



3 Transportation Analysis

This chapter presents results from the analysis of impacts on the transportation system in the proposed BLRT Extension project study area. Results are presented for the No-Build Alternative and the proposed METRO Blue Line Light Rail Transit (BLRT) Extension project. Operating-phase (long-term) and construction-phase (short-term) impacts are identified for each of the alternatives. The No-Build Alternative and the proposed BLRT Extension project are described and illustrated in **Chapter 2 – Alternatives**.

Changes to This Chapter since the Draft Environmental Impact Statement Was Published

This chapter updates the discussion in the *Bottineau Transitway Draft Environmental Impact Statement* (Draft EIS) (March 2014) on the transportation system effects associated with the No-Build Alternative and the proposed BLRT Extension project. The future year of analysis or the planning horizon year has been updated from 2030 to 2040, which is the current horizon year for the region's long-range transportation plan.

This chapter identifies and evaluates the effects of the No-Build Alternative and the proposed BLRT Extension project on six parts of the transportation system: transit conditions, freight rail conditions, vehicular traffic, pedestrians and bicycles, parking, and aviation.

- **Section 3.1** – Transit is analyzed for the proposed BLRT Extension project in relation to the regional transportation system as defined in the Metropolitan Council (Council) travel demand model.
- **Section 3.2** – Freight rail is analyzed within the affected BNSF Railway (BNSF) and Canadian Pacific Railway (CP) rights-of-way.
- **Section 3.3** – Vehicular traffic is analyzed at all intersections along the proposed BLRT Extension project alignment that are signalized, are anticipated to be signalized, or are unsignalized and are anticipated to be controlled by gate arms.
- **Section 3.4** – Pedestrian and bicycle resources are analyzed within ½ mile of the proposed BLRT Extension project alignment and stations.
- **Section 3.5** – Parking is analyzed within the anticipated limits of disturbance (LOD).
- **Section 3.6** – Aviation impacts are analyzed for the areas where the proposed BLRT Extension project LOD are within the Crystal Airport Runway Protection Zone (RPZ) and Safety Zone A.

Table 3.0-1 summarizes the study area considered for each area of analysis in this chapter. Greater detail is provided in each section of this chapter and in the supporting documentation *BLRT Traffic Operations Technical Memorandum* (Council, 2015e) and the *Transportation Technical Report* (Council, 2016).

Table 3.0-2 summarizes the effects of the BLRT Extension project on the transportation system, as well as the Council's minimization and mitigation commitments that are proposed as a part of the BLRT Extension project.



Table 3.0-1. Defined Study Areas for the Transportation Analysis

Resource Evaluated	Study Area Definition	Basis for Study Area
Transit Conditions	Proposed BLRT Extension project in relation to the regional transportation system as defined in the Council travel demand model	Estimated area where changes would occur for the proposed BLRT Extension project based on 15 percent engineering design
Freight Rail Conditions	BNSF and CP rights-of-way	Freight rail infrastructure and operations lie within BNSF and CP rights-of-way
Vehicular Traffic	All signalized intersections, proposed signalized intersections, and crossings controlled by gate arms along the proposed BLRT Extension project alignment	Intersections capture concentrated area of potential impacts and delay
Pedestrians and Bicyclists	Within ½ mile of the proposed BLRT Extension project alignment and stations	Captures bike/walk area around the proposed BLRT Extension project alignment and stations
Parking	Within LOD	Estimated area where construction would occur for the proposed BLRT Extension project based on 15 percent engineering design
Aviation	LOD for the proposed BLRT Extension project that are outside the Crystal Airport property boundaries but within the RPZ and Safety Zone A for Runway 6L	Crystal Airport is the only aviation facility adjacent to the proposed BLRT Extension project; RPZ and Safety Zone are the areas with specific requirements



Table 3.0-2. Summary of Impacts and Mitigation Measures – Transportation Analysis

Category		Summary of Impacts and Mitigations
Transit Conditions (Section 3.1)	Operating-Phase (Long-Term) Direct Impacts	<ul style="list-style-type: none"> ■ The proposed BLRT Extension project would result in 27,000 daily boardings in 2040
	Construction-Phase (Short-Term) Impacts	<ul style="list-style-type: none"> ■ Intermittent impacts to bus operations in construction areas: <ul style="list-style-type: none"> ● Temporary stop relocations or closures ● Route detours ■ Suspensions of service on segments of routes
	Mitigation Measures	<p>Operating-Phase (Long-Term):</p> <ul style="list-style-type: none"> ■ No mitigation is required because no long-term adverse impacts would occur. Route modifications to bus service in order to integrate with the proposed BLRT Extension project will be conducted in accordance with Title VI requirements <p>Construction-Phase (Short-Term):</p> <ul style="list-style-type: none"> ■ Issue construction updates and post them on the BLRT Extension project website ■ Provide advance notice of roadway closures, driveway closures, and utility shutoffs ■ Conduct public meetings ■ Establish a 24-hour construction hotline ■ Prepare materials with information about construction ■ Address property access issues ■ Assign staff to serve as liaisons between the public and contractors during construction ■ Post information at bus stops and regional transit centers indicating temporary stop closures and/or detour details ■ Publish information in advance of bus detours on Metro Transit’s website and in its on-board information brochure
Freight Rail Conditions (Section 3.2)	Operating-Phase (Long-Term) Direct Impacts	<ul style="list-style-type: none"> ■ The proposed BLRT Extension project includes construction of LRT guideway generally in the eastern half of BNSF right-of-way; BNSF track would be relocated about 15 feet to the west
	Construction-Phase (Short-Term) Impacts	<ul style="list-style-type: none"> ■ Potential for temporary rail service impacts
	Mitigation Measures	<p>Operating-Phase (Long-Term):</p> <ul style="list-style-type: none"> ■ No mitigation required for operating-phase (long-term) effects because identified avoidance measures (reconstruction of BNSF rail corridor to current standards including continuously welded rail, provision of a service road, corridor protection measures) will prevent any adverse impacts: ■ Reconstructing BNSF corridor including a service road ■ Continuously welded freight rail track resulting in less noise and vibration impacts associated with freight rail operations <p>Construction-Phase (Short-Term):</p> <ul style="list-style-type: none"> ■ Development and implementation of freight rail operation coordination plans ■ Work with affected freight rail owners/operators to sequence construction to reduce effects on freight traffic ■ Use flaggers to allow freight rail operations to continue



Table 3.0-2. Summary of Impacts and Mitigation Measures – Transportation Analysis

Category		Summary of Impacts and Mitigations
Vehicular Traffic (Section 3.3)	Operating-Phase (Long-Term) Direct Impacts	<ul style="list-style-type: none"> ■ Seven intersections would operate at level of service (LOS) F with the No-Build Alternative, which would be reduced to one intersection with the proposed BLRT Extension project in 2040 ■ Two intersections would operate at LOS E with the No-Build Alternative which would increase to five intersections with the proposed BLRT Extension project in 2040
	Construction-Phase (Short-Term) Impacts	<ul style="list-style-type: none"> ■ The construction phase of the proposed BLRT Extension project is expected to cause disruptions to traffic operations, including lane closures, short-term intersection and roadway closures, and detours that would cause local, short-term increases in congestion
	Mitigation Measures	<p>Operating-Phase (Long-Term):</p> <ul style="list-style-type: none"> ■ No mitigation required for operating-phase (long-term) effects because the identified avoidance measures (roadway and intersection improvements) will prevent adverse impacts resulting from the proposed BLRT Extension project <p>Construction-Phase (Short-Term):</p> <ul style="list-style-type: none"> ■ Mitigation for construction-phase (short-term) effects will include development and implementation of the Construction Mitigation Plan, which includes a Construction Communication Plan and a construction staging plan ■ Contractors will need to comply with the requirements of MnDOT, Hennepin County, and all municipalities affected by construction activities related to the closing of roads ■ Contractors will be required to comply with all guidelines in the Minnesota Manual on Uniform Traffic Control Devices and will develop appropriate traffic control plans
Pedestrians and Bicyclists (Section 3.4)	Operating-Phase (Long-Term) Direct Impacts	<ul style="list-style-type: none"> ■ No adverse impacts identified
	Construction-Phase (Short-Term) Impacts	<ul style="list-style-type: none"> ■ Temporary closures or detours during construction of the proposed BLRT Extension project would affect existing bicycle and pedestrian facilities
	Mitigation Measures	<p>Operating-Phase (Long-Term):</p> <ul style="list-style-type: none"> ■ Provision of pedestrian and bicycle improvements as part of the proposed BLRT Extension project elements, including: <ul style="list-style-type: none"> ● Improved, signalized at-grade pedestrian crossings along Olson Memorial Highway ● Improved pedestrian and bicycle connections and elevators at Plymouth Avenue and Golden Valley Road stations ● Improved pedestrian crossings of the proposed BLRT Extension project/freight rail corridor at existing roadway crossings ● Improved pedestrian crossings of Bottineau Boulevard (County Road 81) at Bass Lake Road and 63rd Avenue ● Improved pedestrian and bicycle facilities on West Broadway Avenue ● New pedestrian and bicycle facilities north of Trunk Highway (TH) 610

Table 3.0-2. Summary of Impacts and Mitigation Measures – Transportation Analysis

Category		Summary of Impacts and Mitigations
		<p>Construction-Phase (Short-Term):</p> <ul style="list-style-type: none"> ■ Mitigation for construction-phase (short-term) effects will include development and implementation of the Construction Communication Plan; implementation of this plan will provide advance notice of pedestrian and bicycle facility closures and detour options
Parking (Section 3.5)	Operating-Phase (Long-Term) Direct Impacts	<ul style="list-style-type: none"> ■ Loss of on-street parking spaces: <ul style="list-style-type: none"> ● About 25 spaces along frontage road on north side of Olson Memorial Highway between Humboldt Avenue and Van White Memorial Boulevard ● About 50 spaces along frontage road on south side of Olson Memorial Highway between Knox Avenue North and the cul-de-sac west of Van White Boulevard ● About 8 spaces along frontage road on north side of Olson Memorial Highway roughly one-half block east and west of Queen Avenue North ● About 3 spaces on west side of Hubbard Avenue immediately south of 42nd Avenue ● About 6 spaces on west side of West Broadway Avenue immediately south of 42nd Avenue ■ Loss of off-street parking spaces: <ul style="list-style-type: none"> ● About 50 parking spaces from a parking lot north of Hubbard Marketplace between 41st and 42nd avenues ● Eleven diagonal parking spaces would be converted to five parallel parking spaces on the north side of the Hubbard Marketplace building ● About 75 parking spaces from a retail center (7316 Lakeland Avenue) surface parking lot ● About 100 parking spaces from Target store (7535 West Broadway Avenue) parking lot
	Construction-Phase (Short-Term) Impacts	<ul style="list-style-type: none"> ■ On-street parking spaces could be temporarily removed at construction locations
	Mitigation Measures	<p>Operating-Phase (Long-Term):</p> <ul style="list-style-type: none"> ■ Loss of off-street parking spaces will be compensated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act) ■ Coordinate mitigation for loss of on-street parking spaces with local jurisdictions to identify whether suitable replacement locations are necessary ■ The proposed BLRT Extension project would add 1,670 new park-and-ride spaces ■ The Council will complete an annual Regional Park-and-Ride System Report to survey use of and travel patterns to park-and-ride facilities, including addressing potential spillover parking <p>Construction-Phase (Short-Term):</p> <ul style="list-style-type: none"> ■ Mitigation for construction-phase (short-term) effects will include development and implementation of a Construction Mitigation Plan to address temporary parking loss during construction



Table 3.0-2. Summary of Impacts and Mitigation Measures – Transportation Analysis

Category		Summary of Impacts and Mitigations
Aviation (Section 3.6)	Operating-Phase (Long-Term) Direct Impacts	<ul style="list-style-type: none"> ■ The two LRT tracks and associated catenary system would be constructed immediately east of the BNSF tracks within the Runway Protection Zone (RPZ) of Crystal Airport
	Construction-Phase (Short-Term) Impacts	<ul style="list-style-type: none"> ■ Construction of overhead catenary system would occur within the RPZ
	Mitigation Measures	<p>Operating-Phase (Long-Term):</p> <ul style="list-style-type: none"> ■ No additional mitigation beyond the findings of the RPZ Alternatives Analysis (AA) are required ■ Based on decisions rendered by the Federal Aviation Administration (FAA) through the RPZ AA and confirmed through FAA’s issuance of a letter of no objection (Form 7460 application), the proposed BLRT Extension project will be included in the updated Crystal Airport Layout Plan



3.1 Transit Conditions

This section documents the travel demand modeling and preparation of 2040 ridership forecasts for the No-Build Alternative and the proposed BLRT Extension project, as defined in this Final Environmental Impact Statement (Final EIS) for the project.

3.1.1 Regulatory Context and Methodology

The Council used its regional travel demand forecasting model to develop the transit ridership forecasts for the project. Detailed documentation regarding the model is available from the Council. Validation data sources included the Council's 2010 On Board Transit Rider Survey and 2010 Household Interview Survey, and transit ridership counts provided by Metro Transit. Additional information on ridership modeling is provided in the *Metro Blue Line LRT Extension Transportation Technical Report* (Council, 2016).

3.1.2 Study Area

The study area for transit conditions is defined as the Metro Transit service area, which is defined in the travel demand model.

The travel demand model is designed to analyze the effects of transportation improvements on travel patterns in the entire Twin Cities metropolitan area. The travel demand model incorporates the entire region (seven-county Council planning area plus parts of 13 surrounding counties in Minnesota and western Wisconsin).

3.1.3 Affected Environment

The transit service area for the proposed BLRT Extension project is generally defined by the Mississippi River to the north and east, Olson Memorial Highway (TH 55) to the south, and US Highway 169 (US 169) to the west. The area is served by a network of urban and suburban local bus routes that make timed connections at three transit centers in the study area (Robbinsdale Transit Center, Brooklyn Center Transit Center, and Starlite Transit Center) as well as downtown Minneapolis (Target Field Station). The area is also served by express bus routes, most of which are oriented toward downtown Minneapolis and serve the peak-period ("rush hour") commuter travel market. Existing transit service in the area is depicted in [Figure 3.1-1](#).

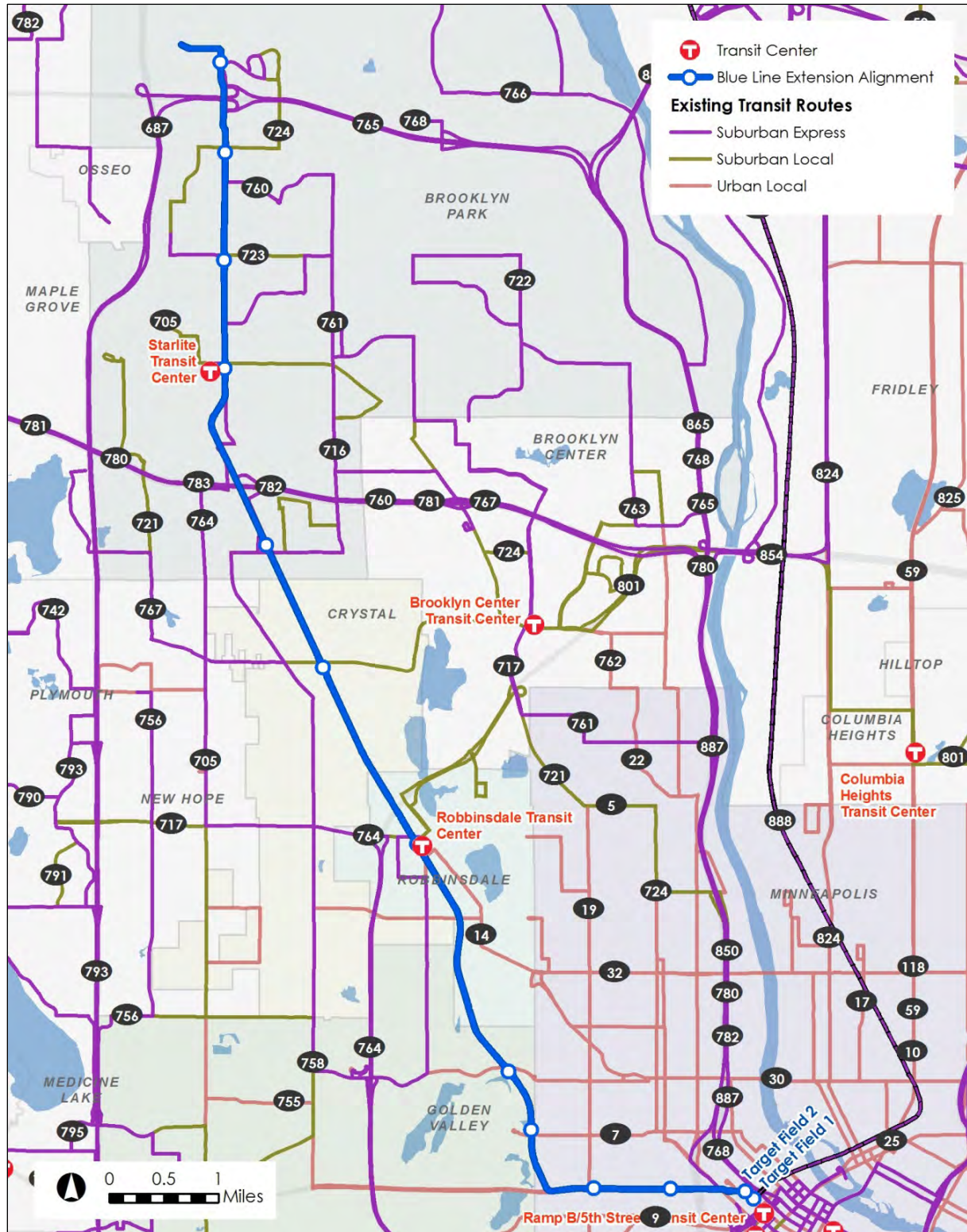
3.1.3.1 Transit Ridership Forecasting Assumptions (2040)

Besides future development, transit ridership forecasts reflect planned and programmed transportation system investments. Background assumptions are made as part of the No-Build Alternative in this Final EIS, with specific changes made to reflect the proposed BLRT Extension project.

The 2040 regional travel demand model incorporates roadway system improvements identified in the fiscally constrained (current revenue) scenario of the Council's regional *2040 Transportation Policy Plan (2040 TPP)* adopted in January 2015. In addition, programmed local or county roadway system improvements in the study area are also reflected in the model.



Figure 3.1-1. Existing Transit Service





The proposed BLRT Extension project would operate within the broader environment of the Twin Cities regional transit system. Connections provided to the proposed BLRT Extension project corridor would promote access and mobility for trips beyond the study area. The adopted regional 2040 TPP includes several improvements in its fully funded transit scenario. Near the proposed BLRT Extension project alignment, this includes the Penn Avenue Arterial Bus Rapid Transit (BRT) line (C Line) and the Chicago-Fremont Avenue Arterial BRT line (D Line).

The alternatives analyzed in the travel demand forecast model include specific network modifications to existing transit service, including changes in routing, frequency, and travel time. Network modifications are focused on providing an integrated “feeder” bus network to connect people to the proposed BLRT Extension project stations. Bus networks and transit plans would continue to be refined as the project progresses; final bus network changes would be subject to a robust public involvement process in accordance with Title VI requirements.¹

Table 3.1-1 identifies the bus and park-and-ride access planned at each station. In addition, all stations are planned to have pedestrian access.

Table 3.1-1. Station Access Characteristics Using 2040 Bus Feeder Plan

LRT Station	Park-and-Ride	Transfer Routes
Van White Boulevard	No	19, 26, C Line
Penn Avenue	No	19, 26, 755, C Line
Plymouth Avenue	No	7
Golden Valley Road	Yes (100 spaces)	7, 30
Robbinsdale	Yes (550 spaces)	7, 14, 19, 30, 32, 46, 56, 712, 716, 717, 746
Bass Lake Road	Yes (170 spaces)	721, 745
63rd Avenue	Yes (565 spaces)	716, 719
Brooklyn Boulevard	No	705, 720, 723, 724
85th Avenue	No	723, 724, 725
93rd Avenue	No	724
Oak Grove Parkway	Yes (850 spaces)	729, 765

Source: Blue Line Extension Travel Demand Model Estimates (Council, 2015c)

¹ Title VI of the Civil Rights Act of 1964 requires that “no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.”



3.1.4 Environmental Consequences

3.1.4.1 Operating-Phase (Long-Term) Impacts

The Council estimated the transit trips projected for the No-Build Alternative and the proposed BLRT Extension project in terms of linked and unlinked passenger trips. A linked passenger trip includes segments of travel from point of origin to point of final destination as a single trip, regardless of transfers or intermediate stops. Because of this, the number of linked passenger trips provides an estimate of the number of people using the transit system. In contrast, an unlinked passenger trip counts each segment of an overall trip as a separate, unlinked trip. Unlinked passenger trips represent the activity experienced by each route segment and travel mode. Therefore, the number of unlinked trips is greater than the number of linked trips. In presenting the analysis of transit patronage, both linked and unlinked passenger trips are reported to provide a comprehensive assessment of each alternative.

Table 3.1-2 summarizes the commonly used daily performance measures projected for year 2040 for both the No-Build Alternative and the proposed BLRT Extension project. Though the Council presumes that the proposed BLRT Extension project would be through-routed with the Blue Line (Hiawatha Light Rail Line), ridership reported includes only those trips attributable to the new service, not existing Blue Line passengers. This includes those patrons boarding and/or alighting at Van White Boulevard and stations to the north and west (including those continuing on the Hiawatha segment of the line).

For the proposed BLRT Extension project, the total system-wide passenger miles are estimated to increase 124,100 miles—from 2,878,400 with the No-Build Alternative to 3,002,500 daily miles with the proposed BLRT Extension project. Total system-wide transit ridership for the proposed BLRT Extension project is estimated to increase by 12,200 riders per day for linked trips and 26,100 per day for unlinked trips in comparison to the No-Build Alternative.

Table 3.1-2. Projected Transit System Performance Measures for the No-Build Alternative and the Proposed BLRT Extension Project in 2040

Alternative	Performance Measure							
	Unlinked Transit Trips (Daily)					Linked Transit Trips (Daily)	Daily Passenger	
	Local Bus	Express Bus	Commuter Rail	Light Rail Transit	Total		Miles	Hours
No-Build	367,800	78,400	Combined with Express Bus	124,400	570,600	351,700	2,878,400	153,000
Proposed BLRT Extension project	373,900	73,100	Combined with Express Bus	149,700	596,700	363,900	3,002,500	158,900

Source: Blue Line Extension Travel Demand Model Estimates (Council, 2015c)



As shown in **Table 3.1-3**, in 2013, the regional vehicle-miles traveled (VMT) on the transportation network was about 81 million daily VMT for the major roadway and transit facilities (including all operational LRT and commuter rail lines) in the Twin Cities region. The Council expects VMT to increase to about 102.9 million daily VMT by 2040 with the No-Build Alternative. Although VMT is expected to increase about 26 percent between 2013 and 2040, with the proposed BLRT Extension project in place, VMT would decrease slightly to 102.7 million daily VMT.

Likewise, regional vehicle-hours traveled (VHT) are forecasted to increase from about 2.5 million daily in 2013 to nearly 3.5 million hours daily in 2040. The proposed BLRT Extension project and the No-Build Alternative would have essentially the same VHT.

Transit passenger-miles traveled (PMT) are expected to increase from about 474 million annually in 2013 to about 861 million annually with the No-Build Alternative, and to about 898 million annually with the proposed BLRT Extension project. The average daily speeds for the regional roadway system were estimated by the Council based on the VMT and VHT totals (VMT/VHT).

Table 3.1-3. Regional System Performance Measures

Measure	2013	2040 No-Build Alternative	2040 Proposed BLRT Extension Project	Percent Change from 2013 to:	
				2040 No-Build Alternative	2040 Proposed BLRT Extension Project
Daily VMT (in millions)	81.8	102.9	102.7	25.7%	25.6%
Daily VHT (in millions)	2.46	3.45	3.45	40.2%	40.2%
Annual transit PMT (in millions)	473.9	860.6	897.6	81.6%	89.4%
Average system speed (in miles per hour [mph])	33.3	29.8	29.8	-10.4%	-10.4%

Source: Blue Line Extension Travel Demand Model Estimates (Council, 2015c)

Table 3.1-4 shows the daily boardings for the proposed BLRT Extension project (for 2040) by station and mode of access. Total ridership is estimated by the Council at about 27,000 riders per day; the numbers presented in the table are the specific travel demand model output. The data show that the transfer rate for the proposed BLRT Extension project would be 52 percent, drive access would be 15 percent, and walk-up access would be 33 percent.



Table 3.1-4. Daily Boardings for the Proposed BLRT Extension Project by Station and Mode of Access

LRT Station	Mode of Access			
	Walk	Transfers	Drive ¹	Total
Van White Boulevard	410	230	3	643
Penn Avenue	439	559	9	1,007
Plymouth Avenue	224	0	5	229
Golden Valley Road	368	422	115	905
Robbinsdale	638	2,269	610	3,517
Bass Lake Road	570	827	199	1,596
63rd Avenue	427	267	610	1,304
Brooklyn Boulevard	394	1,995	8	2,397
85th Avenue	997	1,176	8	2,181
93rd Avenue	249	105	3	357
Oak Grove Parkway	717	664	950	2,331
On-board Entering/Exiting Extension Area (Downtown and Hiawatha boardings/transfers)				10,392
Total project boardings				26,859

Source: Blue Line Extension Travel Demand Model Estimates (Council, 2015c)

¹ Drive access includes both park-and-ride and passenger drop-off

3.1.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

No construction-phase impacts to transit would occur under the No-Build Alternative.

Proposed BLRT Extension Project

Construction of the proposed BLRT Extension project would have intermittent impacts to bus operations on routes within the construction area. These impacts could include temporary stop relocations or closures, route detours, or suspensions of service on segments of routes operating on streets where the proposed BLRT Extension project is being constructed. In particular, the Plymouth Avenue and Golden Valley Road bridges would be reconstructed. Limited alternative roads exist to accommodate regular bus service and maintain connections to area destinations without adding resources for bus operations or curtailing routes and routing buses onto local roads that do not currently have bus service.



3.1.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures that would be implemented to mitigate the long-term and short-term transit impacts from the proposed BLRT Extension project. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures would address.

3.1.5.1 Long-Term Mitigation Measures

No mitigation measures are warranted for long-term impacts to transit because no long-term adverse impacts would occur to transit service due to the proposed BLRT Extension project's expansion of transit service. However, the proposed BLRT Extension project will affect fixed-route bus service as existing transit routes would be modified to more directly serve the proposed LRT stations. The Council will follow federal and local procedures for route modifications or suspension of transit service, which will include a Title VI analysis to determine how service changes will affect low-income and minority communities. This Title VI process will include community outreach for designing route changes, a public hearing for the proposed service changes, and ongoing outreach efforts to communicate service changes prior to implementation.

3.1.5.2 Short-Term Mitigation Measures

Specific mitigation measures for short-term impacts to bus service will be identified in the Construction Mitigation Plan, which includes a Construction Communication Plan and construction staging plan (staging plan) for implementation by the Council prior to and during construction. The purpose of the Construction Communication Plan will be to prepare Metro Transit riders, project-area residents, businesses, and commuters for what to expect during construction (including temporary stop relocations or closures, route detours, or suspensions of service on segments of routes operating on streets), listen to their concerns, and develop plans to minimize disruptive effects. Strategies could include:

- Issue construction updates and post them on the proposed BLRT Extension project website
- Provide advance notice of roadway closures, driveway closures, and utility shutoffs
- Conduct public meetings
- Establish a 24-hour construction hotline
- Prepare materials with information about construction
- Address property access issues
- Assign staff to serve as liaisons between the public and contractors during construction
- Post information at bus stops and regional transit centers (Robbinsdale Transit Center, Brooklyn Center Transit Center, and Starlite Transit Center) indicating temporary stop closures and/or detour details
- Publish information in advance of bus detours on Metro Transit's website and in its on-board information brochure

In addition, the Council will develop and implement a staging plan, which would be reviewed with the appropriate jurisdictions and railroads, and the contractor would be required to secure the



necessary permits and follow the staging plan, unless otherwise approved. Components of a staging plan include traffic management plans and a detailed construction timeline.

3.2 Freight Rail Conditions

3.2.1 Regulatory Context and Methodology

The proposed BLRT Extension project engineering drawings and existing BNSF track charts were used by the Council to identify the physical impacts of the proposed BLRT Extension project to freight rail infrastructure. All proposed physical changes to freight rail lines were identified. Further, all existing at-grade freight rail/roadway crossings affected by the proposed BLRT Extension project were identified, as well as any operational changes to freight rail. The Council reviewed the requirements of Minnesota State Statute 219.46, BNSF, CP, the American Railway Engineering and Maintenance-of-Way Association (AREMA), and the Minnesota Department of Transportation (MnDOT) to determine vertical and horizontal clearance requirements for the freight rail track. Per Minnesota State Statute 219.46, subd. 2, a minimum of 14 feet horizontal separation is required between the rail track centerlines, which is a key issue in understanding where to locate LRT tracks in relation to freight rail tracks. Additional vertical and horizontal clearance requirements are presented in Minnesota Statute 219.46; the proposed BLRT Extension project design is being developed in accordance with these requirements.

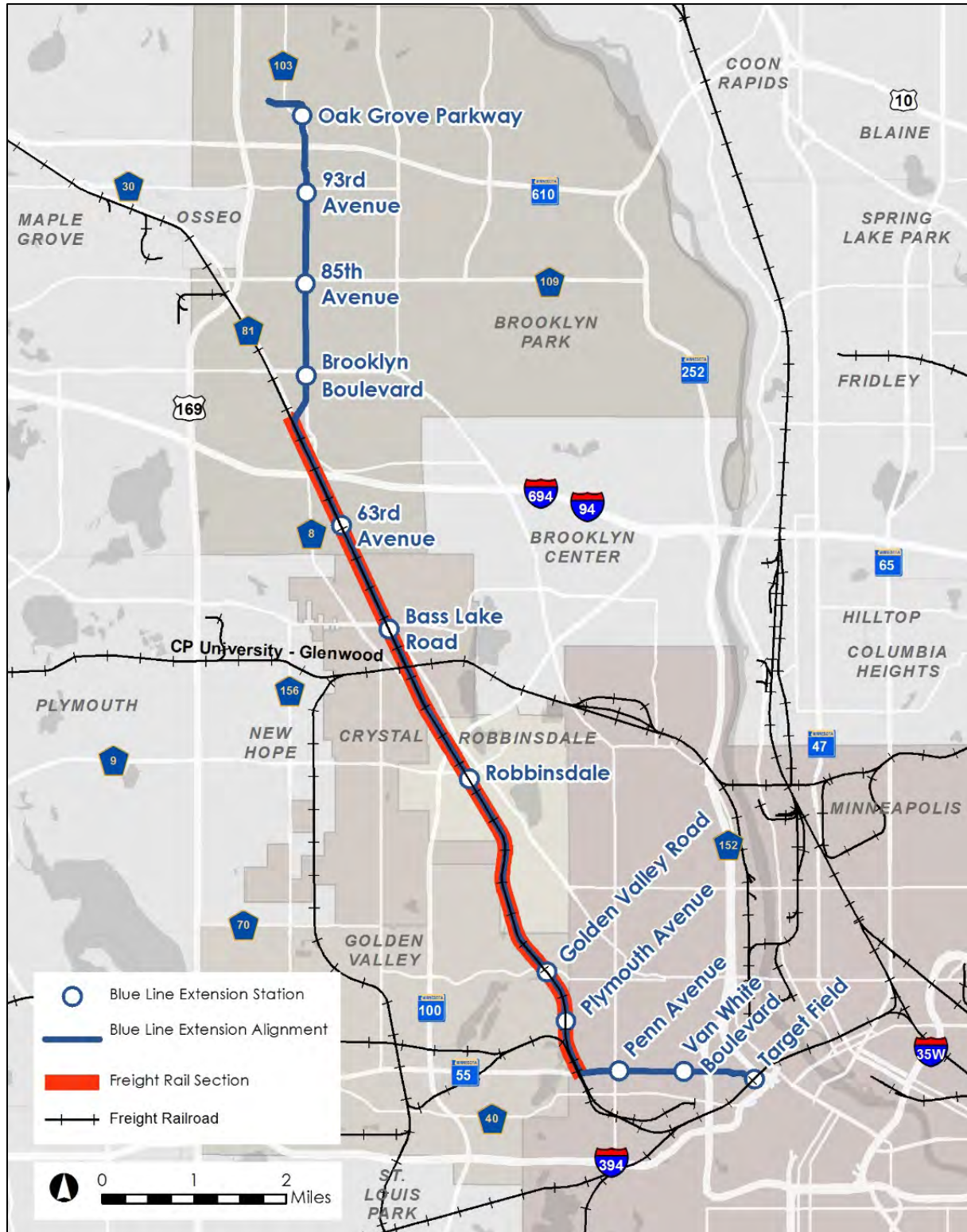
The Federal Railroad Administration (FRA) is the federal agency with jurisdictional authority over railroad safety, except “rapid transit operations in an urban area that are not connected to the general railroad system of transportation” (49 USC § 103, 49 USC § 20102). In September 2013, FRA provided a preliminary jurisdiction determination for the proposed BLRT Extension project which concluded that the proposed BLRT Extension project would be an urban rapid transit operation, and therefore, FRA would not exercise its safety jurisdiction over the proposed BLRT Extension project, except to the extent that it is necessary to ensure railroad safety at any limited shared connections between the proposed BLRT Extension project and freight rail. This applies to the shared at-grade light rail/freight rail roadway crossings included in the proposed BLRT Extension project. The proposed BLRT Extension project would be subject to FRA regulations, including 49 CFR Parts 214, 219, 220, 222, 225, 228, 233, 234, 235, and 236 and 49 CFR Part 229.125, as well as the hours of service laws, but only at the points of connection between the proposed BLRT Extension project and the general railroad system. See Appendix D of the Draft EIS for a copy of correspondence between the Council and FRA regarding FRA’s jurisdictional determination.

3.2.2 Study Area

The study area for freight impacts is defined as about 7.8 miles of the BNSF right-of-way within the Monticello Subdivision located between Brooklyn Boulevard in Brooklyn Park (Mile Post [MP] 9.39) and Olson Memorial Highway in Minneapolis (MP 1.56). The width of the BNSF-owned right-of-way is generally 100 feet (about 50 feet on either side of the centerline of the existing freight rail track). **Figure 3.2-1** illustrates the study area for determining freight rail impacts.



Figure 3.2-1. Freight Rail Study Area





3.2.3 Affected Environment

Within the study area, BNSF operates about four to eight freight trains per week on its existing track. During peak operations in previous years, up to five trains per day operated in the BNSF rail corridor. Future freight operations could increase or decrease based on the needs of BNSF.

This portion of the BNSF system is located in “dark territory,” which means that train movements are controlled by track warrants or train order operations, with train dispatchers issuing orders by radio communication with train engineers, not by train signals. This type of system allows only one train to be on a particular segment of the track at any given time. This segment of the corridor is Class II track and operates at a maximum speed of 25 mph based on existing track conditions.

Between Brooklyn Boulevard and Interstate Highway 94 (I-94), two siding tracks allow rail service to the Anchor Block site and the Atlas Cold Storage building. BNSF has not provided service to these sites for several years. Remnants of two other sidings are present in this area, but do not appear to be functional.

CP has two tracks that come into contact with the BNSF rail line. One is located between Bass Lake Road and Corvallis Avenue and generally runs east-west. At this location, the BNSF track crosses the CP track perpendicularly with a diamond crossing. The second track is located at the south end of the proposed BLRT Extension project alignment just north of Olson Memorial Highway, where the CP track connects to the BNSF track with a crossover.

Between 36th Avenue North and Olson Memorial Highway, the freight rail track is located within an elevation that is lower than adjacent roadways and other land uses (a “trench”). In these areas are vegetated side slopes on either side of the track and no at-grade crossings. The track crosses under five bridge structures located at Olson Memorial Highway, Plymouth Avenue, Theodore Wirth Parkway, Golden Valley Road, and 36th Avenue North.

The freight track located in the remaining segment of the proposed BLRT Extension project alignment, north of 36th Avenue, is generally at the same elevation as, or higher than, the adjacent roadways. Within this area are nine at-grade crossings (39½ Avenue, 41st Avenue, 42nd Avenue, 45½ Avenue, West Broadway Avenue [County Aid State Highway 103], Corvallis Avenue, Bass Lake Road, 63rd Avenue, and 71st Avenue) with active warning devices provided at eight of them. Passive warning devices are provided at the 39½ Avenue at-grade crossing.²

² Under the proposed BLRT Extension project build condition, the 39½ Avenue at-grade crossing would be closed.



3.2.4 Environmental Consequences

3.2.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

No operating-phase impacts to the freight rail corridor would occur under the No-Build Alternative.

Proposed BLRT Extension Project

The proposed BLRT Extension project includes the construction of proposed LRT guideway generally in the eastern half of the BNSF right-of-way. During preliminary engineering activities and coordination with BNSF, the Council determined that the preferred approach would be to reconstruct the freight rail track adjacent to the southbound (western) LRT track, and construct a freight rail access road to the west of the freight rail track.

With the exception of the LRT crossings of the ponds north of Golden Valley Road and Grimes Pond, the approximately 7.8-mile section in the BNSF right-of-way would be divided to accommodate both the BNSF and LRT tracks. The BNSF track would be relocated about 15 feet to the west, thereby allowing BNSF to operate within the western 50 feet of the right-of-way while providing at least 25 feet of horizontal clearance from the LRT track centerline. The LRT tracks would operate in the eastern 50 feet of the existing right-of-way. The pond crossings would leave the BNSF track in its existing location and new LRT bridges would be constructed east of the freight rail embankment. Proposed BLRT Extension project construction would include a 12-foot-wide access road generally located west of the relocated BNSF track for the majority of the 7.8 miles of the proposed BLRT Extension project in the BNSF rail corridor, with the exception of the pond areas and bridges.

The proposed BLRT Extension project includes modifications to active warning devices and signals for at-grade crossings in order to accommodate the relocated BNSF and new LRT tracks. These modifications would include relocating existing active warning devices, such as gate arms, to accommodate the relocated BNSF and LRT tracks and installing new active warning devices, such as gate arms, where they are not currently provided. In addition, combined freight/LRT at-grade crossings would be designed and constructed to be ready for FRA Quiet Zones.³

The proposed BLRT Extension project would include fencing at LRT stations to provide additional separation between pedestrians using the LRT station platform and the freight rail operations. Although BNSF would be required to operate within the western 50 feet of its right-of-way, incorporating an access road would improve BNSF's overall accessibility to its track. The proposed BLRT Extension project would relocate the existing freight track but would not change the overall freight rail operational context.

³ Quiet Zones are locations, at least one-half mile in length, where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings, including modifications to the streets, raised median barriers, four quadrant gates, and other improvements designed and implemented as a part of the proposed BLRT Extension project and consistent with Quiet Zone readiness. Horns are sounded in emergency situations at these locations. Municipalities must apply to FRA for approval of Quiet Zones.



Further discussion of the impacts and improvements needed to accommodate the relocated freight rail alignment is provided below. Unless otherwise noted, these impacts would not permanently affect freight rail operations.

Required Freight Rail Modifications

The 36th Avenue bridge, Golden Valley Road bridge, Theodore Wirth Parkway bridge, Plymouth Avenue bridge, and Olson Memorial Highway bridge (westbound lanes) would be reconstructed to accommodate the relocated freight rail track and LRT guideway. See [Table 3.2-1](#) for proposed modifications. In addition, the crossover connection between the BNSF freight rail alignment and the CP rail spur (just north of the Olson Memorial Highway bridge) would also need to be reconstructed.

The BNSF freight rail track would be relocated about 15 feet west of its current alignment. South of 71st Avenue, part of the BNSF right-of-way is less than 100 feet wide because of the 71st Avenue roadway configuration. This limited right-of-way could require installing a barrier between the existing roadway (back of sidewalk) and the freight rail track. Existing sidings that are located north of I-94 and south of Brooklyn Boulevard are currently out of service and in some cases are not connected to the existing freight track. The relocated freight track might need to reconnect these existing sidings, if BNSF were to resume service to these customers. The existing diamond crossing at the BNSF/CP at-grade intersection would require relocation as part of shifting the freight rail track, while the proposed BLRT Extension project alignment would pass over the CP rail line on a bridge. The portion of the rail corridor between 36th Avenue and Olson Memorial Highway is located within the “trench” described on page 3-16. In some areas, retaining walls would replace the existing vegetated side slopes on either side of the BNSF right-of-way to accommodate the relocated freight rail track while reducing adjacent property impacts.

In three locations, the freight rail tracks would remain on the existing alignment and the LRT tracks would be constructed on a new bridge within the eastern 35 feet of the 100-foot-wide BNSF right-of-way. These three locations are at Grimes Pond adjacent to Sochacki Park south of 36th Avenue, at the ponds immediately north of Golden Valley Road, and at TH 100.



Corridor Protection

The proposed BLRT Extension project was examined by the Council to reduce risks in the event of a freight or LRT derailment. This review included examining technical reports, research papers, and treatments used on other corridors where freight rail and LRT operate jointly.

LRT and freight rail located in a shared corridor is not an unusual occurrence in the United States. These are known as “Common Corridor Operations.” The Council collected and documented information on these locations, including mitigation measures in place. Based on this research, the following Light Rail Operators have Common Corridor Operations on portions of their lines: Port Authority Transit Corp (PATCO), Charlotte NC LYNX, Greater Cleveland Regional Transit Authority Blue and Green Lines, Dallas DART, Denver RTD, Jersey City NJT Hudson-Bergen LRT, Los Angeles LACMTA Green and Gold Lines, Sacramento CA, Sacramento RTD, St. Louis, Bi-State Development Agency, San Jose, VTA, Maryland Counties, Purple Line and Portland MAX Orange Line.

The Council contacted staff associated with these projects to identify the following common methods currently used or planned to be used after system build-out. Some of these projects and methods are still in development, but the following is a summary of these measures:

- Reliance on direct communication by internal radio systems and emergency telephone contact with the adjacent railway’s dispatch center and vice-versa for notification of an accident that interferes with the other’s operation
- Have established incident response protocols with the adjacent railway and first responders as part of their emergency preparedness programs
- Conduct emergency response exercises and drills as part of their training requirements. Many properties actively support “Operation Lifesaver” to reduce trespasser/transit rail accidents.
- Construct corridor protection walls between freight and light rail
- Install intrusion detection devices in areas between freight and light rail

These methods are also planned to be used on the proposed BLRT Extension project and would be incorporated into the construction and management documents, as applicable.

The Metro Transit Light Rail Transit Design Criteria (Council, 2015b), which includes design standards and specifications to provide security and/or enhance safety, includes safeguards to prevent LRT operational derailments, including guardrails (i.e., a rail or other structure laid parallel with the running rails of the track to keep derailed wheels adjacent to the running rails of the track). In addition, the proposed BLRT Extension project includes a combination of horizontal separation, vertical separation, and physical means to provide safe operations. Three specific corridor-protection treatments are proposed:

- A ditch (used where the corridor width permits)
- A retained fill option where the LRT tracks would be at a higher grade than freight rail tracks
- A wall



Typical sections representing these corridor-protection options are shown in **Figures 3.2-2 through 3.2-4** following **Table 3.2-1**. In addition, where clearance between the centerline of the light rail tracks and the centerline of the freight tracks is less than 50 feet, intrusion detection for possible freight derailment would be installed, where appropriate. These corridor-protection treatments were closely coordinated with BNSF.

Further, the design of the proposed BLRT Extension project would include safeguards in the catenary system to help minimize the possibility of sparking occurring in the overhead catenary wires. Electrical sparks, or arcing, occurs when a gap occurs between the overhead contact wire and the vehicles pantograph. Numerous safeguards are included in the design of the Project to address and minimize electrical sparking. Ice cutters would be utilized to maintain positive contact between the contact wire and pantograph during winter weather. Additionally, Metro Transit would regularly inspect pantographs for grooves along the pantograph's carbon strip (as it does on its existing light rail lines), which could cause arcing. Included in the design of the Project to minimize arcing are contact wire gradients, which meet or exceed AREMA recommendations, staggering or zig-zags of the contact wire to ensure even wear, and overlaps between power sections. Finally, the design accounts for the Occupational Safety and Health Administration 10-foot zone of influence, and meets or exceeds National Electrical Safety Code requirements along the proposed shared light rail and freight rail corridor.

The Council's Operations Emergency Management Plan (OEMP) for light rail was developed to assist in identifying, responding to, and resolving emergency situations in an efficient, controlled and coordinated manner, including those related to the location of LRT and freight rail within the same corridor. The OEMP establishes the response process and responsibilities for departments and staff within Metro Transit, as well as outside agencies, in the event of a rail emergency.

In addition, the Council maintains an emergency preparedness exercise plan. The emergency preparedness exercise plan identifies emergency preparedness exercise, which would be carried out by the Fire Life Safety and Security Committee (FLSSC). In advance of operation of the proposed BLRT Extension project, a number of drills would be planned, conducted, and documented in the emergency preparedness exercise plan. Emergency preparedness training exercises would be designed to address areas such as rail equipment familiarization, situational awareness, passenger evacuation, coordination of functions, communications, and hands-on instruction. The FLSSC would coordinate training exercises with the Council and the freight railroad owners and operators, as appropriate. During normal revenue service, the FLSSC would coordinate training exercises to evaluate emergency preparedness. The exact nature of emergency preparedness exercises would be developed in coordination with the FLSSC prior to construction, but could include one tabletop and one full-scale emergency preparedness exercise, annually.



Table 3.2-1. Proposed BLRT Extension Project Bridge Modifications

Bridge Location	Proposed Improvements
Olson Memorial Highway	<p>The north half of the Olson Memorial Highway bridge (westbound lanes) would be reconstructed to accommodate the transition of the LRT guideway out of the BNSF right-of-way into the median of Olson Memorial Highway. These bridge reconstruction impacts are not associated with relocating the freight rail track.</p> <p>No change to BNSF operations or maintenance requirements.</p>
Plymouth Avenue	<p>The bridge deck, piers, and abutments would be removed, and a new bridge would be constructed in the same location. Bridge piers would be spaced to allow the LRT tracks to pass through on the eastern half of the BNSF rail corridor, the reconstructed freight rail track and new access road to pass through on the western half of the BNSF rail corridor, and the reconstructed Theodore Wirth Parkway trail and associated Bassett Creek channel reconstruction. The pier locations would need to accommodate a wider spacing between northbound and southbound LRT tracks to allow the Plymouth Avenue Station to be built in a center platform configuration.</p> <p>Bridge piers would be constructed to provide adequate crash protection based on current MnDOT and AREMA standards.</p> <p>No change to BNSF operations or maintenance requirements.</p>
Theodore Wirth Parkway	<p>The bridge deck, piers, and abutments would be removed, and a new bridge would be constructed in the same location. Bridge piers would be spaced to allow the LRT tracks to pass through on the eastern half of the BNSF rail corridor and the reconstructed freight rail track to pass through on the western half of the BNSF rail corridor. The pier locations would need to accommodate a wider spacing between northbound and southbound LRT tracks to allow the Golden Valley Road Station, which would be located directly north of the Theodore Wirth Parkway bridge, to be built in a center platform configuration.</p> <p>Bridge piers would be constructed to provide adequate crash protection based on current MnDOT and AREMA standards.</p> <p>No change to BNSF operations or maintenance requirements.</p>
Golden Valley Road	<p>The bridge deck, piers, and abutments would be removed, and a new bridge would be constructed in the same location. Bridge piers would be spaced to allow the LRT tracks to pass through on the eastern half of the BNSF rail corridor and the reconstructed freight rail track to pass through on the western half of the BNSF rail corridor. The pier locations would need to accommodate a wider spacing between northbound and southbound LRT tracks to allow the Golden Valley Road Station to be built in a center platform configuration. A portal would be created for a proposed trail connection between Theodore Wirth Regional Park (TWRP) and Sochacki Park.</p> <p>Bridge piers would be constructed to provide adequate crash protection based on current MnDOT and AREMA standards.</p> <p>No change to BNSF operations or maintenance requirements.</p>
36th Avenue	<p>The bridge deck, piers, and abutments would be removed, and a new bridge would be constructed in the same location. Bridge piers would be spaced to allow the LRT tracks to pass through one portal on the eastern half of the BNSF rail corridor and the reconstructed freight rail track and access road to pass through another portal on the western half of the BNSF rail corridor.</p> <p>Bridge piers would be constructed to provide adequate crash protection based on current MnDOT and AREMA standards.</p> <p>No change to BNSF operations or maintenance requirements.</p>



Figure 3.2-2. Typical Railway Section – Ditch Corridor Protection

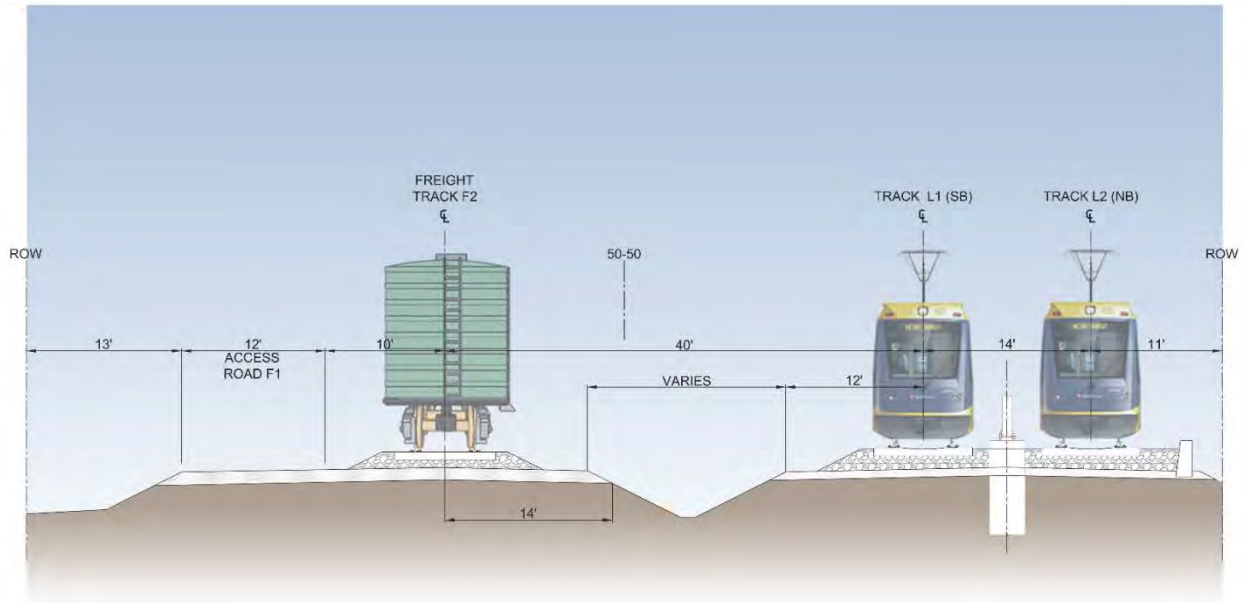


Figure 3.2-3. Typical Railway Section – Retained Embankment Corridor Protection

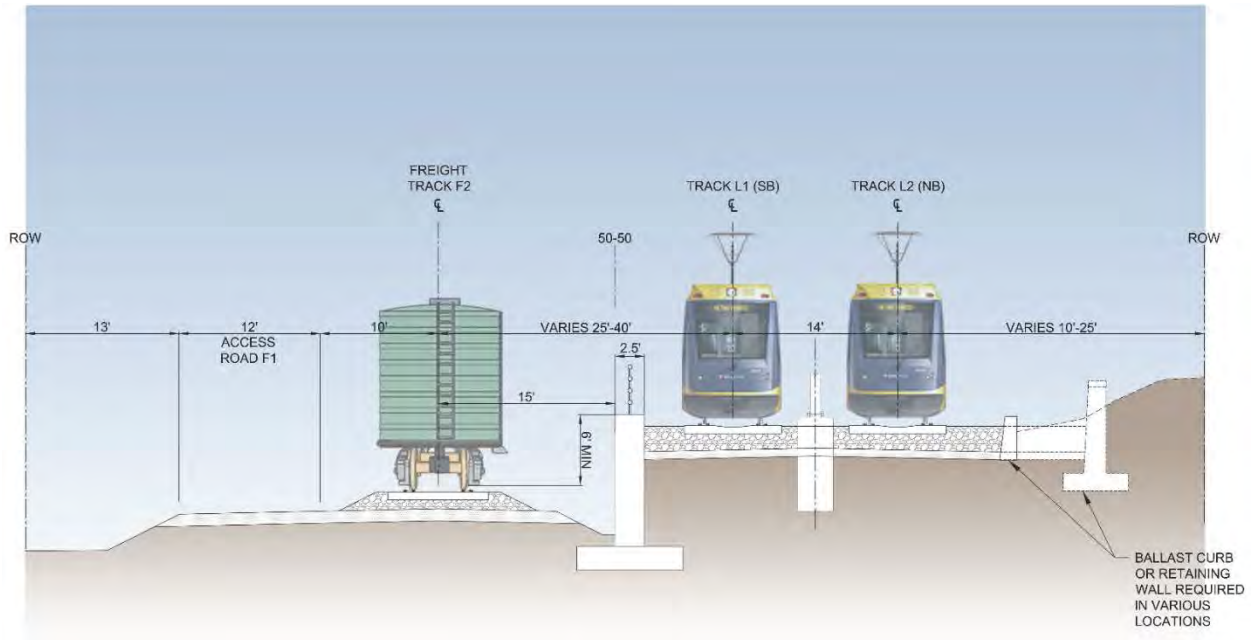
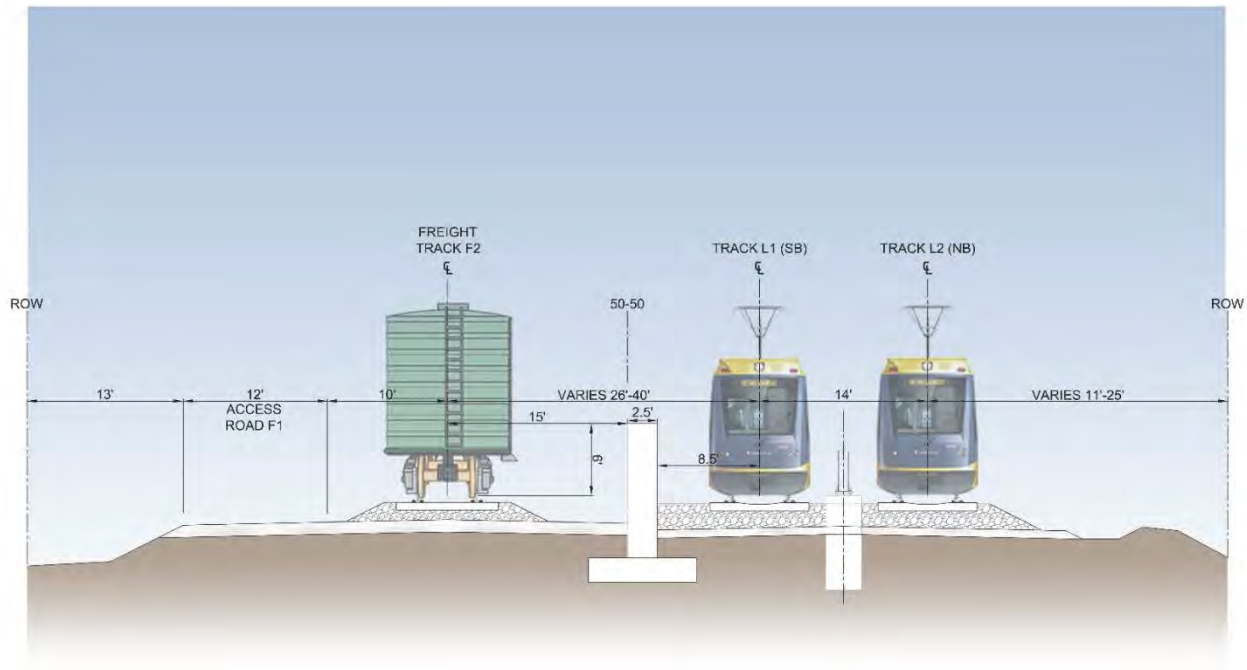


Figure 3.2-4. Typical Railway Section – Wall Corridor Protection



Traction Power Substations (TPSSs)

TPSSs needed to provide power to the LRT system would generally be located on the east side of the BNSF rail corridor, where possible, with a minimum horizontal clearance between the TPSSs and the proposed LRT track centerline of 8 feet. Greater horizontal clearances, a minimum of 15 feet from the track centerline, would be required if the TPSS is located adjacent to the BNSF freight rail track on the west side of the BNSF rail corridor. In most cases, the TPSS sites could be located on property adjacent to and outside of the existing rail corridor to avoid or reduce impacts to the freight rail tracks. Depending on the locations of the TPSS sites, utilities such as the Xcel Energy electrical service might need to cross under or over the freight rail tracks. Vertical and horizontal clearances, as required by the BNSF Utility Accommodation Policy (BNSF, 2011), would be maintained for these utility crossings.

3.2.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

No construction-phase impacts to freight rail would occur under the No-Build Alternative.

Proposed BLRT Extension Project

Construction activities to relocate the freight rail track required as part of constructing the LRT guideway would have limited effects on existing freight service in the BNSF rail corridor. Construction phasing would likely consist of constructing the new freight rail track adjacent to the existing track, shifting freight rail operations to the new freight rail track, and then removing the



existing freight rail track to allow construction of the LRT guideway, thus minimizing disruptions to freight rail operations. Construction work would be done under the guidance of a BNSF flagging crew. At the BNSF/CP diamond crossing, construction would be coordinated with both railroads to limit freight delays.

Construction activities associated with relocating the freight rail track would occur primarily within the existing BNSF right-of-way, with some temporary easements to accommodate construction outside the in-place rail right-of-way.

Construction activities could also cause temporary impacts to sidings if BNSF were to resume service to freight customers between I-94 and Brooklyn Boulevard. Temporary crossovers between the existing and relocated freight rail track would be required to facilitate construction phasing and maintain freight operations. Construction of these crossovers would occur in such a way as to minimize impacts to freight rail operations in the corridor.

3.2.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures that will be implemented to mitigate the long-term and short-term impacts on freight transportation from the proposed BLRT Extension project. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures would address.

3.2.5.1 Long-Term Mitigation Measures

No mitigation measures are warranted for long-term impacts to freight rail because the identified avoidance measures will prevent any adverse impacts. These measures include reconstructing the BNSF rail corridor, including a service road that would provide BNSF with better access to its rail line. In addition, the existing freight rail track is jointed; this type of track generates noise and vibration as freight trains pass over the joints. The new freight rail track that will be constructed in the corridor would be continuously welded rail, which will eliminate the track joint-related noise and vibration.

In addition, as discussed in the section titled **Corridor Protection** in **Section 3.2.4.1**, corridor-protection elements will be included in the project design to reduce risks in the event of a freight or LRT derailment.

Additional information regarding mitigation measures for long-term impacts to other environmental resources associated with freight rail is included in **Section 5.6 – Noise** (including train horn Quiet Zones).

3.2.5.2 Short-Term Mitigation Measures

Short-term impacts to freight rail operations resulting from construction activities could occur along the BNSF rail corridor and where the CP rail corridor intersects the proposed BLRT Extension project.

In order to mitigate short-term impacts to freight rail operations related to construction activities, the Council will develop and implement freight rail operation coordination plans. The purpose of



these plans is to facilitate coordination between the Council and the affected freight railroads during construction activities affecting freight rail operations. As part of this effort, Council staff will also work with affected freight rail owners and operators to provide provisions in the construction contract to identify how the contractor will interact with the railroads. Further, Council staff will work with affected freight rail owners and operators to sequence construction to reduce effects on freight movements and to identify optimal periods for closing the rail service and reducing speeds. Dates and times for all stoppages will be determined through coordination with the railroad owners and operators.

During construction activities, flaggers will be used to allow freight rail operations to continue. The use of flaggers will require construction activities adjacent to active freight rail to halt while freight trains traverse the construction area.

3.3 Vehicular Traffic

The introduction of the proposed BLRT Extension project into the existing transportation network could affect the flow of traffic in the study area. In the southern segment of the proposed BLRT Extension project alignment in Minneapolis, the new LRT tracks would run along the median of Olson Memorial Highway through several intersections. Between Olson Memorial Highway and 36th Avenue (primarily in Golden Valley and Robbinsdale), the proposed BLRT Extension project alignment is in a depressed section of the BNSF rail corridor where cars and trucks would be separated from LRT operations. North of 36th Avenue, the proposed BLRT Extension project alignment would continue to share the BNSF right-of-way and would cross several roads in Robbinsdale, Crystal, and Brooklyn Park until it reaches 73rd Avenue. At that point, the proposed BLRT Extension project alignment transitions to West Broadway Avenue where, similar to Olson Memorial Highway, the LRT would operate in the median and would cross several intersections.

In order to understand the potential for and magnitude of traffic impacts, detailed traffic operations analyses were conducted by the Council. The information in this section is based on the information in the *BLRT Traffic Operations Technical Memorandum* (Council, 2015e).

3.3.1 Regulatory Context and Methodology

Analysis of traffic impacts considers how roads and intersections operate currently and then compares those results with modeled traffic operations in the project's design year (in this case, 2040). The 2040 traffic operations were modeled using two scenarios: (1) forecasted traffic operations without the proposed BLRT Extension project (that is, the conditions with the No-Build Alternative) and (2) forecasted traffic operations with the proposed BLRT Extension project. The traffic forecasting process is described in more detail in the *BLRT Traffic and Park-and-Ride Forecast Technical Memorandum* (Council, 2015d).



The approach to the traffic operations analysis was derived by the Council from methodologies documented in the *Highway Capacity Manual*⁴ (HCM). The HCM contains analysis techniques for evaluating the operations of transportation facilities under various conditions such as roadway and intersection configuration, intersection control, type of roadway, and other factors such as bus stops, parking, and percentage of heavy vehicle traffic. The proposed BLRT Extension project traffic models⁵ consider lane configuration, existing and forecasted⁶ turning movement volumes, pedestrian/bicycle volumes, transit stations, freight and LRT alignments, freight and LRT volumes, intersection and grade crossing control devices, and signal timing characteristics. The LOS thresholds are represented as letter grades ranging from A to F. Based on standard practice in the traffic engineering industry, as well as guidance from the American Association of State Highway and Transportation Officials (AASHTO) and conformance with MnDOT and Hennepin County practice, the threshold for acceptable level of intersection operations is between LOS D and LOS E (with LOS D being considered acceptable and LOS E unacceptable) during the peak hour (hour of highest traffic volume) for urban and suburban areas.

In the study area, both AM and PM peak hours were analyzed; in many cases, the PM peak conditions were worse than the AM peak conditions. At several locations where both AM and PM peak conditions were LOS F, the PM peak had greater delays, although at a few locations the AM peak was worse than the PM peak.

3.3.2 Study Area

The study area for vehicular traffic is defined as the existing and proposed signalized intersections along the proposed BLRT Extension project alignment. In addition, several unsignalized crossings of the transitway that would be controlled with automatic gates have been included in the analysis. Study intersections are identified in Figures 1 through 6 in the *BLRT Traffic Operations Technical Memorandum* (Council, 2015e).

3.3.3 Affected Environment

The regional highway system consists of principal and minor arterials (roads that have a primary purpose of moving traffic efficiently, with less emphasis on access to adjacent land), including Interstate state and county highways and some city streets. The Twin Cities region represents slightly less than half of the state's total population. Between 2010 and 2040, growth in this area is expected by the Council to generate an additional 3 million trips and 16 million VMT per day, for a total of 10 million daily trips and 89 million VMT per day. It is the Council's policy to support

⁴ The 2010 *Highway Capacity Manual* was developed and is regularly updated by the Transportation Research Board, the nationally recognized leader in transportation research and analysis. Use of the HCM analysis techniques is standard practice for traffic operations analysis.

⁵ The proposed BLRT Extension project traffic models use VISSIM software packages that implement HCM methodologies for traffic operations analysis. Synchro software was also used for some of the intersections that did not involve rail crossings.

⁶ The *Thrive MSP 2040* plan (Council, 2014) was used to identify the 2040 forecasts that were used for the traffic modeling.



infrastructure investments that reduce VMT and carbon per unit of fuel, which are key drivers of the region's generation of greenhouse gas emissions.

Although the opportunities are limited in the study area to expand roads to address this increase in VMT, several roadway improvement projects are planned and are included in modeled results for the No-Build Alternative and the proposed BLRT Extension project.

- West Broadway Avenue Reconstruction south of Candlewood Drive to north of 93rd Avenue North – Capacity expansion from two lanes to four lanes (Hennepin County Transportation)
- Bottineau Boulevard (County Road 81) Reconstruction, 63rd Avenue to TH 169 (Hennepin County Transportation)
- Candlewood Drive Extension, West Broadway Avenue to 79th Avenue (city of Brooklyn Park)
- TH 610, Bottineau Boulevard to I-94 – New roadway construction (MnDOT)

All intersections currently operate at overall LOS D or better in the AM and PM peak hours, with the following exception:

- Olson Memorial Highway/Penn Avenue North operates at LOS F in the PM peak hour.

3.3.4 Environmental Consequences

3.3.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

The analysis of the No-Build Alternative was based on the future-year (2040) traffic volumes with the No-Build Alternative, existing roadway configurations and rail crossing treatments, and existing signal operations. The roadway improvements assumed by the Council for the No-Build Alternative analysis are shown in the intersection layouts provided in Appendix B of the *BLRT Traffic Operations Technical Memorandum* (Council, 2015e) and were based on the following projects that were completed since 2014 or are currently programmed:

- Bottineau Boulevard from TH 100 to Wilshire Boulevard restriped from a four-lane roadway to a six-lane roadway; completed in 2015 by Hennepin County
- C Line arterial BRT construction on Penn Avenue North and Olson Memorial Highway; currently planned for construction in 2017 by the Council
- Bottineau Boulevard reconstruction from a four-lane roadway to a six-lane roadway from 63rd Avenue North to West Broadway Avenue/71st Avenue North; currently planned for 2016–2018 by Hennepin County
- Bottineau Boulevard reconstruction from a four-lane roadway to a six-lane roadway from West Broadway Avenue/71st Avenue North to TH 169; currently planned for 2019 by Hennepin County
- West Broadway Avenue reconstruction from a two-lane roadway to a four-lane roadway from 78th Avenue North to 93rd Avenue North; currently planned for 2018–2020 by Hennepin County



Table 3.3-1 lists the intersections in the study area where the Council expects the level of service with the No-Build Alternative to be LOS E or F during the AM or PM peak hours in 2040. All other intersections in the study area are expected to operate at overall LOS D or better.

Table 3.3-1. Peak-Hour Traffic Operations at Intersections in 2040 with the No-Build Alternative¹

Intersection	Time Period	Vehicle Delay (seconds/vehicle)	Intersection LOS
West Broadway Avenue/ 101st Avenue North	AM peak	74	F
	PM peak	194	F
West Broadway Avenue/ Winnetka Avenue North ²	AM peak	134	F
	PM peak	162	F
West Broadway Avenue/ Oak Grove Parkway	AM peak	152	F
	PM peak	200+	F
West Broadway Avenue/ TH 610 westbound ramps	AM peak	200+	F
	PM peak	200+	F
West Broadway Avenue/ TH 610 eastbound ramps	AM peak	105	F
	PM peak	189	F
Golden Valley Road/ Theodore Wirth Parkway ³	PM peak	42	E
Olson Memorial Highway/ Thomas Avenue North ²	AM peak	91	F
	PM peak	89	F
Olson Memorial Highway/ Penn Avenue North	AM peak	81	F
	PM peak	131	F
Olson Memorial Highway/ Morgan Avenue North	PM peak	57	E

¹ Includes only intersections with overall LOS E or F. Intersections are signalized unless otherwise noted.

² Side street stop-controlled intersection.

³ All-way stop-controlled intersection.

The poor operations (delay and queuing resulting in LOS E or F) in the area north of TH 610 with the No-Build Alternative are due to the intense development planned to occur in this area by 2040. Potential transportation system improvements north of TH 610 are discussed in the **Proposed BLRT Extension Project** section that follows.

The poor operations (delay and queuing) at the Golden Valley Road/Theodore Wirth Parkway intersection with the No-Build Alternative are due to the forecasted traffic volume growth and the inefficiency of the all-way stop.

The poor level of service at the Olson Memorial Highway/Thomas Avenue North intersections is due to the high eastbound traffic volumes during the AM peak hour. The LOS E operations at the Olson Memorial Highway/7th Street North/6th Avenue North intersection during the PM peak hour are due to increase in traffic volume at the intersection.



Proposed BLRT Extension Project

The roadway network, and the effect of the proposed BLRT Extension project on that network, is tied to the level of development along the proposed BLRT Extension project alignment. The majority of the study area is developed or developing, and the traffic operations analysis considers the effect of adding LRT into an existing roadway network that serves the surrounding development.

However, the area north of TH 610 in Brooklyn Park is largely undeveloped, with the exception of the Target Northern Campus. The city of Brooklyn Park and other regional stakeholders have identified this area for urban development, and the proposed BLRT Extension project has been designed to support this development. The Council's coordination with city and county stakeholders resulted in a final siting plan for the proposed BLRT Extension project (including track alignment, the Oak Grove Parkway Station, and the Operations and Maintenance Facility [OMF]) that would require realigning the north-south West Broadway Avenue corridor and the east-west 101st Avenue/Oak Grove Parkway corridor.

In addition to realigning these primary roadway corridors, the proposed BLRT Extension project would include minor street connections consistent with the ultimate city and regional plans for the development of this area. These connections include Xylon Avenue, which would provide access to the OMF and additional traffic circulation, and Main Street, which would provide access to the Oak Grove Parkway park-and-ride as well as additional traffic circulation. See [Figure 3.4-14 in Section 3.4 – Pedestrians and Bicyclists](#) for a depiction of the proposed transportation network north of TH 610.

In addition, the city of Brooklyn Park is exploring the construction of a full-access interchange at TH 169 and 101st Avenue as a separate project not related to the proposed BLRT Extension project. This interchange is not part of the region's *TPP*, and therefore the traffic operations analysis results do not include the effects of introducing an interchange at this location. However, the Council analyzed a "what-if" scenario, including the interchange, in order to understand the effects on traffic operations. Information regarding this additional traffic analysis is provided in [Chapter 6 – Indirect Impacts and Cumulative Effects](#).

Several roadway and intersection improvements were identified by the Council as part of the proposed BLRT Extension project. These improvements fall into four primary categories: (1) improvements necessary to facilitate LRT alignment transitions, (2) improvements necessary to maintain or improve neighborhood access, (3) improvements necessary to maintain or improve traffic operations (level of service), and (4) improvements to support the necessary transportation framework for the planned development north of TH 610. These proposed improvements were incorporated into the proposed BLRT Extension project (build) conditions modeling and are shown in Appendix B of the *BLRT Traffic Operations Technical Memorandum* (Council, 2015e). The improvements are summarized in [Table 3.3-2](#).



Table 3.3-2. Traffic-Related Improvements Included in the Proposed BLRT Extension Project

Purpose of Improvement	Improvement Description
Facilitate LRT alignment transition	<ul style="list-style-type: none"> ■ Install a new traffic signal at West Broadway Avenue/94th Avenue North to allow LRT to transition from side-running to center-running. ■ Install a new traffic signal at West Broadway Avenue/75th Avenue North to allow LRT to transition from side-running to center-running.
Maintain and/or improve neighborhood access	<ul style="list-style-type: none"> ■ Install a new traffic signal at Olson Memorial Highway/Thomas Avenue North to maintain neighborhood access. ■ Install new traffic signals on Olson Memorial Highway at the proposed pedestrian crossings of Russell Avenue North, east of Oliver Avenue North, and east of James Avenue North to maintain neighborhood pedestrian access.
Maintain and/or improve traffic operations	<ul style="list-style-type: none"> ■ Modify left-turn signal operations on Brooklyn Boulevard/County Highway 152 from protected-only (green arrows) to protected/permissive (left turn allowed on green ball or flashing yellow arrow, depending on signal configuration). ■ Install a new traffic signal at 63rd Avenue North/Louisiana Avenue to provide for pedestrian crossings of 63rd Avenue North and facilitate traffic exiting the park-and-ride. ■ Modify signal phasing at Bottineau Boulevard/Bass Lake Road to provide a right-turn overlap phase on eastbound Bass Lake Road. ■ Reconfigure the West Broadway Avenue/Vera Cruz Avenue North intersection to a roundabout in order to continue to provide full access to the surrounding neighborhood; provide additional gates and medians at the rail crossing. ■ Restripe West Broadway Avenue at 42nd Avenue North to provide northbound and southbound left-turn lanes and modify the traffic signal to provide northbound and southbound protected/permissive left-turn phasing to accommodate park-and-ride traffic. ■ Modify Penn Avenue lane configurations at Olson Memorial Highway to better accommodate vehicle traffic flow. ■ Modify southbound West Lyndale Avenue North configurations to better accommodate vehicle traffic flow.
Support planned roadway network north of TH 610	<ul style="list-style-type: none"> ■ Reconstruct 101st Avenue North and Oak Grove Parkway to accommodate the needs of the OMF site. ■ Reconstruct West Broadway Avenue from TH 610 to north of Oak Grove Parkway to accommodate the desired location of the LRT alignment, station location, and park-and-ride parking structure. ■ Install a new traffic signal at West Broadway Avenue/Main Street to provide a second access point to the park-and-ride.

With the improvements listed in [Table 3.3-2](#) above being implemented, the Council expects all intersections in the study area to operate at overall LOS D or better during the AM and PM peak hours in 2040 with the proposed BLRT Extension project, with the exceptions of the following intersections that would operate at LOS E or F (see [Table 3.3-3](#)).



Table 3.3-3. Peak-Hour Traffic Operations at Intersections in 2040 with the No-Build and Proposed BLRT Extension Project¹

Intersection	Time Period	Vehicle Delay w/ Proposed BLRT Extension Project (seconds/vehicle)	Intersection LOS	
			Proposed BLRT Extension Project	No-Build Alternative
West Broadway Avenue/ 101st Avenue North ²	PM peak	Not applicable	Not applicable	F
West Broadway Avenue/ Winnetka Avenue North ²	PM peak	Not Applicable	Not applicable	F
Oak Grove Parkway/ Xylon Avenue ^{3,4}	PM peak	75	E	Not applicable
West Broadway Avenue/ Oak Grove Parkway	PM peak	96	F	F
West Broadway Avenue/ TH 610 westbound ramps	PM peak	40	D	F
West Broadway Avenue/ TH 610 eastbound ramps	PM peak	28	C	F
West Broadway Avenue/ Main Street ⁴	PM peak	63	E	Not applicable
Golden Valley Road/ Theodore Wirth Parkway ⁵	PM peak	43	E	E
Olson Memorial Highway/ Thomas Avenue North	AM peak	65	E	F
Olson Memorial Highway/ Penn Avenue North	PM Peak	51	D	F
Olson Memorial Highway/ Morgan Avenue North	PM peak	23	C	F
Olson Memorial Highway/ 7th Street North/ 6th Avenue North ⁶	PM peak	65	E	D

¹ Includes only intersections with overall LOS E or F. Intersections are signalized unless otherwise noted.

² With the proposed BLRT Extension project realigned street network, these intersections would no longer exist.

³ Side street stop-controlled intersection.

⁴ These intersections would not exist with the No-Build Alternative; however, the existing intersections in the area were at LOS F in the No-Build Alternative analysis.

⁵ All-way stop-controlled intersection.

⁶ The LOS E operations at the Olson Memorial Highway/7th Street North/6th Avenue North intersection in the 2040 PM peak is due to growth in traffic volumes at the intersection, the LRT alignment through the intersection that results in changes to the traffic signal phasing, and the roadway geometrics at the intersection. The proposed BLRT Extension project stakeholders, in evaluating the competing needs of all modes at the intersection, recommended that roadway capacity improvements not be implemented at the intersection because the corresponding negative impacts on other modes, including pedestrians, bicyclists, and buses.



The poor operations (delay and queuing) at the Oak Grove Parkway/Xylon Avenue intersection in the PM peak hour with the No-Build Alternative are due to the large amount of traffic that would be generated by development.

The poor operations (delay and queuing) at the West Broadway Avenue/Oak Grove Parkway and West Broadway Avenue/Main Street intersections in the PM peak hour with the proposed BLRT Extension project are due to the large amount of development-generated traffic that would be accessing the TH 610 interchange. The operations issues with the proposed BLRT Extension project would occur to a greater degree with the No-Build Alternative; therefore, no mitigation for these intersections is being proposed by the Council as part of the proposed BLRT Extension project.

The poor level of service (LOS E during the PM peak hour) at the Golden Valley Road/Theodore Wirth Parkway intersection with the proposed BLRT Extension project is due to the forecasted increase in traffic and the inefficiency of the all-way stop.⁷ These conditions are essentially the same as those with the No-Build Alternative; the Council expects the addition of the park-and-ride at the Golden Valley Road Station (see [Table 3.3-4](#)) to contribute 2 percent or less of the PM peak-hour traffic volume in 2040.

The poor level of service at the Olson Memorial Highway/Thomas Avenue North intersection with the proposed BLRT Extension project is due to the high eastbound traffic volumes during the AM peak hour. The operations with the proposed BLRT Extension project are expected to be better than with the No-Build Alternative because of the improvements associated with the proposed BLRT Extension project; therefore, no additional improvements are being proposed by the Council.

The LOS E operations at the Olson Memorial Highway/7th Street North/6th Avenue North intersection in the PM peak hour with the proposed BLRT Extension project are due to increased traffic at the intersection, the LRT alignment through the intersection that results in changes to the traffic signal phasing, and the roadway configurations at the intersection. The proposed BLRT Extension project stakeholders, in evaluating the competing needs of all modes at the intersection, recommended that roadway capacity improvements not be implemented at the intersection because of the corresponding negative impacts on other modes, including pedestrians, bicyclists, and buses.

⁷ Potential modifications to this intersection for the purposes of enhanced pedestrian and bicycle safety and mobility are being considered by the Council in coordination with Hennepin County, the Minneapolis Park and Recreation Board, and the city of Golden Valley. See [Section 3.4.4.1](#) for additional information.



Overall, fewer failing intersections would occur in 2040 with the proposed BLRT Extension project than with the No-Build Alternative because of the improvements that would be made as part of the proposed BLRT Extension project. In addition, all of the intersection operations at LOS E or F were due to an issue that would also exist with the No-Build Alternative, or the stakeholders determined that the traffic mitigation measures would have significant negative impacts on other modes. In summary:

- All intersections that would operate at LOS A to D under the No-Build Alternative would continue to operate at LOS A to D under the proposed BLRT Extension project, with the exception of the Olson Memorial Highway/7th Street North/6th Avenue North intersection as discussed above.
- Four intersections that would operate at LOS E or F under the No-Build Alternative would be improved to LOS A to D under the proposed BLRT Extension project.
- Two intersections that would operate at LOS E or F under the No-Build Alternative would continue to operate at LOS E or F under the proposed BLRT Extension project.

Park-and-Ride Facilities

Several new or expanded park-and-ride facilities are proposed as part of the proposed BLRT Extension project; these facilities would be located at the Golden Valley Road, Robbinsdale, Bass Lake Road, 63rd Avenue, and Oak Grove Parkway stations. The traffic impacts from the park-and-ride facilities were calculated by the Council using a trip generation evaluation based on average rates from other park-and-ride facilities in the Twin Cities metropolitan area. The results of this evaluation are shown in **Table 3.3-4**. The roadway improvements listed in **Table 3.3-2** above were included in the level of service analysis to accommodate the additional traffic generated by the park-and-ride facilities.

Table 3.3-4. Sizes of and Trips Generated by Park-and-Ride Facilities

Station	Size of New Park-and-Ride (parking spaces)	AM Peak Hour Trip Generation (vehicles/hour)	PM Peak Hour Trip Generation (vehicles/hour)	Daily Trip Generation (vehicles/day)
Oak Grove Parkway	850	470	435	2,520
63rd Avenue	565	310	290	1,680
Bass Lake Road	170	95	85	500
Robbinsdale	550	305	280	1,630
Golden Valley Road	100	55	50	300



3.3.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

No construction-phase impacts to vehicular traffic would occur under the No-Build Alternative.

Proposed BLRT Extension Project

The Council expects the construction of the proposed BLRT Extension project to cause disruptions to traffic operations, including lane closures, short-term intersection and roadway closures, and detours that would cause local increases in congestion.

The details of construction staging would be developed by the Council in future stages of project design. Maintenance of traffic (MOT) plans would need to be developed during final design or construction and submitted for approval to the roadway authorities. The MOT plans would address construction phasing, maintenance of traffic, traffic signal operations, access through the construction work zone, road closures, and any traffic detours.

3.3.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures that will be implemented to mitigate the long-term and short-term roadway and traffic impacts from the proposed BLRT Extension project. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address.

3.3.5.1 Long-Term Mitigation Measures

No mitigation measures are warranted for long-term impacts to roads and traffic because several improvements were identified as part of the project scope to provide signalized control of LRT movements at and through intersections and to provide adequate infrastructure to accommodate buses, pedestrians, and park-and-ride traffic near stations. As shown in **Table 3.3-2**, the proposed BLRT Extension project includes a variety of roadway modifications that will avoid new congested intersections, and, with one exception, the proposed BLRT Extension project will not worsen conditions at intersections that would be congested with the No-Build Alternative in 2040.

The Olson Memorial Highway/7th Street/6th Avenue intersection would need geometric improvements to maintain acceptable level of service operations. However, as noted previously in **Section 3.3.4.1**, the proposed BLRT Extension project stakeholders, including the city of Minneapolis, Hennepin County, MnDOT, and the Council, evaluated the competing needs of all modes at the intersection. They recommended that roadway capacity improvements should not be implemented at the intersection because of the corresponding negative impacts on other modes, including pedestrians, bicycles, and buses.



3.3.5.2 Short-Term Mitigation Measures

Project construction will result in temporary partial or full closures of existing streets as well as material and equipment deliveries, worker arrivals and departures, and hauling of excavation and borrow materials.

Mitigation measures for short-term (construction) impacts to roads and traffic will be implemented by the Council prior to and during construction through the Construction Mitigation Plan, which includes a Construction Communication Plan and a construction staging plan. MnDOT, Hennepin County, and all municipalities affected by construction activities related to the proposed BLRT Extension project will require compliance with applicable state and local regulations related to the closing of roads and the effects of construction activities.

Contractors will be required to comply with all guidelines established in the *Minnesota Manual on Uniform Traffic Control Devices* (MnDOT, 2015). Construction staging and mitigation documents will be reviewed by appropriate jurisdictions, and required permits will be secured by construction contractors. Traffic-control plans will be developed by the contractor based on information identified in the construction documents and the Construction Mitigation Plan. Traffic-control plans will be reviewed by appropriate jurisdictions and the Council before construction activities began.

3.4 Pedestrians and Bicyclists

3.4.1 Regulatory Context and Methodology

This section describes existing bicycle and pedestrian facilities and connections in the study area and the expected impacts of the No-Build Alternative and the proposed BLRT Extension project on these facilities. Non-motorized transportation facilities, including sidewalks, single- and multi-use trails, on-street bike facilities, and pedestrian bridges are found throughout the study area. The Council identified facilities by reviewing trail and comprehensive plan maps, aerial photographs, and station-area planning documents; site visits; and discussions with stakeholders. Preliminary engineering drawings and LOD were used to determine the number and severity of impacts. Physical encroachments onto existing facilities were identified and evaluated to avoid or minimize impacts.

Impacts to pedestrian and/or bicycle routes from the proposed BLRT Extension project crossing restrictions were identified by the Council and alternates were examined, with consideration for reasonable accessibility associated with the Americans with Disabilities Act (ADA) requirements.

The discussion of the proposed BLRT Extension project focuses on:

- Target Field Station connection area, especially the Olson Memorial Highway/7th Street intersection
- Olson Memorial Highway, especially the area between the I-94 bridge and Thomas Avenue and including the Van White Boulevard and Penn Avenue stations
- Plymouth Avenue Station area
- Golden Valley Road Station area



- Robbinsdale Station area
- Bass Lake Road Station area
- 63rd Avenue Station area
- Grade separation at Bottineau Boulevard and 73rd Avenue, especially changes to Jolly Lane
- West Broadway Avenue, including the Brooklyn Boulevard, 85th Avenue, and 93rd Avenue stations
- Oak Grove Parkway Station area

The discussion includes a summary of effects on bicycle and pedestrian facilities in the study area, with a focus on the proposed accessibility improvements at future station areas and on reconstructed intersections or crossings where existing bicycle and pedestrian access would change.

3.4.2 Study Area

The study area for impacts to pedestrians and bicyclists is defined as the LOD from the proposed BLRT Extension project, facilities near the proposed BLRT Extension project alignment, and alternate routes in the surrounding area. The study area for alternate routes varies based on the conditions of the surrounding bicycle/pedestrian network, but generally includes alternate routes within ½ mile of the transitway and/or affected crossing.

3.4.3 Affected Environment

The extent and condition of existing pedestrian and bicycle facilities associated with the proposed BLRT Extension project ranges from intermittent facilities in the more suburban areas of the study area to complete sidewalk systems and on-street bicycle facilities in Minneapolis and the other more urban portions of the study area.

3.4.4 Environmental Consequences

3.4.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

No operating-phase impacts to pedestrians or bicyclists would occur under the No-Build Alternative.

Proposed BLRT Extension Project

The proposed BLRT Extension project would provide several long-term improvements to pedestrian and bicycle accessibility and safety. All LRT stations would provide safe access for pedestrian and bicycle traffic. Bicycle parking would be included at or near stations as space allows, with the type and location of parking to be determined by the Council as station design and site development progress.



The issue resolution process conducted with Metro Transit, Hennepin County, and staff from the cities along the proposed BLRT Extension project alignment resulted in several modifications to the pedestrian and bicycle environment beyond that presented in the Draft EIS. These modifications are described in detail below, and a summary of impacts resulting from these modifications is shown in **Table 3.4-1**.

Table 3.4-1. Summary of Impacts to Pedestrian and Bicycle Facilities

Location	Impact
Target Field Station connection and 7th Street North intersection design	Pedestrian and bicycle needs accommodated in design of Olson Memorial Highway and 7th Street North intersection, which includes dedicated bicycle lanes and enhanced pedestrian crossings
Olson Memorial Highway	Improved pedestrian safety and access to stations along Olson Memorial Highway; addition of traffic signal at Thomas Avenue intersection and three mid-block signalized pedestrian crossings; provisions for a cycle track on north side of Olson Memorial Highway
Plymouth Avenue Station	Improved pedestrian and bicycle access through reconstruction of sidewalks and bicycle lanes on Plymouth Avenue bridge; access to the Plymouth Avenue Station vertical circulation facility, as well as connecting to the existing trail west of the bridge; improvements to sidewalks along Plymouth Avenue to facilitate pedestrian movements between bus stop and passenger drop-off areas and station; existing TWRP trail would be relocated west out of its current location within BNSF right-of-way
Golden Valley Road Station area	Improved pedestrian and bicycle access at reconstructed Theodore Wirth Parkway and Golden Valley Road bridges; Theodore Wirth Parkway bridge trail would be widened to meet current design standards, and vertical circulation facilities to access Golden Valley Road Station would be added; trailhead would be constructed at Golden Valley Road Station park-and-ride; new trail connection under Golden Valley Road between TWRP and Sochacki Park
Robbinsdale Station area	Improved pedestrian access and safety through proposed pedestrian crossings at 41st Avenue/Noble Avenue and 42nd Avenue; proposed pedestrian crossings to provide ADA-compliant crossings of the freight rail and LRT tracks; improved pedestrian access through proposed LRT crossing at 45½ Avenue; bicyclists access to station via Crystal Lake Regional Trail; improve pedestrian safety through closing the existing informal (and prohibited) crossings of the BNSF track at Sochacki Park
Bass Lake Road Station area	Improved pedestrian access through proposed pedestrian bridge over Bottineau Boulevard and improved connections from trails and sidewalks to station and park-and-ride lot; bicyclists access to station via Crystal Lake Regional Trail; improved pedestrian crossings of the LRT tracks at West Broadway Avenue
63rd Avenue Station area	Improved pedestrian access and safety through improved connections along 63rd Avenue to reach the proposed station and a proposed grade-separated connection from the parking ramp; improved pedestrian access through at-grade pedestrian crossings of LRT/freight tracks at 71st Avenue; bicyclists access to station via Crystal Lake Regional Trail
Jolly Lane/75th Avenue area	Pedestrian and bicycle access would be maintained through reconstruction and realignment to accommodate proposed BLRT Extension project features



Table 3.4-1. Summary of Impacts to Pedestrian and Bicycle Facilities

Location	Impact

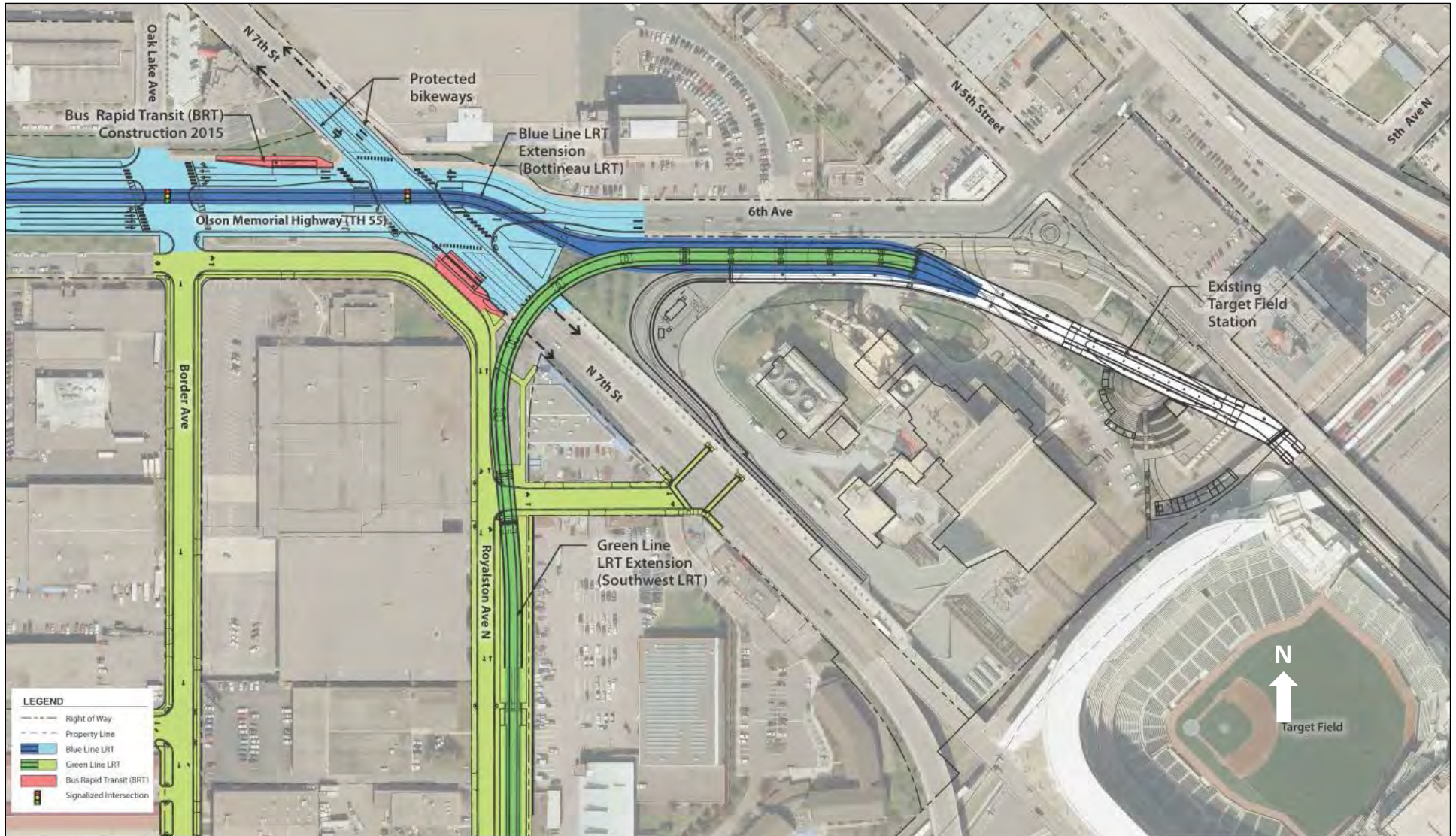
Target Field Station Connection and 7th Street Intersection Design

One of the issues identified for resolution through the early stages of proposed BLRT Extension project development was the LRT connection to the Target Field Station. The challenge was to find a way to address vehicle traffic through the intersection of Olson Memorial Highway and 7th Street North while accommodating pedestrians’ and bicyclists’ needs. Specific components of the pedestrian and bicycle improvements identified through the issues-resolution process include:

- Shortening the pedestrian crossing distance at each leg of the intersection
- Providing pedestrian refuge space at median crossings
- Accommodating northbound and southbound bicycle lanes in 7th Street North (bicycle lanes to be constructed as a component of the Green Line LRT Extension project)
- Creating perpendicular or near-perpendicular crossing paths at LRT tracks for bicycles and wheelchairs to prevent wheels from getting stuck in track channels
- Eliminating the free right-turn movement from northbound (northwest-bound) 7th Street North to eastbound 6th Avenue North

Figure 3.4-1 depicts the proposed BLRT Extension project’s intersection layout at the Olson Memorial Highway/7th Street North intersection near the Target Field Station.

Figure 3.4-1. Proposed Olson Memorial Highway/7th Street North Intersection Layout





Olson Memorial Highway

Concern for pedestrian safety and access to stations along Olson Memorial Highway were key issues identified in multiple comments on the Draft EIS. Currently nine unmarked, unsignalized mid-block crossings occur, in addition to six marked crossings at signalized intersections. Several of these crossings are not ADA-compliant. The city of Minneapolis, Hennepin County, MnDOT, and Metro Transit evaluated multiple options for Olson Memorial Highway that would balance the needs of motorists and other users. The results of extensive analysis and discussion were incorporated into the scope of the proposed BLRT Extension project and are as follows:

- Maintain a six-lane roadway section to accommodate existing and future traffic volumes.
- Reduce lane widths to 11 feet (current widths are 12 feet and greater) to reduce pedestrian crossing length.
- Reduce the design speed and posted speed limit from 40 to 35 mph to provide a safer environment for pedestrians and bicyclists.
- Replace existing sidewalks on the north and south sides of Olson Memorial Highway. The current sidewalks are 5 feet wide and in poor condition, with some gaps. New sidewalks would be 6 feet wide and continuous.
- Provide ADA-compliant pedestrian crossings at the following signalized intersections:
 - West Lyndale Avenue
 - Bryant Avenue
 - Van White Memorial Boulevard (also provides station access)
 - Humboldt Avenue
 - Morgan Avenue
 - Penn Avenue
 - Thomas Avenue
- Provide ADA-compliant signalized pedestrian crossings at the following three mid-block locations:
 - East of the Penn Avenue Station (also provides secondary access to the Penn Avenue Station)
 - James Avenue (between Humboldt and Morgan avenues)
 - Russell Avenue (also provides secondary access to the Van White Boulevard Station)
- Provide pedestrian refuge areas in the median.
- Provide space on the north side of Olson Memorial Highway for a 10-foot two-way cycle track (to be constructed by others) between Thomas Avenue and Van White Memorial Boulevard.
- Provide a multi-use trail on the north side of the reconstructed westbound Olson Memorial Highway bridge.

Figures 3.4-2, 3.4-3, and 3.4-4 depict proposed conceptual pedestrian crossing safety treatments and improvements along Olson Memorial Highway at signalized intersections and mid-block crossings and provisions for the proposed cycle track.

Figure 3.4-2. Conceptual Intersection Pedestrian Safety Improvements

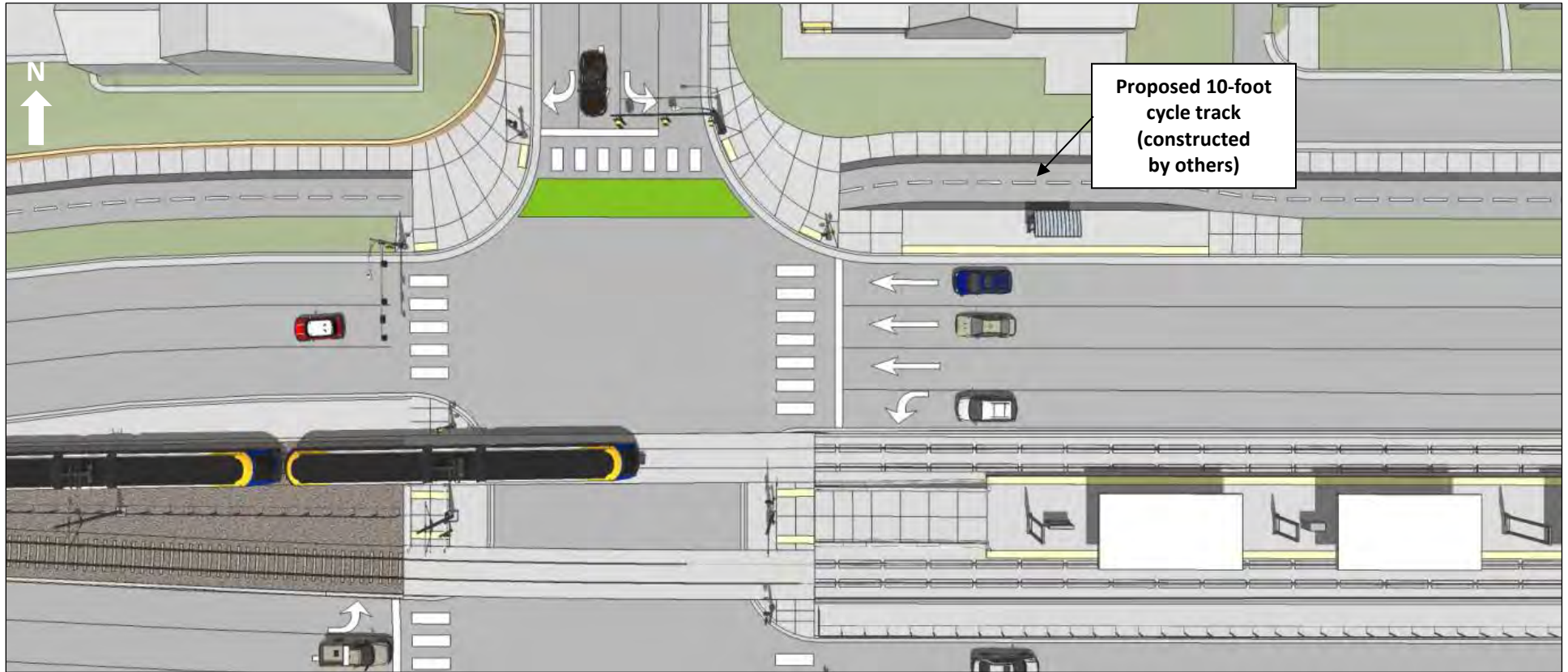




Figure 3.4-3. Conceptual Mid-block Pedestrian Safety Improvements



Figure 3.4-4. Provisions for a Cycle Track on the North Side of Olson Memorial Highway





Plymouth Avenue Station

At the Plymouth Avenue Station, the Plymouth Avenue bridge is proposed to be reconstructed to accommodate the LRT and relocated freight rail tracks. Reconstruction is required because the existing bridge pier spacing would not allow the necessary freight, LRT, and LRT station configurations.

The Minneapolis Park and Recreation Board (MPRB) has requested enhanced trail connections providing greater levels of connectivity with the regional trail system and the proposed Plymouth Avenue Station in this area as well, including a connection between Plymouth Avenue and the TRWP trail adjacent to Bassett Creek.

Pedestrian sidewalks and bicycle lanes in the shoulders on the bridge would be reconstructed and would provide access to the Plymouth Avenue Station vertical circulation facility as well as connecting to the existing trail west of the bridge. Additional improvements would be made to the sidewalks along Plymouth Avenue to the east to facilitate pedestrian movements between bus stop and passenger drop-off areas and the station. As part of this bridge reconstruction, the existing TRWP trail that runs parallel to Bassett Creek would be relocated to the west out of its current location within the BNSF right-of-way. (See [Section 5.3.4](#) for a discussion of impacts to Bassett Creek.) Details of these design improvements have been coordinated with MPRB.

[Figure 3.4-5](#) illustrates the planned bicycle and pedestrian accommodations at the proposed Plymouth Avenue Station.

Golden Valley Road Station Area

At the Golden Valley Road Station, both the Theodore Wirth Parkway bridge and the Golden Valley Road bridge are proposed to be reconstructed, including the existing pedestrian and bicycle facilities. The trail on the Theodore Wirth Parkway bridge would be widened to meet current design standards, and vertical circulation facilities to access the Golden Valley Road Station would be added to the Golden Valley Road bridge. A trailhead would be constructed at the eastern corner of the proposed Golden Valley Road Station park-and-ride. This trailhead would provide access to the existing MPRB trail system and access to the proposed Bassett Creek Regional Trail that would be constructed by the Three Rivers Park District along Golden Valley Road.

The new Golden Valley Road bridge would be designed to accommodate a new trail connection under Golden Valley Road between TWRP and Sohacki Park.

The traffic operations analysis indicates that the Golden Valley Road/Theodore Wirth Parkway intersection would have approximately the same vehicular traffic level of service in 2040 with either the No-Build Alternative or the proposed BLRT Extension project (see [Section 3.3 – Vehicular Traffic](#)). However, the proximity of bicycle and pedestrian facilities and the addition of new trail connections with the proposed BLRT Extension project could require improving the intersection to enhance the safety of pedestrians and bicyclists. The Council will coordinate such improvements with MPRB, the city of Golden Valley, and Hennepin County, along with other stakeholders.

[Figure 3.4-6](#) illustrates the planned bicycle and pedestrian accommodations at the proposed Golden Valley Road Station.

Figure 3.4-5. Plymouth Avenue Station Area





Figure 3.4-6. Golden Valley Road Station Area





Robbinsdale Station Area

At the Robbinsdale Station, pedestrian crossings at 41st Avenue/Noble Avenue and at 42nd Avenue are proposed to be improved to provide safe access from the west side of the BLRT Extension project alignment. A grade-separated crossing at 41st Avenue/Noble Avenue was considered by the Council but was rejected because of impacts to adjacent properties and potential security concerns. Pedestrian crossings are proposed to be constructed to provide ADA-compliant crossings of the freight rail and LRT tracks. Improvements to the 42nd Avenue/West Broadway Avenue intersection would maintain the existing pedestrian crossing alignment.

The Crystal Lake Regional Trail is located about 1,500 feet east of the Robbinsdale Station; cyclists would be able to access the station via 41st and 42nd avenues.

Existing pedestrian facilities are proposed to be improved at the proposed LRT crossing at 45½ Avenue (about 1,300 feet north of TH 100). As proposed, the BLRT Extension project LOD would come within 10 feet of the existing trail in Lee Park, but would not alter the trail itself.

Construction of the proposed BLRT Extension project as proposed would require closing the existing informal (and illegal) crossings of the BNSF track at Sohacki Park. Fences or other barriers to discourage pedestrian crossings would be necessary in these locations to preserve pedestrian safety near the LRT and freight tracks. Reconstructing the 36th Avenue bridge in this area (about ¾ mile south of the Robbinsdale Station) would also include restoring existing bicycle and pedestrian facilities.

Figure 3.4-7 illustrates the planned pedestrian accommodations at the proposed Robbinsdale Station.

Bass Lake Road Station Area

The proposed Bass Lake Road Station area provides a pedestrian bridge over Bottineau Boulevard and improved connections from trails and sidewalks along the south side of Bass Lake Road to reach the station. In addition, sidewalk connections are proposed to be provided or improved in the area of the proposed park-and-ride lot, including improved connections to Lakeland Avenue.

The Crystal Lake Regional Trail runs along the east side of Bottineau Boulevard; bicyclists and pedestrians would be able to use the existing crossing facilities at the Bass Lake Road intersection to connect to the Bass Lake Road Station.

South of Bass Lake Road, the proposed BLRT Extension project also includes improved pedestrian crossings of the LRT tracks at West Broadway Avenue (about 1 mile south of the Bass Lake Road Station) and Corvallis Avenue (about ⅔ mile south of the Bass Lake Road Station).

Figure 3.4-8 illustrates the planned bicycle and pedestrian accommodations at the proposed Bass Lake Road Station.



Figure 3.4-7. Robinsdale Station Area

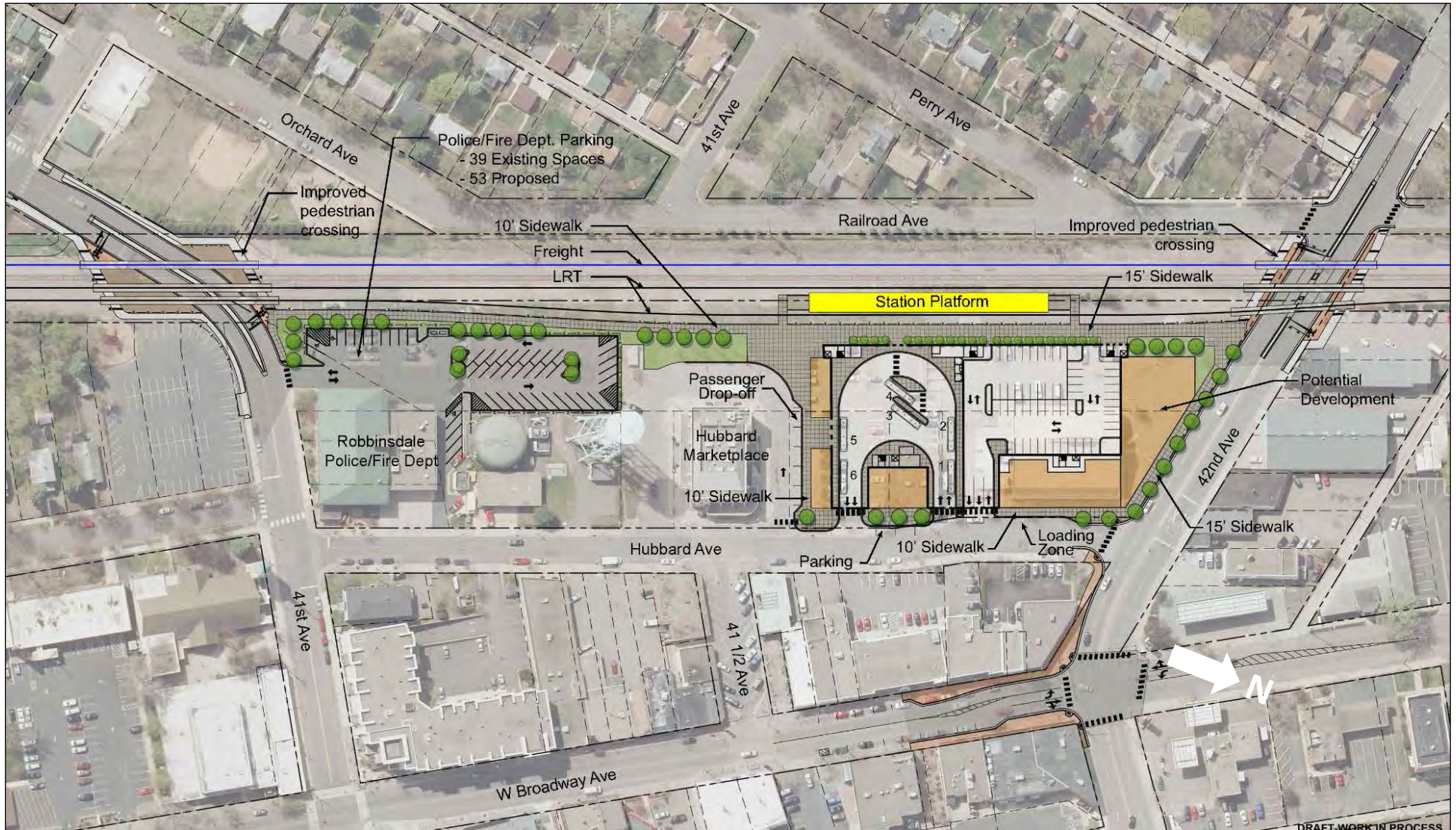
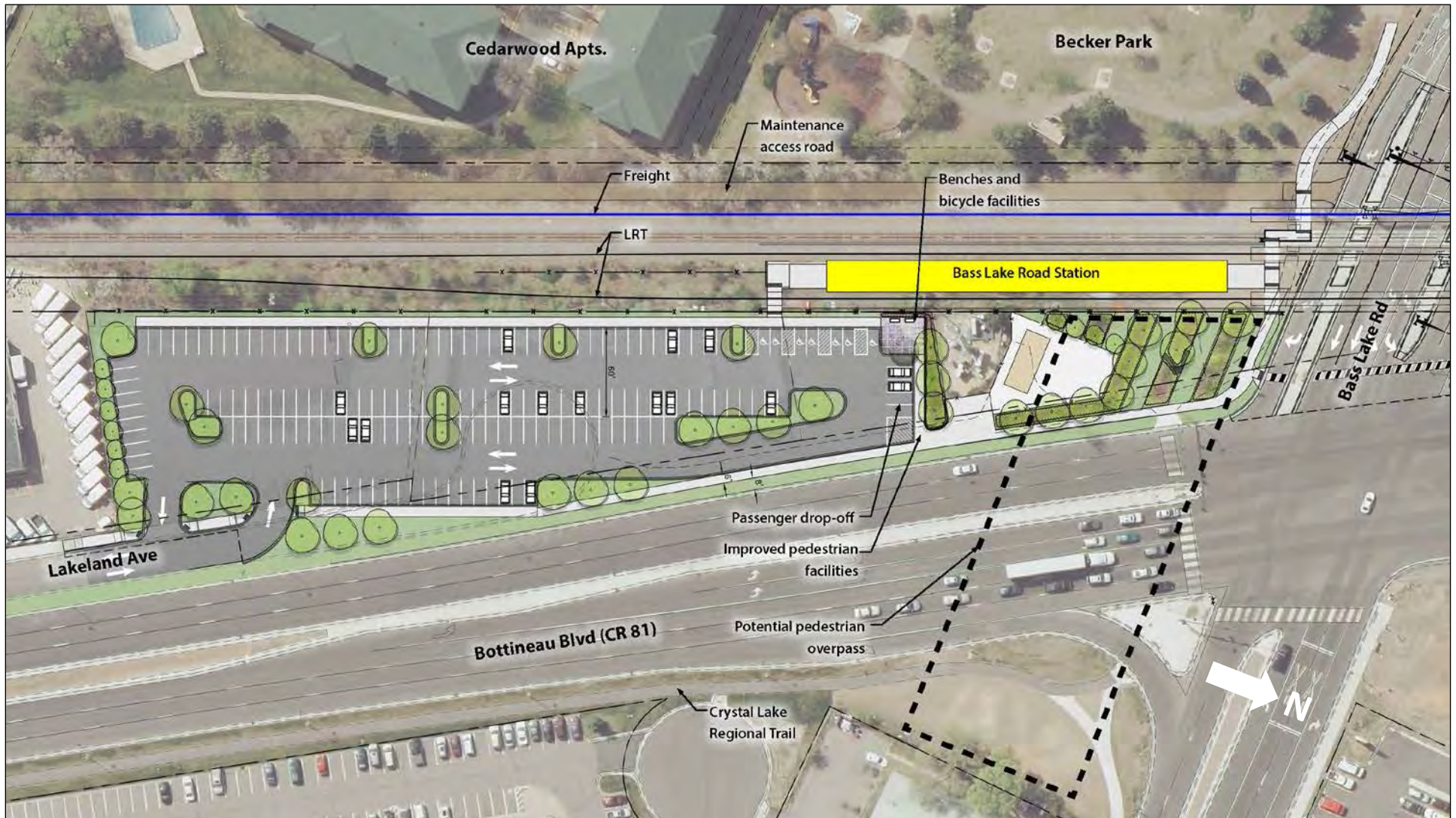


Figure 3.4-8. Bass Lake Road Station Area





63rd Avenue Station Area

The proposed 63rd Avenue Station area stands to provide improved connections along 63rd Avenue to reach the proposed station and a proposed grade-separated connection from the parking ramp to the station to provide a safe means of accessing the station platform directly from the parking ramp.

The Crystal Lake Regional Trail runs along the east side of Bottineau Boulevard; bicyclists would be able to use the existing crossing facilities at the 63rd Avenue intersection to connect to the station.

Improved at-grade pedestrian crossings of the LRT/freight rail alignment would also be provided at 71st Avenue (about 1¼ miles north of the 63rd Avenue Station).

Figure 3.4-9 illustrates the planned pedestrian accommodations at the proposed 63rd Avenue Station area.

Jolly Lane/75th Avenue Area

Just south of the Bottineau Boulevard/73rd Avenue intersection, the LRT alignment is proposed to transition from the BNSF rail corridor to a grade-separated crossing. The LRT would pass over both Bottineau Boulevard and 73rd Avenue and then descend to a run at grade in the center of West Broadway Avenue (see **Figure 3.4-10**). The introduction of the LRT alignment in the Jolly Lane area would require modifying roadway connections; the sidewalks in this area would be modified as well under the proposed BLRT Extension project, but would maintain pedestrian and bicycle connections to West Broadway Avenue.

The Crystal Lake Regional Trail currently ends at the I-94/Interstate Highway 694 (I-694) interchange about ½ mile south of 73rd Avenue. Hennepin County is planning to improve Bottineau Boulevard in this area in 2017; the roadway corridor improvements would include extending the trail. At 73rd Avenue, the trail would go under the proposed LRT bridge built over Bottineau Boulevard.

Figure 3.4-9. 63rd Avenue Station Area

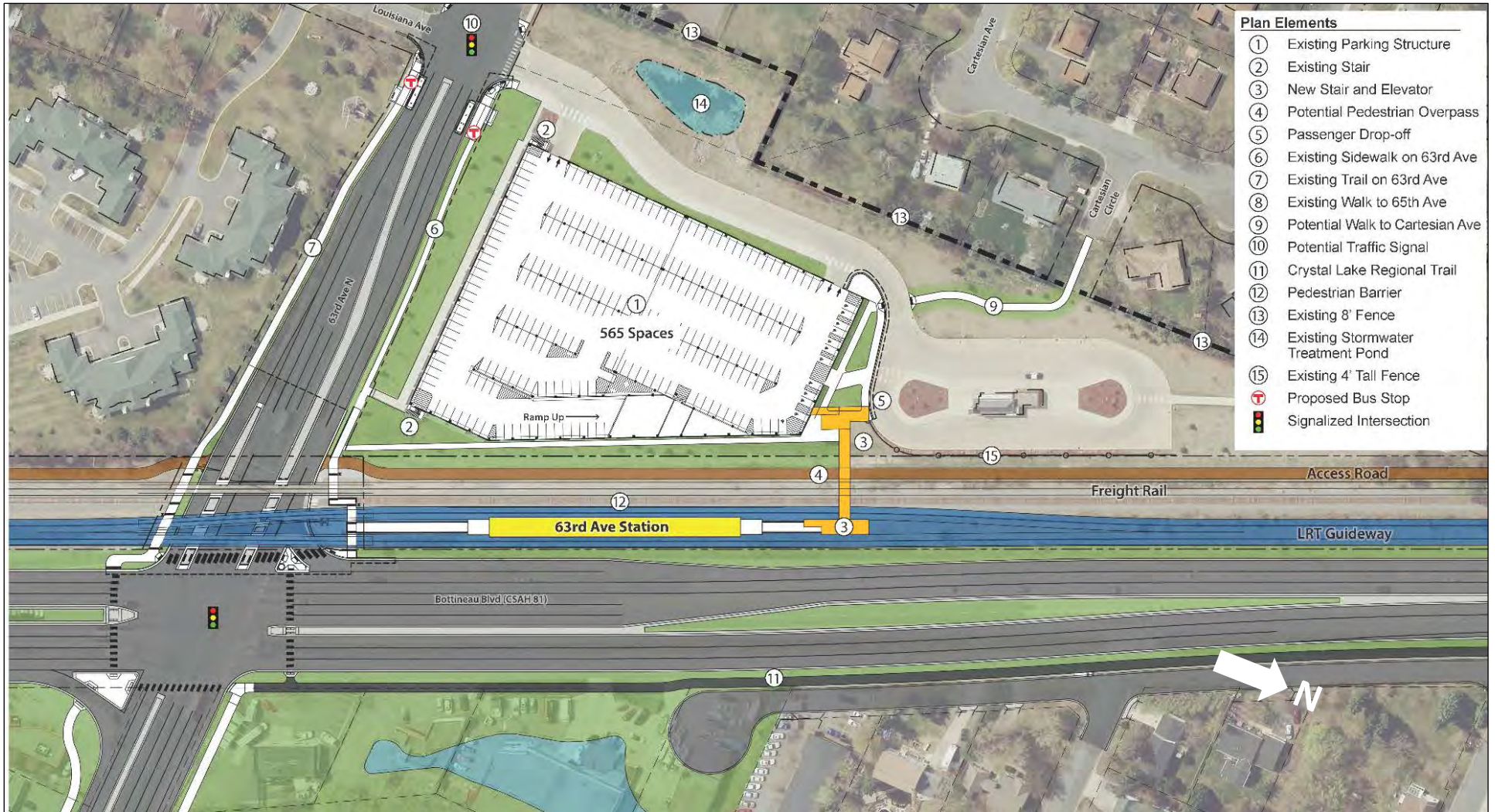




Figure 3.4-10. Grade-Separated Crossing at 73rd Avenue and Jolly Lane/75th Avenue Area





West Broadway Avenue Station Areas (including Brooklyn Boulevard, 85th Avenue, and 93rd Avenue Station Areas)

As proposed, the BLRT Extension project would require closing one pedestrian crossing at West Broadway Avenue in Brooklyn Park at a commercial property access about 400 feet north of the Brooklyn Boulevard/West Broadway Avenue intersection. An alternate crossing is available within $\frac{1}{8}$ mile of the closed crossing.

The proposed BLRT Extension project, and programmed improvements by other agencies, would considerably enhance the non-motorized transportation environment in comparison to the No-Build Alternative. A continuous bicycle/pedestrian facility between Candlewood Drive and 93rd Avenue is included in the design plans for the West Broadway Avenue Reconstruction project, which has been programmed independently of the proposed BLRT Extension project and would be completed by Hennepin County. The existing off-street trails on both sides of West Broadway Avenue north of 93rd Avenue would be crossed by the proposed LRT alignment in the vicinity of 94th Avenue, where the LRT alignment transitions from running alongside the center of West Broadway Avenue to the western side of the street in new right-of-way. Any direct impacts to the trails would be mitigated through trail reconstruction. Trails are proposed to be constructed south of Candlewood Drive along West Broadway Avenue to 75th Avenue. A new signalized crossing would be constructed at 75th Avenue.

Reconstruction of the trails south of Candlewood Drive would be completed as a component of the proposed BLRT Extension project, thereby providing continuous facilities along both sides of West Broadway Avenue in the study area.

Figures 3.4-11, 3.4-12, and 3.4-13 illustrate the planned bicycle and pedestrian accommodations at the proposed West Broadway Avenue station areas at Brooklyn Boulevard, 85th Avenue North, and 93rd Avenue North. At the Brooklyn Boulevard Station, the 76th Avenue/West Broadway Avenue intersection would be improved and would include bus stop access and a secondary pedestrian access to the station. Improvements to the Brooklyn Boulevard/West Broadway Avenue intersection would provide safer pedestrian crossings by eliminating free right turns and would provide the primary pedestrian access to the station.

In the area of the 85th Avenue Station, the pedestrian crossing at 84th Avenue and West Broadway Avenue would be closed. Pedestrian crossing facilities would be provided at a new signalized intersection at College Park Drive and West Broadway Avenue. Pedestrian access to the 85th Avenue Station would be from the 85th Avenue/West Broadway Avenue intersection, as well as from a secondary access about 400 feet south of the intersection. The secondary access would also allow pedestrians to cross West Broadway Avenue if their destination is not the LRT station.

Between the 85th Avenue and 93rd Avenue stations, improved pedestrian crossings of West Broadway Avenue would be located at the Maplebrook Parkway/West Broadway Avenue intersection and also at the Setzler Parkway/West Broadway Avenue intersection, where new, full-access signalized intersections would be constructed as part of the Hennepin County West Broadway Avenue Reconstruction project.



Figure 3.4-11. Brooklyn Boulevard Station Area



Figure 3.4-12. 85th Avenue Station Area

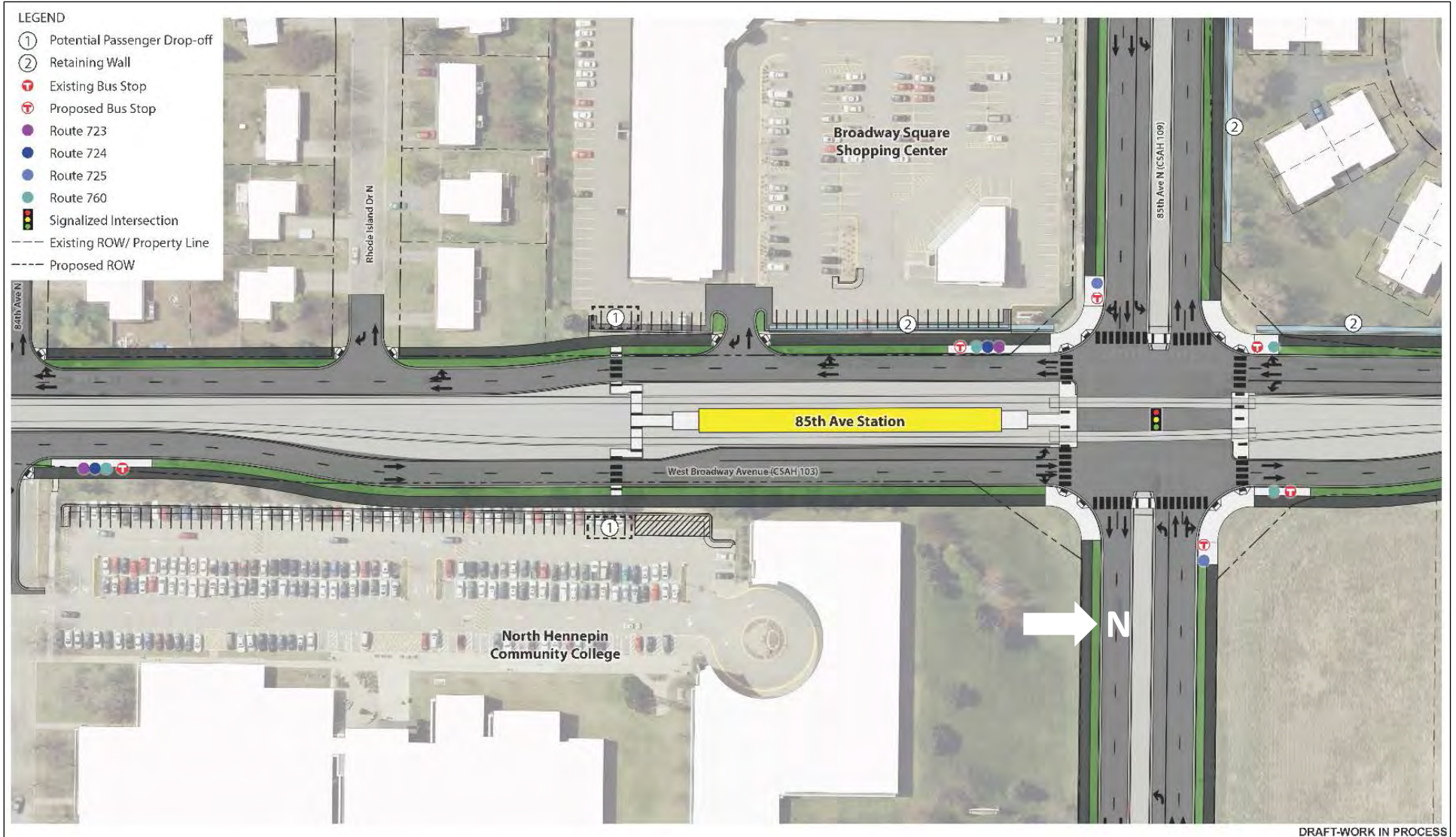
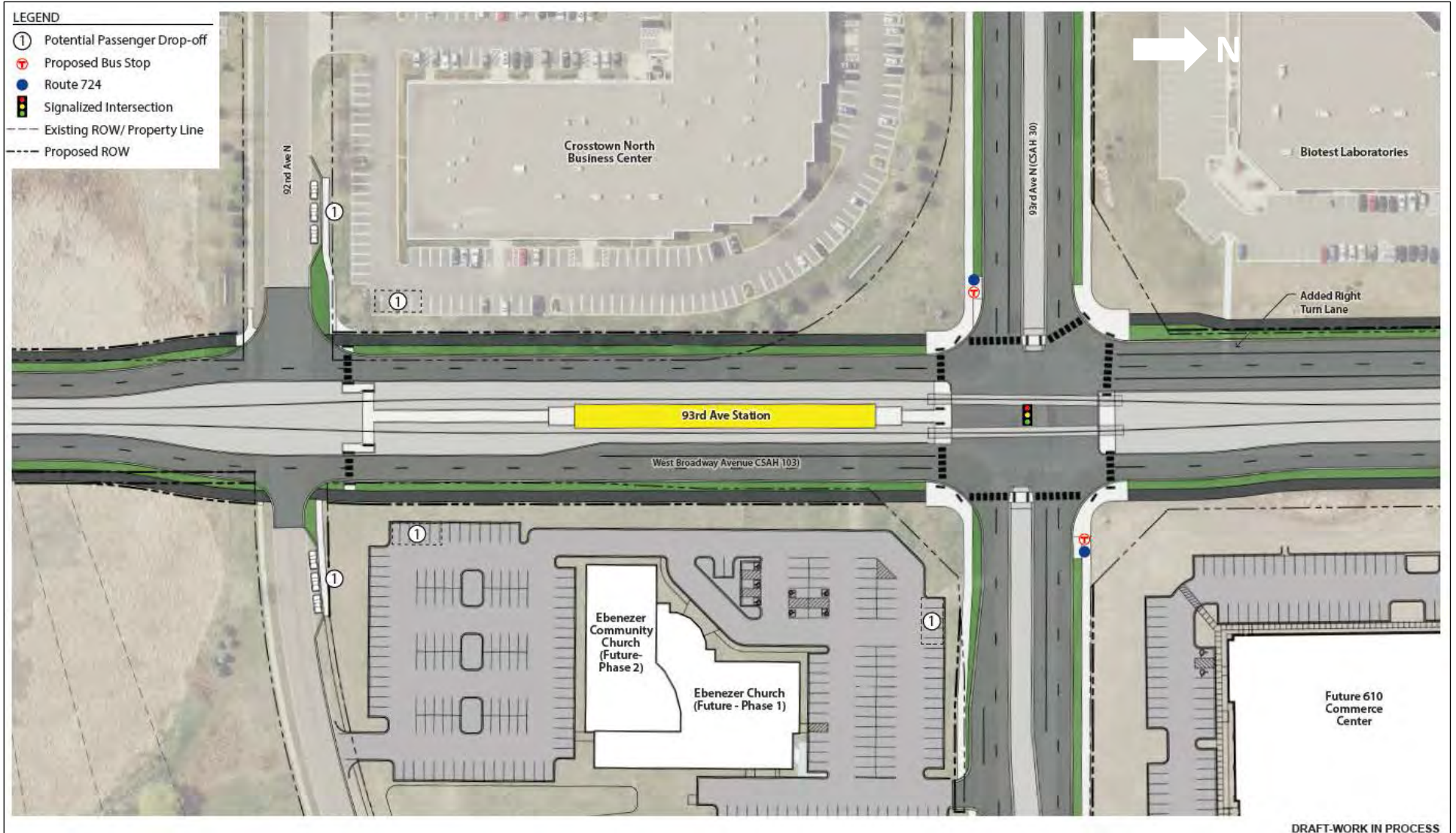




Figure 3.4-13. 93rd Avenue Station Area





Access to the 93rd Avenue Station would be provided at the improved 93rd Avenue/West Broadway Avenue intersection (also part of the Hennepin County West Broadway Avenue Reconstruction project). Secondary access to the station is proposed to be provided by a crossing at 92nd Avenue; this crossing would be constructed as part of the proposed BLRT Extension project.

Bicycle access to proposed LRT stations would use the same locations as those identified for pedestrians; the introduction of bicycle/pedestrian trails on both sides of West Broadway Avenue (through the Hennepin County West Broadway Avenue Reconstruction project) would further enhance bicycle accessibility in this area.

Oak Grove Parkway Station Area

Extensive discussions with the city of Brooklyn Park and Hennepin County resulted in a preliminary layout realigning West Broadway Avenue, Oak Grove Parkway, and 101st Avenue (see [Figure 3.4-14](#)). This proposed roadway layout incorporates the proposed Oak Grove Parkway Station and park-and-ride into a transportation network that would accommodate proposed development in the area. The intent of the proposed transportation network is to create a walkable, bicycle-friendly environment; therefore, the appropriate provisions for sidewalks and bicycle trails are proposed to be incorporated into the final design for the proposed BLRT Extension project in this area. Provisions for future connections (by others) to the Rush Creek Regional Trail, located just north of the OMF, would also be included.

TPSS

The proposed TPSS sites associated with the proposed BLRT Extension project would have little to no impact on existing bicycle and pedestrian facilities.

3.4.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

No construction-phase impacts to pedestrians or bicyclists would occur under the No-Build Alternative.

Proposed BLRT Extension Project

For the proposed BLRT Extension project, the Council anticipates that temporary closures or detours would affect existing bicycle and pedestrian facilities. Construction traffic and debris, such as excess dirt and gravel, can also pose obstacles or issues for pedestrians and bicyclists. Maintaining safe access for non-motorized users as a result of detours, closures, and other inconveniences during the construction phase would be included by the Council in phasing plans.



Figure 3.4-14. Oak Grove Parkway Station Area





3.4.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures proposed to mitigate the long-term and short-term pedestrian and bicyclist impacts from the proposed BLRT Extension project. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures are proposed to address.

3.4.5.1 Long-Term Mitigation Measures

No mitigation measures are warranted for long-term impacts to pedestrians and bicyclists because the proposed avoidance measures will prevent any adverse impacts. As described in [Section 3.4](#), the proposed BLRT Extension project includes a variety of pedestrian and bicyclist enhancements at station locations and at other LRT crossings.

3.4.5.2 Short-Term Mitigation Measures

The proposed BLRT Extension project will require short-term closures of sidewalks, trails, or roads (typically up to about 3 to 5 days), during which detour routes or facilities might not be provided.

Mitigation strategies to be taken in the event of temporary closures will be identified by the Council in the Construction Communication Plan, which will include a staging plan for implementation by the Council prior to and during construction. The purpose of the Construction Communication Plan is to prepare project-area residents, businesses, and commuters for construction; listen to their concerns; and develop plans to minimize disruptive effects. Strategies could include:

- Issuing and distributing regular construction updates
- Providing advance notice of roadway closures, driveway closures, and utility shutoffs
- Conducting public meetings
- Establishing a 24-hour construction hotline
- Preparing materials with information about construction
- Addressing property access issues
- Assigning staff to serve as liaisons between the public and contractors during construction



3.5 Parking

3.5.1 Regulatory Context and Methodology

This section describes the loss of parking in the study area as a result of the proposed BLRT Extension project. The construction of LRT and associated modifications to roadway geometry would alter the supply of on-street and off-street parking. These changes could, in turn, reduce convenient access to businesses and residences.

Dedicated park-and-ride facilities have been identified by the Council as part of the proposal for the BLRT Extension project. All new park-and-ride facilities are described in [Section 2.5](#) and not addressed as part of this impact assessment of existing parking conditions. The transit effects of proposed park-and-ride facilities are addressed in [Section 3.1](#). Also see [Table 3.3-4](#) in [Section 3.3](#) for a summary of the effects of the proposed park-and-ride facilities on traffic.

The study area is characterized by highway facilities with no parking, arterial roads, local streets, frontage roads with some on-street parking, and off-street parking that serves commercial and institutional facilities.

The analysis in this section focuses on the impacts of the proposed BLRT Extension project on existing on-street and off-street parking. The Council reviewed the existing parking supply in the proposed BLRT Extension project corridor, which included reviewing aerial photographs and project engineering drawings, as well as conducting field visits, in order to assess the potential effects of changes in the parking supply.

3.5.2 Study Area

The study area for parking is defined as the proposed BLRT Extension project LOD.

3.5.3 Affected Environment

Vehicle parking in the study area is a combination of on-street parking and surface parking lots. Local jurisdictions have the authority to regulate parking, including introducing permit parking or other parking restrictions.

Almost all on-street parking is available to the public as either metered or unmetered spaces. Some on-street parking spaces are available along certain frontage roads along Olson Memorial Highway and West Broadway Avenue at 42nd Avenue.

Off-street parking consists of a mix of public and private lots. Private off-street parking is restricted to authorized people. Off-street public parking spaces are available for commercial and retail businesses, as well as park areas and facilities such as the TWRP Chalet parking lot. Other off-street parking facilities include parking lots for restaurants, churches, North Hennepin Community College, other public parks, and medical-related businesses. The public can use these parking lots only when they are using these facilities.



3.5.4 Environmental Consequences

3.5.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

No operating-phase parking impacts would occur under the No-Build Alternative.

Proposed BLRT Extension Project

Impacts to on-street and off-street parking resources were considered; the results of the analysis are shown in **Figure 3.5-1** and described below.

Olson Memorial Highway

Existing on-street parking would be affected by the proposed BLRT Extension project primarily on the frontage roads along Olson Memorial Highway. This impact would be caused by the configuration of the proposed reconstruction of the highway. As it developed the proposed BLRT Extension project, the Council tried to maintain frontage road connections and minimize the acquisition of right-of-way. Specifically, reconstructing the frontage roads on the north and south sides of Olson Memorial Highway would eliminate about 83 on-street parking spaces, as follows (see **Figure 3.5-1**):

- About 25 spaces along the frontage road on the north side of Olson Memorial Highway between Humboldt Avenue and Van White Memorial Boulevard; on-street parking would be available on nearby roadways to the north, and the adjacent buildings also have off-street parking
- About 50 spaces along the frontage road on the south side of Olson Memorial Highway between Knox Avenue North and the cul-de-sac west of Van White Boulevard; off-street parking would remain available for the adjacent apartment buildings and businesses
- About eight spaces along the frontage road on the north side of Olson Memorial Highway roughly one-half block east and west of Queen Avenue North; parking on Queen Avenue North would not be affected

Robbinsdale Station Area

Several on-street and off-street parking spaces would also be eliminated on Hubbard Avenue and West Broadway Avenue near the Robbinsdale Station park-and-ride. Specific impacts include:

- About three spaces on the west side of Hubbard Avenue immediately south of 42nd Avenue
- About six spaces on the west side of West Broadway Avenue immediately south of 42nd Avenue
- City of Robbinsdale Police/Fire Department spaces west of the city buildings and east of the proposed BLRT Extension project alignment would be reconfigured. No net loss of spaces is anticipated.
- About 50 parking spaces would be eliminated from a parking lot for local businesses north of Hubbard Marketplace between 41st and 42nd avenues.
- Eleven diagonal parking spaces would be converted to five parallel parking spaces on the north side of the Hubbard Marketplace building.



As discussed in **Chapter 2** and shown in **Table 3.3-4**, the proposed BLRT Extension project would include a 550-space park-and-ride facility for transit patrons adjacent to the Robbinsdale Station.

73rd Avenue/West Broadway Avenue Area

Off-street parking impacts would occur in the area just north of 73rd Avenue and west of West Broadway Avenue in Brooklyn Park. Impacts would include:

- Near 73rd Avenue, about 75 spaces would be eliminated from a retail center (7316 Lakeland Avenue) surface parking lot (about 20 percent of the existing parking lot). This reconfiguration is intended to accommodate the LRT alignment as it transitions from the BNSF rail corridor to West Broadway Avenue.
- At the eastern edge of the Target store (7535 West Broadway Avenue) parking lot, about 80 spaces would be eliminated to accommodate the reconstructed southbound lanes of West Broadway Avenue and the associated multipurpose trail. An additional 15 to 20 spaces would likely be lost at the southern edge of the parking lot as a result of reconfiguring the roadway connection between Jolly Lane and West Broadway Avenue. The total impact at this site would be up to 100 spaces lost out of about 1,200 spaces, or about eight percent.

Oak Grove Parkway Station Area

Realigning Oak Grove Parkway on the east side of West Broadway Avenue north of TH 610 would require reconfiguring the Target North Campus parking lot. No net loss of spaces is anticipated.



Figure 3.5-1. Parking Impacts





Table 3.5-1 summarizes the number of parking spaces that would be eliminated by the proposed BLRT Extension project.

Table 3.5-1. Number of Parking Spaces Eliminated by the Proposed BLRT Extension Project

Alternative	Parking Spaces Eliminated		
	On-Street Spaces	Off-Street Spaces	Total Spaces
No-Build Alternative	0	0	0
Proposed BLRT Extension project	92	231	323

TPSS

The Council anticipates that TPSS sites would be located on available parcels that are adjacent to the guideway and would not directly affect existing on-street or off-street parking.

3.5.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

No construction-phase parking impacts would occur under the No-Build Alternative.

Proposed BLRT Extension Project

On-street parking spaces could be temporarily removed at locations to facilitate construction of the proposed BLRT Extension project (for example, to facilitate truck movements or to provide a temporary truck loading zone). These potential temporary removals of on-street parking spaces would be identified as part of a construction staging plan prior to construction. At the Council’s direction, the contractor would reduce the loss of parking spaces during construction to the extent possible.

3.5.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures that will be implemented to mitigate the long-term and short-term parking impacts from the proposed BLRT Extension project. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address.

3.5.5.1 Long-Term Mitigation Measures

Where off-street parking spaces would be lost but buildings and businesses remain, the Council plans to compensate business owners for the loss of off-street parking spaces, including potential associated losses in business revenues. The Council will compensate property owners based on the terms of the purchase agreement between the Council and the property owner in accordance with the Uniform Act. Refer to **Section 4.3 – Displacement of Residences and Businesses** for additional information regarding the Uniform Act.



The Council will coordinate mitigation for the loss of on-street parking spaces with local jurisdictions (the cities of Minneapolis and Robbinsdale) to identify whether suitable replacement locations are necessary. In Minneapolis, the character of the proposed Olson Memorial Highway has been designed to facilitate multimodal transportation options with greater emphasis on transit, bicycle, and pedestrian modes. Furthermore, parking would remain on nearby streets and at off-street parking lots associated with the adjacent buildings. As a result, mitigating lost parking spaces might not be necessary. Similarly, the city of Robbinsdale is exploring transit-oriented development in the Robbinsdale Station area. This could preclude the need for parking mitigation or provide the opportunity for parking that is better integrated into planned development.

3.5.5.2 Short-Term Mitigation Measures

During construction, some on-street parking spaces could be removed to facilitate construction of the proposed BLRT Extension project and associated roadway and freight rail modifications (for example, to facilitate truck movement or provide a temporary truck loading zone). To address these impacts, the Council will develop a Construction Mitigation Plan to address temporary parking loss during the construction of the proposed BLRT Extension project. Construction activities will be phased; therefore, many of the spaces lost during construction will be lost for only part of the construction phase.

3.6 Aviation

3.6.1 Regulatory Context and Methodology

According to FAA's *Advisory Circular (AC 150/5300-13A)* (FAA, 2012c), a Runway Protection Zone (RPZ) is "an area at ground level prior to the threshold or beyond the runway end to enhance the safety and protection of people and property on the ground." RPZs are located at the end of each airport runway, and land use is typically controlled by the airport owner. Minnesota State Safety Zone areas overlay and extend beyond the federal RPZs.

The most restrictive areas created by MnDOT regulations are called State Safety Zones A and B. The length of State Safety Zone A is typically two-thirds of the total runway length; State Safety Zone B is typically one-third of the total runway length and extends from State Safety Zone A. The Metropolitan Airports Commission (MAC) adopted an airport zoning ordinance applicable to Crystal Airport on August 25, 1952. This ordinance provides additional guidance on the use of property near Crystal Airport.

The FAA Office of Airports issued a memorandum in 2012 that presents interim guidance on land uses within RPZs (FAA, 2012b). This memorandum clarifies what constitutes a compatible land use within an RPZ, as identified in *FAA Advisory Circular 150/5300-Change 17 (Airport Design)* (FAA, 2011). The memorandum states that "it is desirable to clear all objects from the RPZ," but the memorandum also acknowledges that "some uses are permitted" with conditions, while other "land uses are prohibited." The memorandum also provides guidance on how to evaluate proposed land uses within an RPZ. The proposed BLRT Extension project is considered by FAA to be a local development (transportation facility) proposed in the RPZ (either new or reconfigured).



In accordance with the FAA policy guidance, the Council prepared an RPZ Alternatives Analysis (AA) for the proposed BLRT Extension project. The RPZ AA defined and evaluated several alternatives that addressed eliminating or minimizing the effect of the proposed LRT alignment on the Runway 6L RPZ. These alternatives included modifications to the LRT alignment vertically and horizontally, both within and outside the Runway 6L RPZ; modifications that shifted the location of the RPZ; and operational alternatives that addressed the coexistence of aircraft and LRT simultaneously in the RPZ.

3.6.2 Study Area

The only aviation facility within the LOD of the proposed BLRT Extension project is Crystal Airport. The study area for aviation is defined as the area that is within the LOD of the proposed BLRT Extension project and within the Runway 6L RPZ and State Safety Zone A for Runway 6L, but outside the Crystal Airport property boundary.

The size of the RPZ for Runway 6L is based on the design aircraft of the runway, which is a B-1 small aircraft. The RPZ, which is trapezoidal in shape with a 250-foot inner dimension and 450-foot outer dimension, is 1,000 feet long and contains 8.0 acres, 3.1 acres of which are not on airport property. State Safety Zone A contains 10.3 acres, 3.1 acres of which are not on airport property. State Safety Zone B contains 8.3 acres, none of which are on airport property or within the study area.

3.6.3 Affected Environment

Crystal Airport is one of seven airports owned and operated by MAC. The airport is designed for B-1 small aircraft. Based on FAA control tower counts, the total number of operations at Crystal Airport in 2014 was 49,550. The BNSF rail corridor, which runs parallel to Bottineau Boulevard and is about 3 to 4 feet higher in elevation than the adjacent ground west and east of the BNSF rail corridor, passes through the existing Runway 6L RPZ. The approximate length of the existing freight rail track within the RPZ is 435 feet. The land use in the portion of State Safety Zone A that is beyond Crystal Airport's property boundary is residential. State Safety Zone B is located beyond the limits of State Safety Zone A, outside the BNSF right-of-way and outside the proposed BLRT Extension project's identified LOD.



3.6.4 Environmental Consequences

3.6.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

The No-Build Alternative would not include any improvements within the RPZ; therefore, no operating-phase aviation impacts would occur under the No-Build Alternative.

Proposed BLRT Extension Project

With the proposed BLRT extension project, the existing BNSF tracks are proposed to be relocated about 15 feet west of the current location, and two LRT tracks would be constructed immediately east of the BNSF tracks. All three tracks would be located within the existing 100-foot-wide BNSF right-of-way through the RPZ. The length of the northbound and southbound LRT tracks within the RPZ would be about 425 feet each.

The proposed speed of the LRT at this location is about 55 mph. Therefore, the train would be in the RPZ for about 5 seconds per operation. The Council anticipates that trains would operate in this area about every 10 minutes throughout the day.

Airports define runways as having several imaginary surfaces, one of which is the approach surface, which is used as a boundary to determine whether an object would extend upward into navigable airspace. The height of the proposed BLRT Extension project's LRT vehicle is about 16 feet, or about 16.5 feet below Runway 6L's approach surface.

Overhead catenary system (OCS) poles about 23 feet 4 inches high would be located about 200 feet apart. The poles would be located to maximize the distance from the poles to the RPZ centerline. The Council anticipates that the poles could be located about 100 feet left and right of the extended runway centerline. Final OCS pole spacing and locations would be determined during the final design of the proposed BLRT Extension project.

The proposed BLRT Extension project would affect the central portion and the controlled activity area of the RPZ.⁸ The proposed LRT alignment would be within the existing 100-foot BNSF right-of-way, which is currently within the controlled activity area (17,860 square feet) and the central portion of the RPZ (25,470 square feet). During development of the proposed BLRT Extension project, the Council shifted the LRT alignment 10 feet to the east—still within the BNSF right-of-way, but slightly closer to the airport. The alignment shift would allow for additional clearance between the proposed LRT tracks and the BNSF track. **Figure 3.6-1** illustrates the impacts to the RPZ.

⁸ The RPZ includes two areas: (1) the central portion, which is a rectangular area centered on the runway centerline, and (2) the controlled activity areas, which are triangular areas extending from the central portion that are narrower near the runway and wider farther from the runway.



3.6.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

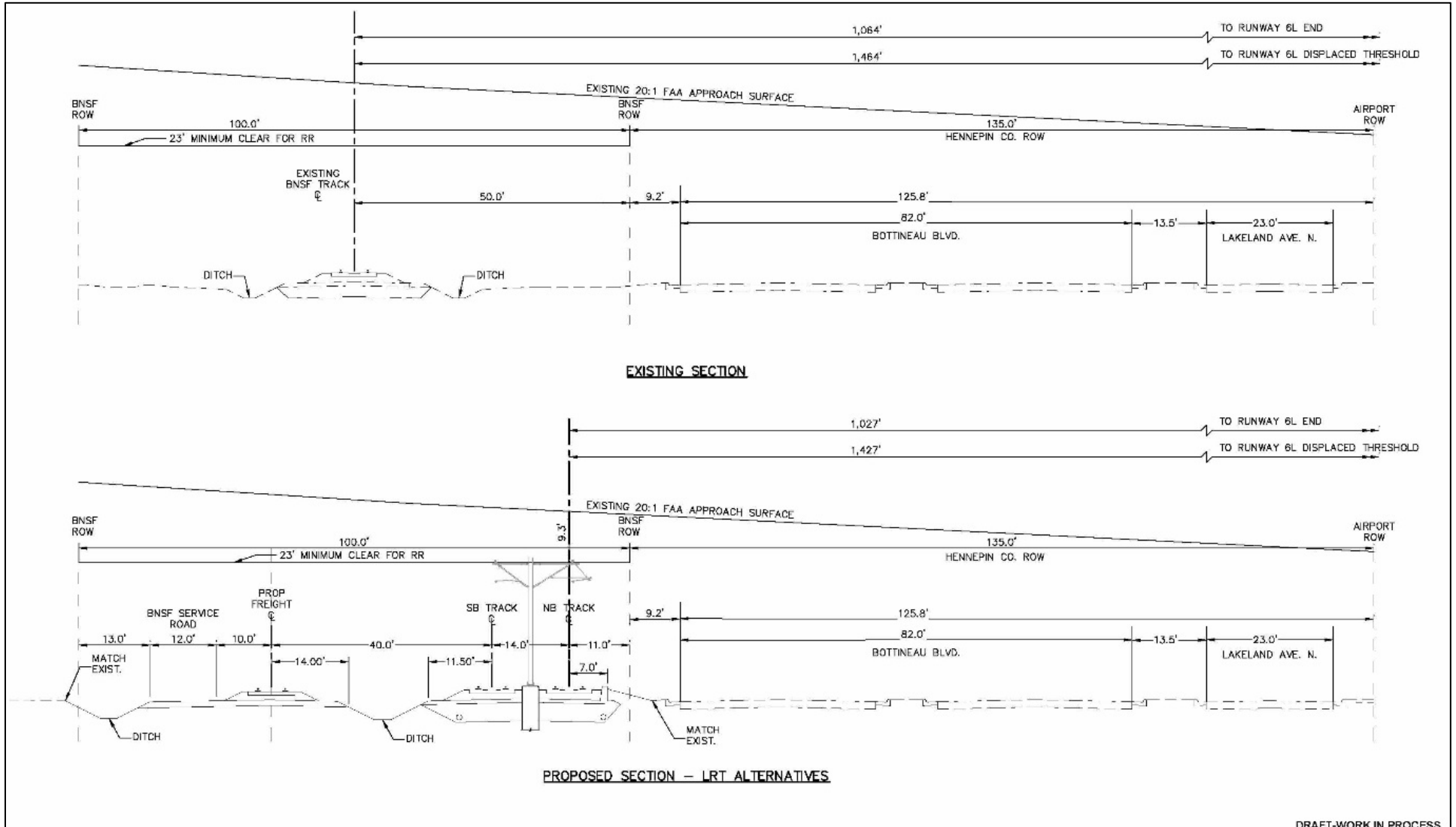
The No-Build Alternative would not involve any improvements within the RPZ; therefore, no construction-phase impacts on aviation would occur under the No-Build Alternative.

Proposed BLRT Extension Project

Construction of the proposed BLRT Extension project, including the overhead catenary system, would occur within the Runway 6L RPZ. Construction operations and phasing in the RPZ would be coordinated with MAC and FAA during the project's final design phase to mitigate these impacts. The Council would complete FAA's *Form 7460 – Notice of Proposed Construction or Alteration* (FAA, 2012a) during final design. The Council would consider the FAA *Form 7460* process complete if FAA were to issue a statement of no objection to the proposed activity.

Construction equipment height would be restricted within the runway approach surface. To discourage bird nesting, no open water would be allowed within the RPZ during construction.

Figure 3.6-1. Crystal Airport Runway Protection Zone and State Safety Zone Effects



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3.6.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures that are proposed to mitigate the long-term and short-term aviation impacts from the proposed BLRT Extension project. For each proposed mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address.

As discussed in [Section 3.6.1](#), an RPZ AA was performed, in conformance with the FAA memorandum *Interim Guidance on Land Uses within a Runway Protection Zone* (FAA, 2012b), to identify the full range of alternatives that could avoid and/or minimize the effects of the proposed BLRT Extension project on the land use within the RPZ, as well as mitigate the risks to people and property on the ground. The RPZ AA reviewed several alternatives to minimize impacts to the RPZ. The recommendation identified in the RPZ AA was that Alignment C, as defined in the Draft EIS locally preferred alternative, was the Preferred Alternative. FAA reviewed the findings and recommendations of the RPZ AA and stated in a letter dated November 24, 2014, that it concurred with the RPZ AA findings.

Because of the shift in the LRT alignment noted above in [Section 3.6.4.1](#), the Council provided updated information regarding the position of the LRT catenary system to FAA on November 20, 2015, along with the Council's opinion that the shift in alignment will not alter the RPZ AA; FAA concurred with the Council's analysis in a letter dated December 28, 2015 (see [Appendix D](#)).

MAC is in the process of updating the Crystal Airport Layout Plan. An Airport Layout Plan is a planning tool that aviation authorities use to depict both existing facilities and planned development for an airport. The Crystal Airport Layout Plan identifies the boundaries and proposed additions that are owned or controlled by the Airport and planned to be used for airport purposes, existing and proposed airport facilities and structures, and the location of existing and proposed non-aviation areas within the airport boundaries. The proposed BLRT Extension project will modify the existing conditions within the RPZ.

Based on the decisions rendered by FAA through the RPZ AA and confirmed through FAA's issuance of a letter of no objection (Form 7460 application), the proposed BLRT Extension project will be included in the updated Crystal Airport Layout Plan.