

## 2.0 Alternatives

This chapter describes the alternatives development process, the alternatives under consideration in this Draft Environmental Impact Statement (Draft EIS), and the alternatives that were considered and subsequently withdrawn from further consideration for the Bottineau Transitway Project.

From 2005 through mid-2012 the authorizing legislation guiding FTA's programs was entitled the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). In July 2012 a new authorization was enacted entitled the Moving Ahead for Progress in the 21st Century Act (MAP-21) that changed several aspects of FTA's primary grant program for funding locally planned, implemented and operated major transit capital investments, including rapid rail, light rail transit (LRT), bus rapid transit (BRT), commuter rail, and ferries. The Major Capital Investment Projects (New and Small Starts) draft final rule sets a new regulatory framework for FTA's evaluation and rating of major transit capital investments seeking funding under the discretionary "New Starts" and "Small Starts" programs.

Primary project decision-making for the Bottineau Transitway to date is summarized in Chapter 2, Alternatives, including the selection and approval of the locally preferred alternative (LPA), identification of the environmentally preferred alternative, and the least environmentally damaging preferred alternative (LEDPA). This chapter will continue to reflect the previous New Starts rule and guidance that were in effect at the time of decision-making. This accurately reflects the information decision-makers had at the time, and is representative of the decision-making process. As the project progresses through more advanced stages of project development and into a Final EIS, future project decisions will be based on the Major Capital Investment Projects (New and Small Starts): Final Rule and associated criteria.

### 2.1 Alternatives Development Process

#### 2.1.1 Alternatives Analysis Study – Spring 2008 – Spring 2010

The Hennepin County Regional Railroad Authority (HCRRA), in consultation with the Metropolitan Council, the Federal Transit Administration (FTA) and local jurisdictions, initiated an Alternatives Analysis (AA) Study for the Bottineau Transitway in 2008. Completed in 2010, the study evaluated a wide range of transit modes and alignments (*Bottineau Transitway Alternatives Analysis Study Final Report*, Hennepin County Regional Railroad Authority, March 2010).

The AA Study developed and evaluated a No-Build alternative, an Enhanced Bus/Transportation System Management (TSM) alternative, and a broad range of transit alternatives. To narrow this initial universe of alternatives, the project team developed screening criteria in consultation with local committee members and other stakeholders ([Table 2.1-1](#)). The purpose of screening was to identify those initial alternatives with potential to address the project needs, goals, and objectives. Alternatives that met all the screening criteria were advanced in the AA Study. The study did not advance those alternatives that did not meet all the screening criteria.

**Table 2.1-1. Screening Criteria Used To Identify Alternatives with Potential to Address Project Needs and Goals**

<b>1. Service Area</b>
<ul style="list-style-type: none"> <li>■ Alignment must be accessible (within walking distance or by connecting feeder bus) to people who depend on transit</li> <li>■ South end must serve downtown Minneapolis</li> <li>■ North end must serve a major traffic or employment generator</li> <li>■ Alignment must serve the highest concentration of origins and destinations</li> </ul>
<b>2. Service Efficiency (travel time and directness)</b>
<ul style="list-style-type: none"> <li>■ Alignment must be as physically short as possible</li> <li>■ Alignment must follow right-of-way that allows for high travel speeds</li> <li>■ Alignment must provide for low travel time between stations on alignment and between origins and destinations on the transit system</li> </ul>
<b>3. System Connectivity</b>
<ul style="list-style-type: none"> <li>■ Alignment must connect or have reasonable interchange in downtown Minneapolis with the regional transitway system</li> </ul>
<b>4. Compatibility with Existing Infrastructure</b>
<ul style="list-style-type: none"> <li>■ Alignment should use existing infrastructure wherever possible</li> <li>■ Alignment should be compatible with the existing roadway system and the built environment</li> </ul>

The AA Study considered the following mode, alignment, and facility types:

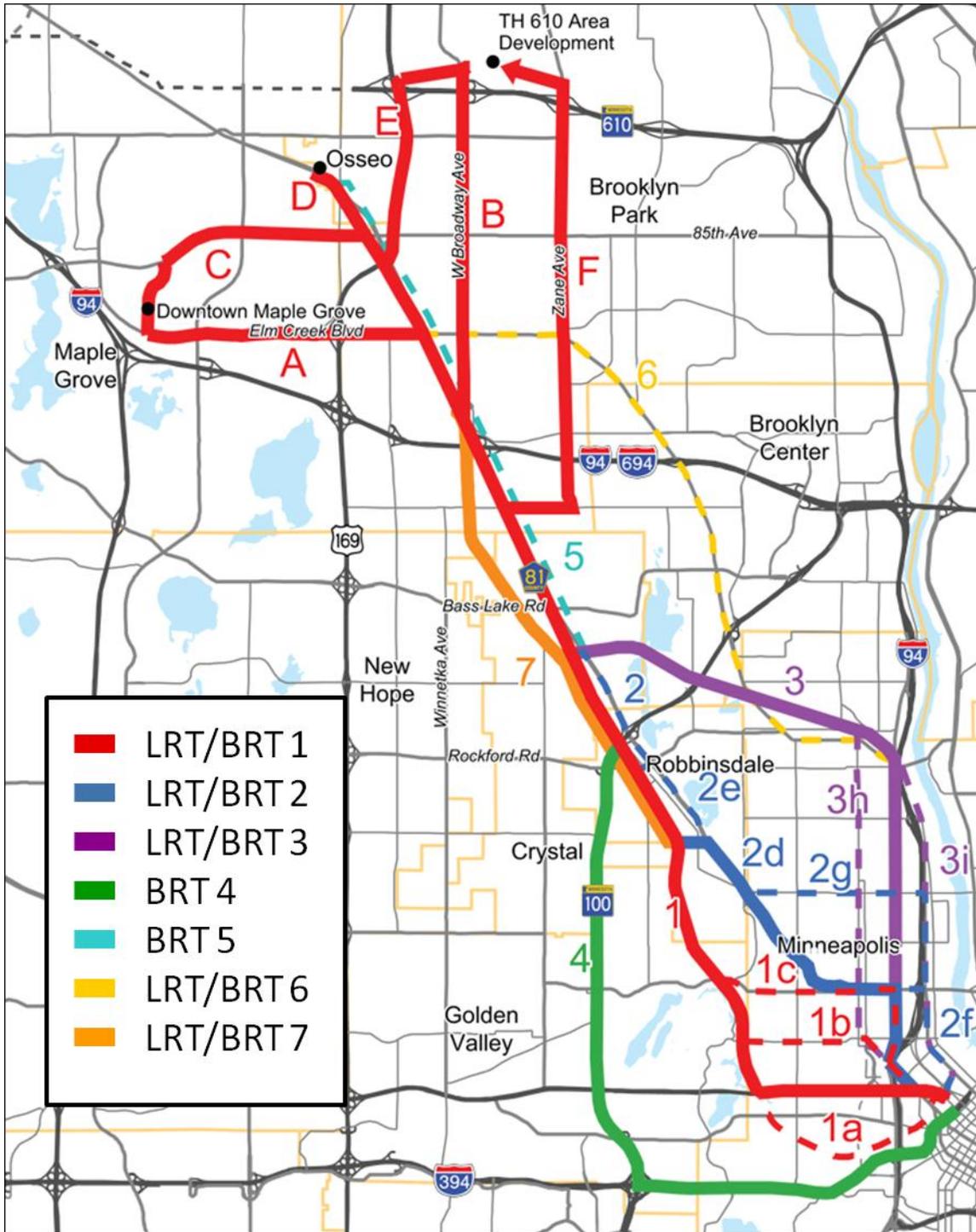
■ **Modes**

Commuter rail, light rail transit (LRT), and bus rapid transit (BRT) modes were considered. Commuter rail alternatives considered would not serve communities in north Minneapolis and Robbinsdale. As such, they would not meet the identified project objective of providing effective reverse commute service and did not meet the service area-screening criterion. As a result, the commuter rail mode was eliminated from further consideration. LRT and BRT modes were retained for technical evaluation.

■ **Alignments**

Alignments were considered for BRT as well as LRT modes. Six LRT or BRT routes providing access to Maple Grove, Osseo, or Brooklyn Park were studied ([Figure 2.2-1](#)). Alternatives with a northern terminus in Maple Grove or Brooklyn Park were retained, as they passed the service area-screening criterion. The alternative terminating in Osseo was dropped from further study because Osseo is no longer a major activity center. On the south end of the corridor, seventeen alternatives were considered for entry into Minneapolis, including 15 suitable for BRT or LRT and two BRT-only alternatives. Five alternatives met all four screening criteria and were retained for technical evaluation. The BRT and LRT alternatives that were dropped all provided system connectivity but failed to meet at least one of the other three screening criteria, most commonly because they were incompatible with existing infrastructure or did not meet the service area criterion.

Figure 2.1-1. Range of Alternatives (AA Study)



## ■ Facility Types

The study sought to develop alternatives with dedicated transitway facilities wherever possible. The primary reasons were to provide the maximum opportunity for travel time advantages, ridership, and mobility benefits and to minimize potential impacts on traffic operations and safety. The study explored some mixed traffic facilities when dedicated facilities were not feasible.

At the conclusion of the screening process, 21 alternatives (12 BRT and nine LRT) were recommended for technical evaluation. The 21 alternatives were then evaluated against the five project goals and 22 objectives. Results for each alternative were reported quantitatively and ranked on a five-point scale for each objective. From this information, summary rankings were developed to allow each alternative to be compared against the others. Complete results are provided in the AA Study report.

### **AA Study Decision: Continue Study of Four LRT Alternatives and One BRT Alternative**

At the conclusion of the AA Study, five alternatives were advanced. The alternatives included the three most promising LRT alternatives identified in the AA Study, a fourth LRT alternative considered in the study that was less promising but still of interest, and a refined BRT alternative.

The refined BRT alternative was developed based on additional understanding gained during the AA Study. Modifications to routing, alignment, and operations were explored to maximize the potential benefits of BRT. The resulting alternative had substantially improved performance over those initially considered in the AA Study and the decision was made to advance this refined BRT alternative for further study.

### **AA Study Decision: Stop Study of Options on West Broadway Avenue East of Penn Avenue**

West Broadway Avenue in Minneapolis (Alignment 2d in [Figure 2.2-1](#)) is a key traffic and activity corridor in the study area and one in which the public has expressed interest. BRT and LRT alternatives on West Broadway Avenue east of County State Aid Highway (CSAH 2) (Penn Avenue) were considered as part of the AA Study because of West Broadway Avenue's role as an important regional and local transportation and activity corridor.

Study of an LRT alternative on West Broadway Avenue east of Penn Avenue was discontinued during the AA Study because of its less feasible connection to the regional LRT system and because of its significant and likely impacts on surrounding land uses, property owners, and other modes of transportation. Because of these concerns, LRT was screened out as a practical mode alternative on West Broadway Avenue.

- **Regional LRT System Connection** – All Bottineau Transitway LRT alternatives connect to the regional LRT system at the Target Field Station (formerly called The Interchange at Target Field) since any Bottineau LRT alternative would become an extension of the Blue Line (Hiawatha). The LRT system connection necessary at the Target Field Station for LRT alternatives on West Broadway Avenue east of Penn Avenue was higher cost, more complex, and limited future expansion potential as compared to the connection possible for other LRT alternatives.
- **Impacts on Surrounding Land Uses, Property Owners, and Other Modes of Transportation** – Additional issues with LRT on West Broadway Avenue east of Penn Avenue included significant impacts to land uses/private property, on-street parking, traffic operations, and right-of-way width. The development of Bottineau Transitway alternatives sought to avoid or minimize these kinds of impacts.

Study of BRT alternatives on West Broadway Avenue east of Penn Avenue was initiated when it became clear that LRT on this alignment would not advance for further study. The BRT alternatives were assumed to operate in mixed traffic, not in the dedicated lanes assumed for all LRT and other BRT alternatives, between Penn and Lyndale Avenues. This approach allowed the BRT alternatives to minimize impacts on

land uses/private property, on-street parking, traffic operations, and right-of-way width. The study considered three BRT alternatives on West Broadway Avenue east of Penn Avenue. Study of the three West Broadway Avenue BRT alternatives was discontinued because of their comparatively weak performances in terms of their ability to meet the Bottineau Transitway purpose and need.

### 2.1.2 D2 Alignment Investigation – April 2010 through November 2011

The AA Study identified two alignments in Minneapolis for further study: the D1 alignment located in the BNSF (Burlington Northern Santa Fe Railroad) right-of-way and the D2 alignment located on West Broadway and Penn Avenues. The investigation of routing options for the D2 alignment occurred following the publication of the AA Study in March 2010 and continued through November 2011.

Several options for the D2 alignment were considered for the segment between West Broadway Avenue and Trunk Highway (TH) 55. These options (called D2-A, D2-B, and D2-C) included various ways of using Penn and/or Oliver Avenues for the Bottineau Transitway (Figure 2.1-2). The D2 evaluation process included a technical evaluation of each of the options within the framework of the purpose and need for the Bottineau Transitway as well as the FTA New Starts program evaluation criteria. Through the evaluation process, the Advise, Review, and Communicate Committee (ARCC) worked to create transitway operating conditions required for the Bottineau Transitway to become a financially viable element of the regional transitway system. The ARCC also worked to develop transitway operating conditions that are compatible with general motor vehicle, bus, bicycle, and pedestrian traffic and with neighboring businesses and residents for the long-term.

An open house was held on October 6, 2011, to share detailed information on the benefits and costs of the D2 options and to obtain community input as to which of these options should be used to compare to the D1 alternative. A survey was provided to attendees and also made available online for those unable to attend the open house. Eighty-three survey responses were received which provided insight into area resident and business owner concerns regarding the potential addition of LRT on Penn or Oliver Avenues.

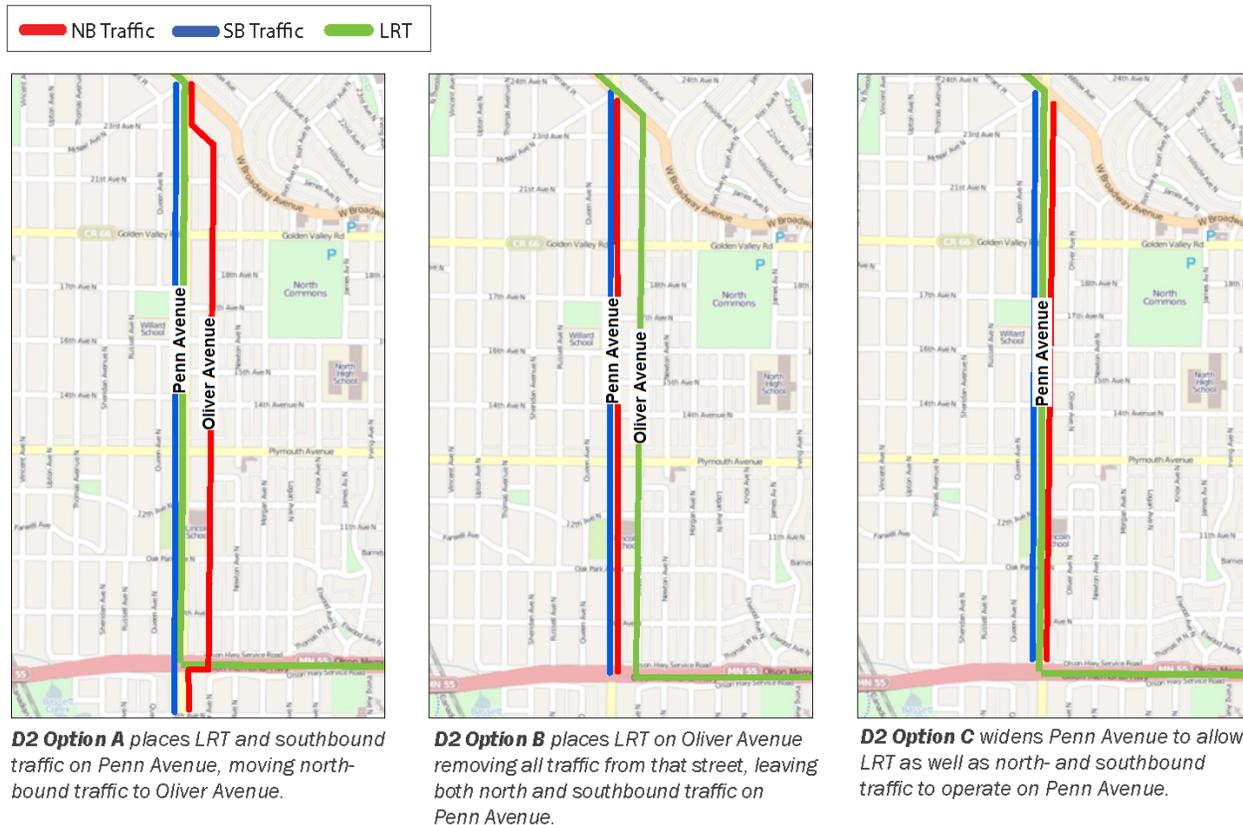
During the 2010 through November 2011 time period, the Northside Neighborhood Transportation Network (NTN), a coalition of north Minneapolis residents and businesses, was actively involved in a process of engaging and informing Northside residents and stakeholders regarding the Bottineau Transitway. Through the NTN engagement process, two additional D2 alignment options were proposed: D2-D and D2-W. D2-D proposed having LRT and a bus lane on Penn Avenue and diverting Penn Avenue traffic to Queen and Oliver Avenues, with Queen Avenue accommodating southbound traffic and Oliver Avenue accommodating northbound traffic. D2-W proposed centering the LRT guideway on Penn Avenue while maintaining two-way traffic. Both of these alignment options did not officially advance for consideration during the Scoping process, as they resulted in greater right-of-way and accessibility impacts to the surrounding neighborhood, without resulting in higher benefits as compared to alignments D2-A, D2-B, or D2-C.

The ARCC prepared a technical paper as input to the Policy Advisory Committee (PAC) which described the relative benefits and impacts of each D2 option. The ARCC concluded that if a D2 alignment alternative were to be carried forward as a comparison to alignment D1, option D2-C should advance for further study, and the study of options D2-A and D2-B should stop. This was based on the fact that Option D2-C would provide access to two key regional destinations – the Terrace Mall and the North Memorial Medical Center (NMMC) – without adversely impacting either facility. Options D2-A and D2-B would have adversely impacted loading and circulation for NMMC to the point where the options were not considered viable. Option D2-C also minimizes street closures in the residential neighborhood.

In addition, the ARCC recommended that the study continue regarding transit system improvements in relationship to the Bottineau Transitway alternatives. Specifically, transit improvements should include the restructuring of the local bus network to integrate with the D1 and D2 alternatives as well as the consideration of other transit improvement initiatives.

Following consideration of public and stakeholder input, the PAC met on November 14, 2011 to recommend a preferred option for Alignment D2. The PAC agreed with the ARCC conclusion to continue study of option D2-C and stop study of options D2-A and D2-B, including Option D2-C as part of Alignment D2 to be studied in the Draft EIS.

**Figure 2.1-2. Segment D2 Alignment Options Considered**



## 2.2 Draft EIS Scoping Process

### 2.2.1 Alignment Definition

For ease of comparison, the alternatives considered following the AA Study and D2 investigation are named in terms of their component alignments. As illustrated in [Figure 2.2-1](#), there are two alignment options at the north end of the corridor:

- **Alignment A:** Begins in Maple Grove at Hemlock Lane/Arbor Lakes Parkway and follows the future Arbor Lakes Parkway and Elm Creek Boulevard to the BNSF railroad corridor located on the west side of Bottineau Boulevard
- **Alignment B:** Begins in **Brooklyn Park** south of Oak Grove Parkway near the Target North Campus (located just north of TH 610), follows West Broadway Avenue, and crosses Bottineau Boulevard at 73rd Avenue to enter the BNSF railroad corridor

In the middle portion of the corridor, there is one alignment option:

- **Alignment C:** Just south of 71st Avenue, both the A and B alignments would transition to the C alignment in the BNSF railroad corridor on the west side of Bottineau Boulevard through southern Brooklyn Park, Crystal, and Robbinsdale. Alignment C is common to all the alternatives.

South of Robbinsdale and into downtown Minneapolis, there are two alignment options:

- **Alignment D1:** Continues along the BNSF railroad corridor to TH 55, and then follows TH 55 to downtown
- **Alignment D2:** Exits the railroad corridor near 34th Avenue, joins West Broadway Avenue, and travels on Penn Avenue to TH 55 and into downtown

## 2.2.2 Technical Analysis

HCRRA conducted a technical analysis following the AA Study and D2 investigation of the four LRT alternatives and one BRT alternative carried forward. The technical analysis identified the characteristics that differentiate the five alternatives and compared the alternatives by alignment (A or B; D1 or D2) and mode (LRT B-C-D1 or BRT B-C-D1) in relation to the five project goals and 22 objectives listed in Chapter 1, Purpose and Need. The goals and objectives have served as a framework for both the development and evaluation of the alternatives.

## 2.2.3 EIS Scoping

The Notice of Intent (NOI) to prepare an EIS on the proposed Bottineau Transitway was published on Tuesday, January 10, 2012 in the Federal Register (Vol. 77, No. 6). The environmental process began with a Scoping effort to determine the content of the Draft EIS. As the first step in the Scoping process, interested members of the public and agencies are invited to participate in the evaluation of the Bottineau Transitway's environmental impacts. The purpose of Scoping is to confirm the purpose and need for the project, identify appropriate alternatives that could address project needs, focus on potentially significant issues that should be studied in the Draft EIS, and eliminate issues that are not significant and/or have been addressed by prior studies.

Based on the findings from the AA Study and D2 investigation, the following alternatives were presented in the EIS Scoping process, which served to define the alternatives and to identify the issues that will be evaluated in the Draft EIS:

- No-Build alternative
- Enhanced Bus/TSM alternative
- LRT A-C-D1 (Maple Grove to Minneapolis via BNSF/ TH 55)
- LRT B-C-D1 (Brooklyn Park to Minneapolis via BNSF/TH 55)
- LRT A-C-D2 (Maple Grove to Minneapolis via West Broadway Avenue/Penn Avenue/TH 55)
- LRT B-C-D2 (Brooklyn Park to Minneapolis via West Broadway Avenue/Penn Avenue/TH 55)
- BRT B-C-D1 (Brooklyn Park to Minneapolis via BNSF/TH 55)

**Figure 2.2-1** illustrates the Build alternatives proposed for study in Scoping. Each LRT alternative would include right-of-way, tracks, stations, support facilities, and transit service for LRT and connecting bus routes. The BRT alternative would include right-of-way, travel lanes, stations, support facilities, and transit service for BRT and connecting bus routes. The BRT alternative would be a high quality investment similar to LRT and would include a dedicated guideway, high-amenity stations, and the service, speed, reliability, and frequency characteristics of our region's other LRT and BRT transitways.

## Refinements During Scoping

Several refinements to alignments were identified and incorporated as part of the Scoping process:

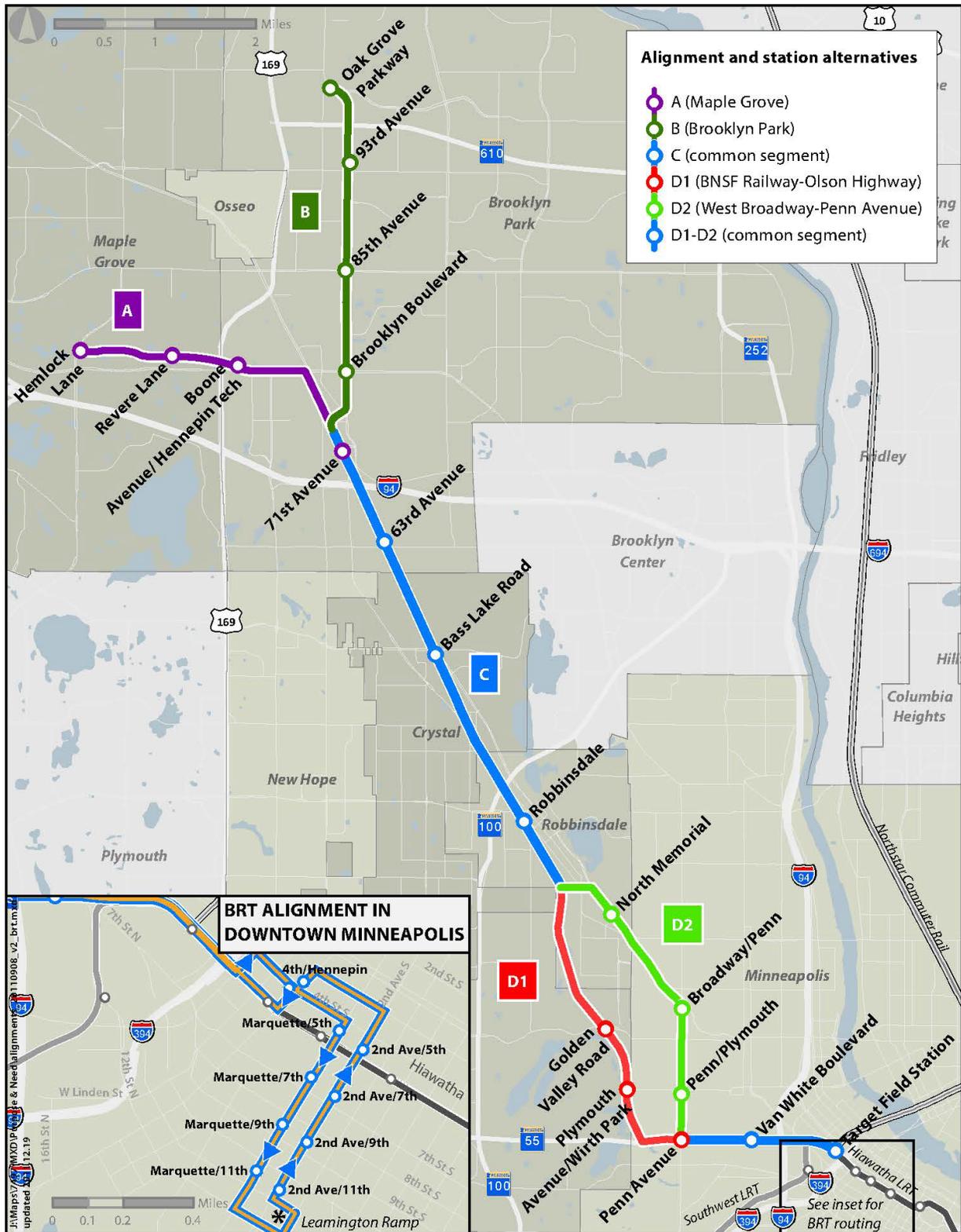
- **Alignment B:** HCRRA worked with the City of Brooklyn Park to refine Alignment B so it would integrate with master planning activities for the Target North Campus. The refinement focused on the alignment north of 93rd Avenue to connect to the proposed park-and-ride facility at 93rd Avenue, and modified the proposed Oak Grove Parkway station location to better accommodate future plans for the property adjacent to the station area.
- **D1 Station Locations:** Input during the Theodore Wirth Regional Park Master Planning effort suggested moving the Golden Valley Station from Golden Valley Road to Plymouth Avenue, potentially providing better access to surrounding residential areas and park facilities. Both station options along alignment D1 were presented during Scoping.
- **D2 Robbinsdale Options:** HCRRA worked with the City of Robbinsdale during the Scoping process to refine the D2 alignment transition between the BNSF railroad corridor and West Broadway Avenue near the Terrace Mall and North Memorial Medical Center. A range of concepts were considered on 36th Avenue and 34th Avenue in Robbinsdale that provided a connection between the BNSF railroad corridor and West Broadway Avenue in Minneapolis. The 34th Avenue alignment was incorporated into the D2 alignment because it minimized the potential impacts to Bottineau Boulevard and the Terrace Mall and best met the identified needs of the City of Robbinsdale. This option was presented during Scoping.

## Scoping Results: Stop Study of BRT Alternative and Continue Study of Four LRT Alternatives in the Draft EIS

Based on the results of the technical analysis and Scoping input, the ARCC, Community Advisory Committee (CAC), and PAC advised and the PAC resolved in April 2012 that study of the BRT alternative should stop, and made the recommendation to HCRRA for final action. The PAC also recommended the continued study of the four LRT alternatives in the Draft EIS, in addition to the No-Build and the Enhanced Bus/TSM alternative. In their resolution, the PAC affirmed the alternatives evaluation process that was conducted and acknowledged the public participation in the process. Following the PAC action, HCRRA passed a resolution adopting the Scoping Decision recommended by the PAC. This resolution and other supporting documentation to the Scoping process can be found in the *Bottineau Transitway Scoping Decision Document*, June 2012.

Section 2.4 provides more detail regarding the reasons for eliminating the study of BRT in the Draft EIS. Section 2.5 provides more detail on the alternatives advanced for further study in the Draft EIS.

Figure 2.2-1. Build Alternatives Proposed for Study in Scoping (As Reflected In Scoping Booklet)



## 2.3 Alternatives Not Recommended for Further Study in Draft EIS

The basis for the decision to discontinue study of BRT is summarized in [Table 2.3-1](#) and organized in relation to the five project goals. Under each goal is a summary of associated criteria that resulted in differences between LRT and BRT. These differentiating criteria are reflective of the objectives established for each goal. In their discussions, the ARCC and the PAC recognized the BRT’s lower capital cost and better cost effectiveness index (CEI) as compared to the LRT alternatives. The groups also recognized that while BRT is not the best performing mode choice for the Bottineau Transitway, the reasons are specific to the physical attributes, ridership characteristics, and other features of the Bottineau Transitway. HCRRA adopted these recommendations as the final Scoping Decision.

**Table 2.3-1. Basis for Scoping Recommendation to Stop Study of BRT**

<b>Goal 1: Enhance Regional Access to Activity Centers</b>				
The LRT B-C-D1 alternative would accomplish this goal better than the BRT alternative on the same alignment. Forecast total ridership for LRT B-C-D1 is 27,000 and 19,000 for BRT B-C-D1. Ridership for the BRT alternative is limited by BRT’s single-vehicle capacity; that is, multiple BRT vehicles cannot be linked together to expand capacity, in contrast to LRT which can be expanded from two cars to three.				
<b>Goal 2: Enhance the Effectiveness of Transit Service within the Corridor</b>				
The transit service provided by LRT B-C-D1 would be more effective than that provided by the BRT alternative. BRT B-C-D1 is expected to generate approximately 1,500 fewer new daily riders than LRT B-C-D1 (5,650 riders compared to 7,150). BRT B-C-D1 also is expected to generate less than half as many passengers per revenue hour than LRT on the same alignment in the year 2030 (71 for BRT vs. 181 for LRT). Also, based on travel time and average speed, the LRT B-C-D1 is forecast to provide more daily travel time benefits in 2030 compared to BRT (8,250 hours per day for LRT B-C-D1 compared to 5,880 for BRT B-C-D1).				
<b>Goal 3: Provide a Cost Effective and Financially Feasible Transit System</b>				
BRT B-C-D1 had a lower (better) cost effectiveness index (CEI) <sup>1</sup> than LRT B-C-D1. The better result for the BRT alternative was driven largely by its lower capital and operating costs, as shown below.				
	<b>CEI</b>	<b>CEI Rating</b>	<b>Capital Cost</b>	<b>Operating Cost</b>
<b>BRT B-C-D1</b>	21	Medium	\$560 million	\$20.7 million
<b>LRT B-C-D1</b>	26	Medium-Low	\$1,000 million	\$24.1 million
<b>Goal 4: Promote Sustainable Development Patterns</b>				
There were no significant differentiators between LRT and BRT B-C-D1.				
<b>Goal 5: Support Healthy Communities and Sound Environmental Practices</b>				
The primary differentiator under this goal pertains to traffic operations. Specifically, the roadway system would not be able to accommodate additional BRT vehicles beyond the assumed six-minute headways while still maintaining acceptable traffic operations. In turn, 2030 ridership forecasts show transitway demand entering downtown Minneapolis during the morning peak hour would exceed the capacity of the BRT alternative. Also, because BRT B-C-D1 would travel to 2nd/Marquette Avenues in downtown Minneapolis in mixed traffic, it would add to capacity issues that would already exist on the downtown street network.				

<sup>1</sup> Cost effectiveness index (CEI) has been one of several criteria used by the Federal Transit Administration (FTA) as part of FTA’s Major Transit Capital Investment discretionary funding program. At the time of this decision, CEI was defined as the annualized project cost per hour of user benefit, with user benefit reported as travel time savings. Future decisions will be based on the updated Major Capital Investment Projects final rule.

## 2.4 Alternatives Advanced for Further Study in Draft EIS

A No-Build alternative, Enhanced Bus/TSM alternative, and four LRT Build alternatives were advanced for further study in this Draft EIS. These alternatives are described in more detail in the following sections.

### 2.4.1 No-Build Alternative

The No-Build alternative reflects existing and committed improvements to the regional transit network for the horizon year of 2030. Based on the Metropolitan Council's *2030 Transportation Policy Plan (TPP)*, major transportation improvements in the No-Build alternative in the Bottineau Transitway project area include:

- Green Line (Central Corridor) LRT and associated corridor bus service changes
- Green Line (Southwest) LRT and associated corridor bus service changes
- Red Line (Cedar Avenue) BRT with station-to-station BRT service and associated corridor bus service changes
- Orange Line (I-35W) BRT with station-to-station BRT service and associated corridor bus service changes
- Target Field Station Project in the City of Minneapolis. This project will provide transportation infrastructure improvements that will maximize the efficiency of existing transit operations, provide for enhanced multi-modal connections, and appropriately plan for future system integration to better serve passengers.
- An Arterial BRT line serving the West Broadway Avenue corridor from Robbinsdale Transit Center (in downtown Robbinsdale) to downtown Minneapolis and associated restructuring of local bus service in the corridor
- Additional Arterial BRT on Snelling Avenue, West 7th Street, East 7th Street, Chicago Avenue, and American Boulevard, and associated restructuring of local bus service in these corridors
- Service frequency improvements to local and express routes within the Bottineau Transitway project area and throughout the regional transit network, consistent with regional service improvement plans
- New park-and-ride facilities at various locations outside of the Bottineau Transitway project area as defined in the Metropolitan Council's *2030 Park-and-Ride Plan*
- Reconstruction of County State Aid Highway (CSAH) 103 in the city of Brooklyn Park from south of Candlewood Drive to north of CSAH 30
- CSAH 81 Reconstruction, CSAH 10 (Bass Lake Road) to CSAH 30 (Hennepin County Transportation)
- Candlewood Drive Extension, CSAH 103 to 79th Avenue (City of Brooklyn Park)
- TH 610, CSAH 81 to I-94 – New roadway construction (MnDOT)

The No-Build alternative would not include any improvements within the Runway Protection Zone (RPZ) for Runway 6L-24R at Crystal Airport.

### 2.4.2 Enhanced Bus/TSM Alternative

The Enhanced Bus/TSM alternative was defined as enhancements and upgrades to the existing transportation system in the project corridor, attempting to meet the project's purpose and need as much as possible without a major transit capital investment. The purpose of the Enhanced Bus/TSM alternative

is to provide a comparable transit service to the Build alternatives without the significant capital investment of building a transitway. Service improvements proposed in the Enhanced Bus/TSM alternative focus on serving the same travel markets that were addressed in the Build alternatives.

For this project, an Enhanced Bus/TSM alternative was defined to serve comparable travel markets as the Build alternatives considered.

In addition to the improvements included in the No-Build alternative, the Enhanced Bus/TSM alternative includes the following:

- New transit center and park-and-ride facility in Brooklyn Park on West Broadway Avenue near TH 610
- Additional limited stop bus routes 731 and 732 (see description below)
- Service frequency improvements to existing transit routes
- Restructuring of existing bus routes in the corridor to connect to the Route 731/732 services and enhance connections within the corridor

The Enhanced Bus/TSM alternative would not result in new transportation facilities being introduced within the RPZ for Runway 6L-24R at Crystal Airport.

#### Route 731 Description

New limited stop bus Route 731 would provide all-day, two-way service in general purpose traffic lanes from Brooklyn Park to downtown Minneapolis. The route would begin at an Oak Grove Parkway Transit Center and follow West Broadway Avenue to the Starlite Transit Center in Brooklyn Park. Route 731 would continue along Bottineau Boulevard, West Broadway Avenue, Penn Avenue, and TH 55 into downtown Minneapolis, serving downtown using the Marquette/2nd Avenue transit lanes. The route's limited stops would be sited at approximately the same locations as stations proposed under the Build alternatives.

#### Route 732 Description

New limited stop bus Route 732 would provide all-day, two-way service in general purpose traffic lanes from Maple Grove to downtown Minneapolis. The route would begin at the Maple Grove Transit Station and travel along Hemlock Lane and Elm Creek Boulevard to the Starlite Transit Center in Brooklyn Park. From Starlite Transit Center, the route would continue on the same alignment as Route 731 into downtown Minneapolis. The route's limited stops would be sited at approximately the same locations as stations proposed under the Build alternatives.

Frequencies for both Routes 731 and 732 would be 15 minutes in the peak periods (6:00 to 9:00 a.m. and 3:00-6:30 p.m.) and 20 minutes in the midday. Together, the routes would provide combined 7.5-minute peak/10-minute midday frequency south of the Starlite Transit Center.

For both of the new 731 and 732 routes, minor construction for bus stops is assumed within existing right-of-way.

### 2.4.3 LRT Alternatives

Four light rail transit (LRT) Build alternatives are under consideration in this Draft EIS, as illustrated in [Figure 2.4-1](#) and summarized below.

- Alternative A-C-D1 (Maple Grove to Minneapolis via BNSF/TH 55)
- Alternative A-C-D2 (Maple Grove to Minneapolis via West Broadway Avenue/Penn Avenue/TH 55)
- Alternative B-C-D1 (Brooklyn Park to Minneapolis via BNSF/TH 55)
- Alternative B-C-D2 (Brooklyn Park to Minneapolis via West Broadway Avenue/Penn Avenue/TH 55)

### 2.4.3.1 General Elements

Several elements of the proposed transitway system are proposed in each of the alternatives: stations, operations and maintenance facility (OMF), traction power substations (TPSS), fare collection, trackway, vehicles, train control, and operating frequencies. These features are summarized in the following sections, along with a detailed description of each alternative and its unique alignment and features.

#### Stations

A station is where passengers board or alight from a light rail vehicle (LRV). Primary elements of stations include the platform(s), shelter, wheelchair ramps, and station amenities such as lighting, benches, security systems, and information displays. These components are essential for traveler safety and security, as well as amenities for passenger comfort and convenience. Stations that require a vertical separation between the platform and adjacent infrastructure would have accommodations so patrons can reach the platform. It is anticipated that elevators would be provided at Golden Valley Road or Plymouth Avenue Station. Station design also reflects compliance with Americans with Disabilities Act (ADA) requirements.

Platforms for the proposed project alternatives would be compatible with low-floor LRT vehicles, with a platform edge 14 inches above the top of the rail. The recommended platform length is 300 feet, with a minimum length of 270 feet required to accommodate a three-car train. A station includes both southbound and northbound platforms. In some cases, a center station would be located between the northbound and southbound tracks.

Station locations are summarized below and illustrated in [Figure 2.4-1](#). At some locations, a park-and-ride would be provided. These locations as well as the approximate acreage associated with the park-and-ride also are noted in [Table 2.4-1](#) and illustrated in [Figure 2.4-2](#). As noted in the table, there is an existing park and ride facility at 63rd Avenue and Bottineau Boulevard. The existing facility has capacity for 565 vehicles on a 6.5 acre site. Under the proposed Build alternatives, the parking capacity at the existing 63rd Avenue facility would expand to accommodate approximately 725 vehicles through modifying the existing structure (additional deck level). Additionally, the Target Field Station in Minneapolis is currently being constructed, and is assumed under the No Build alternative and scheduled to be operational in 2014.

**Table 2.4-1. Stations by Alignment**

Alignment A	Alignment B	Alignment C	Alignment D1	Alignment D2
Hemlock Lane <sup>1</sup> Park-and-ride: 6.4 acres	Oak Grove Parkway	63rd Avenue <sup>1</sup> Park-and-ride: 6.5 acres (existing 565 vehicle facility is located on the 6.5 acre site)	Golden Valley Road or Plymouth Ave/ Theodore Wirth Regional Park <sup>3</sup>	North Memorial Hospital
Revere Lane <sup>1</sup> Park-and-ride: 2.7 acres	93rd Avenue <sup>1</sup> Park-and-ride: 11.2 acres	Bass Lake Road	Penn Avenue	West Broadway/ Penn Avenues
Boone Avenue/ Hennepin Technical College	85th Avenue	Robbinsdale <sup>1</sup> Park-and-ride: acres TBD	Van White Boulevard	Penn/Plymouth Avenues
71st Avenue	Brooklyn Boulevard		Target Field Station <sup>2</sup>	Van White Boulevard
				Target Field Station <sup>2</sup>

<sup>1</sup> Proposed station where park-and-ride would be provided. The existing 565 vehicle park and ride facility on 6.5 acres at the 63rd Avenue site would be expanded through modification of the existing structure (additional parking deck level) to accommodate up to approximately 725 vehicles on the 6.5 acre site.

<sup>2</sup> Built separately from the Bottineau Transitway, included under the No Build alternative definition, and assumed to be operational in 2014.

<sup>3</sup> Draft EIS will evaluate Golden Valley Road and Plymouth Avenue/Theodore Wirth Regional Park stations on the D1 alignment. It is anticipated only one station location will advance due to low ridership demand.

### *Operations and Maintenance Facility*

The OMF site would be located at the north end of the alternatives, either in Maple Grove (Alignment A) or Brooklyn Park (Alignment B). Potential OMF sites are illustrated in [Figure 2.4-3](#).

The OMF sites evaluated on Alignments A and B were selected due to their proximity to the end of the line, adequate space for the special trackwork required between the mainline track and facility, and adequate property for the facility (minimum 14 acres).

Specific to the Alignment A OMF, the facility was located south of the future Arbor Lakes Parkway and east of Hemlock Lane, due to the availability of suitable property that is currently owned by MnDOT.

Within Alignment B, two OMF site options were identified adjacent to West Broadway at 93rd Avenue and 101st Avenue. The 93rd Avenue OMF site was originally identified in the AA and was carried forward from the AA due to the availability of suitable undeveloped property adjacent to the guideway. The 101st Avenue OMF site was selected due to the availability of suitable undeveloped property that is owned by the City of Brooklyn Park. In addition, the 101st Avenue site was identified to reduce potential noise and visual impacts adjacent to the residential neighborhood located at West Broadway and 93rd Avenue. Only one of these sites will be chosen for the OMF.

A potential OMF site at 71st Avenue and Bottineau Boulevard, within Alignment B, was identified within the AA but was eliminated as a viable alternative because it is located west of the freight railroad track. This location would require grade separation of the LRT track over the freight railroad track to access the facility.

The OMF site would be occupied by a storage and maintenance building that is approximately 128,000 square-feet, surface parking for employees and visitors, trackwork, and open space. The facility would include areas to store, service, and maintain up to 36 LRVs, vehicle washing and cleaning equipment, and office space to accommodate staff that would report for work at this facility. The facility would be equipped to perform daily cleaning and repair activities on the LRVs as they enter and leave revenue service. To ensure operational safety and reliability, scheduled service and maintenance inspections would be performed in this facility.

Figure 2.4-1. Bottineau Transitway Build Alternatives

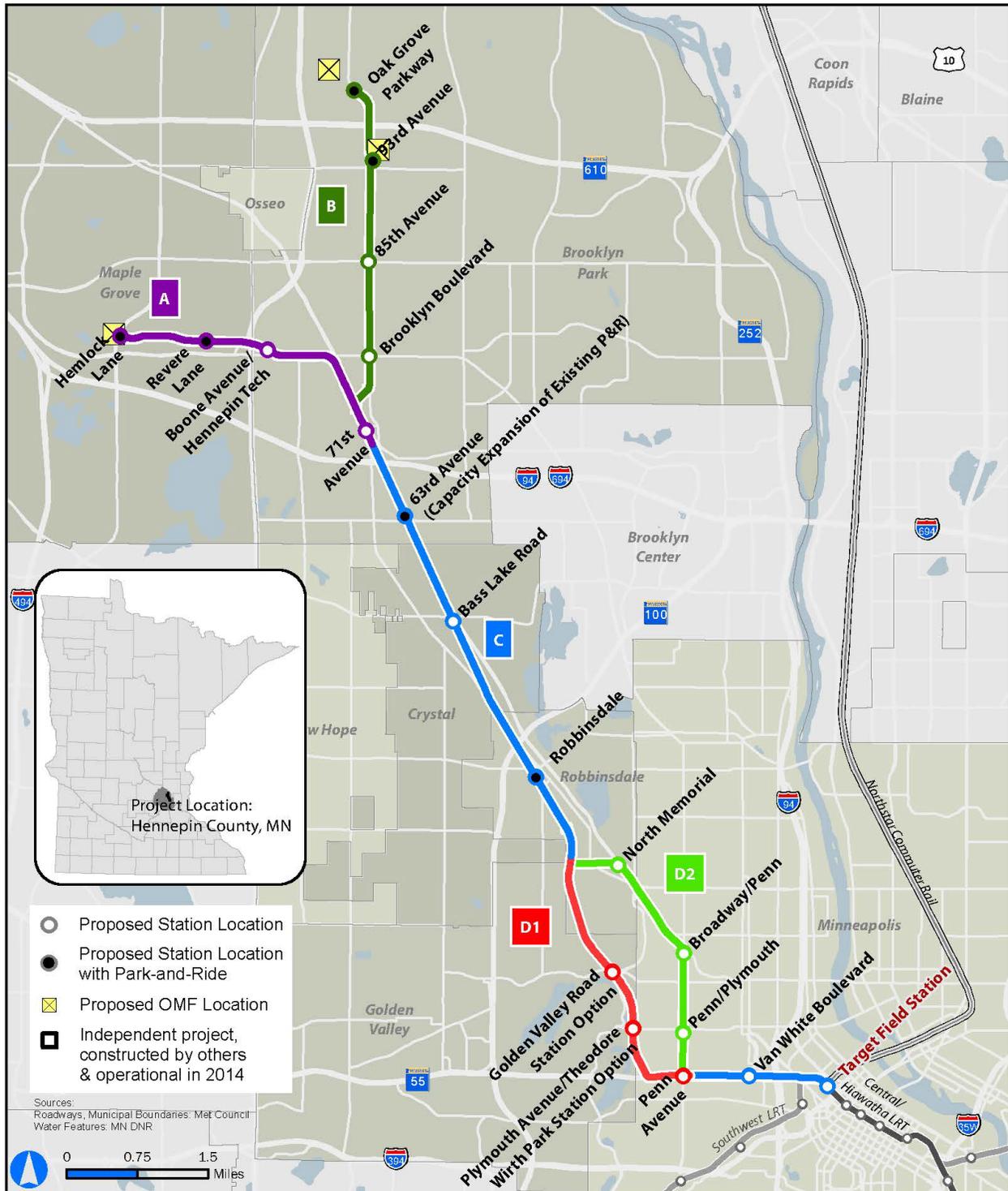


Figure 2.4-2. Alignments A, B, and C: Park-and-Ride Locations



Alignment A - Revere Lane Station



Alignment A - Hemlock Lane Station



Alignment C - Robbinsdale Station

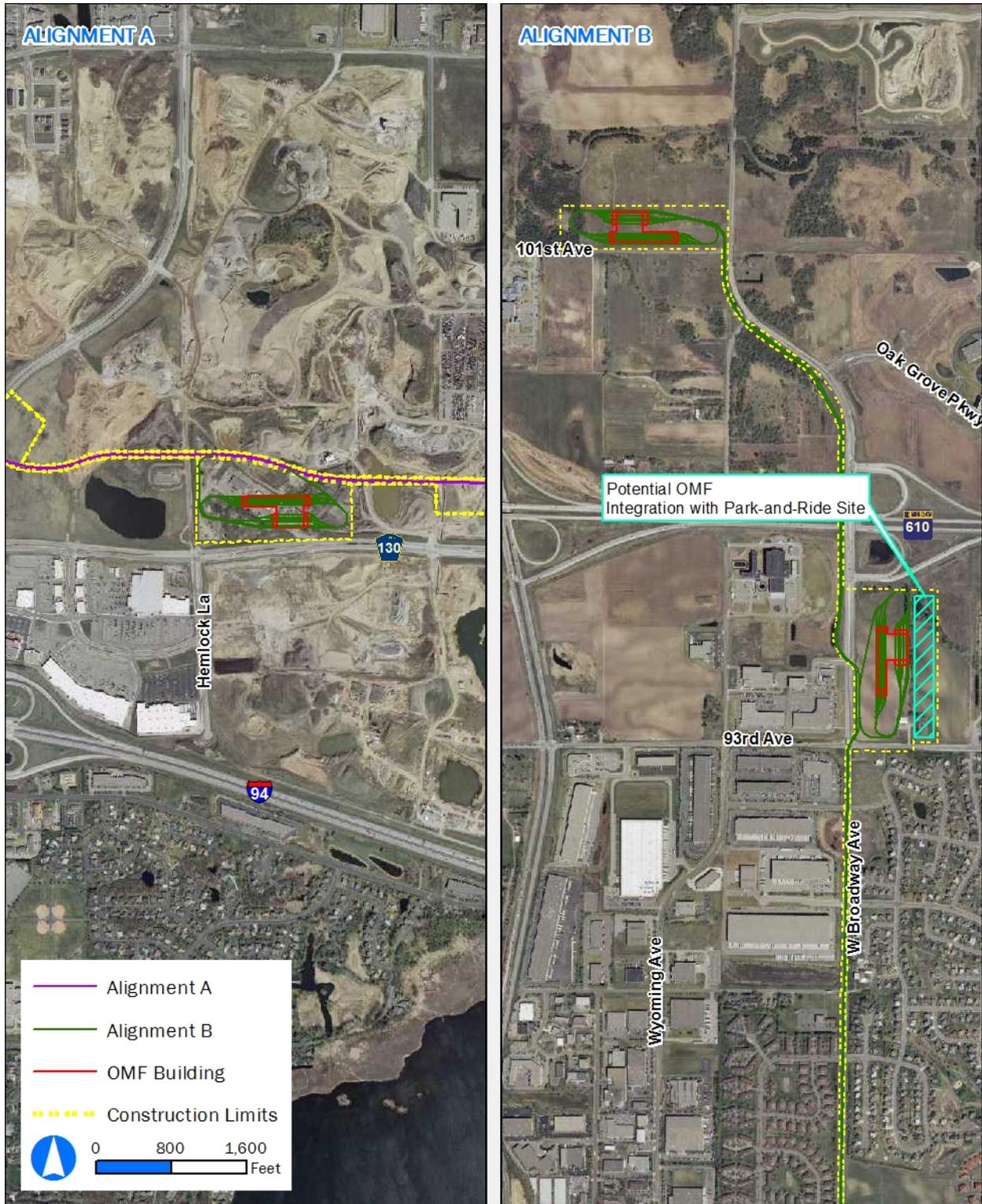


Alignment B - 93rd Avenue Station



Alignment C - 63rd Avenue Station (existing facility on 6.5 acres)

Figure 2.4-3. Potential OMF Sites



### *Traction Power Substations*

TPSS sites are necessary to convert existing electrical current to an appropriate type (AC to DC) and level to power LRT vehicles through an overhead catenary system. They do not generate electricity. TPSS sites would be approximately 4,000 square feet (SF) in size and able to accommodate a single-story building that is approximately 40 feet by 20 feet. Access to the building must also be accommodated.

Typically, TPSS sites are spaced less than one mile apart. A distance greater than one mile reduces the ability to safely deliver and return power from a traveling train. TPSS site spacing must also consider overlaps in the overhead catenary system. For optimal safety and performance, the overlaps in the overhead conductor should not occur at critical locations, including hills, curves, bridges, tunnels, and the passenger stations. Preliminary analysis shows that TPSS sites would be required at approximately  $\frac{3}{4}$ -mile to 1-mile intervals along the proposed alignments to supply electrical power to the traction networks, stations, and the OMF.

Potential locations for the TPSS sites are shown in [Figure 2.4-4](#). There are a total of 28 potential TPSS locations that have been identified along all of the proposed Build alternative alignments; approximately 18 or 19 TPSS would be required for any given Build alternative. The TPSS locations are represented by areas with a 500-foot radius. These areas would be refined through more detailed engineering to minimize impacts to surrounding properties and resources and balance safety, reliability, cost, and operational efficiencies. The majority of the TPSS would be located on the east side of the proposed LRT track; some TPSS are associated with the LRT platforms and stations as opposed to power for the rail vehicles. The TPSS sites would be located at least eight feet from the tracks, consistent with minimum clearance requirements. It is anticipated that most, if not all, TPSS would be located within existing transportation right-of-way. If this is not possible based on more detailed engineering, impacts to additional land would be evaluated in subsequent stages of the EIS process.

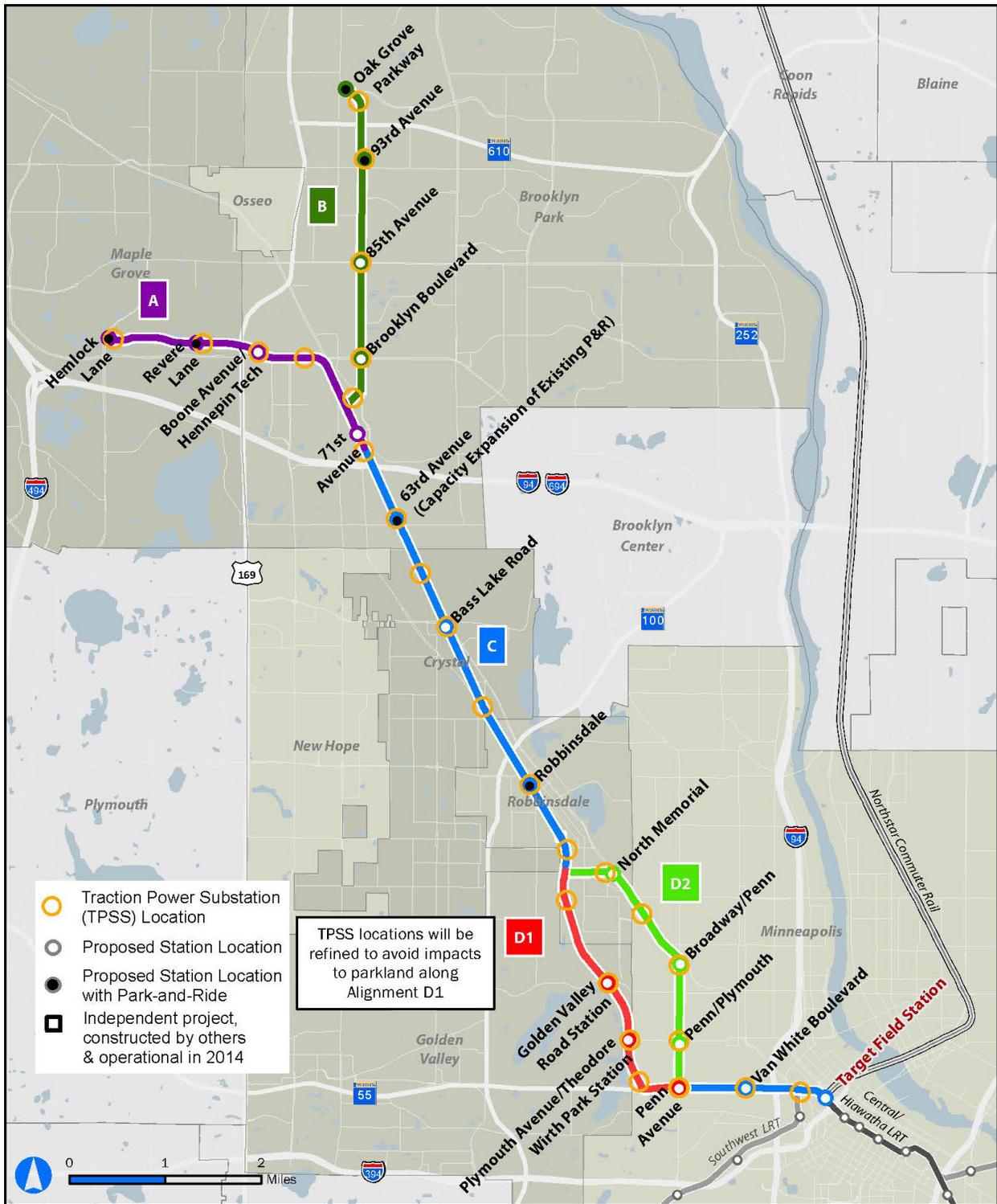
### *Fare Collection*

A self-service, proof-of-payment fare collection system is assumed for the Bottineau Transitway, consistent with that used on the Blue Line (Hiawatha) today. Passengers would purchase individual or multiple rides from fare vending machines located at each station. Passengers would validate tickets prior to boarding the train. Passengers on board the trains would be subject to random checks for proof of payment by ticket inspectors. The absence of turnstiles or fareboxes and the use of cars with multiple, wide boarding doors provides for rapid passenger boarding/alighting and minimal delays at stations.

### *Trackway*

LRVs would operate on standard gauge railroad track. The proposed system would be double-tracked throughout, providing a separate track for northbound and southbound train movements. Generally, a cross-section for an at-grade, double-track LRT alignment is a 30-foot right-of-way for ballasted track and 28-foot right-of-way for embedded track. The minimum vertical clearance is approximately 14 feet from top of rail. The maximum recommended gradient along a vertical alignment is six percent; short segments may have steeper grades. The radius of track curvature plays a significant role in LRT operating speed. The minimum turning radius for a typical modern articulated (able to bend in the middle) light rail vehicle is 82 feet. Crossovers to allow trains to cross from the northbound to the southbound tracks would be provided at regular intervals for special operations or emergencies. Typically, the trackway in the BNSF railroad corridor would be ballasted track separate from the freight rail track. Alignments in streets could be either ballasted or embedded depending on location and the context of the street. In the D2 alignment, the track would be embedded due to its location within street right-of-way and proximity to people and buildings.

Figure 2.4-4. General TPSS Locations



### *Vehicles*

For the purposes of conceptual engineering to support the Draft EIS, a number of assumptions have been made regarding the LRVs that would operate on the transitway. The LRVs have been assumed to be articulated cars capable of bi-directional operation as a single-unit or multi-unit train. Mechanisms located on the roof of each vehicle are assumed to provide for power collection from the overhead catenary system and transmission to the traction motors. Each car is assumed to be approximately 95 feet long, with about 66 seats and capacity of approximately 160 passengers (including those standing). Passengers are assumed to board the trains through four, low-level double doors located on each side of the vehicle. The system would be designed for trains of two-cars (that is, two LRVs connected to each other), with potential to be expanded for three car trains if needed to accommodate ridership demand. The vehicles may be operated at up to 55 miles per hour.

The LRT system would be designed to be fully compatible with ADA standards. The LRVs would be fully accessible with level boarding from accessible platforms and provisions for wheelchair space and on all cars. LRVs would be anticipated to accommodate bicycles.

### *Train Control*

This Draft EIS assumes an operator would control each light rail train, consistent with current practice. Operators have control over the acceleration and braking of the train, as well as passenger door operations. Passenger announcements may be made by the operator or automatically by the rail control center. Operators are in radio contact with the rail control center that oversees and directs all rail operations. Automated train signal and communication systems would transmit various operations data to the rail control center. These systems would also provide for priority consideration at traffic signals, activation of crossing gates, collision and overspeed protection, and track switch operations.

### *Operating Frequencies*

Trains are assumed to operate at the frequencies below between 4:00 a.m. and 1:00 a.m.:

- 7.5-minute frequencies during the weekday morning (6:00 a.m. – 9:00 a.m.) and afternoon (3:00 p.m. – 6:30 p.m.) peak periods
- 10-minute frequencies at all other times (weekday midday and evenings and Saturday and Sunday days and evenings)

#### **2.4.3.2 Description of Alternatives**

The unique alignment and features for each LRT alternative are described below and summarized in [Table 2.4-2](#). The features below are based on assumptions associated with the conceptual level of engineering conducted on the alternatives to date and may be modified as the project proceeds. Under each of the proposed Build alternatives, the LRT alignment would connect to the regional system at the Target Field Station in downtown Minneapolis, a project that will be completed independent of the Bottineau Transitway and be operational in 2014.

**Table 2.4-2. Alternative Descriptions**

	Alternative			
	A-C-D1	A-C-D2	B-C-D1	B-C-D2
<b>Northern Terminus</b>	Maple Grove	Maple Grove	Brooklyn Park	Brooklyn Park
<b>Length<sup>1</sup></b>	12.6 miles	12.7 miles	13.3 miles	13.4 miles
<b>Capital cost (\$2017, in millions)<sup>2</sup></b>	\$997	\$1,119	\$997	\$1,113
<b>Operating cost (\$2013, in millions)<sup>2</sup></b>	\$32.8	\$34.2	\$32.5	\$33.7
<b>Ridership (total)</b>	27,600	27,200	27,000	26,000
<b>Bottineau Stations</b>	<u>10 Stations</u> <ul style="list-style-type: none"> <li>■ Hemlock Lane<sup>3</sup></li> <li>■ Revere Lane<sup>3</sup></li> <li>■ Boone Ave/ Henn Tech</li> <li>■ 71st Avenue</li> <li>■ 63rd Avenue<sup>3</sup></li> <li>■ Bass Lake Road</li> <li>■ Robbinsdale<sup>3</sup></li> <li>■ Golden Valley Rd or Plymouth Avenue/Theodore Wirth Regional Park<sup>5</sup></li> <li>■ Penn Avenue</li> <li>■ Van White Blvd</li> </ul>	<u>11 Stations</u> <ul style="list-style-type: none"> <li>■ Hemlock Lane<sup>3</sup></li> <li>■ Revere Lane<sup>3</sup></li> <li>■ Boone Ave/ Henn Tech</li> <li>■ 71st Avenue</li> <li>■ 63rd Avenue<sup>3</sup></li> <li>■ Bass Lake Road</li> <li>■ Robbinsdale<sup>3</sup></li> <li>■ North Memorial</li> <li>■ Broadway/Penn</li> <li>■ Penn/Plymouth</li> <li>■ Van White Blvd</li> </ul>	<u>10 Stations</u> <ul style="list-style-type: none"> <li>■ Oak Grove Parkway</li> <li>■ 93rd Avenue<sup>3</sup></li> <li>■ 85th Avenue</li> <li>■ Brooklyn Blvd</li> <li>■ 63rd Avenue<sup>3</sup></li> <li>■ Bass Lake Road</li> <li>■ Robbinsdale<sup>3</sup></li> <li>■ Golden Valley Rd or Plymouth Avenue/Theodore Wirth Regional Park<sup>5</sup></li> <li>■ Penn Avenue</li> <li>■ Van White Blvd</li> </ul>	<u>11 Stations</u> <ul style="list-style-type: none"> <li>■ Oak Grove Parkway</li> <li>■ 93rd Avenue<sup>3</sup></li> <li>■ 85th Avenue</li> <li>■ Brooklyn Blvd</li> <li>■ 63rd Avenue<sup>3</sup></li> <li>■ Bass Lake Road</li> <li>■ Robbinsdale<sup>3</sup></li> <li>■ North Memorial</li> <li>■ Broadway/Penn</li> <li>■ Penn/Plymouth</li> <li>■ Van White Blvd</li> </ul>
<b>Station Constructed by Others Where Bottineau LRT Alignment Would Connect with Regional Rail System</b>	Target Field Station	Target Field Station	Target Field Station	Target Field Station

	Alternative			
	A-C-D1	A-C-D2	B-C-D1	B-C-D2
<b>Key Bridge Structures (length)</b>	5 new: US 169 (820'), BNSF railroad (970'), CP rail tracks (500'), TH 100 (400'), HERC driveway (125') <sup>4</sup>  8 existing bridges modified	8 new: US 169 (820'), BNSF railroad (970'), CP rail tracks (500'), TH 100 (400'), Halifax/34th Ave (50'), France Ave to NMMC (720'), NMMC to Lowry Ave (2,000'), HERC driveway (125') <sup>4</sup>  3 existing bridges modified	4 new: TH 610 (300'), CP rail tracks (500'), TH 100 (400'), HERC driveway (125') <sup>4</sup>  8 existing bridges modified	7 new: TH 610 (300'), CP rail tracks (500'), TH 100 (400'), Halifax/34th Ave (50'), France Ave to NMMC (720'), NMMC to Lowry Ave (2,000'), HERC driveway (125') <sup>4</sup>  3 existing bridges modified
	General locations of new bridge structures can be seen on <a href="#">Figure 2.4-9</a> . Refer to the Conceptual Engineering Drawings in Appendix E for detailed location information.			
<b>Operations and Maintenance Facility (OMF) Alternatives</b>	For the alternatives that include alignment A, the OMF facility would be located at the northern end of alternative in Maple Grove on parcel currently within gravel mining area west of US 169.		For the alternatives that include Alignment B, the OMF facility would be located at the northern end of alternative in Brooklyn Park on one of two potential sites: 93rd Avenue park-and-ride or in the northwest quadrant of Winnetka Avenue (CSAH 103) and 101st Avenue intersection.	
<b>Traction Power Substations</b>	18 proposed	18 proposed	19 proposed	19 proposed
	TPSS are proposed to be located at approximately ¾ mile – 1 mile spacing along the LRT line, with most located near LRT stations (as shown in <a href="#">Figure 2.4-4</a> ). TPSS would be located on limited access sites that are approximately 4,000 SF in size and are able to accommodate a single-story building that is approximately 40 ft by 20 ft.			

<sup>1</sup> The length represents the full end-to-end length of the proposed alternatives. Based on direction provided during the AA Study, and affirmed during the Scoping process; the alternatives evaluation will reflect full corridor analysis.  
<sup>2</sup> Cost estimates provided are a snapshot in time and are based on the level of design development contemplated as part of Scoping.  
<sup>3</sup> Proposed station location where park and ride would be provided.  
<sup>4</sup> The Hennepin Energy Recovery Center (HERC) driveway structure is proposed specific for the Bottineau Transitway project and would be an expansion of the structure required for the independent Target Field Station in downtown Minneapolis.  
<sup>5</sup> The Draft EIS will evaluate a Golden Valley Road and Plymouth Avenue/Theodore Wirth Regional Park stations on the D1 alignment. It is anticipated only one station location will advance due to low ridership demand.

**Alternative A-C-D1**

Alternative A-C-D1 originates in Maple Grove at Hemlock Lane/Arbor Lakes Parkway and follows the future Arbor Lakes Parkway and Elm Creek Boulevard to the BNSF railroad corridor located on the west side of Bottineau Boulevard. It enters the railroad corridor separate from the freight rail tracks and continues parallel to the freight rail tracks through the cities of Brooklyn Park, Crystal, Robbinsdale, and Golden Valley. At TH 55, the alignment turns and follows TH 55 to Target Field Station in downtown Minneapolis. Alternative A-C-D1 is illustrated in [Figure 2.4-5](#). Alternative A-C-D1 includes up to 10 new stations, as illustrated in [Figure 2.4-5](#) and summarized in [Table 2.4-2](#). With the D1 alignment, it is assumed that either the Golden Valley Road or Plymouth Avenue/Theodore Wirth Regional Park station option would be chosen due to the proximity of these two stations and their similarity in transit markets served. Four stations are assumed to include park-and-ride lots ([Figure 2.4-2](#)). Hemlock Lane would have

an approximate 6.4 acre park-and-ride; Revere Lane 2.7 acres; the existing 63rd Avenue park-and-ride facility would remain at 6.5 acres, although the vehicle capacity would increase through expansion of the existing structure; and the size of the Robbinsdale park-and-ride is to be determined.

One potential OMF site has been identified for Alignment A. The OMF location is a parcel located within the Maple Grove gravel mining operations area west of US 169 ([Figure 2.4-3](#)).

Alternative A-C-D1 includes five new bridge structures: an 820-foot long structure over US 169, a 970-foot long structure over the BNSF railroad, a 500-foot structure over the CP (Canadian Pacific) rail tracks, a 400-foot crossing over TH 100 to accommodate BNSF freight track, and a 125-foot crossing of the Hennepin Energy Recovery Center (HERC) driveway. Eight existing bridges would be modified at TH 100 (widening of existing BNSF freight track bridge to accommodate LRT), 36th Avenue, Golden Valley Road, Theodore Wirth Parkway, Plymouth Avenue, TH 55, I-94, and the railroad bridge north of TH 55.

#### *Alternative A-C-D2*

Alternative A-C-D2 also originates in Maple Grove and follows the same alignment as Alternative A-C-D1 into Robbinsdale. Once in Robbinsdale, the alignment exits the BNSF railroad corridor near 34th Avenue and joins West Broadway Avenue where it enters Minneapolis. It then travels on Penn Avenue to TH 55 to Target Field Station in downtown Minneapolis as illustrated in [Figure 2.4-6](#).

Alternative A-C-D2 includes 11 new stations, as illustrated in [Figure 2.4-6](#) and summarized in [Table 2.4-2](#). It includes the same four park-and-ride locations and the same general OMF location as identified in Alternative A-C-D1.

Alternative A-C-D2 includes eight new bridge structures: an 820-foot long structure over US 169, a 970-foot long structure over the BNSF railroad, a 500-foot structure over the CP rail tracks, a 400-foot crossing over TH 100 to accommodate BNSF freight track, a 50-foot long structure at Halifax and 34th Avenues, a 720-foot long structure between France Avenue and North Memorial Medical Center, a 2,000 foot long structure between NMMC and Lowry Avenue, and a 125-foot crossing of the HERC driveway. Three existing bridges would be modified at TH 100 (widening of existing BNSF freight track bridge to accommodate LRT), 36th Avenue, and at I-94.

#### *Alternative B-C-D1*

Alternative B-C-D1 begins in Brooklyn Park just north of TH 610 near the Target North Campus, follows West Broadway Avenue, and crosses Bottineau Boulevard at 73rd Avenue to enter the BNSF railroad corridor. Adjacent to the freight rail tracks, it continues in the railroad corridor through the cities of Crystal, Robbinsdale, and Golden Valley. At TH 55, the alignment turns to the east and follows TH 55 to Target Field Station in downtown Minneapolis, as illustrated in [Figure 2.4-7](#).

Alternative B-C-D1 includes up to 10 new stations, as illustrated in [Figure 2.4-7](#) and summarized in [Table 2.4-2](#). With the D1 alignment, it is assumed that either the Golden Valley Road or Plymouth Avenue/Theodore Wirth Regional Park station option would be chosen due to the proximity of these stations and their similarity in transit markets served. Three of these stations would also include park-and-ride lots ([Figure 2.4-2](#)). The 93rd Avenue station would have an approximate 11.2-acre park-and-ride; the existing 63rd Avenue park-and-ride facility would remain at 6.5 acres, although the vehicle capacity would increase through expansion of the existing structure; and the size of the Robbinsdale park-and-ride is to be determined.

Two potential OMF site options have been identified for Alignment B. The locations of the two potential OMF sites are at the park-and-ride station at 93rd Avenue and the northwest quadrant of the intersection of Winnetka Avenue (CSAH 103) and 101st Avenue ([Figure 2.4-3](#)).

Alternative B-C-D1 includes four new bridges: a 300-long structure over TH 610, a 500-foot structure over the CP rail tracks, a 400-foot crossing over TH 100 to accommodate BNSF freight track, and a 125-

foot crossing of the HERC driveway. Eight existing bridges would be modified (see Alternative A-C-D1 for complete listing of the eight bridges that would require modification).

#### *Alternative B-C-D2*

Alternative B-C-D2 originates in Brooklyn Park, following the same alignment as Alternative B-C-D1 through the cities of Crystal and Robbinsdale. Once in Robbinsdale, the alignment exits the BNSF railroad corridor near 34th Avenue and joins West Broadway Avenue where it enters Minneapolis. It then travels on Penn Avenue to TH 55 to the Target Field Station in downtown Minneapolis as illustrated in [Figure 2.4-8](#).

Alternative B-C-D2 includes 11 new stations, as illustrated in [Figure 2.4-8](#) and summarized in [Table 2.4-2](#). It includes the same three park-and-ride locations and the same OMF location options as identified in Alternative B-C-D1.

Alternative B-C-D2 includes seven new bridge structures: a 300-foot structure over TH 610, a 500-foot structure over the CP rail tracks, a 400-foot crossing over TH 100 to accommodate BNSF freight track, a 50-foot long structure at Halifax and 34th Avenues, a 720-foot long structure between France Avenue and NMMC, a 2,000 foot long structure between NMMC and Lowry Avenue, and a 125-foot crossing of the HERC driveway. Three existing bridges would be modified: TH 100 (widening of existing BNSF freight track bridge to accommodate LRT), 36th Avenue, and at I-94.

Figure 2.4-5. Alternative A-C-D1

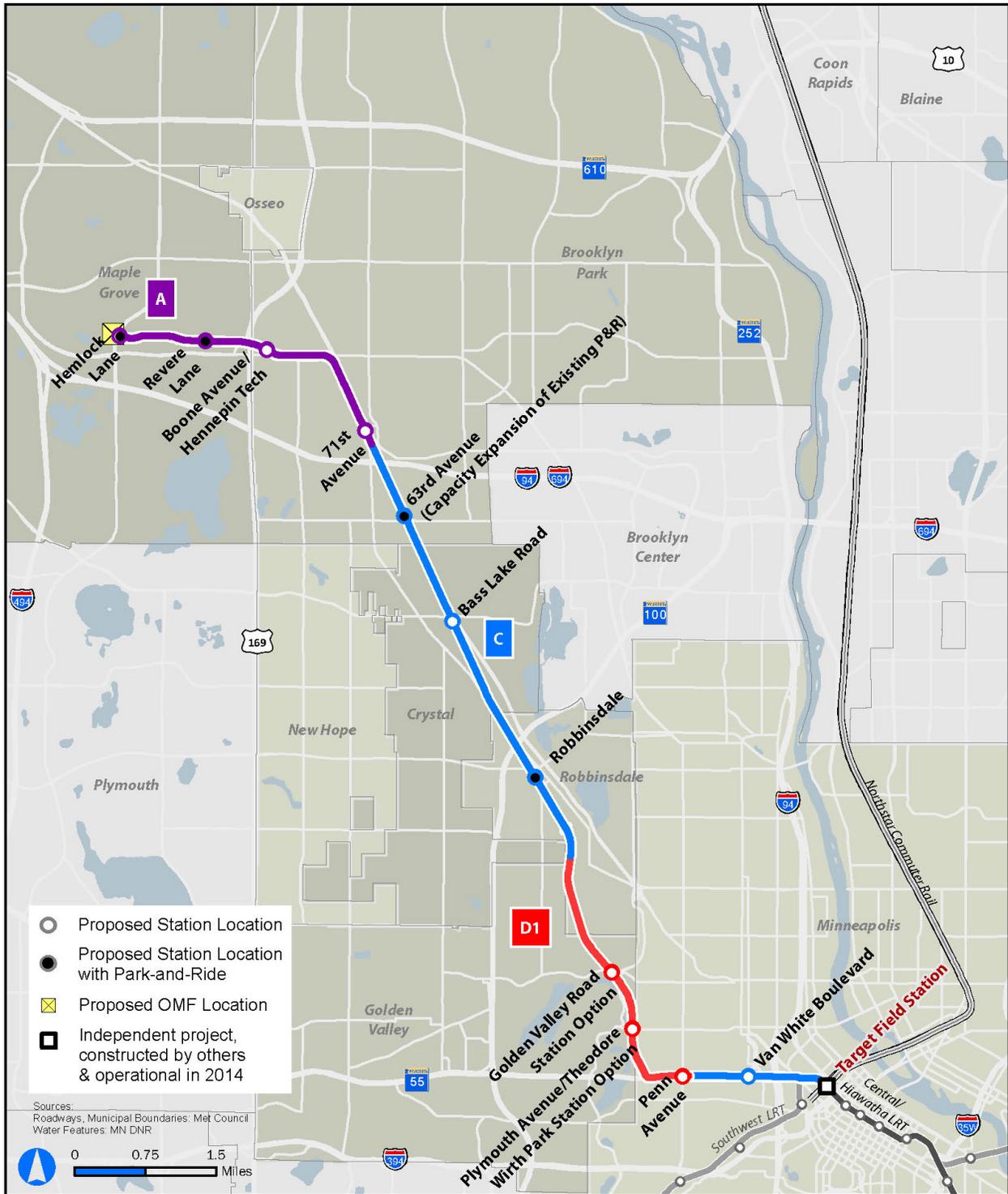


Figure 2.4-6. Alternative A-C-D2

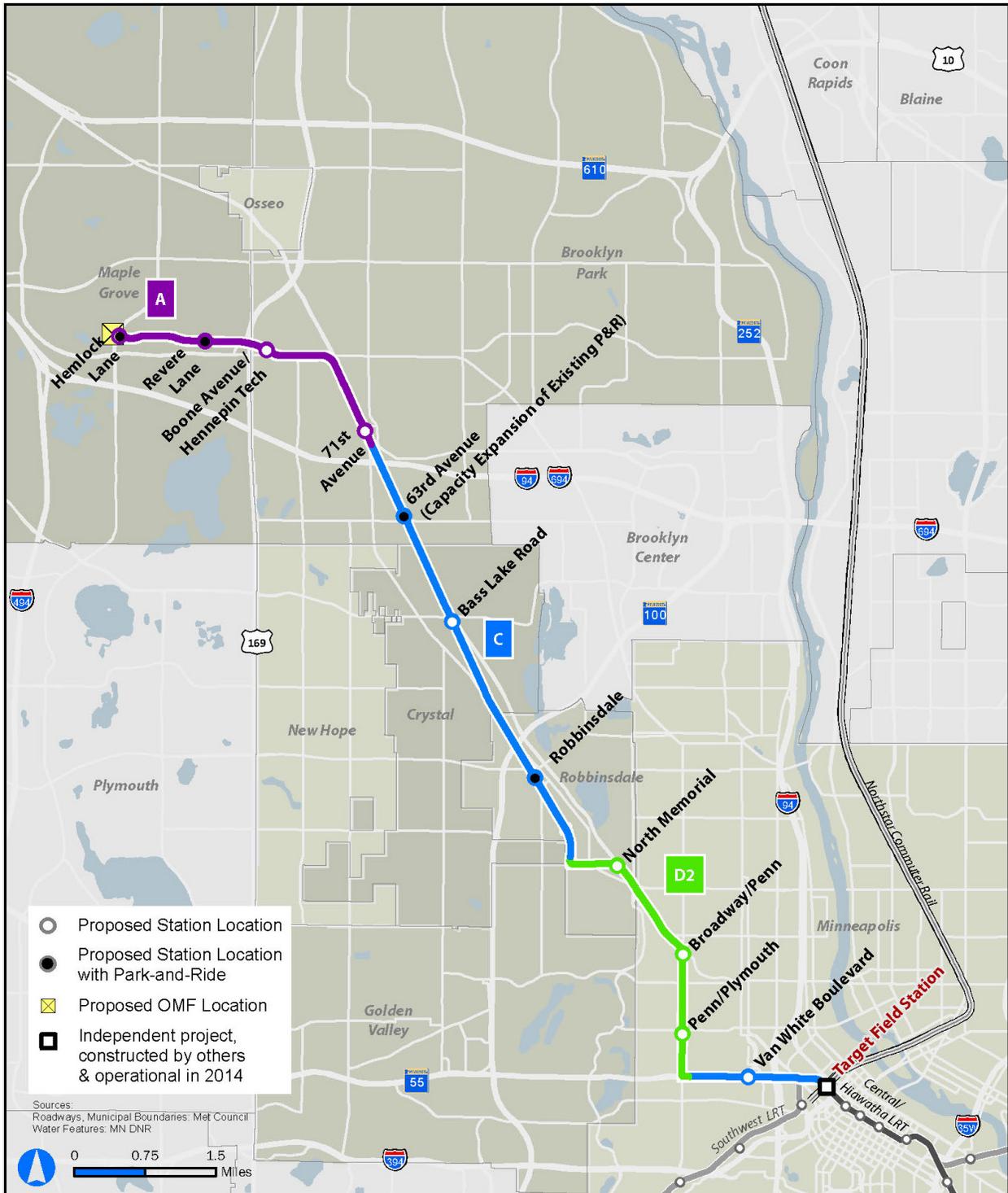


Figure 2.4-7. Alternative B-C-D1

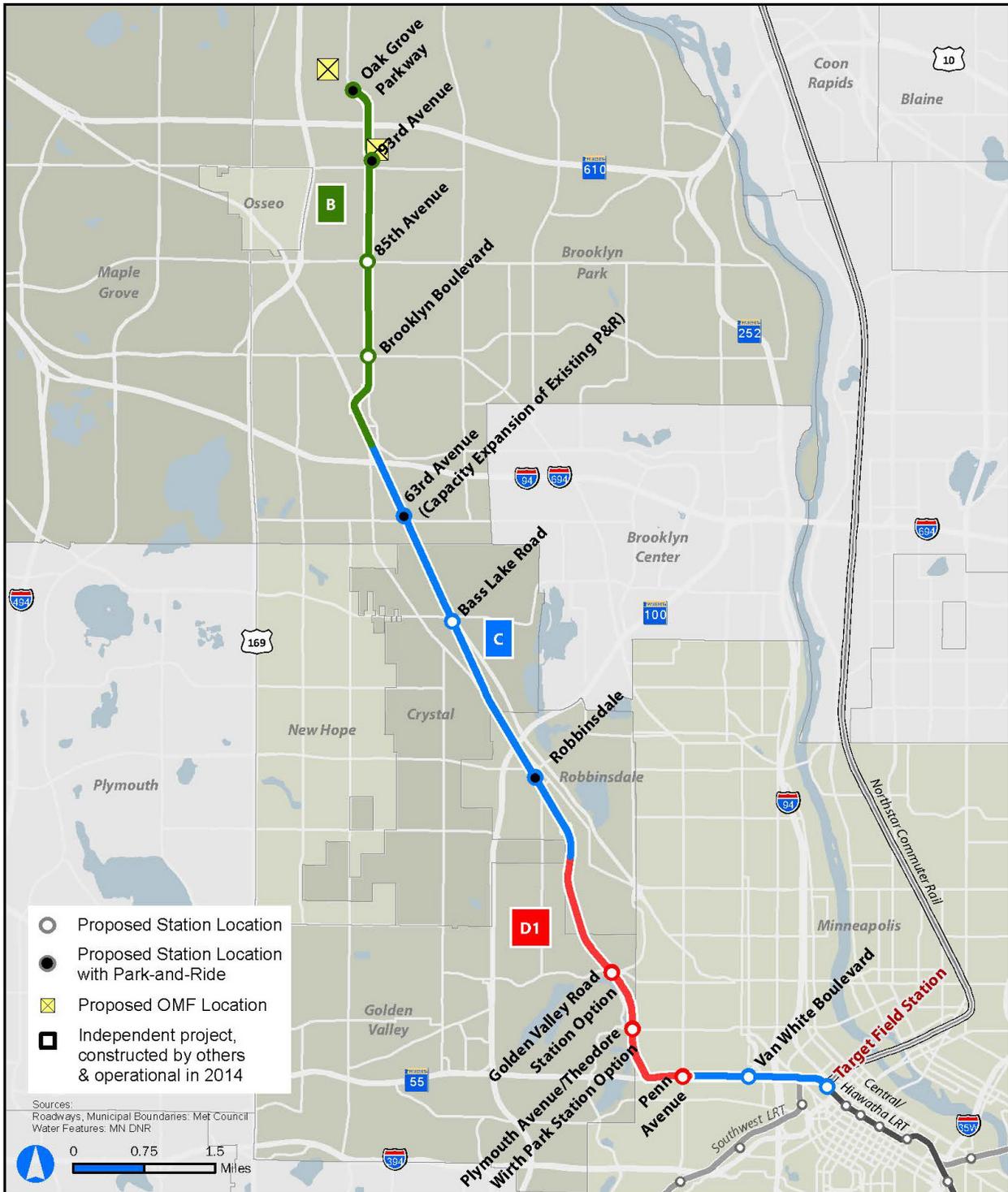


Figure 2.4-8. Alternative B-C-D2

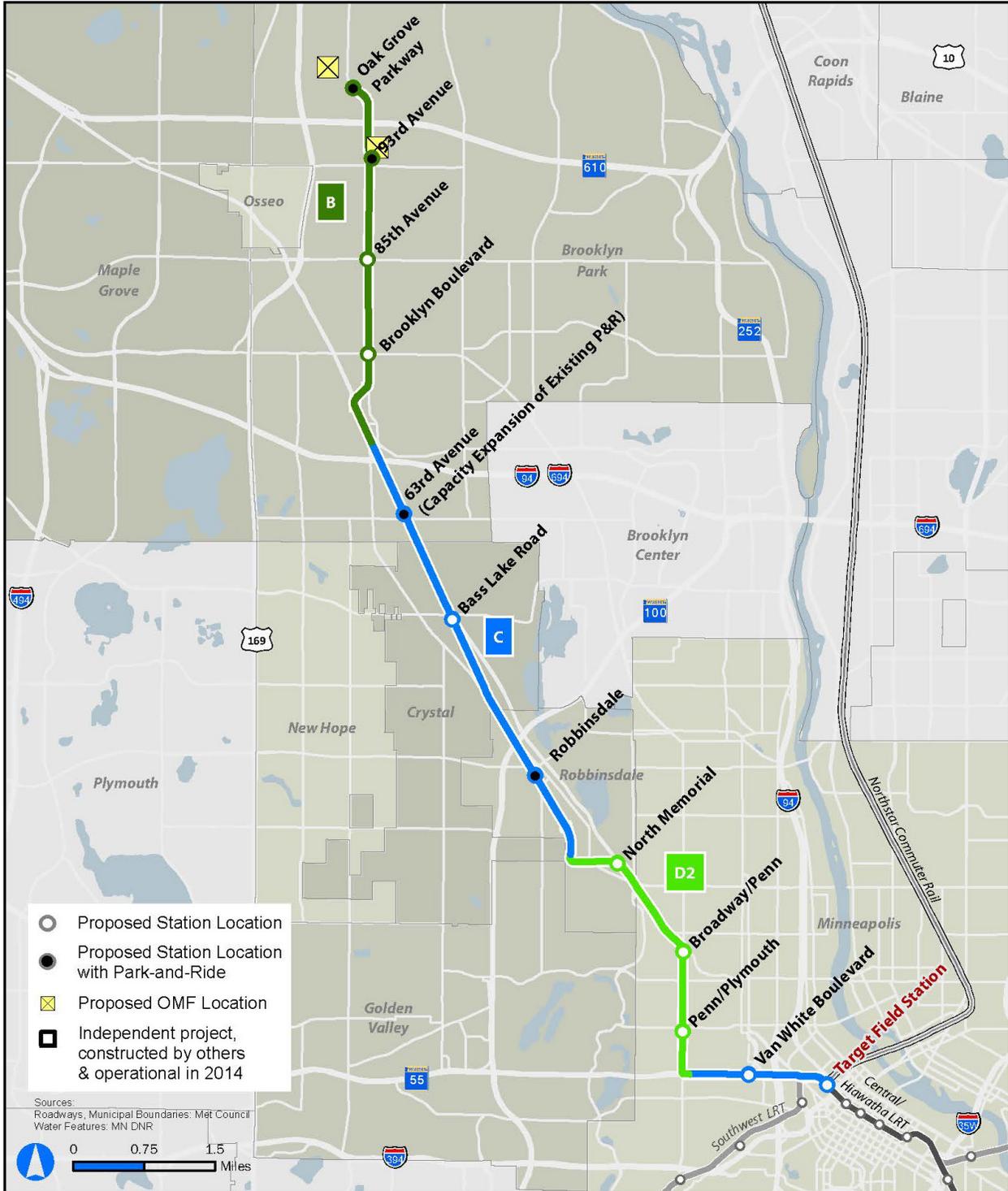
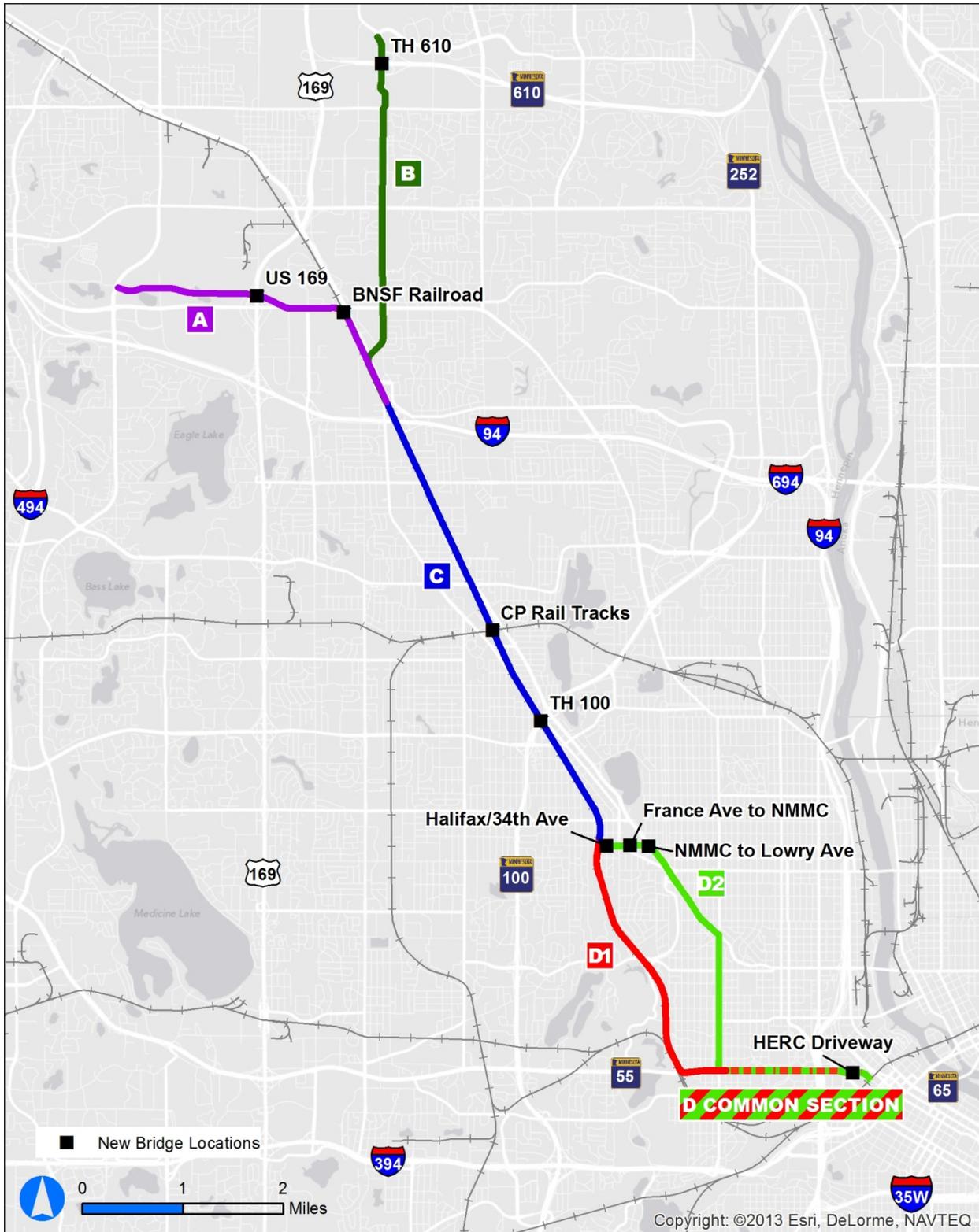


Figure 2.4-9. Locations of New Bridge Structures



## 2.5 Locally Preferred Alternative (LPA) Selection Process

An LPA is the transitway alternative that the corridor's cities, Hennepin County, and the Metropolitan Council recommend for detailed study through engineering and environmental review. The LPA specifies both the type of transit that will be used (mode) and the location (alignment). Other elements of the project, including termini and final station locations are established formally during subsequent engineering based on additional information, including opening year travel demand forecasts.

The multi-step process to formally recommend and select an LPA for the Bottineau Transitway began following the technical analysis and Scoping decisions previously described. At their meeting on June 26, 2012, following a PAC public hearing and recommendation, and passage of resolutions of support from the cities of Minneapolis, Robbinsdale, Crystal, and Brooklyn Park, and a HCRRA-sponsored LPA public hearing, HCRRA passed a resolution recommending Alternative B-C-D1 as the LPA for the Bottineau Transitway. The City of Golden Valley followed with its resolution in December 2012. On May 8, 2013, the Metropolitan Council formally adopted amendments to the 2030 *TPP* – the region's long-rang transportation plan – to include the Bottineau Transitway LPA as Alternative B-C-D1. This action, which concludes the LPA process, followed a public comment period and input from the Council's Transportation Advisory Board (TAB). This LPA process will not be the only time cities will have input into the approval of the project. The cities will be required to review preliminary engineering plans and provide municipal approval for portions of the project within their jurisdiction. In a letter dated September 27, 2013, the FTA and the Federal Highway Administration (FHWA) concurred with the amendment to the *TPP* dated May 22, 2013 (see [Appendix D](#)).

Additional details on public input into the LPA selection process can be found in Chapter 9 Consultation and Coordination.

## 2.6 Recommended Environmentally Preferred Alternative

As summarized in Chapter 11 Evaluation of Alternatives, Alternative B-C-D1 meets the purpose and need of the Bottineau Transitway project and is the environmentally preferred alternative because it will cause the least damage to the biological and physical environment and that best protects, preserves, and enhances historic, cultural, and natural resources.