⁶ Sound level meter's battery failed prior to completion of 24-hour measurement.



Figure B-5 Long-Term Noise Measurement Location LT-9: 5906 Elmhurst Ave
Site LT-9: 5906 Elmhurst Ave., Minneapolis; Mon -- April 3, 2023 to Tues --
April 4, 2023; Ldn: 63 dBA

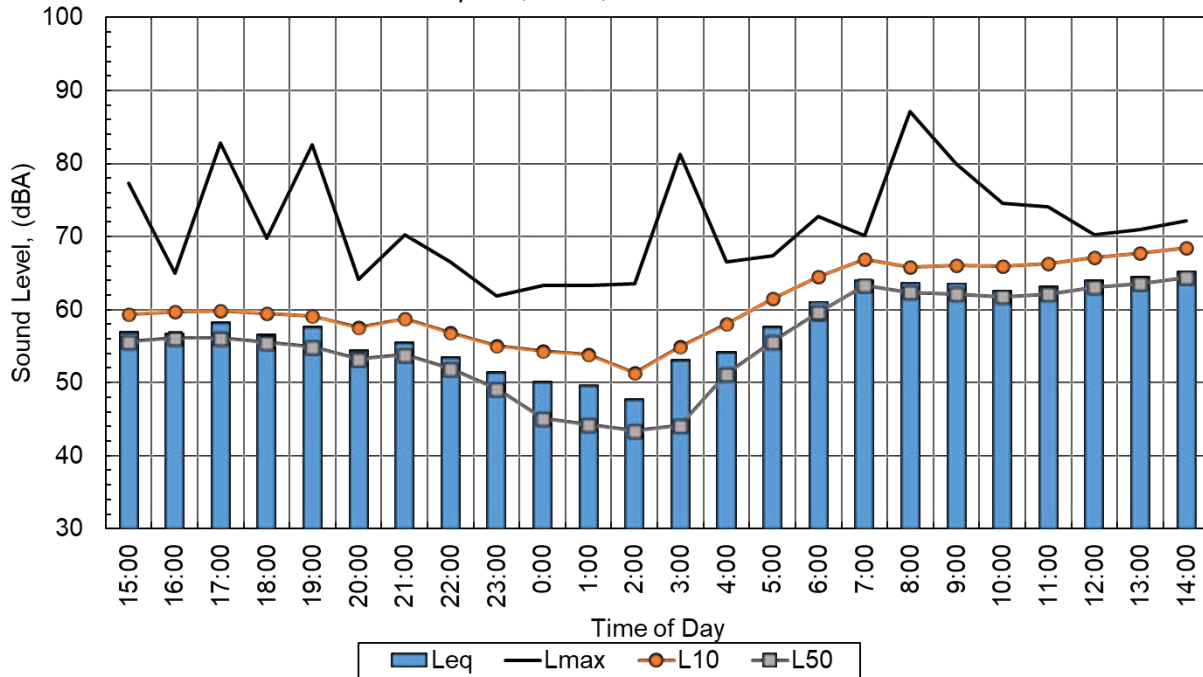


Figure B-6 Long-Term Noise Measurement Location LT-8: 5257 Xenia Ave

Site LT-8: 5257 Xenia Ave. N., Minneapolis; Mon -- April 3, 2023 to Tues --
April 4, 2023; Ldn: 59 dBA

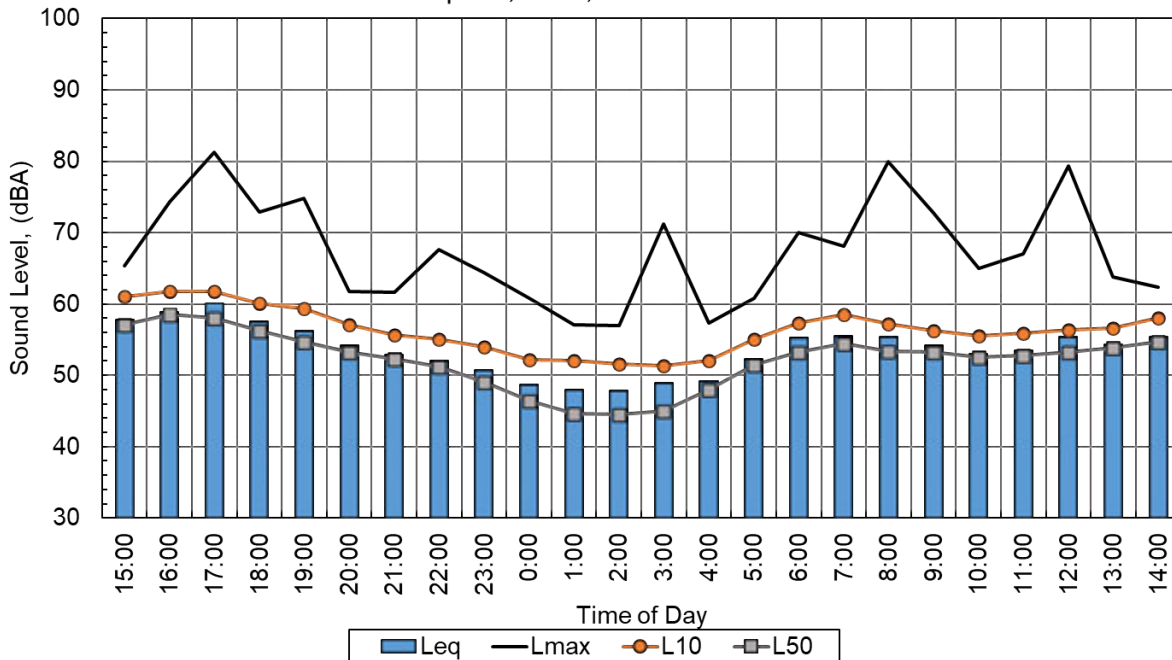




Figure B-7 Long-Term Noise Measurement Location LT-7: 4536 Regent Ave

Site LT-7: 4536 Regent Ave. N., Minneapolis; Mon -- April 3, 2023 to Tues -- April 4, 2023; Ldn: 60 dBA

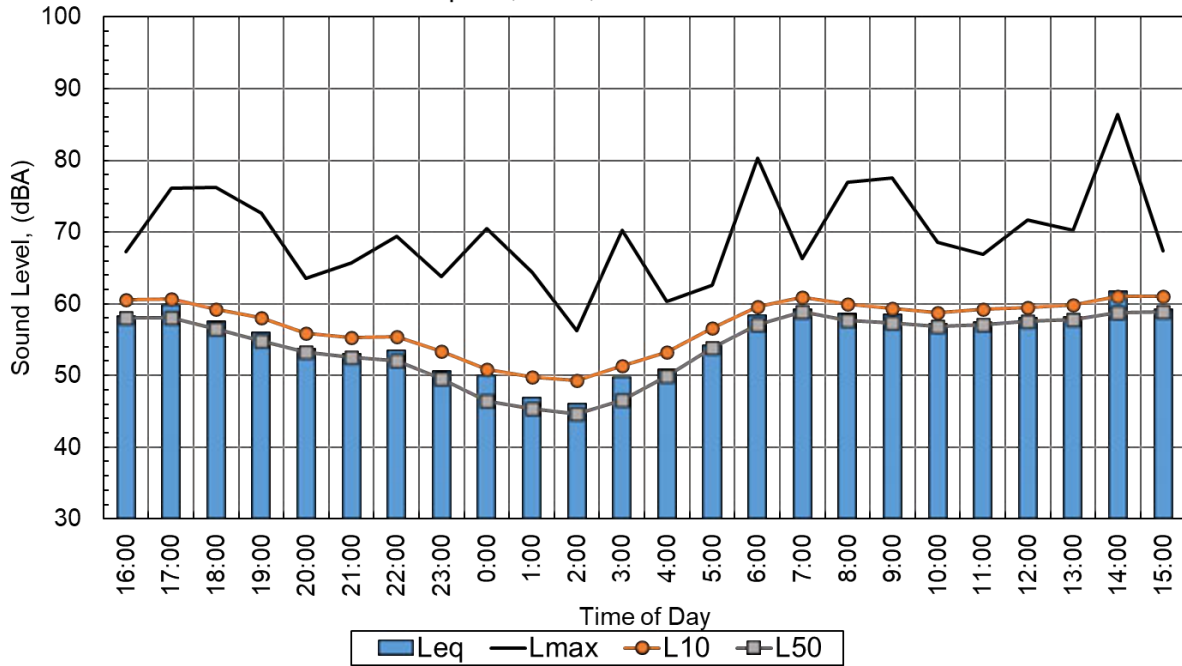


Figure B-8 Long-Term Noise Measurement Location LT-6: 3369 Broadway Ave

Site LT-6: 3369 W. Broadway Ave., Minneapolis; Tues -- April 4, 2023 to Wed -- April 5, 2023; Ldn: 70 dBA

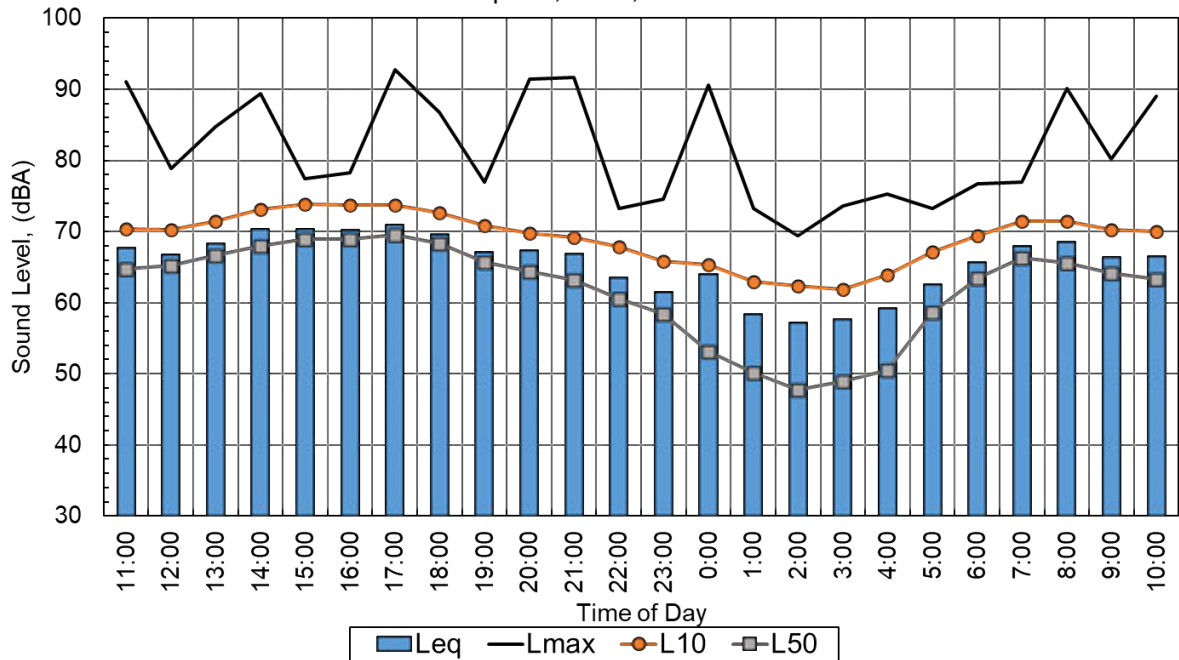


Figure B-9 Long-Term Noise Measurement Location LT-5: 2741 Upton Ave

Site LT-5: 2741 N. Upton Ave., Minneapolis; Tues -- April 4, 2023 to Wed -- April 5, 2023; Ldn: 69 dBA

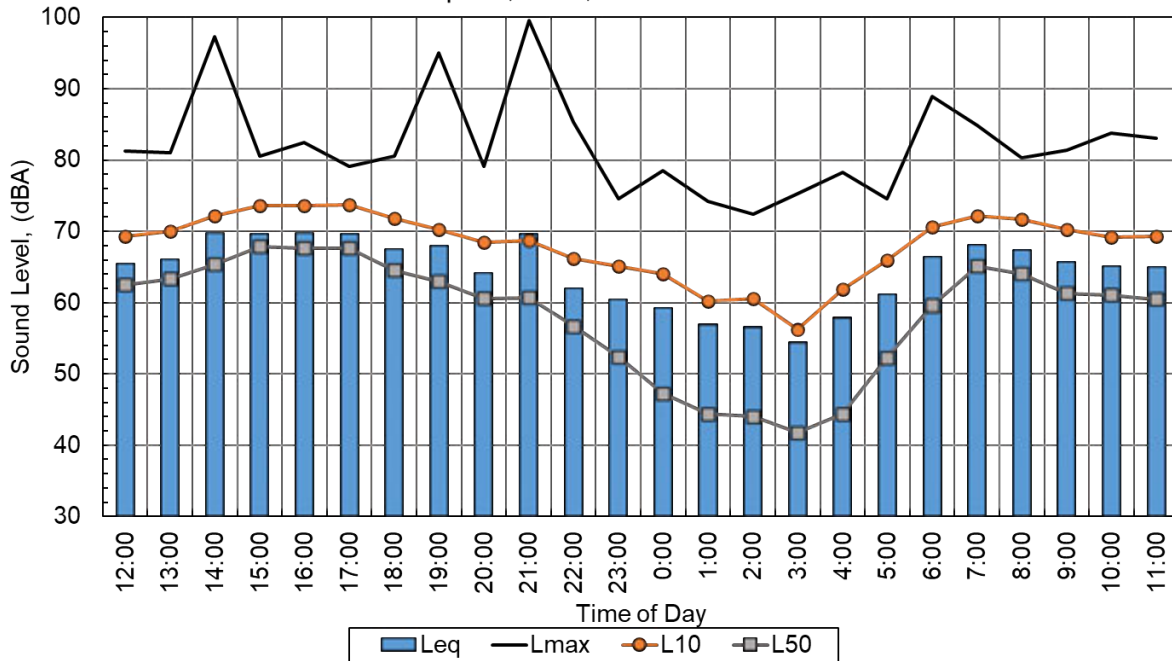


Figure B-10 Long-Term Noise Measurement Location LT-4: 2235 Broadway Ave

Site LT-4: 2239 W. Broadway Ave., Minneapolis; Wed -- April 5, 2023 to Thurs -- April 6, 2023; Ldn: 69 dBA

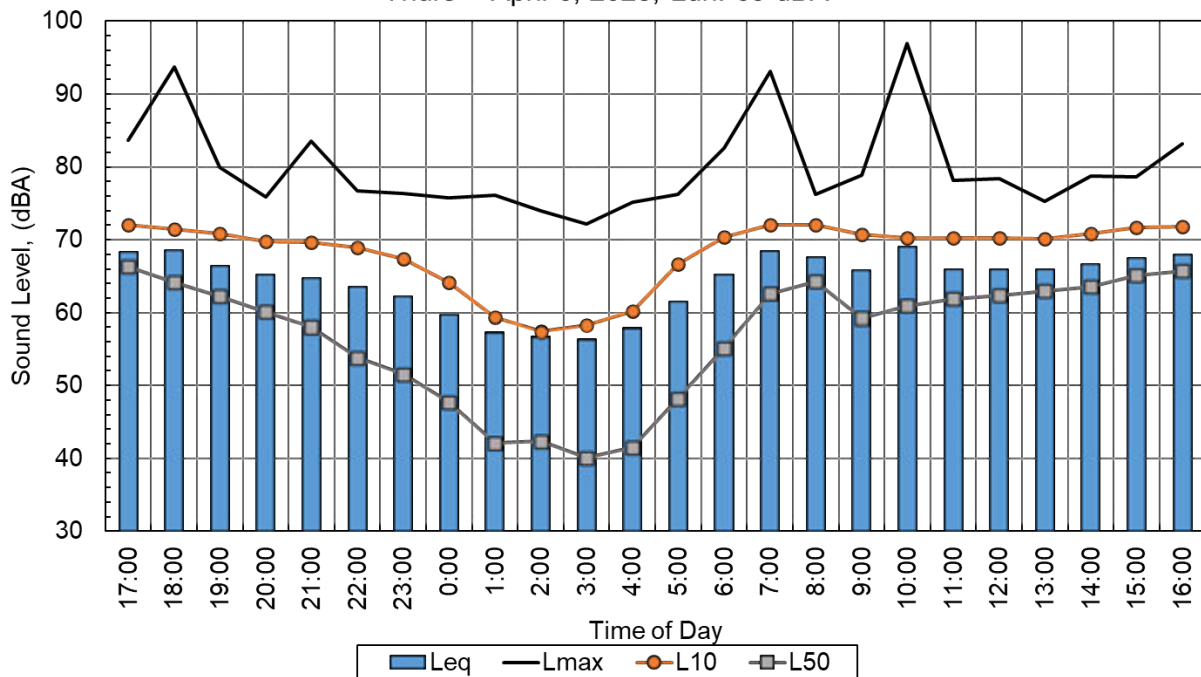




Figure B-11 Long-Term Noise Measurement Location LT-3: 1927 Morgan Ave

Site LT-3: 1931 N Morgan Ave, Minneapolis; Tue -- May 2, 2023 to Wed -- May 3, 2023; Ldn: 69 dBA

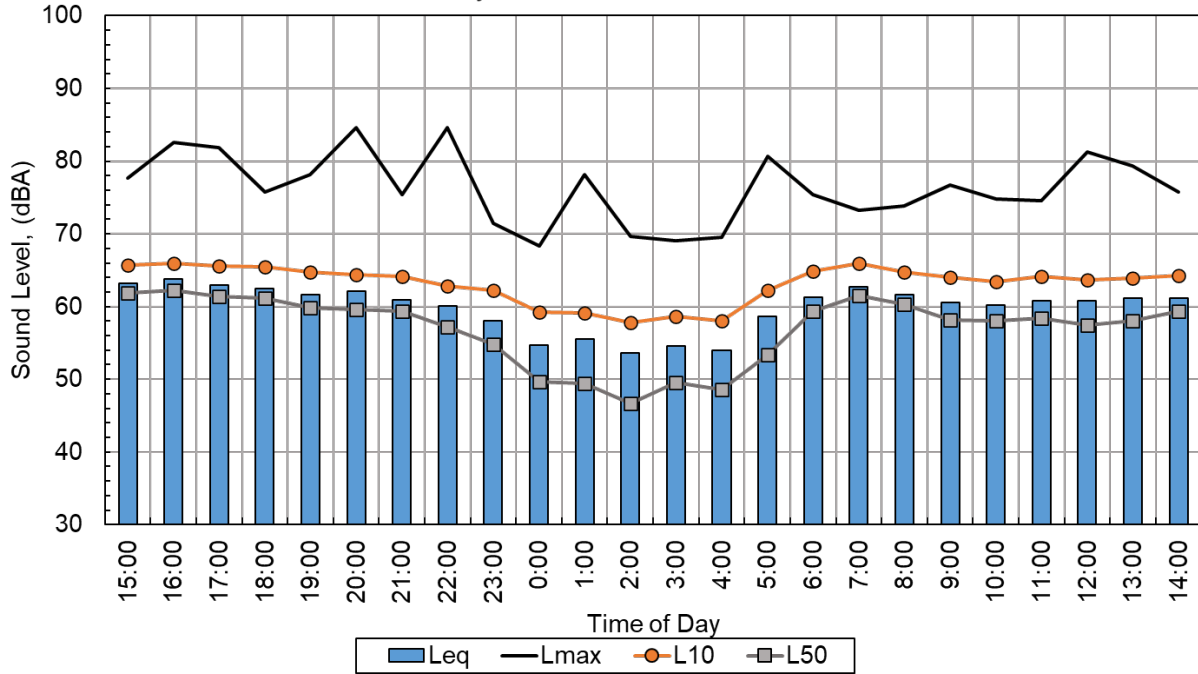


Figure B-12 Long-Term Noise Measurement Location LT-2: 2117 Dupont Ave

Site LT-2: 2117 Dupont Ave N., Minneapolis; Wed -- April 5, 2023 to Thurs -- April 6, 2023; Ldn: 54 dBA

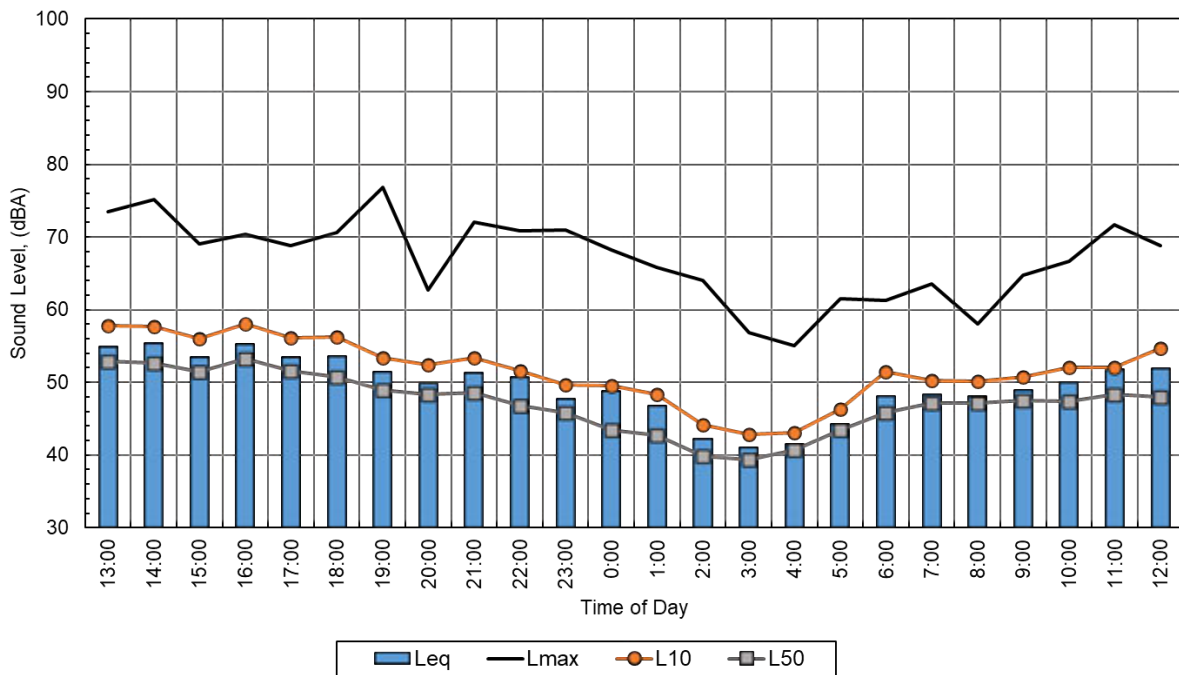
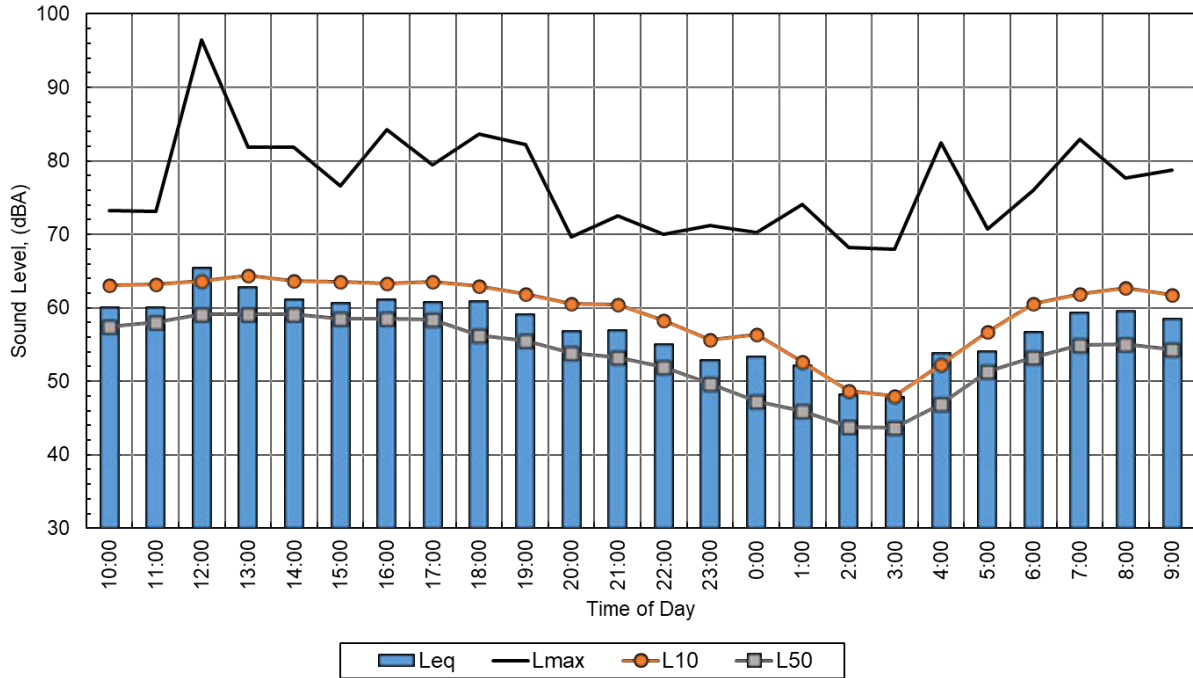




Figure B-13 Long-Term Noise Measurement Data – LT-1: 626 Harry Davis Ln

Site LT-1: 626 Harry Davis Ln., Minneapolis; Wed -- April 5, 2023 to Thurs -- April 6, 2023; Ldn: 62 dBA





Appendix C Vibration Measurement Location Photographs

Figure C-1 Vibration Measurement Location VP-E: 5200 48th Ave



Figure C-2 Vibration Measurement Location VP-D: Lakeview Terrace Park



Figure C-3 Vibration Measurement Location VP-C: 2700 27th Ave



Figure C-4 Vibration Measurement Location VP-B: 21st Ave and Dupont Ave





Figure C-5 Vibration Measurement Location VP-A: Lyndale Ave and 14th Ave





Appendix D Vibration Measurement Data

Table D-1 Location VP-2 North Hennepin Community College 1/3-Octave Band Transfer Mobility Coefficients

Coeff.	6.3 Hz	8 Hz	10 Hz	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz
A	32.5	41	45.3	52	57.7	61.1	22.6	24.8	20.9	18.1	24.5	25.2	41.2	94.9	88.6	76.1
B	-9.3	-12.6	-11.7	-13	-13.8	-14.6	38.8	39.7	49	55.7	49.7	50	28.8	-40.4	-38.5	-35.2
C	0	0	0	0	0	0	-17.2	-18.2	-21.9	-24.9	-23.5	-24.9	-20.3	0	0	0

$$LSTM = A + B * \log(dist) + C * \log(dist)^2$$

Figure D-1 Line Source Transfer Mobility Location VP-2 North Hennepin Community College

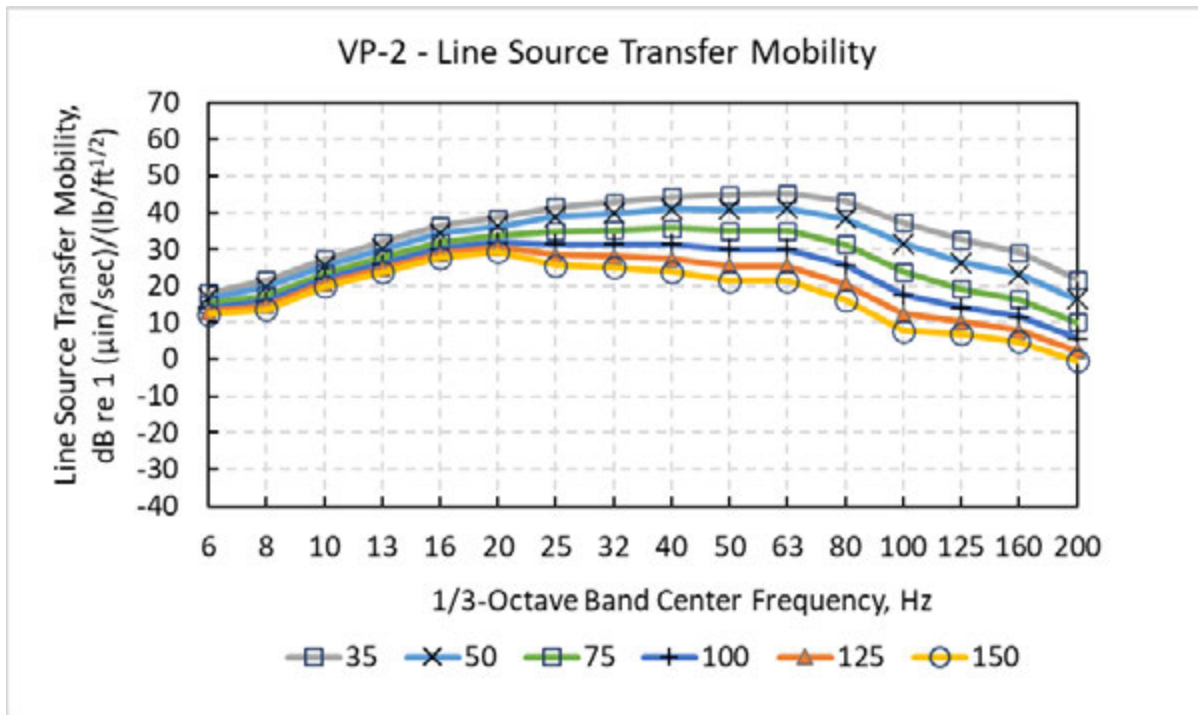




Table D-2 Location VP-3 62nd Ave and Hampshire Ave 1/3-Octave Band Transfer Mobility Coefficients

Coeff.	6.3 Hz	8 Hz	10 Hz	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz
A	34.6	34.6	42.2	47	54.5	62.7	70.3	78.4	89	97.4	104.4	98.7	98.8	92.7	72.1	57.3
B	-8.5	-6.9	-8.8	-9.8	-12.6	-15.6	-18.8	-22.5	-28.5	-34.7	-40.4	-39.6	-42.1	-40	-30.7	-25.6
C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

$$LSTM = A + B * \log(dist) + C * \log(dist)^2$$

Figure D-2 Line Source Transfer Mobility Location VP-3 62nd Ave and Hampshire Ave

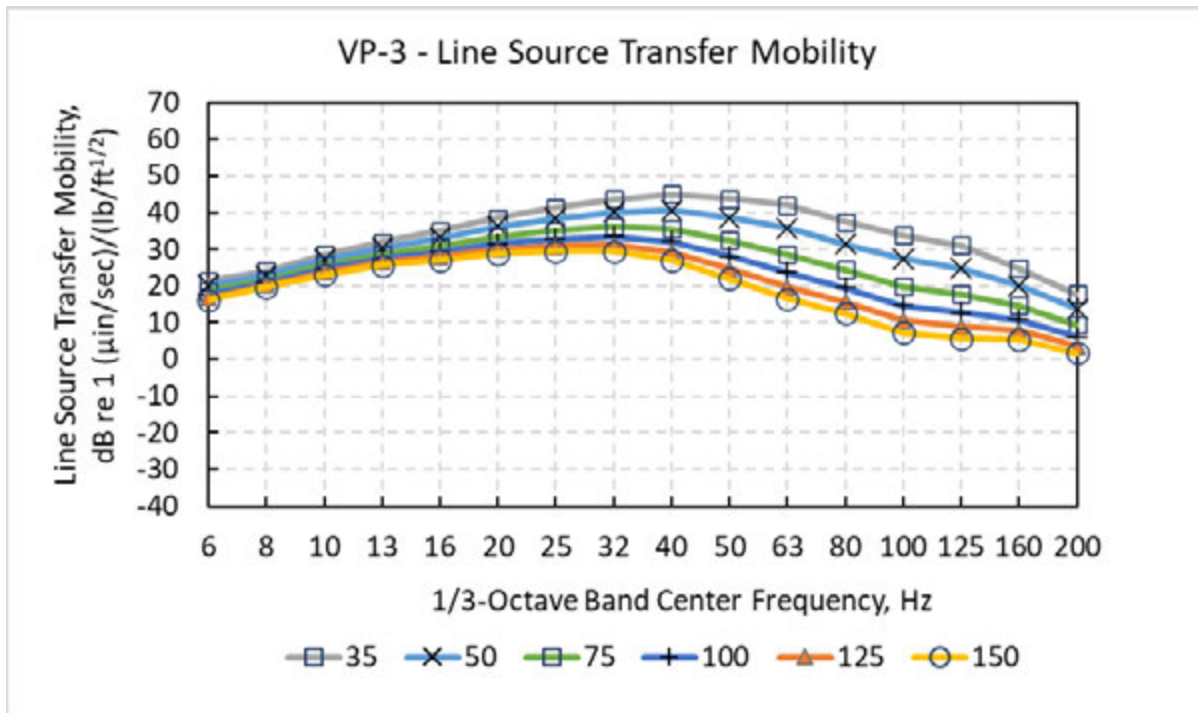




Table D-3 Location VP-E 5200 48th Ave 1/3-Octave Band Transfer Mobility Coefficients

Coeff.	6.3 Hz	8 Hz	10 Hz	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz
A	54.1	38.0	46.1	69.5	79.0	77.6	98.4	113.6	145.2	147.1	110.5	76.3	43.7	50.4	38.0	25.5
B	-21.9	-13.0	-11.9	-19.4	-22.2	-19.3	-28.4	-36.0	-54.0	-57.5	-41.6	-27.9	-14.6	-23.3	-20.5	-13.4
C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

$$LSTM = A + B * \log(dist) + C * \log(dist)^2$$

Figure D-3 Line Source Transfer Mobility Location VP-E 5200 48th Ave

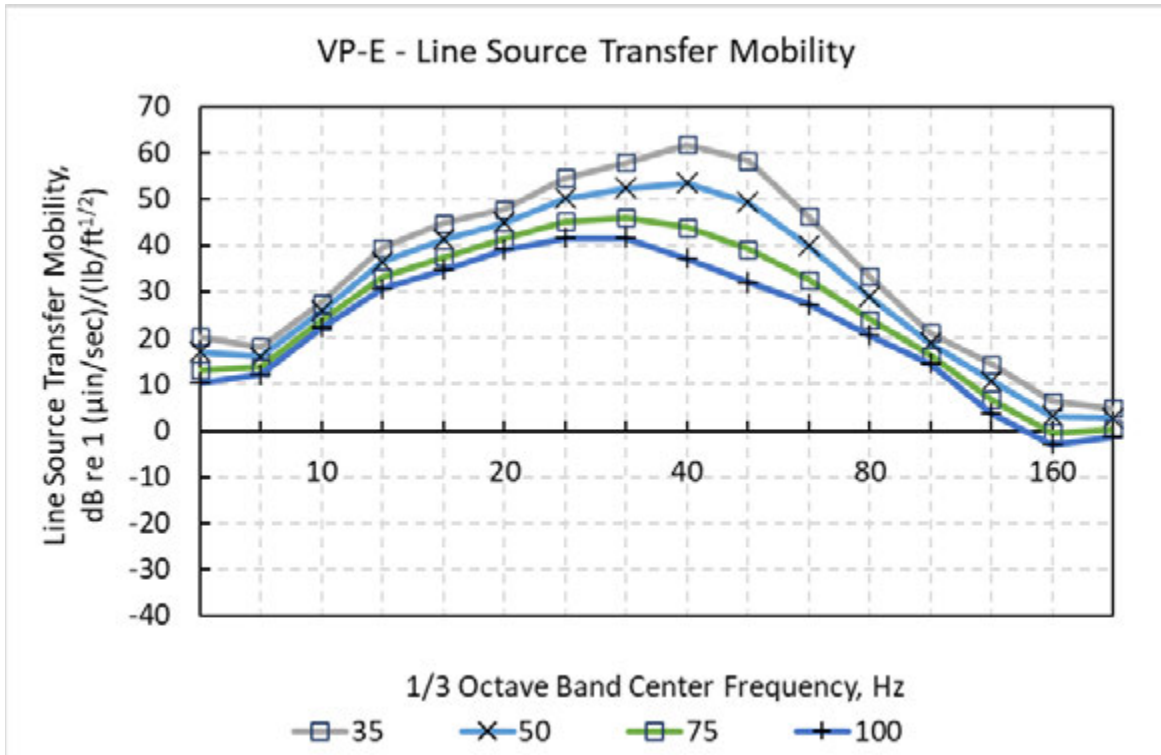




Table D-4 Location VP-D Lakeview Terrace Park 1/3-Octave Band Transfer Mobility Coefficients

Coeff.	6.3 Hz	8 Hz	10 Hz	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz
A	45.9	55.9	50.8	68.6	101.2	104.9	110.4	115.4	110.1	83.5	98.5	118.5	88.8	78.1	38.4	22.6
B	-16.7	-18.2	-10.9	-15.2	-33.5	-36.3	-39.8	-44.0	-43.2	-30.3	-41.6	-60.0	-49.5	-49.0	-30.6	-20.0
C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

$$LSTM = A + B * \log(dist) + C * \log(dist)^2$$

Figure D-4 Line Source Transfer Mobility Location VP-D Lakeview Terrace Park

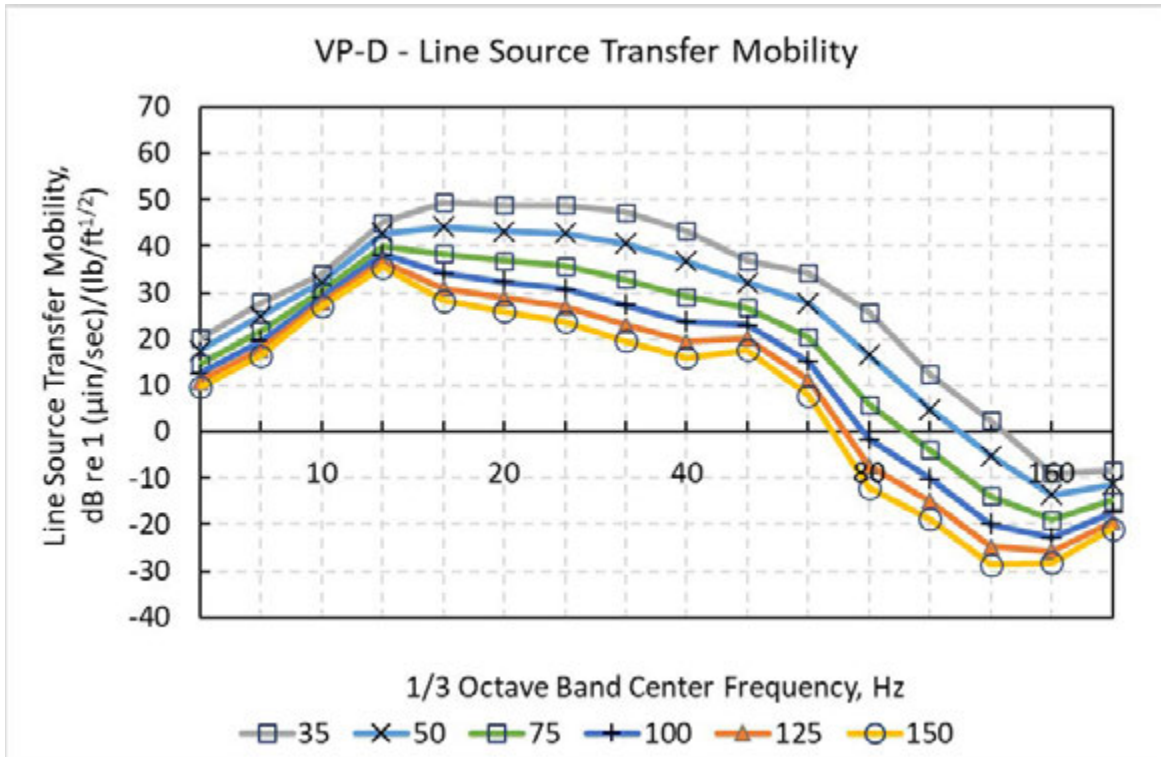




Table D-5 Location VP-C 2700 27th Ave 1/3-Octave Band Transfer Mobility Coefficients

Coeff.	6.3 Hz	8 Hz	10 Hz	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz
A	37.0	40.1	45.4	60.8	74.3	98.1	107.7	113.3	102.2	87.6	80.5	83.2	70.4	72.2	50.1	34.7
B	-18.8	-15.3	-13.6	-20.2	-24.1	-35.9	-40.4	-44.9	-40.9	-36.7	-36.5	-42.7	-41.1	-44.2	-32.9	-21.0
C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

$$LSTM = A + B * \log(dist) + C * \log(dist)^2$$

Figure D-5 Line Source Transfer Mobility Location VP-C 2700 27th Ave

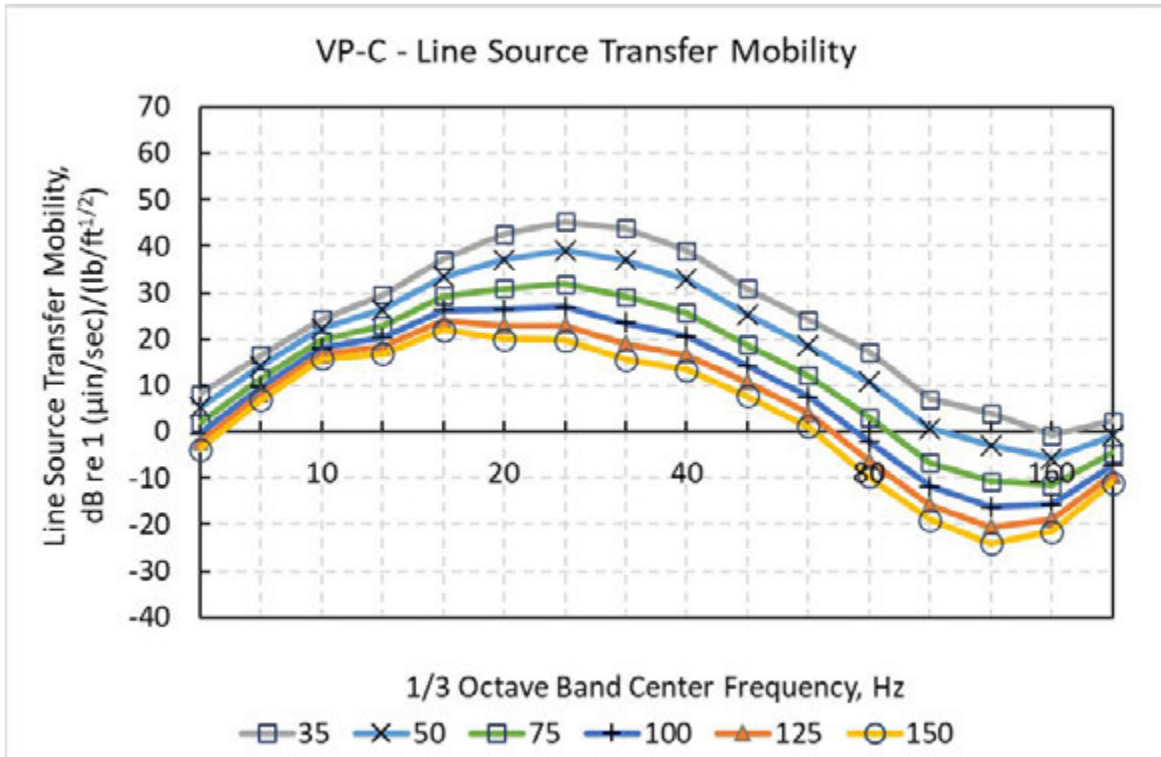




Table D-6 Location VP-B 21st Ave and Dupont Ave 1/3-Octave Band Transfer Mobility Coefficients

Coeff.	6.3 Hz	8 Hz	10 Hz	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz
A	33.1	29.5	29.7	32.8	54.6	80.5	107.9	110.3	96.5	85.8	77.1	85.2	76.6	49.3	28.0	26.6
B	-15.6	-14.8	-13.7	-11.5	-16.5	-28.2	-42.5	-44.5	-38.2	-35.4	-33.1	-39.1	-38.8	-25.5	-14.9	-12.0
C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

$$LSTM = A + B * \log(dist) + C * \log(dist)^2$$

Figure D-6 Line Source Transfer Mobility Location VP-B 21st Ave and Dupont Ave

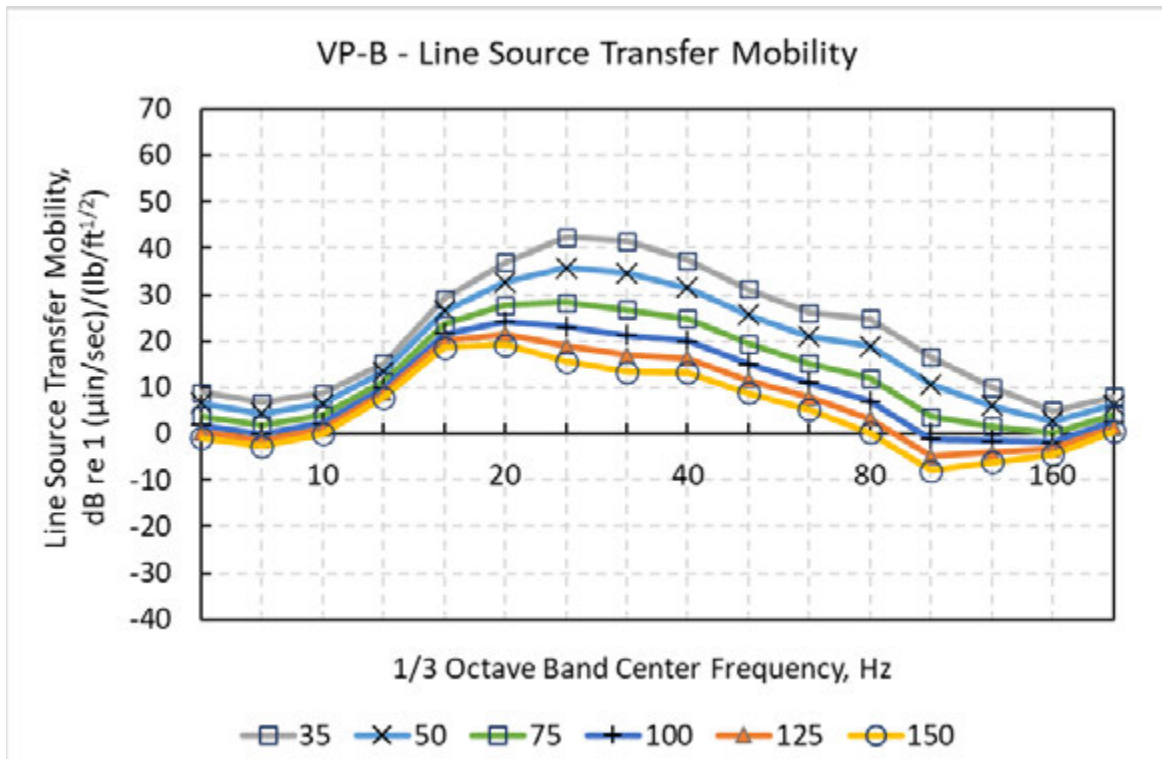


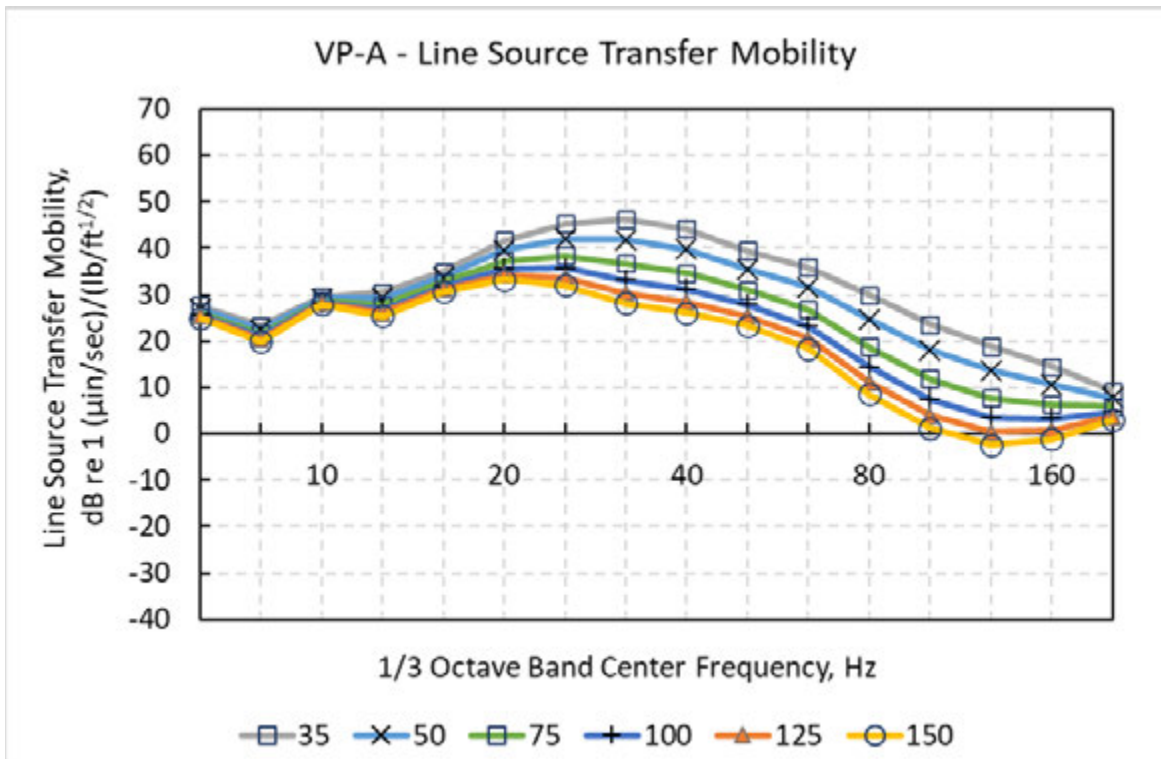


Table D-7 Location VP-A Lyndale Ave and 14th Ave 1/3-Octave Band Transfer Mobility Coefficients

Coeff.	6.3 Hz	8 Hz	10 Hz	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz
A	34.0	31.8	33.5	42.8	45.4	62.2	77.8	90.5	88.2	78.7	78.9	82.5	78.3	70.6	52.5	24.5
B	-4.1	-5.4	-2.6	-8.0	-6.8	-13.3	-21.1	-28.6	-28.5	-25.4	-27.8	-34.0	-35.5	-33.5	-24.7	-9.9
C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

$$LSTM = A + B * \log(dist) + C * \log(dist)^2$$

Figure D-7 Line Source Transfer Mobility Location VP-A Lyndale Ave and 14th Ave





Appendix E Project Noise Analysis from Project Alignment and Design Options Evaluated

This appendix presents results from the analysis of noise impacts for the Project alignment and design options evaluated. The East of I-94 segment for the Project alignment and design options shown below differs from the East of I-94 segment in the Build Alternative. The Project alignment and design options are on Washington Ave N and diverge from Washington Ave N south of N 17th Ave to intersect 10th Ave N near the intersection of 4th St. The Project Alignment remains on Washington Ave N to the intersection of 10th St. The W Broadway Ave N to East of I-94 (either one or two station option) alignment has the fewest noise impacts – with moderate impacts at eight residential properties (153 dwelling units) and severe impacts at two residential properties (three dwelling units). Of the alignments analyzed, the Build Alternative (shown in last row of the table below) has the most noise impacts – with moderate impacts at 16 residential properties (211 dwelling units) and severe impacts at 15 residential properties (173 dwelling units). As shown on Figures E-1 through E-6 and Tables E-1 through E-9, the design options primarily affect the number and severity of the noise impacts east of James Station. The differences in the number and severity of the noise impacts are a result of differences in the existing noise levels and the number of sensitive properties along the alignments.

A relatively low noise level (for an urban environment) of 55 dBA was measured to represent existing noise levels at the residential properties on 21st Ave, which has a mix of residential, commercial, and light industrial uses. Under the options that traverse 21st Ave (including the Build Alternative), noise levels would increase between 3 and 18.7 dB depending on the location and design option. Existing noise measured to represent residences on Lyndale Ave was also relatively low. By comparison, existing noise along W Broadway Ave N is more representative of an urban environment at 68 dBA Ldn. As shown on Tables E-1 through E-9, the Project Noise Level varies depending on the distance between the Project Alignment and the receptor, and the impact is determined by considering the existing and Project noise levels, as per FTA criteria. The difference in the number of noise impacts among the design options is primarily due to the existing noise levels. Those that traverse 21st and Lyndale Aves the longest distance have the highest number of noise impacts, and those that avoid 21st and Lyndale Aves have the fewest.

Table E-1 Summary of Residential Noise Impacts by Project Cities and Option

City and Option	# of Moderate Impacts**	# of Severe Impacts**
Brooklyn Park	13	0
Robbinsdale*	18	0
Crystal	2	0
Minneapolis by Option	NA	NA
Minneapolis 21st Ave N to East of I-94 One Station	169	74
Minneapolis 21st St N to East of I-94 Two Stations	169	43



City and Option	# of Moderate Impacts**	# of Severe Impacts**
Minneapolis 21st St N to Lyndale Ave One Station	178	123
Minneapolis 21st St N to Lyndale Ave Two Stations	178	92
Minneapolis W Broadway Ave to East of I-94 One Station	153	3
Minneapolis W Broadway Ave to East of I-94 Two Stations	153	3
Minneapolis W Broadway Ave to Lyndale Ave One Station	168	54
Minneapolis W Broadway Ave to Lyndale Ave Two Stations	168	54
Minneapolis 21st St N to East of I-94 along Washington Ave (Build Alternative)	211	173

Source: CSA, 2023

*All station options in Robbinsdale have the same number of noise impacts.

**The impact numbers represent the total number DUs (including apartments and other multi-family buildings), not the number of buildings, impacted.



Table E-2 Summary of Noise Impacts for Residential Land Use in the City of Minneapolis (21st Ave to East of I-94)

Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Ldn (dBA)	Project Noise Levels Ldn (dBA)	FTA Mod Impact Noise Level Ldn (dBA)	FTA Sev Impact Noise Level Ldn (dBA)	Number of Mod Noise Impacts	Number of Sev Noise Impacts
	N 26th Ave to N Lowry Ave	Minneapolis	NB	43	45	69	70	64	69	2	2
	N 26th Ave to N Lowry Ave	Minneapolis	SB	40	45	69	70	64	69	51	1
	N Knox Ave to N 26th Ave	Minneapolis	NB	56	20	69	64	64	69	104	0
	N Knox Ave to N 26th Ave	Minneapolis	SB	53	35	69	60	64	69	0	0
One Station	N Emerson Ave to N Knox Ave	Minneapolis	NB	54	30	55	64	55	61	1	4
	N Emerson Ave to N Knox Ave	Minneapolis	SB	18	30	55	75	55	61	0	16
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	34	30	55	67	55	61	5	31
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	17	30	55	66	55	61	0	18
Two Stations	N Emerson Ave to N Knox Ave	Minneapolis	NB	54	30	55	64	55	61	1	4
	N Emerson Ave to N Knox Ave	Minneapolis	SB	18	30	55	75	55	61	0	16
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	55	30	55	61	55	61	5	0
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	17	20	55	72	55	61	0	18
	I-94 to Lyndale Ave	Minneapolis	NB	56	40	55	64	55	61	5	2
	I-94 to Lyndale Ave	Minneapolis	SB	*	*	*	*	*	*	*	*
	N 17th Ave to I-94	Minneapolis	NB	*	*	*	*	*	*	*	*



Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Ldn (dBA)	Project Noise Levels Ldn (dBA)	FTA Mod Impact Noise Level Ldn (dBA)	FTA Sev Impact Noise Level Ldn (dBA)	Number of Mod Noise Impacts	Number of Sev Noise Impacts
	N 17th Ave to I-94	Minneapolis	SB	*	*	*	*	*	*	*	*
	Plymouth Ave to N 17th Ave	Minneapolis	NB	*	*	*	*	*	*	*	*
	Plymouth Ave to N 17th Ave	Minneapolis	SB	*	*	*	*	*	*	*	*
	N 8th Ave to Plymouth Ave N	Minneapolis	NB	241	20	64	51	60	65	0	0
	N 8th Ave to Plymouth Ave N	Minneapolis	SB	*	*	*	*	*	*	*	*
	Target Field Station to N 8th Ave	Minneapolis	NB	43	20	65	59	60	66	0	0
	Target Field Station to N 8th Ave	Minneapolis	SB	*	*	*	*	*	*	*	*

Source: CSA, 2023

Notes:

Predicted noise levels shown for each location are highest for each location. Projected noise levels at other receptors within each location are lower.

The reported noise levels are rounded to the nearest decibel.

Mod = moderate; Sev = severe.

*No noise sensitive land use or property would be acquired in this design option.



- **N 26th Ave to N Lowry Ave (NB):** There are four single-family residences on the northbound side of the Project Alignment between N 26th Ave and N Lowry Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks, the speed of the train, and a nearby crossover.
- **N 26th Ave to N Lowry Ave (SB):** There are 52 single and multi-family residences, representing seven buildings, on the southbound side of the Project Alignment between N 26th Ave and N Lowry Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks, the speed of the train, and a nearby crossover.
- **N Knox Ave to N 26th Ave (NB):** There are 104 single and multi-family residences, representing two buildings, on the northbound side of the Project Alignment between N Knox Ave and N 26th Ave predicted to have moderate noise impacts. These impacts are due to the proximity of the tracks and bells at Penn Ave Station.
- **N Emerson Ave to N Knox Ave One Station Option (NB):** There are five single and multi-family residences, representing four buildings, on the northbound side of the Project Alignment between N Emerson Ave and N Knox Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks and bells at N Girard Ave, N Fremont Ave, and N Emerson Ave.
- **N Emerson Ave to N Knox Ave Two Station Option (NB):** There are five single and multi-family residences, representing four buildings, on the northbound side of the Project Alignment between N Emerson Ave and N Knox Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks and bells at N Girard Ave, N Fremont Ave, and N Emerson Ave.
- **N Emerson Ave to N Knox Ave One Station Option (SB):** There are 16 single and multi-family residences, representing five buildings, on the southbound side of the Project Alignment between N Emerson Ave and N Knox Ave predicted to have severe noise impacts. These impacts are due to the proximity of the tracks and bells at N Girard Ave, N Fremont Ave, and N Emerson Ave.
- **N Emerson Ave to N Knox Ave Two Station Option (SB):** There are 16 single and multi-family residences, representing five buildings, on the southbound side of the Project Alignment between N Emerson Ave and N Knox Ave predicted to have severe noise impacts. These impacts are due to the proximity of the tracks and bells at N Girard Ave, N Fremont Ave, and N Emerson Ave.
- **N Lyndale Ave to N Emerson Ave One Station Option (NB):** There are 36 single and multi-family residences on the northbound side of the Project Alignment between N Lyndale Ave and N Emerson Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks and bells at Bryant Ave and Lyndale Ave.
- **N Lyndale Ave to N Emerson Ave Two Station Option (NB):** There are five single-family residences on the northbound side of the Project Alignment between N Lyndale Ave and N Emerson Ave predicted to have moderate noise impacts. These impacts are due to the proximity of the tracks and bells at Bryant Ave and Lyndale Ave.
- **N Lyndale Ave to N Emerson Ave One Station Option (SB):** There are 18 multi-family residences southbound, representing one building, on the southbound side of the Project Alignment between N Lyndale Ave and N Emerson Ave predicted to have severe noise impacts. These impacts are due to the proximity of the tracks and bells at Bryant Ave and Lyndale Ave.
- **N Lyndale Ave to N Emerson Ave Two Station Option (SB):** There are 16 multi-family residences southbound, representing one building, on the southbound side of the Project Alignment between N Lyndale Ave and N Emerson Ave predicted to have severe noise impacts. These impacts are due to the proximity of the tracks and bells at Bryant Ave and Lyndale Ave.



- **I-94 to N Lyndale Ave (NB):** There are seven single and multi-family residences, representing five buildings, on the northbound side of the Project Alignment between I-94 and N Lyndale Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks, bells at Lyndale Ave, and the additional noise generated by the elevated structure.

Table E-3 Summary of Noise Impacts for Institutional Land Use in the City of Minneapolis (21st Ave to East of I-94)

Option	Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impact Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Type of Impact
	Parkway United Church of Christ	Minneapolis	NB	338	25	68	46	68	73	--
	Good News Minneapolis Church	Minneapolis	NB	139	25	68	52	68	73	--
	True Vine Missionary Baptist Church	Minneapolis	SB	111	45	68	63	68	73	--
	KIPP Legacy	Minneapolis	NB	200	35	68	51	68	73	--
	St Anne-St Joseph Hien Church	Minneapolis	NB	323	35	68	42	68	73	--
	Morning Star Assembly of God	Minneapolis	SB	17	20	68	61	68	73	--
	All Nations Seventh-day Adventist Church	Minneapolis	SB	182	20	68	41	68	73	--
	PYC Arts & Technology Alternative High School	Minneapolis	SB	53	20	62	58	64	69	--
	Capri Theater*	Minneapolis	SB	40	20	62	63	64	69	--
	Star Child Development Center LLC	Minneapolis	SB	40	20	62	63	64	69	--
	Real Believers Faith Center Church	Minneapolis	SB	233	30	68	42	68	73	--



Option	Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impact Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Type of Impact
One Station	Liberty Community Church	Minneapolis	NB	43	25	68	62	68	73	--
	United Deliverance Temple Inc	Minneapolis	NB	259	15	68	32	68	73	--
	Sanctuary Covenant Church	Minneapolis	SB	16	30	68	66	68	73	--
Two Stations	Liberty Community Church	Minneapolis	NB	43	30	68	63	68	73	--
	United Deliverance Temple Inc	Minneapolis	NB	259	20	68	37	68	73	--
	Sanctuary Covenant Church	Minneapolis	SB	16	20	68	68	68	73	--
	Faith Tabernacle Gospel Fellowship International	Minneapolis	SB	14	40	68	69	68	73	Moderate
	Metro Schools College Prep	Minneapolis	SB	166	25	67	50	67	72	--
	Minnesota International Middle Charter School	Minneapolis	NB	99	30	66	53	66	72	--

Source: CSA, 2023

Note: The reported noise levels are rounded to the nearest decibel.

*This represents the results for non-special use spaces in the Capri Theater.

- **Faith Tabernacle Gospel Fellowship International:** The Faith Tabernacle Gospel Fellowship International is predicted to have a moderate noise impact. This noise impact is due to the proximity of the tracks.

The locations of the noise impacts for the City of Minneapolis along the 21st Ave and East of I-94 are shown in figures below for the one station and two station design options, respectively.



Figure E-1 Project Noise Impacts in the City of Minneapolis along the 21st Ave N and East of I-94 One Station Option

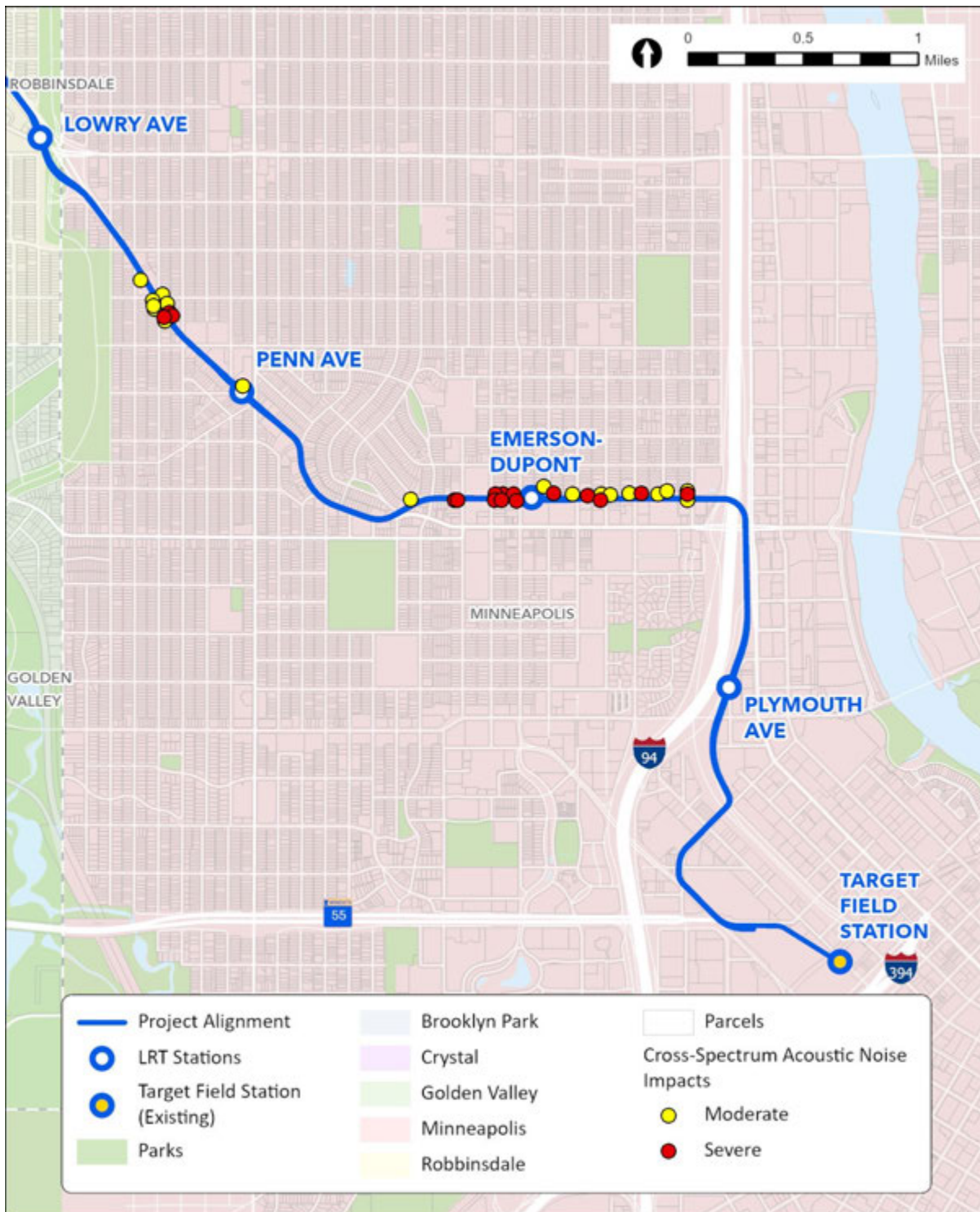




Figure E-2 Project Noise Impacts in the City of Minneapolis along the 21st Ave N and East of I-94 Two Stations Option

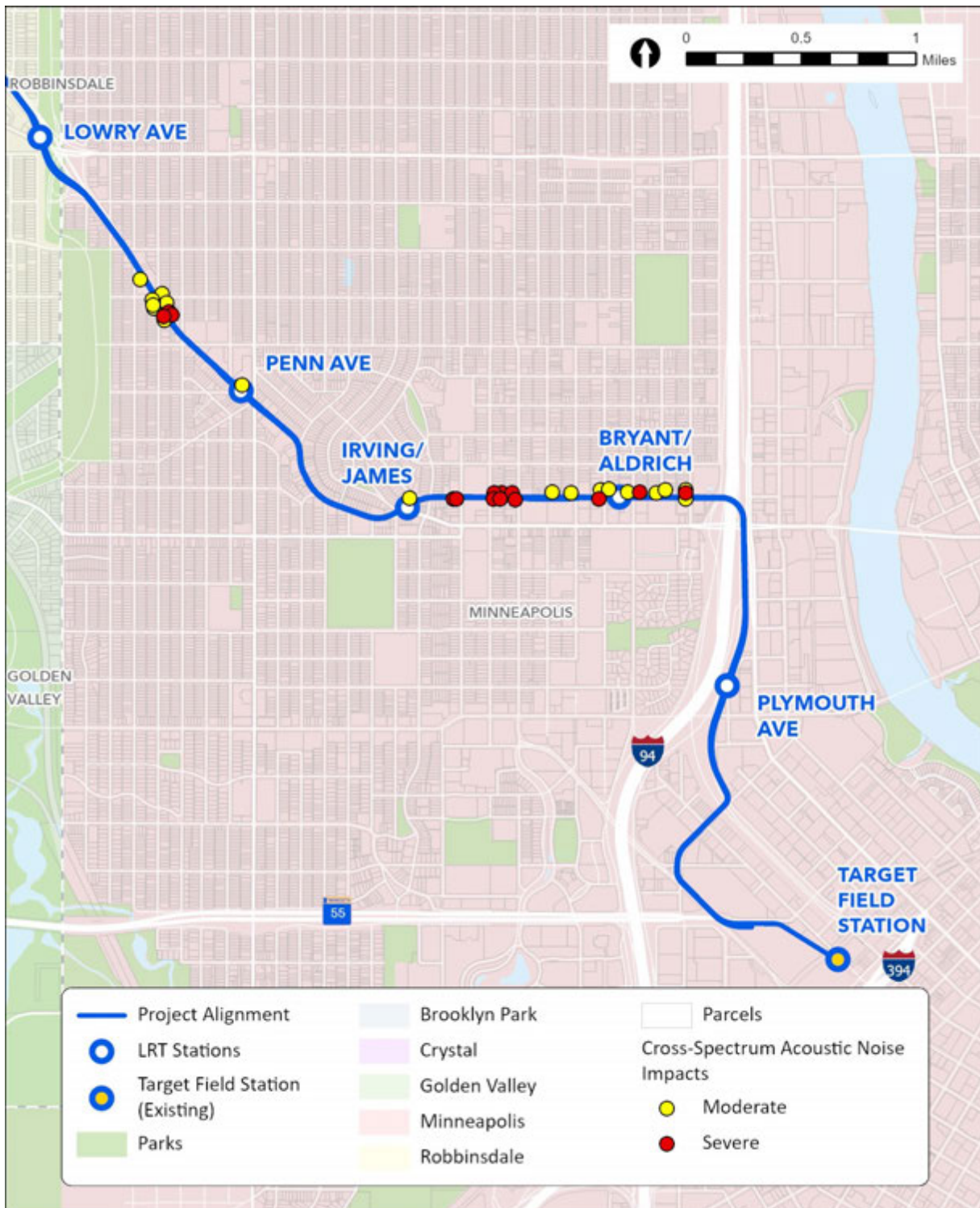




Table E-4 Summary of Noise Impacts for Residential Land Use in the City of Minneapolis (21st Ave N to Lyndale Ave)

Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Ldn (dBA)	Project Noise Levels Ldn (dBA)	FTA Mod Impact Noise Level Ldn (dBA)	FTA Sev Impact Noise Level Ldn (dBA)	Number of Mod Noise Impacts	Number of Sev Noise Impacts
	N 26th Ave to N Lowry Ave	Minneapolis	NB	43	45	69	70	64	69	2	2
	N 26th Ave to N Lowry Ave	Minneapolis	SB	40	45	69	70	64	69	51	1
	N Knox Ave to N 26th Ave	Minneapolis	NB	56	20	69	64	64	69	104	0
	N Knox Ave to N 26th Ave	Minneapolis	SB	50	35	69	60	64	69	0	0
One Station	N Emerson Ave to N Knox Ave	Minneapolis	NB	54	30	55	64	55	61	1	4
	N Emerson Ave to N Knox Ave	Minneapolis	SB	18	30	55	75	55	61	0	16
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	34	30	55	67	55	61	5	31
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	17	30	55	66	55	61	0	18
Two Stations	N Emerson Ave to N Knox Ave	Minneapolis	NB	54	30	55	64	55	61	1	4
	N Emerson Ave to N Knox Ave	Minneapolis	SB	18	30	55	75	55	61	0	16
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	55	30	55	61	55	61	5	0
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	17	20	55	72	55	61	0	18
	Plymouth Ave to N 17th Ave	Minneapolis	NB	55	35	62	66	59	64	2	50



Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Ldn (dBA)	Project Noise Levels Ldn (dBA)	FTA Mod Impact Noise Level Ldn (dBA)	FTA Sev Impact Noise Level Ldn (dBA)	Number of Mod Noise Impacts	Number of Sev Noise Impacts
	Plymouth Ave to N 17th Ave	Minneapolis	SB	63	40	62	62	59	64	13	0
	N 8th Ave to Plymouth Ave N	Minneapolis	NB	*	*	*	*	*	*	*	*
	N 8th Ave to Plymouth Ave N	Minneapolis	SB	163	35	62	58	59	64	0	0
	Target Field Station to N 8th Ave	Minneapolis	NB	50	10	65	53	60	66	0	0
	Target Field Station to N 8th Ave	Minneapolis	SB	*	*	*	*	*	*	*	*

Source: CSA, 2023

Notes:

Predicted noise levels shown for each location are highest for each location. Projected noise levels at other receptors within each location are lower.

The reported noise levels are rounded to the nearest decibel.

Mod = moderate; Sev = severe.

*No noise sensitive land use or property would be acquired in this design option.



- **N 26th Ave to N Lowry Ave (NB):** There are four single-family residences on the northbound side of the Project Alignment between N 26th Ave and N Lowry Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks, the speed of the train, and a nearby crossover.
- **N 26th Ave to N Lowry Ave (SB):** There are 52 single and multi-family residences, representing seven buildings, on the southbound side of the Project Alignment between N 26th Ave and N Lowry Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks, the speed of the train, and a nearby crossover.
- **N Knox Ave to N 26th Ave (NB):** There are 104 single and multi-family residences, representing two buildings, on the northbound side of the Project Alignment between N Knox Ave and N 26th Ave predicted to have moderate noise impacts. These impacts are due to the proximity of the tracks and bells at Penn Ave Station.
- **N Emerson Ave to N Knox Ave One Station Option (NB):** There are five single and multi-family residences, representing four buildings, on the northbound side of the Project Alignment between N Emerson Ave and N Knox Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks and bells at N Girard Ave, N Fremont Ave, and N Emerson Ave.
- **N Emerson Ave to N Knox Ave Two Stations Option (NB):** There are five single and multi-family residences, representing four buildings, on the northbound side of the Project Alignment between N Emerson Ave and N Knox Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks and bells at N Girard Ave, N Fremont Ave, and N Emerson Ave.
- **N Emerson Ave to N Knox Ave One Station Option (SB):** There are 16 single and multi-family residences, representing five buildings, on the southbound side of the Project Alignment between N Emerson Ave and N Knox Ave predicted to have severe noise impacts. These impacts are due to the proximity of the tracks and bells at N Girard Ave, N Fremont Ave, and N Emerson Ave.
- **N Emerson Ave to N Knox Ave Two Stations Option (SB):** There are 16 single and multi-family residences, representing five buildings, on the southbound side of the Project Alignment between N Emerson Ave and N Knox Ave predicted to have severe noise impacts. These impacts are due to the proximity of the tracks and bells at N Girard Ave, N Fremont Ave, and N Emerson Ave.
- **N Lyndale Ave to N Emerson Ave One Station Option (NB):** There are 36 single and multi-family residences on the northbound side of the Project Alignment between N Lyndale Ave and N Emerson Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks and bells at Bryant Ave and the Emerson/Dupont Station.
- **N Lyndale Ave to N Emerson Ave Two Stations Option (NB):** There are five single-family residences on the northbound side of the Project Alignment between N Lyndale Ave and N Emerson Ave predicted to have moderate noise impacts. These impacts are due to the proximity of the tracks and bells at Bryant Ave and the Aldrich/Bryant Station.
- **N Lyndale Ave to N Emerson Ave One Station Option (SB):** There are 18 multi-family residences, representing one building, on the southbound side of the Project Alignment between N Lyndale Ave and N Emerson Ave predicted to have severe noise impacts. These impacts are due to the proximity of the tracks and bells at Bryant Ave and the Emerson/Dupont Station.
- **N Lyndale Ave to N Emerson Ave Two Stations Option (SB):** There are 18 multi-family residences, representing one building, on the southbound side of the Project Alignment between N Lyndale Ave and N Emerson Ave predicted to have severe noise impacts. These impacts are due to the proximity of the tracks and bells at Bryant Ave and the Aldrich/Bryant Station.



- **N Plymouth Ave to N 18th Ave (NB):** There are 52 single and multi-family residences on the northbound side of the Project Alignment between N Plymouth Ave and N 18th Ave predicted to have moderate and severe noise impacts. These impacts are due to the bells in the area and the proximity of a crossover.
- **N Plymouth Ave to N 18th Ave (SB):** There are 13 single and multi-family residences, representing seven buildings, on the southbound side of the Project Alignment between N Plymouth Ave and N 18th Ave predicted to have moderate noise impacts. These impacts are due to the proximity of the tracks and bells in the area.

Table E-5 Summary of Noise Impacts for Institutional Land Use in the City of Minneapolis (21st Ave N to Lyndale Ave)

Option	Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impact Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Type of Impact
	Parkway United Church of Christ	Minneapolis	NB	338	25	68	46	68	73	--
	Good News Minneapolis Church	Minneapolis	NB	139	25	68	52	68	73	--
	True Vine Missionary Baptist Church	Minneapolis	SB	111	45	68	63	68	73	--
	KIPP Legacy	Minneapolis	NB	200	35	68	51	68	73	--
	St Anne-St Joseph Hien Church	Minneapolis	NB	323	35	68	42	68	73	--
	Morning Star Assembly of God	Minneapolis	SB	17	20	68	61	68	73	--
	All Nations Seventh-day Adventist Church	Minneapolis	SB	182	20	68	41	68	73	--
	PYC Arts & Technology Alternative High School	Minneapolis	SB	53	20	62	58	64	69	--
	Capri Theater*	Minneapolis	SB	40	20	62	63	64	69	--



Option	Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impact Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Type of Impact
	Star Child Development Center LLC	Minneapolis	SB	40	20	62	63	64	69	--
	Real Believers Faith Center Church	Minneapolis	SB	233	30	68	42	68	73	--
One Station	Liberty Community Church	Minneapolis	NB	43	25	68	62	68	73	--
	United Deliverance Temple Inc	Minneapolis	NB	288	15	68	32	68	73	--
	Sanctuary Covenant Church	Minneapolis	SB	16	30	68	66	68	73	--
Two Stations	Liberty Community Church	Minneapolis	NB	43	30	68	63	68	73	--
	United Deliverance Temple Inc	Minneapolis	NB	288	20	68	37	68	73	--
	Sanctuary Covenant Church	Minneapolis	SB	16	20	68	68	68	73	--
	Masjid An-Nur Mosque	Minneapolis	SB	30	40	60	71	63	68	Severe
	United Faith Pentecostal Church	Minneapolis	SB	50	10	60	60	63	68	--
	Metro Schools College Prep	Minneapolis	SB	166	25	67	50	67	72	--

Source: CSA, 2023

Note: The reported noise levels are rounded to the nearest decibel.

Mod = moderate; Sev = severe.

*This represents the results for non-special use spaces in the Capri Theater.



- **Masjid An-Nur Mosque:** The Masjid An-Nur Mosque is predicted to have a severe noise impact. This noise impact is due to the proximity of the track and a nearby crossover.

The locations of the noise impacts for the City of Minneapolis along the 21st Ave N and Lyndale Ave are shown in figures below for the one station and two station design options, respectively.

Figure E-3 Project Noise Impacts in the City of Minneapolis along the 21st Ave N and Lyndale Ave One Station Option

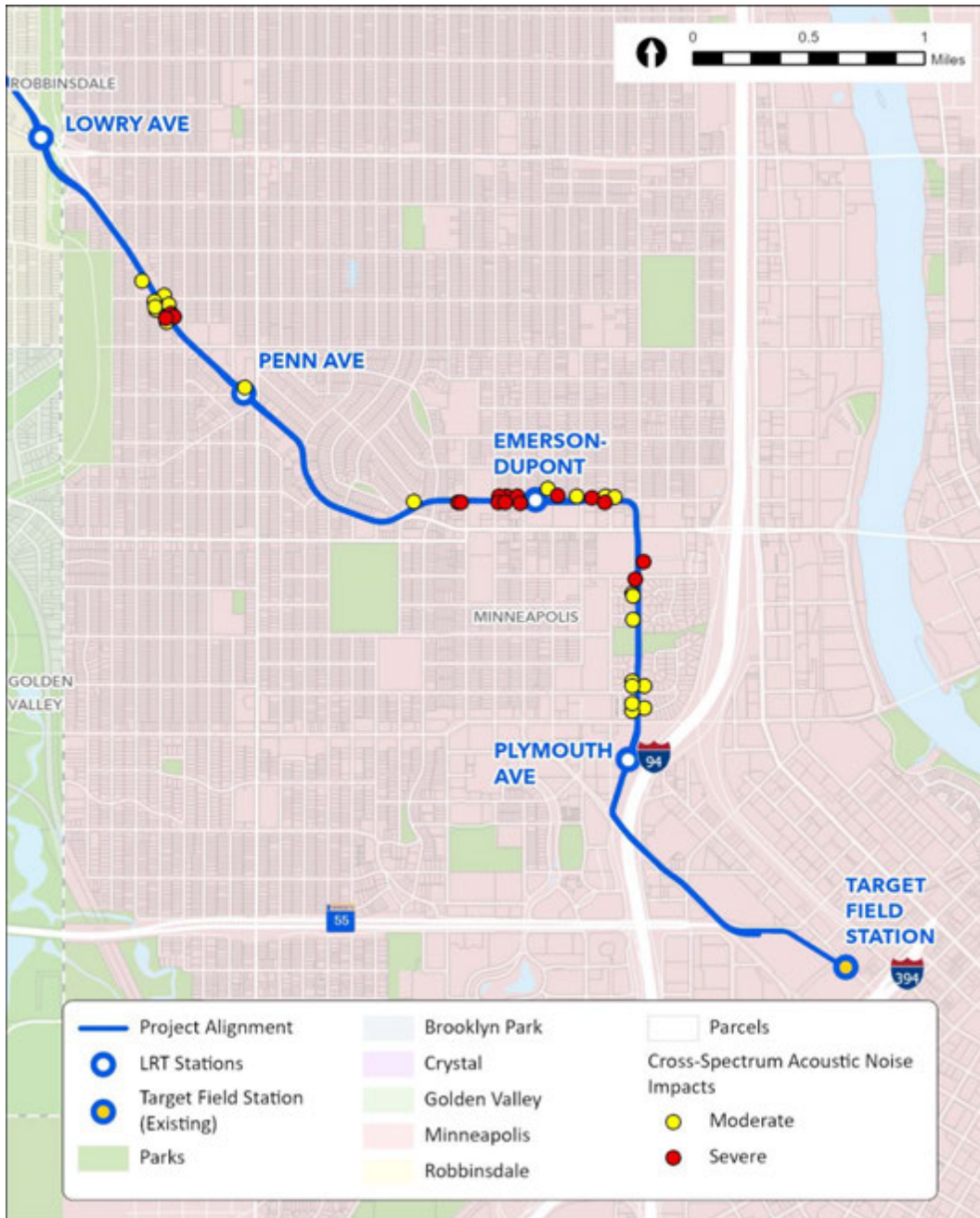




Figure E-4 Project Noise Impacts in the City of Minneapolis along the 21st Ave N and Lyndale Ave Two Stations Option

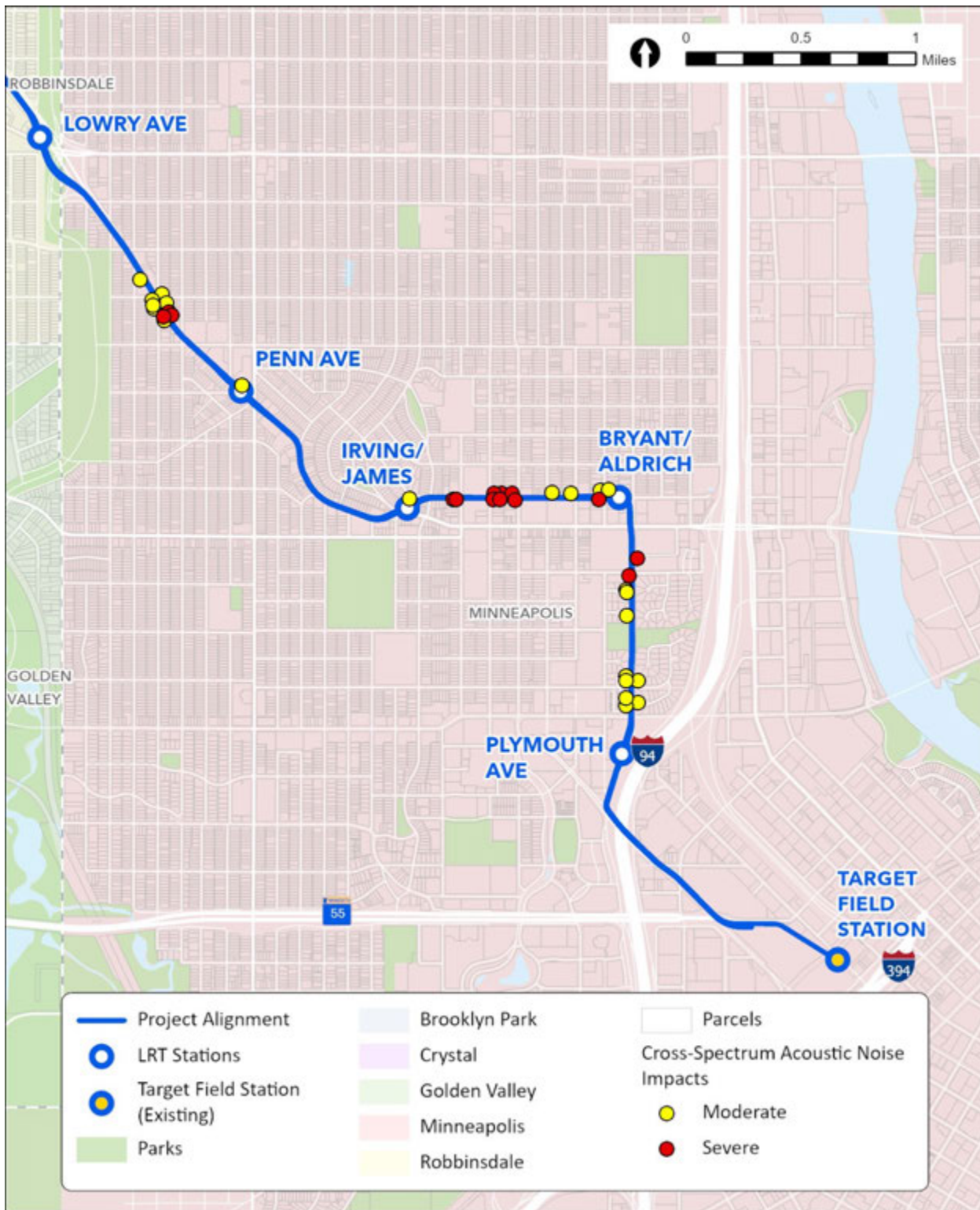




Table E-6 Summary of Noise Impacts for Residential Land Use in the City of Minneapolis (W Broadway Ave to East of I-94)

Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Ldn (dBA)	Project Noise Levels Ldn (dBA)	FTA Mod Impact Noise Level Ldn (dBA)	FTA Sev Impact Noise Level Ldn (dBA)	Number of Mod Noise Impacts	Number of Sev Noise Impacts
	N 26th Ave to N Lowry Ave	Minneapolis	NB	43	45	69	70	64	69	2	2
	N 26th Ave to N Lowry Ave	Minneapolis	SB	40	45	69	70	64	69	51	1
	N Knox Ave to N 26th Ave	Minneapolis	NB	56	20	69	64	64	69	104	0
	N Knox Ave to N 26th Ave	Minneapolis	SB	50	35	69	60	64	69	0	0
One Station	N Emerson Ave to N Knox Ave	Minneapolis	NB	195	20	65	49	61	66	0	0
	N Emerson Ave to N Knox Ave	Minneapolis	SB	128	27	65	54	61	66	0	0
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	*	*	*	*	*	*	*	*
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	217	20	65	51	61	66	0	0
Two Station	N Emerson Ave to N Knox Ave	Minneapolis	NB	209	20	65	55	61	66	0	0
	N Emerson Ave to N Knox Ave	Minneapolis	SB	129	23	65	58	61	66	0	0
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	*	*	*	*	*	*	*	*
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	215	20	65	44	61	66	0	0
	I-94 to Lyndale Ave	Minneapolis	NB	*	*	*	*	*	*	*	*
	I-94 to Lyndale Ave	Minneapolis	SB	307	30	69	46	64	69	0	0



Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Ldn (dBA)	Project Noise Levels Ldn (dBA)	FTA Mod Impact Noise Level Ldn (dBA)	FTA Sev Impact Noise Level Ldn (dBA)	Number of Mod Noise Impacts	Number of Sev Noise Impacts
	Plymouth Ave to N 17th Ave	Minneapolis	NB	*	*	*	*	*	*	*	*
	Plymouth Ave to N 17th Ave	Minneapolis	SB	*	*	*	*	*	*	*	*
	N 8th Ave to Plymouth Ave N	Minneapolis	NB	241	20	64	51	60	65	0	0
	N 8th Ave to Plymouth Ave N	Minneapolis	SB	*	*	*	*	*	*	*	*
	Target Field Station to N 8th Ave	Minneapolis	NB	50	20	65	59	60	66	0	0
	Target Field Station to N 8th Ave	Minneapolis	SB	*	*	*	*	*	*	*	*

Source: CSA, 2023

Notes:

Predicted noise levels shown for each location are highest for each location. Projected noise levels at other receptors within each location are lower.

The reported noise levels are rounded to the nearest decibel.

Mod = moderate; Sev = severe.

*No noise sensitive land use.



- **N 26th Ave to N Lowry Ave (NB):** There are four single-family residences on the northbound side of the Project Alignment between N 26th Ave and N Lowry Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks, the speed of the train, and a nearby crossover.
- **N 26th Ave to N Lowry Ave (SB):** There are 52 single and multi-family residences, representing seven buildings, on the southbound side of the Project Alignment between N 26th Ave and N Lowry Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks, the speed of the train, and a nearby crossover.
- **N Knox Ave to N 26th Ave (NB):** There are 104 single and multi-family residences, representing two buildings, on the northbound side of the Project Alignment between N Knox Ave and N 26th Ave predicted to have moderate noise impacts. These impacts are due to the proximity of the tracks and bells at Penn Ave Station.

Table E-7 Summary of Noise Impacts for Institutional Land Use in the City of Minneapolis (W Broadway Ave to East of I-94)

Option	Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impact Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Type of Impact
	Parkway United Church of Christ	Minneapolis	NB	338	25	68	46	68	73	--
	Good News Minneapolis Church	Minneapolis	NB	139	25	68	52	68	73	--
	True Vine Missionary Baptist Church	Minneapolis	SB	111	45	68	63	68	73	--
	KIPP Legacy	Minneapolis	NB	200	35	68	51	68	73	--
	St Anne-St Joseph Hien Church	Minneapolis	NB	323	35	68	42	68	73	--
	Morning Star Assembly of God	Minneapolis	SB	17	20	68	61	68	73	--
	All Nations Seventh-day Adventist Church	Minneapolis	SB	182	20	68	41	68	73	--



Option	Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impact Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Type of Impact
	PYC Arts & Technology Alternative High School	Minneapolis	SB	53	20	62	58	64	69	--
	Capri Theater*	Minneapolis	SB	40	20	62	63	64	69	--
	Star Child Development Center LLC	Minneapolis	SB	40	20	62	63	64	69	--
	St. Andrews Episcopal Church	Minneapolis	SB	326	20	68	35	68	73	--
One Station	Shiloh Temple International Ministries	Minneapolis	SB	53	30	68	62	68	73	--
	Real Believers Faith Center Church	Minneapolis	NB	129	26	68	52	68	73	--
Two Stations	Shiloh Temple International Ministries	Minneapolis	SB	44	30	68	64	68	73	--
	Real Believers Faith Center Church	Minneapolis	NB	138	26	68	52	68	73	--
	Episcopal Church in Minnesota	Minneapolis	SB	48	20	68	61	68	73	--
	Full Proof Ministry COGIC	Minneapolis	SB	343	20	68	37	68	73	--
	Sanctuary Covenant Church	Minneapolis	NB	237	20	68	46	68	73	--
	Minnesota International Middle Charter School	Minneapolis	SB	99	25	66	52	66	72	--



Option	Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impact Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Type of Impact
	Metro Schools College Prep	Minneapolis	SB	166	25	67	50	67	72	--

Source: CSA, 2023

Note: The reported noise levels are rounded to the nearest decibel.

Mod = moderate; Sev = severe.

*This represents the results for non-special use spaces in the Capri Theater.

The locations of the noise impacts for the City of Minneapolis along the W Broadway Ave and East of I-94 alignment option are shown in the figure below.



Figure E-5 Project Noise Impacts in the City of Minneapolis along the W Broadway Ave and East of I-94 Option

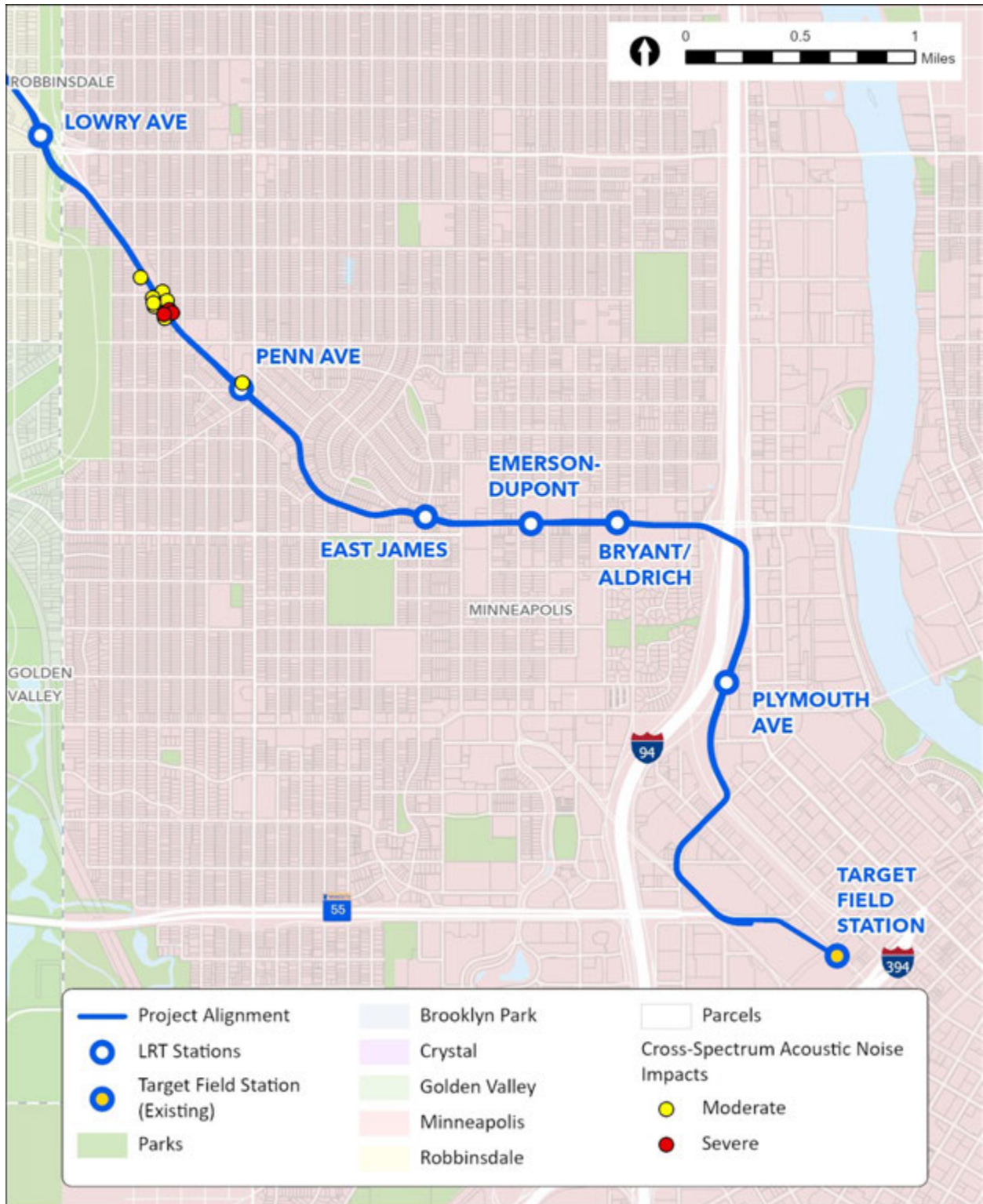




Table E-8 Summary of Noise Impacts for Residential Land Use in the City of Minneapolis (W Broadway Ave to Lyndale Ave)

Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Ldn (dBA)	Project Noise Levels Ldn (dBA)	FTA Mod Impact Noise Level Ldn (dBA)	FTA Sev Impact Noise Level Ldn (dBA)	Number of Mod Noise Impacts	Number of Sev Noise Impacts
	N 26 th Ave to N Lowry Ave	Minneapolis	NB	43	45	69	70	64	69	2	2
	N 26 th Ave to N Lowry Ave	Minneapolis	SB	40	45	69	70	64	69	51	1
	N Knox Ave to N 26 th Ave	Minneapolis	NB	56	20	69	64	64	69	104	0
	N Knox Ave to N 26 th Ave	Minneapolis	SB	50	35	69	60	64	69	0	0
One Station	N Emerson Ave to N Knox Ave	Minneapolis	NB	195	20	65	49	61	66	0	0
	N Emerson Ave to N Knox Ave	Minneapolis	SB	128	27	65	54	61	66	0	0
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	*	*	*	*	*	*	*	*
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	217	20	65	51	61	66	0	0
Two Stations	N Emerson Ave to N Knox Ave	Minneapolis	NB	209	20	65	55	61	66	0	0
	N Emerson Ave to N Knox Ave	Minneapolis	SB	129	23	65	58	61	66	0	0
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	*	*	*	*	*	*	*	*
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	215	20	65	44	61	66	0	0
	Plymouth Ave to N 17 th Ave	Minneapolis	NB	55	35	62	66	59	64	2	50
	Plymouth Ave to N 17 th Ave	Minneapolis	SB	63	40	62	62	59	64	13	0



Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Ldn (dBA)	Project Noise Levels Ldn (dBA)	FTA Mod Impact Noise Level Ldn (dBA)	FTA Sev Impact Noise Level Ldn (dBA)	Number of Mod Noise Impacts	Number of Sev Noise Impacts
	N 8 th Ave to Plymouth Ave N	Minneapolis	NB	*	*	*	*	*	*	*	*
	N 8 th Ave to Plymouth Ave N	Minneapolis	SB	163	35	62	58	59	64	0	0
	Target Field Station to N 8 th Ave	Minneapolis	NB	50	10	65	53	60	66	0	0
	Target Field Station to N 8 th Ave	Minneapolis	SB	*	*	*	*	*	*	*	*

Source: CSA, 2023

Notes:

Predicted noise levels shown for each location are highest for each location. Projected noise levels at other receptors within each location are lower.

The reported noise levels are rounded to the nearest decibel.

Mod = moderate; Sev = severe.

*No noise sensitive land use or property would be acquired in this design option.



- **N 26th Ave to N Lowry Ave (NB):** There are four single-family residences on the northbound side of the Project Alignment between N 26th Ave and N Lowry Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks, the speed of the train, and a nearby crossover.
- **N 26th Ave to N Lowry Ave (SB):** There are 52 single and multi-family residences, representing seven buildings, on the southbound side of the Project Alignment between N 26th Ave and N Lowry Ave predicted to have moderate and severe noise impacts. These impacts are due to the proximity of the tracks, the speed of the train, and a nearby crossover.
- **N Knox Ave to N 26th Ave (NB):** There are 104 single and multi-family residences, representing two buildings, on the northbound side of the Project Alignment between N Knox Ave and N 26th Ave predicted to have moderate noise impacts. These impacts are due to the proximity of the tracks and bells at Penn Ave Station.
- **N Plymouth Ave to N 18th Ave (NB):** There are 52 single and multi-family residences on the northbound side of the Project Alignment between N Plymouth Ave and N 18th Ave predicted to have moderate and severe noise impacts. These impacts are due to the bells in the area and the proximity of a crossover.
- **N Plymouth Ave to N 18th Ave (SB):** There are 13 single and multi-family residences, representing seven buildings, on the southbound side of the Project Alignment between N Plymouth Ave and N 18th Ave predicted to have moderate noise impacts. These impacts are due to the proximity of the tracks and bells at N 14th Ave and Plymouth Ave.

Table E-9 Summary of Noise Impacts for Institutional Land Use in the City of Minneapolis (W Broadway Ave to Lyndale Ave)

Option	Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impact Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Type of Impact
	Parkway United Church of Christ	Minneapolis	NB	338	25	68	46	68	73	--
	Good News Minneapolis Church	Minneapolis	NB	139	25	68	52	68	73	--
	True Vine Missionary Baptist Church	Minneapolis	SB	111	45	68	63	68	73	--
	KIPP Legacy	Minneapolis	NB	200	35	68	51	68	73	--
	St Anne-St Joseph Hien Church	Minneapolis	NB	323	35	68	42	68	73	--



Option	Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impact Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Type of Impact
	Morning Star Assembly of God	Minneapolis	SB	17	20	68	61	68	73	--
	All Nations Seventh-day Adventist Church	Minneapolis	SB	182	20	68	41	68	73	--
	PYC Arts & Technology Alternative High School	Minneapolis	SB	53	20	62	58	64	69	--
	Capri Theater*	Minneapolis	SB	40	20	62	63	64	69	--
	Star Child Development Center LLC	Minneapolis	SB	40	20	62	63	64	69	--
	St. Andrews Episcopal Church	Minneapolis	SB	326	20	68	35	68	73	--
One Station	Shiloh Temple International Ministries	Minneapolis	SB	53	30	68	62	68	73	--
	Real Believers Faith Center Church	Minneapolis	NB	129	26	68	52	68	73	--
Two Stations	Shiloh Temple International Ministries	Minneapolis	SB	44	30	68	64	68	73	--
	Real Believers Faith Center Church	Minneapolis	NB	138	26	68	52	68	73	--
	Episcopal Church in Minnesota	Minneapolis	SB	48	20	68	61	68	73	--
	Full Proof Ministry COGIC	Minneapolis	SB	343	20	68	37	68	73	--



Option	Name	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Exist Noise Level Leq (dBA)	Project Noise Levels Leq (dBA)	FTA Mod Impact Noise Level Leq (dBA)	FTA Sev Impact Noise Level Leq (dBA)	Type of Impact
	Sanctuary Covenant Church	Minneapolis	NB	197	30	68	51	68	73	--
	Masjid An-Nur Mosque	Minneapolis	SB	34	40	60	70	63	68	Severe
	United Faith Pentecostal Church	Minneapolis	SB	50	20	60	61	63	68	--
	Metro Schools College Prep	Minneapolis	NB	166	35	67	52	67	72	--

Source: CSA, 2023

Note: The reported noise levels are rounded to the nearest decibel.

Mod = moderate; Sev = severe.

*This represents the results for non-special use spaces in the Capri Theater.

- **Masjid An-Nur Mosque:** The Masjid An-Nur Mosque is predicted to have a severe noise impact. This noise impact is due to the proximity of the tracks and a nearby crossover.

The locations of the noise impacts for the City of Minneapolis along the W Broadway Ave and Lyndale Ave alignment option are shown in the figure below.



Figure E-6 Project Noise Impacts in the City of Minneapolis along the W Broadway Ave and Lyndale Ave Option

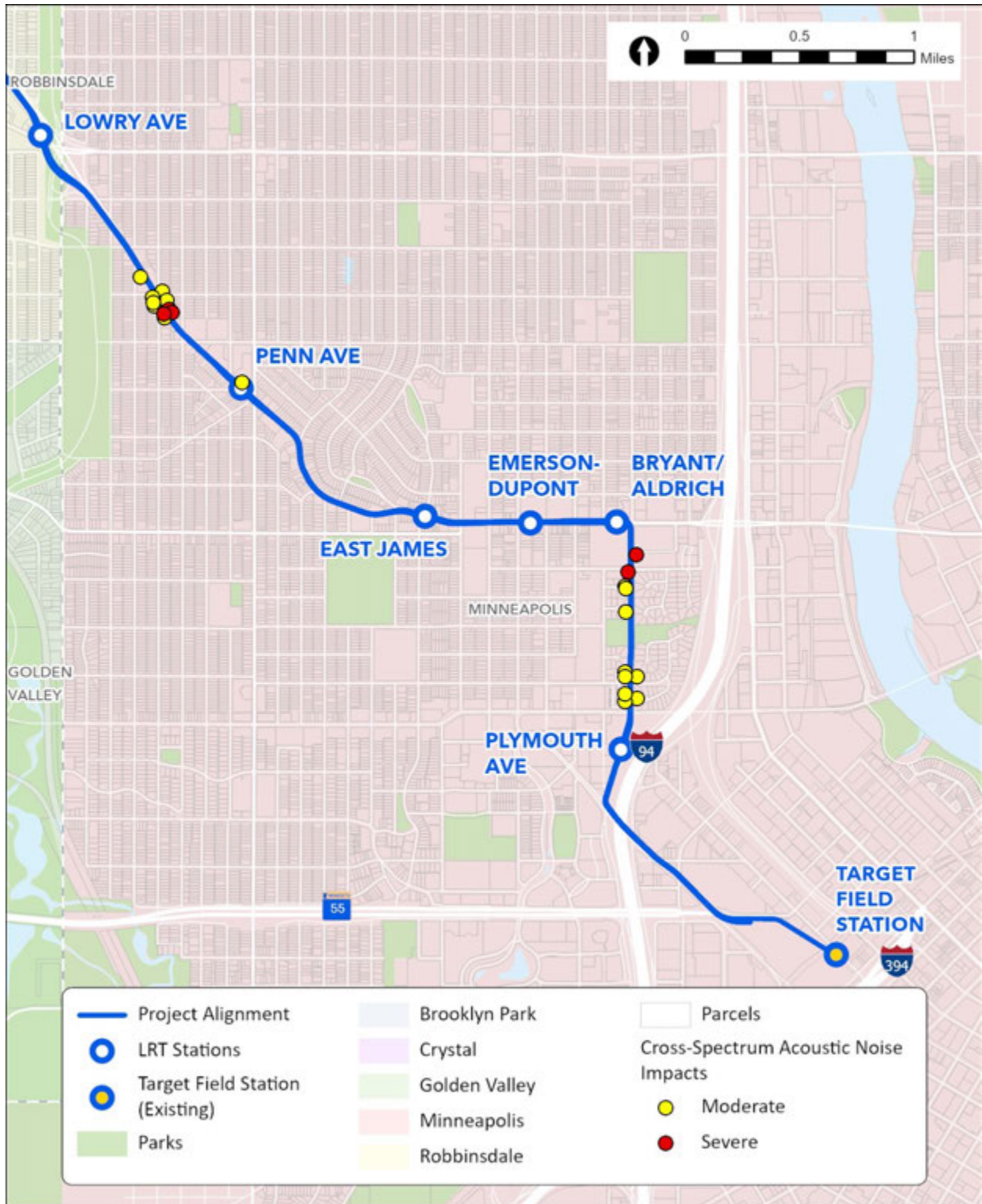
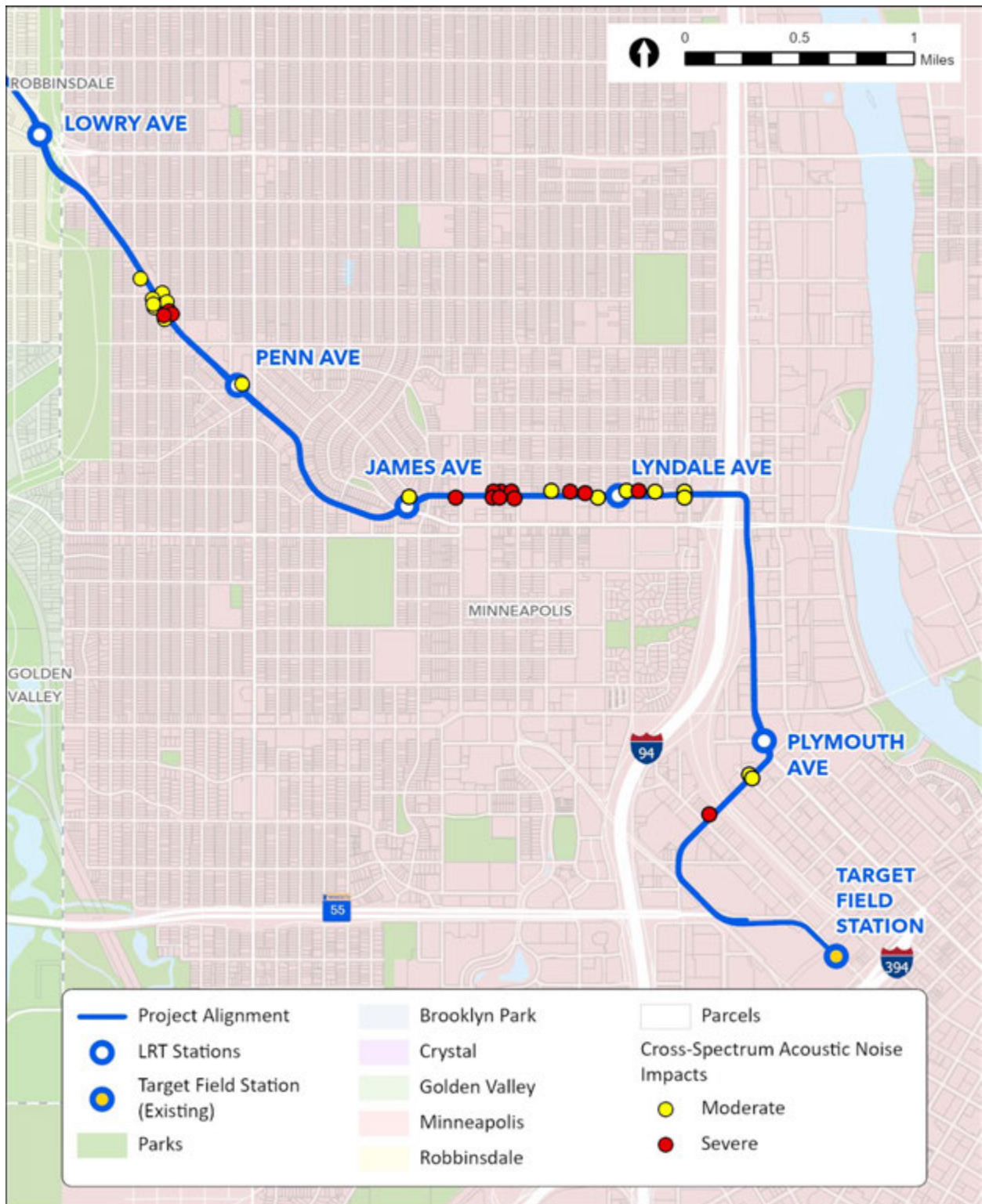




Figure E-7 Project Noise Impacts in the City of Minneapolis along the 21st Ave N and Washington Ave Option





Appendix F Project Vibration Analysis from Other Project Alignment and Design Options Evaluated

This appendix presents results from the analysis of vibration impacts for other Project alignment and design options evaluated.

Table F-1 through Table F-9 include a tabulation of location information for each sensitive receptor group, Project vibration levels, the impact criteria, and whether there will be vibration impacts. The tables also show the total number of dwelling units with vibration impacts for each location.

Table F-1 Summary of Vibration Impacts by Project Cities and Option

City and Option	# of Vibration Impacts**
Brooklyn Park	0
Robbinsdale*	0
Crystal	0
Minneapolis by Option	NA
Minneapolis <i>21st St N to East of I-94 (One Station)</i>	21
Minneapolis <i>21st St N to East of I-94 (Two Stations)</i>	20
Minneapolis <i>21st St N to Lyndale Ave (One Station)</i>	21
Minneapolis <i>21st St N to Lyndale Ave (Two Stations)</i>	20
Minneapolis <i>W Broadway Ave to East of I-94 (One Station)</i>	0
Minneapolis <i>W Broadway Ave to East of I-94 (Two Stations)</i>	0
Minneapolis <i>W Broadway Ave to Lyndale Ave (One Station)</i>	0
Minneapolis <i>W Broadway Ave to Lyndale Ave (Two Stations)</i>	0
Minneapolis <i>21st St N to East of I-94 along Washington Ave (Build Alternative)</i>	28

Source: CSA, 2023

*All station options in Robbinsdale have the same vibration impacts.

** The impact numbers represent the total number DUs (including apartments and other multi-family buildings), not the number of buildings impacted.

**Table F-2 Summary of Vibration Impacts for Residential Land Use in the City of Minneapolis (21st Ave N to East of I-94)**

Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Number of Impacts
	N 26th Ave to N Lowry Ave	Minneapolis	NB	43	45	60	72	0
	N 26th Ave to N Lowry Ave	Minneapolis	SB	54	45	66	72	0
	N Knox Ave to N 26th Ave	Minneapolis	NB	41	20	60	72	0
	N Knox Ave to N 26th Ave	Minneapolis	SB	36	20	62	72	0
One Station	N Emerson Ave to N Knox Ave	Minneapolis	NB	48	35	57	72	0
	N Emerson Ave to N Knox Ave	Minneapolis	SB	18	30	74	72	2
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	34	30	61	72	0
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	18	30	74	72	18
Two Stations	N Emerson Ave to N Knox Ave	Minneapolis	NB	48	30	56	72	0
	N Emerson Ave to N Knox Ave	Minneapolis	SB	18	30	74	72	2
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	55	25	54	72	0
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	17	20	73	72	18
	I-94 to Lyndale Ave	Minneapolis	NB	60	35	53	72	0
	I-94 to Lyndale Ave	Minneapolis	SB	*	*	*	*	*
	Plymouth Ave N to N 18th Ave	Minneapolis	NB	32	20	0	72	0



Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Number of Impacts
	Plymouth Ave N to N 18th Ave	Minneapolis	SB	*	*	*	*	*
	N 8th Ave to Plymouth Ave N	Minneapolis	NB	341	15	49	72	0
	N 8th Ave to Plymouth Ave N	Minneapolis	SB	*	*	*	*	*
	Target Field Station to N 8th Ave	Minneapolis	NB	43	20	47	72	0
	Target Field Station to N 8th Ave	Minneapolis	SB	*	*	*	*	*

Source: CSA, 2023

Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

*There are no vibration sensitive receivers at this location.

- **N Emerson Ave to N Knox Ave (SB):** There are two single-family residences along the southbound side of the Project Alignment between N Emerson Ave and N Knox Ave predicted to have a vibration impact. These impacts are due to the proximity of the tracks. The impacts are the same for both the one station and two station design options.
- **Lyndale Ave to N Emerson Ave (SB):** There are 18 multi-family residences, representing one building, along the southbound side of the Project Alignment between Lyndale Ave and N Emerson Ave predicted to have a vibration impact. These impacts are due to the proximity of the tracks. The impacts are the same for both the one station and two station design options.

**Table F-3 Summary of Vibration Impacts for Institutional Land Use in the City of Minneapolis (21st Ave N to East of I-94)**

Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Impact
	Parkway United Church of Christ	Minneapolis	NB	338	25	27	75	--
	Good News Minneapolis Church	Minneapolis	NB	139	25	35	75	--
	True Vine Missionary Baptist Church	Minneapolis	SB	111	45	52	75	--
	KIPP Legacy	Minneapolis	NB	200	35	42	75	--
	St Anne-St Joseph Hien Church	Minneapolis	NB	323	35	39	75	--
	All Nations Seventh-day Adventist Church	Minneapolis	SB	182	20	40	75	--
	PYC Arts & Technology Alternative High School	Minneapolis	SB	53	20	54	75	--
	Capri Theater*	Minneapolis	SB	40	20	60	75	--
	Star Child Development Center llc	Minneapolis	SB	40	20	59	75	--
	Real Believers Faith Center Church	Minneapolis	SB	233	30	38	75	--
One Station	Liberty Community Church	Minneapolis	NB	43	25	57	75	--
	United Deliverance Temple Inc	Minneapolis	NB	259	15	34	75	--
	Sanctuary Covenant Church	Minneapolis	SB	16	30	76	75	Impact
Two Stations	Liberty Community Church	Minneapolis	NB	43	30	57	75	--
	United Deliverance Temple Inc	Minneapolis	NB	259	20	35	75	--
	Sanctuary Covenant Church	Minneapolis	SB	16	20	75	75	--
	Faith Tabernacle Gospel Fellowship International	Minneapolis	SB	14	40	67	75	--



Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Impact
	Metro Schools College Prep	Minneapolis	SB	166	25	54	75	--
	Minnesota International Middle Charter School	Minneapolis	NB	99	30	55	75	--

Source: CSA, 2023

Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

*This level represents the non-special use spaces in the Capri Theater.

- **Sanctuary Covenant Church:** Sanctuary Covenant Church is predicted to have a vibration impact with the one station design option along 21st Street. This impact is due to the speed of the LRV and proximity of the track. This impact is only for the one station design option.

The location of the vibration impacts for the City of Minneapolis along the 21st Ave N and East of I-94 alignment options are shown in figures below for the one station and two station design options, respectively.



Figure E-8 Project Vibration Impacts in the City of Minneapolis along the 21st Ave N and East of I-94 One Station Option

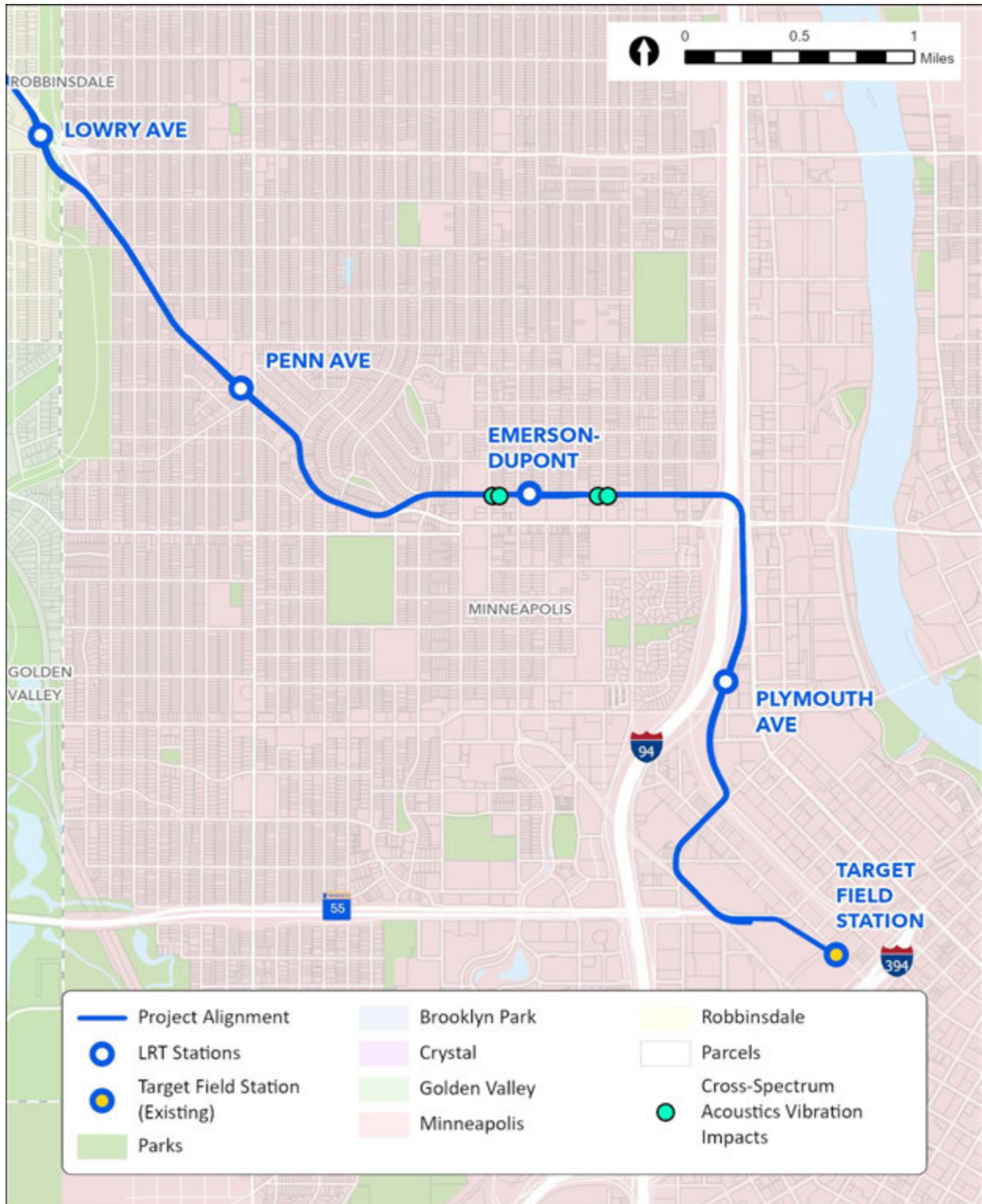
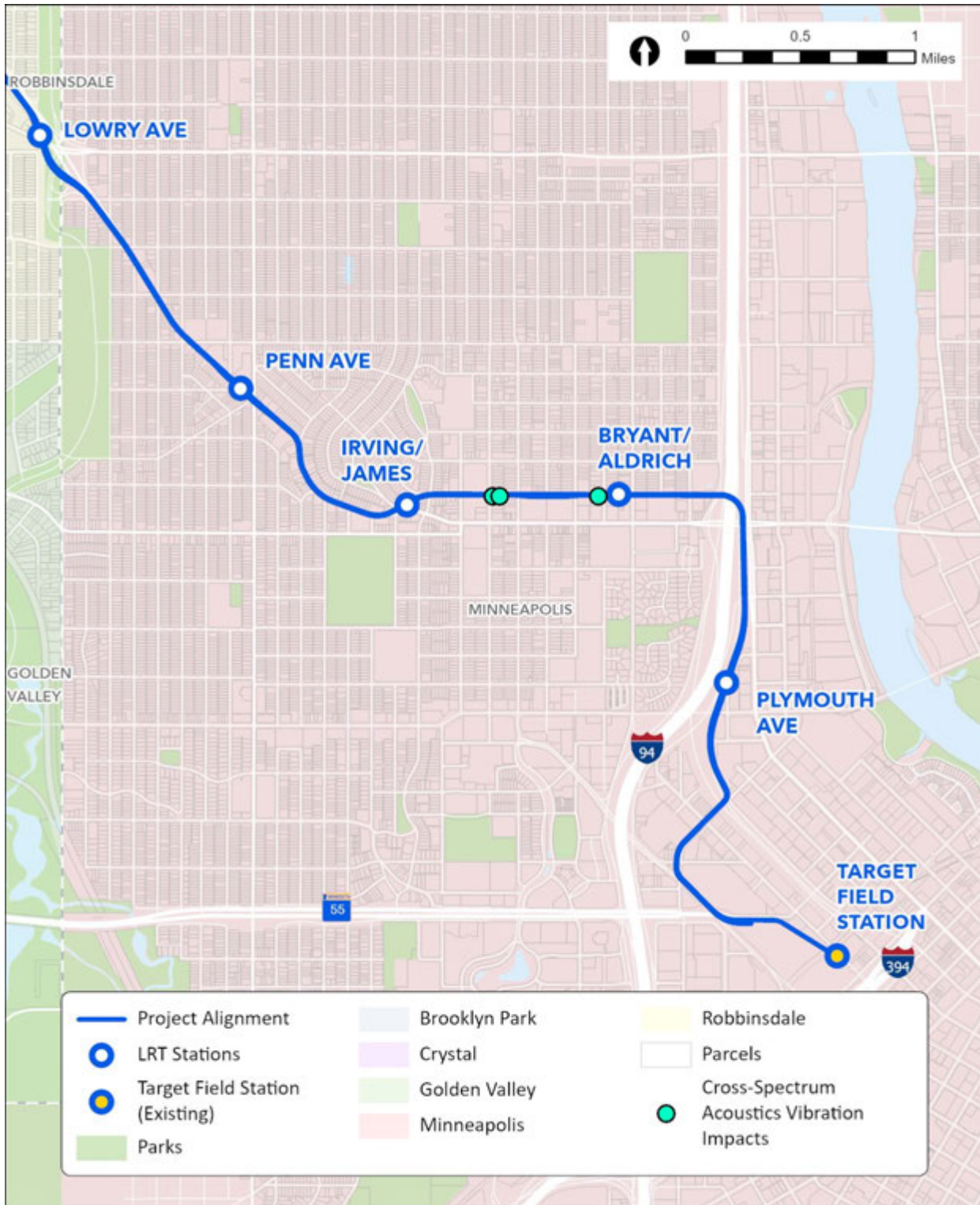




Figure E-9 Project Vibration Impacts in the City of Minneapolis along the 21st Ave N and East of I-94 Two Stations Option



**Table F-4 Summary of Vibration Impacts for Residential Land Use in the City of Minneapolis (21st Ave N to Lyndale Ave)**

Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Number of Impacts
	N 26th Ave to N Lowry Ave	Minneapolis	NB	43	45	60	72	0
	N 26th Ave to N Lowry Ave	Minneapolis	SB	54	45	66	72	0
	N Knox Ave to N 26th Ave	Minneapolis	NB	41	20	60	72	0
	N Knox Ave to N 26th Ave	Minneapolis	SB	36	20	62	72	0
One Station	N Emerson Ave to N Knox Ave	Minneapolis	NB	48	35	57	72	0
	N Emerson Ave to N Knox Ave	Minneapolis	SB	18	30	74	72	2
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	34	30	61	72	0
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	18	30	74	72	18
Two Stations	N Emerson Ave to N Knox Ave	Minneapolis	NB	48	30	56	72	0
	N Emerson Ave to N Knox Ave	Minneapolis	SB	18	30	74	72	2
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	55	25	54	72	0
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	17	20	73	72	18
	Plymouth Ave N to N 18th Ave	Minneapolis	NB	71	35	70	72	0
	Plymouth Ave N to N 18th Ave	Minneapolis	SB	63	55	62	72	0



Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Number of Impacts
	N 8th Ave to Plymouth Ave N	Minneapolis	NB	*	*	*	*	*
	N 8th Ave to Plymouth Ave N	Minneapolis	SB	127	15	51	72	0
	Target Field Station to N 8th Ave	Minneapolis	NB	284	25	43	72	0
	Target Field Station to N 8th Ave	Minneapolis	SB	*	*	*	*	*

Source: CSA, 2023

Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

*There are no vibration sensitive receivers at this location.

- **N Emerson Ave to N Knox Ave (SB):** There are two single-family residences along the southbound side of the Project Alignment between N Emerson Ave and N Knox Ave predicted to have a vibration impact. These impacts are due to the proximity of the tracks. These impacts are the same for both design options.
- **Lyndale Ave to N Emerson Ave (SB):** There are 18 multi-family residences, representing one building, along the southbound side of the Project Alignment between Lyndale Ave and N Emerson Ave predicted to have a vibration impact. These impacts are due to the proximity of the tracks. These impacts are the same for both design options.

Table F-5 Summary of Vibration Impacts for Institutional Land Use in the City of Minneapolis (21st Ave N to Lyndale Ave)

Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Impact
	Parkway United Church of Christ	Minneapolis	NB	338	25	27	75	--
	Good News Minneapolis Church	Minneapolis	NB	139	25	35	75	--
	True Vine Missionary Baptist Church	Minneapolis	SB	111	45	52	75	--



Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Impact
	KIPP Legacy	Minneapolis	NB	200	35	42	75	--
	St Anne-St Joseph Hien Church	Minneapolis	NB	323	35	39	75	--
	All Nations Seventh-day Adventist Church	Minneapolis	SB	182	20	40	75	--
	PYC Arts & Technology Alternative High School	Minneapolis	SB	53	20	54	75	--
	Capri Theater*	Minneapolis	SB	40	20	60	75	--
	Star Child Development Center llc	Minneapolis	SB	40	20	59	75	--
	Real Believers Faith Center Church	Minneapolis	SB	233	30	38	75	--
One Station	Liberty Community Church	Minneapolis	NB	43	25	57	75	--
	United Deliverance Temple Inc	Minneapolis	NB	259	15	34	75	--
	Sanctuary Covenant Church	Minneapolis	SB	16	30	76	75	Impact
Two Stations	Liberty Community Church	Minneapolis	NB	43	30	57	75	--
	United Deliverance Temple Inc	Minneapolis	NB	259	20	35	75	--
	Sanctuary Covenant Church	Minneapolis	SB	16	20	75	75	--
	Masjid An-Nur	Minneapolis	SB	30	40	71	75	--
	United Faith Pentecostal Church	Minneapolis	SB	50	10	63	75	--
	Metro Schools College Prep	Minneapolis	SB	166	35	56	75	--

Source: CSA, 2023

Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

*This level represents the non-special use spaces in the Capri Theater.



- **Sanctuary Covenant Church:** Sanctuary Covenant Church is predicted to have a vibration impact with the one station design option along 21st Street. This impact is due to the speed of the LRV and proximity of the tracks. This impact is only for the one station design option.

The location of the vibration impacts for the City of Minneapolis along the 21st Ave N and Lyndale Ave alignment option are shown in figures below for one station and two station design options, respectively.

Figure E-10 Project Vibration Impacts in the City of Minneapolis along the 21st Ave N and Lyndale Ave One Station Option

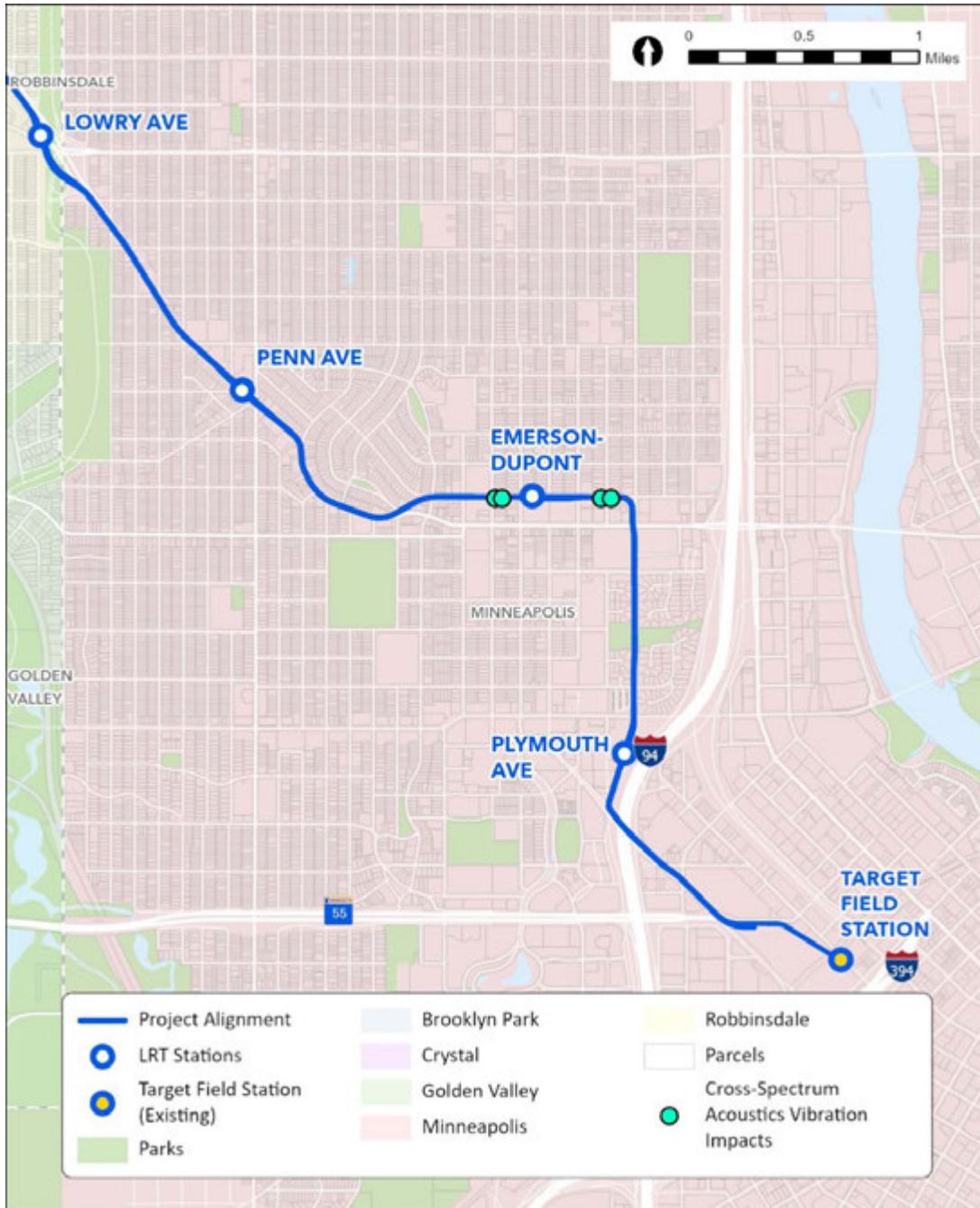
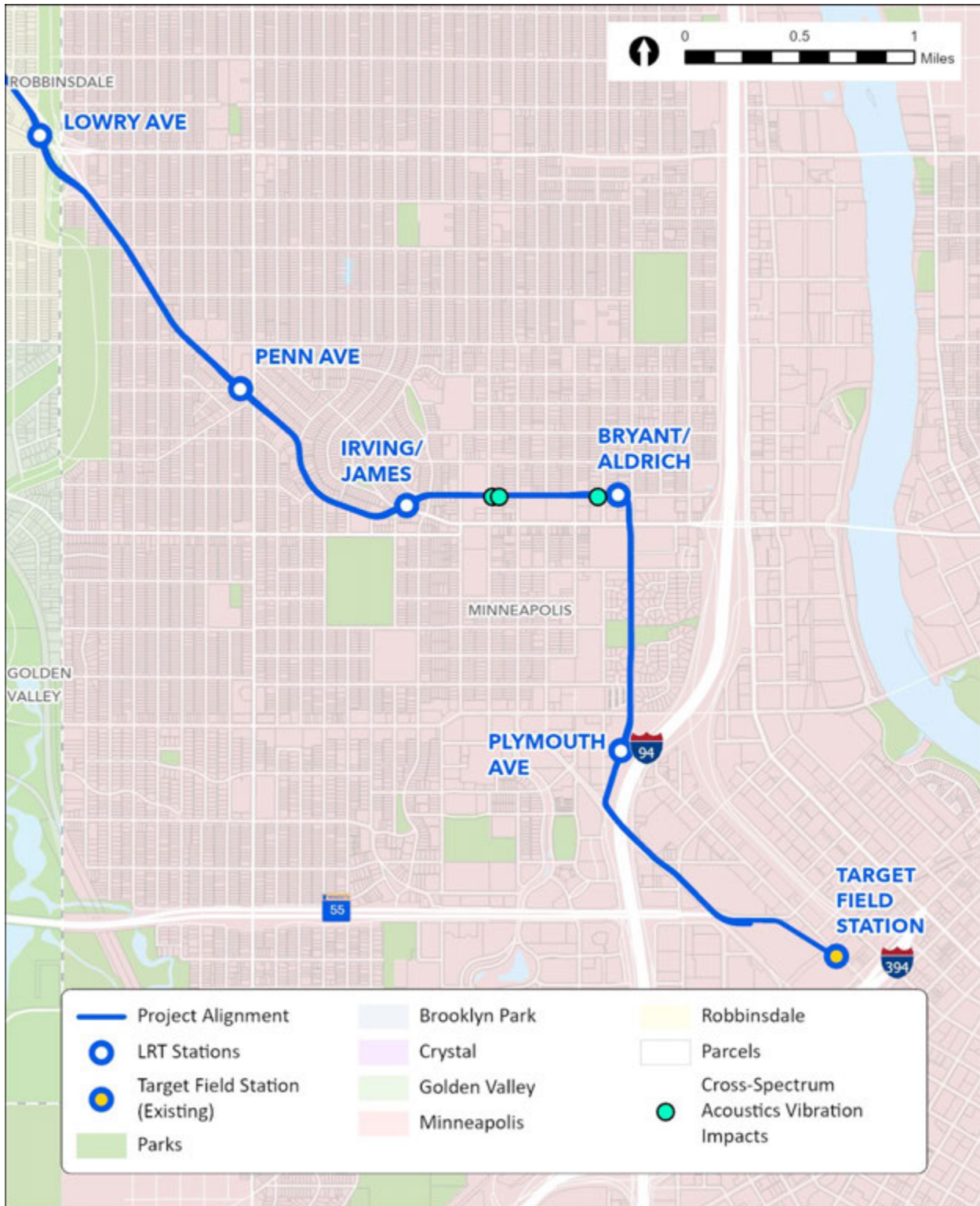




Figure E-11 Project Vibration Impacts in the City of Minneapolis along the 21st Ave N and Lyndale Ave Two Stations Option



**Table F-6 Summary of Vibration Impacts for Residential Land Use in the City of Minneapolis (W Broadway Ave to East of I-94)**

Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Number of Impacts
	N 26th Ave to N Lowry Ave	Minneapolis	NB	43	45	60	72	0
	N 26th Ave to N Lowry Ave	Minneapolis	SB	54	45	66	72	0
	N Knox Ave to N 26th Ave	Minneapolis	NB	41	20	60	72	0
	N Knox Ave to N 26th Ave	Minneapolis	SB	36	20	62	72	0
One Station	N Emerson Ave to N Knox Ave	Minneapolis	NB	157	23	38	72	0
	N Emerson Ave to N Knox Ave	Minneapolis	SB	128	27	40	72	0
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	*	*	*	*	*
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	215	20	36	72	0
Two Stations	N Emerson Ave to N Knox Ave	Minneapolis	NB	131	20	39	72	0
	N Emerson Ave to N Knox Ave	Minneapolis	SB	99	23	43	72	0
	Lyndale Ave to N Emerson Ave	Minneapolis	NB	*	*	*	*	*
	Lyndale Ave to N Emerson Ave	Minneapolis	SB	215	20	36	72	0
	Plymouth Ave N to N 18th Ave	Minneapolis	NB	89	50	59	72	0
	Plymouth Ave N to N 18th Ave	Minneapolis	SB	63	50	62	72	0



Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Number of Impacts
	N 8th Ave to Plymouth Ave N	Minneapolis	NB	*	*	*	*	*
	N 8th Ave to Plymouth Ave N	Minneapolis	SB	127	10	51	72	0
	Target Field Station to N 8th Ave	Minneapolis	NB	284	25	43	72	0
	Target Field Station to N 8th Ave	Minneapolis	SB	*	*	*	*	*

Source: CSA, 2023

Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

*There are no vibration sensitive receivers at this location.

Table F-7 Summary of Vibration Impacts for Institutional Land Use in the City of Minneapolis (W Broadway Ave to East of I-94)

Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Impacts
	Parkway United Church of Christ	Minneapolis	NB	338	25	27	75	--
	Good News Minneapolis Church	Minneapolis	NB	139	25	35	75	--
	True Vine Missionary Baptist Church	Minneapolis	SB	111	45	52	75	--
	KIPP Legacy	Minneapolis	NB	200	35	42	75	--
	St Anne-St Joseph Hien Church	Minneapolis	NB	323	35	39	75	--
	All Nations Seventh-day Adventist Church	Minneapolis	SB	182	20	40	75	--



Option	Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Impacts
	PYC Arts & Technology Alternative High School	Minneapolis	SB	53	20	54	75	--
	Capri Theater*	Minneapolis	SB	40	20	60	75	--
	Star Child Development Center Ilc	Minneapolis	SB	40	20	59	75	--
	St. Andrews Episcopal Church	Minneapolis	SB	326	23	34	75	--
One Station	Shiloh Temple International Ministries	Minneapolis	SB	53	30	54	75	--
	Real Believers Faith Center Church	Minneapolis	NB	129	26	40	75	--
Two Stations	Shiloh Temple International Ministries	Minneapolis	SB	44	30	57	75	--
	Real Believers Faith Center Church	Minneapolis	NB	138	26	39	75	--
	Episcopal Church in Minnesota	Minneapolis	SB	48	20	56	75	--
	Full Proof Ministry COGIC	Minneapolis	SB	343	20	33	75	--
	Sanctuary Covenant Church	Minneapolis	NB	197	30	38	75	--
	Masjid An-Nur	Minneapolis	SB	34	50	70	75	--
	United Faith Pentecostal Church	Minneapolis	SB	50	20	63	75	--
	Metro Schools College Prep	Minneapolis	SB	166	25	54	75	--

Source: CSA, 2023

Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

*This level represents the non-special use spaces in the Capri Theater.

**Table F-8 Summary of Vibration Impacts for Residential Land Use in the City of Minneapolis (21st Ave N to East of I-94)**

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Number of Impacts
N 26th Ave to N Lowry Ave	Minneapolis	NB	43	45	60	72	0
N 26th Ave to N Lowry Ave	Minneapolis	SB	54	45	66	72	0
N Knox Ave to N 26th Ave	Minneapolis	NB	41	20	60	72	0
N Knox Ave to N 26th Ave	Minneapolis	SB	36	20	62	72	0
N Emerson Ave to N Knox Ave	Minneapolis	NB	34	15	61	72	0
N Emerson Ave to N Knox Ave	Minneapolis	SB	21	35	71	72	0
Lyndale Ave to N Emerson Ave	Minneapolis	NB	33	35	63	72	0
Lyndale Ave to N Emerson Ave	Minneapolis	SB	18	15	73	72	18
I-94 to Lyndale Ave	Minneapolis	NB	51	25	54	72	0
I-94 to Lyndale Ave	Minneapolis	SB	*	*	*	*	*
N 8th Ave to Plymouth Ave N	Minneapolis	NB	29	40	71	72	0
N 8th Ave to Plymouth Ave N	Minneapolis	SB	26	40	73	72	10
Target Field Station to N 8th Ave	Minneapolis	NB	50	15	63	72	0
Target Field Station to N 8th Ave	Minneapolis	SB	*	*	*	*	*

Source: CSA, 2023

Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

*There are no vibration sensitive receivers at this location.



- **Lyndale Ave to N Emerson Ave (SB):** There are 18 multi-family residences, representing one building, along the southbound side of the Project Alignment between Lyndale Ave and N Emerson Ave predicted to have a vibration impact. These impacts are due to the proximity of the tracks.
- **N 8th Ave to Plymouth Ave (SB):** There are 10 multi-family residences, representing one building, along the southbound side of the Project Alignment between N 8th Ave and Plymouth Ave predicted to have a vibration impact. These impacts are due to the proximity of the tracks.

Table F-9 Summary of Vibration Impacts for Institutional Land Use in the City of Minneapolis (21st Ave N to East of I-94)

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Impact
Parkway United Church of Christ	Minneapolis	NB	338	25	27	75	--
Good News Minneapolis Church	Minneapolis	NB	139	25	35	75	--
True Vine Missionary Baptist Church	Minneapolis	SB	111	45	52	75	--
KIPP Legacy	Minneapolis	NB	200	35	42	75	--
St Anne-St Joseph Hien Church	Minneapolis	NB	323	35	39	75	--
All Nations Seventh-day Adventist Church	Minneapolis	SB	182	20	40	75	--
PYC Arts & Technology Alternative High School	Minneapolis	SB	53	20	54	75	--
Capri Theater*	Minneapolis	SB	40	20	60	75	--
Star Child Development Center llc	Minneapolis	SB	40	20	59	75	--
Real Believers Faith Center Church	Minneapolis	SB	236	15	33	75	--
Liberty Community Church	Minneapolis	NB	41	35	60	75	--
United Deliverance Temple Inc	Minneapolis	NB	250	15	35	75	--
Sanctuary Covenant Church	Minneapolis	SB	16	15	74	75	--
Faith Tabernacle Gospel Fellowship International	Minneapolis	SB	17	25	74	75	--



Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Max Project Vibration Level (VdB)	FTA Vibration Criteria (VdB)	Impact
Metro Schools College Prep	Minneapolis	SB	166	10	50	75	--
Minnesota International Middle Charter School	Minneapolis	NB	358	40	56	75	--
Lundstrum Performing Arts	Minneapolis	NB	279	40	56	75	--

Source: CSA, 2023

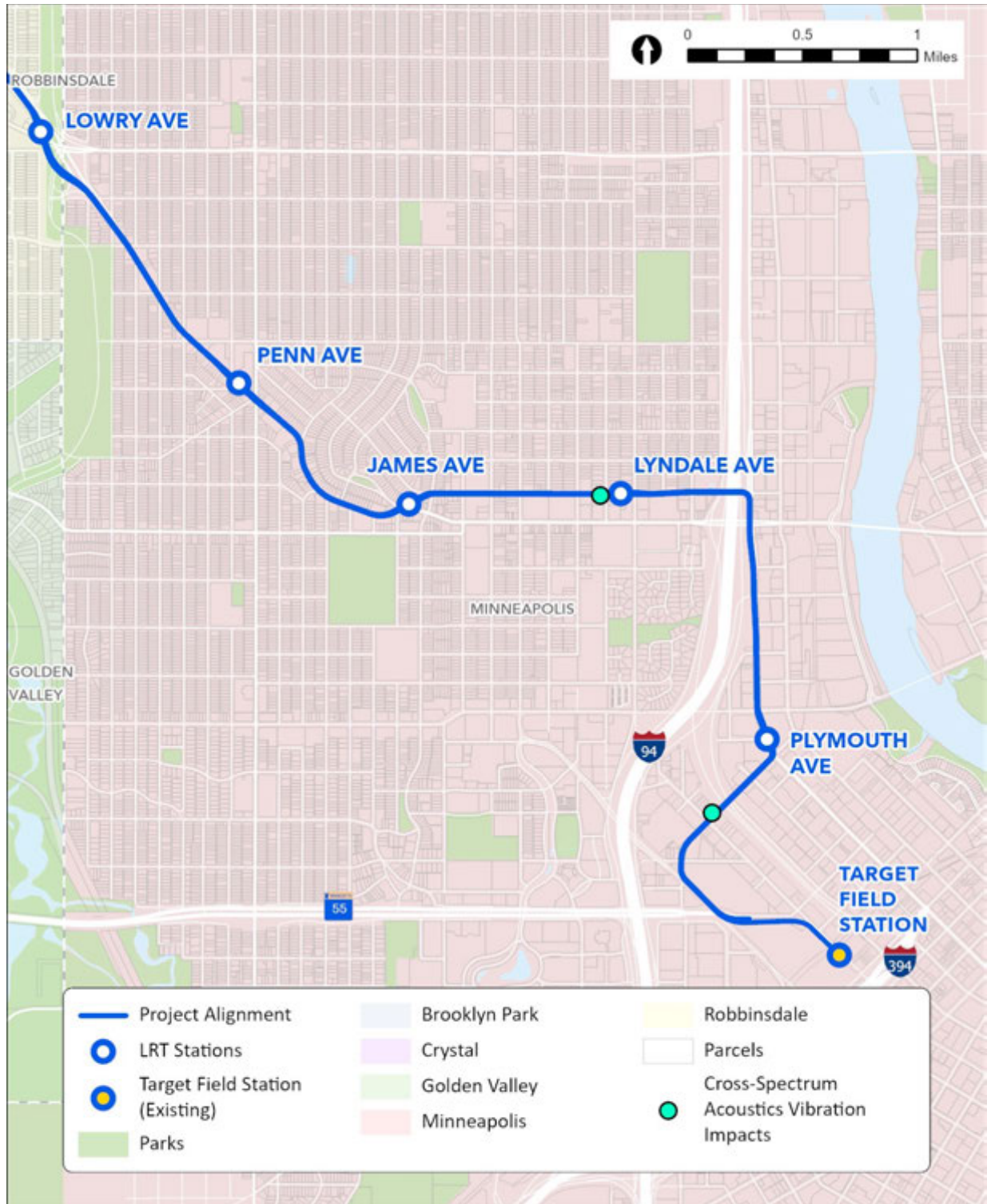
Note: The vibration levels shown for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower.

*This level represents the non-special use spaces in the Capri Theater.

The location of the vibration impacts for the City of Minneapolis along the 21st Ave N and East of I-94 to Washington Ave alignment options are shown below.



Figure E-12 Project Vibration Impacts in the City of Minneapolis along the 21st Ave N and Washington Ave Option



Member _____ moved and Member _____ seconded a motion that the following resolution be read and adopted this 1st day of October 2024.

RESOLUTION NO. _____

A RESOLUTION PROVIDING MUNICIPAL CONSENT FOR THE BLUE LINE LIGHT RAIL EXTENSION

WHEREAS, pursuant to Minnesota Statutes Section 473.3994, the City of Robbinsdale (the City) has the opportunity to review Preliminary (30% engineered) Physical Design Plans (the Plans) for the Blue Line Light Rail Extension Project (the Project), and is required to hold a public hearing regarding those Plans; and

WHEREAS, following the City's review and the public hearing, the City is required to approve or disapprove the Plans, also known as Municipal Consent; and

WHEREAS, the City held the public hearing on September 3, 2024, where members of the community provided input regarding the Plans; and

WHEREAS, in addition to the public hearing, the City has gathered public input through public meetings, email, an online survey, and an Open House on August 21, 2024, and has continued to communicate questions, comments, and concerns with elected officials and staff from the Metropolitan Council (Met Council) and Hennepin County; and

WHEREAS, based on the City's review and public input, the City identified several significant design issues related to safety concerns for pedestrians and vehicles in the corridor and in the area of the parking structure; traffic management and redirection; station design; and financial concerns; and

WHEREAS, discussions among the Project, the City, and Hennepin County have resulted in certain commitments from the Project or Hennepin County, as applicable; and

WHEREAS, the City Council finds these commitments to be sufficient for the Project to develop into the next phase of design work and that the appropriate Municipal Consent action would be approval based on these commitments; and

WHEREAS, the City Council is generally supportive of the METRO Blue Line Extension Project.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Robbinsdale, Minnesota, elects to APPROVE the Plans in accordance with Minnesota Statutes Section 473.3994; and

BE IT FURTHER RESOLVED that the City Council approval of the Plans is based on the following commitments made by the Project or Hennepin County, as follows:

1. Overall Project Commitments: The Project has committed to resolving specific design issues, enumerated below, and as described in the September 25, 2024 letter from Interim Project Director Nick Thompson, attached to this Resolution as **EXHIBIT A**.
 - a. The Blue Line Extension Project commits to amending project design plans to significantly enhance intersection design with robust pedestrian safety measures at the intersections of West Broadway Avenue and 40th, 41st, and 42nd avenues. The

Projects also commit to relocating the Downtown Robbinsdale Station from its currently proposed location south of 40th Avenue to a new location north of 40th Avenue. These commitments will be reflected in 60% design plans. The pedestrian safety measures include:

- Designing roadway for reduced speed of County Road 81 through Downtown Robbinsdale. Recent studies show roadway speed is the main factor in pedestrian safety.
- Protective pedestrian bollards and concrete curbs in the middle of the roadway at 40th, 41st, 42nd avenues provide a physical barrier between vehicles and pedestrians crossing County Road 81.
- Fencing between light rail tracks deters dangerous mid-block crossings.
- Enhancing traffic signals with visual and auditory crossing countdown timers.
- Pedestrian signal timing will allow for adequate 'walk' and flashing 'don't walk' time for pedestrians to safely cross the entire width of County Road 81 in one cycle.
- Wider 12-foot wide, hi-visibility crosswalks to more clearly delineate pedestrian space and alert drivers to the potential presence of pedestrians.
- Enhanced pedestrian lighting levels.
- Narrow lane widths reduce the amount of time pedestrians are exposed to oncoming vehicle traffic while crossing by and adding protective pedestrian refuge spaces at either end of the station.
- Removal of 5 right turn lanes through Downtown Robbinsdale reduces vehicle-pedestrian conflict points.
- Enhancing pedestrian signage to alert turning vehicles to pedestrian presence.

- b. Relocation of the Downtown Robbinsdale Station North of 40th Avenue, for the following reasons:
 - i. Improved connections and access
 - ii. Reduced impacts to residential areas south of 40th
 - iii. Greater Opportunities for Redevelopment and Tax Base Growth
- c. The Blue Line Extension Project commits that the Downtown Robbinsdale park-and-ride and transit center building will include no more than 290 public parking spaces. The Project further commits that all bus traffic ingress and egress will be restricted to West Broadway, and all car ingress and egress will be restricted to Bottineau Boulevard. The Project also commits to inclusion of a Metro Transit Police substation within the park-and-ride. These commitments will be reflected in 60% design plans.
- d. The project will address concerns from North Memorial Hospital through the federal environmental review process, with specific binding mitigation measures to be included in the Supplemental Final Environmental Impact Statement.

- e. The Blue Line Extension Project commits to designing and constructing station platforms to be able to accommodate the potential future addition of turnstiles or other barricade designs at a later date. These designs will be developed in collaboration with the city through the station design process in 2025.
- 2. The Blue Line Extension Project has committed to funding a city staff position to serve as a project liaison during the pendency of the Project.
- 3. The Blue Line Extension Project will support conversations between the City and Hennepin County regarding the reconstruction of West Broadway outside the BLE project, as appropriate and helpful. The City welcomes Hennepin County's commitments to evaluate West Broadway for longer-term reconstruction consideration
- 4. Other Project Commitments outside of the Preliminary Design Review as follows:
 - a. Funding, resources and commitments to anti-displacement that are incorporated within the scope of the Blue Line Extension Project itself will be distributed equitably between cities according to the specific needs and impacts to residents and businesses within each city. The Project's specific anti-displacement commitments will be determined through the federal environmental process and published in the Supplemental Draft Environmental Impact Statement in mid-2025.
 - b. The Blue Line Extension Project will work to develop an MOU specifically related to the Downtown Robbinsdale Park-and-Ride. The Project previously committed to and is incorporating a Metro Transit Police substation in design plans for the Park-and-Ride and Transit Center in Downtown Robbinsdale. Transit police are most effective when they are actively patrolling station platforms and riding light rail vehicles. The Project will continue to develop specific agreements and share staffing details for the Robbinsdale Park-and-Ride and Transit Center as the project advances and as Metro Transit continues to implement its Safety and Security Action Plan that was previously shared with the City.
 - c. The Blue Line Extension Project will share future outreach, engagement, and communications plans as requested by the City of Robbinsdale as they are developed. The Project is committed to providing robust and inclusive outreach and communications to ensure all stakeholders are well informed regarding activity and impacts of the project leading up to and during construction. The Project will work with the City to continue to develop and refine current outreach and communications efforts as the project advances.
 - d. The Blue Line Extension Project will develop, in partnership with local emergency response departments, a Safety and Security Management Plan before revenue service begins. This document will detail strategies for organizing, controlling, and

influencing safety and security throughout the design, construction, procurement, testing, activation and acceptance of the Blue Line Extension. It will outline specific requirements to certify the Blue Line extension is safe and secure and will describe how these requirements will be implemented and overseen, as well as the management structure.

- e. Maintenance agreements will be developed with the City of Robbinsdale, Hennepin County, and Metro Transit before revenue service begins. These agreement swill cover a wide variety of maintenance issues, including snow removal and management, landscape maintenance, traffic control devices operations and maintenance, pedestrian and bicycle facilities maintenance and other roadway elements. The project will jointly work with the county to amend existing maintenance agreements, and develop a new agreement for maintenance of transit facilities.
- f. The Project commits to a no-net-loss in vegetation near the Project, that all lighting installed will use LEDs and meet Dark Sky compliance. The Project will also follow all city and county ordinances and relevant plans related to practices that promote sustainability. Specific landscaping and lighting plans will be developed collaboratively with the City of Robbinsdale through Design Resolution Team meetings.
- g. The Blue Line Extension Project is committed to continued study to address noise impacts during construction and during LRT operations, following guidance from the Federal Transit Administration regarding construction and operation noise. The National Environmental Protection Act requires the Project to evaluate and identify mitigation of noise and vibration impacts where required. The Project cannot commit to any measures beyond or “regardless” of findings of the environmental impact statement before the Supplemental Final Environmental Impact Statement is published, which is expected to be mid-2025. If after this document outlining specific commitments to address noise impacts is published, the City of Robbinsdale feels there remain unaddressed impacts, the Project will work with the City to document those impacts and determine appropriate action, including options for mitigation.
- h. The Blue Line Extension Project commits to reconstructing the 40th Avenue roadway from County Road 81 to Hubbard Avenue North.
- i. The Blue Line Extension Project commits to cover all costs associated with required public utility impacts and necessary improvements related to construction and operations of the Blue Line extension.

BE IT FURTHER RESOLVED that this resolution of approval is limited to the specific provisions of Minnesota Statutes Section 473.3994 and does limit or preclude the City from taking other actions within

its authority to ensure that the Project is built, operated, and maintained in a manner that enhances the quality of life for residents and businesses within the City of Robbinsdale.

PASSED AND ADOPTED BY THE CITY COUNCIL THIS 1ST DAY OF OCTOBER 2024.

William A. Blonigan, Mayor

ATTEST:

Chase Peterson-Etem, City Clerk

DRAFT

Member _____ moved and Member _____ seconded a motion that the following resolution be read and adopted this 17th day of September 2024.

RESOLUTION NO. _____

A RESOLUTION DENYING MUNICIPAL CONSENT FOR THE BLUE LINE LIGHT RAIL EXTENSION

WHEREAS, pursuant to Minnesota Statutes Section 473.3994, the City of Robbinsdale (the City) has the opportunity to review Preliminary (30% engineered) Physical Design Plans for the Blue Line Light Rail Extension project (the Plans), and is required to hold a public hearing regarding those Plans; and

WHEREAS, following the City's review and the public hearing, the City is required to approve or disapprove the Plans, also known as Municipal Consent; and

WHEREAS, if the City disapproves of the Plans and denies Municipal Consent, the City must describe specific amendments to the Plans that, if adopted, would cause the local unit to withdraw its disapproval; and

WHEREAS, the City held the public hearing on September 3, 2024, where members of the community provided input regarding the Plans; and

WHEREAS, in addition to the public hearing, the City has gathered public input through public meetings, email, an online survey, and an Open House on August 21, 2024, and has continued to communicate questions, comments, and concerns with elected officials and staff from the Metropolitan Council (Met Council) and Hennepin County; and

WHEREAS, based on the City's review and public input, the City identified several significant design issues related to safety concerns for pedestrians and vehicles in the corridor and in the area of the parking structure; traffic management and redirection; station design; and financial concerns; and

WHEREAS, the City has identified specific modifications to the Plans to address the identified design issues; and

WHEREAS, in addition to the design issues, the City has identified other significant priorities not directly related to the Plans, which will require resolution as the project goes forward.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Robbinsdale, Minnesota, as follows:

1. The City Council disapproves the Plans and denies Municipal Consent to the Blue Line Light Rail Extension pursuant to Minnesota Statutes Section 473.3994.
2. The City Council would consider withdrawing this disapproval if the Plans are amended as follows:
 - a. To address concerns related to east/west travel for pedestrians and vehicle traffic, on at least 42nd Avenue North and 41st Avenue North on Highway 81 (Bottineau

Boulevard), the Plans should be amended to include an elevated structure, or significantly enhanced intersection design with pedestrian safety protocols. If the elevated structure is not included in the Plans, the Plans should be modified to relocate the station currently proposed in the location south of 40th Avenue to a new location north of 40th Avenue.

- b. To address concerns related to the parking structure proposed at the northwest corner of Highway 81 and 40th Avenue North regarding the size of the structure, public safety concerns in the vicinity of the structure, and redirection of vehicle and bus traffic to adjacent residential streets, the Plans should be amended to:
 - i. right-size the structure for the projected ridership so that it is not too large and therefore partially unused;
 - ii. direct all ingress and egress of vehicle and bus access into and out of the structure so as to limit vehicle and bus traffic on adjacent residential streets.
 - c. To address concerns related to the Project's impact of access to and from North Memorial Hospital, which could result in delays to emergency care of patients brought by public safety personnel as well as the 20,000 individuals who arrive in private vehicles annually; and related to concerns about protecting safety and accessibility in the vicinity of the Lowry Avenue Station; and related to the Project's impact on Air Care Operations, the Plans should be amended to:
 - i. indicate traffic control measures to mitigate issues of interaction of emergency vehicles, private vehicles, and Air Care Operations;
 - ii. indicate modifications to the station area and platform to increase public safety and accessibility to and from North Memorial Hospital.
 - d. To address concerns related to the diversion of significant amounts of traffic onto West Broadway, which will increase risks to pedestrian and bicycle traffic and will accelerate the deterioration of the condition of West Broadway, the Plans should be amended to include a full reconstruct (under direction of the Robbinsdale City Engineer) of West Broadway, north of 42nd Avenue North.
 - e. To address concerns related to public safety at the LRT Station areas, the Plans should be amended to include the installation of turnstiles and/or other ticketing mechanisms at all station platforms.
3. To address additional concerns identified by the City, the seeks continue work by the City, Met Council, and Hennepin County regarding the following:
- a. Dedication of direct resources to the City for Anti-Displacement requirements to serve residents and businesses in the immediate corridor and walkshed of the Project.

Such Anti-Displacement resources should reflect the City's proportionate share of the Project and should be allocated fairly among cities within the Project route.

- b. Provision by the Met Council to the City of rider data that was used to determine the number of parking stalls to be built in the parking structure.
- c. A Memorandum of Understanding (MOU) addressing Public Safety in and near the parking garage, and on and near the train(s) and station platforms. Such MOU shall include a commitment to roles and responsibilities of the Metro Transit Police Department. Such Public Safety MOU also shall include a provision that memorializes verbal representation from Project staff to the City committing to the establishment of a substation of the Metro Transit Police Department at the parking garage.
- d. An MOU outlining measures to be taken by the Met Council for ongoing communications with the City of Robbinsdale, including residents, owners, businesses, and workers in the immediate corridor, regarding all activity and impacts of the project during construction through the commencement of operations and revenue service of the Line.
- e. An MOU outlining how Public Safety officials, including but not limited to Robbinsdale Police Department and Robbinsdale Fire Department, will receive appropriate training and equipment for calls unique to a Light Rail system.
- f. A three-party MOU between the City, Met Council, and Hennepin County to address maintenance issues, including snow plowing/storage/removal.
- g. A three-party MOU between the City, Met Council, and Hennepin County, or a detailed landscaping plan regarding vegetation and lighting throughout the corridor. Such MOU or landscaping plan must commit Met Council and Hennepin County to practices that promote sustainability, including a no-net-loss (with a preference for increase) in vegetation near the Project, all lighting installed use LEDs, and consideration of Dark Sky Compliance where appropriate.
- h. An MOU committing to continued work to address increased intermittent noise, including options for mitigation, regardless of the findings of the SEIS.
- i. Project reimbursement to the City for the City's share of the cost for all right-of-way acquisition that was a part of the Highway 81 reconstruction in 2005-2008.
- j. Project reimbursement to the City in the form of a Payment in Lieu of Taxes (PILT) that will result from the loss of taxable property due to the parking structure being built on the northwest corner of 40th Avenue North and Highway 81, in the amount of a same or similar project along the corridor. This loss of property tax revenue

would also be offset by the Project including the reconstruction of 40th Avenue North from Highway 81 to Hubbard Avenue North.

- k. The Met Council and Hennepin County agree to cover all costs for any required enhancement of existing and new utilities that have enhancement required due to the Project.

The question was on the adoption of the resolution and upon a vote being taken thereon, the following voted in favor thereof:

And the following voted against the same:

PASSED AND ADOPTED BY THE CITY COUNCIL THIS 17th DAY OF SEPTEMBER 2024.

William A. Blonigan, Mayor

ATTEST:

Chase Peterson-Etem, City Clerk