Transit Operations Plans Report

Bottineau Transitway

DRAFT ENVIRONMENTAL IMPACT STATEMENT

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1.0 INTRODUCTION

The Bottineau Transitway project area extends approximately 13 miles northwest from downtown Minneapolis through the neighborhoods of north Minneapolis, and into the communities of Golden Valley, Robbinsdale, Crystal, Brooklyn Park, and Maple Grove in Hennepin County, Minnesota. Transitway alternatives that are being evaluated as part of this Draft Environmental Impact Statement (Draft EIS) are light rail transit (LRT) and bus rapid transit (BRT).

This report presents proposed bus and rail operating plans for the Bottineau Transitway project alternatives. This report begins with a description of existing transit facilities and bus routes that operate in the Bottineau Transitway study area. Service plans are then presented for the following alternatives:

- No-Build alternative
- Baseline alternative
- LRT alternatives
  - A-C-D1
  - A-C-D2
  - B-C-D1
  - B-C-D2
- BRT alternative

All alternatives have been defined for the Horizon Year 2030. Transit operators that are affected by the project alternatives include Metro Transit, Metropolitan Council-funded routes, and Maple Grove Transit. Route alignments and service frequencies have been defined to the level needed for coding in the travel demand model's transit network. Service statistics are presented for each alternative for purposes of cost estimation.

Scoping Decision and Alternatives to be Studied in the Draft EIS

Since the initial development of this report, the Hennepin County Regional Railroad Authority (HCRRA) has made additional decisions regarding the alternatives to be studied in greater detail in the Draft EIS. Based on the findings from the technical analysis completed to date, along with the public and agency input received during the Scoping phase, the following alternatives will be studied in more detail in the Bottineau Transitway Draft EIS:

- No-Build alternative
- Baseline/TSM alternative
- 4 LRT Build alternatives: A-C-D1, A-C-D2, B-C-D1, B-C-D2

Following the technical analysis conducted and public input received during the Scoping process, the HCRRA determined that the BRT alternative will not be studied in the Draft EIS process. Additional information reagarding the decision not to carry the BRT alternative forward is documented in this project's *Scoping Decision Document*, available on the project website at www.bottineautransitway.org.

Although the BRT alternative will not be carried forward for study in the Draft EIS, the details of its operations plans are included in this report for the purpose of fully documenting the assumptions that were included in the alternative.

2.0 EXISTING SERVICE CHARACTERISTICS

The Bottineau Transitway's transit service area is generally defined by the Mississippi River to the north and east, Highway 55 (Olson Memorial Highway) to the south, and I-494 to the west. This area is served by several Metro Transit urban and suburban routes, Maple Grove Transit, and routes operated by contract operators through Metropolitan Council funding. Following are general descriptions of transit facilities and routes that operate within the Bottineau Transitway project area. Figures 2-1, 2-2 and 2-3 at the end of this section illustrate urban local, suburban local and limited stop/express routes that operate in the project area, in addition to locations of existing transit facilities.

2.1 Bottineau Project Area Facilities

There are several existing transit facilities located within the defined Bottineau Transitway project area. Existing transit facilities are as follows:

- *Robbinsdale Transit Center (RTC)* – this facility is located in downtown Robbinsdale on Hubbard Avenue. Existing routes that operate at this transit center are: 14, 32, 716, 717 and 758.
- *Brooklyn Center Transit Center (BCTC)* – This facility is located at 57th Avenue and Xerxes Avenue, adjacent to the Brookdale Mall (currently being redeveloped). Routes that serve this transit center are: 5, 19, 22, 717, 721, 722, 723, 724, 761, 762 and 801.
- *Starlite Transit Center (STC)* – This facility is located within the Starlite shopping center, at West Broadway and Brooklyn Blvd. Routes that serve this facility are: 705, 723, 724 and 764.
- *Maple Grove Transit Station (MGTS)* – This facility is located on Main Street in Maple Grove, just west of Hemlock Lane (part of the Arbor Lakes commercial area). Maple Grove Transit routes that serve this facility are: 781, 787 and 789.

Existing park-and-ride facilities that are located in the Bottineau Transitway project area are as follows:

- 63rd Ave./Bottineau Blvd. – served by express route 767.
- 65rd Ave./Brooklyn Blvd. – served by express routes 760 and 767.
- Maple Grove Transit Station – served by Maple Grove express routes 781 and 789.
- Zachary Lane & 96th Ave. – served by Maple Grove express route 782
- Parkway Station – served by Maple Grove express route 785
- Crosswinds Church – served by Maple Grove express route 783
- Shepherd of the Grove Church – served by Maple Grove express route 788
- Highway 100 & Duluth Street – served by express route 758.

2.2 Urban Local Routes

Routes that operate in the Bottineau Transitway project area, their service patterns and frequencies as of September 2011 are as follows:

Route 5 - This route is operated by Metro Transit and provides local service between BCTC, downtown Minneapolis, the Chicago-Lake Transit Center in south Minneapolis, and the Mall of America. Within the Bottineau project area, Route 5 generally follows Xerxes Avenue, Brooklyn Boulevard, Osseo Road, 44th Avenue, Fremont Avenue and 7th Street into downtown Minneapolis (outbound trips use Emerson Avenue instead of Fremont Avenue). Select trips also serve 26th Avenue to West Broadway.

There are three Route 5 patterns that serve the Bottineau project area:

- Route 5M operates to/from BCTC
- Route 5L operates to/from 33rd Avenue and Fremont Avenue
- Route 5F operates to/from 26th Avenue and W. Broadway Ave

Combined, frequencies are generally 5 to 10 minutes in the peak periods, as noted in the table below. Route 5 operates seven days a week.

5	Brklyn Center - Fremont - 26th Av - Chicago - MOA				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	1:25 AM to 1:55 AM	5 - 10	7 - 8	10 - 15	60
Saturday	1:25 AM to 1:40 AM	10 all day			
Sunday	1:25 AM to 1:35 AM	10 - 15 all day			

Route 7 – This route is a Metro Transit-operated route that serves north Minneapolis, downtown, 46th Street Station, and south Minneapolis. Route 7 begins at Plymouth Avenue at Wirth Chalet and generally follows Plymouth Avenue to Hennepin Avenue, 4th Street, and 5th Avenue to the Gateway Ramp downtown, before continuing south to Highway 62. Trips occurring between midnight and 5:00 a.m. operate along 6th and 7th Streets downtown instead of 4th and 5th Streets. Select trips also operate to Washington Avenue and Lowry Avenue (route pattern 7D) four times daily on weekdays. Frequencies are generally 15 to 30 minutes during the peak as noted below. Route 7 operates seven days a week.

7	Plymouth - 27Av - Midtown - 46St LRT - 34Av S				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	4:10 AM to 1:50 AM	15 - 30	30	30	-
Saturday	4:15 AM to 1:50 AM	30 all day			
Sunday	4:15 AM to 1:50 AM	30 - 60 all day			

Route 14 – This route is a Metro Transit-operated route that provides local route service to Robbinsdale, Crystal, Golden Valley, and beyond downtown Minneapolis, the 38th Street Station, and Richfield. Within the Bottineau project area, service begins at the RTC and alternates among different alignments to West Broadway Avenue and Fremont Avenue. It then follows West Broadway Avenue and Washington Avenue into downtown. Route 14 alignment patterns within the Bottineau project area include:

- 14D to/from RTC, Crystal, and Golden Valley via 36th Avenue, Douglas Drive, and Golden Valley Road
- 14G to/from Golden Valley via Golden Valley Road/Duluth Street and Lilac Drive (MnDOT P&R).
- 14L to/from RTC via Golden Valley Road and Noble Avenue
- 14N to/from RTC via France, 36th, Noble, and Hubbard Avenues

- 14R to/from RTC via Washington and France Avenues

As noted above, all but one route pattern serves the RTC. Service frequencies vary between the different Route 14 service patterns, but cumulatively range from 10 to 20 minutes in the peak periods as noted in the table below. Route 14 operates seven days a week.

14	Robbinsdale - West Broadway Av - Bloomington Av				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	4:25 AM to 1:35 AM	10 - 20	15 - 20	20 - 30	-
Saturday	4:25 AM to 1:35 AM		20 - 30 all day		
Sunday	5:25 AM to 12:35 AM		20 - 30 all day		

Route 19 – This route is a Metro Transit-operated route that serves Brooklyn Center, Robbinsdale, and north and downtown Minneapolis. Service generally begins at BCTC and heads south along Xerxes Avenue, 55th Avenue, Brooklyn Boulevard, continuing on Osseo Road to Penn Avenue, south to Olson Highway, and downtown along 7th and 8th Streets. Route 19 patterns in the Bottineau project area are:

- 19B - to/from BCTC
- 19H - to/from 42nd and York Avenues
- 19Y - to/from 36th and York Avenues

Combined frequencies are noted below. Route 19 operates seven days a week.

19	Olson Memorial Hwy - Penn Av N - Brooklyn Center				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	2:30 AM to 1:40 AM	8 - 15	15	15 - 20	60
Saturday	2:30 AM to 1:40 AM		15 - 20 all day		
Sunday	2:30 AM to 1:40 AM		20 - 30 all day		

Route 22 – This route is a Metro Transit-operated route that serves the areas of Brooklyn Center, and north and downtown Minneapolis. Route 22 has three weekday alignments between BCTC and downtown and another alignment from 69th and Humboldt Avenues to downtown. From 45th and Bryant Avenues, all alignments travel downtown via Lyndale Avenue and 7th Street before continuing to the VA Medical Center Station in south Minneapolis. The Route 22 service patterns that serve the Bottineau project area are:

- Route 22A follows Xerxes Avenue to 55th Avenue, Brooklyn Boulevard, 51st Avenue, Penn Avenue, 49th Avenue, Humboldt Avenue, Shingle Creek Drive to 45th Avenue
- Route 22B follows 57th Avenue, Logan Avenue, Humboldt Avenue, Shingle Creek Drive to 45th Avenue
- Route 22C follows 57th Avenue/Bass Lake Road to Dupont Avenue, Bryant Avenue, and 45th Avenue
- Route 22D follows 69th Avenue to Dupont Avenue and mimics the Route 22C pattern

Route 22 operates seven days a week.

22	Brklyn Ctr - Lyndale Av N - Cedar - 28th Av S - VA				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	4:50 AM to 1:55 AM	11 - 15	20	20 - 30	-
Saturday	4:20 AM to 1:55 AM	20 all day			
Sunday	5:00 AM to 1:50 AM	30 all day			

Route 32 – This route is a Metropolitan Council-funded local route that travels from Robbinsdale in the west to Roseville in the east and serves neighborhoods in north Minneapolis along the way. Currently, Route 32 is under a detour pattern due to construction on the Lowry Avenue bridge over the Mississippi River.

Route 32 starts at the RTC and follows West Broadway Avenue and France Avenue to Oakdale Avenue and Lowry Avenue. On detour, the route follows 2nd Street, the West Broadway Avenue bridge, and Marshall Street, resumes the regular route on Lowry Avenue, continues on Kenzie Terrace, New Brighton Boulevard, County Road C, Walnut Street to Terminal Road, and east to the Rosedale Transit Center.

Route 32 operates Monday through Friday only with the following times and frequencies:

32	Robbinsdale - Lowry Av - Rosedale				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	6:20 AM to 7:40 PM	30	60	-	-

2.3 Suburban Local Routes

Route 705 – This route is a Metropolitan Council-funded route that provides service from the Walmart Supercenter in Brooklyn Park to the Louisiana Avenue Transit Center in St. Louis Park with the majority of its service along Winnetka Avenue. From Walmart, Route 705 takes Lakeland Avenue to 79th Avenue and Jolly Lane to Brooklyn Boulevard, stops at the Starlite Transit Center, then continues south on West Broadway Avenue across Bottineau Boulevard, and transfers to Winnetka Avenue via Modern Road. Two service patterns continue the remainder of the route:

- Route 705A provides service along Medicine Lake Road, alternating trips travel either Medicine Lake Road west to Hillsboro Avenue/Mendelssohn Avenue to Plymouth Avenue, or remains on Winnetka Avenue
- Route 705B includes a deviation along Golden Valley Road, Douglas Drive, and Olson Highway, where it returns to Winnetka Avenue

Trips on both patterns continue south on Winnetka to Wayzata to terminate at the Louisiana Avenue Transit Center along the south frontage road of I-394 (Wayzata Boulevard).

Route 705 operates hourly service Monday through Friday.

705	Starlite - Winnetka Av				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	5:10 AM to 9:20 PM	60	60	60	-

Route 716 – This route is a Metropolitan Council-funded route that provides service to Brooklyn Park, Plymouth, and Robbinsdale and has two service patterns:

- Weekday southbound trips originate at Brooklyn Boulevard and Welcome Avenue, then travel south on Regent/73rd Avenue to Zane Avenue, then follows multiple streets from 65th Avenue to Hampshire Avenue, 63rd Avenue to the 63rd Avenue Park-and-Ride, and then continues south on West Broadway Avenue, Douglas Drive to 42nd Avenue, turning east to terminate at the RTC. Northbound trips retrace the path back to Brooklyn and Welcome.
- Saturday-only Route 716B originates at 67th and Idaho Avenues, travels east to Zane Avenue to 63rd Avenue, West Broadway Avenue, Bass Lake Road, Winnetka Avenue, 42nd Avenue to terminate at the Robbinsdale Transit Center

Route 716 operates Monday through Saturday during the following times:

716	Zane Av - 63rd Av - Crystal - Robbinsdale				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	5:25 AM to 10:25 PM	60	60	60	-
Saturday	6:05 AM to 8:00 PM	60 all day			

Route 717 – This route is a Metropolitan Council-funded route that operates between BCTC and Plymouth. Route 717 westbound begins at BCTC and heads south on Xerxes Avenue, 55th Avenue, and Brooklyn Boulevard, operates non-stop along Highway 100 to France Avenue, and follows Lake Drive to the RTC, and 42nd Avenue to the Cub Foods Park-and-Ride on Nathan Lane in Plymouth. Route 717 operates Monday through Friday.

717	(714) Brooklyn Center - Robbinsdale				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	5:55 AM to 10:15 PM	60	60	60	-

Route 721 – This route is a jointly-operated Metro Transit and Metropolitan Council route that provides local route service between Hennepin Technical College at 77th Avenue and Northland Drive and BCTC. Route 721 travels on Northland Drive, Boone Avenue, Bass Lake Road and Xerxes Avenue to the BCTC. Route 721 has two patterns:

- Route 721 operates between downtown and Hennepin Technical College via BCTC, Xerxes Avenue, Brooklyn Boulevard/Osseo Road, 44th Avenue, Fremont and Dowling to I-94.
- Route 721A operates only between Hennepin Technical College and BCTC.

Both patterns operate Monday through Friday. The 721A pattern also operates weekends. Route 721 is operated by Metro Transit but portions are funded by Metropolitan Council.

721	Ltd Stop - Brooklyn Center - New Hope - Mpls				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	5:30 AM to 9:30 PM	30 - 60	60	60	-
Saturday	7:35 AM to 6:20 PM	60 all day			
Sunday	7:30 AM to 6:25 PM	60 all day			

Route 722 – This route is a jointly-operated Metro Transit and Metropolitan Council route that provides local route service between Brooklyn Park and Brooklyn Center. Route 722 has differing route patterns beyond BCTC:

- Route 722A originates at 69th and Humboldt Avenues and follows Dupont Avenue, 65th Avenue, and Shingle Creek Parkway to BCTC.
- Route 722B loops around Lad Parkway, Noble Parkway, and 85th Avenue, travels along Brookdale Drive to Humboldt Avenue, then follows the 722A pattern.
- Select afternoon trips travel to Earle Brown Tower by taking Summit Drive, traveling around Earle Brown Drive, and returning to Summit Drive to Shingle Creek Parkway.
- Weekend trips follow the 722A pattern, operating only between 69th at Humboldt and the BCTC with select trips to Earle Brown Tower.

Route 722 operates seven days a week with headways generally every 30 minutes.

722	Brooklyn Ctr - Humboldt Av N - Shingle Creek Pkwy				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	4:05 AM to 11:25 PM	30	30	30	-
Saturday	6:15 AM to 12:05 AM	30 all day			
Sunday	7:30 AM to 9:55 PM	30 all day			

Route 723 – This route is a Metropolitan Council-funded route that operates one pattern between Starlite Transit Center and BCTC. The alignment begins at Starlite and heads north on West Broadway to 85th Avenue, Zane Avenue, 80th Avenue, Yates Avenue, Brookdale Drive, Noble Parkway, Brooklyn Boulevard, and Bass Lake Road to the BCTC. Route 723 operates seven days a week.

723	Starlite - North Henn Comm College - Brooklyn Ctr				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	6:00 AM to 11:00 PM	60	60	60	-
Saturday	8:00 AM to 7:05 PM	60 all day			
Sunday	9:00 AM to 6:55 PM	60 all day			

Route 724 – This route is a Metro Transit-operated route that serves areas between the Starlite Transit Center and BCTC. The alignment follows Brooklyn Boulevard, Regent Lane/73rd Avenue, Zane Avenue, 63rd Avenue, and Xerxes Avenue to BCTC. Select trips also operate north to the Target Northern Campus. Select trips also travel to downtown Minneapolis via Xerxes Avenue, Brooklyn Boulevard/Osseo Road, 44th Avenue, Fremont Avenue, 38th /Dowling Avenues, then non-stop on I-94 to downtown.

Route 724 operates Monday through Friday with these patterns but on weekends only operates between Starlite and BCTC. Headways are generally 30 minutes all day for most patterns, except for trips with service extensions to Target Northern Campus or downtown where headways are more peak-oriented.

724	Ltd Stop - Target Campus - Starlite - Brooklyn Ctr				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	3:55 AM to 2:00 PM	30	30	30 - 60	-
Saturday	3:55 AM to 2:00 AM	30 all day			
Sunday	4:55 AM to 1:00 AM	30 all day			

2.4 Limited Stop and Express Routes

Route 755 – This route is a Metro Transit-operated route that provides service between New Hope, Crystal, Golden Valley, and downtown Minneapolis. Most trips follow Winnetka Avenue, Golden Valley Road, Douglas Road, and Olson Memorial Highway into downtown. Most southbound Route 755 begins at Xylon and 45th Avenues. Crystal is served by some trips operating via 36th, Louisiana, and 32nd Avenues. Limited stop service occurs on Olson Memorial Highway between Penn Avenue and 7th Street. Route patterns on Route 755 are:

- Route 755C extends to Science Center Drive and Boone Avenue
- Southbound p.m. trips begin at Science Center Drive and Boone Avenue, and take Winnetka south to Medicine Lake Road, then Hillsboro/Mendelssohn Avenues to Plymouth Avenue to Winnetka Avenue

Route 755 operates Monday through Friday during the peak periods only.

755	Ltd Stop - Hwy 55 - Golden Valley Rd - Winnetka Av				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	5:05 AM to 9:00 AM	6 trips	-	-	-
	3:00 PM to 6:50 PM	6 SB, 7 NB	-	-	-

Route 756 – This route is a Metro Transit-operated route that provides express service between New Hope, Crystal, Golden Valley, and downtown Minneapolis. Southbound trips originate at Science Center Drive then head south on Boone Avenue to Medicine Lake Road, Hillsboro/Mendelssohn Avenues, Plymouth Avenue, Boone, 10th, and Wisconsin Avenues, Golden Valley Road, and Boone Avenue to I-394 nonstop to downtown. Route 756 makes stops at the park-and-rides located at General Mills Boulevard and at the Louisiana Avenue Transit Center.

Route 756 operates Monday through Friday during the peak periods only.

756	Express- Hwy 55 - Mendelssohn Rd - Boone Av				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Southbound	6:35 AM to 8:20 AM	3 trips	-	-	-
Northbound	4:00 PM to 5:50 PM	3 trips	-	-	-

Route 758 – This route is a Metro Transit-operated route that provides express service from Crystal, Golden Valley, and Robbinsdale to downtown Minneapolis. Route 758 has three route patterns:

- Route 758D originates in Crystal at West Broadway and Bass Lake Road, follows West Broadway and Douglas Drive to Duluth Street, then operates express to downtown via Highway 100 and I-394.
- Route 758N originates from the RTC and takes Hubbard Avenue, 42nd, Regent, and 39th Avenue to Noble Avenue to Duluth Street, then operates express to downtown via Highway 100 and I-394.
- Route 758M provides express service between the MnDOT park-and-ride at Duluth Street & Highway 100 and downtown.

Route 758 operates Monday through Friday during the peak only.

758	Express - 63rd Av P&R - Douglas - Noble - Mpls				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Southbound	6:20 AM to 8:25 AM	7 trips	-	-	-
Northbound	3:30 PM to 6:50 PM	8 trips	-	-	-

Route 760 – This route is a Metro Transit-operated route that provides express service between Brooklyn Park, Brooklyn Center and downtown Minneapolis, and local service in Brooklyn Park and Downtown. Route 760 originates at Xylon and 85th Avenues and takes Zane Avenue to 63rd Avenue east to Brooklyn Boulevard, serving the 65th Avenue park-and-ride before traveling non-stop to downtown via I-94. Route 760 has two patterns which deviate at Xylon and 85th Avenues:

- Route 760E travels east on 85th Avenue, south on West Broadway, east on Candlewood Drive to Zane Avenue
- Route 760A travels north at West Broadway to Setzler Parkway continuing on Neddersen Parkway to Zane Avenue

Route 760 operates Monday through Friday during the morning and afternoon rush hour periods only. Route 760A occurs twice in the morning and twice in the afternoon. Route 760E operates six trips in the morning and five trips in the afternoon.

760	Express - Zane Av - 63rd Av - 65th Av P&R - Mpls				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Southbound	5:25 AM to 8:45 AM	8 trips	-	-	-
Northbound	3:30 PM to 6:55 PM	7 trips	-	-	-

Route 761 – This route is a Metro Transit-operated route that provides express service from Brooklyn Park and Brooklyn Center to downtown Minneapolis via I-94. Route 761 begins in Brooklyn Park at Yates and 80th Avenues (using Zane Avenue instead of Yates on the return) and continues on Yates south to Brookdale Drive, Noble Avenue, Woodbine Lane, Halifax, 71st, France, and 69th Avenues, and Shingle Creek Parkway, turning south on Xerxes Avenue before stopping at BCTC. Route 761 then continues south on Xerxes Avenue to Brooklyn Boulevard, 51st and Penn Avenues, and then 49th Avenue to I-94 to downtown.

Route 761 operates during the rush hour periods only, Monday through Friday, with five trips each period.

761	Express - Brooklyn Park - Xerxes - 49th Av - Mpls				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Southbound	6:05 AM to 8:15 AM	5 trips	-	-	-
Northbound	3:35 PM to 6:25 PM	5 trips	-	-	-

Route 762 – This route is a Metro Transit-operated route that operates Monday through Friday during rush hour periods only, providing two limited-stop trips each period. The route begins at BCTC and follows 57th, Logan, 53rd, Humboldt, 49th, Bryant, 45th, Lyndale, and Dowling Avenues, then travels non-stop to downtown on I-94. The return alignment takes I-94 north to Dowling Avenue, then north on Washington Avenue to 41st Avenue to continue on the same alignment taken southbound.

762	Ltd Stop - Brooklyn Ctr - North Mpls - Mpls				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Southbound	6:50 AM to 7:50 AM	2 trips	-	-	-
Northbound	4:05 PM to 5:15 PM	2 trips	-	-	-

Route 763 – This route is a Metro Transit-operated route that provides service from Brooklyn Park and Brooklyn Center to downtown Minneapolis. From France and 73rd Avenues, Route 763 takes Xerxes Avenue, to loop around Lad Parkway, Noble and 85th Avenues, to Xerxes then Brookdale Drive, Humboldt Drive, then east on 65th and 66th Avenues where it heads south on I-94 non-stop to downtown. A park-and-ride is located on 66th Avenue at the northeast corner of the parking lot at Regal Cinemas. Route 763 operates Monday through Friday during the peak periods only.

763	Express - 85th Av - Brookdale Dr - Humboldt - Mpls				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Southbound	6:00 AM to 8:55 AM	5 trips	-	-	-
Northbound	3:35 PM to 6:55 PM	6 trips	-	-	-

Route 764 – This route is a Metro Transit-operated route that provides service from Brooklyn Park, New Hope, Crystal, and Robbinsdale to downtown Minneapolis, operating express along Highway 100 and I-394. The route begins at the Starlite Transit Center then takes West Broadway Avenue, Modern Road, Winnetka Avenue, and 42nd Avenue to Highway 100. Route 764 runs Monday through Friday during the rush hour periods only. The route serves a small park-and-ride located at the Faith Lilac Way Lutheran Church on 42nd and Welcome Avenues.

764	Express - Winnetka Av - 42nd Av - Mpls				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Southbound	6:40 AM to 8:20 AM	3 trips	-	-	-
Northbound	4:00 PM to 6:20 PM	4 trips	-	-	-

Route 765 – This route is a Metro Transit-operated express route that operates between downtown Minneapolis and the Target Northern Campus in Brooklyn Park, serving two park-and-ride facilities in Brooklyn Center on the way. The route begins at the Target Northern Campus between campus parking and the south end of the main building on Target Parkway, then takes Highways 610 and 252 and makes two stops on the way: at the 73rd Avenue park-and-ride at the Church of the Nazarene, and at the Regal Cinemas park-and-ride at 66th & Highway 252. Route 765 then continues non-stop to downtown Minneapolis.

Route 756 operates Monday through Friday during the peak only in the reverse commute direction and provides three trips during the following times.

765	Express - Target - Hwy 252 and 73rd Av P&R - Mpls				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Northbound	6:25 AM to 8:20 AM	3 trips	-	-	-
Southbound	3:40 PM to 5:40 PM	3 trips	-	-	-

Route 766 – This route is a Metro Transit-operated route that provides express service between Anoka, Champlin, Brooklyn Park, Brooklyn Center and downtown Minneapolis. Service is non-stop along I-94 and generally follows the west side of the Mississippi River along West River Road and I-94. Route 766F, 766H, 766N, and 766R all take Highway 610/252/I-94 express to downtown from the Highway 610 & Noble Parkway park-and-ride facility. Routes 766C, 766E, 766G, 766W, and 766X enter Highway 252 at Brookdale Drive. Route 766 has several different patterns:

- Route 766E originates in Anoka on Main Street, takes Ferry Street to West River Road to the Richardson Park park-and-ride, follows West River Road, Russell Avenue, 97th, and Noble Avenue to the 610/Noble Avenue park-and-ride, then operates via Highway 610/252/I-94 to downtown.
- Route 766C originates at Richardson Park and follows the same path as the 766E pattern south to downtown via the 610/Noble Avenue park-and-ride.
- Route 766G originates at Richardson Park, follows West River Road and enters Highway 252 at Brookdale Drive
- Route 766F originates in Champlin and loops around French Lake Road, Valley Forge Lane, and Dayton Road, then takes Cartway Road and Champlin Drive to 117th Avenue to West River Road, to Noble Avenue to the 610/Noble Avenue park-and-ride, then operates via Highway 610/252/I-94 to downtown.
- Route 766H originates at Richardson Park and takes West River Road and Noble Avenue to the 610/Noble Avenue park-and-ride, then operates via Highway 610/252/I-94 to downtown.
- Route 766W originates at West River Road and 117th Avenue, traveling south on West River Road and entering Highway 252 at Brookdale Drive.
- Route 766R originates at Russell/97th Avenues, serves the 610/Noble Avenue park-and-ride, then operates via Highway 610/252/I-94 to downtown.
- Route 766N originates at the 610/Noble Avenue park-and-ride, then operates via Highway 610/252/I-94 to downtown.
- Route 766X operates on West River Road between Richardson Park park-and-ride and 66th Avenue/Highway 252; this pattern does not serve downtown Minneapolis.
- All patterns serve the park-and-rides at 73rd Avenue/Highway 252 and Regal Cinemas.

Route 766 operates Monday through Friday in the morning and afternoon peak periods, and includes some evening service.

766	Express - Champlin - Noble P&R - West River Rd				
Service		Average Frequency [mins.]			
Days	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Weekdays	4:35 AM to 8:45 PM	15 - 60	60 - 120	60	-

Route 767 – This route is a Metro Transit-operated route that provides a combination of local and express service between New Hope, Maple Grove, Brooklyn Park, and Downtown Minneapolis. Route 767 has three service patterns:

- Route 767A provides direct express service between 63rd Avenue park-and-ride and downtown Minneapolis via Bottineau Boulevard and I-94.
- Route 767B originates at 69th Avenue and Magda Drive and serves Magda Drive, Boone Avenue, Bass Lake Road, and West Broadway to the 63rd Avenue park-and-ride, then continues to downtown via Bottineau Boulevard and I-94.
- Route 767C operates between the 63rd Avenue park-and-ride and downtown via 63rd Avenue, Brooklyn Boulevard and I-94, serving the park-and-ride at 65th and Brooklyn Boulevard.

Route 767 operates Monday through Friday during the morning and afternoon rush hour periods only.

767	Express - 63rd Av P&R - 65th Av P&R - Mpls				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Southbound	5:20 AM to 8:10 AM	6 trips	-	-	-
Northbound	3:10 PM to 6:40 PM	6 trips	-	-	-

2.5 Routes operated by Maple Grove Transit

Route 780 – This route is an express route that originates at Weaver Lake and Fish Lake Roads, then takes East Fish Lake Road south to West Eagle Lake Drive, services the Shepherd of the Grove Church park-and-ride at the intersection of West Eagle Lake Drive and Hemlock Lane, follows Hemlock Lane to I-94/I-694, then operates non-stop to downtown.

Route 780 operates during the morning and afternoon rush hours only.

780	Maple Grove - Express - Shepherd of the Grove P&R				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Southbound	5:55 AM to 8:15 AM	4 trips	-	-	-
Northbound	3:40 PM to 6:05 PM	4 trips	-	-	-

Route 781 – This route is an express route. Select trips originate at 94th Avenue and Dunkirk Lane, and follow Dunkirk Lane, 95th Avenue/93rd Avenue, Forestview Lane, 89th Avenue, Elm Creek Boulevard, and Main Street to the Maple Grove Transit Station. Additional trips begin at MGTS, with all trips then operating non-stop to downtown Minneapolis. In non-peak periods, Route 781 completes two midday trips and one evening trip. Route 781 operates weekdays only: southbound during the morning rush and early midday period, then northbound for the afternoon midday and afternoon rush hour periods.

781	Maple Grove - Express - Maple Grove Station				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Southbound	5:50 AM to 11:55 AM	20 trips	1 trip	-	-
Northbound	12:10 PM to 7:05 PM	22 trips	1 trip	-	-

Route 782 – This route provides express service that originates at Central Avenue and 1st Street in Osseo, then continues on Central and 93rd Avenues, Revere Lane, 101st Avenue, Nathan Lane, 109th Avenue, Zachary Lane, Boundary Creek Terrace, 101st Avenue, and Zachary Lane to the park-and-ride at 96th Avenue. This route then continues non-stop on Zachary Lane/Hemlock lane before entering I-94/I-694 and continuing non-stop to downtown Minneapolis. Route 782 operates Monday through Friday during the morning and afternoon rush periods only.

782	Maple Grove - Express - Zachary and 96th Av P&R				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Southbound	5:30 AM to 8:20 AM	5 trips	-	-	-
Northbound	3:40 PM to 6:30 PM	5 trips	-	-	-

Route 783 – This route operates during the morning and afternoon rush hour periods only. The route begins at Bass Lake Road and Lawndale, travels north on Troy Lane, east on 89th Avenue, south on Dunkirk Lane, east on Weaver Lake Road to the Crosswinds Church park-and-ride, then travels non-stop to downtown. Route 783 makes transfers with Route 788 at Crosswinds Church park-and-ride.

783	Maple Grove - Express - Crosswinds Church P&R				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Southbound	5:35 AM to 9:00 AM	6 trips	-	-	-
Northbound	3:45 PM to 6:30 PM	5 trips	-	-	-

Route 785 – This route provides express service between Parkway Station park-and-ride and downtown via Maple Grove Parkway and I-94/I-694. Route 785 operates during the weekday rush hour periods only.

785	Maple Grove - Express - Parkway Station				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Southbound	5:50 AM to 8:55 AM	8 trips	-	-	-
Northbound	3:40 PM to 6:45 PM	7 trips	-	-	-

Route 787 – This route provides two midday trips and one evening trip to park-and-rides at Shepherd of the Grove Church, Crosswinds Church, Parkway Station, and Zachary Lane at 96th Avenue, northbound only. The route takes Hemlock Lane to I-94, Weaver Lake Road, Dunkirk Lane, Maple Grove Parkway, 101st Avenue, Fernbrook Lane, CR-81, and Zachary Lane.

787	Maple Grove - Midday Shuttle - Flex Route				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Northbound	12:40 PM to 7:10 PM	3 trips	-	-	-

Route 788 – This route begins at Quinwood Lane and 62nd Place, takes Quinwood Lane, Sycamore Lane, Bass Lake Road, and West Fish Lake Road to Crosswinds Church park-and-ride. Connecting service to downtown Minneapolis can be made with Route 783. Route 788 operates during the morning and afternoon rush hour periods only.

788	Maple Grove - Bass Lake Rd - Crosswinds Church P&R				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Northbound	6:00 AM to 7:40 AM	4 trips	-	-	-
Southbound	4:15 PM to 6:30 PM	5 trips	-	-	-

Route 789 – This route provides two morning and two afternoon express trips from MGTS to the University of Minnesota campus, with service terminating at Washington Avenue and Oak Street.

789	Maple Groeve- U of M Express				
Service		Average Frequency [mins.]			
Weekdays	Approx. Span	Rush Hrs.	Midday	Evening	Owl
Northbound	7:00 AM to 8:50 AM	2 trips	-	-	-
Southbound	4:40 PM to 6:15 PM	2 trips	-	-	-

Figure 2-1

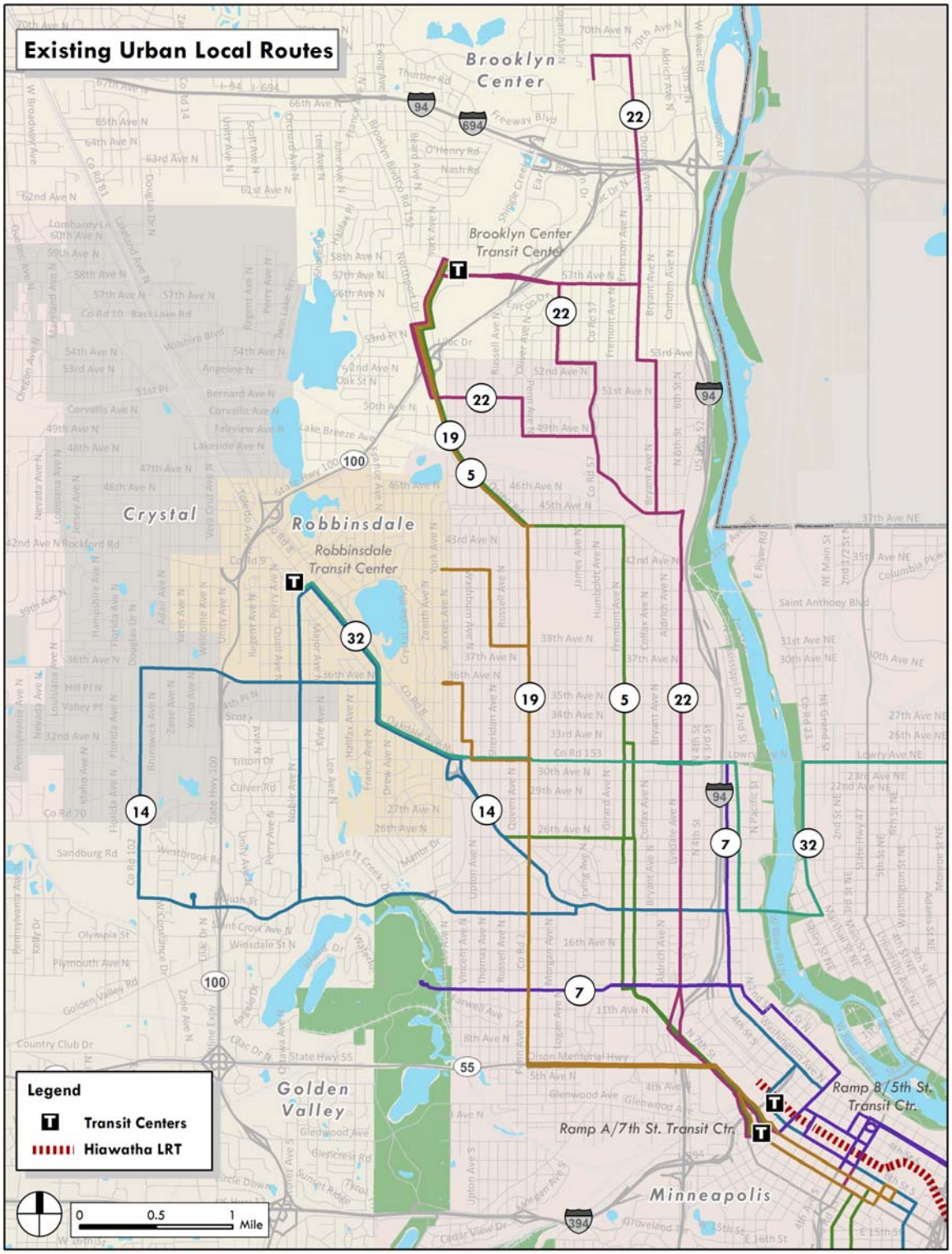

Existing Urban Local Routes
Brooklyn Center
Brooklyn Center Transit Center
Crystal
Robbinsdale
Robbinsdale Transit Center
Golden Valley
Minneapolis
Ramp B/5th St. Transit Ctr.
Ramp A/7th St. Transit Ctr.
Legend
Transit Centers
Hiawatha LRT
0 0.5 1 Mile

Figure 2-2

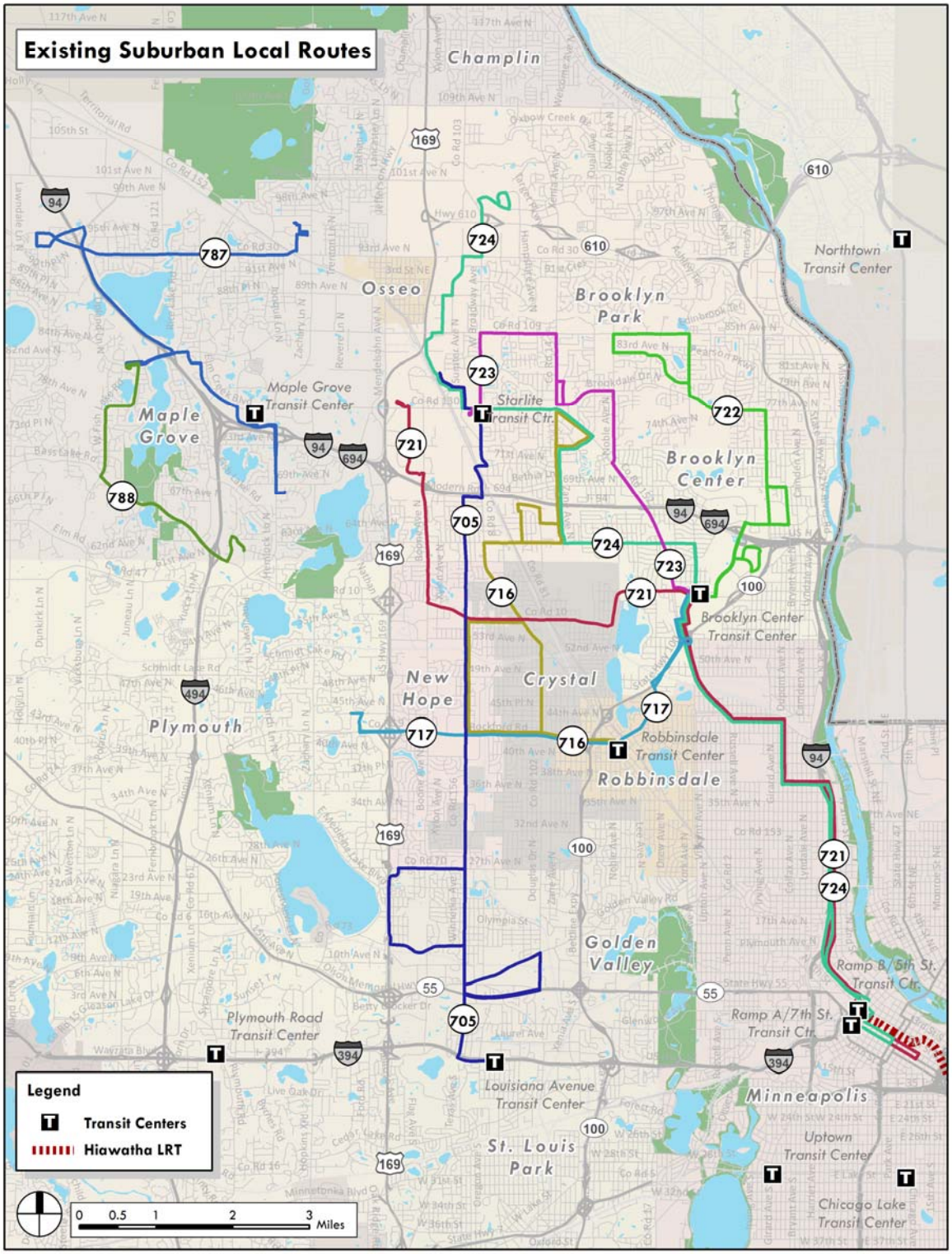
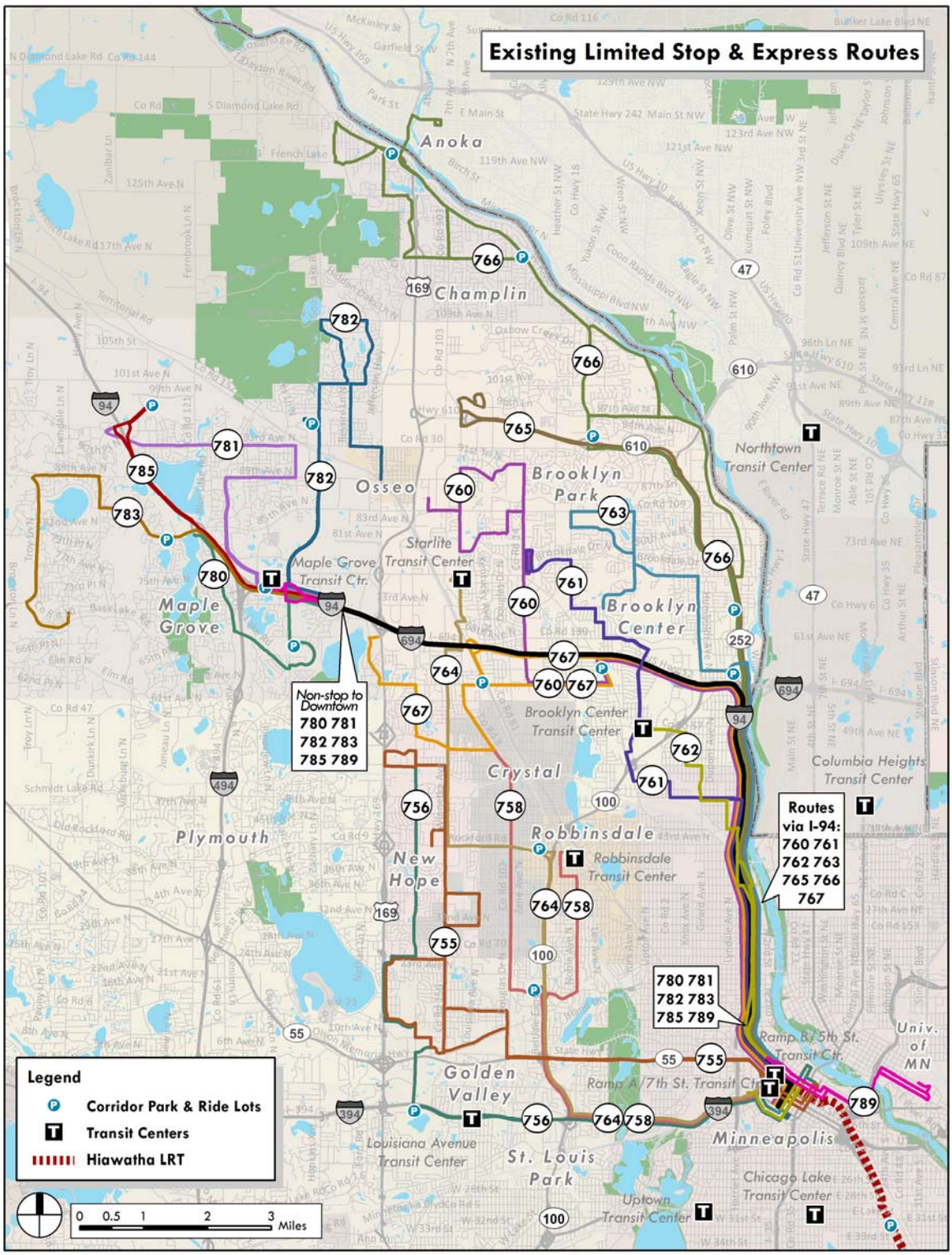

Existing Suburban Local Routes
Champlin
Osseo
Brooklyn Park
Maple Grove
Maple Grove Transit Center
Starlite Transit Ctr.
Northtown Transit Center
Brooklyn Center
Brooklyn Center Transit Center
New Hope
Crystal
Plymouth
Robbinsdale
Robbinsdale Transit Center
Golden Valley
Plymouth Road Transit Center
Louisiana Avenue Transit Center
St. Louis Park
Minneapolis
Uptown Transit Center
Ramp B/5th St. Transit Ctr.
Ramp A/7th St. Transit Ctr.
Chicago Lake Transit Center
Legend
Transit Centers
Hiawatha LRT
0 0.5 1 2 3 Miles

Figure 2-3


Existing Limited Stop & Express Routes
Anoka
Champlin
Osseo
Brooklyn Park
Northtown Transit Center
Maple Grove
Maple Grove Transit Ctr.
Starlite Transit Center
Brooklyn Center
Brooklyn Center Transit Center
Crystal
Columbia Heights Transit Center
Plymouth
New Hope
Robbinsdale
Robbinsdale Transit Center
Golden Valley
Louisiana Avenue Transit Center
St. Louis Park
Uptown Transit Center
Chicago Lake Transit Center
Minneapolis
Ramp B / 5th St. Transit Ctr.
Ramp A / 7th St. Transit Ctr.
Univ. of MN
Non-stop to Downtown
780 781
782 783
785 789
Routes via I-94:
760 761
762 763
765 766
767
780 781
782 783
785 789
Legend
Corridor Park & Ride Lots
Transit Centers
Hiawatha LRT
0 0.5 1 2 3 Miles

3.0 NO-BUILD ALTERNATIVE

A No-Build alternative reflects existing and committed transit improvements to the regional transit network. Major regional transit improvements that are included in the No-Build alternative are as follows:

- Central Corridor (Green Line) LRT and associated corridor bus service changes
- Southwest Corridor (Green Line) LRT and associated corridor bus service changes
- Cedar Avenue (Red Line) BRT with station-to-station BRT service and associated corridor bus service changes
- I-35W (Orange Line) BRT with station-to-station BRT service and associated corridor bus service changes
- Arterial BRT (rapid bus) service along the following corridors: Snelling Avenue, West 7th Street, East 7th Street, Chicago Avenue, American Blvd. and West Broadway Avenue, with associated corridor bus service changes as defined in the 2011 Arterial Transitway Corridors Study
- New park-and-ride facilities at various locations outside of the Bottineau Transitway project area
- Various service frequency improvements throughout the regional transit network

As noted above, the No-Build alternative assumes rapid bus service along the West Broadway corridor, from downtown Minneapolis to the Robbinsdale Transit Center. Rapid bus service would be provided along 7th/8th Streets in downtown Minneapolis, and follow 7th Street, Lyndale Avenue, West Broadway, Oakdale Avenue, France Avenue and West Broadway Avenue to the Robbinsdale Transit Center. Proposed frequencies on the Rapid Bus service are 15 minutes in the peak and midday. Existing Route 14 service on West Broadway, Oakdale and France (route patterns N and R) would be eliminated north of downtown Minneapolis. In addition, the route alignment for remaining Route 14 patterns into downtown Minneapolis would be switched with Route 22's current alignment. Thus, from the intersection of West Broadway and Lyndale Avenues, Route 14 follows Lyndale and 7th Street into downtown and Route 22 follows West Broadway and Washington Avenue into downtown. This results in Route 14 having a consistent route pattern with the rapid bus alignment into downtown Minneapolis.

Other transit improvements within the Bottineau Transitway project area included in this project's No-Build alternative are as follows:

- Route 22 – Midday frequencies on the 51st/Penn route pattern are improved from 60 to 30 minutes, resulting in a combined 15-minute midday frequency south of 51st/Penn (meeting Metro Transit's High Frequency Network standards)
- Route 32 – Route no longer operates on its current detour route and reverts back to its permanent alignment across the Mississippi River on Lowry Avenue. Midday frequencies are also improved from 60 to 30 minutes.
- Route 721 – Midday service frequencies are increased from 60 minutes to 30 minutes. Peak period frequencies remain at 30 minutes.
- Route 723 – Peak and midday frequencies are increased from 60 to 30 minutes.
- Route 724 – There are presently two midday trips (each direction) that begin and end at the Target Northern Campus. One trip only operates from Target Northern Campus to Starlite Transit Center. The other trip operates from Target Northern Campus to downtown Minneapolis. It is proposed that the existing midday trips that operate only between the Target Northern Campus and Starlite be extended to downtown Minneapolis.

- Route 785 (Maple Grove) – Add 4 a.m. inbound and 5 p.m. outbound trips, resulting in a total of 12 trips in each peak period.
- Route 786 (Maple Grove) – This is a proposed new route that starts alnog Lawndale Lane, south of Bass Lake Road, and follows Bass Lake Road, I-494, I-694 and I-94 into downtown Minneapolis. Eight a.m. inbound and eight p.m. outbound trips are proposed. Rotue would also serve a new park-and-ride lot at Bass Lake Road and I-494.
- Route 788 (Maple Grove) – Add one a.m. peak period trip, resulting in 5 a.m. inbound and 5 p.m. outbound trips. Route alignment is also modified to operate between Nottingham (west of Fish Lake Road) and Shepherd of the Grove Church park-and-ride.

3.1 No-Build Operating Requirements

The following tables present No-Build operating requirements for each transit operator in the Bottineau Transitway project area. Table 3-4 presents annualized operating requirements for each transit operator. Revenue hours and miles and bus requirements by time period are tabulated for weekday, Saturday, and Sunday service. Annualization is based on a year consisting of 254 weekdays, 54 Saturdays, and 57 Sunday/Holiday service days. Time periods were separated into peak, midday, and all other time periods. For purposes of cost analysis, Maple Grove Route 788 was assumed operated by Midwest Paratransit.

Route-level statistics were originally validated with agency statistics from September 2010 and were obtained from the Metropolitan Council. Service patterns and frequencies were then based on publicly available timetables from Maple Grove Transit and Metro Transit and stratified by service day to produce statistics that emulated operating conditions as accurately as possible. Appendix E presents complete route-level statistics by transit agency and service day.

Table 3-1

Total Weekday Operating Requirements

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Maple Grove	128	2,250	28	3	26	0
Met Council	129	1,607	10	8	10	9
Metro Transit	1,196	13,270	109	65	111	40
Metro Transit/Met Council	52	696	5	4	5	2
Midwest Paratransit	5	66	2	0	2	0
Total	**1,510**	**17,889**	**153**	**80**	**154**	**51**

Table 3-2

Total Saturday Operating Requirements

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	36	503	3	3	3	1
Metro Transit	803	9,061	44	49	49	40
Metro Transit/Met Council	39	517	3	3	3	1
Total	**877**	**10,082**	**50**	**55**	**55**	**42**

Table 3-3

Total Sunday Operating Requirements

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	21	307	2	2	2	0
Metro Transit	732	8,104	45	45	44	38
Metro Transit/Met Council	39	517	3	3	3	1
Total	**792**	**8,928**	**50**	**50**	**49**	**39**

Table 3-4

Annualized Operating Requirements

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Metro Transit-Operated	406,542	4,559,400	114	69	116	42
Met Council-Operated	35,985	453,836	10	8	10	9
Maple Grove-Operated	33,915	590,504	29	3	28	0
TOTALS FOR CORRIDOR	**476,442**	**5,603,740**	**153**	**80**	**154**	**51**
Change from Existing:	**50,582**	**690,950**	**9**	**4**	**12**	**-1**

4.0 BASELINE ALTERNATIVE

The purpose of the Baseline alternative is to provide a comparable transit service to the Build alternatives without the significant capital expense of a transitway "Build" alternative. Service improvements proposed in the Baseline alternative are focused on serving the same travel markets that are addressed in the Build alternatives.

For this project, one Baseline alternative has been defined that addresses the travel markets that are served by all variations of the Build alternatives. The Baseline alternative definition may be modified in future phases of project development, once a preferred Build alternative has been determined.

4.1 Baseline alternative Transit Facilities

The Baseline alternative continues to assume transfer opportunities at the following existing transit facilities:

- Maple Grove Transit Station (MGTS)
- Starlite Transit Center (STC)
- Brooklyn Center Transit Center (BCTC)
- Robbinsdale Transit Center (RTC)

The Baseline alternative also includes a new transit center at 97th Avenue north of Highway 610 (near the Target North Campus).

As noted before, existing park-and-ride facilities in the Bottineau Transitway project area are at the following locations:

- Maple Grove Transit Station (Maple Grove)
- Zachary Lane & 96th Avenue (Maple Grove)
- Parkway Station (Maple Grove)
- Crosswinds Church (Maple Grove)
- Shepherd of the Grove Church (Maple Grove)
- 63rd Avenue & Bottineau Boulevard (Brooklyn Park)
- 65th Avenue & Brooklyn Boulevard (Brooklyn Center)
- Highway 100 & Duluth Street (Golden Valley)

The Baseline alternative includes a new park-and-ride at the Baseline's proposed 97th Avenue Transit Center.

4.2 Baseline Bus Routes

The primary Baseline bus routes that have been proposed for the Bottineau Transitway are as follows:

Route 731 – This proposed route provides all-day limited stop service in general purpose traffic lanes from Brooklyn Park to downtown Minneapolis. Proposed frequencieis are 15-minutes in the peak periods and 20-minutes in the midday period (both directions). This route begins at the Baseline alternative's Target Northern Campus Transit Center and follows West Broadway to the Starlite Transit Center. It then continues along Bottineau Boulevard, West Broadway, Penn Avenue, and Olson Memorial Highway (TH 55) to downtown Minneapolis. Within downtown Minneapolis, the proposed alignment follows 6th Avenue, 5th Street, 2nd Avenue, 4th Street, Marquette Avenue, 12th Street and 3rd Avenue into the Leamington Ramp/Transit Center. Outbound routing follows 11th Street, 2nd Avenue, 4th Street, Hennepin Avenue and 5th Street, back to 6th Avenue/Olson Memorial Highway. This bus route would operate in general purpose traffic lanes.

As noted above, this route is to operate with limited stops, with those stops at approximately the same locations as proposed in the Build alternative. Those stops are as follows:

- Target North Campus Transit Center (park-and-ride)
- 93rd Avenue/West Broadway
- 85th Avenue/West Broadway
- Starlite Transit Center
- 71st Avenue/Bottineau Boulevard
- 63rd Avenue (park-and-ride)
- Bass Lake Road/Bottineau Boulevard
- Robbinsdale Transit Center
- North Memorial Medical Center
- West Broadway/Penn Avenue
- Penn Avenue/Plymouth Avenue
- Olson Memorial Highway/Penn Avenue
- Olson Memorial Highway/Van White Boulevard
- Olson Memorial Highway/Border Avenue

Within downtown, inbound stops are proposed at:

- 4th Street/Hennepin Avenue
- Marquette Avenue /5th Street
- Marquette Avenue /7th Street
- Marquette Avenue /9th Street
- Marquette Avenue /11th Street
- Leamington Ramp

Outbound stops are proposed at:

- 2nd Avenue/11th Street
- 2nd Avenue/9th Street
- 2nd Avenue/7th Street
- 2nd Avenue/5th Street
- Hennepin Avenue/4th Street

Route 732 – This proposed route provides all-day limited stop service in general purpose traffic lanes from Maple Grove to downtown Minneapolis. Proposed frequencies are 15 minutes in the peak periods and 20 minutes in the midday (both directions). This route starts at the Maple Grove Transit Station and travels along Hemlock Lane and Elm Creek Blvd. to the Starlite Transit Center. It then follows the same alignment as Route 731 into downtown Minneapolis. Proposed stops between Maple Grove and Starlite are as follows:

- Maple Grove Transit Station
- Hemlock Lane/Elm Creek Blvd.
- Revere Lane
- Hennepin Technical College
- Starlite Transit Center

Routes 731 and 732 provide a combined 7.5-minute peak/10-minute midday frequency south of the Starlite Transit Center, which is comparable to proposed frequencies in the Build alternatives.

4.3 Background Bus Service Plan

Following are proposed service changes to the background bus network for the Baseline alternative (from this project's No-Build alternative). Figures 4-1 through 4-3 at the end of this section illustrate proposed route alignments for urban local, suburban local and express routes. Appendix A presents a side-by-side comparison of bus route modifications between the project alternatives.

4.3.1 Urban Local Routes

Route 5 – No change from the No-Build alternative.

Route 7 – Route pattern 7C (NB) presently operates approximately every 30 minutes in the peak and midday periods to Wirth Park. This route pattern is extended to Golden Valley Road via Wirth Parkway. This route pattern would then continue north to Robbinsdale Transit Center via Golden Valley Road, Noble Avenue, 39th Avenue, Regent Avenue and 42nd Avenue. No change in service frequencies (30 peak/30 midday). Route connects to the Baseline routes at RTC and Penn/Plymouth.

Route 14 – Route pattern 14L (NB) service presently operates via Noble Avenue (3 a.m. southbound and 3 p.m. northbound trips). This service on Noble Avenue is eliminated and replaced with the proposed extension of Route 7 service. Route 14 frequencies are to remain the same between downtown Minneapolis and Bloomington. Route connects to the Baseline routes at RTC.

West Broadway Rapid Bus – No change from the No-Build alternative. Route connects to Baseline bus service at RTC.

Route 19 – Route pattern 19H is extended from its current terminus of 42nd Avenue and York to the Robbinsdale Transit Center via Victory Drive, 45th Avenue and Lake Drive. No change is proposed to existing Route 19H frequencies (30 peak/60 midday). Route connects to all Baseline routes along Penn Avenue and Olson Memorial Highway, and at RTC.

Route 22 - No alignment change is proposed from the No-Build alternative (service frequencies were increased in the No-Build alternative to High Frequency Network standards).

Route 32 – No change is proposed to Route 32's alignment. Frequencies improved from 30 peak/60 midday to 30 peak/30 midday. Route connects to the Baseline routes at RTC.

4.3.2 Suburban Local Routes

Route 705 – Route 705 is extended from its current northern terminus at Walmart to the proposed Target Northern Campus Transit Center, following the existing Route 724C alignment. Service frequencies remain at 60 peak/60 midday. Route connects to Baseline routes at the Target Northern Campus, 93rd Avenue, the Starlite Transit Center and at 71st Avenue/Bottineau Blvd.

Route 716 – This route alignment is deviated slightly to Bass Lake Road/Bottineau Boulevard. The route connects to Baseline Bottineau Boulevard bus routes at Robbinsdale Transit Center, Bass Lake Road/Bottineau Boulevard, and 63rd Avenue park-and-ride. Service frequencies during peak are improved from approximately 60 to 30 minutes.

Route 717 – No change is proposed from the No-Build alternative. Route connects to the Baseline bus service at Robbinsdale Transit Center.

Route 718 – This is a new route that is proposed for the Baseline alternative. The route begins at Four Seasons Mall in Plymouth, and follows Lancaster Lane, 36th Avenue, and Noble Avenue to Robbinsdale Transit Center. Proposed frequencies are 30 minutes peak and 30 minutes midday. Route connects to the Baseline bus service at RTC.

Route 721 – No alignment change is proposed from the No-Build alternative. Frequencies remain 30 minutes peak and 30 minutes midday (midday service frequencies were increased in the No-Build alternative to 30 minutes). Route connects to Baseline bus service at the Hennepin Technical College and at Bass Lake Road stops.

Route 722 –Service frequencies are increased to 30 minutes peak and 30 minutes midday for the entire route (722B pattern to 83rd/Noble).

Route 723 – No alignment change is proposed from the No-Build alternative. Peak/base service frequencies were improved from 60 minutes to 30 minutes in the peak and midday periods in the Baseline alternative. Route connects to Baseline bus service at 85th Avenue/West Broadway and the Starlite Transit Center.

Route 724 – Existing limited service to Target Northern Campus is eliminated and replaced with extension of Route 705 service. No other alignment or frequency changes are proposed. Route connects to Baseline bus routes at Starlite Transit Center.

Route 729 – This is a new route proposed for the Baseline alternative. This alignment begins at Anoka Station and follows 4th Avenue, Main Street, and 1st Avenue across the Mississippi River. It then follows West River Road and Winnetka Avenue to the proposed Target Northern Campus Transit Center, where it will connect to proposed Baseline bus service. Proposed frequencies (after review of initial ridership and equilibration to meet anticipated ridership demand) are 30 minutes in the peak period and 60 minutes in the midday.

Route 759 – This is a proposed new local route that replaces the "local" portion of the existing Route 760 and portions of the existing Route 767 alignment. This route follows the existing Route 760 alignment north of Zane and 63rd Avenues, but with service extended to Osseo via 85th Avenue and Jefferson Highway/Central Avenue, with a loop in Osseo via 7th Street North, 6th Avenue NE and 3rd Street NE, back to Central Avenue. At Zane and 63rd Avenues, this new route travels west along 63rd Avenue to the 63rd Avenue park-and-ride. It then continues west on 63rd to Magda, picking up portions of the existing Route 767 alignment. Proposed frequencies are 30 minutes all-day. Route connects to Baseline bus service at 85th Avenue/West Broadway and the 63rd Avenue park-and-ride.

Route 764 – This route is converted to a suburban local route that is anchored at the Robbinsdale Transit Center. This route presently operates with 3 a.m. southbound and 3 p.m. northbound trips. This route becomes an all-day connecting route to the Baseline Bottineau Boulevard routes with connections at the RTC, 71st Avenue/Bottineau Blvd., and the Starlite Transit Center. Proposed frequencies are 60 minutes all-day.

4.3.3 Limited Stop/Express Routes

Route 755 – No changes are proposed from the No-Build alternative.

Route 756 – No changes are proposed from the No-Build alternative.

Route 758 – Trips on the "N" pattern (Noble) are eliminated and replaced with extended Route 7 service. Routing on the "D" pattern (Douglas) are modified to follow 42nd Avenue to the RTC where it connects to Baseline routes. No changes proposed to service frequencies (4 a.m. southbound and 4 p.m. northbound trips).

Route 760 – This route is modified to begin/end at the 65th & Brooklyn Blvd. park-and-ride with no change in service frequencies. The existing alignment west of 65th & Brooklyn Blvd. is modified into a new suburban local Route 759.

Route 761 – No change are proposed from the No-Build alternative.

Route 762 – No changes are proposed from the No-Build alternative.

Route 763 – No changes are proposed from the No-Build alternative.

Route 765 – This route is converted to operate in both directions from the proposed Target Northern Campus Transit Center, with 4 a.m. and 4 p.m. peak period round trips. No midday service is proposed.

Route 766 – No changes are proposed from the No-Build alternative.

Route 767 – This route is eliminated, replaced with a combination of Baseline Bottineau Boulevard bus service and new suburban local route service.

4.3.4 Maple Grove Routes

Route 780 – No change are proposed from the No-Build alternative.

Route 781 – This route is converted to a local route with its northern terminus modified. Service would start at the Maple Grove Hospital, operate south to 94th Avenue/Dunkirk Lane (Walmart/Sams Club), and then continue to the Maple Grove transit Station along the existing 781 alignment where connections to Baseline bus services are available. Proposed frequencies are 15 minutes in the peak periods and 30 minutes in the midday.

Route 781X – It is proposed that some express service remain in place from the Maple Grove Transit Station. Proposed frequencies are 15 minutes in the peak period, peak direction only (10 a.m. and 10 p.m. trips).

Route 782 – No changes are proposed from the No-Build alternative.

Route 783 – No changes are proposed from the No-Build alternative.

Route 785 – No changes are proposed from the No-Build alternative.

Route 786 – No changes are proposed from the No-Build alternative.

Route 787 – This route is eliminated.

Route 788 – This route is modified from its No-Build routing to operate all-day, with service extended from the Shepherd of the Grove Church park-and-ride lot to the Maple Grove Transit Station via Hemlock Lane and Main Street. Routing is also modified to provide midday service to the Crosswinds Church park-and-ride. Proposed frequencies are 30 minutes in the peak period and 60 minutes midday.

Route 789 – No changes are proposed from the No-Build alternative.

4.4 Baseline Operating Requirements

Ridership forecasts from the Baseline alternative were reviewed to determine if any service frequency adjustments were required based on passenger demand. As noted earlier, Route 729's peak period service frequency was adjusted to 30-minutes (from 60-minutes) to address potential passenger overloads.

Routes 731 and 732 also were determined to have passenger overloads. To address this problem, an adjustment was made to the model's wait time parameters at stops between the Robbinsdale Transit Center and downtown Minneapolis, to reflect the likely condition of passengers waiting for the next bus in an over-capacity scenario. This resulted in the shifting of trips to other routes, thus reducing the number of route segments with passenger overloads on Highway 55 (Olson Highway) outside of downtown Minneapolis.

The following tables present the Baseline operating requirements for each transit operator in the Bottineau Transitway project area. Table 4-4 presents annualized operating requirements for each transit operator. Revenue hours and miles and bus requirements by time period are tabulated for weekday, Saturday, and Sunday service. Annualization is based on a year consisting of 254 weekdays, 54 Saturdays, and 57 Sunday/Holiday service days. Time periods were separated into peak, midday, and all other time periods. For purposes of cost analysis, Maple Grove Route 788 was assumed operated by Midwest Paratransit.

The methodology for creating the Baseline operating requirements was the same as mentioned in the No-Build Operating Requirements section. Appendix E presents complete route-level statistics by transit agency and service day.

Table 4-1

Total Weekday Operating Requirements

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Maple Grove	166	2,485	28	3	26	3
Met Council	177	2,212	13	12	13	10
Metro Transit	1,522	17,685	121	83	121	50
Metro Transit/Met Council	53	709	5	4	5	2
Midwest Paratransit	25	368	2	1	2	1
Total	**1,941**	**23,459**	**168**	**103**	**167**	**66**

Table 4-2

Total Saturday Operating Requirements

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	54	699	4	4	4	2
Metro Transit	1,101	12,681	58	68	68	51
Metro Transit/Met Council	39	517	3	3	3	1
Total	**1,194**	**13,896**	**65**	**75**	**75**	**54**

Table 4-3

Total Sunday Operating Requirements

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	53	684	4	4	4	2
Metro Transit	948	11,144	55	59	57	49
Metro Transit/Met Council	39	517	3	3	3	1
Total	**1,040**	**12,346**	**62**	**66**	**64**	**52**

Table 4-4

Annualized Operating Requirements

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Metro Transit-Operated	517,973	6,053,157	126	87	126	52
Met Council-Operated	50,890	640,107	13	12	13	10
Maple Grove-Operated	48,450	727,388	30	4	28	4
TOTALS FOR CORRIDOR	**617,312**	**7,420,652**	**168**	**103**	**167**	**66**
Change from No-Build:	**140,870**	**1,816,912**	**15**	**23**	**13**	**15**

Figure 4-1

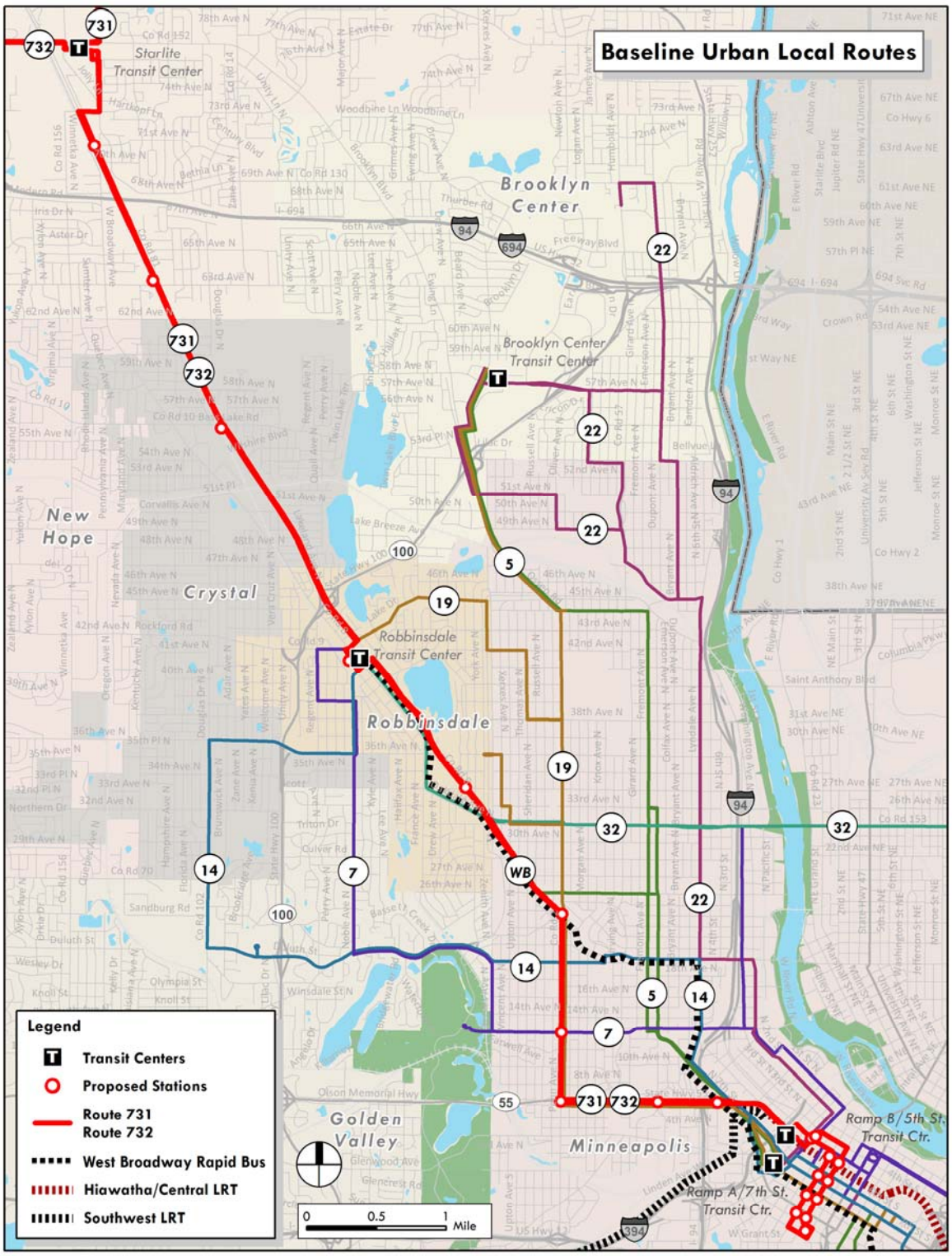

Baseline Urban Local Routes
Starlite Transit Center
Brooklyn Center
Brooklyn Center Transit Center
New Hope
Crystal
Robbinsdale Transit Center
Robbinsdale
Golden Valley
Minneapolis
Ramp B/5th St. Transit Ctr.
Ramp A/7th St. Transit Ctr.
Legend
Transit Centers
Proposed Stations
Route 731
Route 732
West Broadway Rapid Bus
Hiawatha/Central LRT
Southwest LRT
0 0.5 1 Mile

Figure 4-2

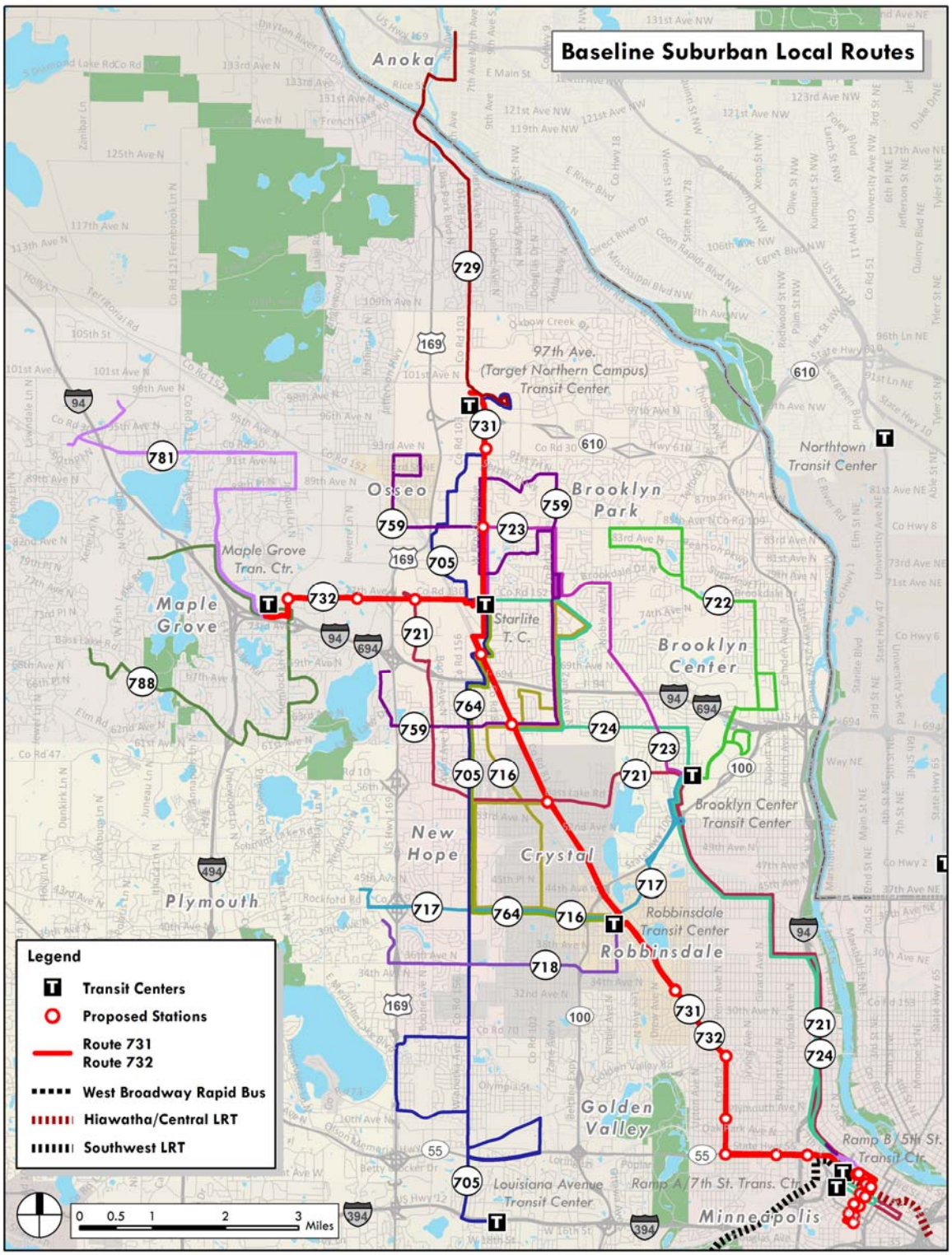
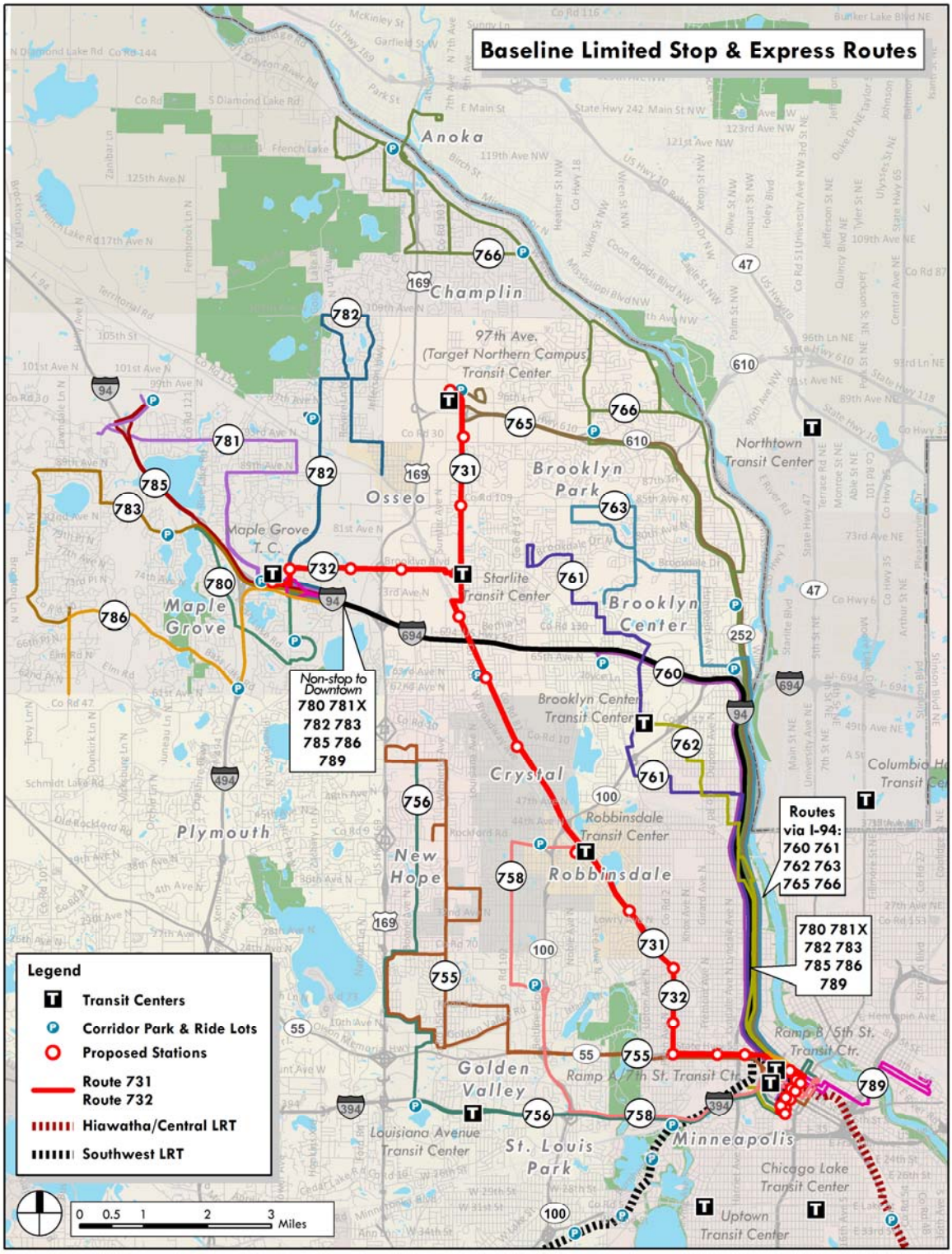

Baseline Suburban Local Routes
Anoka
97th Ave. (Target Northern Campus) Transit Center
Northtown Transit Center
Osseo
Brooklyn Park
Maple Grove Tran. Ctr.
Maple Grove
Starlite T. C.
Brooklyn Center
Brooklyn Center Transit Center
New Hope
Crystal
Plymouth
Robbinsdale Transit Center
Robbinsdale
Golden Valley
Louisiana Avenue Transit Center
Ramp A / 7th St. Trans. Ctr.
Ramp B / 5th St. Transit Ctr.
Minneapolis
Legend
Transit Centers
Proposed Stations
Route 731
Route 732
West Broadway Rapid Bus
Hiawatha/Central LRT
Southwest LRT
0 0.5 1 2 3 Miles

Figure 4-3


Baseline Limited Stop & Express Routes
Anoka
Champlin
97th Ave. (Target Northern Campus) Transit Center
Osseo
Maple Grove T.C.
Maple Grove
Brooklyn Park
Northtown Transit Center
Starlite Transit Center
Brooklyn Center
Brooklyn Center Transit Center
Crystal
Robbinsdale Transit Center
Robbinsdale
New Hope
Plymouth
Golden Valley
Louisiana Avenue Transit Center
St. Louis Park
Ramp B / 5th St. Transit Ctr.
Ramp A / 7th St. Transit Ctr.
Minneapolis
Chicago Lake Transit Center
Uptown Transit Center
Columbia Heights Transit Center
Non-stop to Downtown
780 781X
782 783
785 786
789
Routes via I-94:
760 761
762 763
765 766
780 781X
782 783
785 786
789
Legend
Transit Centers
Corridor Park & Ride Lots
Proposed Stations
Route 731
Route 732
Hiawatha/Central LRT
Southwest LRT
0 0.5 1 2 3 Miles

5.0 LRT BUILD ALTERNATIVES

The Bottineau Transitway Draft EIS is presently evaluating four potential LRT alternatives.

There are two alignment options at the north end of the alignment. Alignment "A" originates in Maple Grove at Hemlock Lane/Arbor Lakes Parkway, follows Arbor Lakes Parkway and Elm Creek Boulevard to the BNSF railroad alignment. Alignment "B" begins at the Target North Campus (just north of Trunk Highway 610), follows West Broadway Avenue, and crosses Bottineau Boulevard to enter the BNSF railroad alignment.

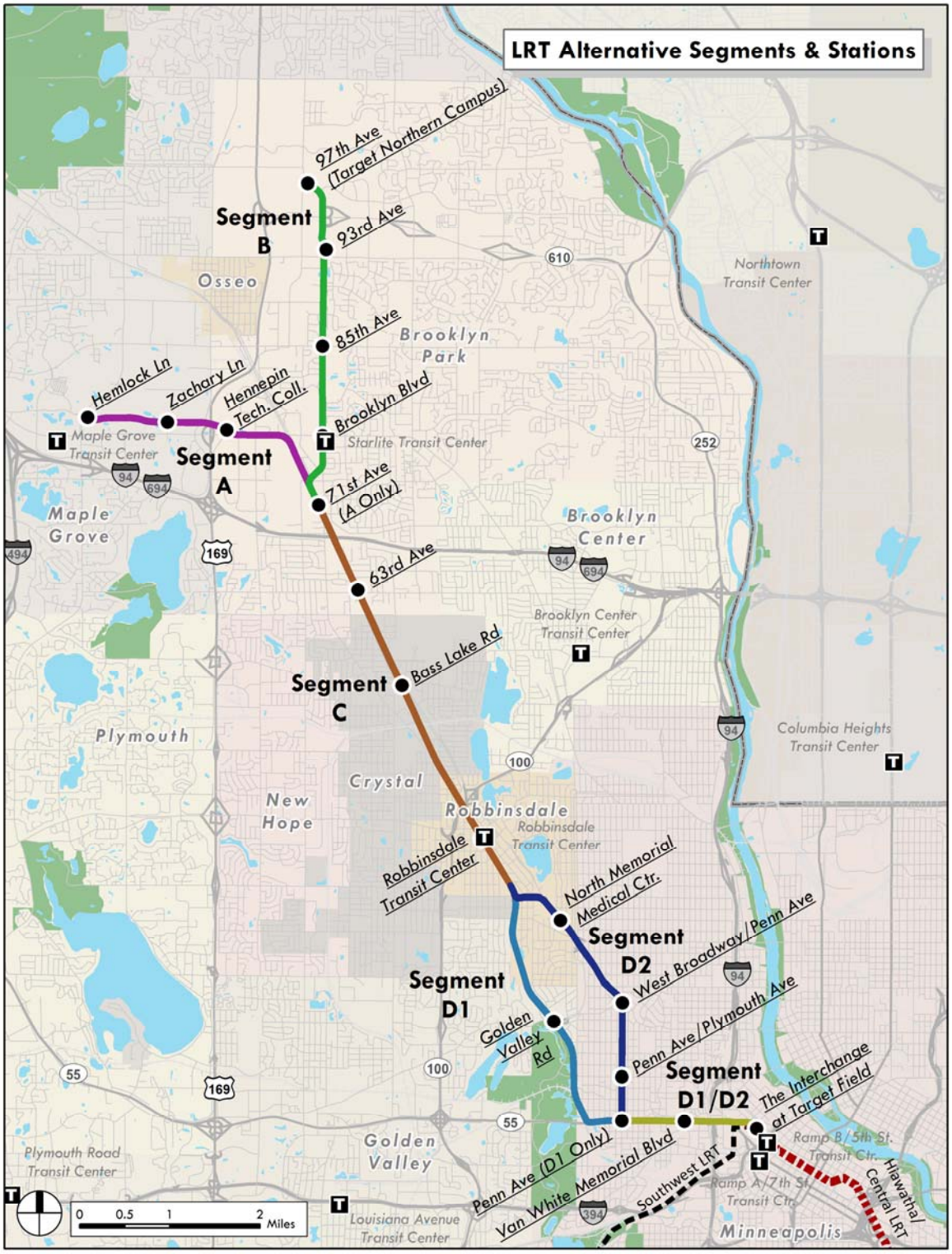
The common "C" alignment follows the BNSF railroad alignment (adjacent to Bottineau Boulevard).

There are two alignments under consideration for the transitway south of approximately 36th Avenue into downtown Minneapolis. Alignment "D1" continues along the BNSF railroad alignment to Olson Memorial Highway (TH 55), and then follows Olson Highway to downtown. Alignment "D2" exits the railroad corridor in the vicinity of 34th Avenue, cuts over to West Broadway, travels on Penn or Oliver Avenue to Olson Highway, and then follows Olson Highway into downtown. Thus, the four LRT alignments presently under consideration in this DEIS are as follows:

- A-C-D1
- A-C-D2
- B-C-D1
- B-C-D2

Figure 5-1 illustrates the LRT alignment segments. Following are descriptions of proposed rail and bus service plans for each LRT alternative.

Figure 5-1


LRT Alternative Segments & Stations
97th Ave (Target Northern Campus)
93rd Ave
85th Ave
Brooklyn Blvd
71st Ave (A Only)
63rd Ave
Bass Lake Rd
Segment B
Segment A
Segment C
Segment D1
Segment D2
Segment D1/D2
Hemlock Ln
Zachary Ln
Hennepin Tech. Coll.
Maple Grove Transit Center
Starlite Transit Center
Osseo
Brooklyn Park
Northtown Transit Center
Maple Grove
Brooklyn Center
Brooklyn Center Transit Center
Columbia Heights Transit Center
Plymouth
Crystal
New Hope
Robbinsdale
Robbinsdale Transit Center
Robbinsdale Transit Center
North Memorial Medical Ctr.
West Broadway/Penn Ave
Golden Valley Rd
Penn Ave/Plymouth Ave
The Interchange at Target Field
Penn Ave (D1 Only)
Van White Memorial Blvd
Southwest LRT
Ramp B/5th St. Transit Ctr.
Ramp A/7th St. Transit Ctr.
Hiawatha/ Central LRT
Minneapolis
Golden Valley
Plymouth Road Transit Center
Louisiana Avenue Transit Center
0 0.5 1 2 Miles

5.1 A-C-D1 Alternative

The A-C-D1 alignment begins in Maple Grove at Hemlock Lane and travels east to Bottineau Blvd. (CR 81) and the BNSF Railroad right-of-way (ROW). It then follows the BNSF ROW to Olson Memorial Highway (TH 55), and follows TH 55 into downtown, connecting to existing LRT tracks at Target Field. There are 10 new stations proposed along the 12.6-mile alignment at the following locations:

- Hemlock Lane
- Zachary Lane
- Hennepin Technical College
- 71st Avenue
- 63rd Avenue
- Bass Lake Road
- Robbinsdale
- Golden Valley Road[1]
- Penn Avenue
- Van White Boulevard
- The Interchange at Target Field

Park-and-ride facilities are proposed at Hemlock Lane, Zachary Lane, 63rd Avenue and Robbinsdale Transit Center.

5.1.1 LRT Service Plan

All rail alternatives assume Bottineau LRT service is interlined with Hiawatha (Blue Line) trains. Thus, Bottineau service frequencies are determined by Hiawatha frequencies, which are as follows in the 2030 transit network:

Table 5-1

Bottineau Corridor LRT Service Frequencies

Day of Week	Time Period	Service Frequency
Weekday	Peak	7.5 minutes
	Midday	10 minutes
	Evening	10 minutes
Saturday	Day	10 minutes
	Evening	10 minutes
Sunday	Day	10 minutes
	Evening	10 minutes

[1] In response to Scoping comments from the City of Minneapolis, the Draft EIS will evaluate stations at both Golden Valley Road and Plymouth Avenue/Wirth Park. For the purposes of ridership forecasting and cost estimation, the operations plan assumes the station at Golden Valley Road. Differences in forecasts and costs between the two stations are expected to be minor.

Components that determine LRT station-to-station travel time estimates are:

- *Alignment Characteristics* – Alignment data was obtained from current plan and profile drawings and take into consideration curves along the proposed alignments and maximum operating speeds through those curves.
- *Maximum Operating Speed* – Maximum assumed speeds for LRT reflect the posted speed limit, with a 35 mph maximum speed when running in-street. A 55 mph maximum speed is assumed along the BNSF railroad alignment.
- *Acceleration/Deceleration Rates* – LRT travel time estimates take into consideration a 3.0 mphps, tapered acceleration rate for speeds above 25 mph, down to 1.5 mphps for 0 to 55 mph. A 3.0 mphps constant deceleration rate is assumed.
- *Station Dwell Times* – Station dwells assume 20 seconds for stops with medium to high ridership volumes, 15 seconds for stops with low ridership volumes (1,000 boardings/day has been used to define the difference between low and medium ridership volumes at stations, using ridership forecasts previously prepared for this project's Alternatives Analysis).
- *Traffic Signal Delays* – Travel time estimates assume transit signal priority (TSP), resulting in additional green time for intersections that LRT crosses. Different rates have been assumed for major vs. minor intersection crossings. Full signal priority is assumed for crossings when LRT is operating within the BNSF railroad ROW.

Table 5-2 presents estimated station-to-station travel time estimates for LRT A-C-D1. A more detailed description of operating assumptions used to develop LRT travel times is provided in Appendix B and a detailed travel time estimates are provided in Appendix C.

Table 5-2

LRT Travel Time Estimate for A-C-D1 Alignment

Segment	Segment Distance	Segment Time
Hemlock Lane Station		
	0.94	0:02:25
Zachary Lane Station		
	0.67	0:01:21
Hennepin Technical College Station		
	1.49	0:03:00
71st Ave Station		
	1.00	0:01:47
63rd Ave Station		
	1.22	0:01:57
Bass Lake Rd Station		
	1.87	0:02:44
Robbinsdale Transit Center Station		
	2.29	0:03:07
Golden Valley Rd Station		
	1.63	0:03:18
Penn Ave Station		
	0.70	0:02:01
Van White Memorial Station		
	0.81	0:03:56
The Interchange at Target Field Station		
Total	**12.62**	**0:25:37**

5.1.2 Background/Feeder Bus Service Plan

Following are proposed service changes to the background bus network for the LRT A-C-D1 alternative. Figures 5-2 through 5-4 illustrate proposed route alignments. Appendix A presents a side-by-side comparison of bus route modifications between the project alternatives. Appendix D identifies LRT station connections for corridor bus routes.

Urban Local Routes

Route 5 – No change from the Baseline alternative.

Route 7 – Changes proposed in this project's Baseline alternative are also proposed for this Build alternative. Route pattern 7C (NB) presently operates approximately every 30 minutes in the peak and midday periods to Wirth Park. This route pattern is extended to Golden Valley station via Wirth Parkway. Route 7 would then continue to the Robbinsdale Transit Center via Golden Valley Road, Noble Avenue, 39th Avenue, Regent Avenue and 42nd Avenue. No change is proposed to Route 7's service frequencies (30 peak/30 midday). Route connects to LRT at the Golden Valley Road and Robbinsdale Transit Center stations.

Route 14 – Changes proposed in this project's Baseline alternative are also proposed for this Build alternative. Route pattern 14L (NB) presently operates via Noble Avenue (3 a.m. southbound and 3 p.m. northbound trips). This service on Noble Avenue is eliminated and replaced with proposed Route 7 service. Route connects to LRT at the RobbinsdaleTransit Center station.

West Broadway Rapid Bus – No change from the Baseline alternatives. Route connects to LRT at the Robbinsdale Transit Center station.

Route 19 – Changes proposed in this project's Baseline alternative are also proposed for this Build alternative. Route pattern 19H is extended from its current terminus of 42nd Avenue and York to the RTC via Victory drive, 45th Avenue and Lake Drive. No change in service frequencies (30 peak/60 midday on the 19H pattern). Route connects to LRT at the Robbinsdale Transit Center station and at Olson Memorial Highway stations.

Route 22 - No change from the Baseline alternative (midday service frequencies were increased in the Baseline alternative).

Route 32 – No change from the Baseline alternative (midday service frequencies were increased to 30-minutes in the Baseline alternative). Route connects to LRT at the Robbinsdale Transit Center station.

Suburban Local Routes

Route 705 – Changes proposed in the Baseline alternative are also proposed for this Build alternative. Route 705 is extended from its current northern terminus at Walmart to the Target Northern Campus following the existing Route 724 alignment. Service frequencies remain at 60 peak/60 midday. Route connects to LRT at the 71st Avenue station.

Route 716 – This route's alignment was deviated slightly in the Baseline alternative to connect to Bass Lake Road/Bottineau Boulevard. No additional changes are proposed in this alternative. Route connects to LRT at the Robbinsdale Transit Center, Bass Lake Road and 63rd Avenue stations.

Route 717 – No change from the Baseline alternative. Route connects to LRT at the Robbinsdale Transit Center station.

Route 718 – This is a new route that was proposed in the Baseline alternative and is included in the Build alternative. Route begins at Four Seasons Mall in Plymouth, and follows Lancaster Lane, 36th Avenue, Noble Avenue to Robbinsdale Transit Center. Proposed frequencies are 30 minutes peak and 30 minutes midday. Route connects to LRT at the Robbinsdale Transit Center station.

Route 721 – No change from the Baseline alternative (service frequencies were increased to 30 peak/30 midday in the Baseline alternative). The route connects to LRT at the Hennepin Technical College and at Bass Lake Road stations.

Route 722 –No change from the Baseline alternative.

Route 723 – Extend route from Starlite Transit Center to 71st Avenue LRT station. Peak and base period service frequencies are 30 minutes (this service frequency increase was also proposed in the No-Build alternative).

Route 724 – Modify route alignment to include a mid-route connection to the 63rd Avenue station. No change proposed to service frequencies (30 peak/30 midday).

Route 729 – This new route was proposed in the Baseline alternative and is also proposed in this Build alternative. This alignment begins at Anoka Station and follows 4th Avenue, Main Street, and 1st Avenue across the Mississippi River. It then follows West River Road and Winnetka Avenue to the Target Northern Campus, continuing south along Broadway to the 71st Avenue LRT station. Proposed frequencies (after review of initial ridership and equilibration to meet anticipated ridership demand) are 30 minutes in the peak period and 60 minutes in the midday.

Route 731 – This route was proposed in the Baseline alternative and is also proposed in this Build alternative, but with a modified alignment. This route only operates between the Target Northern Campus and 71st Avenue LRT station in this Alternative as a local route (i.e., stops approximately every ¼ mile). Proposed service frequencies are 15 minutes in the peak period and 20 minutes in the midday.

Route 732 – This route was proposed in the Baseline alternative. It is eliminated in this alternative.

Route 759 – This route was proposed in the Baseline alternative and is also proposed in this Build alternative. This is a proposed new local route that replaces the "local" portion of the existing Route 760 and portions of the existing Route 767 alignment. This route follows the existing Route 760 alignment north of Zane and 63rd, but with service extended to Osseo via 85th Avenue and Jefferson Highway/Central Avenue, with a loop in Osseo via 7th Street North, 6th Avenue NE and 3rd Street NE, back to Central Avenue. At Zane and 63rd, this new route would travel west along 63rd Avenue to the 63rd Avenue LRT station. It then continues west on 63rd to Magda, picking up portions of the existing Route 767 alignment. Proposed frequencies are 30 minutes all-day.

Route 764 – Changes proposed in the Baseline alternative are also proposed for this Build alternative. In the Baseline, this route is converted to a suburban local route that is anchored at the RTC. This route becomes an all-day feeder route with 60-minute all-day service frequencies. The route would also connect to LRT at the 71st Avenue LRT station.

Limited Stop/Express Routes

Route 755 – No changes are proposed from the Baseline alternative. This route will connect to LRT at the Penn Avenue and Van White Memorial Boulevard stations along Olson Memorial Highway.

Route 756 – No changes are proposed from the Baseline alternative.

Route 758 – Changes proposed in the Baseline alternative are also proposed for this Build alternative. Trips on the "N" pattern (Noble) are eliminated and replaced with extended Route 7 service. Routing on the "D" pattern (Douglas) is modified to follow 42nd Avenue to the Robbinsdale Transit Center station where it connects to LRT service. No changes are proposed to service frequencies (4 a.m. southbound and 4 p.m. northbound trips).

Route 760 – Changes proposed in the Baseline alternative are also proposed for this Build alternative. This route is modified to begin/end at the 65th & Brooklyn Blvd. park-and-ride with no change in service frequencies. The existing alignment west of 65th & Brooklyn Blvd. is modified into a new Route 759.

Route 761 – No changes are proposed from the Baseline alternative.

Route 762 – No changes are proposed from the Baseline alternative.

Route 763 – No changes are proposed from the Baseline alternative.

Route 765 – Changes proposed in the Baseline alternative are also proposed in this Build alternative. This route is converted to operate in both directions, with 4 a.m. and 4 p.m. peak period round trips. A small park-and-ride lot is assumed at the Target Northern Campus.

Route 766 – No changes are proposed from the Baseline alternative.

Route 767 – As in the Baseline alternative, this route is eliminated and replaced with LRT and new local route service.

Maple Grove Routes

Route 780 – No changes are proposed from the Baseline alternative.

Route 781 – Changes proposed in the Baseline alternative are also proposed in this Build alternative. This route is converted to a local route with its northern terminus modified. Service would start at the Maple Grove Hospital and operate to 94th Avenue/Dunkirk Lane (Walmart/Sams Club). Route 781 service would then follow the existing 781 alignment to Maple Grove Transit Station, with service extended to the Hemlock Lane LRT station. Proposed frequencies are 15 minutes in the peak periods and 30 minutes in the midday.

Route 781X – It is proposed that some express service remain in place from the Maple Grove Transit Station. Proposed frequencies are 30 minutes in the peak period, peak direction only (5 a.m. and 5 p.m. trips). These trips could be service extensions of select Route 781 trips.

Route 782 – This route is modified into a feeder route that operates all-day. This route would begin/end at the Maple Grove Transit Station with a stop at the Hemlock Lane LRT station. Proposed frequencies are 30 minutes in the peak period and 60 minutes in the midday.

Route 783 – No changes are proposed from the Baseline alternative.

Route 785 – No changes are proposed from the Baseline alternative.

Route 786 – No changes are proposed from the Baseline alternative.

Route 787 – As in the Baseline alternative, this route is eliminated.

Route 788 – In the Baseline alternative, this route was modified to serve the MGTS. This route is further modified in this alternative to connect to the Hemlock Lane LRT station via Main Street, Elm Creek Blvd. and Hemlock Lane. Proposed frequencies are 30 minutes in the peak period and 60 minutes midday (same as Baseline).

Route 789 – No changes are proposed from the Baseline alternative.

Figure 5-2

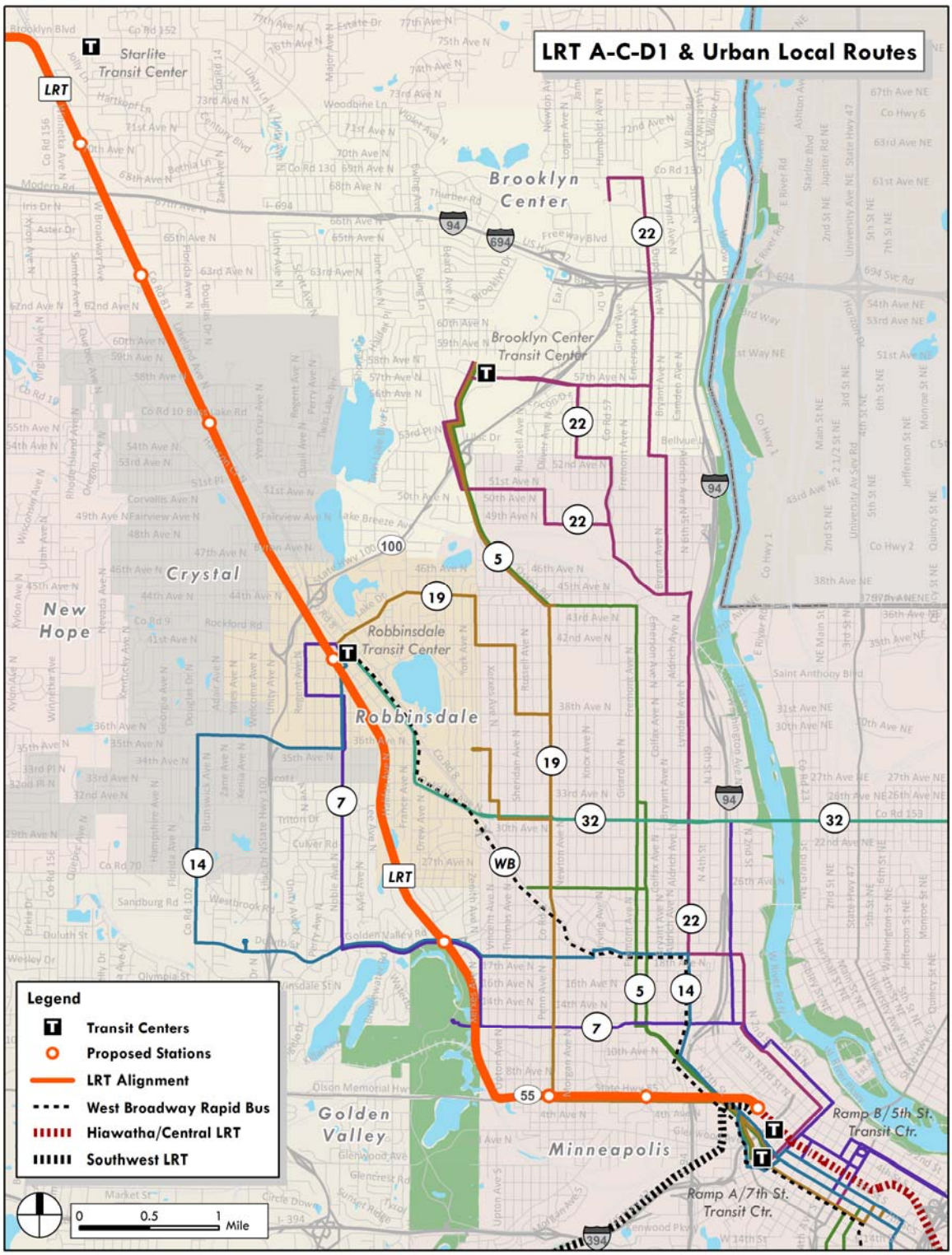

LRT A-C-D1 & Urban Local Routes
Starlite Transit Center
LRT
Brooklyn Center
Brooklyn Center Transit Center
Crystal
New Hope
Robbinsdale Transit Center
Robbinsdale
Golden Valley
Minneapolis
Ramp B/5th St. Transit Ctr.
Ramp A/7th St. Transit Ctr.
WB
Legend
Transit Centers
Proposed Stations
LRT Alignment
West Broadway Rapid Bus
Hiawatha/Central LRT
Southwest LRT
0 0.5 1 Mile

Figure 5-3

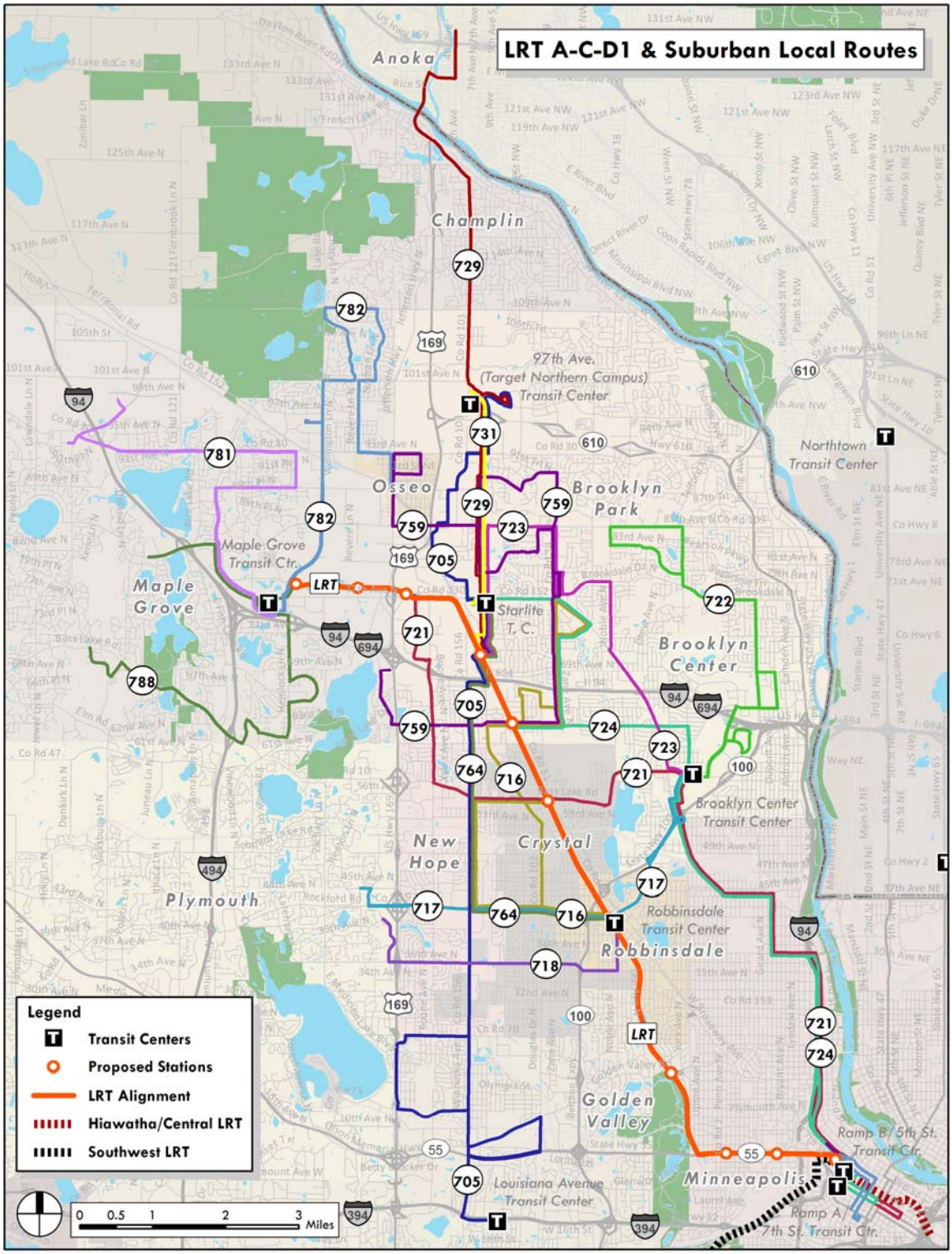
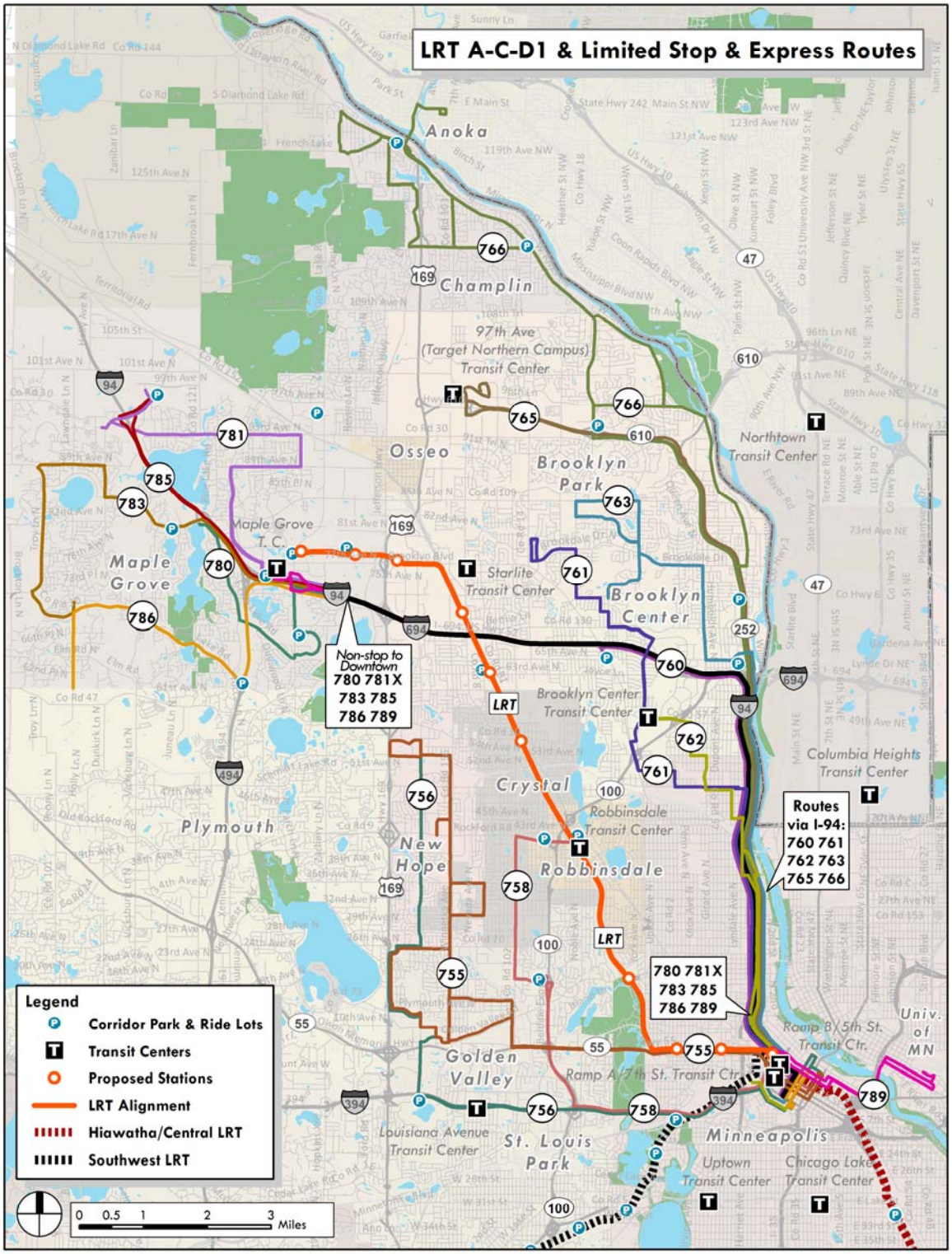

LRT A-C-D1 & Suburban Local Routes
Anoka
Champlin
97th Ave.
(Target Northern Campus)
Transit Center
Northtown
Transit Center
Osseo
Brooklyn
Park
Maple Grove
Transit Ctr.
Maple
Grove
Starlite
T. C.
Brooklyn
Center
Brooklyn Center
Transit Center
New
Hope
Crystal
Plymouth
Robbinsdale
Transit Center
Robbinsdale
Golden
Valley
Ramp B / 5th St.
Transit Ctr.
Minneapolis
Louisiana Avenue
Transit Center
Ramp A /
7th St. Transit Ctr.
LRT
Legend
Transit Centers
Proposed Stations
LRT Alignment
Hiawatha/Central LRT
Southwest LRT
0 0.5 1 2 3 Miles

Figure 5-4


LRT A-C-D1 & Limited Stop & Express Routes
Anoka
Champlin
97th Ave (Target Northern Campus) Transit Center
Osseo
Brooklyn Park
Northtown Transit Center
Maple Grove T.C.
Maple Grove
Starlite Transit Center
Brooklyn Center
Brooklyn Center Transit Center
Columbia Heights Transit Center
Crystal
Robbinsdale Transit Center
Robbinsdale
Plymouth
New Hope
Golden Valley
Louisiana Avenue Transit Center
St. Louis Park
Minneapolis
Uptown Transit Center
Chicago Lake Transit Center
Ramp B/5th St. Transit Ctr.
Ramp A/7th St. Transit Ctr.
Univ. of MN
Non-stop to Downtown
780 781X
783 785
786 789
Routes via I-94:
760 761
762 763
765 766
780 781X
783 785
786 789
LRT
Legend
Corridor Park & Ride Lots
Transit Centers
Proposed Stations
LRT Alignment
Hiawatha/Central LRT
Southwest LRT
0 0.5 1 2 3 Miles

5.2 A-C-D2 Alternative

The A-C-D2 alternative differs from the A-C-D1 alternative between the Robbinsdale Transit Center station and downtown Minneapolis. The D2 alignment exits the BNSF railroad alignment at 34th Avenue, and traverses over to West Broadway. The alignment then follows West Broadway and Penn Avenue to Olson Memorial Highway (TH 55), where it continues to downtown Minneapolis via the same alignment as D1. Stations north of Robbinsdale are the same as proposed in the prior build alternative, and are as follows:

- Hemlock Lane
- Zachary Lane
- Hennepin Technical College
- 71st Avenue
- 63rd Avenue
- Bass Lake Road
- Robbinsdale Transit Center

South of the Robbinsdale Transit Center, station locations are as follows:

- North Memorial Medical Center
- Broadway / Penn
- Penn /Plymouth
- Van White Boulevard
- The Interchange at Target Field

5.2.1 LRT Service Plan

LRT service frequencies for this alternative are the same as previously noted in Table 5-1 for the A-C-D1 alternative. Table 5-3 presents estimated station-to-station travel time estimates for the LRT alternative A-C-D2. A more detailed description of operating assumptions used to develop LRT travel times is provided in Appendix B and a detailed travel time estimates are provided in Appendix C.

Table 5-2

LRT Travel Time Estimate for A-C-D2 Alignment

Segment	Segment Distance	Segment Time
Hemlock Lane Station		
	0.94	0:02:25
Zachary Lane Station		
	0.67	0:01:21
Hennepin Technical College Station		
	1.49	0:03:00
71st Ave Station		
	1.00	0:01:47
63rd Ave Station		
	1.22	0:01:57
Bass Lake Rd Station		
	1.87	0:02:44
Robbinsdale Transit Center Station		
	1.42	0:02:55
North Memorial Medical Center Station		
	1.29	0:03:51
West Broadway/Penn Ave. Station		
	0.83	0:02:15
Penn Ave./Plymouth Ave. Station		
	1.20	0:03:26
Van White Memorial Blvd Station		
	0.81	0:03:56
Mnpls Transp. Interchg. (Target Field) Station		
Total	**12.73**	**0:29:36**

5.2.2 Background/Feeder Bus Service Plan

The background bus network for LRT A-C-D2 pivots from the Baseline transit network, with changes made to better connect to LRT. Since this alternative reflects the same LRT alignment as A-C-D1 north of Robbinsdale, many of the changes previously described for A-C-D1 also apply to this alternative. There are, however, some modifications regarding bus service connections to LRT along the D2 alignment. Those modifications are described below and affect primarily urban local routes. Figures 5-5 illustrates the LRT connections for urban local routes under this alternative. Appendix A presents a side-by-side comparison of bus route modifications between the project alternatives. Appendix D identifies LRT station connections for corridor bus routes.

Route 5 – This route's 5F (NB) pattern operates to 26th and Broadway at approximately 30-minute peak and midday service frequencies. For this Build alternative, this route's alignment is modified slightly to provide a connection to the Broadway/Penn Avenue LRT Station.

Route 7 – No changes are proposed from the Baseline alternative. This route had connections to LRT at the Robbinsdale Transit Center and Golden Valley stations under the A-C-D1 Alternative. For D2, the connection at Robbinsdale Transit Center station remains, but the other connection is modified to the Plymouth/Penn Ave. station.

Route 14 – This route had connections to LRT at the Robbinsdale Transit Center and Golden Valley stations under the A-C-D1 alternative. For D2, this route's connection is only at the Robbinsdale Transit Center station.

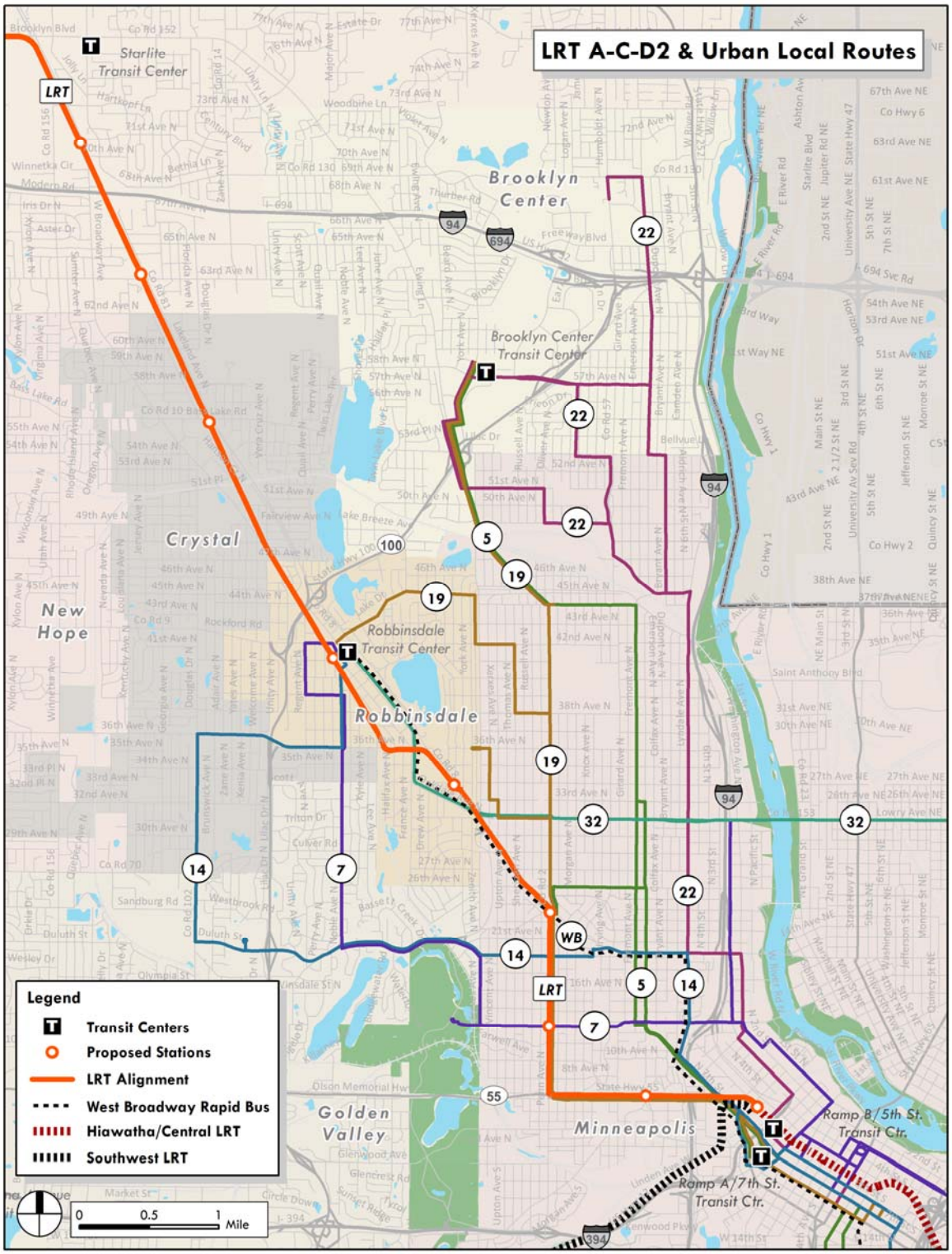
West Broadway Rapid Bus – This route had a connection to LRT at the Robbinsdale Transit Center station under the A-C-D1 alternative. For D2, this route gains new connections at North Memorial Medical Center and at Broadway/Penn stations.

Route 19 – This route had connections to three LRT stations under the A-C-D1 alternative (Robbinsdale, Penn/Olson and Van White Memorial/Olson). For D2, there are four LRT station connections – Robbinsdale, Broadway/Penn, Plymouth/Penn and Van White Memorial/Olson. Due to roadway constraints resulting from the addition of LRT on Penn Avenue, some Route 19 bus stops on Penn Avenue are removed. Between West Broadway and Olson Highway, Route 19 stops are reduced to signalized intersections at Golden Valley Road, 16th Avenue, Plymouth Avenue, and Oak Park Avenue, in addition to West Broadway and at Olson Memorial Highway.

Route 32 – This route had only one connection to LRT service under the A-C-D1 alternative (at Robbinsdale Transit Center). For D2, this route also has a connection at the North Memorial Medical Center station.

Route 755 – This route connected to LRT at the Penn Avenue and Van White Boulevard stations in the A-C-D1 alternative. For D2, this route's connection to LRT is only at the Van White Boulevard station.

Figure 5-5


LRT A-C-D2 & Urban Local Routes
Starlite Transit Center
Brooklyn Center
Brooklyn Center Transit Center
Crystal
New Hope
Robbinsdale Transit Center
Robbinsdale
Golden Valley
Minneapolis
Ramp B/5th St. Transit Ctr.
Ramp A/7th St. Transit Ctr.
LRT
WB
Legend
Transit Centers
Proposed Stations
LRT Alignment
West Broadway Rapid Bus
Hiawatha/Central LRT
Southwest LRT
0 0.5 1 Mile

5.3 B-C-D1 Alternative

The B-C-D1 alignment differs from the A-C-D1 alignment at the north end of the corridor. Instead of operating to Maple Grove, this alignment follows West Broadway Avenue to the Target North Campus. Stations north of 63rd Avenue for this alternative are as follows:

- 97th Avenue (Target North Campus)
- 93rd Avenue
- 85th Avenue
- Brooklyn Boulevard

Stations south of Brooklyn Boulevard are the same as previously noted for the A-C-D1 alternative, and are as follows:

- 63rd Avenue
- Bass Lake Road
- Robbinsdale Transit Center
- Golden Valley Road[2]
- Penn Avenue
- Van White Boulevard
- The Interchange at Target Field

Park-and-ride lots are proposed at 97th Avenue, 93rd Avenue, 63rd Avenue and Robbinsdale Transit Center.

5.3.1 LRT Service Plan

LRT service frequencies for this alternative are the same as previously noted in Table 5-1 for the A-C-D1 alternative. Table 5-4 presents estimated station-to-station travel time estimates for the LRT alternative B-C-D1. A more detailed description of operating assumptions used to develop LRT travel times is provided in Appendix B and a detailed travel time estimates are provided in Appendix C.

[2] In response to Scoping comments from the City of Minneapolis, the Draft EIS will evaluate stations at both Golden Valley Road and Plymouth Avenue/Wirth Park. For the purposes of ridership forecasting and cost estimation, the operations plan assumes the station at Golden Valley Road. Differences in forecasts and costs between the two stations are expected to be minor.

Table 5-3

LRT Travel Time Estimate for B-C-D1 Alternative

Segment	Segment Distance	Segment Time
97th Avenue Station		
	0.94	0:02:33
93rd Avenue Station		
	0.99	0:02:31
85th Avenue Station		
	1.00	0:02:24
Brooklyn Blvd Station		
	1.82	0:04:32
63rd Ave Station		
	1.22	0:01:57
Bass Lake Rd Station		
	1.87	0:02:44
Robbinsdale Transit Center Station		
	2.29	0:03:07
Golden Valley Rd Station		
	2.83	0:07:25
Penn Ave Station		
	0.26	0:01:09
Van White Memorial Station		
	0.06	0:00:41
The Interchange at Target Field Station		
Total	**13.27**	**0:29:04**

5.3.2 Background/Feeder Bus Service Plan

The background bus network for LRT A-C-D2 pivots from the Baseline transit network, with changes made to accommodate LRT. The background bus network for LRT B-C-D1 is very similar to what was previously described for LRT A-C-D1, but with modifications to suburban local and express routes at the north end of the corridor to account for the "B" alignment. Those modifications are described below. All urban local routes remain the same as in LRT A-C-D1. Figures 5-6 through 5-8 illustrates background bus alignments under this alternative. Appendix A presents a side-by-side comparison of bus route modifications between the project alternatives. Appendix D identifies LRT station connections for corridor bus routes.

Suburban Local Routes

Route 705 – Alignment changes previously proposed for the Baseline alternative are also proposed for this alternative, with the route ending at the proposed 97th Avenue (Target Northern Campus) LRT station. Route also connects to LRT at the 93rd Avenue, Brooklyn Blvd. and 71st Avenue stations.

Route 716 – Route changes previously described for the Baseline alternative also apply to this alternative. Route connects to LRT at the Robbinsdale Transit Center, Bass Lake Road and 63rd Avenue stations.

Route 717 – No change from the Baseline alternative. Route connects to LRT at the RobbinsdaleTransit Center station.

Route 718 – This is a new route that was proposed in the Baseline and other build alternatives. It is also proposed in this alternative, with no changes from what was described in the Baseline alternative. Route connects to LRT at the Robbinsdale Transit center station.

Route 721 – No change from the Baseline alternative. Under this alternative, this route connects to LRT service at just the Bass Lake Road station.

Route 722 – No change from the Baseline alternative.

Route 723 – No changes are proposed from the Baseline Alernative. This route connects to LRT service at the Brooklyn (Starlite) and 85th Avenue LRT stations.

Route 724 – Modify route alignment to include a mid-route connection to the 63rd Avenue station. Route also connects to LRT at the Brooklyn Blvd. station. No change proposed to service frequencies (30 peak/30 midday).

Route 729 – No change from the Baseline alternative. This route connects to LRT service at the 97th Avenue (Target) LRT station.

Route 731 – This route is eliminated under this alternative and replaced with LRT service.

Route 732 – This route was proposed in the Baseline alternative and is also proposed in this particular Build alternative, but with a modified alignment. This route only operates between the Maple Grove Transit Station and the Brooklyn (Starlite) LRT station as a local route (i.e., stops approximately every ¼ mile). Proposed service frequencies are 15-minutes in the peak period and 20-minutes in the midday.

Route 759 – This proposed new route from the Baseline alternative that is also proposed for this alternative. Under this alternative, this route connects to LRT service at the 63rd Avenue and 85th Avenue LRT stations.

Route 764 – Changes proposed in the Baseline alternative are also proposed for this Build alternative. In the Baseline, this route is converted to a suburban local route that is anchored at the RTC. This route becomes an all-day feeder route with 60-minute all-day service frequencies. The route also connects to LRT at the 71st Avenue and Brooklyn Blvd. stations.

Limited Stop/Express Routes

Route 755 – No change from the Baseline alternative. This route connects to LRT at the Penn Avenue and Van White memorial Boulevard stations along the Olson Memorial Highway.

Route 756 – No change from the Baseline alternative.

Route 758 – No change from the Baseline alternative. Route connects to LRT at the Robbinsdale Transit Center station.

Route 760 – No change from the Baseline alternative.

Route 761 – No change from the Baseline alternative.

Route 762 – No change from the Baseline alternative.

Route 763 – No change from the Baseline alternative.

Route 765 – This route is eliminated under this Build alternative, replaced with LRT service.

Route 766 – No change from the Baseline alternative.

Route 767 – As in the Baseline alternative, this route is eliminated and replaced with LRT and new local route service.

Maple Grove Routes

Route 780 – No change from the Baseline alternative.

Route 781 – This route retains Baseline alternative routing, with service starting/ending at the Maple Grove Transit Station.

Route 781X – This route retains Baseline alternative service frequencies, with 15-minute frequencies in the peak period, peak direction only (i.e., 10 a.m. and 10 p.m. trips). These trips could be service extensions of select Route 781 trips.

Route 782 – No changes are proposed from the Baseline alternative. This route continues to operate as an express route with peak period, peak direction service to/from downtown Minneapolis.

Route 783 – No change from the Baseline alternative.

Route 785 – No change from the Baseline alternative.

Route 787 – This route is eliminated.

Route 788 – This route reverts back to Baseline alternative routing, with this route serving the Maple Grove Transit Station.

Route 789 - No change from the Baseline alternative.

Figure 5-6

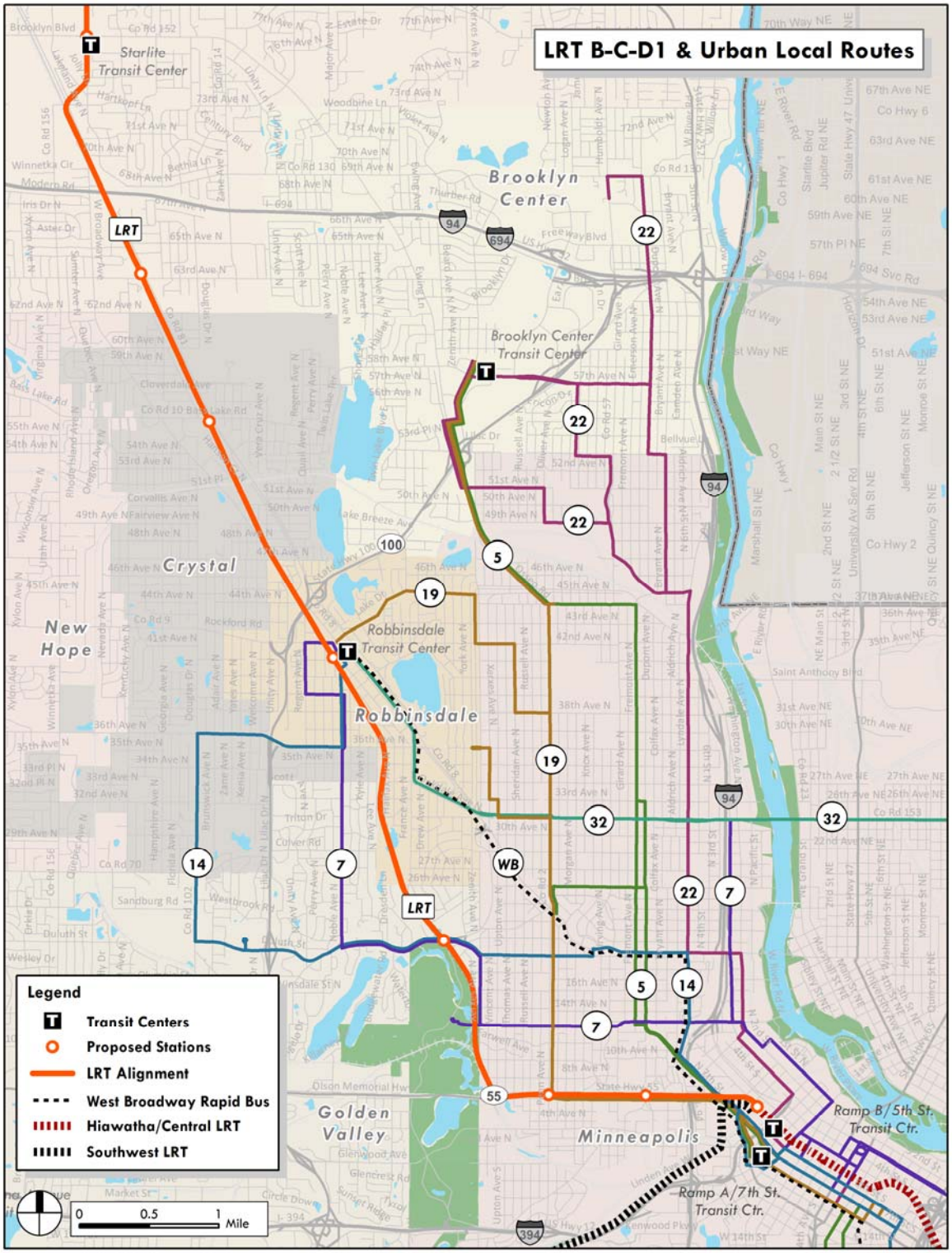

LRT B-C-D1 & Urban Local Routes
Starlite Transit Center
Brooklyn Center
Brooklyn Center Transit Center
Crystal
New Hope
Robbinsdale Transit Center
Robbinsdale
Golden Valley
Minneapolis
Ramp B/5th St. Transit Ctr.
Ramp A/7th St. Transit Ctr.
LRT
WB
Legend
Transit Centers
Proposed Stations
LRT Alignment
West Broadway Rapid Bus
Hiawatha/Central LRT
Southwest LRT
0 0.5 1 Mile

Figure 5-7

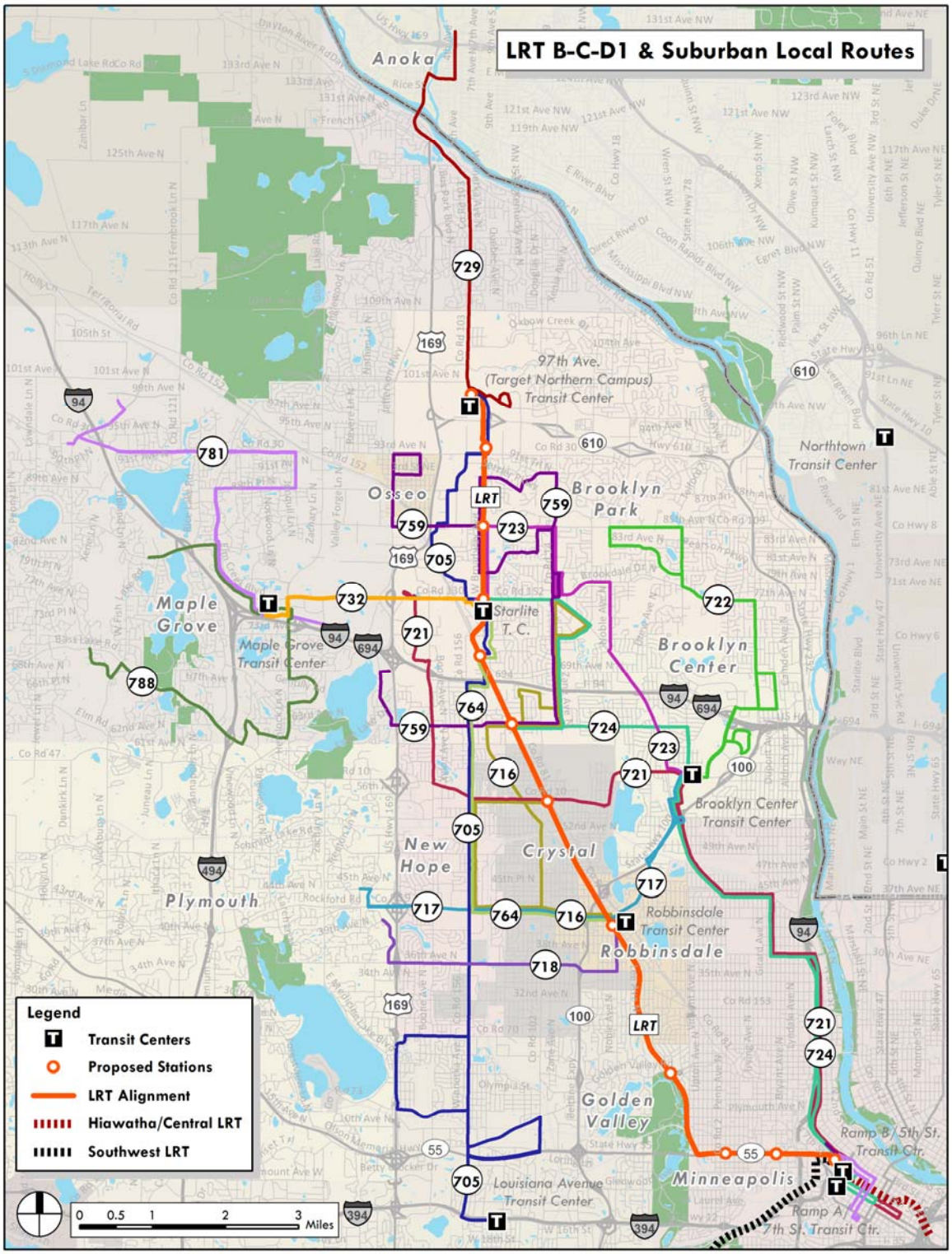
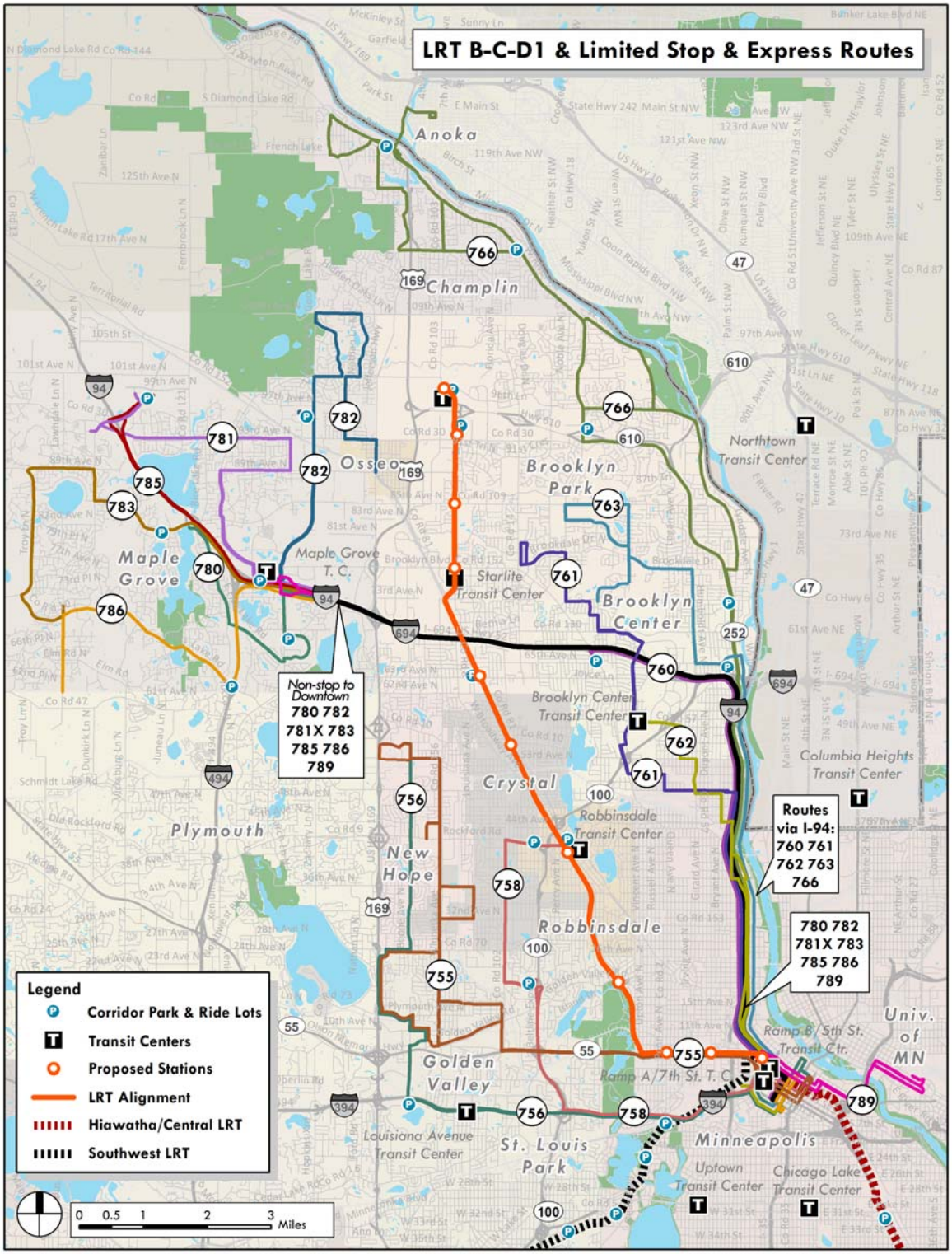

LRT B-C-D1 & Suburban Local Routes
Anoka
97th Ave. (Target Northern Campus) Transit Center
Northtown Transit Center
Brooklyn Park
Osseo
Maple Grove
Maple Grove Transit Center
Starlite T. C.
Brooklyn Center
Brooklyn Center Transit Center
New Hope
Crystal
Plymouth
Robbinsdale Transit Center
Robbinsdale
Golden Valley
Minneapolis
Louisiana Avenue Transit Center
Ramp B / 5th St. Transit Ctr.
Ramp A / 7th St. Transit Ctr.
LRT
Legend
Transit Centers
Proposed Stations
LRT Alignment
Hiawatha/Central LRT
Southwest LRT
0 0.5 1 2 3 Miles

Figure 5-8


LRT B-C-D1 & Limited Stop & Express Routes
Anoka
Champlin
Osseo
Maple Grove
Maple Grove T. C.
Starlite Transit Center
Brooklyn Park
Northtown Transit Center
Brooklyn Center
Brooklyn Center Transit Center
Crystal
Robbinsdale
Robbinsdale Transit Center
New Hope
Plymouth
Golden Valley
Louisiana Avenue Transit Center
St. Louis Park
Minneapolis
Uptown Transit Center
Chicago Lake Transit Center
Columbia Heights Transit Center
Ramp B/5th St. Transit Ctr.
Ramp A/7th St. T. C.
Univ. of MN
Non-stop to Downtown
780 782
781X 783
785 786
789
Routes via I-94:
760 761
762 763
766
780 782
781X 783
785 786
789
Legend
Corridor Park & Ride Lots
Transit Centers
Proposed Stations
LRT Alignment
Hiawatha/Central LRT
Southwest LRT
0 0.5 1 2 3 Miles

5.4 B-C-D2 Alternative

The B-C-D2 alternative differs from the B-C-D1 alternative between the Robbinsdale Transit Center station and downtown Minneapolis. As was noted for the A-C-D2 alternative, the D2 alignment exits the BNSF Railroad alignment at 34th Avenue, and traverses over to West Broadway. The alignment then follows Broadway and Penn Avenue to Olson Memorial Highway (TH 55), where it continues to downtown Minneapolis via the same alignment as D1. Stations north of Robbinsdale are the same as proposed in the B-C-D1 Build alternative, and are as follows:

- 97th Avenue (Target Northern Campus)
- 93rd Avenue
- 85th Avenue
- Brooklyn Boulevard
- 63rd Avenue
- Bass Lake Road
- Robbinsdale Transit Center

South of the Robbinsdale Transit Center, station locations are as follows:

- North Memorial Medical Center
- Broadway/Penn
- Penn/Plymouth
- Van White Boulevard
- The Interchange at Target Field

5.4.1 LRT Service Plan

LRT service frequencies for this alternative are the same as previously noted in Table 5-1 for the A-C-D1 alternative. Table 5-5 presents estimated station-to-station travel time estimates for the LRT Alternative B-C-D2. A more detailed description of operating assumptions used to develop LRT travel times is provided in Appendix B and a detailed travel time estimates are provided in Appendix C.

Table 5-4

LRT Travel Time Estimate for B-C-D2 Alternative

Segment	Segment Distance	Segment Time
97th Avenue Station		
	0.94	0:02:33
93rd Avenue Station		
	0.99	0:02:31
85th Avenue Station		
	1.00	0:02:24
Brooklyn Blvd Station		
	1.82	0:04:32
63rd Ave Station		
	1.22	0:01:57
Bass Lake Rd Station		
	1.87	0:02:44
Robbinsdale Transit Center Station		
	1.42	0:02:55
North Memorial Medical Center Station		
	1.29	0:03:51
West Broadway/Penn Ave. Station		
	0.83	0:02:14
Penn Ave./Plymouth Ave. Station		
	1.20	0:03:26
Van White Memorial Blvd Station		
	0.81	0:03:56
Mnpls Transp. Interchg. (Target Field) Station		
Total	**13.38**	**0:33:03**

5.4.2 Background/Feeder Bus Service Plan

The background bus network for LRT B-C-D2 pivots from the Baseline transit network, but with changes made to accommodate LRT. Since this alternative reflects the same alignment as B-C-D1 north of Robbinsdale, many of the changes previously described for B-C-D1 also apply to this alternative. There are, however, somemodifications regarding bus service connections to LRT along the D2 alignment. Those modifications are described below and affect primarily Urban Local routes. They are also the same changes previously noted for the A-C-D2 alternative. Those changes are as follows:

Route 5 – This route's 5F (NB) pattern operates to 26th and Broadway at approximately 30-minute peak and midday service frequencies. For the D2 alternatives, this route's alignment is modified slightly to provide a connection to the Broadway/Penn LRT station.

Route 7 – This route had connections to LRT at the Robbinsdale Transit Center and Golden Valley stations under the B-C-D1 Alternative. For D2, the connection at Robbinsdale station remains, but the other connection is modified to the Plymouth/Penn Ave. station.

Route 14 – This route had connections to LRT at the Robbinsdale Transit Center and Golden Valley stations under the B-C-D1 Alternative. For D2, this route's connection is only at the Robbinsdale Transit Center station.

West Broadway Rapid Bus – This route had a connection to LRT at the Robbinsdale Transit Center station under the B-C-D1 alternative. For D2, this route gains new connections at North Memorial Medical Center and at Broadway/Penn stations.

Route 19 – This route had connections to three LRT stations under the B-C-D1 Alternative (Robbinsdale, Penn/Olson and Van White Memorial/Olson). For D2, there are four LRT station connections – Robbinsdale, Broadway/Penn, Plymouth/Penn and Van White Memorial/Olson.

Route 32 – This route had only one connection to LRT service under the B-C-D1 Alternative (at Robbinsdale Transit Center). For D2, this route also has a connection at the North Memorial Medical Center Station.

Route 755 – This route connected to LRT at the Penn/Olson and Van White Boulevard stations in the B-C-D1 Alternative. For D2, this route's connection to LRT is only at the Van White Boulevard station.

5.5 LRT Operating Requirements

Peak hour ridership projections were reviewed for each LRT scenario. Maximum peak hour, peak direction line load projections are as follows:

- LRT A-C-D1 – 1,810
- LRT A-C-D2 – 1,690
- LRT B-C-D1 – 1,780
- LRT B-C-D2 – 1,660

Metro Transit light rail vehicles (LRVs) have a seated capacity for 65 passengers, and a seated plus standing capacity for 134 passengers. Thus, two-car trains at 7.5-minute frequencies provides capacity for 2,144 passengers per hour, per direction. This is sufficient capacity to meet demand for all four LRT alternatives. Note that these passenger demand / vehicle supply requirements have been reviewed only for the Bottineau Transitway. Passenger demand has not been reviewed for the Hiawatha Line, which will be interlined with the Bottineau Transitway. For purposes of this project, two-car trains have been assumed on all interlined trains, based on passenger demand requirements for the Bottineau Transitway.

The following tables present the LRT operating requirements for all four LRT Build alternatives. For each alternative, two-car train consists were assumed to operate for all time periods and all days. Run times and distances were estimated from the Mall of America station (the Hiawatha Line's end-of-line station) for all alternatives.

Table 5-5

2030 LRT A-C-D1 Operating Requirements

From	To	Time (min.)	Distance (mi.)	Day	Headway Early	AM	Mid	PM	Eve	Late	Vehicles Peak	Total	Trains Early	AM	Mid	PM	Eve	Late	One-way daily train trips Early	AM	Mid	PM	Eve	Late	Total
Mall of America	Hemlock Lane	65.62	24.97	M-Th	15	7.5	10	7.5	15	30	42	51	11	21	16	21	11	5	12	32	114	32	32	12	**234**
				Fri	15	7.5	10	7.5	15	30			11	21	16	21	11	5	12	32	114	32	32	16	**238**
				Sat	30	15	10	10	15	30			5	11	16	16	11	5	4	28	108	12	36	12	**200**
				Sun	30	15	10	10	15	30			5	11	16	16	11	5	4	32	102	12	36	12	**198**
TOTALS											**42**	**51**													
DIFFERENCE FROM NO-BUILD											**20**	**24**													

Table 5-6

2030 LRT A-C-D2 Operating Requirements

From	To	Time (min.)	Distance (mi.)	Day	Headway Early	AM	Mid	PM	Eve	Late	Vehicles Peak	Total	Trains Early	AM	Mid	PM	Eve	Late	One-way daily train trips Early	AM	Mid	PM	Eve	Late	Total
Mall of America	Hemlock Lane	69.60	25.08	M-Th	15	7.5	10	7.5	15	30	44	53	11	22	17	22	11	6	12	32	114	32	32	12	**234**
				Fri	15	7.5	10	7.5	15	30			11	22	17	22	11	6	12	32	114	32	32	16	**238**
				Sat	30	15	10	10	15	30			6	12	18	18	11	6	4	28	108	12	36	12	**200**
				Sun	30	15	10	10	15	30			6	12	18	18	11	6	4	32	102	12	36	12	**198**
TOTALS											**44**	**53**													
DIFFERENCE FROM NO-BUILD											**22**	**26**													

Table 5-7

2030 LRT B-C-D1 Operating Requirements

From	To	Time (min.)	Distance (mi.)	Day	Headway Early	AM	Mid	PM	Eve	Late	Vehicles Peak	Total	Trains Early	AM	Mid	PM	Eve	Late	One-way daily train trips Early	AM	Mid	PM	Eve	Late	Total
Mall of America	97th Ave. (Target Campus)	69.07	25.62	M-Th	15	7.5	10	7.5	15	30	44	53	11	22	17	22	11	6	12	32	114	32	32	12	**234**
				Fri	15	7.5	10	7.5	15	30			11	22	17	22	11	6	12	32	114	32	32	16	**238**
				Sat	30	15	10	10	15	30			6	12	18	18	11	6	4	28	108	12	36	12	**200**
				Sun	30	15	10	10	15	30			6	12	18	18	11	6	4	32	102	12	36	12	**198**
TOTALS											**44**	**53**													
DIFFERENCE FROM NO-BUILD											**22**	**26**													

Table 5-8

2030 LRT B-C-D2 Operating Requirements

From	To	Time (min.)	Distance (mi.)	Day	Headway Early	AM	Mid	PM	Eve	Late	Vehicles Peak	Total	Trains Early	AM	Mid	PM	Eve	Late	One-way daily train trips Early	AM	Mid	PM	Eve	Late	Total
Mall of America	97th Ave. (Target Campus)	73.05	25.73	M-Th	15	7.5	10	7.5	15	30	46	56	12	23	18	23	12	6	12	32	114	32	32	12	**234**
				Fri	15	7.5	10	7.5	15	30			12	23	18	23	12	6	12	32	114	32	32	16	**238**
				Sat	30	15	10	10	15	30			6	12	18	18	12	6	4	28	108	12	36	12	**200**
				Sun	30	15	10	10	15	30			6	12	18	18	12	6	4	32	102	12	36	12	**198**
TOTALS											**46**	**56**													
DIFFERENCE FROM NO-BUILD											**24**	**29**													

5.6 Bus Operating Requirements

The following tables present the operating requirements for each LRT Build alternative by each transit operator in the Bottineau Transitway project area. Bus operating requirements are the same for both "A" alternatives; likewise, bus operating requirements are the same for both "B" alternatives. As such, the following tables represent operating requirements for either "A" or "B" alternative, respectively. Tables 5-12 and 5-16 present annualized operating requirements for LRT A-C-D1/LRT A-C-D2 and LRT B-C-D1/B-C-D2. Revenue hours and miles and bus requirements by time period are tabulated for Weekday, Saturday, and Sunday service. Annualization is based on a year consisting of 254 weekdays, 54 Saturdays, and 57 Sunday/Holiday service days. Time periods were separated into peak, midday, and all other time periods. For purposes of cost analysis, Maple Grove Route 788 was assumed operated by Midwest Paratransit.

The methodology for creating the LRT Build operating requirements was the same as mentioned in the No-Build Operating Requirements section. Appendix E presents complete route-level statistics by transit agency and service day.

Table 5-09

Total Weekday Bus Operating Requirements for LRT A-C-D1 and LRT A-C-D2

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Maple Grove	172	2,521	26	5	25	3
Met Council	183	2,270	14	13	14	10
Metro Transit	1,300	14,922	106	71	106	44
Metro Transit/Met Council	53	709	5	4	5	2
Midwest Paratransit	40	529	3	2	3	2
Total	**1,747**	**20,951**	**154**	**94**	**152**	**61**

Table 5-10

Total Saturday Bus Operating Requirements for LRT A-C-D1 and LRT A-C-D2

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	60	743	5	5	5	2
Metro Transit	914	10,406	50	56	56	44
Metro Transit/Met Council	39	517	3	3	3	1
Total	**1,012**	**11,666**	**57**	**64**	**64**	**47**

Table 5-11

Total Sunday Bus Operating Requirements for LRT A-C-D1 and LRT A-C-D2

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	53	726	4	4	4	2
Metro Transit	794	8,812	48	49	48	42
Metro Transit/Met Council	39	517	3	3	3	1
Total	**885**	**10,056**	**55**	**56**	**55**	**45**

Table 5-12

Annualized Bus Operating Requirements for LRT A-C-D1 and LRT A-C-D2

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Metro Transit-Operated	442,691	5,094,995	111	75	111	46
Met Council-Operated	52,706	659,621	14	13	14	10
Maple Grove-Operated	53,933	777,750	29	7	28	5
TOTALS FOR CORRIDOR	**549,329**	**6,532,366**	**154**	**94**	**152**	**61**
Change from No-Build:	**72,887**	**928,626**	**1**	**15**	**-2**	**10**

Table 5-13

Total Weekday Bus Operating Requirements for LRT B-C-D1 and LRT B-C-D2

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Maple Grove	166	2,485	28	3	26	3
Met Council	177	2,212	13	12	13	10
Metro Transit	1,268	14,370	102	71	102	43
Metro Transit/Met Council	53	709	5	4	5	2
Midwest Paratransit	25	368	2	1	2	1
Total	**1,688**	**20,144**	**149**	**91**	**148**	**59**

Table 5-14

Total Saturday Bus Operating Requirements for LRT B-C-D1 and LRT B-C-D2

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	54	699	4	4	4	2
Metro Transit	908	10,223	49	56	56	44
Metro Transit/Met Council	39	517	3	3	3	1
Total	**1,001**	**11,439**	**56**	**63**	**63**	**47**

Table 5-15

Total Sunday Bus Operating Requirements for LRT B-C-D1 and LRT B-C-D2

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	53	684	4	4	4	2
Metro Transit	794	8,735	48	49	48	42
Metro Transit/Met Council	39	517	3	3	3	1
Total	**885**	**9,936**	**55**	**56**	**55**	**45**

Table 5-16

Annualized Bus Operating Requirements for LRT B-C-D1 and LRT B-C-D2

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Metro Transit-Operated	434,397	4,940,392	107	75	107	45
Met Council-Operated	50,890	640,107	13	12	13	10
Maple Grove-Operated	48,450	727,388	30	4	28	4
TOTALS FOR CORRIDOR	**533,737**	**6,307,886**	**149**	**91**	**148**	**59**
Change from No-Build:	**57,294**	**704,147**	**-4**	**11**	**-6**	**8**

6.0 BRT Alternative

The Bottineau Transitway development process also included evaluation of a BRT alternative. As noted earlier in this report, the BRT alternative was screened from further development following Scoping and will not be studied in greater detail in the Draft EIS.

This alternative assumes a dedicated busway alignment from the Target North Campus to Olson Memorial Highway/7th Street. The busway alignment follows the LRT B-C-D1 alignment. BRT stations along the transitway are the same as noted for LRT alternative B-C-D1, and are as follows:

- 97th Avenue (Target North Campus)
- 93rd Avenue
- 85th Avenue
- Brooklyn Boulevard
- 63rd Avenue
- Bass Lake Road
- Robbinsdale Transit Center
- Golden Valley Road
- Penn Avenue
- Van White Boulevard
- Border Avenue

The B-C-D1 LRT alternative assumes a station at The Interchange (Target Field). The BRT alternative does not include this station, but does still include a stop in the vicinity of Target Field, at Border Avenue and Olson Memorial Highway.

Within downtown, the BRT alignment operates in mixed traffic along the following streets: 5th Street, 2nd Avenue, 4th Street, Marquette Avenue, 12th Street and 3rd Avenue to the Leamington Ramp. Outbound routing follows 11th Street, 2nd Avenue, 3rd Street, Hennepin Avenue, and 5th Street back to 6th Avenue and Olson Memorial Highway.

Proposed BRT stops within downtown are at:

- 4th Street / Hennepin Avenue
- Marquette Avenue / 5th Street
- Marquette Avenue / 7th Street
- Marquette Avenue / 9th Street
- Marquette Avenue / 11th Street
- Leamington Ramp
- 2nd Avenue / 11th Street
- 2nd Avenue / 9th Street
- 2nd Avenue / 7th Street

- 2nd Avenue / 5th Street
- Hennepin Avenue/4th Street

6.1 BRT Service Plan

The BRT service plan assumes the Baseline alternative's Routes 731 and 732 are operating on the BRT transitway. Route 731 operates from 97th Avenue (Target North Campus) to downtown Minneapolis. Route 732 operates from the Maple Grove Transit Station to the Brooklyn Blvd. BRT station in mixed traffic, with peak-period trips continuing to downtown Minneapolis via the Bottineau Transitway. Non-peak-period trips on Route 732 would operate only to the Brooklyn Blvd. BRT station.

A review of ridership forecasts from the prior Alternatives Analysis indicates that ridership line loads require more frequent service for BRT than what is proposed in the LRT Build alternatives, due to lower passenger capacity of BRT vehicles. However, traffic intersection analyses indicate that at higher service frequencies, signal prioritization for buses at key intersections will be disruptive to general traffic. Initially, two peak-period service plan scenarios were defined for the BRT alternative:

- Scenario 1 assumed 731 and 732 operate at 7.5-minute frequencies in the peak periods, resulting in a combined 3.75-minute frequency along the transitway south of the Brooklyn Blvd. BRT station.
- Scenario 2 assumed 731 and 732 operate at 12-minute frequencies in the peak periods, resulting in a combined 6-minute frequency along the transitway south of the Brooklyn Blvd. BRT station (preliminary analyses indicates that 6-minute frequencies are the maximum frequencies that can operate with signal prioritization without adversely disrupting general traffic at key high-volume intersections).

After further analysis of traffic impacts, it was determined that Scenario 2 was the best that can be done without severely compromising traffic operations. Therefore, the BRT alternative studied in Scoping reflected the assumptions in Scenario 2.

In the midday, Route 731 will operate from the 97th Avenue Station to downtown at 10-minute frequencies (same as LRT). Route 732 will operate between the Maple Grove Transit Station and the Brooklyn Blvd. BRT station at 10-minute frequencies, providing transfer opportunities to Route 731 at this station.

Components that determine BRT station-to-station travel time estimate are similar to those previously noted for LRT travel times. Differences are as follows:

- *Acceleration/Deceleration Rates* – BRT travel time estimates take into consideration a 2.0 mphps, with a tapered acceleration rate for speeds above 25 mph. A 2.0 mphps constant deceleration rate is assumed.
- *Station Dwell Times* – Station dwells assume 25 seconds for stops with medium to high ridership volumes, 20 seconds for stops with low ridership volumes (1,000 boardings/day has been used to define the difference between low and medium ridership volumes at stations, using ridership forecasts previously prepared for this project's Alternatives Analysis).
- *Downtown Travel Times* – BRT travel time estimates on Marquette and 2nd Avenues are assumed to be similar to observed existing bus travel times.

Table 6-1 presents estimated station-to-station travel time estimates for Route 731 from 97th Avenue to Target Field. Table 6-2 presents estimated inbound travel time estimates in downtown Minneapolis to the Leamington Ramp. Table 6-3 presents travel time estimates for Route 732 service from Maple Grove Transit Station to Target Field. A more detailed description of operating assumptions used to develop BRT travel times is provided in Appendix B and a detailed travel time estimates are provided in Appendix C.

Table 6-1
BRT Travel Time Estimate for Route 731
97th Avenue to Target Field

Segment	Segment Distance	Segment Time
97th Avenue Station		
	0.94	0:02:36
93rd Avenue Station		
	0.99	0:02:45
85th Avenue Station		
	1.00	0:02:39
Brooklyn Blvd Station		
	1.85	0:04:50
63rd Ave Station		
	1.22	0:02:16
Bass Lake Rd Station		
	1.87	0:03:04
Robbinsdale Transit Center Station		
	2.29	0:03:26
Golden Valley Rd Station		
	1.63	0:03:57
Penn Ave Station		
	0.70	0:02:13
Van White Memorial Blvd Station		
	0.40	0:02:16
Border Avenue		
Total	**12.88**	**0:30:03**

Table 6-2
BRT Travel Time Estimate for Downtown Segment
Target Field to Leamington Ramp

Segment	Segment Distance	Segment Time
Border Avenue		
	0.82	0:04:52
4th Hennepin Downtown Stop		
	0.22	0:01:54
Marquette/5th Downtown Stop		
	0.16	0:01:40
Marquette/7th Downtown Stop		
	0.15	0:01:36
Marquette/9th Downtown Stop		
	0.16	0:01:36
Marquette/11th Downtown Stop		
	0.38	0:03:39
Leamington Ramp Stop (Downtown Layover)		
Total	**1.89**	**0:15:17**

Table 6-3

BRT Travel Time Estimate for Route 732

Maple Grove Transit Station to Target Field

Segment	Segment Distance	Segment Time
Maple Grove Transit Station (MGTS)		
	0.64	0:02:42
Elm Creek Blvd./Hemlock Lane Stop		
	0.86	0:02:17
Revere Lane Stop		
	0.78	0:02:51
Hennepin Technical College Stop		
	0.95	0:03:15
Brooklyn Blvd Station		
	1.85	0:04:50
63rd Ave Station		
	1.22	0:02:16
Bass Lake Rd Station		
	1.87	0:03:04
Robbinsdale Station		
	2.29	0:03:26
Golden Valley Rd Station		
	1.63	0:03:56
Penn Ave Station		
	0.70	0:02:13
Van White Memorial Blvd Station		
	0.40	0:02:16
Border Avenue		
Total	**13.18**	**0:33:07**

6.2 Background/Feeder Bus Service Plan

The background bus network for the BRT alternative is the same as previously described for LRT B-C-D1, with the exception of Routes 731 and 732 (the BRT routes described in the section above). Figures 6-1 through 6-3 illustrates background bus alignments under this alternative. Appendix A presents a side-by-side comparison of bus route modifications between the project alternatives. Appendix C identifies BRT station connections for corridor bus routes.

Figure 6-1

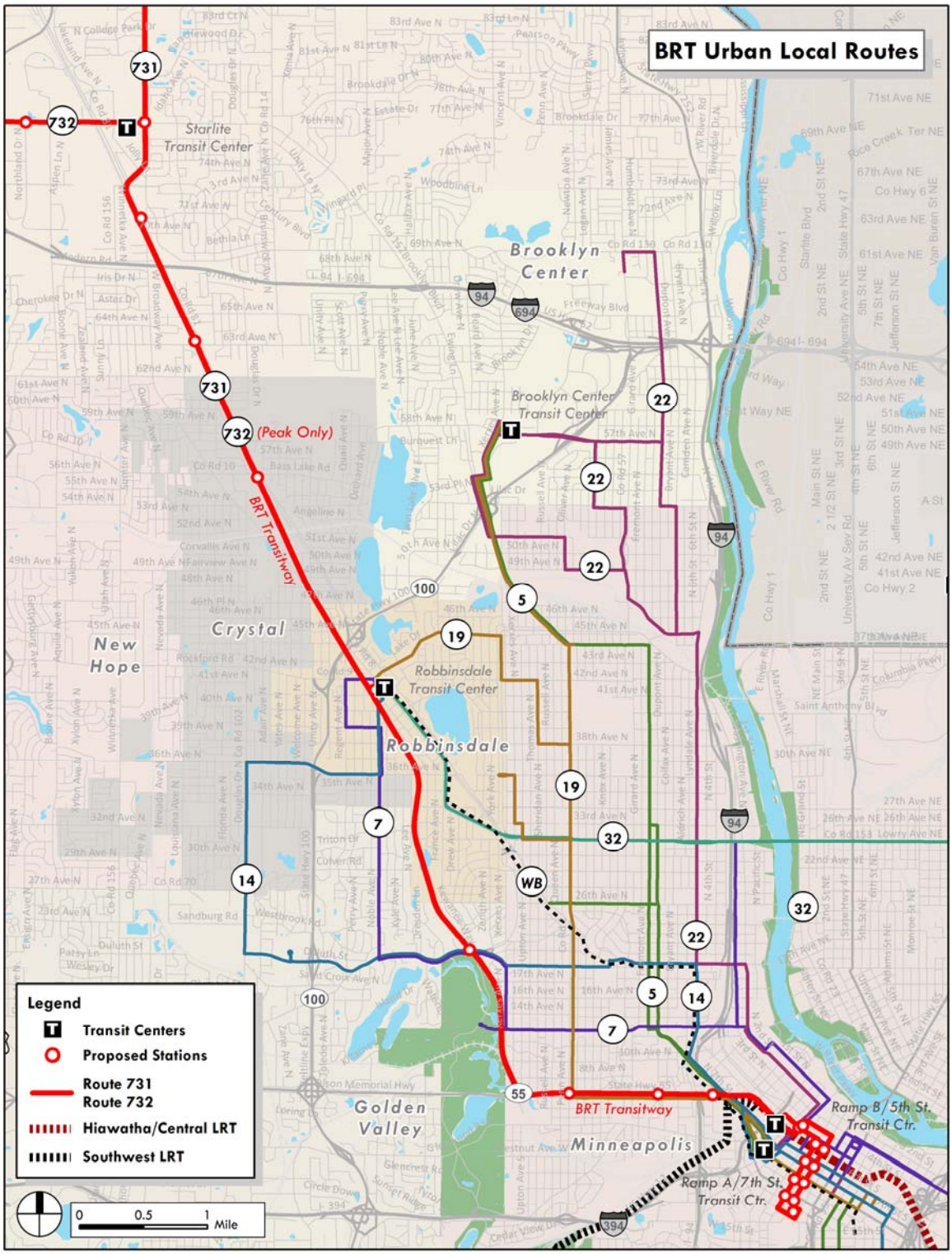

BRT Urban Local Routes
Starlite Transit Center
Brooklyn Center
Brooklyn Center Transit Center
Crystal
New Hope
Robbinsdale Transit Center
Robbinsdale
Golden Valley
Minneapolis
BRT Transitway
(Peak Only)
WB
Ramp B/5th St. Transit Ctr.
Ramp A/7th St. Transit Ctr.
Legend
Transit Centers
Proposed Stations
Route 731
Route 732
Hiawatha/Central LRT
Southwest LRT
0 0.5 1 Mile

Figure 6-2

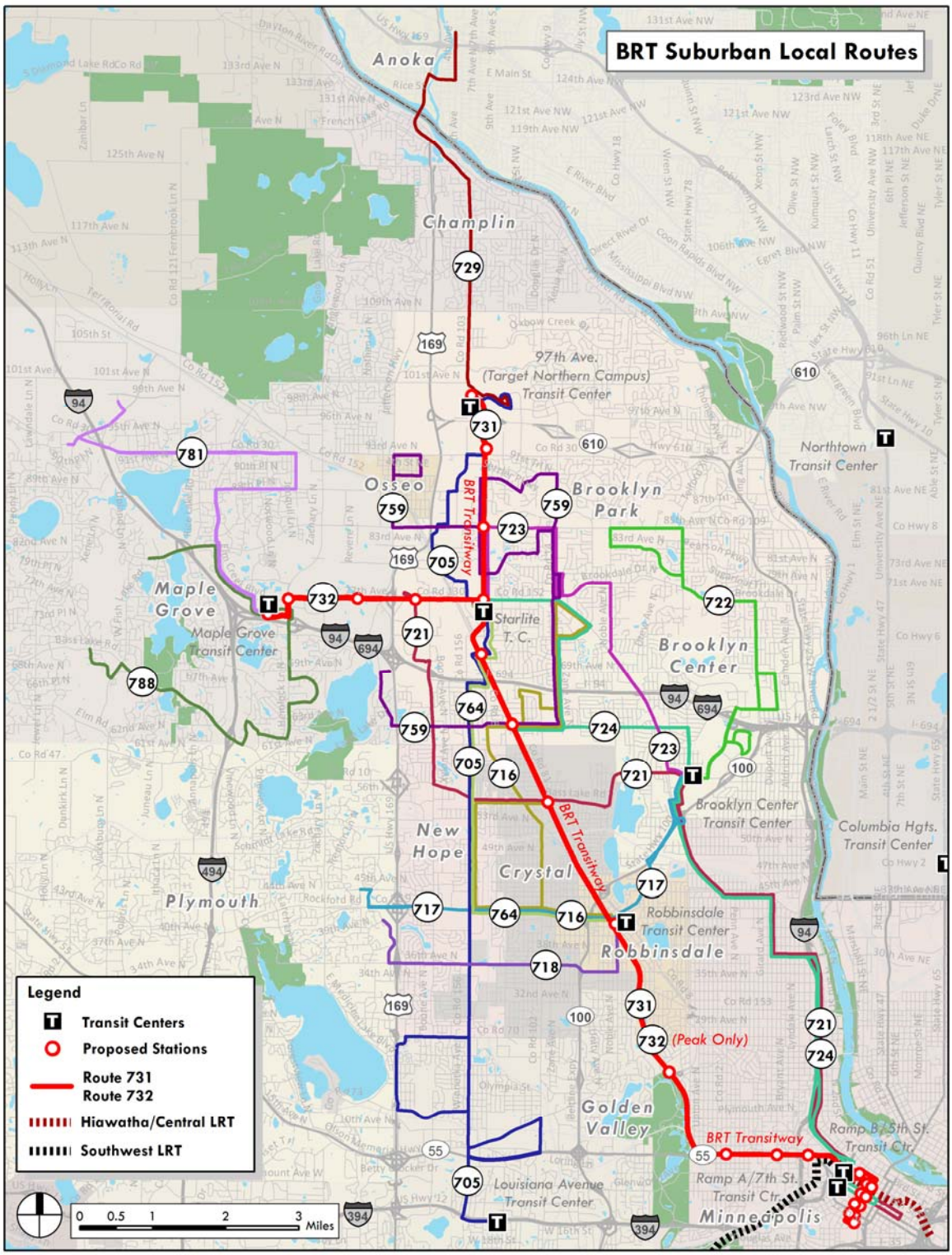
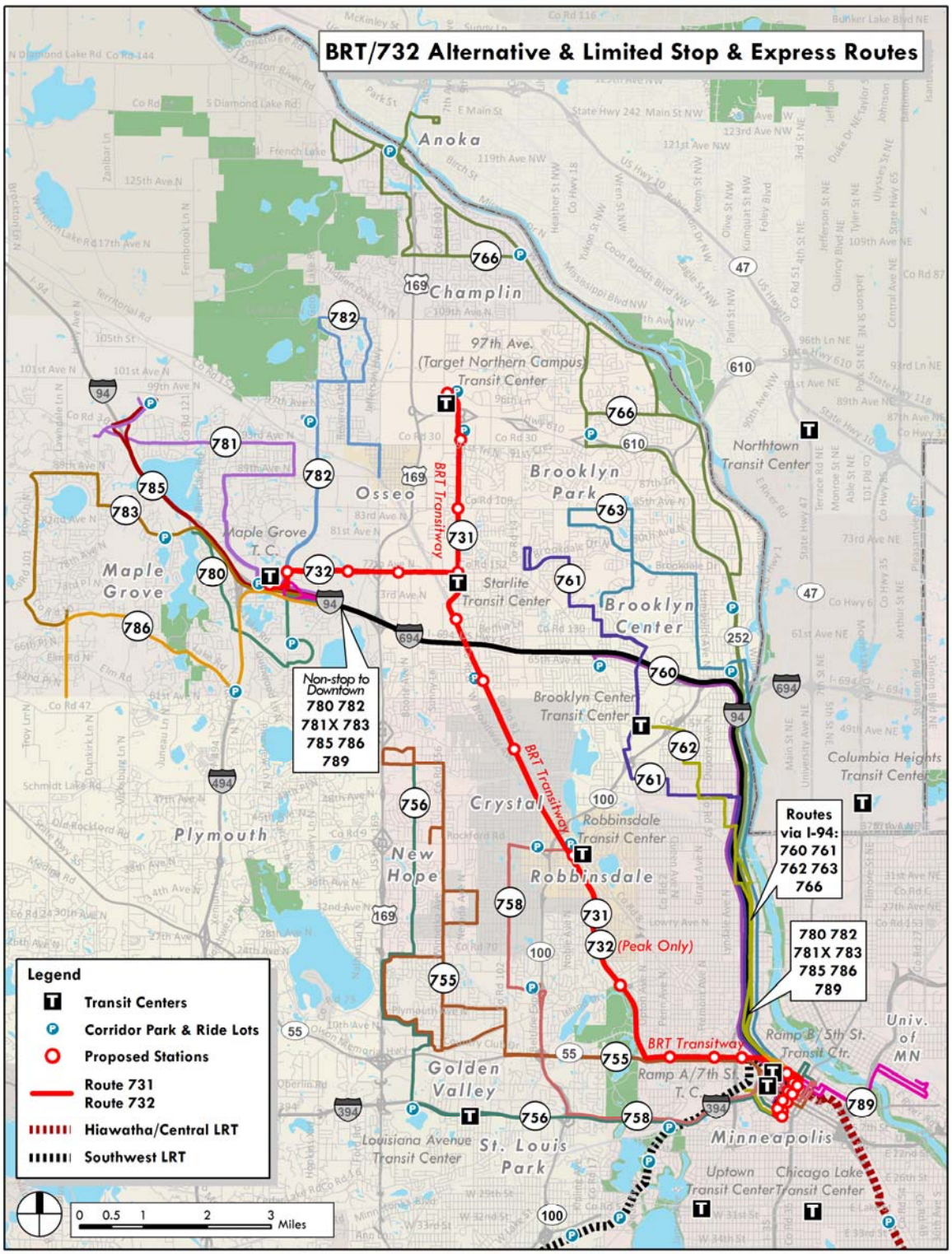

BRT Suburban Local Routes
Anoka
Champlin
97th Ave.
(Target Northern Campus)
Transit Center
Northtown
Transit Center
Osseo
Brooklyn
Park
Maple
Grove
Maple Grove
Transit Center
Starlite
T. C.
Brooklyn
Center
Brooklyn Center
Transit Center
Columbia Hgts.
Transit Center
New
Hope
Crystal
Plymouth
Robbinsdale
Transit Center
Robbinsdale
Golden
Valley
Louisiana Avenue
Transit Center
Ramp B/5th St.
Transit Ctr.
Ramp A/7th St.
Transit Ctr.
Minneapolis
BRT Transitway
(Peak Only)
Legend
Transit Centers
Proposed Stations
Route 731
Route 732
Hiawatha/Central LRT
Southwest LRT
0 0.5 1 2 3 Miles

Figure 6-3


BRT/732 Alternative & Limited Stop & Express Routes
Anoka
Champlin
97th Ave. (Target Northern Campus) Transit Center
Osseo
Maple Grove T. C.
Maple Grove
Brooklyn Park
Northtown Transit Center
Starlite Transit Center
Brooklyn Center
Brooklyn Center Transit Center
Columbia Heights Transit Center
Crystal
Robbinsdale Transit Center
Robbinsdale
New Hope
Plymouth
Golden Valley
Louisiana Avenue Transit Center
St. Louis Park
Ramp B/5th St. Transit Ctr.
Ramp A/7th St. T. C.
Minneapolis
Uptown Transit Center
Chicago Lake Transit Center
Univ. of MN
BRT Transitway
Non-stop to Downtown
780 782
781X 783
785 786
789
Routes via I-94:
760 761
762 763
766
780 782
781X 783
785 786
789
732 (Peak Only)
Legend
Transit Centers
Corridor Park & Ride Lots
Proposed Stations
Route 731
Route 732
Hiawatha/Central LRT
Southwest LRT
0 0.5 1 2 3 Miles

6.3 BRT Operating Requirements

Ridership forecasts for the BRT alternative were constrained to limit BRT peak hour, peak direction ridership to proposed service levels and capacity (90 passengers per articulated bus). The following table presents the BRT operating requirements for the BRT alternative. This table reflects three operating patterns, as described above. Route 731 would operate from the Target North Campus to Leamington Ramp all-day. Route 732 would operate from Maple Grove Transit Station to Leamington Ramp in the peak periods, and from Maple Grove Transit Station to Brooklyn Park during other time periods.

Table 6-4

2030 Operating Requirements for Routes 731 and 732

From	To	Time (min.)	Distance (mi.)	Day	Headway Early	AM	Mid	PM	Eve	Late	Vehicles Peak	Total	BRT Buses Early	AM	Mid	PM	Eve	Late	One-way daily bus trips Early	AM	Mid	PM	Eve	Late	Total
97th Ave. (Target Campus)	Leamington Ramp	40.33	14.77	M-Th	15	12	10	12	15	30	9	11	7	9	10	9	7	4	12	20	114	20	32	12	**210**
				Fri	15	12	10	12	15	30			7	9	10	9	7	4	12	20	114	20	32	16	**214**
				Sat	30	15	10	10	15	30			4	7	10	10	7	4	4	28	108	12	36	12	**200**
				Sun	30	15	10	10	15	30			4	7	10	10	7	4	4	32	102	12	36	12	**198**
TOTALS											**9**	**11**													
Maple Grove Transit Station	Leamington Ramp	48.40	15.07	M-Th	0	12	0	12	0	0	10	12	0	10	0	10	0	0	0	20	0	20	0	0	**40**
				Fri	0	12	0	12	0	0			0	10	0	10	0	0	0	20	0	20	0	0	**40**
				Sat	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	**0**
				Sun	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTALS											**10**	**12**													
Maple Grove Transit Station	Brooklyn Park Station	11.08	3.22	M-Th	15	0	20	0	15	30	0	0	2	0	2	0	2	1	12	0	57	0	32	12	**113**
				Fri	15	0	20	0	15	30			2	0	2	0	2	1	12	0	57	0	32	16	**117**
				Sat	30	30	20	20	30	30			1	1	2	2	1	1	4	14	54	6	18	12	**108**
				Sun	30	30	20	20	30	30			1	1	2	2	1	1	4	16	51	6	18	12	**107**
TOTALS											**0**	**0**													
TOTALS FOR ALL ROUTE PATTERNS											**19**	**23**	**9.0**	**19.0**	**12.0**	**19.0**	**9.0**	**5.0**							

6.4 Bus Operating Requirements

The following tables present the operating requirements for the BRT alternative by each transit operator in the Bottineau Transitway project area. Table 6-8 presents annualized operating requirements. Revenue hours and miles and bus requirements by time period are tabulated for weekday, Saturday, and Sunday service. Annualization is based on a year consisting of 254 weekdays, 54 Saturdays, and 57 Sunday/Holiday service days. Time periods were separated into peak, midday, and all other time periods. For purposes of cost analysis, Maple Grove Route 788 was assumed operated by Midwest Paratransit.

The methodology for creating the BRT Build operating requirements was the same as mentioned in the No-Build Operating Requirements section. Appendix E presents complete route-level statistics by transit agency and service day.

Table 6-5

Total Weekday Operating Requirements

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Maple Grove	166	2,485	28	3	26	3
Met Council	177	2,212	13	12	13	10
Metro Transit	1,235	13,986	100	69	100	42
Metro Transit/Met Council	53	709	5	4	5	2
Midwest Paratransit	25	368	2	1	2	1
Total	**1,655**	**19,760**	**147**	**89**	**146**	**58**

Table 6-6

Total Saturday Operating Requirements

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	54	699	4	4	4	2
Metro Transit	878	9,913	48	54	54	43
Metro Transit/Met Council	39	517	3	3	3	1
Total	**971**	**11,129**	**55**	**61**	**61**	**46**

Table 6-7

Total Sunday Operating Requirements

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	53	726	4	4	4	2
Metro Transit	764	8,424	47	47	46	41
Metro Transit/Met Council	39	517	3	3	3	1
Total	**855**	**9,668**	**54**	**54**	**53**	**44**

Table 6-8

Annualized Operating Requirements

Provider	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Metro Transit-Operated	422,682	4,808,328	105	73	105	44
Met Council-Operated	50,890	642,543	13	12	13	10
Maple Grove-Operated	48,450	727,388	30	4	28	4
TOTALS FOR CORRIDOR	**522,022**	**6,178,258**	**147**	**89**	**146**	**58**
Change from No-Build:	**45,579**	**574,519**	**-6**	**9**	**-8**	**7**

APPENDIX A
BOTTINEAU CORRIDOR ROUTE MODIFICATIONS BY ALTERNATIVE

Route	No-Build	Baseline	LRT A-C-D1	LRT B-C-D1
5	No change from existing.	Same as No-Build	Same as No-Build Alt.	Same as No-Build Alt.
7	No change from existing.	Extend route to Golden Valley Rd, Noble, 39th, Regent and 42nd to Robbinsdale Transit Center. No change to service frequencies (30 peak/30 midday)	Same as Baseline Alt.	Same as Baseline Alt.
14	Route modified per Rapid Bus plans. Existing Broadway pattern to Robbinsdale is eliminated. Routing into downtown is modified to follow Lyndale & 7th Street. No change to 14 freq. south of downtown.	Eliminate Noble Ave. route pattern (14L). Service is replaced with Route 7 extension. Frequencies on 14 via Golden Valley Rd./Douglas are 30 peak/60 midday. No change to 14 freq. south of downtown.	Same as Baseline Alt.	Same as Baseline Alt.
Broadway Rapid	Proposed new route that operates from Robbinsdale T.C. to downtown via Broadway, Lyndale & 7th. Frequencies: 15 peak/15 midday	Same as No-Build Alt.	Same as No-Build Alt.	Same as No-Build Alt.
19	No change from existing.	Extend 19H trips (42nd/York) to Robbinsdale Transit Center via Victory Drive, 45th Avenue, Lake Drive. Frequencies: 30 peak/60 midday	Same as Baseline Alt.	Same as Baseline Alt.
22	Increase midday frequencies on 51st/Penn pattern from 60 to 30-imin., resulting in a combined 15-min. midday freq. south of 51st/Penn.	Same as No-Build Alt.	Same as No-Build Alt.	Same as No-Build Alt.
32	Route reverts back to Lowry Ave. Bridge across Mississippi River	Increase midday frequencies (new frequencies are 30 peak/30 midday)	Same as Baseline Alt.	Same as Baseline Alt.
705	No change from existing.	Extend route from Walmart to Target Northern Campus via existing 724 alignment. Freq. remain at 60 peak/60 midday.	Same as Baseline Alt.	Same as Baseline Alt.
716	No change from existing.	Modify route to include a stop at Bass Lake/Bottineau Baseline bus stops. Frequencies improved to 30 peak/60 midday.	Same as Baseline Alt., but with route stopping at Bass Lake LRT Station.	Same as Baseline Alt., but with route stopping at Bass Lake LRT Station.
717	No change from existing.	Same as No-Build Alt.	Same as No-Build Alt.	Same as No-Build Alt.
718	Route not proposed for No-Build Alt.	Proposed new route that starts at Four Seasons Mall and follows Lancaster, 36th, Noble to Robbinsdale T.C. Frequencies: 30 peak/30 midday.	Same as Baseline Alt.	Same as Baseline Alt.
721	Increase midday frequencies from 60 to 30-min. Peak freq. remain at 30-min.	Same as No-Build Alt.	Same as Baseline Alt.	Same as Baseline Alt.
722	No change from existing.	Frequencies improved to 30 peak/30 midday for full route alignment.	Same as Baseline Alt.	Same as Baseline Alt.
723	Frequencies improved to 30 peak/30 midday.	Same alignment as No-Build.	Extend route from Starlite to 71st Ave. LRT Station. Frequencies improved to 30 peak/30 midday.	No change in alignment (route would end at Brooklyn/Starlite LRT station. Frequencies improved to 30 peak/30 midday.
724	Both midday trips that start at Target Northern campus are extended to downtown Minneapolis.	Eliminate the limited trip service to Target Northern Campus (replaced with 705 service. No change to frequencies.	Modify alignment to deviate to 63rd Ave. LRT Station. No change to frequencies (30 peak/30 midday)	Modify alignment to deviate to 63rd Ave. LRT Station. No change to frequencies (30 peak/30 midday)
729	Route not proposed for No-Build Alt.	Proposed new route that starts in Anoka and operates along Winnetka to Target Northern Campus. Frequencies: 60 peak/60 midday.	Same as Baseline Alt., but with route extended to 71st Ave. Station.	Same as Baseline Alt.
731	Route not proposed for No-Build Alt.	Proposed new route that starts at Target Campus and operates Ltd. Stop to downtown. Frequencies: 15 peak/20 midday.	Route is turned back at 71st Ave. LRT Station and is converted from a Ltd. Stop to a local route. Frequencies remain at 15 peak/20 midday.	Route is eliminated.
732	Route not proposed for No-Build Alt.	Proposed new route that starts at MGTS and operates Ltd. Stop to downtown. Frequencies: 15 peak/20 midday.	Route is eliminated.	Route is turned back at Brooklyn Blvd. LRT Station and is converted from a Ltd. Stop to a local route. Frequencies remain at 15 peak/20 midday.

Route	No-Build	Baseline	LRT A-C-D1	LRT B-C-D1
755	No change from existing.	Same as No-Build Alt.	Same as No-Build	Same as No-Build
756	No change from existing.	Same as No-Build Alt.	Same as No-Build	Same as No-Build
758	No change from existing.	Eliminate 758N (Noble) trips (replaced with modified Route 7 service). 758D routed to Robbinsdale. No change to Route 758D service frequencies.	Same as Baseline Alt.	Same as Baseline Alt.
759	Route not proposed for No-Build Alt.	Proposed new route that covers existing local portion of Route 760, but with route extended west of Hwy 169 to Osseo. Route provides service to 63rd Ave. P&R, with service extended west along 63rd to Magda/69th. 30 peak/30 midday freq.	Same as Baseline Alt.	Same as Baseline Alt.
760	No change from existing.	Route modified to begin/end at 65rd Ave/Brooklyn P&R. No change to service freq. Existing local portion of 760 replaced with new 759 service.	Same as Baseline Alt.	Same as Baseline Alt.
761	No change from existing.	Same as No-Build Alt.	Same as No-Build	Same as No-Build
762	No change from existing.	Same as No-Build Alt.	Same as No-Build	Same as No-Build
763	No change from existing.	Same as No-Build Alt.	Same as No-Build	Same as No-Build
764	No change from existing.	Route is converted to a local route operating between Starlite and Robbinsdale T.C. Freq: 60 peak/60 midday.	Same as Baseline Alt.	Same as Baseline Alt.
765	No change from existing.	Route modified to operate in both directions with 4 a.m. and 4 p.m. round trips.	Same as Baseline Alt.	Route is eliminated.
766	No change from existing.	Same as No-Build Alt.	Same as No-Build	Same as No-Build
767	No change from existing.	Route is eliminated.	Route is eliminated.	Route is eliminated.
780	No change from existing.	Same as No-Build Alt.	Same as No-Build	Same as No-Build
781	No change from existing.	Route becomes a local route that serves both Maple Grove Hospital/Target and Walmart, withs eservivce to MGTS. Route operates at 15-minutes peak/30 minutes midday.	Both route patterns extended to Hemlock Lane LRT Station. No change to service frequencies.	Same as Baseline Alt.
781X	Route not proposed for No-Build Alt.	Maintains 781 express service from MGTS. 15-min. peak period, peak dir. frequencies proposed (10 trips each peak period)	Service frequencies reduced to 30-minutes peak period/peak direction (5 trips each peak period)	Same as Baseline Alt.
782	No change from existing.	Same as No-Build Alt.	Convert to local route that is anchored at MGTS with a stop at Hemlock Lane LRT Station. 30 peak/60 midday freq.	Same as No-Build Alt.
783	No change from existing.	Same as No-Build Alt.	Same as No-Build	Same as No-Build
785	Increase trips to 12 a.m. and 12 p.m. trips	Same as No-Build Alt.	Same as No-Build	Same as No-Build
786	Proposed new route that operates from Bass Lake Road in Maple Grove to Downtown. 8 a.m. and 8 p.m. trips.	Same as No-Build Alt.	Same as No-Build	Same as No-Build
787	No change from existing.	This route is eliminated.	Same as Baseline Alt.	Same as Baseline Alt.
788	Modify alignment to operate from Nottingham to Shepherd of the Grove Church, with 5 a.m. and 5 p.m. trips	Modify route to operate all-day, with service extended to MGTS and Hemlock Lane and to Crosswinds Church. Service freq: 30 peak/60 midday.	Service extended to Hemlock Ln. Station via Main, Elm Creek, and Hemlock. Service freq: 30 peak/60 midday.	Same as Baseline Alt.
789	No change from existing.	Same as No-Build Alt.	Same as No-Build	Same as No-Build

Route	LRT A-C-D2	LRT B-C-D2	BRT
5	Extend 5F trips to Broadway/Penn LRT Station.	Extend 5F trips to Broadway/Penn LRT Station.	Same as No-Build Alt.
7	Same as Baseline Alt.	Same as Baseline Alt.	Same as Baseline Alt.
14	Same as Baseline Alt.	Same as Baseline Alt.	Same as Baseline Alt.
Broadway Rapid	Same as No-Build Alt.	Same as No-Build Alt.	Same as No-Build Alt.
19	Same as Baseline Alt.	Same as Baseline Alt.	Same as Baseline Alt.
22	Same as No-Build Alt.	Same as No-Build Alt.	Same as No-Build Alt.
32	Same as Baseline Alt.	Same as Baseline Alt.	Same as Baseline Alt.
705	Same as Baseline Alt.	Same as Baseline Alt.	Same as Baseline Alt.
716	Same as Baseline Alt., but with route stopping at Bass Lake LRT Station.	Same as Baseline Alt., but with route stopping at Bass Lake LRT Station.	Same as Baseline Alt., but with route stopping at Bass Lake LRT Station.
717	Same as No-Build Alt.	Same as No-Build Alt.	Same as No-Build Alt.
718	Same as Baseline Alt.	Same as Baseline Alt.	Same as Baseline Alt.
721	Same as Baseline Alt.	Same as Baseline Alt.	Same as Baseline Alt.
722	Same as Baseline Alt.	Same as Baseline Alt.	Same as Baseline Alt.
723	Extend route from Starlite to 71st Ave. LRT Station. Frequencies improved to 30 peak/30 midday.	No change in alignment (route would end at Brooklyn/Starlite LRT station. Frequencies improved to 30 peak/30 midday.	No change in alignment (route would end at Brooklyn/Starlite LRT station. Frequencies improved to 30 peak/30 midday.
724	Modify alignment to deviate to 63rd Ave. LRT Station. No change to frequencies (30 peak/30 midday)	Modify alignment to deviate to 63rd Ave. LRT Station. No change to frequencies (30 peak/30 midday)	Modify alignment to deviate to 63rd Ave. LRT Station. No change to frequencies (30 peak/30 midday)
729	Same as Baseline Alt., but with route extended to 71st Ave. Station.	Same as Baseline Alt.	Same as Baseline Alt.
731	Route is turned back at 71st Ave. LRT Station and is converted from a Ltd. Stop to a local route. Frequencies remain at 15 peak/20 midday.	Route is eliminated.	Route operates on BRT transitway. Either 7.5-minute or 12-minute peak period frequencies proposed. 10 min. midday.
732	Route is eliminated.	Route is turned back at Brooklyn Blvd. LRT Station and is converted from a Ltd. Stop to a local route. Frequencies remain at 15 peak/20 midday.	Route operates on BRT transitway in peak period at either 7.5 or 12-min. freq. Midday service turned back at Brooklyn Blvd with 10-min. freq.

Route	LRT A-C-D2	LRT B-C-D2	BRT
755	Same as No-Build	Same as No-Build	Same as No-Build
756	Same as No-Build	Same as No-Build	Same as No-Build
758	Same as Baseline Alt.	Same as Baseline Alt.	Same as Baseline Alt.
759	Same as Baseline Alt.	Same as Baseline Alt.	Same as Baseline Alt.
760	Same as Baseline Alt.	Same as Baseline Alt.	Same as Baseline Alt.
761	Same as No-Build	Same as No-Build	Same as No-Build
762	Same as No-Build	Same as No-Build	Same as No-Build
763	Same as No-Build	Same as No-Build	Same as No-Build
764	Same as Baseline Alt.	Same as Baseline Alt.	Same as Baseline Alt.
765	Same as Baseline Alt.	Route is eliminated.	Route is eliminated.
766	Same as No-Build	Same as No-Build	Same as No-Build
767	Route is eliminated.	Route is eliminated.	Route is eliminated.
780	Same as No-Build	Same as No-Build	Same as No-Build
781	Both route patterns extended to Hemlock Lane LRT Station. No change to service frequencies.	Same as Baseline Alt.	Same as Baseline Alt.
781X	Service frequencies reduced to 30-minutes peak period/peak direction (5 trips each peak period)	Same as Baseline Alt.	Same as Baseline Alt.
782	Convert to local route that is anchored at MGTS with a stop at Hemlock Lane LRT Station. 30 peak/60 midday freq.	Same as No-Build Alt.	Same as No-Build Alt.
783	Same as No-Build	Same as No-Build	Same as No-Build
785	Same as No-Build	Same as No-Build	Same as No-Build
786	Same as No-Build	Same as No-Build	Same as No-Build
787	Same as Baseline Alt.	Same as Baseline Alt.	Same as Baseline Alt.
788	Service extended to Hemlock Ln. Station via Main, Elm Creek, and Hemlock. Service freq: 30 peak/60 midday.	Same as Baseline Alt.	Same as Baseline Alt.
789	Same as No-Build	Same as No-Build	Same as No-Build

APPENDIX B
BOTTINEAU CORRIDOR
LRT AND BRT
OPERATING PLAN AND TRAVEL TIME ASSUMPTIONS

Bottineau DEIS
Proposed LRT and BRT Operating Plan Assumptions

The following proposed operating assumptions for use in the Bottineau DEIS are based on the experience of Connetics Transportation Group (CTG) in similar projects in the Minneapolis-St. Paul area and across the country. CTG has defined operating plan assumptions for numerous FTA New Starts projects, following established FTA planning guidelines. These assumptions represent typical standard practice for the development of transitway operating plans for both BRT and LRT modes.

1.0 Run Time Components

Components that factor into the calculation of a LRT or BRT station-to-station travel time estimate are:

1. Alignment Characteristics – distances, curves
2. Maximum Operating Speed
3. Acceleration/Deceleration Rates
4. Station Dwell Times
5. Traffic Signal Delays

Following is a description of the proposed methodology associated with each component in the development of Bottineau DEIS LRT and BRT travel time estimates. Prior assumptions used in the Bottineau Alternatives Analysis (AA) are first noted, followed by the proposed DEIS approach. Comparisons to other projects/data sources are also noted, when applicable.

1.1 Alignment Characteristics

Bottineau AA Approach

- Station-to-station distances based on the initial concept layouts developed as part of the Alternatives Analysis Study and used in run time spreadsheets.
- Took into consideration operating speed limitations on any significant turns between stations (e.g., turning from 36th Avenue onto Broadway).

Proposed DEIS Approach

- Utilize more specific distance information from plan and profile drawings including concept refinements identified during scoping.
- Take into consideration all curves along proposed alignments and maximum operating speeds through curves based on curve characteristics (radii, superelevation).

1.2 Maximum Operating Speeds

Bottineau AA Approach

- Assume posted speed limit when running in-street or adjacent to streets for both BRT and LRT
- 55 mph assumed along BNSF alignment for both BRT and LRT
- Travel times calculated only to Intermodal Station
- Optimized BRT travel times to Leamington Ramp estimated based on scheduled bus travel times on Marquette

Proposed DEIS Approach

- Assume posted speed limit when running in-street or adjacent to streets for both BRT and LRT. Posted speeds are being verified for use in updated travel time estimates.
- 55 mph assumed along BNSF alignment for both BRT and LRT
- BRT travel times to be initially calculated through downtown to the Leamington Ramp via Marquette Avenue transit lanes based on actual downtown bus times. Future downtown transit service plans will need to be discussed with Metro Transit to determine capacity impacts along Marquette and 2nd Avenues and potential impacts to Bottineau vehicle travel time estimates.
- LRT travel times to be calculated to Interchange, with Bottineau trains interlined with Hiawatha trains

1.3 LRT Acceleration/Deceleration Rates

Bottineau AA Approach

- LRT Acceleration = 3.0 mphps, tapered acceleration rate for speeds above after 25 mph, down to 1.5 mphps for 0 to 55 mph (AW2)
- LRT Deceleration = 3.0 mphps constant rate
- NOTE: AA Operating Plan Report incorrectly states 1.5 mphps as the deceleration rate for both LRT and BRT. This was incorrectly stated by CTG at the time of the AA work. The above-noted deceleration rate of 3.0 mphps was used in the AA work.

Proposed DEIS Approach

- Apply same acceleration/deceleration rates as used in the Alternatives Analysis. Sufficient recovery/layover time will be included in cycle time calculations to account for potential travel time variances.
- A comparison of proposed LRT and BRT acceleration and deceleration rates, and resulting time and distances to reach certain speeds is provided in Exhibits 2 through 4 at the end of this paper.

Comparison to Other Projects

- LRT New Starts projects that CTG has worked on have used the same acceleration/deceleration rates as used in the Bottineau AA (e.g., Norfolk, Denver, San Jose LRT New Starts projects).
- Exhibit 1 at the end of this paper presents acceleration and deceleration rates that have been identified by various published sources. The Minneapolis Hiawatha and Central Corridor LRT projects used the same acceleration and deceleration rates as used in the Bottineau AA.

1.4 BRT Acceleration/Deceleration Rates

Bottineau AA Approach

- BRT: Acceleration = 1.5 mphps, tapered acceleration rate for speeds above 30 mph, down to 1.0 mphps for 0 to 55 mph
- BRT Deceleration = 2.0 mphps constant
- NOTE: AA Operating Plan Report incorrectly states 1.5 mphps as the deceleration rate for both LRT and BRT. This was incorrectly stated by CTG at the time of the AA work. The above-noted deceleration rate of 2.0 mphps was used in the AA work.

Proposed DEIS Approach

- Adjust the BRT maximum acceleration rate to 2.0 mphps, tapering to a lower rate at higher speeds. The proposed acceleration speed curve fits better with data recently provided by Metro Transit. A constant 2.0 mphps deceleration rate is proposed (same as in the AA). Sufficient recovery/layover time will be included in cycle time calculations to account for potential travel time variances.
- A comparison of proposed LRT and BRT acceleration and deceleration rates, and resulting time and distances to reach certain speeds is provided in Exhibits 2 through 4 at the end of this paper.

Comparison to Other Projects

- Bus/BRT projects that CTG has worked on throughout the nation have used similar acceleration/deceleration rates as used in the Bottineau AA (e.g., Fort Collins Mason Corridor project, Virginia Beach BRT project, Lansing AA, Grand Rapids Division Avenue project).
- Cedar Avenue BRT is a recent local example that utilized these same rates.
- TCRP Report 90 identifies a rate of 1.5 mphps for acceleration and 2.0 mphps for bus deceleration, and notes the overall acceleration rate from 0 to 30 mph tends to range around 20-seconds (consistent with a 1.5 to 2.0 acceleration rate and similar to times identified in the APTA standard bus Procurement Guidelines).

1.5 Station Dwell Times

Components of Station Dwell Time

- Number of passenger boardings and alightings
- Average boarding time/passenger and alighting time per passenger through heaviest volume door
- Number of doors used for boarding and alighting
- Fare collection method
- Number of passengers inside bus/train
- Width of the doors, width of the aisle for circulation/ standing passengers.

Bottineau AA Approach

- Initial BRT Alternatives assume 30-seconds per stop – all stops
- Optimized BRT Alternatives assume 25-seconds per stop – all stops outside of downtown
- LRT Alternatives assume 20-seconds per stop – all stops
- Difference between BRT and LRT dwell times intended to reflect difference in doors per train/bus and differences in door widths and vehicle circulation space

Proposed DEIS Approach

- LRT and BRT – assume pre-boarding fare collection (consistent with AA)
- BRT – assume 3-door vehicles per Metro Transit
- BRT – assume 25-seconds for stops with medium to high ridership volumes, 20 seconds for stops with lower ridership volumes
- LRT – assume 20 seconds for stops with medium to high ridership volumes, 15 seconds for stops with low ridership volumes

- Define High/Low ridership stops based on ridership forecasts from AA (1,000 boardings/day per station as initial threshold)
- BRT – assume 30 seconds for downtown stops; refine approach based on Marquette/2nd transit speed data

Comparison to Other Projects

- Central Corridor LRT used 15 second dwells for stations with low ridership volumes, 20 seconds for all other stations.
- Cedar Avenue BRT used 20 second dwells for all station stops
- Other CTG projects have assumed 15 to 30 second dwells for BRT and LRT, with variance to account for anticipated ridership volumes. This is based on observations of station dwell times for various properties over several years (pre-boarding fare collection)
- Denver Light Rail Design Criteria (2005) uses 20 seconds per station as an average dwell
- Phoenix LRT planning assumed 20 seconds as an average station dwell

1.6 Traffic Signal Delay

General Assumptions

- Transit (BRT and LRT) will receive some level of signal prioritization
- Prioritization will be through an increase in effective green time (through early green or extended green time)
- Benefits of prioritization are reduced travel times and reduction in travel time variability

Bottineau AA Approach

- Assumes 10 seconds per signalized intersection – for both BRT and LRT
- Level of prioritization, and intersections where transit would have priority were not yet determined.

Proposed DEIS Approach

- Define intersections as major vs. minor. Use 10,000 ADT on cross street as the designation between major vs. minor.

- Include all proposed signalized intersections per DEIS plan and profile drawings (prior AA travel time estimates may not have included all proposed signals).

- Major intersections/With TSP: Assume up to 9 seconds additional green time (10% of cycle time):
  - Average signal cycle length = 90 seconds
  - Effective green time for transit = 45 seconds (50%)
  - Additional TSP time = 9 seconds (10% of cycle time)
  - Resulting max. stop time = 36 seconds (40%)
  - Probability of being stopped = 50%
  - Average delay/major intersection = 18 seconds

- Minor intersections With TSP: Assume up to 7.5 seconds additional green time (10% of cycle time):
  - Average signal cycle length = 75 seconds
  - Effective green time for transit = 45 seconds (60%)
  - Additional TSP time = 7.5 seconds (10% of cycle time)
  - Resulting max. stop time = 22.5 seconds (30%)
  - Probability of being stopped = 33%
  - Average delay/major intersection = 7.5 seconds

- Intersection delay will be confirmed/adjusted based on operational analysis.

- Designation of segments/intersections with TSP will need to be defined. If no TSP is included, there may need to be an adjustment in intersection delay length.

- Full pre-emption is assumed at street crossings along the BNSF RR.

- Above approach could be further modified to account for favorable signal progression for transit. All signal delay assumptions will be reviewed after initial travel time estimates to verify reasonableness.

Comparison to Other Projects

- Central Corridor LRT signal delay assumptions range from 5 to 15 seconds, and was determined through discussions/concurrence with project design team.
- Cedar Avenue BRT assumed 10 second average delays per signalized intersection.
- Other CTG projects typically assume a range 5 to 20 seconds of signal delay per intersection, depending on phase of the project and known project characteristics for signal priority.
- Application of up to 10% of the signal cycle consistent with LA TSP (TCRP Report 90)
- L.A. Metro Rapid project identified a 7.5% reduction in overall travel time and TriMet (Portland) reported a 5-8% reduction in overall running time where TSP was applied (TCRP Report 90).

2.0 Operating Plans

2.1 Peak Hour Train/BRT Bus Platoon Sizing

Bottineau AA Approach

- LRT: Assumed 2-car trains
- LRVs assumed to be 94 feet long with 66 seats. Passenger capacity is approximately 134 people for a normal load
- BRT buses assumed to have approximately 65 seats, accommodating as many as 90 total passengers (peak load factor = 138%)
- Route 732 buses assumed to be regular (non-BRT) bus
- Initial AA BRT: Assumed 2-bus platoons for every BRT trip

- Optimized BRT:
  - Assumed 2-bus platoons on half of BRT trips to provide sufficient capacity
  - Assumed Route 732 (Maple Grove branch) buses enter/exit guideway at Brooklyn Boulevard station
  - South of Brooklyn Boulevard, Route 732 buses form platoons with remaining half of BRT trips
  - Net effect (combined BRT + 732) at stations south of Brooklyn Boulevard is 2-bus platoon on every trip
  - North of Brooklyn Boulevard, 2-bus platoon on every other trip
  - Sensitivity analysis of 3.75 minute non-platoon headways will be completed

Proposed DEIS Approach

- LRT: Consistent with AA approach
- BRT: Assume 60-foot articulated 3-door vehicles with 50 seats and room for 30 standees; total vehicle capacity for 80 passengers

2.2 Midday/Other Time Period Train/BRT Bus Platoon Sizing

Bottineau AA Approach

- Assumed 2-car trains (LRT) and no bus platoons (BRT) for all time periods.

Proposed DEIS Approach

- Maintain assumptions from AA.

2.3 Operating Hours/Service Frequencies

Bottineau AA Approach

- LRT: Operating hours and service frequencies by time period were consistent with existing Metro Transit Hiawatha line hours and service frequencies by time period.
- BRT: Assumed same operating hours as LRT and same service frequencies as a result of platooning vehicles during peak periods.
- Optimized BRT included sensitivity test of 3.75-minute headways without platoons during peak period.

Proposed DEIS Approach

- LRT: Maintain assumptions from AA.
- BRT: Requires discussion with Metro Transit/Metropolitan Council, coordination with traffic signal work

2.4 Spare Vehicle Ratio

Bottineau AA Approach

- A 15% minimum (15% to 18% range) spare vehicle ratio was used for both BRT and LRT.

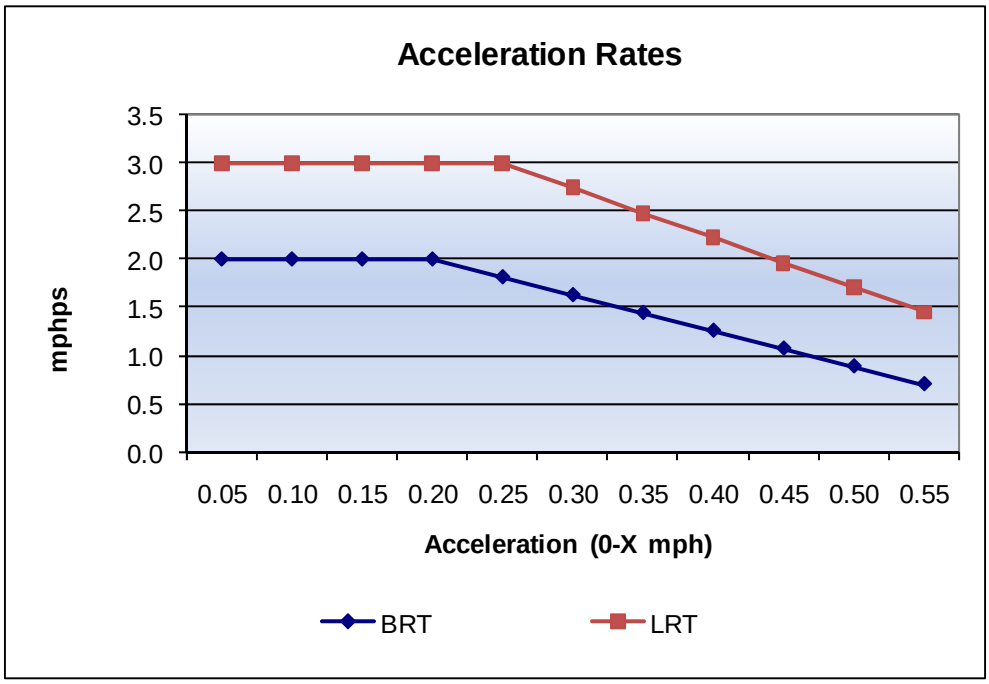
Proposed DEIS Approach

- Maintain assumptions from AA (15 to 18 % range in the spare vehicle ratio).
- Consistent with other regional transitway development projects, assume that contingency costs may be used in future to account for additional fleet purchases

Exhibit 1
Published Acceleration/Deceleration Rates for Various Light Rail Vehicles

Veh Type	Manufacturer	Vehicle	Operator	Year	Max Design Speed (mph)	Max Op Speed (mph)	Initial Accel Rate (mphps)	Service Accel Rate (mphps)	Decel Rate (mphps)	Overall Accel	Source
LR	Boeing-Vertol	Double Ended Articulated	MBTA	1976	70	52	2.8	3.1	3.5	0-50 in 37s	lightrail.com
LR	Bombardier		Tri-Met	1981	55			3.0	3.0		lightrail.com
LR	Breda Costruzioni Ferroviarie	Low Floor Double Articulated	MBTA	1997	55	55		2.8	3.5		lightrail.com
LR	Kinkisharyo	Double Ended Articulated	DART			65					lightrail.com
LR	Kinkisharyo	Double Ended Articulated	MBTA	1986	55	52		2.8	3.5		lightrail.com
LR	Kinkisharyo	Double Ended Articulated	NJT	2000	55	55		3.0	3.0		lightrail.com
LR	Siemens SD-100		RTD & San Diego		55	55		3.0	3.0		lightrail.com
LR	Siemens SD-400	Double Ended Articulated	Port Authority		50			3.0	3.7		lightrail.com
LR	Siemens SD-600A	Double Ended, Double Artic	Tri-Met	1996	58.5	55		3.1	3.0		lightrail.com
LR	Siemens U2A	Double Ended Articulated	SacRT	1987	50	50		2.5	3.5		lightrail.com
LR	Siemens U4	Bi-directional Articulated	Frankfurt		49.7			2.2	3.6		lightrail.com
LR	UTDC	Double Ended Articulated	TTC	1987			2.7		3.6		lightrail.com
LR	UTDC	Double Ended Articulated	SCVTA	1987	65	55		3.0	3.5		lightrail.com
LR	RTD Design Manual		RTD	2000				3.0	3.5	0-56 in 35s	Denver RTD
LR	CAF	Double Ended Articulated	SacRT	2002	62	55		3.0	3.0		SacRT
LR	Siemens S70	Bi-directional Articulated	Houston, MSP, Charl,Port, etc.	2005	71.5	66		3.0	3.0	0-25 in 9.5s 0-50 in 29s	Siemens
LR	Siemens S71	Bi-directional Articulated	San Diego	2005	71.5	55		3.0	3.0		Siemens
LR	Siemens P2000	Bi-directional Articulated	LACMTA	1991		70		3.0	3.5		Siemens
LR	Siemens SD660	Bi-directional Articulated	Portland	2005		55		3.0	3.0		Siemens
LR	Siemens SD460	Bi-directional Articulated	St. Louis	2005		65		3.0	3.0		Siemens
LR	Siemens SD160	Bi-directional Articulated	Calgary	2005		50		2.8	3.0		Siemens
LR	Siemens SD160	Bi-directional Articulated	Salt Lake City	2005		50		2.8	3.0		Siemens
LR	Breda Costruzioni Ferroviarie	Bi-directional Articulated	Cleveland			55		3.0	4.0	0-50 in 25s	Breda
LR	Breda Costruzioni Ferroviarie	Bi-directional Articulated	MUNI	1991		50		3.2	4.0		Breda

Exhibit 2
LRT and BRT Acceleration and Deceleration Rates



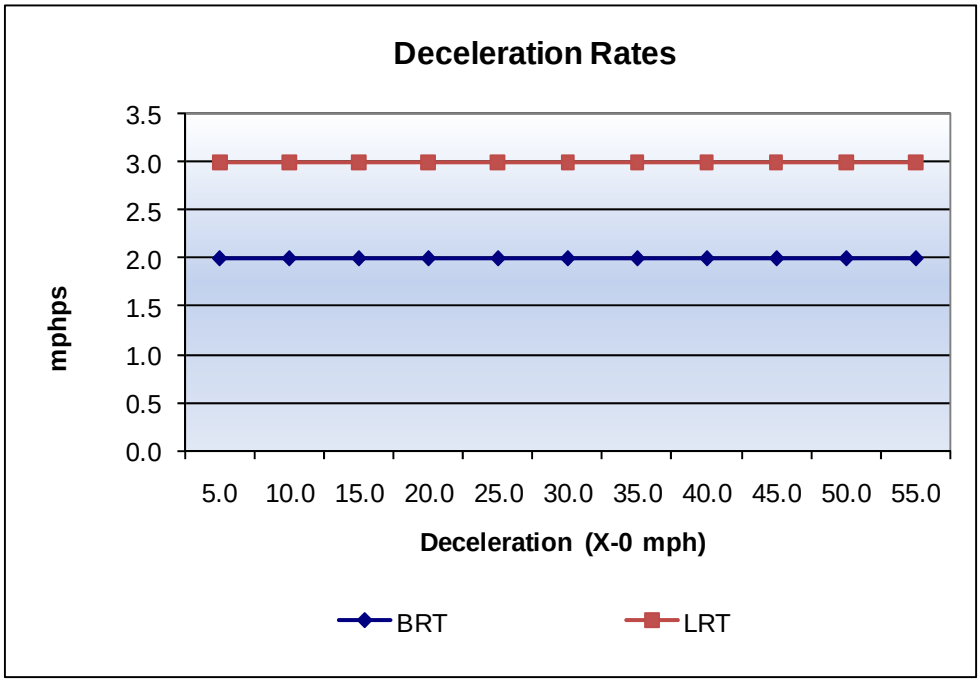
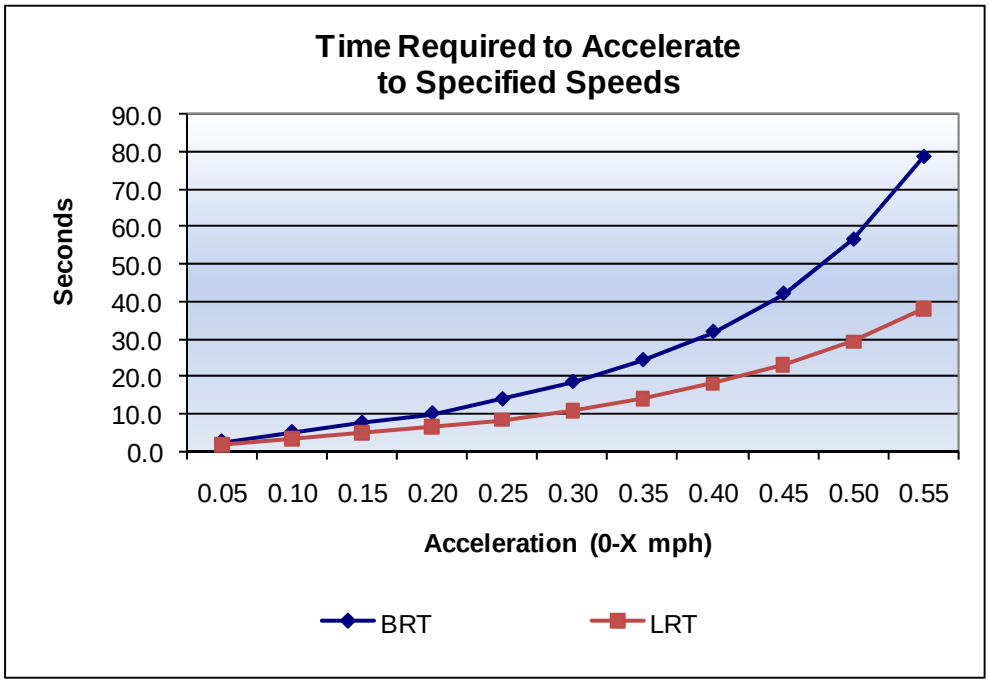


Exhibit 3
LRT and BRT Time Required to Reach Certain Speeds



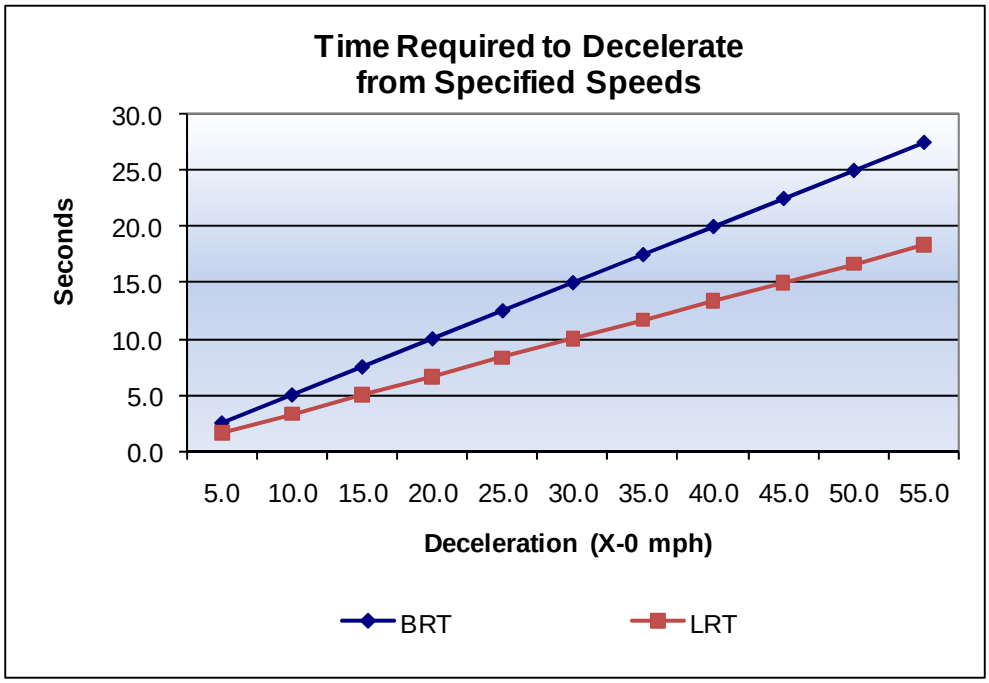
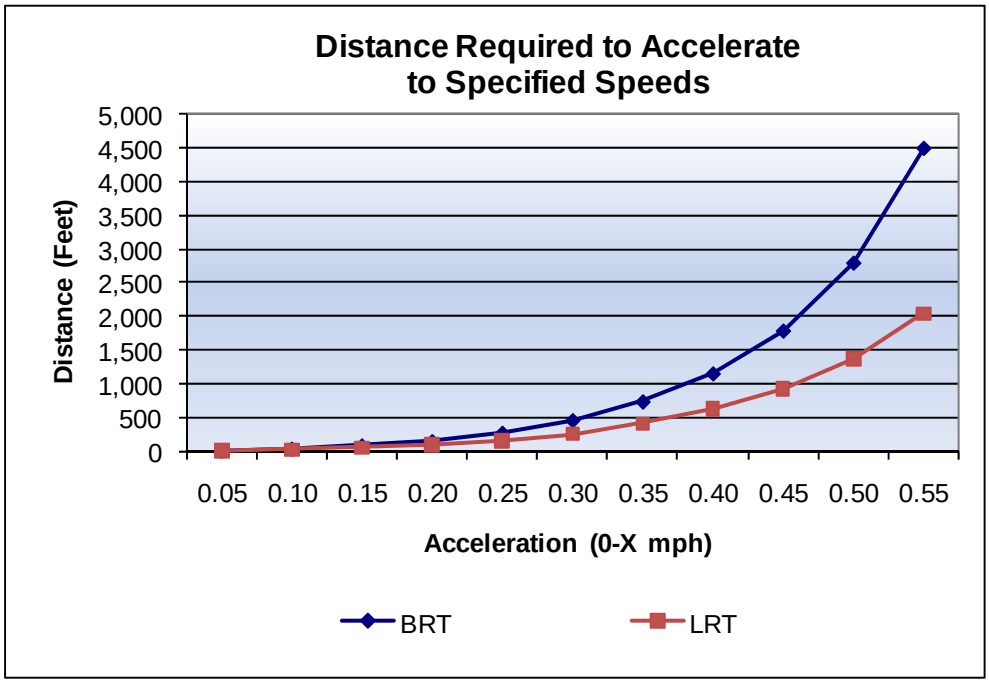
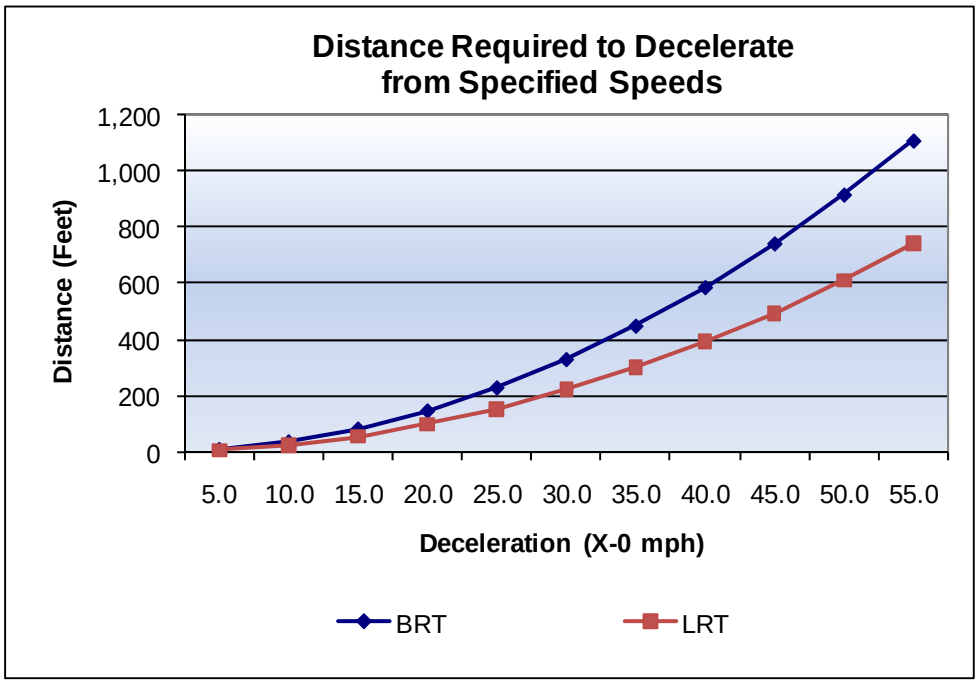


Exhibit 4
LRT and BRT Distance Required to Reach Certain Speeds





APPENDIX C
BOTTINEAU CORRIDOR
LRT AND BRT
STATION-TO-STATION TRAVEL TIMES

LRT ALIGNMENT: A-C-D1

Station/Location	Max Spd. (mph)	Station	Distance Miles	Total	Run Time (hr:min:sec)	Delay Time (hr:min:sec)	Dwell Time (hr:min:sec)	Total Time (hr:min:sec)
Hemlock Ln Station		**100,160**		**0**			**0:00:00**	**0:00:00**
	25		0.04		0:00:09	0:00:00		
Begin curve (A 1) after Hemlock Ln Sta.		100,348		0.04			0:00:00	0:00:09
	30		0.14		0:00:17	0:00:00		
End curve (A 1) after Hemlock Ln Sta., Begin curve (A 2)		101,095		0.18			0:00:00	0:00:26
	30		0.08		0:00:09	0:00:00		
End curve (A 2) after Hemlock Ln Sta.		101,499		0.25			0:00:00	0:00:35
	30		0.21		0:00:25	0:00:07		
Begin curve (A 3) after Zachary Ln		102,609		0.46			0:00:00	0:01:08
	35		0.14		0:00:14	0:00:07		
End curve (A 3), begin curve (A 4) before unnamed road		103,335		0.60			0:00:00	0:01:29
	35		0.13		0:00:14	0:00:00		
End curve (A 4) before unnamed road		104,040		0.73			0:00:00	0:01:43
	35		0.21		0:00:27	0:00:00		
Zachary Ln Station		**105,144**		**0.94**			**0:00:15**	**0:02:25**
	55		0.67		0:01:06	0:00:00		
Hennepin Technical College Station		**108,692**		**1.62**			**0:00:15**	**0:03:46**
	20		0.04		0:00:10	0:00:00		
Begin curve (A 5) before Northland Dr		108,891		1.65			0:00:00	0:03:56
	20		0.07		0:00:13	0:00:07		
End curve (A 5) after Northland Dr		109,284		1.73			0:00:00	0:04:17
	40		0.33		0:00:32	0:00:07		
Begin curve (A 6) at Zealand Ave		111,034		2.06			0:00:00	0:04:56
	40		0.08		0:00:08	0:00:00		
End curve (A 6) at Zealand Ave, begin curve (A 7) at aerial structure		111,480		2.14			0:00:00	0:05:04
	30		0.18		0:00:22	0:00:00		
End curve (A 7) at BNSF ROW		112,450		2.33			0:00:00	0:05:26
	55		0.78		0:01:05	0:00:00		
71st Ave Station		**116,555**		**3.11**			**0:00:15**	**0:06:46**
Station adjustment	55		1.00		0:01:27	0:00:00		
63rd Ave Station		**304,427**		**4.10**			**0:00:20**	**0:08:33**
	55		1.22		0:01:42	0:00:00		
Bass Lake Rd Station		**310,869**		**5.32**			**0:00:15**	**0:10:30**
	55		1.87		0:02:24	0:00:00		
Robbinsdale Transit Center Station		**320,722**		**7.19**			**0:00:20**	**0:13:14**
Station adjustment	55		2.29		0:02:52	0:00:00		
Golden Valley Rd Station		**408,689**		**9.48**			**0:00:15**	**0:16:21**
	55		1.18		0:01:34	0:00:00		
Begin curve (D1 1) at TH 55		414,894		10.65			0:00:00	0:17:55
	15		0.07		0:00:17	0:00:00		
End curve (D1 1) on TH 55		415,275		10.73			0:00:00	0:18:12
	35		0.11		0:00:14	0:00:07		
Begin curve (D1 2) at TH 55		415,877		10.84			0:00:00	0:18:33
	35		0.15		0:00:15	0:00:00		
End curve (D1 2) on TH 55		416,659		10.99			0:00:00	0:18:48
	35		0.12		0:00:18	0:00:18		
Penn Ave Station		**417,305**		**11.11**			**0:00:15**	**0:19:39**
	35		0.70		0:01:24	0:00:23		
Van White Memorial Blvd Station		**420,996**		**11.81**			**0:00:15**	**0:21:41**
	35		0.44		0:00:54	0:00:51		
Begin curve (D1 3) at 7th St		423,338		12.25			0:00:00	0:23:26
	15		0.03		0:00:08	0:00:07		
End curve (D1 3) after 7th St		423,514		12.29			0:00:00	0:23:41
	15		0.02		0:00:05	0:00:00		
Begin curve (D1 4) at aerial interchange		423,634		12.31			0:00:00	0:23:46
	15		0.03		0:00:08	0:00:00		
End curve (D1 4) at aerial interchange		423,809		12.34			0:00:00	0:23:54
	15		0.08		0:00:20	0:00:07		
Begin curve (D1 5) at aerial interchange		424,255		12.43			0:00:00	0:24:22
	15		0.05		0:00:12	0:00:00		
End curve (D1 5) at aerial interchange		424,516		12.48			0:00:00	0:24:34
	15		0.09		0:00:22	0:00:00		
Begin curve (D1 6)		424,993		12.57			0:00:00	0:24:56
	10		0.02		0:00:06	0:00:00		
End curve (D1 6)		425,082		12.58			0:00:00	0:25:02
	10		0.04		0:00:15	0:00:00		
The Interchange at Target Field Station		**425,284**		**12.62**			**0:00:20**	**0:25:37**
				12.62	**0:20:28**	**0:02:24**	**0:02:45**	**0:25:37**
							Average Speed =	**29.56**

LRT ALIGNMENT: A-C-D2

Station/Location	Max Spd. (mph)	Station	Distance Miles	Total	Run Time (hr:min:sec)	Delay Time (hr:min:sec)	Dwell Time (hr:min:sec)	Total Time (hr:min:sec)
Hemlock Ln Station		**100,160**		**0**			**0:00:00**	**0:00:00**
	25		0.04		0:00:09	0:00:00		
Begin curve (A 1) after Hemlock Ln Sta.		100,348		0.04			0:00:00	0:00:09
	30		0.14		0:00:17	0:00:00		
End curve (A 1) after Hemlock Ln Sta., Begin curve (A 2)		101,095		0.18			0:00:00	0:00:26
	30		0.08		0:00:09	0:00:00		
End curve (A 2) after Hemlock Ln Sta.		101,499		0.25			0:00:00	0:00:35
	30		0.21		0:00:25	0:00:07		
Begin curve (A 3) after Zachary Ln		102,609		0.46			0:00:00	0:01:08
	35		0.14		0:00:14	0:00:07		
End curve (A 3), begin curve (A 4) before unnamed road		103,335		0.60			0:00:00	0:01:29
	35		0.13		0:00:14	0:00:00		
End curve (A 4) before unnamed road		104,040		0.73			0:00:00	0:01:43
	35		0.21		0:00:27	0:00:00		
Zachary Ln Station		**105,144**		**0.94**			**0:00:15**	**0:02:25**
	55		0.67		0:01:06	0:00:00		
Hennepin Technical College Station		**108,692**		**1.62**			**0:00:15**	**0:03:46**
	20		0.04		0:00:10	0:00:00		
Begin curve (A 5) before Northland Dr		108,891		1.65			0:00:00	0:03:56
	20		0.07		0:00:13	0:00:07		
End curve (A 5) after Northland Dr		109,284		1.73			0:00:00	0:04:17
	40		0.33		0:00:32	0:00:07		
Begin curve (A 6) at Zealand Ave		111,034		2.06			0:00:00	0:04:56
	40		0.08		0:00:08	0:00:00		
End curve (A 6) at Zealand Ave, begin curve (A 7) at aerial structure		111,480		2.14			0:00:00	0:05:04
	30		0.18		0:00:22	0:00:00		
End curve (A 7) at BNSF ROW		112,450		2.33			0:00:00	0:05:26
	55		0.78		0:01:05	0:00:00		
71st Ave Station		**116,555**		**3.11**			**0:00:15**	**0:06:46**
Station adjustment	55		1.00		0:01:27	0:00:00		
63rd Ave Station		**304,427**		**4.10**			**0:00:20**	**0:08:33**
	55		1.22		0:01:42	0:00:00		
Bass Lake Rd Station		**310,869**		**5.32**			**0:00:15**	**0:10:30**
	55		1.87		0:02:24	0:00:00		
Robbinsdale Transit Center Station		**320,722**		**7.19**			**0:00:20**	**0:13:14**
	55		0.64		0:00:55	0:00:00		
End Seg. C, Begin Seg. D2, Begin curve at N 36th Ave		324,124		7.83			0:00:00	0:14:09
Station adjustment	55		0.33		0:00:26	0:00:00		
Begin curve (D2 1) at Indiana Ave		501,745		8.16			0:00:00	0:14:35
	15		0.07		0:00:17	0:00:00		
End curve (D2 1)		502,109		8.23			0:00:00	0:14:52
	35		0.16		0:00:19	0:00:15		
Begin curve (D2 2) after France Ave/Oakdale Ave.		502,978		8.40			0:00:00	0:15:26
	35		0.10		0:00:11	0:00:00		
End curve (D2 3) near Drew Ave		503,518		8.50			0:00:00	0:15:37
	35		0.11		0:00:17	0:00:00		
North Memorial Medical Center Station		**504,112**		**8.61**			**0:00:15**	**0:16:09**
	20		0.04		0:00:11	0:00:00		
Begin curve (D2 4) out of North Mem. Med. Ctr. Sta.		504,335		8.65			0:00:00	0:16:20
	20		0.08		0:00:15	0:00:00		
End curve (D2 4) in Botineau Blvd median		504,779		8.74			0:00:00	0:16:35
	40		0.15		0:00:16	0:00:00		
Begin curve (D2 5)		505,571		8.89			0:00:00	0:16:51
	40		0.05		0:00:04	0:00:00		
End curve (D2 5) before Victory Mem. Pkwy overpass		505,827		8.94			0:00:00	0:16:55
	45		0.10		0:00:08	0:00:00		
Begin curve (D2 6)		506,334		9.03			0:00:00	0:17:03
	45		0.06		0:00:05	0:00:07		
End curve (D2 6)		506,646		9.09			0:00:00	0:17:16
	45		0.21		0:00:18	0:00:00		
Begin curve (D2 7)		507,779		9.31			0:00:00	0:17:34
	35		0.05		0:00:05	0:00:00		
End curve (D2 7)		508,061		9.36			0:00:00	0:17:38
	35		0.19		0:00:20	0:00:07		
Begin curve (D2 8)		509,045		9.55			0:00:00	0:18:06
	20		0.05		0:00:10	0:00:00		
End curve (D2 8)		509,324		9.60			0:00:00	0:18:16
	20		0.22		0:00:41	0:00:00		
Begin curve (D2 9) at Penn Ave		510,497		9.82			0:00:00	0:18:57
	10		0.02		0:00:08	0:00:18		
End curve (D2 9) at Penn Ave		510,616		9.84			0:00:00	0:19:23
	10		0.06		0:00:22	0:00:00		
West Broadway/Penn Ave. Station		**510,912**		**9.90**			**0:00:15**	**0:20:00**
	35		0.83		0:01:37	0:00:23		
Penn Ave./ Plymouth Ave. Station		**515,279**		**10.73**			**0:00:15**	**0:22:14**
	35		0.44		0:00:54	0:00:00		
Begin curve (D2 10) at TH 55		517,577		11.16			0:00:00	0:23:08
	10		0.03		0:00:12	0:00:18		
End curve (D2 10) at TH 55		517,751		11.20			0:00:00	0:23:38
	35		0.73		0:01:24	0:00:23		
Van White Memorial Blvd Station		**521,592**		**11.92**			**0:00:15**	**0:25:40**
	35		0.44		0:00:54	0:00:51		
Begin curve (D2 11) at 7th St		523,934		12.37			0:00:00	0:27:25
	15		0.09		0:00:21	0:00:07		
End curve (D2 12) after 7th St		524,406		12.46			0:00:00	0:27:53
	15		0.08		0:00:20	0:00:00		
Begin curve (D2 13) at aerial interchange		524,851		12.54			0:00:00	0:28:13
	15		0.05		0:00:12	0:00:00		
End curve (D2 13) at aerial interchange		525,113		12.59			0:00:00	0:28:25
	15		0.09		0:00:22	0:00:07		
Begin curve (D2 14) at aerial interchange		525,589		12.68			0:00:00	0:28:55
	10		0.02		0:00:06	0:00:00		
End curve (D2 14) at aerial interchange		525,679		12.70			0:00:00	0:29:01
	10		0.04		0:00:15	0:00:00		
The Interchange at Target Field Station		**525,880**		**12.73**			**0:00:20**	**0:29:36**
				12.73	**0:23:09**	**0:03:27**	**0:03:00**	**0:29:36**
							Average Speed =	**25.81**

LRT ALIGNMENT: B-C-D1

Station/Location	Max Spd. (mph)	Station	Distance Miles	Total	Run Time (hr:min:sec)	Delay Time (hr:min:sec)	Dwell Time (hr:min:sec)	Total Time (hr:min:sec)
97th Avenue Station		**200,160**		**0**			**0:00:00**	**0:00:00**
	20		0.03		0:00:09	0:00:00		
Begin curve (B 1) out of station		200,340		0.03			0:00:00	0:00:09
	20		0.03		0:00:06	0:00:00		
End curve (B 2) out of station		200,513		0.07			0:00:00	0:00:15
	30		0.04		0:00:06	0:00:00		
Begin curve (B 3) at 97th Ave		200,743		0.11			0:00:00	0:00:21
	30		0.16		0:00:19	0:00:00		
End curve (B 3) at 97th Ave		201,597		0.27			0:00:00	0:00:40
	40		0.40		0:00:39	0:00:00		
Begin curve (B 4)		203,731		0.68			0:00:00	0:01:19
	20		0.05		0:00:09	0:00:00		
End curve (B 4), begin curve (B 5)		203,990		0.73			0:00:00	0:01:28
	20		0.05		0:00:09	0:00:00		
End curve (B 5)		204,244		0.77			0:00:00	0:01:37
	20		0.16		0:00:33	0:00:07		
93rd Avenue Station		**205,102**		**0.94**			**0:00:15**	**0:02:33**
	45		0.99		0:01:36	0:00:40		
85th Avenue Station		**210,331**		**1.93**			**0:00:15**	**0:05:04**
	45		1.00		0:01:36	0:00:33		
Brooklyn Blvd Station		**215,611**		**2.93**			**0:00:15**	**0:07:28**
	40		0.25		0:00:32	0:00:07		
Begin curve (B 6) at 75th Ave		216,939		3.18			0:00:00	0:08:07
	20		0.08		0:00:14	0:00:07		
End curve at (B 6) 75th Ave		217,338		3.25			0:00:00	0:08:29
	20		0.13		0:00:23	0:00:25		
Begin curve (B 7) at Bottineau Blvd.		218,019		3.38			0:00:00	0:09:17
	20		0.12		0:00:21	0:00:18		
End curve (B 7) at Bottineau Blvd.		218,644		3.50			0:00:00	0:09:56
Station adjustment	50		1.25		0:01:44	0:00:00		
63rd Ave Station		**304,430**		**4.75**			**0:00:20**	**0:12:00**
	55		1.22		0:01:42	0:00:00		
Bass Lake Rd Station		**310,870**		**5.97**			**0:00:15**	**0:13:57**
	55		1.87		0:02:24	0:00:00		
Robbinsdale Transit Center Station		**320,722**		**7.84**			**0:00:20**	**0:16:41**
Station adjustment	55		2.29		0:02:52	0:00:00		
Golden Valley Rd Station		**408,689**		**10.13**			**0:00:15**	**0:19:48**
	55		1.18		0:01:34	0:00:00		
Begin curve (D1 1) at TH 55		414,894		11.30			0:00:00	0:21:22
	15		0.07		0:00:17	0:00:00		
End curve (D1 1) on TH 55		415,275		11.37			0:00:00	0:21:40
	35		0.11		0:00:14	0:00:07		
Begin curve (D1 2) at TH 55		415,877		11.49			0:00:00	0:22:01
	35		0.15		0:00:15	0:00:00		
End curve (D1 2) on TH 55		416,659		11.64			0:00:00	0:22:16
	35		0.12		0:00:18	0:00:18		
Penn Ave Station		**417,305**		**11.76**			**0:00:15**	**0:23:07**
	35		0.70		0:01:24	0:00:23		
Van White Memorial Blvd Station		**420,996**		**12.46**			**0:00:15**	**0:25:08**
	35		0.44		0:00:54	0:00:51		
Begin curve (D1 3) at 7th St		423,338		12.90			0:00:00	0:26:53
	15		0.03		0:00:08	0:00:07		
End curve (D1 3) after 7th St		423,514		12.93			0:00:00	0:27:09
	15		0.02		0:00:05	0:00:00		
Begin curve (D1 4) at aerial interchange		423,634		12.96			0:00:00	0:27:14
	15		0.03		0:00:08	0:00:00		
End curve (D1 4) at aerial interchange		423,809		12.99			0:00:00	0:27:22
	15		0.08		0:00:20	0:00:07		
Begin curve (D1 5) at aerial interchange		424,255		13.07			0:00:00	0:27:49
	15		0.05		0:00:12	0:00:00		
End curve (D1 5) at aerial interchange		424,516		13.12			0:00:00	0:28:01
	15		0.09		0:00:22	0:00:00		
Begin curve (D1 6)		424,993		13.21			0:00:00	0:28:23
	10		0.02		0:00:06	0:00:00		
End curve (D1 6)		425,082		13.23			0:00:00	0:28:29
	10		0.04		0:00:15	0:00:00		
The Interchange at Target Field Station		**425,284**		**13.27**			**0:00:20**	**0:29:04**
				13.27	**0:22:06**	**0:04:14**	**0:02:45**	**0:29:04**
							Average Speed =	**27.39**

LRT ALIGNMENT: B-C-D2

Station/Location	Max Spd. (mph)	Station	Distance Miles	Total	Run Time (hr:min:sec)	Delay Time (hr:min:sec)	Dwell Time (hr:min:sec)	Total Time (hr:min:sec)
97th Avenue Station		**200,160**		**0**			**0:00:00**	**0:00:00**
	20		0.034		0:00:09	0:00:00		
Begin curve (B 1) out of station		200,340		0.03			0:00:00	0:00:09
	20		0.033		0:00:06	0:00:00		
End curve (B 2) out of station		200,513		0.07			0:00:00	0:00:15
	30		0.044		0:00:06	0:00:00		
Begin curve (B 3) at 97th Ave		200,743		0.11			0:00:00	0:00:21
	30		0.162		0:00:19	0:00:00		
End curve (B 3) at 97th Ave		201,597		0.27			0:00:00	0:00:40
	40		0.404		0:00:39	0:00:00		
Begin curve (B 4)		203,731		0.68			0:00:00	0:01:19
	20		0.049		0:00:09	0:00:00		
End curve (B 4), begin curve (B 5)		203,990		0.73			0:00:00	0:01:28
	20		0.048		0:00:09	0:00:00		
End curve (B 5)		204,244		0.77			0:00:00	0:01:37
	20		0.163		0:00:33	0:00:07		
93rd Avenue Station		**205,102**		**0.94**			**0:00:15**	**0:02:33**
	45		0.990		0:01:36	0:00:40		
85th Avenue Station		**210,331**		**1.93**			**0:00:15**	**0:05:04**
	45		1.000		0:01:36	0:00:33		
Brooklyn Blvd Station		**215,611**		**2.93**			**0:00:15**	**0:07:28**
	40		0.252		0:00:32	0:00:07		
Begin curve (B 6) at 75th Ave		216,939		3.18			0:00:00	0:08:07
	20		0.076		0:00:14	0:00:07		
End curve at (B 6) 75th Ave		217,338		3.25			0:00:00	0:08:29
	20		0.129		0:00:23	0:00:25		
Begin curve (B 7) at Bottineau Blvd.		218,019		3.38			0:00:00	0:09:17
	20		0.12		0:00:21	0:00:18		
End curve (B 7) at Bottineau Blvd.		218,644		3.50			0:00:00	0:09:56
Station adjustment	50		1.25		0:01:44	0:00:00		
63rd Ave Station		**304,430**		**4.75**			**0:00:20**	**0:12:00**
	55		1.22		0:01:42	0:00:00		
Bass Lake Rd Station		**310,870**		**5.97**			**0:00:15**	**0:13:57**
	55		1.87		0:02:24	0:00:00		
Robbinsdale Transit Center Station		**320,722**		**7.84**			**0:00:20**	**0:16:41**
	55		0.64		0:00:55	0:00:00		
End Seg. C, Begin Seg. D2, Begin curve at N 36th Ave		324,124		8.48			0:00:00	0:17:37
Station adjustment	55		0.33		0:00:26	0:00:00		
Begin curve (D2 1) at Indiana Ave		501,745		8.81			0:00:00	0:18:03
	15		0.07		0:00:17	0:00:00		
End curve (D2 1)		502,109		8.88			0:00:00	0:18:20
	35		0.16		0:00:19	0:00:15		
Begin curve (D2 2) after France Ave/Oakdale Ave.		502,978		9.04			0:00:00	0:18:54
	35		0.10		0:00:11	0:00:00		
End curve (D2 3) near Drew Ave		503,518		9.15			0:00:00	0:19:05
	35		0.11		0:00:17	0:00:00		
North Memorial Medical Center Station		**504,112**		**9.26**			**0:00:15**	**0:19:37**
	20		0.04		0:00:11	0:00:00		
Begin curve (D2 4) out of North Mem. Med. Ctr. Sta.		504,335		9.30			0:00:00	0:19:48
	20		0.08		0:00:15	0:00:00		
End curve (D2 4) in Botineau Blvd median		504,779		9.39			0:00:00	0:20:03
	40		0.15		0:00:16	0:00:00		
Begin curve (D2 5)		505,571		9.54			0:00:00	0:20:18
	40		0.05		0:00:04	0:00:00		
End curve (D2 5) before Victory Mem. Pkwy overpass		505,827		9.58			0:00:00	0:20:22
	45		0.10		0:00:08	0:00:00		
Begin curve (D2 6)		506,334		9.68			0:00:00	0:20:30
	45		0.06		0:00:05	0:00:07		
End curve (D2 6)		506,646		9.74			0:00:00	0:20:43
	45		0.21		0:00:18	0:00:00		
Begin curve (D2 7)		507,779		9.95			0:00:00	0:21:01
	35		0.05		0:00:05	0:00:00		
End curve (D2 7)		508,061		10.01			0:00:00	0:21:06
	35		0.19		0:00:20	0:00:07		
Begin curve (D2 8)		509,045		10.19			0:00:00	0:21:33
	20		0.05		0:00:10	0:00:00		
End curve (D2 8)		509,324		10.25			0:00:00	0:21:43
	20		0.22		0:00:41	0:00:00		
Begin curve (D2 9) at Penn Ave		510,497		10.47			0:00:00	0:22:24
	10		0.02		0:00:08	0:00:18		
End curve (D2 9) at Penn Ave		510,616		10.49			0:00:00	0:22:51
	10		0.06		0:00:22	0:00:00		
West Broadway/Penn Ave. Station		**510,912**		**10.55**			**0:00:15**	**0:23:27**
	35		0.83		0:01:37	0:00:23		
Penn Ave./ Plymouth Ave. Station		**515,279**		**11.37**			**0:00:15**	**0:25:42**
	35		0.44		0:00:54	0:00:00		
Begin curve (D2 10) at TH 55		517,577		11.81			0:00:00	0:26:36
	10		0.03		0:00:12	0:00:18		
End curve (D2 10) at TH 55		517,751		11.84			0:00:00	0:27:06
	35		0.73		0:01:24	0:00:23		
Van White Memorial Blvd Station		**521,592**		**12.57**			**0:00:15**	**0:29:07**
	35		0.44		0:00:54	0:00:51		
Begin curve (D2 11) at 7th St		523,934		13.01			0:00:00	0:30:52
	15		0.09		0:00:21	0:00:07		
End curve (D2 12) after 7th St		524,406		13.10			0:00:00	0:31:21
	15		0.08		0:00:20	0:00:00		
Begin curve (D2 13) at aerial interchange		524,851		13.19			0:00:00	0:31:41
	15		0.05		0:00:12	0:00:00		
End curve (D2 13) at aerial interchange		525,113		13.24			0:00:00	0:31:53
	15		0.09		0:00:22	0:00:07		
Begin curve (D2 14) at aerial interchange		525,589		13.33			0:00:00	0:32:22
	10		0.02		0:00:06	0:00:00		
End curve (D2 14) at aerial interchange		525,679		13.34			0:00:00	0:32:28
	10		0.04		0:00:15	0:00:00		
The Interchange at Target Field Station		**525,880**		**13.38**			**0:00:20**	**0:33:03**
				13.38	**0:24:47**	**0:05:16**	**0:03:00**	**0:33:03**
							Average Speed =	**24.29**

BRT ALIGNMENT: 732-C-D1

Station/Location	Max Spd. (mph)	Station*	Distance Feet	Distance Miles	Distance Total	Run Time (hr:min:sec)	Delay Time (hr:min:sec)	Dwell Time (hr:min:sec)	Total Time (hr:min:sec)
Maple Grove Transit Station (MGTS)		***100,090***			***0.00***			**0:00:00**	**0:00:00**
	35		*1,490*	*0.28*		0:00:42	0:00:15		
Begin turn Main St at Hemlock Ln		*101,580*			*0.28*			0:00:00	0:00:57
	15		*210*	*0.04*		0:00:10	0:00:00		
End turn Main St at Hemlock Ln		*101,790*			*0.32*			0:00:00	0:01:07
	35		*1,110*	*0.21*		0:00:28	0:00:18		
Begin turn Hemlock Ln at Elm Creek Blvd/77th Ave/CR 103		*102,900*			*0.53*			0:00:00	0:01:53
	15		*300*	*0.06*		0:00:14	0:00:00		
End turn Hemlock Ln at Elm Creek Blvd/77th Ave/CR 103		*103,200*			*0.59*			0:00:00	0:02:07
	15		*250*	*0.05*		0:00:15	0:00:00		
Elm Creek Bld./Hemlock Lane Stop		***103,450***			***0.64***			**0:00:20**	**0:02:42**
	45		*4,541*	*0.86*		0:01:35	0:00:23		
Revere Lane Stop		***107,991***			***1.50***			**0:00:20**	**0:05:00**
	45		*4,118*	*0.78*		0:01:29	0:01:01		
Hennepin Technical College Stop		***112,109***			***2.28***			**0:00:20**	**0:07:50**
Station adjustment	35		*4,798*	*0.91*		0:01:46	0:00:37		
Begin turn at 77th Ave/Broadway		*215,411*			*3.19*			0:00:00	0:10:13
	15		*100*	*0.02*		0:00:05	0:00:18		
End turn at 77th Ave/Broadway		*215,511*			*3.20*			0:00:00	0:10:36
	15		*100*	*0.02*		0:00:08	0:00:00		
Brooklyn Blvd Station		**215,611**			**3.22**			**0:00:20**	**0:11:05**
	35		1,328	0.25		0:00:37	0:00:07		
Begin curve (B 6) at 75th Ave		216,939			3.47			0:00:00	0:11:49
	20		399	0.08		0:00:14	0:00:07		
End curve at (B 6) 75th Ave		217,338			3.55			0:00:00	0:12:11
	20		681	0.13		0:00:23	0:00:25		
Begin curve (B 7) at Bottineau Blvd.		218,019			3.68			0:00:00	0:12:59
	20		625	0.12		0:00:21	0:00:18		
End curve (B 7) at Bottineau Blvd.		218,644			3.80			0:00:00	0:13:38
Station adjustment	55		6,718	1.27		0:01:52	0:00:00		
63rd Ave Station		**304,427**			**5.07**			**0:00:25**	**0:15:55**
	55		6,442	1.22		0:01:56	0:00:00		
Bass Lake Rd Station		**310,869**			**6.29**			**0:00:20**	**0:18:11**
	55		9,853	1.87		0:02:39	0:00:00		
Robbinsdale Transit Center Station		**320,722**			**8.16**			**0:00:25**	**0:21:15**
Station adjustment	55		12,091	2.29		0:03:06	0:00:00		
Golden Valley Rd Station		**408,689**			**10.45**			**0:00:20**	**0:24:41**
	55		6,205	1.18		0:01:47	0:00:00		
Begin curve (D1 1) at TH 55		414,894			11.62			0:00:00	0:26:28
	15		381	0.07		0:00:17	0:00:00		
End curve (D1 1) on TH 55		415,275			11.69			0:00:00	0:26:45
	15		602	0.11		0:00:27	0:00:07		
Begin curve (D1 2) at TH 55		415,877			11.81			0:00:00	0:27:19
	35		782	0.15		0:00:19	0:00:00		
End curve (D1 2) on TH 55		416,659			11.96			0:00:00	0:27:38
	35		646	0.12		0:00:21	0:00:18		
Penn Ave Station		**417,305**			**12.08**			**0:00:20**	**0:28:37**
	35		3,691	0.70		0:01:31	0:00:23		
Van White Memorial Blvd Station		**420,996**			**12.78**			**0:00:20**	**0:30:51**
	35		*2,112*	*0.40*		0:01:00	0:00:51		
Border Avenue		***423,108***			***13.18***			**0:00:25**	**0:33:07**
					13.18	**0:23:42**	**0:05:30**	**0:03:55**	**0:33:07**
								Average Speed =	**23.87**

BRT ALIGNMENT: B-C-D1

Station/Location	Max Spd. (mph)	Station	Distance Feet	Distance Miles	Distance Total	Run Time (hr:min:sec)	Delay Time (hr:min:sec)	Dwell Time (hr:min:sec)	Total Time (hr:min:sec)
97th Avenue Station		**200,160**			**0**			**0:00:00**	**0:00:00**
	20		180	0.03		0:00:11	0:00:00		
Begin curve (B 1) out of station		200,340			0.03			0:00:00	0:00:11
	20		173	0.03		0:00:06	0:00:00		
End curve (B 2) out of station		200,513			0.07			0:00:00	0:00:17
	20		230	0.04		0:00:08	0:00:00		
Begin curve (B 3) at 97th Ave		200,743			0.11			0:00:00	0:00:25
	30		854	0.16		0:00:21	0:00:00		
End curve (B 3) at 97th Ave		201,597			0.27			0:00:00	0:00:46
	45		2,134	0.40		0:00:39	0:00:00		
Begin curve (B 4)		203,731			0.68			0:00:00	0:01:25
	20		513	0.10		0:00:17	0:00:00		
End curve (B 5)		204,244			0.77			0:00:00	0:01:42
	20		858	0.16		0:00:34	0:00:00		
93rd Avenue Station		**205,102**			**0.94**			**0:00:20**	**0:02:36**
	45		5,229	0.99		0:01:45	0:00:40		
85th Avenue Station		**210,331**			**1.93**			**0:00:20**	**0:05:21**
	45		5,280	1.00		0:01:46	0:00:33		
Brooklyn Blvd Station		**215,611**			**2.93**			**0:00:20**	**0:08:00**
	35		1,328	0.25		0:00:37	0:00:07		
Begin curve (B 6) at 75th Ave		216,939			3.18			0:00:00	0:08:45
	20		399	0.08		0:00:14	0:00:07		
End curve at (B 6) 75th Ave		217,338			3.25			0:00:00	0:09:06
	20		681	0.13		0:00:23	0:00:25		
Begin curve (B 7) at Bottineau Blvd.		218,019			3.38			0:00:00	0:09:55
	20		625	0.12		0:00:21	0:00:18		
End curve (B 7) at Bottineau Blvd.		218,644			3.50			0:00:00	0:10:34
Station adjustment	55		6,718	1.27		0:01:52	0:00:00		
63rd Ave Station		**304,427**			**4.77**			**0:00:25**	**0:12:51**
	55		6,442	1.22		0:01:56	0:00:00		
Bass Lake Rd Station		**310,869**			**5.99**			**0:00:20**	**0:15:07**
	55		9,853	1.87		0:02:39	0:00:00		
Robbinsdale Transit Center Station		**320,722**			**7.86**			**0:00:25**	**0:18:11**
Station adjustment	55		12,091	2.29		0:03:06	0:00:00		
Golden Valley Rd Station		**408,689**			**10.15**			**0:00:20**	**0:21:37**
	55		6,205	1.18		0:01:47	0:00:00		
Begin curve (D1 1) at TH 55		414,894			11.32			0:00:00	0:23:24
	15		381	0.07		0:00:17	0:00:00		
End curve (D1 1) on TH 55		415,275			11.40			0:00:00	0:23:41
	15		602	0.11		0:00:27	0:00:07		
Begin curve (D1 2) at TH 55		415,877			11.51			0:00:00	0:24:15
	35		782	0.15		0:00:19	0:00:00		
End curve (D1 2) on TH 55		416,659			11.66			0:00:00	0:24:34
	35		646	0.12		0:00:21	0:00:18		
Penn Ave Station		**417,305**			**11.78**			**0:00:20**	**0:25:33**
	35		3,691	0.70		0:01:31	0:00:23		
Van White Memorial Blvd Station		**420,996**			**12.48**			**0:00:20**	**0:27:47**
	35		2,112	0.40		0:01:00	0:00:51		
Border Avenue		**423,108**			**12.88**			**0:00:25**	**0:30:03**
					12.88	**0:22:37**	**0:03:51**	**0:03:35**	**0:30:03**
								Average Speed =	**25.72**

BRT ALIGNMENT: DT (continued from 732-C-D1 and B-C-D1)

Station/Location	Max Spd. (mph)	Distance Station	Feet	Miles	Total	Run Time (hr:min:sec)	Delay Time (hr:min:sec)	Dwell Time (hr:min:sec)	Total Time (hr:min:sec)
Border Avenue		**423,112**			**0.00**			**0:00:00**	**0:00:00**
	15		223	0.04		0:00:14	0:00:00		
Begin curve (15) at 7th St		423,335			0.04			0:00:00	0:00:14
	20		482	0.09		0:00:17	0:00:07		
End curve (16) after 7th St		423,817			0.13			0:00:00	0:00:39
	20		442	0.08		0:00:15	0:00:07		
Begin curve (17) at aerial interchange		424,259			0.22			0:00:00	0:01:01
	20		245	0.05		0:00:08	0:00:00		
End curve (17) at aerial interchange		424,504			0.26			0:00:00	0:01:09
	20		492	0.09		0:00:17	0:00:00		
Begin curve (18) at aerial interchange		424,996			0.36			0:00:00	0:01:26
	20		89	0.02		0:00:03	0:00:00		
End curve (18) at aerial interchange		425,085			0.37			0:00:00	0:01:29
	20		1,230	0.23		0:00:43	0:00:17		
Begin turn at 5th St N at 2nd Ave N		101,029			0.61			0:00:00	0:02:30
	10		80	0.02		0:00:05	0:00:23		
End turn at 2nd Ave N at 5th St N		101,109			0.62			0:00:00	0:02:57
	20		290	0.05		0:00:12	0:00:00		
Begin turn at 2nd Ave N at N 4th St		101,399			0.68			0:00:00	0:03:09
	10		70	0.01		0:00:05	0:00:23		
End turn at N 4th St at 2nd Ave N		101,469			0.69			0:00:00	0:03:37
	25		700	0.13		0:00:28	0:00:23		
4th Hennepin Downtown Stop		**102,169**			**0.82**			**0:00:25**	**0:04:52**
	25		910	0.17		0:00:33	0:00:40		
Begin turn at N 4th St at Marquette Ave S		103,079			0.99			0:00:00	0:06:05
	10		50	0.01		0:00:03	0:00:00		
End turn at Marquette Ave S at N 4th St		103,129			1.00			0:00:00	0:06:08
	15		190	0.04		0:00:13	0:00:00		
Marquette/5th Downtown Stop		**103,319**			**1.04**			**0:00:25**	**0:06:46**
	25		830	0.16		0:00:35	0:00:41		
Marquette/7th Downtown Stop		**104,149**			**1.20**			**0:00:25**	**0:08:27**
	25		810	0.15		0:00:35	0:00:36		
Marquette/9th Downtown Stop		**104,959**			**1.35**			**0:00:25**	**0:10:03**
	25		830	0.16		0:00:35	0:00:36		
Marquette/11th Downtown Stop		**105,789**			**1.51**			**0:00:25**	**0:11:38**
	25		540	0.10		0:00:23	0:00:36		
Begin turn at Marquette Ave S at S 12th St		106,329			1.61			0:00:00	0:12:37
	10		85	0.02		0:00:06	0:00:00		
End turn at S 12th St at Marquette Ave S		106,414			1.63			0:00:00	0:12:44
	25		725	0.14		0:00:24	0:00:45		
Begin turn at S 12th St at S 3rd St		107,139			1.76			0:00:00	0:13:52
	10		105	0.02		0:00:07	0:00:00		
End turn at S 3rd St at S 12th St		107,244			1.78			0:00:00	0:14:00
	20		305	0.06		0:00:13	0:00:23		
Begin turn at S 3rd Ave at S 11th St		107,549			1.84			0:00:00	0:14:35
	10		90	0.02		0:00:06	0:00:00		
End turn at S 11th St at 2 3rd St		107,639			1.86			0:00:00	0:14:41
	15		160	0.03		0:00:11	0:00:00		
Leamington Ramp Stop (Downtown Layover)		**107,799**			**1.89**			**0:00:25**	**0:15:17**
					1.89	**0:06:51**	**0:05:56**	**0:02:30**	**0:15:17**
								Average Speed =	**7.42**

LRT Delay by Intersection

Segment	Seg ID	Intersection	Intersection Delay Type	Priority?	Int. Delay
A	1104	Zachary Lane	Minor	Yes	0:00:07
A	1105	Unnamed road before Zachary Lane P&R Sta.	Minor	Yes	0:00:07
A	1302	CR 130 at Northland Dr	Minor	Yes	0:00:07
A	1303	CR 130 at Boone Ave	Minor	Yes	0:00:07
A	1305	BNSF ROW at N 73rd Ave	RR	Full	0:00:00
A	1305	BNSF ROW at N 71st Ave	RR	Full	0:00:00
B	2108	W Broadway Ave at N 94th Ave	Minor	Yes	0:00:07
B	2201	W Broadway Ave at N 93rd Ave	Minor	Yes	0:00:07
B	2201	W Broadway Ave at Setzler Pkwy	Minor	Yes	0:00:07
B	2201	W Broadway Ave at Maplebrook Pkwy/Ter	Minor	Yes	0:00:07
B	2201	W Broadway Ave at N 85th Ave	Major	Yes	0:00:18
B	2301	W Broadway Ave at College Park Dr	Minor	Yes	0:00:07
B	2301	W Broadway Ave at Candlewood Dr	Minor	Yes	0:00:07
B	2301	W Broadway Ave at Brooklyn Blvd	Major	Yes	0:00:18
B	2401	W Broadway at 76th Ave	Minor	Yes	0:00:07
B	2402	W Broadway at 75th Ave	Minor	Yes	0:00:07
B	2403	New ROW at Jolly Ln	Minor	Yes	0:00:07
B	2403	New ROW at Lakeland Ave	Major	Yes	0:00:18
B	2404	W Broadway at Lakeland Ave & CR 81 Bott. Blvd/73rd Ave	Major	Yes	0:00:18
B	2405	W Broadway at 71st Ave	Major	Full	0:00:00
C	3101	BNSF ROW at 63rd Ave	RR	Full	0:00:00
C	3101	BNSF ROW at Bass Lake Rd	RR	Full	0:00:00
C	3201	BNSF ROW at Corvalis Ave N	RR	Full	0:00:00
C	3202	BNSF ROW at W Broadway Ave	RR	Full	0:00:00
C	3203	BNSF ROW at 45th 1/2 Ave	RR	Full	0:00:00
C	3203	BNSF ROW at N 42nd Ave	RR	Full	0:00:00
C	3301	BNSF ROW at Noble Ave/41st Ave N	RR	Full	0:00:00
D1	4103	TH 55 (Olson Hwy) at Thomas Ave	Minor	Yes	0:00:07
D1	4105	TH 55 (Olson Hwy) at Penn Ave	Major	Yes	0:00:18
D1	4201	TH 55 (Olson Hwy) at Morgan Ave	Minor	Yes	0:00:07
D1	4201	TH 55 (Olson Hwy) at Humboldt Ave	Minor	Yes	0:00:07
D1	4201	TH 55 (Olson Hwy) at Van White Blvd	Minor	Yes	0:00:07
D2	5003	N 34th Ave at Grimes Ave	Minor	Yes	0:00:07
D2	5003	N 34th Ave at France Ave/Oakdale Ave.	Minor	Yes	0:00:07
D2	5106	W Broadway Ave at N 29th Ave	Minor	Yes	0:00:07
D2	5109	W Broadway Ave at N 26th Ave	Minor	Yes	0:00:07
D2	5112	W Broadway Ave at N Penn Ave	Major	Yes	0:00:18
D2	5201	N Penn Ave at N 23rd Ave	Minor	Yes	0:00:07
D2	5201	N Penn Ave at Golden Valley Rd	Minor	Yes	0:00:07
D2	5201	N Penn Ave at N Plymouth Ave	Minor	Yes	0:00:07
D2	5302	N Penn Ave at TH 55 (Olson Hwy)	Major	Yes	0:00:18
D2	5303	TH 55 (Olson Hwy) at N Morgan Ave	Minor	Yes	0:00:07
D2	5303	TH 55 (Olson Hwy) at N Humboldt Ave	Minor	Yes	0:00:07
D2	5303	TH 55 (Olson Hwy) at Van White Memorial Blvd	Minor	Yes	0:00:07
D1/D2	6101	TH 55 (Olson Hwy) at Bryant Ave	Minor	Yes	0:00:07
D1/D2	6101	TH 55 (Olson Hwy) at W Lyndale/I-94 SB	Major	Yes	0:00:18
D1/D2	6101	TH 55 (Olson Hwy) at E Lyndale/I-94 NB	Major	Yes	0:00:18
D1/D2	6101	TH 55 (Olson Hwy) at Border Ave	Minor	Yes	0:00:07
D1/D2	6102	TH 55 (Olson Hwy) at N 7th St	Minor	Yes	0:00:07
D1/D2	6105	6th Ave N at HERC	Minor	Yes	0:00:07

BRT Delay by Intersection

Segment	Seg ID	Name	Intersection Delay Type	Priority?	Int. Delay
732	7101	Main St at Shopping Center Entrance	Minor	Yes	0:00:07
732	7101	Main St at Hemlock Ln	Minor	Yes	0:00:07
732	7103	Hemlock Ln at Elm Creek Blvd/77th Ave/CR 103	Major	Yes	0:00:18
732	7201	CR 130 at Fountains Dr	Minor	Yes	0:00:07
732	7201	CR 130 at Zachary Ln	Minor	Yes	0:00:07
732	7301	CR 130 at Unnamed Future Road (Revere Lane)	Minor	Yes	0:00:07
732	7301	CR 130 at Jefferson Hwy/Kilmer Ln	Major	Yes	0:00:18
732	7301	CR 130 at US-169 SB	Major	Yes	0:00:18
732	7301	CR 130 at US-169 NB	Major	Yes	0:00:18
732	7401	CR 130 at Northland Dr	Minor	Yes	0:00:07
732	7401	CR 130 at Boone Ave	Minor	Yes	0:00:07
732	7401	CR 130 at Bottineau Blvd	Minor	Yes	0:00:07
732	7401	CR 130 at Jolly Ln	Minor	Yes	0:00:07
732	7401	CR 130 at Shopping Center Entrance	Minor	Yes	0:00:07
732	7402	CR 130 at Brooklyn Blvd	Major	Yes	0:00:18
732	7201	W Broadway at 76th Ave	Minor	Yes	0:00:07
732	7202	W Broadway at 75th Ave	Minor	Yes	0:00:07
732	7203	New ROW at Jolly Ln	Minor	Yes	0:00:07
732	7203	New ROW at Lakeland Ave	Major	Yes	0:00:18
732	7203	W Broadway at Lakeland Ave & CR 81 Bott. Blvd/73rd Ave	Major	Yes	0:00:18
732	7203	W Broadway at 71st Ave	Major	Full	0:00:00
B	2108	W Broadway Ave at N 94th Ave	Minor	Yes	0:00:07
B	2202	W Broadway Ave at N 93rd Ave	Minor	Yes	0:00:07
B	2203	W Broadway Ave at Setzler Pkwy	Minor	Yes	0:00:07
B	2203	W Broadway Ave at Maplebrook Pkwy/Ter	Minor	Yes	0:00:07
B	2203	W Broadway Ave at N 85th Ave	Major	Yes	0:00:18
B	2301	W Broadway Ave at College Park Dr	Minor	Yes	0:00:07
B	2301	W Broadway Ave at Candlewood Dr	Minor	Yes	0:00:07
B	2301	W Broadway Ave at Brooklyn Blvd	Major	Yes	0:00:18
B	2401	W Broadway at 76th Ave	Minor	Yes	0:00:07
B	2402	W Broadway at 75th Ave	Minor	Yes	0:00:07
B	2403	New ROW at Jolly Ln	Minor	Yes	0:00:07
B	2403	New ROW at Lakeland Ave	Major	Yes	0:00:18
B	2404	W Broadway at Lakeland Ave & CR 81 Bott. Blvd/73rd Ave	Major	Yes	0:00:18
B	2405	W Broadway at 71st Ave	Major	Yes	0:00:18
C	3101	BNSF ROW at 63rd Ave	RR	Full	0:00:00
C	3101	BNSF ROW at Bass Lake Rd	RR	Full	0:00:00
C	3201	BNSF ROW at Corvalis Ave N	RR	Full	0:00:00
C	3202	BNSF ROW at W Broadway Ave	RR	Full	0:00:00
C	3203	BNSF ROW at 45th 1/2 Ave	RR	Full	0:00:00
C	3203	BNSF ROW at N 42nd Ave	RR	Full	0:00:00
C	3301	BNSF ROW at Noble Ave/41st Ave N	RR	Full	0:00:00
D1	4103	TH 55 (Olson Hwy) at Thomas Ave	Minor	Yes	0:00:07
D1	4105	TH 55 (Olson Hwy) at Penn Ave	Major	Yes	0:00:18
D1	4201	TH 55 (Olson Hwy) at Morgan Ave	Minor	Yes	0:00:07
D1	4201	TH 55 (Olson Hwy) at Humboldt Ave	Minor	Yes	0:00:07
D1	4201	TH 55 (Olson Hwy) at Van White Memorial Blvd	Minor	Yes	0:00:07
D1/D2	6101	TH 55 (Olson Hwy) at Bryant Ave	Minor	Yes	0:00:07
D1/D2	6101	TH 55 (Olson Hwy) at W Lyndale/I-94 SB	Major	Yes	0:00:18
D1/D2	6101	TH 55 (Olson Hwy) at E Lyndale/I-94 NB	Major	Yes	0:00:18
D1/D2	6101	TH 55 (Olson Hwy) at Border Ave	Minor	Yes	0:00:07
DT	8001	TH 55 (Olson Hwy) at N 7th St	Minor	Yes	0:00:07
DT	8002	6th Ave N at HERC	Minor	Yes	0:00:07
DT	8006	5th St N at 5th Ave N	Minor	Yes	0:00:07
DT	8006	5th St N at 3rd Ave N	Minor	No	0:00:10
DT	8007	5th St N at 2nd Ave N	Major	No	0:00:23
DT	8009	2nd Ave N at N 4th St	Major	No	0:00:23
DT	8010	N 4th St at N 1st Ave	Major	No	0:00:23
DT	8101	N 4th St at Hennepin Ave	Major	No	0:00:23
DT	8101	S 4th St at Nicolette Mall	Minor	No	0:00:10
DT	8101	N 4th St at Marquette Ave S	Minor	Yes	0:00:07
DT	8201	Marquette Ave S at S 5th St (Hiawatha Line)	Major	No	0:00:23
DT	8201	Marquette Ave S at S 6th St	Major	Yes	0:00:18
DT	8301	Marquette Ave S at S 7th St	Major	Yes	0:00:18
DT	8301	Marquette Ave S at S 8th St	Major	Yes	0:00:18
DT	8401	Marquette Ave S at S 9th St	Major	Yes	0:00:18
DT	8401	Marquette Ave S at S 10th St	Major	Yes	0:00:18
DT	8501	Marquette Ave S at S 11th St	Major	Yes	0:00:18
DT	8501	Marquette Ave Sat S 12th St	Major	Yes	0:00:18
DT	8503	S 12th St at S 2nd Ave	Major	No	0:00:23
DT	8503	S 12th St at S 3rd Ave	Major	No	0:00:23
DT	8505	S 3rd Ave at S 11th St	Major	No	0:00:23

LRT Dwell Times by Station

Segment	Stop ID	Station Name	Est. Sta. Volume	Station Dwell
A	1100	Hemlock Ln P&R Station	High	0:00:00
A	1200	Zachary Ln P&R Station	Not High	0:00:15
A	1300	Hennepin Technical College Station	Not High	0:00:15
A	1400	71st Ave Station	Not High	0:00:15
B	2100	97th Avenue P&R - Target Campus Station	Not High	0:00:00
B	2200	93rd Avenue Station	Not High	0:00:15
B	2300	85th Avenue Station	Not High	0:00:15
B	2400	Brooklyn Blvd Station	Not High	0:00:15
C	3100	63rd Ave P&R Station	High	0:00:20
C	3200	Bass Lake Rd Station	Not High	0:00:15
C	3300	Robbinsdale P&R Station	High	0:00:20
D1	4100	Golden Valley Rd Station	Not High	0:00:15
D1	4200	Penn Ave Station	Not High	0:00:15
D2	5100	North Memorial Medical Center Station	Not High	0:00:15
D2	5200	Broadway at Penn Station	Not High	0:00:15
D2	5300	Penn at Plymouth Station	Not High	0:00:15
D1/D2	6100	Van White Memorial Blvd Station	Not High	0:00:15
D1/D2	6200	Mnpls Transp. Interchg. (Target Field) Station	High	0:00:20

BRT Dwell Times by Station

Segment	Stop ID	Name	Est. Sta. Volume	Station Dwell
732	7100	Maple Grove Transit Station (MGTS)	High	0:00:00
732	7200	Hennepin Lane/Elm Creek Blvd.	Not High	0:00:20
732	7300	Zachery Lane	Not High	0:00:20
732	7400	Hennepin Technical College	Not High	0:00:20
B	2100	97th Avenue P&R - Target Campus Station	Not High	0:00:00
B	2200	93rd Avenue Station	Not High	0:00:20
B	2300	85th Avenue Station	Not High	0:00:20
B	2400	Brooklyn Blvd Station	Not High	0:00:20
C	3100	63rd Ave P&R Station	High	0:00:25
C	3200	Bass Lake Rd Station	Not High	0:00:20
C	3300	Robbinsdale P&R Station	High	0:00:25
D1	4100	Golden Valley Rd Station	Not High	0:00:20
D1	4200	Penn Ave Station	Not High	0:00:20
D1/D2	6100	Van White Memorial Blvd Station	Not High	0:00:20
D1/D2	6200	Border Avenue	High	0:00:25
DT	8100	4th Hennepin Downtown Stop	High	0:00:25
DT	8200	Marquette/5th Downtown Stop	High	0:00:25
DT	8300	Marquette/7th Downtown Stop	High	0:00:25
DT	8400	Marquette/9th Downtown Stop	High	0:00:25
DT	8500	Marquette/11th Downtown Stop	High	0:00:25
DT	8600	Leamington Ramp Stop (Downtown Layover)	High	0:00:25

APPENDIX D
BOTTINEAU CORRIDOR
BUS ROUTE CONNECTIONS TO
LRT STATIONS
BY ALTERNATIVE

Route	A-C-D1	B-C-D1	A-C-D2	B-C-D2
5	None	None	None	None
7	Golden Valley Rd., Robbinsdale	Golden Valley Rd., Robbinsdale	Robbinsdale, Plymouth/Penn	Robbinsdale, Plymouth/Penn
14	Robbinsdale, Golden Valley Rd.	Robbinsdale, Golden Valley Rd.	Robbinsdale	Robbinsdale
19	Robbinsdale, Penn/Olson, Van White Memorial	Robbinsdale, Penn/Olson, Van White Memorial	Robbinsdale, West Broadway/Penn, Plymouth/Penn, Van White Memorial	Robbinsdale, West Broadway/Penn, Plymouth/Penn, Van White Memorial
22	None	None	None	None
32	Robbinsdale	Robbinsdale	Robbinsdale, North Memorial	Robbinsdale, North Memorial
705	71st Ave	Brooklyn Blvd., 97th Ave.	71st Ave	Brooklyn Blvd., 97th Ave.
716	Bass Lake Rd., Robbinsdale	Bass Lake Rd., Robbinsdale	Bass Lake Rd., Robbinsdale	Bass Lake Rd., Robbinsdale
717	None	None	None	None
718	Robbinsdale	Robbinsdale	Robbinsdale	Robbinsdale
721	Hennepin Tech. College, Bass Lake Rd.	Bass Lake Rd.	Hennepin Tech. College, Bass Lake Rd.	Bass Lake Rd.
722	None	None	None	None
723	71st Ave	85th Ave., Brooklyn Blvd.	71st Ave	85th Ave., Brooklyn Blvd.
724	63rd Ave.	Brooklyn Blvd., 63rd Ave.	63rd Ave.	Brooklyn Blvd., 63rd Ave.
729 (new)	71st. Ave.	97th Ave.	71st. Ave.	97th Ave.
731 (new)	71st Ave	Route Eliminated	71st Ave	Route Eliminated
732 (new)	Route Eliminated	Brooklyn Blvd.	Route Eliminated	Brooklyn Blvd.
755	Penn/Olson, Van White Memorial	Penn/Olson, Van White Memorial	Van White Memorial	Van White Memorial
756	None	None	None	None
758	Robbinsdale	Robbinsdale	Robbinsdale	Robbinsdale
759 (new)	63rd Ave.	63rd Ave., 85th Ave.	63rd Ave.	63rd Ave., 85th Ave.
760	None	None	None	None
761	None	None	None	None
762	None	None	None	None
763	None	None	None	None
764	71st Ave., Robbinsdale	Brooklyn Blvd., Robbinsdale	71st Ave., Robbinsdale	Brooklyn Blvd., Robbinsdale
765	None	Route Eliminated	None	Route Eliminated
766	None	None	None	None
767	Route Eliminated	Route Eliminated	Route Eliminated	Route Eliminated
780	None	None	None	None
781	Hemlock Ln.	None	Hemlock Ln.	None
781X (new)	None	None	None	None
782	Hemlock Ln.	93rd Ave.	Hemlock Ln.	93rd Ave.
783	None	None	None	None
785	None	None	None	None
786 (new)	None	None	None	None
788	Hemlock Ln.	None	Hemlock Ln.	None
789	None	None	None	None

APPENDIX E
BOTTINEAU CORRIDOR
ROUTE-LEVEL OPERATING STATISTICS
BY ALTERNATIVE

No-Build Weekday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Maple Grove	**128.00**	**2,249.70**	**27.5**	**3**	**26**	**0**
780	8.00	151.20	2	0	2	0
781	45.00	782.70	9	3	9	0
782	15.00	235.00	3	0	3	0
783	16.00	246.40	4.5	0	3	0
785	24.00	453.60	4	0	4	0
786	16.00	312.00	4	0	4	0
789	4.00	68.80	1	0	1	0
Met Council	**129.00**	**1,607.40**	**10**	**8**	**10**	**9**
32	40.00	404.00	4	2	4	4
705	30.00	375.00	2	2	2	2
716	15.00	213.00	1	1	1	1
717	15.00	192.00	1	1	1	1
723	29.00	423.40	2	2	2	1
Metro Transit	**1,195.50**	**13,270.10**	**109**	**65**	**111**	**40**
5	315.50	3,511.10	21.5	21	21.5	13
7	87.75	884.20	5	4.5	6.5	4
14	162.00	2,078.90	14	8	14	6
19	145.50	1,221.20	8	7	9	6
22	212.50	2,433.10	13.5	15.5	13.5	6
724	53.50	671.70	6	5	4	1
755	33.00	325.80	6	0	6	0
756	9.00	83.40	3	0	3	0
758	17.25	163.40	4.5	0	5	0
760	22.50	248.10	6	0	6	0
761	13.75	138.00	3	0	3	0
762	3.00	34.40	1.5	0	1.5	0
763	15.25	170.30	2.5	0	3	0
764	12.00	122.40	3	0	3	0
765	5.25	92.70	1.5	0	2	0
767	15.75	162.60	6	0	6	0
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**52.00**	**695.80**	**5**	**3.5**	**5**	**2**
721	29.00	448.80	3	2	3	1
722	23.00	247.00	2	1.5	2	1
Midwest Paratransit	**5.00**	**66.00**	**1.5**	**0**	**1.5**	**0**
788	5.00	66.00	1.5	0	1.5	0
Grand Total	**1,509.50**	**17,889.00**	**153**	**79.5**	**153.5**	**51**

No-Build Saturday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	**36.00**	**503.20**	**3**	**3**	**3**	**1**
716	14.00	182.00	1	1	1	1
723	22.00	321.20	2	2	2	0
Metro Transit	**802.67**	**9,061.30**	**44**	**48.5**	**48.5**	**39.5**
5	272.50	2,972.30	16	16.5	17.5	13
7	77.00	826.90	5	4	4	6
14	134.00	1,700.90	7	8	7	6
19	76.67	651.30	4	4.5	4.5	3.5
22	137.00	1,582.50	6	9.5	9.5	6
724	33.50	398.60	2	2	2	1
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**38.50**	**517.00**	**3**	**3**	**3**	**1**
721	22.00	352.00	2	2	2	0
722	16.50	165.00	1	1	1	1
Grand Total	877.17	10,081.50	50	54.5	54.5	41.5

No-Build Sunday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	**21.00**	**306.60**	**2**	**2**	**2**	**0**
723	21.00	306.60	2	2	2	0
Metro Transit	**732.00**	**8,104.10**	**45**	**45**	**44**	**38**
5	231.00	2,367.10	16	16	16	12
7	77.00	826.90	5	4	4	6
14	134.00	1,700.90	7	8	7	6
19	79.00	633.90	5	5	5	3
22	109.50	1,295.50	6	6	6	6
724	29.50	351.00	2	2	2	1
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**38.50**	**517.00**	**3**	**3**	**3**	**1**
721	22.00	352.00	2	2	2	0
722	16.50	165.00	1	1	1	1
Grand Total	791.50	8,927.70	50	50	49	39

Baseline Weekday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Maple Grove	**165.50**	**2,485.00**	**27.5**	**3**	**26**	**3**
780	8.00	151.20	2	0	2	0
781	67.50	720.00	6	3	6	3
782	15.00	235.00	3	0	3	0
783	16.00	246.40	4.5	0	3	0
785	24.00	453.60	4	0	4	0
786	16.00	312.00	4	0	4	0
789	4.00	68.80	1	0	1	0
781X	15.00	298.00	3	0	3	0
Met Council	**176.50**	**2,212.10**	**13**	**12**	**13**	**10**
32	52.00	525.20	4	4	4	4
705	30.00	489.00	2	2	2	2
716	20.00	308.00	2	1	2	1
717	15.00	192.00	1	1	1	1
718	30.50	274.50	2	2	2	1
723	29.00	423.40	2	2	2	1
Metro Transit	**1,521.50**	**17,685.00**	**120.5**	**82.5**	**120.5**	**50**
5	315.50	3,511.10	21.5	21	21.5	13
7	111.00	1,202.40	6.5	5.5	8	5
14	153.50	1,866.40	13	7.5	13	6
19	149.00	1,294.80	9	7	9	6
22	212.50	2,433.10	13.5	15.5	13.5	6
724	39.50	496.60	4	3	2	1
729	24.50	328.30	2	1	2	1
731	134.50	1,740.00	9	7	9	4
732	143.00	1,800.00	10	7	10	4
755	33.00	325.80	6	0	6	0
756	9.00	83.40	3	0	3	0
758	8.00	83.60	2	0	2	0
759	43.50	658.30	3	3	3	0
760	15.00	149.70	3	0	3	0
761	13.75	138.00	3	0	3	0
762	3.00	34.40	1.5	0	1.5	0
763	15.25	170.30	2.5	0	3	0
764	14.00	190.40	1	1	1	0
765	12.00	249.60	3	0	3	0
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**53.00**	**709.20**	**5**	**4**	**5**	**2**
721	29.00	448.80	3	2	3	1
722	24.00	260.40	2	2	2	1
Midwest Paratransit	**24.50**	**367.50**	**2**	**1**	**2**	**1**
788	24.50	367.50	2	1	2	1
Grand Total	**1,941.00**	**23,458.80**	**168**	**102.5**	**166.5**	**66**

Baseline Saturday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	**54.00**	**698.80**	**4**	**4**	**4**	**2**
716	14.00	215.60	1	1	1	1
718	18.00	162.00	1	1	1	1
723	22.00	321.20	2	2	2	0
Metro Transit	**1,101.08**	**12,680.60**	**58**	**67.5**	**67.5**	**51**
5	272.50	2,972.30	16	16.5	17.5	13
7	109.50	1,106.40	7	6	6	8
14	127.50	1,538.40	6.5	7.5	6.5	6
19	113.58	1,124.60	5.5	7	7	5
22	137.00	1,582.50	6	9.5	9.5	6
724	33.50	398.60	2	2	2	1
729	12.50	167.50	1	1	1	0
731	111.50	1,406.50	5	7	7	4
732	111.50	1,455.00	5	7	7	4
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**38.50**	**517.00**	**3**	**3**	**3**	**1**
721	22.00	352.00	2	2	2	0
722	16.50	165.00	1	1	1	1
Grand Total	**1,193.58**	**13,896.40**	**65**	**74.5**	**74.5**	**54**

Baseline Sunday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council						
716	14.00	215.60	1	1	1	1
718	18.00	162.00	1	1	1	1
723	21.00	306.60	2	2	2	0
Metro Transit						
5	231.00	2,367.10	16	16	16	12
7	109.50	1,106.40	7	6	6	8
14	127.50	1,538.40	6.5	7.5	6.5	6
19	80.50	695.70	5	5	5	4
22	109.50	1,295.50	6	6	6	6
724	29.50	351.00	2	2	2	1
731	97.00	1,406.50	4	6	6	4
732	91.50	1,455.00	4	6	5	4
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council						
721	22.00	352.00	2	2	2	0
722	16.50	165.00	1	1	1	1
Grand Total	**1,039.50**	**12,345.60**	**61.5**	**65.5**	**63.5**	**52**

LRT A-C-D1/LRT A-C-D2 Weekday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Maple Grove	**172.00**	**2,520.80**	**26**	**5**	**24.5**	**3**
780	8.00	151.20	2	0	2	0
781	67.50	810.00	6	3	6	3
782	29.00	329.80	3	2	3	0
783	16.00	246.40	4.5	0	3	0
785	24.00	453.60	4	0	4	0
786	16.00	312.00	4	0	4	0
789	4.00	68.80	1	0	1	0
781X	7.50	149.00	1.5	0	1.5	0
Met Council	**182.50**	**2,270.10**	**13.5**	**12.5**	**13.5**	**10**
32	52.00	525.20	4	4	4	4
705	30.00	489.00	2	2	2	2
716	20.00	308.00	2	1	2	1
717	15.00	192.00	1	1	1	1
718	30.50	274.50	2	2	2	1
723	35.00	481.40	2.5	2.5	2.5	1
Metro Transit	**1,299.50**	**14,921.80**	**106**	**71**	**106**	**43.5**
5	315.50	3,511.10	21.5	21	21.5	13
7	111.00	1,202.40	6.5	5.5	8	5
14	153.50	1,866.40	13	7.5	13	6
19	149.00	1,294.80	9	7	9	6
22	212.50	2,433.10	13.5	15.5	13.5	6
724	41.25	587.60	4.5	3	2.5	1
729	36.75	534.10	3	1.5	3	1.5
731	41.50	480.00	3	2	3	1
755	33.00	325.80	6	0	6	0
756	9.00	83.40	3	0	3	0
758	8.00	83.60	2	0	2	0
759	43.50	658.30	3	3	3	0
760	15.00	149.70	3	0	3	0
761	13.75	138.00	3	0	3	0
762	3.00	34.40	1.5	0	1.5	0
763	15.25	170.30	2.5	0	3	0
764	14.00	190.40	1	1	1	0
765	12.00	249.60	3	0	3	0
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**53.00**	**709.20**	**5**	**4**	**5**	**2**
721	29.00	448.80	3	2	3	1
722	24.00	260.40	2	2	2	1
Midwest Paratransit	**39.50**	**529.20**	**3**	**1.5**	**3**	**2**
788	39.50	529.20	3	1.5	3	2
Grand Total	**1,746.50**	**20,951.10**	**153.5**	**94**	**152**	**60.5**

LRT A-C-D1/LRT A-C-D2 Saturday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	**59.50**	**742.80**	**4.5**	**4.5**	**4.5**	**2**
716	14.00	215.60	1	1	1	1
718	18.00	162.00	1	1	1	1
723	27.50	365.20	2.5	2.5	2.5	0
Metro Transit	**914.33**	**10,405.90**	**49.5**	**56**	**56**	**44**
5	272.50	2,972.30	16	16.5	17.5	13
7	109.50	1,106.40	7	6	6	8
14	127.50	1,538.40	6.5	7.5	6.5	6
19	113.58	1,124.60	5.5	7	7	5
22	137.00	1,582.50	6	9.5	9.5	6
724	33.50	492.40	2	2	2	1
729	18.75	272.50	1.5	1.5	1.5	0
731	30.00	388.00	1	2	2	1
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**38.50**	**517.00**	**3**	**3**	**3**	**1**
721	22.00	352.00	2	2	2	0
722	16.50	165.00	1	1	1	1
Grand Total	**1,012.33**	**11,665.70**	**57**	**63.5**	**63.5**	**47**

LRT A-C-D1/LRT A-C-D2 Sunday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	**53.00**	**726.20**	**4**	**4**	**4**	**2**
716	14.00	215.60	1	1	1	1
718	18.00	162.00	1	1	1	1
723	21.00	348.60	2	2	2	0
Metro Transit	**793.50**	**8,812.30**	**47.5**	**48.5**	**47.5**	**42**
5	231.00	2,367.10	16	16	16	12
7	109.50	1,106.40	7	6	6	8
14	127.50	1,538.40	6.5	7.5	6.5	6
19	80.50	695.70	5	5	5	4
22	109.50	1,295.50	6	6	6	6
724	33.50	492.40	2	2	2	1
731	30.00	388.00	1	2	2	1
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**38.50**	**517.00**	**3**	**3**	**3**	**1**
721	22.00	352.00	2	2	2	0
722	16.50	165.00	1	1	1	1
Grand Total	**885.00**	**10,055.50**	**54.5**	**55.5**	**54.5**	**45**

LRT B-C-D1/LRT B-C-D2 Weekday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Maple Grove	**165.50**	**2,485.00**	**27.5**	**3**	**26**	**3**
780	8.00	151.20	2	0	2	0
781	67.50	720.00	6	3	6	3
782	15.00	235.00	3	0	3	0
783	16.00	246.40	4.5	0	3	0
785	24.00	453.60	4	0	4	0
786	16.00	312.00	4	0	4	0
789	4.00	68.80	1	0	1	0
781X	15.00	298.00	3	0	3	0
Met Council	**176.50**	**2,212.10**	**13**	**12**	**13**	**10**
32	52.00	525.20	4	4	4	4
705	30.00	489.00	2	2	2	2
716	20.00	308.00	2	1	2	1
717	15.00	192.00	1	1	1	1
718	30.50	274.50	2	2	2	1
723	29.00	423.40	2	2	2	1
Metro Transit	**1,268.25**	**14,370.40**	**101.5**	**70.5**	**101.5**	**43**
5	315.50	3,511.10	21.5	21	21.5	13
7	111.00	1,202.40	6.5	5.5	8	5
14	153.50	1,866.40	13	7.5	13	6
19	149.00	1,294.80	9	7	9	6
22	212.50	2,433.10	13.5	15.5	13.5	6
724	42.75	587.60	5	3	3	1
729	24.50	328.30	2	1	2	1
732	33.00	384.00	2	2	2	1
755	33.00	325.80	6	0	6	0
756	9.00	83.40	3	0	3	0
758	8.00	83.60	2	0	2	0
759	43.50	658.30	3	3	3	0
760	15.00	149.70	3	0	3	0
761	13.75	138.00	3	0	3	0
762	3.00	34.40	1.5	0	1.5	0
763	15.25	170.30	2.5	0	3	0
764	14.00	190.40	1	1	1	0
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**53.00**	**709.20**	**5**	**4**	**5**	**2**
721	29.00	448.80	3	2	3	1
722	24.00	260.40	2	2	2	1
Midwest Paratransit	**24.50**	**367.50**	**2**	**1**	**2**	**1**
788	24.50	367.50	2	1	2	1
Grand Total	**1,687.75**	**20,144.20**	**149**	**90.5**	**147.5**	**59**

LRT B-C-D1/LRT B-C-D2 Saturday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	**54.00**	**698.80**	**4**	**4**	**4**	**2**
716	14.00	215.60	1	1	1	1
718	18.00	162.00	1	1	1	1
723	22.00	321.20	2	2	2	0
Metro Transit	**908.08**	**10,223.30**	**49**	**55.5**	**55.5**	**44**
5	272.50	2,972.30	16	16.5	17.5	13
7	109.50	1,106.40	7	6	6	8
14	127.50	1,538.40	6.5	7.5	6.5	6
19	113.58	1,124.60	5.5	7	7	5
22	137.00	1,582.50	6	9.5	9.5	6
724	33.50	492.40	2	2	2	1
729	12.50	167.50	1	1	1	0
732	30.00	310.40	1	2	2	1
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**38.50**	**517.00**	**3**	**3**	**3**	**1**
721	22.00	352.00	2	2	2	0
722	16.50	165.00	1	1	1	1
Grand Total	**1,000.58**	**11,439.10**	**56**	**62.5**	**62.5**	**47**

LRT B-C-D1/LRT B-C-D2 Sunday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	**53.00**	**684.20**	**4**	**4**	**4**	**2**
716	14.00	215.60	1	1	1	1
718	18.00	162.00	1	1	1	1
723	21.00	306.60	2	2	2	0
Metro Transit	**793.50**	**8,734.70**	**47.5**	**48.5**	**47.5**	**42**
5	231.00	2,367.10	16	16	16	12
7	109.50	1,106.40	7	6	6	8
14	127.50	1,538.40	6.5	7.5	6.5	6
19	80.50	695.70	5	5	5	4
22	109.50	1,295.50	6	6	6	6
724	33.50	492.40	2	2	2	1
732	30.00	310.40	1	2	2	1
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**38.50**	**517.00**	**3**	**3**	**3**	**1**
721	22.00	352.00	2	2	2	0
722	16.50	165.00	1	1	1	1
Grand Total	**885.00**	**9,935.90**	**54.5**	**55.5**	**54.5**	**45**

BRT Weekday Operating Requirements

Routes	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Maple Grove	**165.50**	**2,485.00**	**27.5**	**3**	**26**	**3**
780	8.00	151.20	2	0	2	0
781	67.50	720.00	6	3	6	3
782	15.00	235.00	3	0	3	0
783	16.00	246.40	4.5	0	3	0
785	24.00	453.60	4	0	4	0
786	16.00	312.00	4	0	4	0
789	4.00	68.80	1	0	1	0
781X	15.00	298.00	3	0	3	0
Met Council	**176.50**	**2,212.10**	**13**	**12**	**13**	**10**
32	52.00	525.20	4	4	4	4
705	30.00	489.00	2	2	2	2
716	20.00	308.00	2	1	2	1
717	15.00	192.00	1	1	1	1
718	30.50	274.50	2	2	2	1
723	29.00	423.40	2	2	2	1
Metro Transit	**1,235.25**	**13,986.40**	**99.5**	**68.5**	**99.5**	**42**
5	315.50	3,511.10	21.5	21	21.5	13
7	111.00	1,202.40	6.5	5.5	8	5
14	153.50	1,866.40	13	7.5	13	6
19	149.00	1,294.80	9	7	9	6
22	212.50	2,433.10	13.5	15.5	13.5	6
724	42.75	587.60	5	3	3	1
729	24.50	328.30	2	1	2	1
755	33.00	325.80	6	0	6	0
756	9.00	83.40	3	0	3	0
758	8.00	83.60	2	0	2	0
759	43.50	658.30	3	3	3	0
760	15.00	149.70	3	0	3	0
761	13.75	138.00	3	0	3	0
762	3.00	34.40	1.5	0	1.5	0
763	15.25	170.30	2.5	0	3	0
764	14.00	190.40	1	1	1	0
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**53.00**	**709.20**	**5**	**4**	**5**	**2**
721	29.00	448.80	3	2	3	1
722	24.00	260.40	2	2	2	1
Midwest Paratransit	**24.50**	**367.50**	**2**	**1**	**2**	**1**
788	24.50	367.50	2	1	2	1
Grand Total	**1,654.75**	**19,760.20**	**147**	**88.5**	**145.5**	**58**

BRT Saturday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	**54.00**	**698.80**	**4**	**4**	**4**	**2**
716	14.00	215.60	1	1	1	1
718	18.00	162.00	1	1	1	1
723	22.00	321.20	2	2	2	0
Metro Transit	**878.08**	**9,912.90**	**48**	**53.5**	**53.5**	**43**
5	272.50	2,972.30	16	16.5	17.5	13
7	109.50	1,106.40	7	6	6	8
14	127.50	1,538.40	6.5	7.5	6.5	6
19	113.58	1,124.60	5.5	7	7	5
22	137.00	1,582.50	6	9.5	9.5	6
724	33.50	492.40	2	2	2	1
729	12.50	167.50	1	1	1	0
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**38.50**	**517.00**	**3**	**3**	**3**	**1**
721	22.00	352.00	2	2	2	0
722	16.50	165.00	1	1	1	1
Grand Total	**970.58**	**11,128.70**	**55**	**60.5**	**60.5**	**46**

BRT Sunday Operating Requirements

Route	Revenue Hours	Revenue Miles	Bus Requirements			
			AM Peak	Midday	PM Peak	Other Times
Met Council	**53.00**	**726.20**	**4**	**4**	**4**	**2**
716	14.00	215.60	1	1	1	1
718	18.00	162.00	1	1	1	1
723	21.00	348.60	2	2	2	0
Metro Transit	**763.50**	**8,424.30**	**46.5**	**46.5**	**45.5**	**41**
5	231.00	2,367.10	16	16	16	12
7	109.50	1,106.40	7	6	6	8
14	127.50	1,538.40	6.5	7.5	6.5	6
19	80.50	695.70	5	5	5	4
22	109.50	1,295.50	6	6	6	6
724	33.50	492.40	2	2	2	1
WB	72.00	928.80	4	4	4	4
Metro Transit/Met Council	**38.50**	**517.00**	**3**	**3**	**3**	**1**
721	22.00	352.00	2	2	2	0
722	16.50	165.00	1	1	1	1
Grand Total	**855.00**	**9,667.50**	**53.5**	**53.5**	**52.5**	**44**