Southwest Transitway Alternatives Analysis

Technical Memorandum No. 3
Definition of Alternatives

Prepared for
Hennepin County Regional Railroad Authority

Prepared by:

PB Americas, Inc. (PB)

January 2007

Table of Contents

List of Tables

List of Figures

Appendix Figures

1. Introduction

This technical memorandum documents the methodology, assumptions, and results of the definition of alternatives task prepared for the Southwest Transitway Alternatives Analysis (Southwest Transitway AA).

2. Background and Assumptions

The Hennepin County Regional Railroad Authority (HCRRA) in partnership with the cities of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, Minneapolis and Edina; the Metropolitan Council, the Minnesota Department of Transportation, Metro Transit, and SouthWest Metro Transit; the Twin West, Minneapolis Regional, and Eden Prairie Chambers of Commerce; and, the Three Rivers Parks Park District and Midtown Community Works Partnership are conducting the Southwest Transitway Alternatives Analysis (Southwest Transitway AA). The purpose of the Southwest Transitway AA is to identify and compare the benefits, costs and impacts of a range of transit options, and to determine a preferred course of action.

The HCRRA was established in 1980 as a political subdivision and local government unit of Minnesota to conduct rail transit planning and to acquire abandoned freight rail corridors in order to preserve them for future transportation uses. The HCRRA consists of the seven members of the Hennepin County Board of Commissioners. Currently, the HCRRA maintains over 57 miles of former freight rail corridors, which accommodate 37 miles of bicycle and pedestrian trails.

This technical memorandum discusses the process used to define the initial alternatives and to refine them into alternatives for evaluation. The alternatives were developed in coordination with the Southwest Transitway Technical Advisory Committee (TAC) and the Southwest Transitway Policy Advisory Committee (PAC).

The process for defining and refining the potential Southwest Transitway alternatives included:

- Reviewing previous studies of the Southwest Transitway.
- Establishing a set of Southwest Transitway Goals and Objectives that address the Purpose and Need Statement contained in Technical Memorandum No. 1.
- Performing a transit technology screening to identify which transit technologies address the study areas travel needs as documented in the Purpose and Need Statement.
- Identifying general alignments (i.e. station locations and routings).
- Combining the selected transit technologies and alignments into an initial set of transitway alternatives for agency and public review and comment.
- Modifying the initial transitway alternatives into refined alternatives for evaluation based on comments and technical analyses.

This technical memorandum documents the work of Task 5 in the consultant scope of services (Development of Alternatives). The principal objective of Task 5 was to define

the alternatives for evaluation (as well as public and agency comment) during the Southwest Transitway AA.

3. Methodology

A. Review of Previous Transitway Studies

The consultant team began the process of developing the initial alternatives by reviewing previous Southwest Transitway studies. The consultant team reviewed the following documents:

- *The Feasibility of LRT in the Twin Cities Metro Area*, Metropolitan Council, 1981
- *Comprehensive LRT System Plan for Hennepin County*, HCRRA, 1988
- Hennepin County Stage 1 LRT System Scoping Decision Document, HCRRA, 1988
- *Draft Environmental Impact Statement (DEIS) Hennepin County LRT System*, HCRRA, 1989
- *Preliminary Design Plans: Stage 1 System in Minneapolis*, HCRRA, 1990
- *Preliminary Design of the Southwest LRT Corridor in the Cities of St. Louis Park and Hopkins,* HCRRA, 1990
- *LRT Regional Coordination Plan*, Regional Transit Board, 1990
- *St. Louis Park Rail Task Force Report*, St. Louis Park, 1999
- *Twin Cities Exclusive Busway Study*, Mn/DOT, 2000
- *29th Street and Southwest Busway Feasibility Study*, Hennepin County and Metro Transit, 2000
- *Southwest Rail Transit Study*, HCRRA, 2003
- *Addendum to the Southwest Rail Transit Study: Modified LRT 3A Analysis*, HCRRA, 2004
- *Transportation Policy Plan*, Metropolitan Council, 2004
- *Transit 2030 Plan*, Metropolitan Council, 2004

B. Develop Southwest Transitway Goals and Objectives

On February 11, 2005, the Southwest Transitway Technical Advisory Committee (TAC) developed goals and objectives and forwarded them for consideration by the Southwest Transitway Policy Advisory Committee (PAC). On March 2, 2005, the Southwest Transitway PAC unanimously approved the goals and objectives forwarded by the Southwest Transitway TAC.

Southwest Transitway AA Goals:

1. Improve Mobility
2. Provide a Cost-Effective, Efficient Travel Option
3. Protect the Environment
4. Preserve and Protect the Quality of Life in the Study Area and the Region
5. Support Economic Development

In addition, the Southwest Transitway PAC decided to prioritize the goals into two tiers. Tier one goals are those that must be achieved in order for a project to move forward.

Tier two goals are those that should be achieved once it is determined a viable project exists. The tier one goals are to Improve Mobility and Provide a Cost-Effective, Efficient Travel Option. The tier two goals are to Protect the Environment, Preserve and Protect the Quality of Life in the Study Area and the Region, and Support Economic Development.

These goals and related objectives are based upon the identified transportation needs in the study area as described in *Technical Memorandum No. 1 Purpose and Need Statement*. They were used to develop the initial alternatives to address transportation needs, and form the basis of the evaluation measures.

The adopted Southwest Transitway goals and objectives are consistent with the Federal Transit Administration's (FTA) Section 5309 New Starts Program.

Tier One Goals

Tier 1 goals are defined as those goals that must be achieved or a project does not exist.

GOAL 1: Improve mobility

Objectives:

- Provide a travel option competitive with other modes in terms of journey time
- Provide a reliable travel option that improves mobility throughout the day
- Provide a travel option that serves population and employment concentrations
- Provide a travel option that adds capacity and access to the regional and local transportation system
- Provide a travel option that serves people who depend on transit
- Provide a travel option that enhances pedestrian and bicycle activity and access to community nodes

GOAL 2: Provide a cost-effective, efficient travel option

Objectives:

- Provide a travel option with acceptable capital and operating costs
- Provide a travel option that efficiently and effectively moves people
- Provide a travel option that integrates efficiently with other modes and avoids substantial negative impacts to the existing roadway system
- Provide a travel option that supports regional system efficiency

Tier Two Goals

Tier 2 goals are defined as goals to be satisfied assuming a proposed project results from the application of the Tier 1 goals.

GOAL 3: Protect the environment

Objectives:

- Provide a travel option beneficial to the region's air quality
- Provide a travel option that avoids or minimizes alterations to environmentally sensitive areas

- Provide a travel option that supports efficient, compact land use that facilitates accessibility
- Provide a travel option that avoids major environmental impacts on adjacent properties, such as noise and vibration

GOAL 4: Preserve and protect the quality of life in the study area and the region

Objectives:

- Provide a travel option that contributes to the economic health of the study area and region through improving mobility and access
- Provide a travel option that is sensitively designed with respect to existing neighborhoods and property values
- Provide a travel option that protects and enhances access to public service and recreational facilities
- Provide a travel option that supports sound planning and design of transit stations and park-and-ride lots
- Provide a travel option that enhances the image and use of transit services in the region

GOAL 5: Support economic development

Objectives:

- Provide a travel option that supports economic development and redevelopment with improved access to transit stations
- Provide a travel option that supports local sustainable development/redevelopment goals
- Provide a transportation system element that facilitates more efficient land development patterns and saves infrastructure costs
- Provide a travel option that accommodates future regional growth in locations consistent with local plans and the potential for increased transit ridership

These goals and objectives were also applied later in the AA process to assist in the refinement of the study alternatives.

4. Transit Technology Screening

This section documents the process used to determine which transit technologies address the transportation needs identified in the Purpose and Need Statement contained in Technical Memorandum No. 1. First the range of possible transit technologies was identified and then a set of qualitative evaluation measures was applied to determine which technologies to retain for inclusion in the Southwest Transitway AA..

A. Transit Technologies

The transit technology review considered the following:

- Conventional Diesel Bus (including use of HOV and shoulder bus lanes)
- Bus Rapid Transit (BRT)

- Streetcar (modern)
- Light Rail Transit (LRT)
- Heavy Rail Transit (rapid transit or subway)
- Commuter Rail (bi-level and diesel multiple unit)
- Automated Guideway Transit (AGT)/Monorail
- Personal Rapid Transit (PRT)

Conventional Diesel Bus

The diesel transit bus is the most commonly used transit vehicle in the world. Buses offer the flexibility of operation in mixed traffic on city streets and highways.

Bus Rapid Transit (BRT)

Bus Rapid Transit (BRT) works to combine the flexibility of buses with the frequency and travel time advantages of rail transit. BRT typically offers high capacity, high frequency bus operation in an exclusive bus-only roadway with on-line, high amenity stations.

Streetcar (Modern)

Streetcars were the precursor to the modern day light rail vehicles. Today, streetcars come in several forms from a modern vehicle to replica and refurbished vehicles. Streetcar technology is similar to light rail technology in terms of track gauge, overhead electrification, and operations. In contrast to modern light rail systems, streetcar systems typically serve intra-city trips and are more likely to share street rights-of-way with other vehicles or use semi-exclusive rights-of-way. Streetcar vehicles are typically smaller, lighter and have fewer seats than light rail vehicles. This design makes them efficient at serving short trips (stops several blocks apart) within relatively densely populated areas.

Light Rail Transit (LRT)

Light Rail Transit (LRT) is a medium to high capacity passenger rail service that can be used both for short and line-haul trips. LRT technology has evolved from the streetcar system to a more modern system that can carry more passengers further and faster. LRT vehicles typically operate in exclusive or semi-exclusive rights-of-way and are powered from an overhead electrification system. Stations are typically 1/2 to 2 miles apart.

Heavy Rail Transit (subway)

Heavy rail, commonly referred to as a rapid transit or subway, is a high-capacity, high-speed transit service that operates on exclusive tracks with an electrified third rail and no grade crossings. Heavy rail systems typically serve high density areas with significant congestion problems with stations from ½ to 3 miles apart.

Commuter Rail (bi-level and diesel multiple unit)

Commuter rail service is defined as passenger rail service operating on existing freight rail tracks. Service is typically between outer suburban, exurban areas and the city center. Trains typically operate every half hour inbound in the morning and outbound in the evening. Commuter rail stations are typically spaced three to five miles apart. Commuter rail service is primarily oriented toward commuter service to outer suburban regions, and as a result it typically serves longer trips than most light and heavy rail

transit lines. Commuter rail trains are normally made up of a locomotive and several passenger coaches or self propelled diesel-electric passenger coaches.

Automated Guideway Transit (AGT)/Monorail

Monorail/AGT are electric transit systems in which the vehicles are suspended from or straddle a guideway. Most of these systems are driverless, and utilize an electrified power rail. They are separated from all traffic on exclusive rights-of-way. Monorail/AGT is typically used for circulation/distribution at airports or downtowns.

Personal Rapid Transit (PRT)

Personal rapid transit (PRT) is a transit system that provides point-to-point, demand responsive service to individuals or small groups. Electrically powered vehicles carrying as few as 3 to 5 passengers, or more depending on design, travel on guideways separated from traffic. PRT is designed to serve as a circulator/distributor system providing service within business parks, airports, and campus environments. It could also be used to provide service to/from line-haul transit systems such as LRT, BRT, commuter rail, and heavy rail to other activity centers.

B. Transit Technology Screening Criteria

The following screening criteria were used to determine which technologies to retain:

- **Compatible with the study area's transit travel demand**
  The technology is easily able to accommodate the line-haul transit travel demand of the study area.
- **Proven Technology**
  The technology is fully implemented with a history that can be researched and studied.
- **Compatible with existing infrastructure**
  The technology is compatible with existing and planned infrastructure and will not require major retrofit of existing infrastructure.
- **Identified in the region's long-range transportation plan, the TPP, and other studies**
  The technology is identified as an option in the Metropolitan Council's long-range transportation plan, the Transportation Policy Plan (TPP). The TPP includes the region's long-range plan for transit and transitways, the Transit 2030 Plan. In addition, the following studies have been completed documenting the feasibility of transit technologies for the Southwest Transitway, the *Hennepin County LRT System Draft Environmental Impact Statement (DEIS), 1989*; the *29th Street and Southwest Busway Feasibility Study, 2000*; *Mn/DOT's Exclusive Busway Study, 2000*; and the *Southwest Rail Transit Study, 2003.*

C. Summary of Transit Technology Screening

The results of this analysis suggested that the Southwest Transitway TAC should retain conventional diesel bus, bus rapid transit (BRT), and light rail transit (LRT) for inclusion in the Southwest Transitway AA.

The Southwest Transitway TAC concurred and forwarded their recommendation to the Southwest Transitway PAC. On July 27, 2005, the Southwest Transitway PAC voted unanimously to accept the Southwest Transitway TAC's recommendation to retain conventional bus, BRT and LRT.

Table 1 summarizes the results of the Transit Technology Screening.

Conventional diesel buses were retained based upon the following:

- **Travel Demand –** Because of its flexibility**,** conventional buses service a variety of trip types. Express and limited stop services provide line-haul transit service to the study area. For shorter trips, local services offers more frequent stops and closer access to a greater number of destinations.
- **Proven Technology –** The conventional diesel bus in the most commonly used transit vehicle in the world. All major metropolitan transit systems include conventional bus options. In the Twin Cities, conventional buses constitute the predominant technology used in the existing transit system. Vehicles can range in size, interior quality levels, and operating characteristics.
- **Compatible with Existing Infrastructure –** Conventional diesel buses are compatible with the region's current transportation infrastructure. In the existing regional transportation system, bus-only shoulder lanes, bus-only ramps, and High-Occupancy Vehicle (HOV) lanes provide conventional buses with a series of advantages over other modes of travel.
- **Identified in the Long-Range Transportation Plan –** The Metropolitan Council's Transit 2030 Plan identifies conventional bus operations as remaining the backbone of the regional transit system.

Bus rapid transit (BRT) was retained based upon the following:

- **Travel Demand –** Demand exists within the southwestern portion of the metro area for high-frequency line-haul bus transit service. BRT operating at a high frequency primarily within exclusive rights-of-way can provide transit service to accommodate the travel demand needs within the area.
- **Proven Technology –** Bus rapid transit is a proven technology that has been implemented in numerous urban areas, including Pittsburgh, Boston Los Angeles, and Ottawa.
- **Compatible with Existing and Planned Infrastructure –** A BRT system utilizing rubber-tired buses on a paved guideway is consistent with existing regional infrastructure.
- **Regional Transportation Plan –**The Metropolitan Council's Transit 2030 Plan identified BRT as a potential transit technology to serve the travel demand in the Twin Cities. BRT was also determined to be a feasible transitway alternative in both the *29th Street and Southwest Busway Feasibility Study, 2000* and *Mn/DOT's Exclusive Busway Study, 2000.*

Light rail transit (LRT) was retained based upon the following:

- **Travel Demand –** Demand exists within the southwestern portion of the metro area for high-frequency line-haul rail transit service. An LRT line operating at frequencies similar to the Hiawatha LRT line is expected to accommodate this projected travel demand.
- **Proven Technology –** LRT is a proven technology that has been implemented in the Twin Cities and numerous cities across the country, including Denver, Portland, Salt Lake City and St Louis.
- **Compatible with Existing and Planned Infrastructure –** The infrastructure required for a new southwest LRT system would be the same as, and compatible with the existing Hiawatha LRT line's infrastructure.
- **Regional Transportation Plan –** The Metropolitan Council's Transit 2030 Plan identifies LRT as a potential transit technology to serve the travel demand in the Twin Cities. LRT was also determined to be a feasible transit technology in the Southwest Rail Transit Study, 2003.

Appendix B provides a larger discussion of the evaluation of each transit technology.

Table 1 Transit Technology Screening

Modes	Compatibility with Travel Demand	Proven Technology	Compatibility with Existing Infrastructure	Identified in the Regional Transportation Plan	Recommendation
Conventional Bus	○	○	○	○	Retain
BRT	○	○	○	○	Retain
Light Rail Transit (LRT)	○	○	○	○	Retain
Streetcar (Modern)*	◐	○	◐	●	Not Retain
Heavy Rail Transit	●	○	●	●	Not Retain
Commuter Rail	●	○	○	○	Not Retain
Monorail/AGT (Automated Guideway Transit)	●	○	●	●	Not Retain
Personal Rapid Transit (PRT)	●	●	●	●	Not Retain

LEGEND

Compatibility with Travel Demand:	Ability of service type to accommodate expected travel demand
Proven Technology:	Fully implemented and able to be evaluated
Compatibility with Existing Infrastructure:	Does not require massive retrofit of existing infrastructure
Identified in the Regional Transportation Plan:	Identified in the Metropolitan Council's Transportation Policy Plan (TPP)

*May be appropriate for intercity/local circulator service connecting to/from the corridor

○ Fully Meets Criteria
◐ Partially Meets Criteria
● Does Not Meet Criteria

10Aug05

Source: Parsons Brinckerhoff, 2006

D. Guidelines for Defining Alternatives

This section documents the process used to define the initial alternatives, which combined transit technologies with conceptual alignments (composed of potential station locations and general routes.)

A. Station Locations

The guidelines for locating transit stations included service to activity centers, accessibility by bus, auto, bicycle and walking, integration with the community and surrounding environment, and spacing appropriate for transit operations.

Activity Centers
Stations were located to serve concentrations of residential population, employment and destination/activity centers (e.g., shopping centers, medical centers, recreation areas).

Access to the Station
Stations were located in areas easy accessible via foot, bicycle, bus or automobile. Consideration was given to existing and planned roadways, bus routes, pedestrian and bicycle connections and availability of land for park-and-ride.

Integration with the Community and the Environment
Stations were located to be compatible with the community and the natural environment. Considerations included compatibility with existing/proposed land use as identified in local comprehensive plans, the area's potential for transit oriented development or redevelopment, and avoiding negative environmental and community impacts, for example increased traffic on neighborhood streets.

Appropriate Spacing for Transit Operations
Stations should be spaced approximately ½ to one mile apart, except in downtowns, where stations every few blocks are appropriate.

B. Routes

Following the identification of station locations, the second step in defining alternatives was to determine the best route for connecting the stations. The guidelines for selecting routes between stations included minimizing travel time, costs and adverse environmental and community impacts.

Travel Time
The routes were selected to minimize travel time between stations because shorter overall travel times improve the attractiveness of the transit service and increase transit ridership.

Capital Costs
The routes were selected to minimize capital costs associated with right-of-way, structures, utilities, roadway construction and signal systems.

Operating Costs
The routes were selected to minimize operating and maintenance costs, which are a function of travel time and routing characteristics (e.g., curves, steep grades, paved trackwork, structures and integrated roadway/transit signal systems).

Environmental and Community Impacts
The routes were selected to minimize adverse impacts to the existing environment and community including sensitive or protected natural resources, adjacent land uses, vehicular and pedestrian traffic and public safety.

C. Transit Operating Plan

The next step in developing the alternatives was to define the transit operating plan. It is proposed the study area would be adequately served by high-frequency (7.5 minute peak headway in 2030) line-haul transit service. Feeder bus operating plans for each alternative were coordinated with the two transit operators in the study area, Metro Transit and SouthWest Metro Transit. The transit operating plan for each alternative is included in Appendix D.

5. Definition of Initial Alternatives

The following section describes the initial alternatives recommended for evaluation in the Southwest AA Study. These alternatives include an Enhanced Bus option required by FTA, Bus Rapid Transit (BRT) options, and Light Rail Transit (LRT) options. These initial transitway alternatives were presented to the public at a series of non-National Environmental Policy Act (NEPA) scoping meetings in May 2005. These alternatives were then modified based upon input received at the scoping meetings, meetings with staff from the five partner cities, meeting with other partner agencies (Mn/DOT, Metro Transit, SouthWest Metro Transit), and on other input received from the general public.

The definition of each alternative includes a description of the area served, the routing, the station location, major infrastructure requirements, and the transit operating plan. A more detailed definition of each alternative is included in Appendix D.

Table 2 at the conclusion of this section identifies the stations served by each alternative.

1. No Build Alternative (2030)
The No Build Alternative represents existing and committed infrastructure, facilities and services expected to be in place and operating for the forecast year, 2030. Future projects included in a financially constrained regional plan are considered elements of a no build alternative, unless they might have a major impact on decisions for the corridor alternatives in the Southwest Transitway AA, in which case they are removed from the ridership model of highways or transit guideways. The *Twin Cities 2030 Transportation Policy Plan* was developed under a constrained funding scenario. The No Build alternative is incorporated in the 2030 Twin Cities regional travel demand forecasting model, used to forecast ridership for the Southwest Transitway AA. The following description is provided as background information on the level of transportation investment already programmed by the region.

The Twin City metropolitan area surrounding Minneapolis and St. Paul is planning for rapid population growth, growing congestion and limited prospects for new major freeways by 2030. The region's *Transportation Policy Plan* identifies the 2030 system as multi-modal, geographically balanced, cost-effective and supportive of the Regional Development Framework. Roadway infrastructure and service improvements are focused on maintaining and managing the existing system, removing or relieving

bottlenecks, and adding capacity. The *Transit 2030 Plan*, a major component of the overall *Transportation Policy Plan*, is designed and scaled to strongly support the region's economic vitality by promoting mobility, access to opportunities, and more efficient use of land and public infrastructure.

For the highway network, each major corridor improvement undergoes intense planning through the Minnesota Department of Transportation (Mn/DOT), host county and cities in an FHWA planning process comparable in scope and schedule to the FTA process. Highway improvements include planning for roadway-based transit. Through a partnership called Team Transit, Mn/DOT, the Metropolitan Council, transit agencies, cities and counties coordinate to provide a system of advantages for transit vehicles to help improve the efficiency of the region's freeways by implementing bus-only shoulders, bus-only ramps, and High Occupancy Vehicle (HOV) lanes. Team Transit has also constructed a network of park-and-ride lots throughout the study area, positioned to offer efficient access to the regional highway system.

In the vicinity of the Southwest Transitway study area, major improvements programmed for implementation under the constrained funding scenario include the following:

- Lane Additions: Additional highway lanes on I-494, TH 100, and I-35W
- HOV lanes: Fully implemented on I-35W through Richfield and Minneapolis, with on-line stations for BRT service, identifying the improved I-35W as a transitway
- Construction of new highway TH 212 from I-494 in Hennepin County into Carver County
- Bus shoulder lane expansions on TH 62, I-494, TH 100, TH 169, TH 212, and TH 5, facilitating the planned Express Commuter Bus System on I-494, TH 5 and TH 169
- Southwest Transitway
- Park-and-Ride lots: County Road 60/Minnetonka Boulevard, TH 212/TH 101, TH 212/CSAH 41
- TH 212 SouthWest Metro Transit bus service to TH 101, Chanhassen and CSAH 41, Chaska

Within the Southwest study area, existing and planned transit service centers on a dense local bus route structure. As the Twin Cities metropolitan area does not have dedicated funding for transit, transit operators in the region modify routes regularly to better target service to the markets served and to match available funding. The entire Southwest Transitway study area is within the regional Transit Taxing District.

The 2030 No Build alternative assumes the future transit service network will closely resemble the dense route structure and extensive facilities of the existing system, with additions noted above and reflected in the regional travel model maintained by the Metropolitan Council. The 2030 No Build transit system is graphically represented in the Figure D-1 in Appendix D. Major additions to the regional transit system outside the Southwest Transitway study area planned to be in place by 2030 include Northstar commuter rail service between Minneapolis and Big Lake, Central Corridor LRT service between downtown Minneapolis, the University of Minnesota, and downtown St. Paul, Bottineau Boulevard BRT service between Rogers and downtown Minneapolis, Cedar Avenue BRT service between Dakota County and the Mall of America in Bloomington, the Red Rock commuter rail service between Hastings and St. Paul, and the Rush Line transitway between Pine County and St. Paul.

Existing Transit Service

Metro Transit operates twenty-three routes within the study area: seven local, two limited stop, and thirteen express routes. SouthWest Metro Transit operates a total of twenty-three routes: eleven local and twelve express routes. Team Transit has constructed a network of park-and-ride lots throughout the study area, positioned to offer efficient access to the regional highway system. The existing transit system is described in *Technical Memorandum No.1 Purpose and Need Statemen*t for the Southwest Transitway.

2. Enhanced Bus Alternative

The Federal Transit Administration (FTA) requires the development of a baseline bus option for inclusion in an alternatives analysis study. The FTA web site defines baseline bus as:

> *… the best than can be done for mobility without constructing a new transit guideway. An acceptable baseline alternative emphasizes transportation system upgrades such as intersection improvement, minor road widening, traffic engineering actions, bus route restructuring, shortened bus headways, expanded use of articulated buses, reserved bus lanes, contra-flow lanes for buses and High Occupancy Vehicle (HOVs) on freeways, special bus ramps on freeways, expanded park/ride facilities, express and limited-stop service, signalization improvement, and timed-transfer operations.*[1]

In an Alternatives Analysis (AA), the Enhanced Bus alternative, not the No Build alternative, is used as the basis for comparison to the "build" alternatives, which are defined as BRT and LRT for this study. This is required to demonstrate that the higher level of investment in a "build" alternative is justified (or not.)

Description

The Enhanced Bus alternative includes two new limited-stop bus routes providing bi-directional service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and downtown Minneapolis; minor modifications to the existing express service; increased service frequencies on the existing transit system; and, restructured local service to provide access to stops along the new limited-stop routes.

The transit operating plan for the Enhanced Bus alternative is generally carried through as elements of the BRT and LRT alternatives to ensure that ridership forecast differences result from characteristics of the alternative other than the level of transit service provided.

Figure 1 illustrates the Enhanced Bus alternative. The transit operating plan for the Enhanced Bus alternative is described in Appendix D.

Limited-Stop Route "A" – Eden Prairie, Hopkins, St. Louis Park to Downtown Minneapolis

This route begins at a park-and-ride lot at Mitchell Road and Technology Drive. The route enters TH 5 to SouthWest Metro Transit Station on Technology Drive, and then reenters TH 5 to Flying Cloud Drive to the bus-only shoulder lanes on TH 212. From the bus-only shoulder lanes of TH 212, the route enters the bus-only shoulder lanes on TH 169 to Excelsior Boulevard in Hopkins. The route continues in mixed traffic along Excelsior Boulevard then northbound in mixed traffic on Blake Road to TH 7. The route continues in mixed traffic along TH 7 to access the bus-only shoulder lanes on TH 100. From the TH 100 bus-only shoulder lanes the route enters the I-394 High Occupancy Vehicle (HOV) lanes to downtown Minneapolis. The route departs the I-394 HOV lane at 12th Street to access the 2nd and Marquette Avenue one-way pair to its downtown terminus at the Gateway Transit Center (3rd and Washington Avenues).

Stops

Limited Stop Route A provides service to the following 14 stops: Mitchell Road park-and-ride at TH 5, SouthWest Station, Flying Cloud Drive, TH 212/Shady Oak Road, TH 169/Bren Road, TH 169/

[1] http://www.fta.gov

Excelsior Boulevard, Excelsior Boulevard/ Blake Road, Blake Road/TH 7, TH 7/Texas Avenue, TH 7/Louisiana Avenue, TH 7/Wooddale Avenue, 11th Avenue/Marquette and2nd Avenues, 8th Avenue/Marquette and 2nd Avenues, and 5th/Marquette and 2nd Avenues.

Limited-Stop Route "B" – Minnetonka, Hopkins, St. Louis Park to Downtown Minneapolis

This route begins at the intersection of Shady Oak Road and Excelsior Boulevard. The route then travels in mixed traffic along Excelsior Boulevard to Blake Road. From Blake Road the route travels north to TH 7, then westbound on TH 7 to access new bus-only shoulder lanes on TH 100. From the TH 100 bus-only shoulder lanes the route enters the I-394 High Occupancy Vehicle (HOV) lanes to downtown Minneapolis. The route departs the I-394 HOV lane at 12th Street to access the 2nd and Marquette Avenue one-way pair to its downtown terminus at the Gateway Transit Center (3rd and Washington Avenues).

Stops

Limited Stop Route B provides service to the following 11 stops: Shady Oak Road/Excelsior Boulevard, 8th Avenue (downtown Hopkins)/Excelsior Boulevard, TH 169/Excelsior Boulevard, Blake Road/Excelsior Boulevard, Blake Road/ TH 7, TH 7/Texas Avenue, TH 7/Louisiana Avenue, TH 7/Wooddale Avenue, 11th/Marquette and 2nd Avenues, 8th/Marquette and 2nd Avenues, and 5th/Marquette and 2nd Avenues.

Minor Infrastructure Improvements

The following minor infrastructure improvements in the study area are included in the region's long range transportation plan, the TPP:

- Bus shoulder lane expansions on TH 62, I-494, TH 100, TH 169, TH 212, and TH 5,
- Park-and-ride lots: County Road 60/Minnetonka Boulevard, TH 212/TH 101, TH 212/CSAH 41

The following minor infrastructure improvements are not included in the region's long-range transportation plan, the TPP, and are therefore proposed as capital costs required to implement the Enhanced Bus alternative:

- New park-and-ride lots at Mitchell Road/TH 5, TH 212/Shady Oak Road, 8th Avenue (downtown Hopkins), and TH 7/Texas Avenue.

A queue-bypass ramp connecting TH 100 and I-394 is recommended to improve this area so it can be traversed with a minimum of delay. However, this improvement would have to be coordinated with Mn/DOT before its implementation could be assumed.

Service Plan

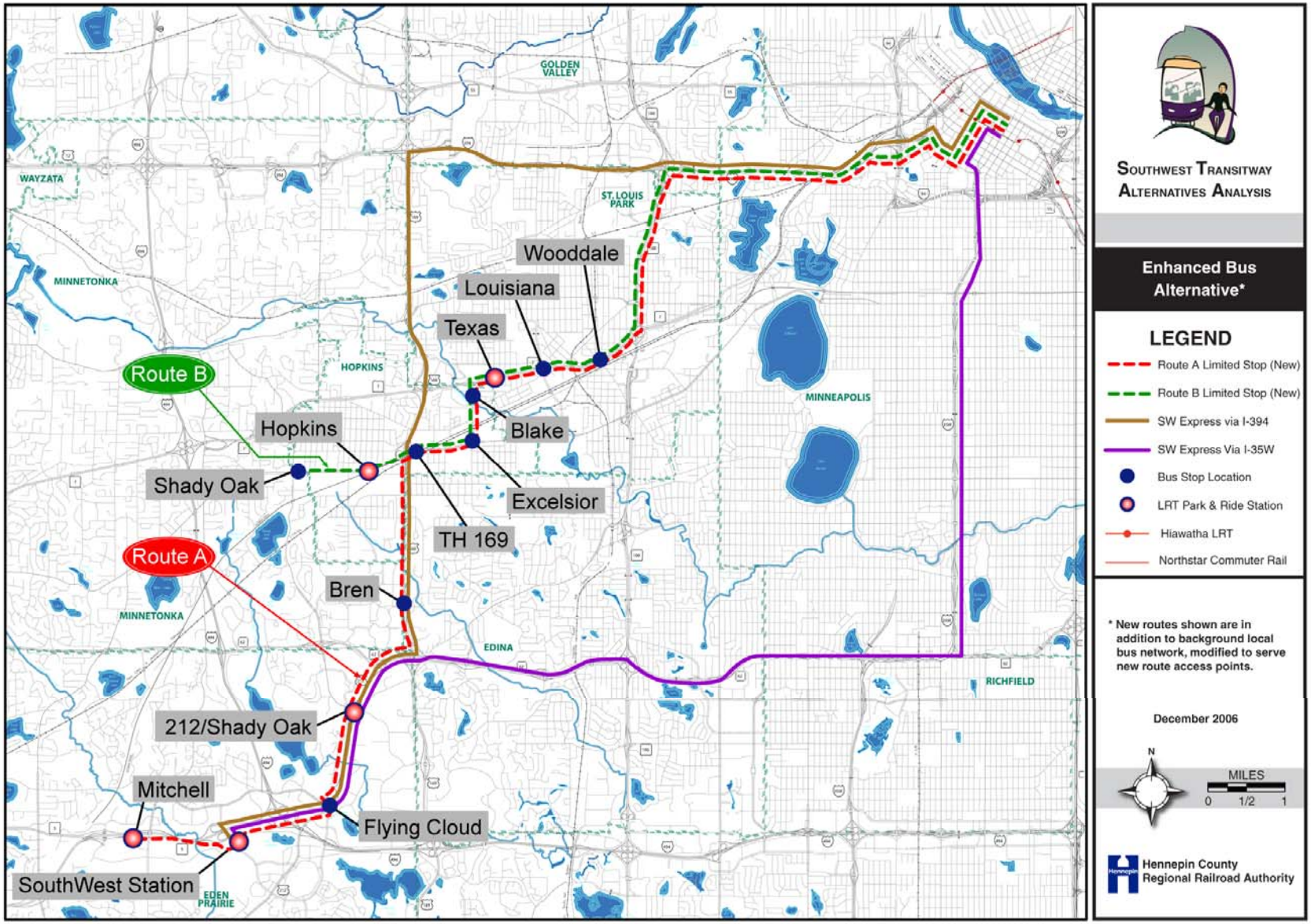
The weekday service frequencies are listed below. When combined for the overlapping segment from Hopkins to downtown Minneapolis, the resulting frequencies are 10 minutes in the early morning, 7.5 minutes during the morning peak, 10 minutes for the mid-day, 7.5 minutes during afternoon peak, and 15 minutes during the evening.

Table 2 Enhanced Bus Service Plan – Frequency (Minutes between Buses) and Hours

	Weekdays	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)
Weekdays	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Route “A”	20	15	20	15	30
Route “B”	20	15	20	15	30
Combined	10	7.5	10	7.5	15
Weekends	20-60 minutes	20-60 minutes	20-60 minutes	20-60 minutes	20-60 minutes
Weekdays	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)

Source: Parsons Brinckerhoff, 2006.

Figure 1: Initial Enhanced Bus Alternative



Source: Parsons Brinckerhoff, 2006.

C. Build Alternatives

The two build alternatives, defined as those requiring major infrastructure improvements are Bus Rapid Transit (BRT) and Light Rail Transit (LRT).

Table 3 Characteristics of BRT and LRT

Characteristic	BRT	LRT
Service Type	High frequency (7.5 minute peak), bi-directional, line-haul, limited-stop, seven days per week.	High frequency (7.5 minute peak), bi-directional, line-haul, limited-stop, seven days per week.
Service Hours	Weekday: 4:00 AM to2:00 AM Weekend/Holiday: 4:00 AM to 2:00 AM	Weekday: 4:00 AM to 2:00 AM Weekend/Holiday: 4:00 AM to 2:00 AM
Station Spacing	Downtown: ¼ to ½ mile First ring: ½ to 1 mile Second ring: 1 to 2 miles	Downtown: ¼ to ½ mile First ring: ½ to 1 mile Second ring: 1 to 2 miles
Fare Collection	Proof of Payment	Proof of Payment
Stations	High amenity, on-line with park & ride where appropriate.	High amenity, on-line with park & ride where appropriate.
Dedicated Guideway	Two-lane bus only roadway (approximately 28 feet in width)	Two exclusive tracks (approximately 30 feet wide path)
Vehicles	Low-floor, diesel hybrid vehicles	Light rail vehicles (assumes use of Bombardier Hiawatha LRT vehicle, or similar)
Intelligent Transportation System (ITS)	Signal priority and preemption where feasible	Signal priority and preemption where feasible.

Source: Parsons Brinckerhoff, 2006.

Bus Rapid Transit (BRT) Alternatives

Effective BRT transit service is frequent, direct, easy to understand, comfortable, reliable, operationally efficient, and above all – rapid. Of the alternative transit modes recommended for evaluation for the Southwest Transitway, bus rapid transit encompasses perhaps the widest variety of potential features. A range of options exists within each component of a bus rapid transit system, allowing the BRT concept to be tailored to the needs and resources of the community for which it is proposed.

Two BRT alternatives, labeled BRT 1 and BRT 2, are defined to serve the travel needs of the study area. In developing these BRT alternatives the consultant team reviewed the *29th Street and Southwest Busway Feasibility Study, 2000* and *Mn/DOT's Exclusive Busway Study, 2000*. The two primary routes under the Enhanced Bus alternative, Limited Stop Routes A and B, operate as the principal BRT routes under the BRT alternatives. The two routes provide overlapping service from Shady Oak Road to Minneapolis, combining to offer 7.5 minute headways from Shady Oak into downtown Minneapolis.

BRT 1

The BRT 1 alternative is proposed to operate from TH 5 in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing

The route begins near the intersection of TH 5 and the HCRRA's Southwest Corridor. From that point the route enters a new exclusive (bus-only) guideway in the HCRRA's Southwest Corridor to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive (bus-only) guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive (bus-only) guideway in the HCRRA's Cedar Lakes Corridor. When it reaches the new Van White Boulevard, the route exits the exclusive guideway and follows new reserved bus-only lanes along Dunwoody Boulevard and Hennepin Avenue into downtown Minneapolis. The route ends at the intersection of 5th Street and Hennepin Avenue, adjacent to the existing Hiawatha LRT line, then loops around using 3rd and 4th Streets.

Stations

BRT 1 provides service to the following 15 stations: TH 5, TH 62, Rowland Road, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, 21st Street, Van White Boulevard, 12th Street, 8th Street, and 5th Street.

Table 4 BRT 1 Service Plan – Frequency (Minutes between Buses) and Hours

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday					
Route A	20	15	20	15	30
Route B	20	15	20	15	30
Combined	10	7.5	10	7.5 (to 7:30 pm)	15
Weekend					
Route A	30-60	30-60	20	20	30-60
Route B	30-60	30-60	20	20	30-60
Combined	15-30	15-30	10	10	15-30

Source: Parsons Brinckerhoff, 2006.

Freight Rail Relocation

To construct and operate an exclusive bus-only guideway in the HCRRA's Kenilworth Corridor the existing freight rail service must be relocated.

In 1999, St. Louis Park in partnership with Hennepin County and Mn/DOT convened the Southwest Railroad Advisory Task Force to study freight rail issues affecting St. Louis Park. After the task force concluded their work, the St. Louis Park City Council adopted a position that "freight rail from the west headed for St. Paul should continue to travel through the Kenilworth corridor in Minneapolis unless and until such time as a viable form of mass transit displaces it….If at a future date, it is determined that the Kenilworth Corridor is the most feasible route for mass transit and that freight rail and a mass transit system cannot coexist in that corridor, freight rail traffic will be re-routed through St. Louis Park. This is

to be accomplished by constructing a northerly connection on the Golden Auto Site and a connection on the iron triangle property." (Citation Page 1, May 23, 2001)

Under alternative BRT 1 it would be necessary to remove the existing freight railroad track from the HCRRA Kenilworth Corridor. Consistent with the conclusion of the St. Louis Park Rail Task Force position statement, since mass transit is proposed, the freight rail traffic in Kenilworth is proposed to be relocated to the Canadian Pacific Railway's (CP) north-south line (the MNS Subdivision) located west of TH 100, then east on the Burlington Northern SantaFe Railway's (BNSF) Wayzata Subdivision. This requires construction of a new connection on the Golden Auto Site in the northwest corner between the CP Bass Lake Subdivision and the MNS Subdivision, and restoration of the Iron Triangle, a former connection in the southeast corner between the BNSF Wayzata Subdivision and the CP MNS Subdivision.

BRT 2

The BRT 2 alternative is proposed to operate from Mitchell Road in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis. As with BRT 1, the two routes provide overlapping service from Shady Oak Road to Minneapolis, combining to offer 7.5 minute headways from Shady Oak into downtown Minneapolis.

The route begins near the intersection of TH 5 and Mitchell Road in Eden Prairie. From that point the route uses the existing bus-only shoulders along TH 5 to the Prairie Center Drive interchange, where it enters new reserved bus-only lanes along Prairie Center Drive. It follows Prairie Center Drive south, then turns east into new reserved bus-only lanes along Singletree Lane. When the route reaches the intersection of Singletree Lane and Flying Cloud Drive, it turns north and continues in new bus-only shoulders along Flying Cloud Drive. At Valley View Road the route enters an exclusive (bus-only) guideway along the east side of the TH 212 right-of-way, then swings east and north along new right-of-way through the Golden Triangle area.

After crossing Shady Oak Road, the exclusive bus-only guideway crosses over TH 212 into the City West area, then crosses over TH 62 into the Opus area of Minnetonka. At Bren Road the route leaves the bus-only guideway and follows new reserved bus-only lanes along Bren Road to the TH 169 interchange. At TH 169 the route follows the existing bus-only shoulders north to Excelsior Boulevard, where it then enters an exclusive (bus-only) guideway located in the HCRRA's Southwest Corridor.

For this alternative, the exclusive guideway in the HCRRA's Southwest Corridor begins near Shady Oak Road. It continues east, passing under TH 169, where it is joined by the route branch coming north from Bren Road. The combined route continues in the exclusive guideway to West Lake Street in Minneapolis.

Just north of West Lake Street the route enters an exclusive (bus-only) guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive (bus-only) guideway in the HCRRA's Cedar Lakes Park Corridor. When it reaches the new Van White Boulevard, the route exits the exclusive guideway and follows new reserved bus-only lanes along Dunwoody Boulevard and Hennepin Avenue into downtown Minneapolis. The route ends at the intersection of 5th Street and Hennepin Avenue, adjacent to the existing Hiawatha LRT line, then loops around using 3rd and 4th Streets.

Potential Route Variations

This alternative includes a route variation in Eden Prairie. After serving the SouthWest Metro Transit station, the route continues east on bus-only shoulders along TH 5. Once it passes under I-494 and

Valley View Road, the route enters an exclusive (bus-only) guideway that carries it into the Golden Triangle area. The variation does not include an Eden Prairie Center station.

Stations

BRT 2 provides service to the following 18 stations: Mitchell Road, SouthWest, Eden Prairie Center, Golden Triangle, City West, Opus, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, 21st Street, Van White Boulevard, 12th Street, 8th Street, and 5th Street.

Table 5 BRT 2 Service Plan – Frequency (Minutes between Buses) and Hours

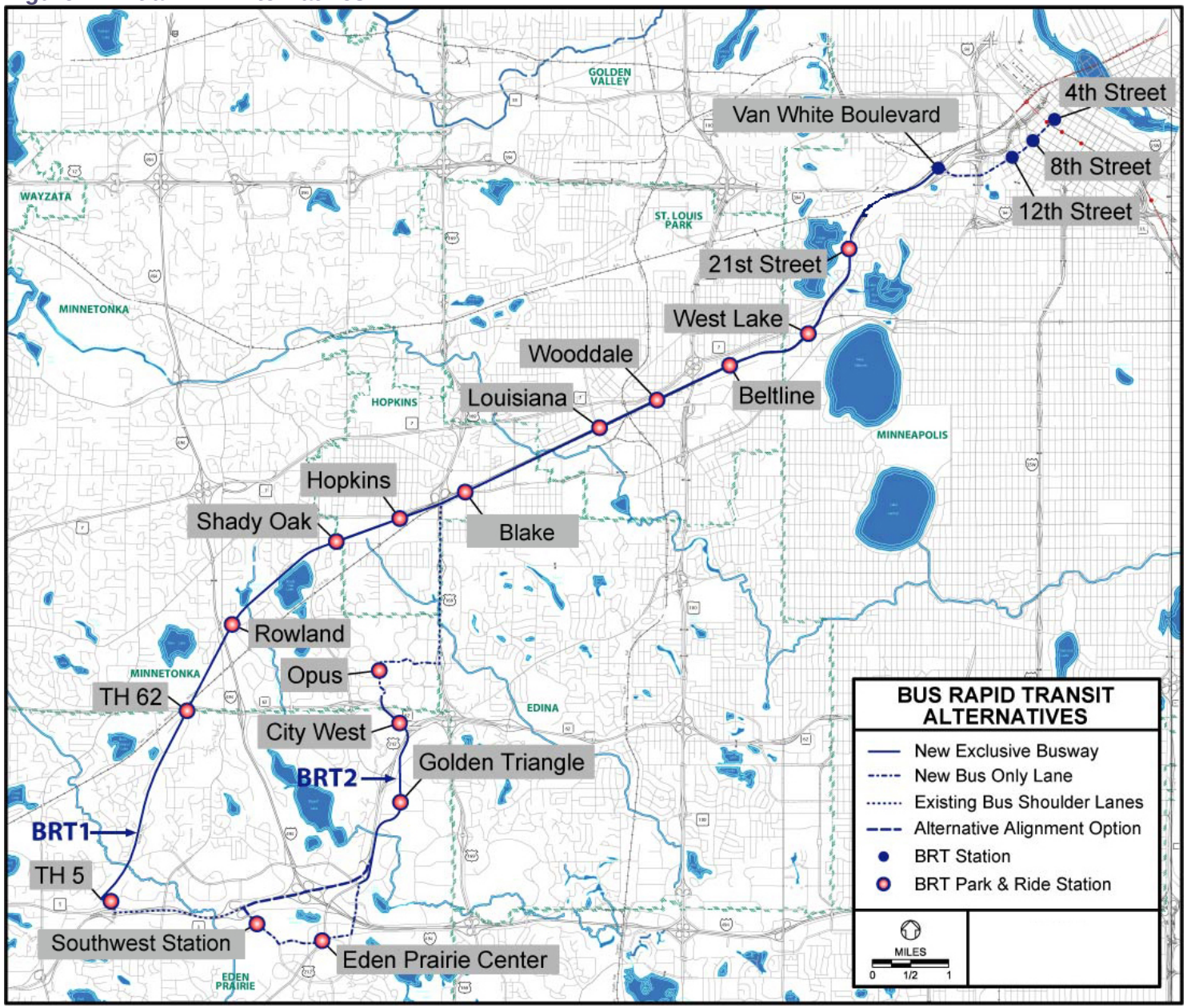
	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday					
Route "A"	20	15	20	15	30
Route "B"	20	15	20	15	30
Combined (routes A & B)	10	7.5	10	7.5 (to 7:30 pm)	15
Weekend					
Route "A"	30-60	30-60	20	20	30-60
Route "B"	30-60	30-60	20	20	30-60
Combined (routes A & B)	15-30	15-30	10	10	15-30

Source: Parsons Brinckerhoff, 2006.

Freight Rail Relocation

As described under BRT 1, to construct and operate an exclusive bus-only guideway in the HCRRA's Kenilworth Corridor the existing freight rail service must be relocated. Consistent with the conclusion of the St. Louis Park Rail Task Force position statement, since mass transit is proposed, the freight rail traffic in Kenilworth is proposed to be relocated to the CP north-south line (the MNS Subdivision) located west of TH 100, then east on the BNSF Wayzata Subdivision. This requires construction of a new connection on the Golden Auto Site in the northwest corner between the CP Bass Lake Subdivision and the MNS Subdivision, and restoration of the Iron Triangle, a former connection in the southeast corner between the BNSF Wayzata Subdivision and the CP MNS Subdivision.

Figure 2: Initial BRT Alternatives



Source: Parsons Brinckerhoff, 2006.

Light Rail Transit (LRT) Alternatives

Light rail transit service is characterized by service that is frequent, direct, easy to understand, comfortable, reliable, operationally efficient, and rapid.

Eight initial LRT alternatives were defined to serve the travel needs of the study area. In developing the initial LRT alternatives, the consultants reviewed the HCRRA's *Southwest Rail Transit Study, 2003* was reviewed.

The eight LRT alternatives are described using a combination of a numeric (1, 2, 3, or 4) and alphabetic (A or C) designation. The numbers designate the four possible routings west of Louisiana Avenue in St. Louis Park. The letters designate the two possible routes east of Louisiana Avenue in St. Louis Park.

Alternatives numbered "1" designate routes that use the HCRRA's Southwest Corridor through Eden Prairie, Minnetonka, Hopkins, to Louisiana Avenue in St. Louis Park. Alternatives numbered "2" designate routes that use TH 5 and I-494 rights-of-way through Eden Prairie and Minnetonka and HCRRA's Southwest Corridor through Hopkins to Louisiana Avenue in St. Louis Park. Alternatives numbered "3" use a combination of new exclusive rights-of-way through Eden Prairie, Minnetonka and part of Hopkins, then they use the HCRRA's Southwest Corridor through Hopkins to Louisiana Avenue in St. Louis Park. Alternatives numbered "4" designate shortened routes using the HCRRA's Southwest Corridor from Shady Oak Road in Minnetonka to Louisiana Avenue in St. Louis Park. These alternatives do not provide direct LRT service to areas of Minnetonka west of Shady Oak Road and Eden Prairie. LRT alternatives 1 through 4 mirror those resulting from the HCRRA's *Southwest Rail Transit Study, 2003*.

Alternatives with the letter "A" designate routes that use the HCRRA's Southwest Corridor through St. Louis Park, and the HCRRA's Kenilworth and Cedar Lake Park Corridors in Minneapolis. Alternatives with the letter "C" designate routes that use the HCRRA's Southwest Corridor in St. Louis Park, the HCRRA's Midtown Corridor in Minneapolis, and a shallow tunnel under Nicollet Avenue between 29th and Franklin Avenue in Minneapolis. In general, the A and C routings are similar to those contained in the HCRRA's *Draft Environmental Impact Statement (DEIS) Hennepin County LRT System, 1988.*

The LRT alternatives are summarized in the following paragraphs and illustrated in the figures which follow. A more extensive route and station description and individual maps of each alternative are included in Appendix D.

LRT 1A

The LRT 1A alternative is proposed to operate from TH 5 in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing

The route begins near the intersection of TH 5 and the HCRRA's Southwest Corridor. From that point the route enters a new exclusive light rail transit (LRT) guideway in the HCRRA's Southwest Corridor to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive (LRT) guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive (LRT) guideway in the HCRRA's Cedar Lakes Corridor to Glenwood Avenue in Minneapolis. At Glenwood Avenue the route climbs from the Cedar Lakes Corridor to street level, where it enters Royalston Avenue. In Royalston Avenue the route operates on exclusive (LRT) guideway in the median of Royalston Avenue to 7th Street. At 7th Street the route enters a shallow tunnel under 7th

Street to 5th Street. At 5th Street the route continues through downtown Minneapolis on the Hiawatha LRT tracks.

Potential Route Variations
Two route variations are included in the LRT 1A alternative, one in Eden Prairie and the other in downtown Minneapolis.

Under the LRT 1A alternative as described above, the LRT route must cross the TC&W Railroad tracks near TH 62. The TH 62 overpass and the existing grades in that area make the crossing difficult. To avoid this potentially difficult and costly crossing, a short route variation that uses the TC&W and Canadian Pacific right-of-way may be evaluated in future engineering studies. Under this variation the route turns into the railroad right-of-way after passing below TH 62, and run next to the railroad tracks to a location near the Minnetonka-Hopkins city limits. At that point the route crosses beneath the freight tracks and turns north, following new right-of-way until it reaches the HCRRA's Southwest Corridor. The route then enters the HCRRA's Southwest Corridor and proceeds towards Minneapolis.

The second route variation uses Dunwoody Boulevard and Hennepin Avenue rather than Royalston Avenue to access downtown Minneapolis. Under this variation the route leaves the HCRRA's Cedar Lakes Corridor at the new Van White Boulevard and enters Dunwoody Boulevard and Hennepin Avenue to 5th Street in downtown Minneapolis. While this route variation can interline with the Hiawatha LRT line eastbound it cannot interline with the Hiawatha LRT line westbound to access the Warehouse and proposed Intermodal stations.

Stations
LRT 1A provides service to the following 13 stations: TH 5, TH 62, Rowland Road, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, 21st Street, Van White Boulevard, and Royalston.

Because this route operates on the Hiawatha LRT tracks through downtown Minneapolis it also provides direct service to the proposed Intermodal, as well as existing Warehouse, Nicollet, Government Plaza and Metrodome LRT stations.

The Hennepin Avenue variation of this alternative does not include service to the proposed Royalston, the proposed Intermodal, and the Warehouse stations. However, it does provide service to new stations at 12th Street and 8th Street as well as to the existing LRT stations at Nicollet, Government Plaza, and the Metrodome in downtown Minneapolis.

Table 6 LRT 1A Service Plan – Frequency (Minutes Between Trains) and Hours

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 (to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Source: Parsons Brinckerhoff, 2006.

Freight Rail Relocation
As described under the BRT alternatives, to construct and operate an exclusive transit-only guideway in the HCRRA's Kenilworth Corridor the existing freight rail service must be relocated. Consistent with the conclusion of the St. Louis Park Rail Task Force position statement summarized previously, since mass transit is proposed under LRT 1A, the freight rail traffic in Kenilworth is proposed to be relocated to the CP's north-south line (the MNS Subdivision) located west of TH 100, then east on the BNSF's Wayzata Subdivision.

LRT 2A

The LRT 2A alternative is proposed to operate from Mitchell Road in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing
The route begins near the intersection of TH 5 and Mitchell Road in Eden Prairie. From that point the route enters an exclusive (LRT) guideway along the south side of TH 5, crossing under Prairie Center Drive. As it approaches the I-494/TH 5 interchange, the route climbs and crosses over TH 5, descending along the west side of the I-494 exit ramp to TH 5. It continues north along the west side of I-494 right-of-way to the HCRRA's Southwest Corridor, where it turns east and crosses under the freeway.

After entering the HCRRA's Southwest Corridor, the route continues in an exclusive (LRT) guideway to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive (LRT) guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive (LRT) guideway in the HCRRA's Cedar Lakes Corridor to Glenwood Avenue in Minneapolis. At Glenwood Avenue the route climbs from the Cedar Lakes Corridor to street level where it enters Royalston Avenue. In Royalston Avenue the route operates on exclusive (LRT) guideway in the median of Royalston Avenue to 7th Street. At 7th Street the route enters a shallow tunnel under 7th Street to 5th Street. At 5th Street the route continues through downtown Minneapolis on the Hiawatha LRT tracks.

Potential Route Variation
This alternative includes the potential Hennepin Avenue route variation described under LRT 1A.

Stations
LRT 2A provides service to the following 15 stations: Mitchell Road, SouthWest, Valley View, TH 62, Rowland Road, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, 21st Street, Van White Boulevard, and Royalston.
Because this route can operate on the Hiawatha LRT tracks through downtown Minneapolis it also provides direct service to the proposed Intermodal, as well as existing Warehouse, Nicollet, Government Center and Metrodome LRT stations.

Table 7 LRT 2A Service Plan – Frequency (Minutes Between Trains) and Hours

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 (to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Source: Parsons Brinckerhoff, 2006.

Freight Rail Relocation

As described previously, to construct and operate an exclusive transit-only guideway in the HCRRA's Kenilworth Corridor the existing freight rail service must be relocated. Consistent with the conclusion of the St. Louis Park Rail Task Force position statement summarized previously, since mass transit is proposed under LRT 2A, the freight rail traffic in Kenilworth is proposed to be relocated to the CP's north-south line (the MNS Subdivision) located west of TH 100, then east on the BNSF's Wayzata Subdivision.

LRT 3A

The LRT 3A alternative is proposed to operate from Mitchell Road in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing

The route begins near the intersection of TH 5 and Mitchell Road in Eden Prairie. From that point the route enters an exclusive (LRT) guideway along the south side of TH 5, crossing under Prairie Center Drive. It turns south along the east side of Prairie Center Drive, then turns east into new right-of-way located behind the existing properties on the north side of Singletree Lane. The route continues along the south side of Leona Road to Flying Cloud Drive, where it turns north. It runs along the east side of Flying Cloud Drive, over I-494 and into the east side of the TH 212 right-of-way.

The route then swings east and north along new right-of-way through the Golden Triangle area. After crossing Shady Oak Road, the route crosses over TH 212 into the City West area, then it crosses over TH 62 into the Opus area of Minnetonka. The route follows new right-of-way through Opus, crossing under Smetana Road and continuing north along the Minnetonka-Hopkins city limits. After reaching the HCRRA's Southwest Corridor, the route turns east and enters an exclusive (LRT) guideway to West Lake Street in Minneapolis.

Just north of West Lake Street the route enters an exclusive (LRT) guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive (LRT) guideway in the HCRRA's Cedar Lakes Corridor to Glenwood Avenue in Minneapolis. At Glenwood Avenue the route climbs from the Cedar Lakes Corridor to street level where it enters Royalston Avenue. In Royalston Avenue the route operates on exclusive (LRT) guideway in the median of Royalston Avenue to 7th Street. At 7th Street the route enters a shallow tunnel under 7th Street to 5th Street. At 5th Street the route continues through downtown Minneapolis on the Hiawatha LRT tracks.

Potential Route Variation

This alternative includes a route variation in Eden Prairie. After serving the SouthWest station, the route would cross under Prairie Center Drive and continue along the north side of Technology Drive. It then turns northeast, crossing over I-494 and intersecting Flying Cloud Drive. The route follows along the east side of Flying Cloud Drive and into the east side of the TH 212 right-of-way. The variation does not include an Eden Prairie Center station.

This alternative also includes the potential Hennepin Avenue route variation described under LRT 1A.

Stations
LRT 3A provides service to the following 16 stations: Mitchell Road, SouthWest, Eden Prairie Center, Golden Triangle, City West, Opus, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, 21st Street, Van White Boulevard, and Royalston.
Because this route can operate on the Hiawatha LRT tracks through downtown Minneapolis it also provides direct service to the proposed Intermodal, as well as existing Warehouse, Nicollet, Government Center and Metrodome LRT stations.

Table 8 LRT 3A Service Plan – Frequency (Minutes Between Trains) and Hours

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 (to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Source: Parsons Brinckerhoff, 2006.

Freight Rail Relocation
As described previously, to construct and operate an exclusive transit-only guideway in the HCRRA's Kenilworth Corridor the existing freight rail service must be relocated. Consistent with the conclusion of the St. Louis Park Rail Task Force position statement summarized previously, since mass transit is proposed under LRT 3A, the freight rail traffic in Kenilworth is proposed to be relocated to the CP's north-south line (the MNS Subdivision) located west of TH 100, then east on the BNSF's Wayzata Subdivision.

LRT 4A
The LRT 4A alternative is proposed to operate from Shady Oak Road in Minnetonka to downtown Minneapolis, providing service to Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing
The route begins near the intersection of Shady Oak Road and the HCRRA's Southwest Corridor. From Shady Oak Road the route enters a new exclusive light rail transit (LRT) guideway in the HCRRA's Southwest Corridor to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive (LRT) guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive (LRT) guideway in the HCRRA's Cedar Lakes Corridor to Glenwood Avenue in Minneapolis. At Glenwood Avenue the route climbs from the Cedar Lakes Corridor to street level where it enters Royalston Avenue. In Royalston Avenue the route operates on

exclusive (LRT) guideway in the median of Royalston Avenue to 7th Street. At 7th Street the route enters a shallow tunnel under 7th Street to 5th Street. At 5th Street the route continues through downtown Minneapolis on the Hiawatha LRT tracks.

Potential Route Variation
This alternative includes the potential Hennepin Avenue route variation described under LRT 1A.

Stations
LRT 4A provides service to the following 10 stations: Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, 21st Street, Van White Boulevard, and Royalston. Because this route can operate on the Hiawatha LRT tracks through downtown Minneapolis it also provides direct service to the proposed Intermodal, as well as existing Warehouse, Nicollet, Government Center and Metrodome LRT stations.

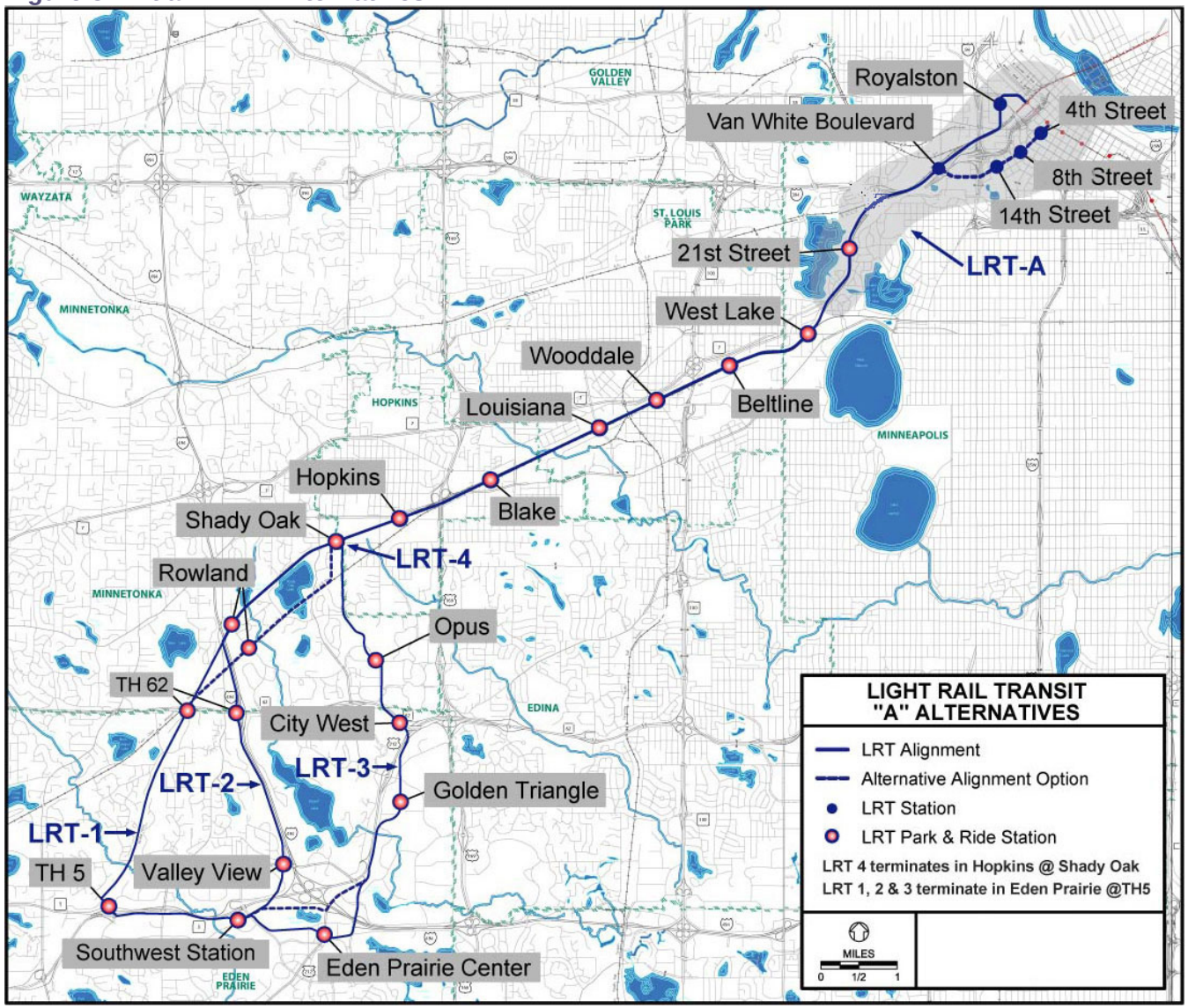
Table 9 LRT 4A Service Plan – Frequency (Minutes Between Trains) and Hours

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 (to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Source: Parsons Brinckerhoff, 2006.

Freight Rail Relocation
As described previously, to construct and operate an exclusive transit-only guideway in the HCRRA's Kenilworth Corridor the existing freight rail service is proposed to be relocated. Consistent with the conclusion of the St. Louis Park Rail Task Force position statement summarized previously, since mass transit is proposed under LRT 4A, the freight rail traffic in Kenilworth is proposed to be relocated to the CP's north-south line (the MNS Subdivision) located west of TH 100, then east on the BNSF's Wayzata Subdivision.

Figure 3: Initial LRT A Alternatives



Source: Parsons Brinckerhoff, 2006.

LRT 1C

The LRT 1C alternative is proposed to operate from TH 5 in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing

The route begins near the intersection of TH 5 and the HCRRA's Southwest Corridor. From that point the route enters a new exclusive light rail transit (LRT) guideway in the HCRRA's Southwest Corridor to West Lake Street in Minneapolis. Just east of West Lake Street the route enters a new exclusive (LRT) guideway in the HCRRA's Midtown Corridor to Nicollet Avenue. At Nicollet Avenue the route turns northward entering a new exclusive (LRT) guideway in a cut and cover tunnel under Nicollet Avenue to Franklin Avenue. At Franklin Avenue the route exits the shallow tunnel and operates at-grade on Nicollet Avenue to Grant Street. At Grant the route will either operate two-way on Nicollet Mall or as a one-way paired loop on 2nd and Marquette Avenues to 4th Street.

Potential Route Variation

This alternative includes the potential shared railroad right-of-way route variation described under LRT 1A.

Stations

LRT 1C provides service to the following 17 stations: TH 5, TH 62, Rowland Road, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, Uptown, Lyndale Avenue, 28th Street, Franklin Avenue, 12th Street, 8th Street (Nicollet routing), 7th Street (2nd/Marquette routing), and 4th Street.

Table 10 LRT 1C Service Plan – Frequency (Minutes Between Trains) and Hours

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 (to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Source: Parsons Brinckerhoff, 2006.

Freight Rail Right-of-Way Exchange

Under alternative LRT 1C in order to serve the proposed stations at Wooddale Avenue, Beltline Boulevard, and West Lake Street the rights-of-way owned by the HCRRA and the CP Railway are proposed to be exchanged and a grade separated crossing of the LRT and freight rail tracks is proposed to be constructed between Louisiana Avenue and Wooddale Avenue. This exchange allows freight rail operations to be located to the north of the LRT service. Under this alternative, freight rail service is proposed to continue to operate in the HCRRA's Kenilworth Corridor in Minneapolis.

LRT 2C

The LRT 2C alternative is proposed to operate from Mitchell Road in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing

The route begins near the intersection of TH 5 and Mitchell Road in Eden Prairie. From that point the route follows along the south side of TH 5, crossing under Prairie Center Drive. As it approaches the I-494/TH 5 interchange, the route climbs and crosses over TH 5, descending along the west side of the I-494 exit ramp to TH 5. It continues north along the west side of I-494 to the HCRRA's Southwest Corridor, where it turns east and crosses under the freeway.

After entering the HCRRA's Southwest Corridor, the route continues in an exclusive (LRT) guideway to West Lake Street in Minneapolis. Just east of West Lake Street the route enters a new exclusive (LRT) guideway in the HCRRA's Midtown Corridor to Nicollet Avenue. At Nicollet Avenue the route turns northward entering a new exclusive (LRT) guideway in a shallow tunnel under Nicollet Avenue to Franklin Avenue. At Franklin Avenue the route exits the shallow tunnel and operates at-grade on Nicollet Avenue to Grant Street. At Grant the route will either operate two-way on Nicollet Mall or as a one-way paired loop on 2nd and Marquette Avenues.

Stations

This alternative includes service to the following 19 stations: Mitchell Road, SouthWest, Valley View, TH 62, Rowland Road, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, Uptown, Lyndale Avenue, 28th Street, Franklin Avenue, 12th Street, 8th Street (Nicollet routing) or 7th Street (2nd/Marquette routing), and 4th Street.

Table 11 LRT 2C Service Plan – Frequency (Minutes Between Trains) and Hours

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 (to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Source: Parsons Brinckerhoff, 2006.

Freight Rail Right-of-Way Exchange

Under alternative LRT 2C in order to serve the proposed stations at Wooddale Avenue, Beltline Boulevard, and West Lake Street the rights-of-way owned by the HCRRA and the CP Railway are proposed to be exchanged and a grade separated crossing of the LRT and freight rail tracks is proposed to be constructed between Louisiana Avenue and Wooddale Avenue. This exchange allows freight rail operations to be located to the north of the LRT service. Under this alternative freight rail service is proposed to continue to operate in the HCRRA's Kenilworth Corridor in Minneapolis.

LRT 3C

The LRT 3C alternative is proposed to operate from Mitchell Road in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing

The route begins near the intersection of TH 5 and Mitchell Road in Eden Prairie. From that point the route follows along the south side of TH 5, crossing under Prairie Center Drive. It turns south along the east side of Prairie Center Drive, then turns east into new right-of-way located behind the existing properties on the north side of Singletree Lane. The route continues along the south side of Leona Road to Flying Cloud Drive, where it turns north. It runs along the east side of Flying Cloud Drive, over I-494 and into the east side of the TH 212 right-of-way. The route then swings east and north along new right-of-way through the Golden Triangle area.

After crossing Shady Oak Road, the route crosses over TH 212 into the City West area, then crosses over TH 62 into the Opus area of Minnetonka. The route follows new right-of-way through Opus, crossing under Smetana Road and continuing north along the Minnetonka-Hopkins city limits. After reaching the HCRRA's Southwest Corridor, the route turns east and follows an exclusive (LRT) guideway to West Lake Street in Minneapolis.

Just east of West Lake Street the route enters a new exclusive (LRT) guideway in the HCRRA's Midtown Corridor to Nicollet Avenue. At Nicollet Avenue the route turns northward entering a new exclusive (LRT) guideway in a shallow tunnel under Nicollet Avenue to Franklin Avenue. At Franklin Avenue the route exits the shallow tunnel and operates at-grade on Nicollet Avenue to Grant Street. At Grant the route either operates two-way on Nicollet Mall or as a one-way paired loop on 2nd and Marquette Avenues.

Potential Route Variation

This alternative includes the potential Eden Prairie route variation described under LRT 3A.

Stations

LRT 3C provides service to the following 20 stations: Mitchell Road, SouthWest, Eden Prairie Center, Golden Triangle, City West, Opus, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, Uptown, Lyndale Avenue, 28th Street, Franklin Avenue, 12th Street, 8th Street and 4th Street.

.

Table 12 LRT 3C Service Plan – Frequency (Minutes Between Trains) and Hours

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 (to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Source: Parsons Brinckerhoff, 2006.

Freight Rail Right-of-Way Exchange

Under alternative LRT 3C in order to serve the proposed stations at Wooddale Avenue, Beltline Boulevard, and West Lake Street the rights-of-way owned by the HCRRA and the CP Railway are proposed to be exchanged and a grade separated crossing of the LRT and freight rail tracks is proposed to be constructed between Louisiana Avenue and Wooddale Avenue. This exchange allows freight rail operations to be located to the north of the LRT service. Under this alternative freight rail service is proposed to continue to operate in the HCRRA's Kenilworth Corridor in Minneapolis.

LRT 4C

The LRT 4C alternative is proposed to operate from Shady Oak Road in Minnetonka to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing

The route begins near the intersection of Shady Oak Road and the HCRRA's Southwest Corridor. From Shady Oak Road the route enters a new exclusive light rail transit (LRT) guideway in the HCRRA's Southwest Corridor to West Lake Street in Minneapolis. Just east of West Lake Street the route enters a new exclusive (LRT) guideway in the HCRRA's Midtown Corridor to Nicollet Avenue. At Nicollet Avenue the route turns northward entering a new exclusive (LRT) guideway in a shallow tunnel under Nicollet Avenue to Franklin Avenue. At Franklin Avenue the route exits the shallow tunnel and operates at-grade on Nicollet Avenue to Grant Street. At Grant the route will either operate two-way on Nicollet Mall or as a one-way paired loop on 2nd and Marquette Avenues.

Stations

LRT 4C provides service to the following 14 stations: Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, Uptown, Lyndale Avenue, 28th Street, Franklin Avenue, 12th Street, 8th Street(Nicollet routing) or 7th Street (2nd/Marquette routing), and 4th Street.

.

Table 13 LRT 4C Service Plan – Frequency (Minutes Between Trains) and Hours

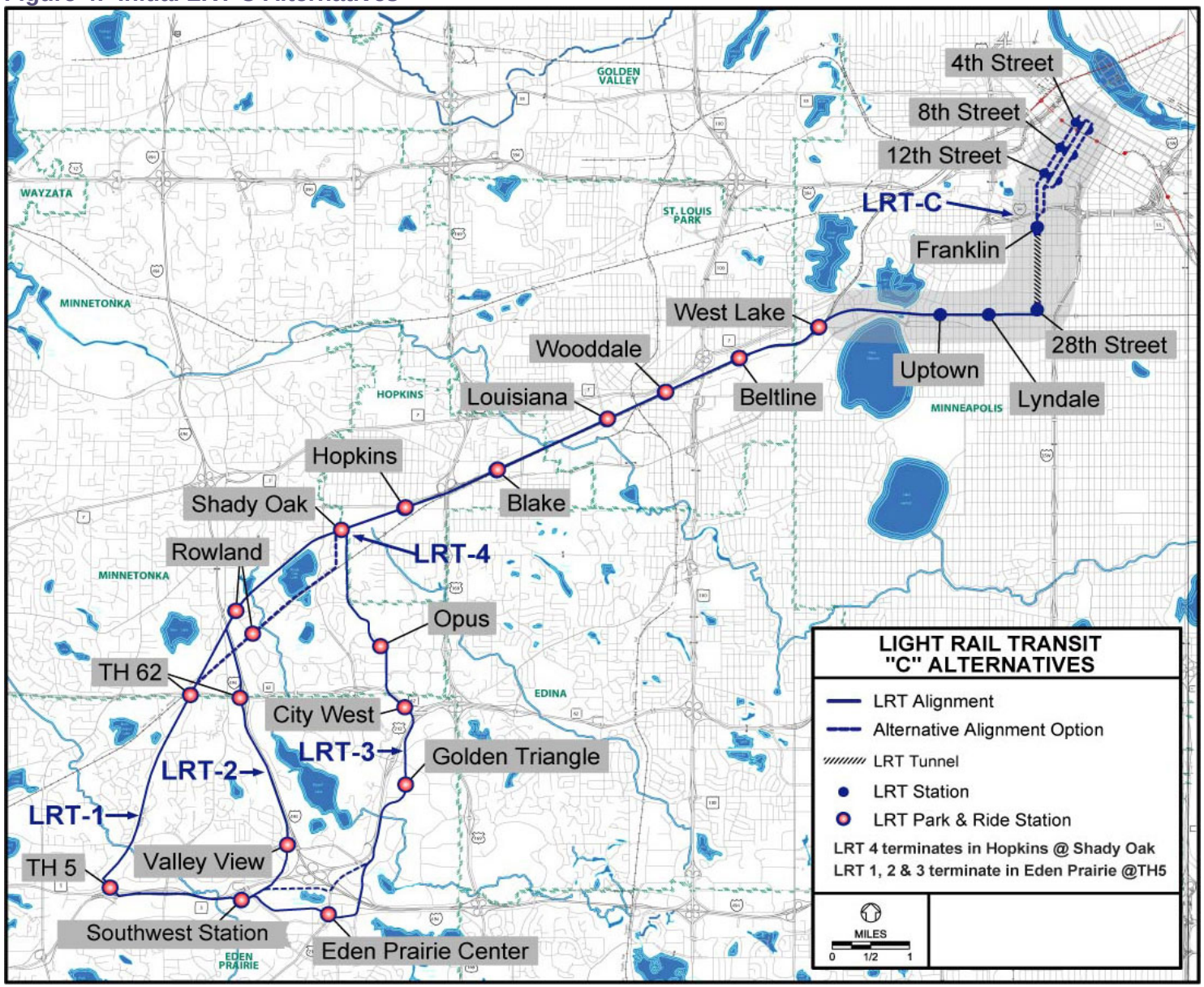
	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 (to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Source: Parsons Brinckerhoff, 2006.

Freight Rail Right-of-Way Exchange

Under alternative LRT 4C in order to serve the proposed stations at Wooddale Avenue, Beltline Boulevard, and West Lake Street the rights-of-way owned by the HCRRA and the CP Railway are proposed to be exchanged and a grade separated crossing of the LRT and freight rail tracks is proposed to constructed between Louisiana Avenue and Wooddale Avenue. This exchange allows freight rail operations to be located to the north of the LRT service. Under this alternative freight rail service is proposed to continue to operate in the HCRRA's Kenilworth Corridor in Minneapolis.

Figure 4: Initial LRT C Alternatives



Source: Parsons Brinckerhoff, 2006.

Table 14 Stations Served by Initial Southwest Transitway Alternatives

Station (Enhanced Bus Stop)	Enhanced Bus Alternative	BRT Alternatives		LRT Alternatives							
		1	2	1A	2A	3A	4A	1C	2C	3C	4C
TH 5 / HCRRA		x	x	x				x			
Mitchell Rd.	x				x	x			x	x	
TH 62 / HCRRA		x		x				x			
SouthWest Station	x		x		x	x			x	x	
Valley View					x				x		
TH 62/Baker Rd					x				x		
Eden Prairie Center			x			x				x	
Flying Cloud Dr. / TH 212	x										
Golden Triangle			x			x				x	
City West			x			x				x	
Rowland Rd. / HCRRA		x		x	x			x	x		
Shady Oak Rd. / TH 212	x										
Opus / Bren	x		x			x				x	
Shady Oak Rd. / HCRRA		x	X	x	x	x	x	x	x	x	x
Hopkins 8th Ave. / HCRRA		x		x	x	x	x	x	x	x	x
Hopkins / 8th Ave.											
TH 169 / Excelsior	x										
Excelsior / Blake	x										
Blake Rd. / TH 7	x										
Texas / TH 7	x										
Blake Rd./HCRRA		x	x	x	x	x	x	x	x	x	x
Louisiana Ave. / HCRRA		x	x	x	x	x	x	x	x	x	x
Louisiana Ave / TH 7	x										
Wooddale Ave. / HCRRA		x	x	x	x	x	x	x	x	x	x
Wooddale Av / TH 7	x										
Beltline Blvd. / HCRRA		x	x	x	x	x	x	x	x	x	x
West Lake St. / HCRRA		x	x	x	x	x	x	x	x	x	x
21st St. / HCRRA		x	x	x	x	x	x				
Van White Blvd. / HCRRA		x	x	x	x	x	x				
Royalston Ave.				x	x	x	x				
Intermodal Station				x	x	x	x				
Hennepin Avenue Option [1]				x	x	x	x				

Hiawatha LRT downtown [2] Minneapolis Stations				x	x	x	x				
Enhanced Bus Stops Downtown Minneapolis	x										
14th / Hennepin		x	x	x	x	x	x				
10th / Hennepin		x	x	x	x	x	x				
Uptown Station								x	x	x	x
Lyndale / Midtown								x	x	x	x
28th / Nicollet								x	x	x	x
Franklin / Nicollet								x	x	x	x
12th / Nicollet or 2nd / Marquette								x	x	x	x
8th / Nicollet or 2nd / Marquette								x	x	x	x
4th / 5th Street		x	x	x	x	x	x	x	x	x	x

Source: Parsons Brinckerhoff, 2006

Notes: 1. Hennepin Avenue Option replaces the Royalston Avenue and proposed Intermodal Stations with 14th and 10th Street stations. LRT riders with this option can only access the Warehouse Hiawatha LRT station via transfer but can directly access all other Hiawatha LRT stations.

2. Downtown Minneapolis Hiawatha LRT stations -- direct access to stations from Warehouse District to Metrodome; as well as all other Hiawatha LRT stations via transfer.

6. Refined Alternatives

The initial set of alternatives described earlier in this technical memorandum was presented at three community open houses, several community meetings, and individual meetings with the five affected cities to solicit comments. Subsequently, the alternatives were refined based upon comments received at these meetings into the set of alternatives for evaluation. See Appendix C for a list of the meetings.

Refinements to the initial alternatives are listed below, followed by a map of each refined alternative. A full description of each refined alternative is provided in Appendix D.

A. Enhanced Bus

- In response to changed routing from SouthWest Metro, the previous Uptown service is rerouted to I-35W.

B. Bus Rapid Transit (BRT)

BRT 1

- In response to comments from members of the Bryn Mawr neighborhood, a station is added at Penn Avenue to serve their neighborhood.

- To provide better bus feeder connections the station originally identified at TH 169 is moved to Blake Road.

BRT 2

- In response to comments from members of the Bryn Mawr neighborhood, a station is added at Penn Avenue to serve their neighborhood.

- To avoid an additional freeway crossing, the terminal station is moved from TH 5 to Mitchell Road.

- For operating efficiency, westbound vehicles are proposed to use Technology Drive rather than TH 5 between the SouthWest Metro Transit Station and Mitchell Road.

- The BRT guideway is proposed to cross I-494 at Flying Cloud Drive rather than at Prairie Center Drive.

- To provide better integration with Eden Prairie's plan for the Major Center Area, the Eden Prairie Center Station is moved west about 1/3 mile and renamed the Eden Prairie Town Center station.

C. Light Rail Transit (LRT)

LRT A Segment

- In response to comments from members of the Bryn Mawr neighborhood, a station is added at Penn Avenue for LRT 1A, LRT 2A, LRT 3A, and LRT 4A alternatives.

LRT A Segment (Hennepin Avenue option)

- To provide better access to the bus network, the stations along Hennepin Avenue are moved from 14th and 10th Streets to 12th and 8th Streets.

LRT C Segment

- Because of transit operating issues, the LRT C alternatives are proposed to operate on a loop via 4th Street rather than interline with the Hiawatha LRT line on 5th Street.

- Because of parking ramp access issues and to facilitate better pedestrian flow, the stations on 2nd/Marquette are proposed to be located at 7th Street rather than 8th Street.

LRT 1 Segment

- Because of freight railroad grade constraints, the potential route deviation that shares the TCW-CP right-of-way is proposed to turn north following the Minnetonka-Hopkins jurisdiction boundary rather than ¼ mile west. This change affects the LRT 1A and LRT 1C alternatives.

LRT 2 Segment

- To avoid an additional freeway crossing, the terminal station is moved from TH 5 to Mitchell Road.

- Because of existing terrain and access issues, the Valley View Station is moved south about 1/4 mile.

- The TH 62 Station is proposed to be about 1/4 mile south of the original location, adjacent to the athletic club's south parking lot.

LRT 3 Segment

- To avoid an additional freeway crossing, the terminal station is moved from TH 5 to Mitchell Road.

- The routing is proposed to cross I-494 at Flying Cloud Drive rather than Prairie Center Drive.

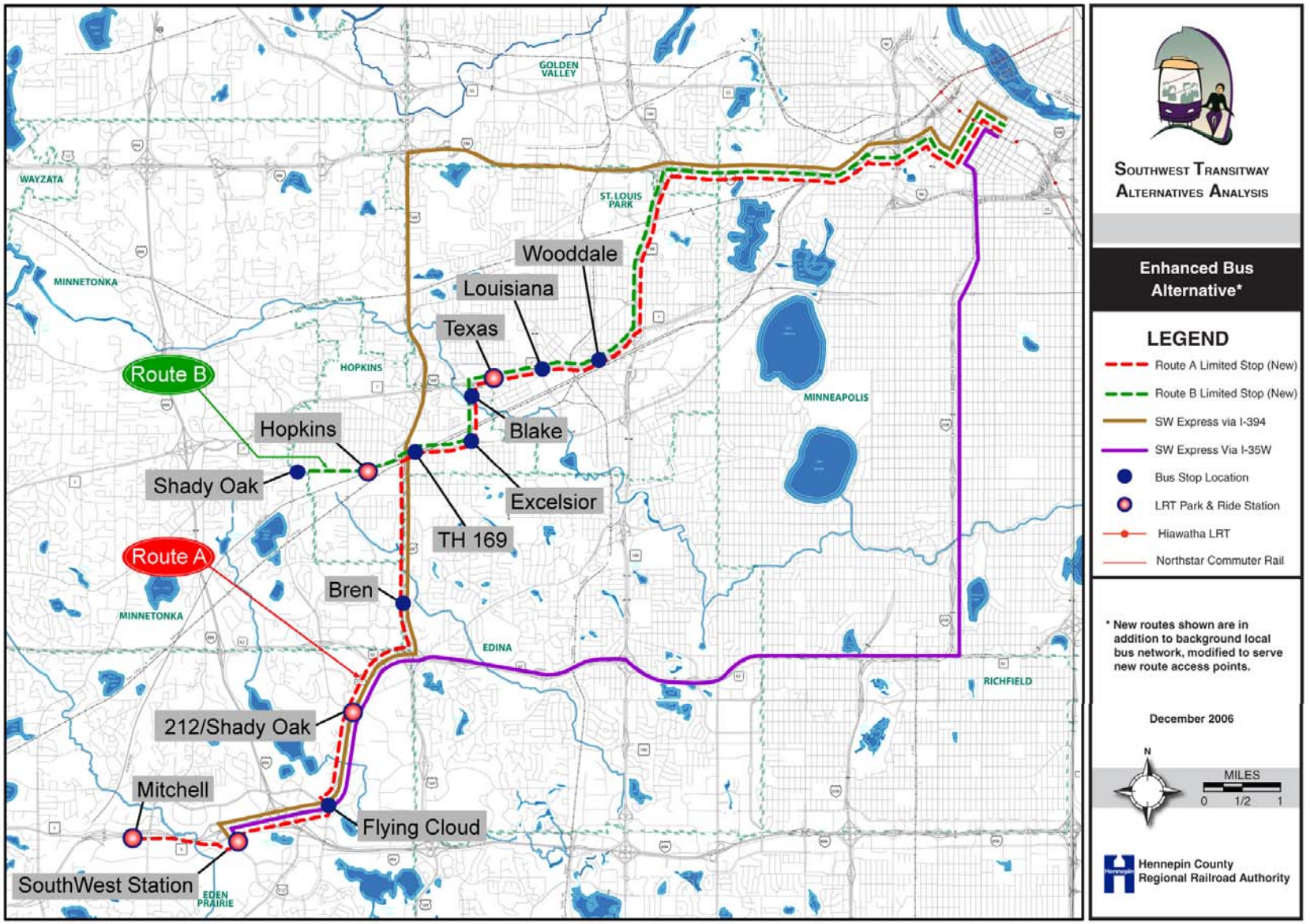
- To provide better integration with Eden Prairie's plan for the Major Center Area, the Eden Prairie Center Station is moved west about 1/3 mile and renamed Eden Prairie Town Center Station.

- Because of existing terrain, the routing through the north end of Opus is changed.

D. Refined Alternatives for Evaluation

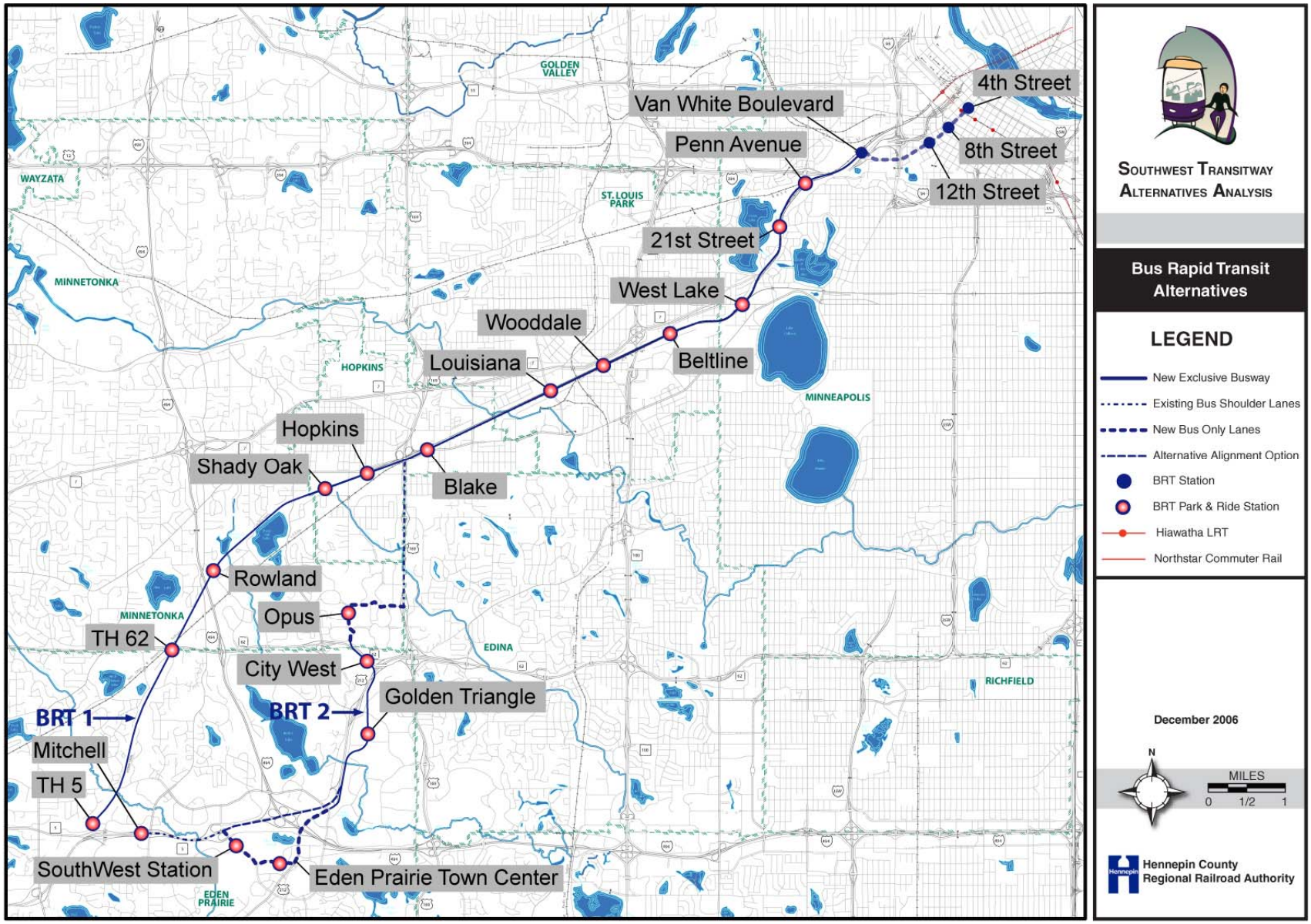
Figures 5 through 7 illustrate the Enhanced Bus, BRT and LRT A and C alternatives refined for evaluation in the Southwest Transitway Alternatives Analysis. Appendix D describes the alignment, stations, infrastructure requirements, service plan, and connecting transit service for each refined alternative. Following the figures 5 through 7, Table 15 identifies the stations included in the refined alternatives.

Figure 5: Refined Enhanced Bus Alternative



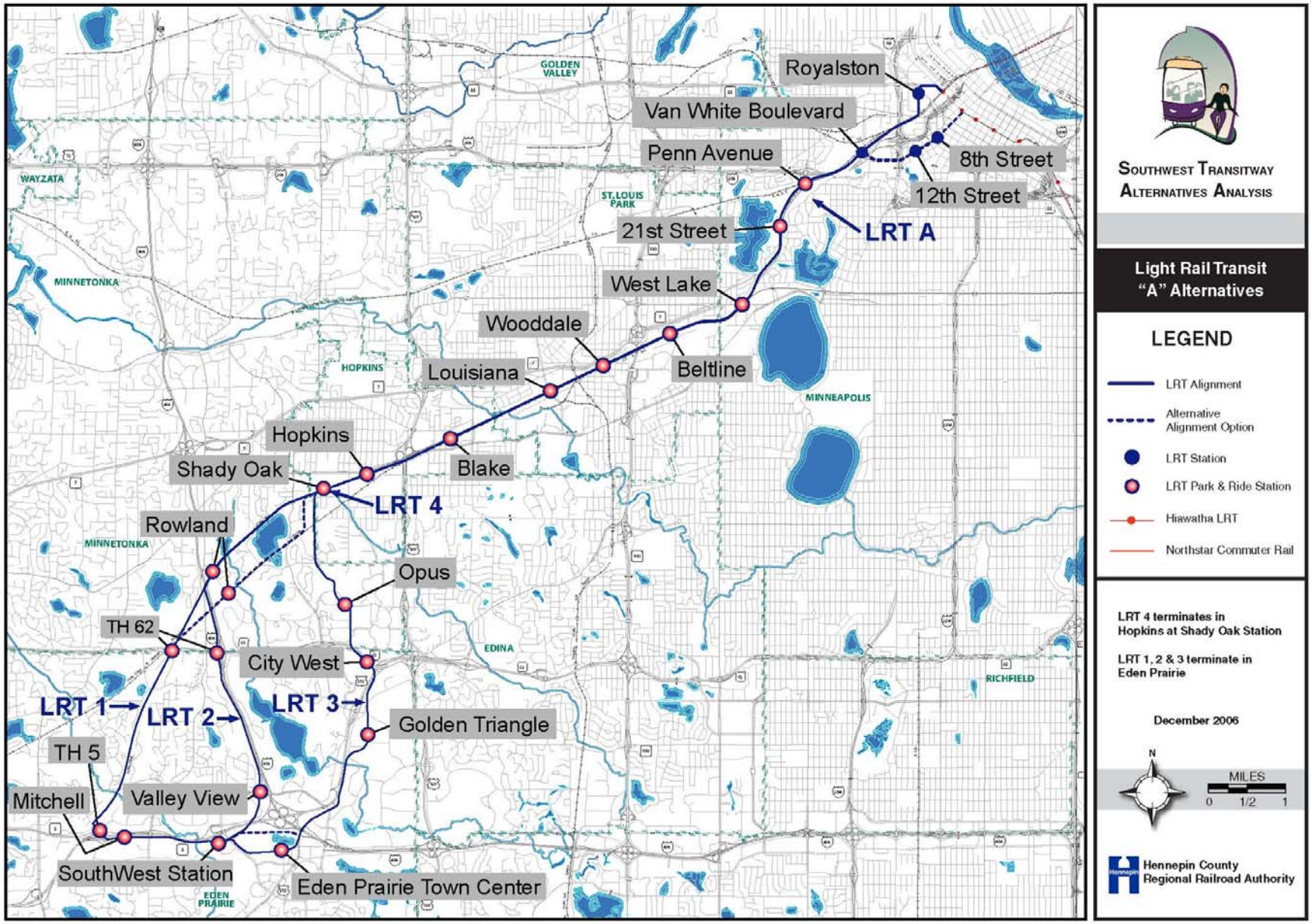
Source: Parsons Brinckerhoff, 2007.

Figure 6: Refined Bus Rapid Transit Alternatives



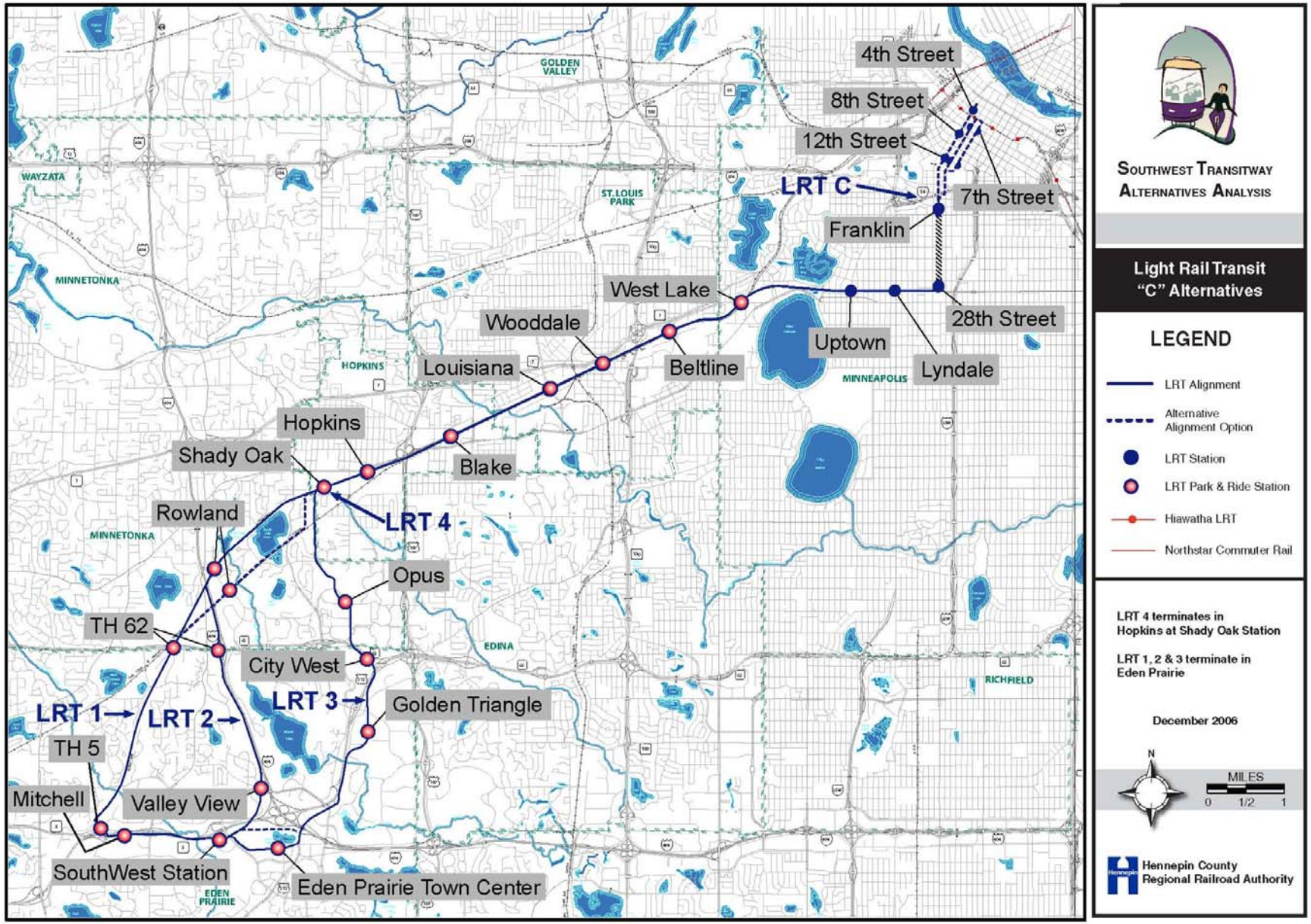
Source: Parsons Brinckerhoff, 2007.

Figure 7: Refined Light Rail "A" Alternatives



Source: Parsons Brinckerhoff, 2007.

Figure 8: Refined Light Rail "C" Alternatives



Source: Parsons Brinckerhoff, 2007.

Table 15 Stations Served by Refined Southwest Transitway Alternatives

Station (Enhanced Bus Stop)	Enhanced Bus Alternative	BRT Alternatives		LRT Alternatives							
		1	2	1A	2A	3A	4A	1C	2C	3C	4C
TH 5 / HCRRA		x	x	x				x			
Mitchell Rd.	x				x	x			x	x	
TH 62 / HCRRA		x		x				x			
SouthWest Station	x		x		x	x			x	x	
Valley View					x				x		
TH 62/Baker Rd					x				x		
Eden Prairie Town Center			x			x				x	
Flying Cloud Dr. / TH 212	x										
Golden Triangle			x			x				x	
City West			x			x				x	
Rowland Rd. / HCRRA		x		x	x			x	x		
Shady Oak Rd. / TH 212	x										
Opus / Bren	x		x			x				x	
Shady Oak Rd. / HCRRA		x	X	x	x	x	x	x	x	x	x
Hopkins 8th Ave. / HCRRA		x		x	x	x	x	x	x	x	x
Hopkins / 8th Ave.											
TH 169 / Excelsior	x										
Excelsior / Blake	x										
Blake Rd. / TH 7	x										
Texas / TH 7	x										
Blake Rd./HCRRA		x	x	x	x	x	x	x	x	x	x
Louisiana Ave. / HCRRA		x	x	x	x	x	x	x	x	x	x
Louisiana Ave / TH 7	x										
Wooddale Ave. / HCRRA		x	x	x	x	x	x	x	x	x	x
Wooddale Av / TH 7	x										
Beltline Blvd. / HCRRA		x	x	x	x	x	x	x	x	x	x
West Lake St. / HCRRA		x	x	x	x	x	x	x	x	x	x
21st St. / HCRRA		x	x	x	x	x	x				
Penn Ave. / HCRRA		x	x	x	x	x	x				
Van White Blvd. / HCRRA		x	x	x	x	x	x				
Royalston Ave.				x	x	x	x				

Intermodal Station				x	x	x	x				
Hennepin Avenue Option [1]				x	x	x	x				
Hiawatha LRT downtown [2] Minneapolis Stations				x	x	x	x				
Enhanced Bus Stops Downtown Minneapolis	x										
12th / Hennepin		x	x	x	x	x	x				
8th / Hennepin		x	x	x	x	x	x				
Uptown Station								x	x	x	x
Lyndale / Midtown								x	x	x	x
28th / Nicollet								x	x	x	x
Franklin / Nicollet								x	x	x	x
12th / Nicollet or 2nd / Marquette								x	x	x	x
8th / Nicollet or 7th on 2nd / Marquette								x	x	x	x
4th / 5th Street		x	x	x	x	x	x	x	x	x	x

Source: Parsons Brinckerhoff, 2006

Notes: 1. Hennepin Avenue Option replaces the Royalston Avenue and proposed Intermodal Stations with 12th and 8th Street stations. LRT riders with this option can only access Warehouse Hiawatha LRT station via transfer but can directly access all other Hiawatha LRT stations.

2. Downtown Minneapolis Hiawatha LRT stations -- direct access to stations from Warehouse District to Metrodome; as well as all other Hiawatha LRT stations via transfer.

Appendix A: Transit Technology Screening

The following transit technologies were considered for inclusion in the Southwest AA Study:

- Conventional Diesel Bus (including use of HOV lanes)
- Bus Rapid Transit
- Streetcar
- Light Rail Transit (LRT)
- Heavy Rail Transit (subway)
- Commuter Rail (bi-level and diesel multiple unit)
- Automated Guideway Transit (AGT)/Monorail
- Personal Rapid Transit (PRT)

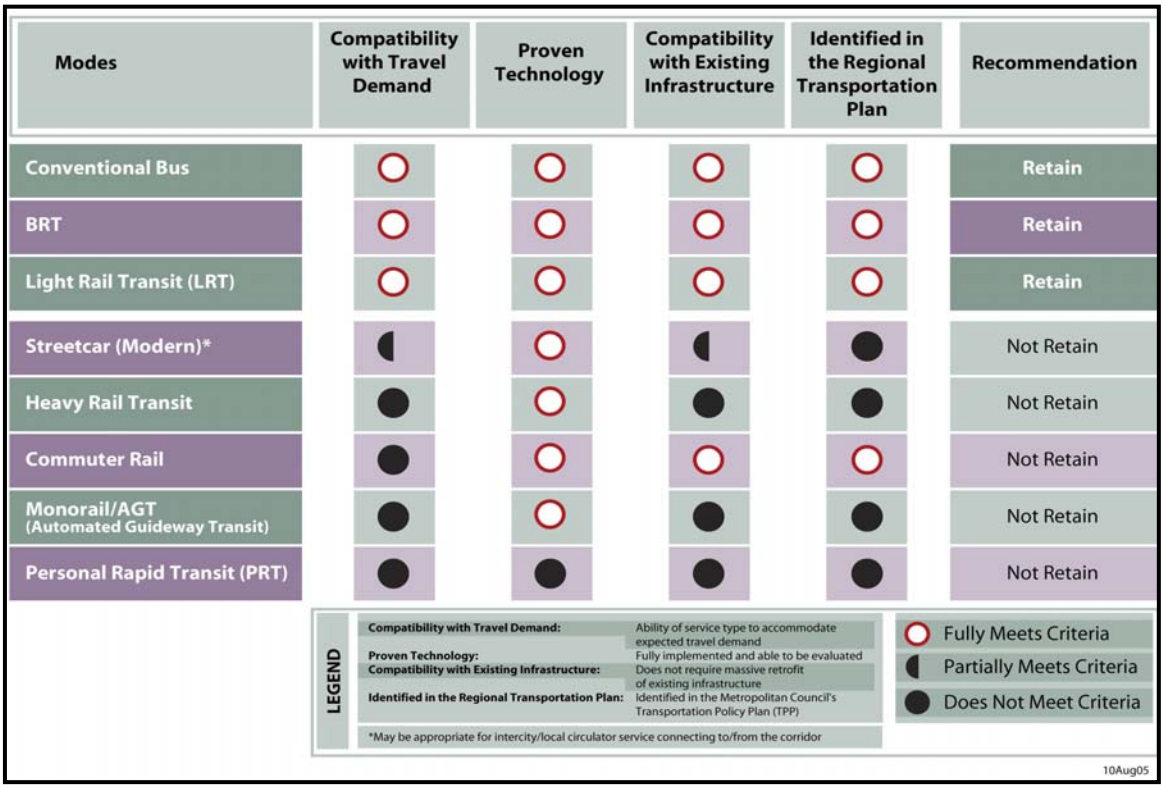
The screening criteria included the following:

- **Compatible with the study area's transit travel demand**
  The technology is easily able to accommodate the line-haul transit travel demand of the corridor. Other technologies may be appropriate for shorter-distance feeder or circulator service to stations, and could be considered by others for connecting service to the principal corridor technology.
- **Proven Technology**
  The technology is fully implemented with a history that can be research and studied.
- **Compatible with existing infrastructure**
  The technology is compatible with existing and planned infrastructure and will not require massive retrofit of existing infrastructure.
- **Identified in the region's long-range transportation plan, the TPP, and/or other studies**
  The Metropolitan Council, acting as the region's Metropolitan Planning Organization (MPO), prepares the region's long-range plan for transit and transitways.
  In addition, a number of other studies have been completed documenting the feasibility of bus rapid transit, light rail transit, and commuter rail. These studies include the *Hennepin County LRT System Draft Environmental Impact Statement (DEIS), 1989*; the *29th Street and Southwest Busway Feasibility Study, 2000*; *Mn/DOT's Exclusive Busway Study, 2000*; and *Mn/DOT's Commuter Rail System Plan, 1997*.

As a result of this analysis the transit technologies retained for inclusion in the Southwest Alternatives Analysis (AA) study include the conventional diesel bus (including use of HOV and shoulder bus lanes), bus rapid transit (BRT), and light rail transit (LRT). The technologies retained for inclusion in the Southwest AA provide for on-vehicle bicycle transport.

Methods of access to the primary technology of the corridor currently include pedestrian, bicycle, local circulator bus, and automobile drop-off and park-and-ride facilities. Other technologies may be considered in the future. Current and potential future methods and technologies for feeder service developed by others are not evaluated in this discussion.

Figure A-1: Transit Technology Review



Conventional Bus

Description

The 40-foot diesel transit bus is the most commonly used transit vehicle in the world. Buses offer the flexibility of operation in mixed traffic on city streets and highways. A standard 40-foot bus has a seated capacity of 44.

Conventional Bus in Twin Cities

Throughout the region, conventional buses provide express, limited-stop, and local circulator service. Currently, the Twin Cities is the 11th largest transit system in the country. According to the Metropolitan Council's Transit 2030 plan, conventional buses are and will remain the backbone of the region's transit system.

Transit Advantages

Through a partnership called Team Transit, Mn/DOT, Metropolitan Council, transit agencies, cities and counties, have cooperated to provide a system of advantages for transit vehicles to help improve the efficiency of the region's freeways by implementing bus-only shoulders, bus-only ramps, and High Occupancy Vehicle (HOV) lanes.

Bus-Only Shoulders and Ramps

Bus-only shoulders and ramps are a quick, inexpensive way to allow buses to bypass congestion on the freeway system by using the shoulders. Buses are restricted to use of the bus only shoulder lanes only during congested freeway times and the buses are only

allowed to travel 15 miles faster than the flow of the general purpose lanes or a maximum of 35 miles per hour.

High Occupancy Vehicle (HOV) lanes
Two HOV lanes exist in the Twin Cities region. One is a reversible HOV lane located in the center of I-394. The other is located in the I-35W corridor from Lakeville to Minneapolis. Buses and car pools with at least two occupants are allowed to utilize the HOV lanes.

Compatibility with Travel Demand
While conventional buses operating express and limited stop service provide line-haul transit service to the study area, their ability to continue to provide a competitive travel option may be jeopardized as roadway congestion continues to increase.

Conventional bus service is also appropriate for connecting or feeder service to corridor access points/stations. This technology currently provides connecting service to the Hiawatha LRT stations through Bloomington and Minneapolis.

Compatibility with Existing/Planned Infrastructure
A conventional bus operating on city streets and highways is compatible with the region's existing and planned transportation infrastructure.

Existing Systems
All major metropolitan areas in North American have a transit system including conventional bus operations.

Identified in the Transportation Plan (Transit 2030)
The Metropolitan Council, the region's Metropolitan Planning Organization (MPO), identifies conventional bus operations as remaining the backbone of the regional transit system.

Bus Rapid Transit

Description
Bus Rapid Transit (BRT) attempts to combine the flexibility of buses with the frequency and travel time advantages of rail transit. BRT typically offers high capacity, high-frequency bus operation along an exclusive bus-only roadway with on-line, high amenity stations. A typical bus rapid transit guideway is a two-lane bus only roadway a minimum of 28 feet in width.


Proposed BRT Service in Eugene, Oregon

According to the Federal Transit Administration (FTA), "BRT combines the quality of rail transit and the flexibility of buses. A BRT system combines *intelligent transportation systems* technology, priority for transit, cleaner and quieter vehicles, rapid and convenient fare collection, and integration with land use policy."[2]

BRT systems typically offer high frequency, limited-stop bus operations in primarily exclusive right-of-way with on-line stations. The use of exclusive right-of-way, limited-

[2] http://www.fta.dot.gov/7639_7662_ENG_HTML.htm

stop operations, and on-line stations provides passengers with quick and reliable service. The on-line stations are similar to rail stations providing passengers with seating, shelter form the elements, bike racks, schedules and maps, park/ride lots, and ticket machines.

Compatibility with Travel Demand
Due to the high service frequency and travel time competitiveness it is likely that a bus rapid transit system can accommodate the projected travel demand.

Compatibility with Existing/Planned Infrastructure
A BRT system is assumed to require construction of some bus only roadway which is consistent with the existing and planned infrastructure in the region. In addition, a BRT is likely to also utilize bus-only roadways, bus-only shoulder lanes, ramp meter bypasses, and other transit advantages. The region currently provides these types of facilities to improve transit travel time reliability and encourage transit usage.

Existing Systems
Bus Rapid Transit (BRT) is a relatively new concept, but does operate in a number of North American cities including Los Angeles, Pittsburgh, Eugene, and Boston.

Identified in the Regional Transportation Plan (Transit 2030)
The Metropolitan Council, the region's Metropolitan Planning Organization (MPO), does identify Bus Rapid Transit as a potential transitway technology in the region's long-range transit plan, Transit 2030.

In addition, the Minnesota Department of Transportation (Mn/DOT) *Twin Cities Exclusive Busway Study, 2000*, determined that an exclusive busway from Eden Prairie to downtown Minneapolis was a feasible transitway alternative. Hennepin County and Metro Transit also conducted a busway feasibility study for the Southwest (defined as Hopkins to downtown Minneapolis) in 1999 and determined that busway or BRT was a feasible alternative for a Southwest Transitway.

Light Rail Transit

Description
Light rail transit (LRT) is a medium to high capacity passenger rail service that can be used both for short and line-haul trips. LRT technology has evolved from the streetcar system to a more modern system that can carry more passengers further and faster. LRT vehicles typically operated in exclusive or semi-exclusive rights-of-way and are powered from an overhead electrification system.


The Twin Cities Hiawatha LRT line

LRT can operate in single-track or double-track configuration employing a single car or multiple car training. LRT stations are typically spaced about one to two miles apart in suburban areas and one-half mile in the downtown area.

In June 2004, the Twin Cities began operation on the region's first light rail transit (LRT) line, the Hiawatha line. The Hiawatha LRT line connects downtown Minneapolis with the Minneapolis St. Paul International Airport (MSP) and the Mall of America.

Compatibility with Travel Demand
A light rail transit (LRT) system operating at frequencies similar to the Hiawatha LRT line is expected to accommodate the projected travel demand.

Compatibility with Existing/Planned Infrastructure
While a light rail transit (LRT) system serving the southwest metro area will require new infrastructure, that infrastructure is compatible with the infrastructure constructed for the Hiawatha LRT line.

Existing Systems
Light rail transit systems operate in numerous North American cities including Denver, Portland, Salt Lake City, and Los Angeles.

Identified in the Regional Transportation Plan (Transit 2030)
The Metropolitan Council, the region's Metropolitan Planning Organization (MPO), does identify Light Rail Transit (LRT) as a potential transitway technology in the region's long-range transit plan, Transit 2030.

Light Rail Transit (LRT) has been studied as a feasible technology for a Southwest Transitway since the mid-1980s. A Southwest LRT line was first included in the *Hennepin County Stage 1 LRT Plan, 1988.*

In 2003 the *Southwest Rail Transit Study* was completed which identified four potential light rail transit (LRT) routes as feasible and appropriate for further evaluation.

Streetcar

Description
Streetcars were the precursor to the modern day light rail vehicles. Today, streetcars come in several different forms from a modern vehicle as shown on the right to replica and refurbished vehicles. Streetcar technology is similar to light rail technology in terms of track gauge and operations. In contrast to modern light rail systems, streetcars systems typically serve intra-city trips and are more likely to share street rights-of-way with other vehicles. Streetcar vehicles are typically smaller, lighter, and have fewer seats than light rail vehicles. This design makes them efficient at serving short trips within relatively densely populated areas.


Streetcar in Portland, Oregon

Streetcars typically operate in mixed traffic on surface streets serving short distance intra-city trips with stops as frequently as every few blocks. They are well suited to local transit needs in developed urban major activity centers, and are often used as shuttle service to attractions, shopping, downtown circulation, parking areas and airports.

Compatibility with Travel Demand
Streetcars typically serve a circulator/distributor function for short distance intra-city trips. They do not typically serve longer distance trips from low density suburban areas to the intercity core.

Streetcar technology is under consideration for implementation adjacent to the existing bicycle/pedestrian trails in the Midtown Corridor. This technology may be appropriate for connecting or feeder service to the line-haul service being evaluated for the Southwest Corridor.

Compatibility with Existing/Planned Infrastructure
Streetcars use the same track gauge and similar overhead electrification systems as light rail transit vehicles. In Portland, light rail vehicles and streetcars share the same tracks.

Existing Systems
Streetcar systems currently exist in numerous North American cities including Portland, New Orleans, San Francisco, and Memphis.

Identified in the Regional Transportation Plan (Transit 2030)
The Metropolitan Council, the region's Metropolitan Planning Organization (MPO), does not identify streetcars as a potential transitway technology in the region's long-range transit plan, Transit 2030.

Subways offer high-capacity service

Heavy Rail Transit (Subway)

Description
Heavy rail, commonly referred to as a subway, is a high-capacity, high-speed transit service that operates on exclusive tracks with an electrified third rail and no grade crossings. Heavy rail systems typically service high density areas with significant congestion problems such as Chicago, New York, Boston, and London.

Compatibility with Travel Demand
The anticipated travel demand in the southwest metro area does not warrant the high frequency and intense infrastructure demands of heavy rail transit.

Compatibility with Existing/Planned Infrastructure
Heavy rail requires construction on a new unique guideway that cannot be shared with bus, light rail or commuter rail vehicles.

Existing Systems
Heavy rail systems exist throughout the U.S. and the rest of the world. Existing heavy rail systems include the El in Chicago, the T in Boston, the Metro in Washington D.C., the Subway in New York, MARTA in Atlanta, and the Tube in London.

Identified in the Regional Transportation Plan (Transit 2030)
The Metropolitan Council, the region's Metropolitan Planning Organization (MPO), does not identify heavy rail transit (subway) as a potential transitway technology in the region's long-range transit plan, Transit 2030.

Commuter Rail

Description

New Jersey Commuter Rail

Commuter rail service in this region is defined as passenger rail service operating on existing freight rail tracks. Service is typically between outer suburban, exurban areas and the city center. Trains typically operate every half hour in bound in the morning and outbound in the evening. Commuter rail stations are typically spaced three to five miles apart.

Commuter rail is primarily oriented toward commuter service to outer suburban regions, and as a result it typically serves longer trip than most light and heavy rail transit lines. Commuter rail trains are normally made up of a locomotive and several passenger coaches. Commuter rail uses either single or bi-level passenger cars. Commuter rail vehicles have an on-board operator, who adjusts vehicle speed in response to traffic conditions and railway signaling requirements. Commuter rail vehicles have the ability to share track with freight trains and other intercity passenger services such as Amtrak.

Compatibility with Travel Demand

Due to the low service frequency (approximately every 30 minutes) and hours (peak only) it is unlikely that commuter rail service could accommodate the projected travel demand for the southwest metro area.

Compatibility with Existing/Planned Infrastructure

While implementation of commuter rail service typically requires station construction, track improvements, and track leasing fees, the required infrastructure is compatible with the infrastructure required for the proposed Northstar commuter rail line.

Existing Systems

Commuter rail systems exist in numerous North American cities including Dallas, Virginia, Chicago, Washington D.C., and San Francisco.

Identified in the Regional Transportation Plan (Transit 2030)

While commuter rail is identified in the regional transportation plan as a potential transitway technology, a commuter rail route serving the southwest metro area is not identified.

During the 1997 Minnesota Legislative session, the Legislature instructed the Minnesota Department of Transportation (Mn/DOT) to conduct a feasibility study to determine if the Twin Cities metropolitan area could support commuter rail service. Out of 19 rail corridors studied, 6 proved to be feasible of supporting commuter rail services. Those 6 lines were divided into two tiers. Tier one included the Northstar Corridor from St. Cloud to Minneapolis, the Red Rock Corridor from Hastings to Minneapolis, and the Dan Patch Corridor from Lakeville to Minneapolis. Tier two includes the Bethel Corridor, the Rush Line Corridor and the Norwood-Young America Corridor. The Southwest Corridor was not identified as a commuter rail corridor.

A diesel multiple unit (DMU) option was evaluated for the Southwest Corridor during the *Southwest Rail Transit Study, 2003*. The diesel multiple unit (DMU) technology was included in the Southwest Rail Transit Study to determine if it is a lower cost alternative that could more easily be implemented than light rail transit (LRT). Based upon the analysis conducted for this study, the Southwest TAC determined and the Southwest PAC concurred that the Aero DMU technology would not result in significantly lower cost alternative and would not necessarily be easier to implement than LRT.

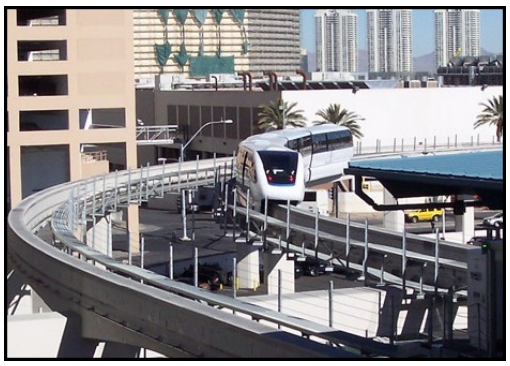
While the DMU capital costs were estimated to be approximately 10 percent less than LRT these cost savings are quickly eroded due to the higher operating and maintenance costs for the DMU technology. The higher operating and maintenance costs are due to higher costs, $1 to $2 million/year, for general operations and maintenance as well as the annual lease payment, estimated to range from $1 million to $7.5 million per year, to the private freight rail companies. In order to implement a DMU system an additional track must be constructed and a lease agreement must be negotiated with the Canadian Pacific, Twin City & Western, and Burlington Northern & Santa Fe freight rail companies.

Other issues with the DMU technology included the lack of a seamless connection to downtown Minneapolis, the University of Minnesota, the MSP Airport, the Mall of America, and downtown St. Paul; the fact that the Aero DMU is a prototype and not currently in operation; and the potential noise, vibration, and emissions impact of the DMU vehicle.

Monorail/Automated Guideway Transit (AGT)

Description

Monorail/Automated Guideway Transit (AGT) is an electric rail system in which the vehicles are suspended from or straddles a guideway. Most of these systems are driverless, utilize heavy rail technology (i.e., an electrified rail), and are separated from other traffic. AGT/Monorails are typically used for circulation/distribution at airports including Atlanta's Hartsfield-Jackson Int'l Airport; at theme parks including Walt Disney World; and along the Las Vegas strip as shown in the photo.



Monorail system in Las Vegas

Compatibility with Travel Demand

Monorail/AGT is a transit service intended to circulate/distribute passengers within a relatively small geographic area. It is also intended to provide connections to larger line-haul transit systems. As such, Monorail/AGT is not compatible with the anticipated travel demand from the southwest area.

Compatibility with Existing/Planned Infrastructure

A Monorail/AGT system requires construction of a new separated guideway that is unique and cannot be used by buses, light rail or commuter rail vehicles.

Existing Systems

Monorail/AGT systems currently exist in Las Vegas, Seattle, Disneyworld and many airports.

Identified in the Regional Transportation Plan (Transit 2030)
The Metropolitan Council, the region's Metropolitan Planning Organization (MPO), does not identify Monorail/Automated Guideway Transit (AGT) as a potential transitway technology in the region's long-range transit plan, Transit 2030.

PRT provides point-to-point service

Personal Rapid Transit (PRT)

Description
Personal Rapid Transit is a transit system that provides point-to-point, demand-responsive service to individuals or small groups. Electrically powered vehicles carrying 3 to 5 passengers travel on 16 foot high guideways separated from traffic.

PRT is designed to serve as a circulator/distributor transit system providing service within business parks/airports/campus environments and making connections to line-haul transit systems such as LRT, BRT, Commuter Rail, Heavy Rail, and conventional bus.

Compatibility with Travel Demand
PRT is a transit service intended to circulate/distribute passengers within a relatively small geographic area. It is also intended to provide connections to larger line-haul transit systems. As such, PRT is not compatible with the anticipated travel demand from the southwest area.

PRT may be appropriate as a feeder to a line-haul system, connecting to areas using this type of an internal circulation/distribution system.

Compatibility with Existing/Planned Infrastructure
A PRT system requires the construction of an elevated guideway to separate the service from other traffic. The PRT elevated guideway is unique and could not be used by other transit vehicles such as buses or light rail vehicles. The system also requires elevated stations with Americans with Disabilities (ADA) compliant elevators at each station. PRT stations are designed to be approximately ¼ mile apart.

Existing Systems
No large scale PRT system exists today.

Identified in the Regional Transportation Plan (Transit 2030)
The Metropolitan Council, the region's Metropolitan Planning Organization (MPO), does not identify Personal Rapid Transit as a potential transitway technology in the region's long-range transit plan, Transit 2030.

Introduction

This report provides an inventory of previous studies on the proposed Southwest Transitway Corridor. Hennepin County Department of Housing, Community Works and Transit has an archive of these studies and related work at their building on 417 N. 5th St. in Minneapolis.

Southwest Transitway Corridor Reports

The Feasibility of LRT in the Twin Cities Metropolitan Area, Metropolitan Council (1981)

During the 1980 Legislative Session, the Minnesota Legislature directed the Metropolitan Council to conduct a feasibility study of the use of light rail transit in the Metropolitan Area and appropriated a sum of $150,000 for that purpose. The feasibility study included the following corridors: West, Southwest, University, Northeast, Northwest, and Hiawatha. The report concluded that the three corridors with the most promise were the University, Southwest, and Hiawatha corridors.

Comprehensive LRT System Plan for Hennepin County, HCRRA (June 1988)

The Hennepin County Regional Railroad Authority (HCRRA) was directed by the Minnesota Legislature in 1987 to develop a comprehensive plan prior to implementation of a light rail transit system. The HCRRA received an additional requirement that three specific corridors (a southern, northern and southwest) be studied for ridership potential, cost of development and derived public benefit. The final product included a 20-Year Plan, which identified the candidate corridors, and the Stage I Plan, to be implemented in the following eight years.

HCRRA's Comprehensive LRT System Plan for Hennepin County identified the corridor characteristics to be analyzed:

- Railroad and other rights-of-way for LRT track location
- LRT passenger station locations
- Estimated ridership by corridor, residents and visitors
- Cost of building an LRT system
- Cost of operating and maintaining an LRT system
- Benefits of LRT system
- Provisions of feeder bus services
- Park-and-ride lots at LRT stations
- LRT/surface street traffic operations
- Development potential in LRT station areas

The plan also listed downtown Minneapolis LRT issues, such as at-grade vs. subway location, station locations, Nicollet Mall vs. not on the mall and impacts on surface street operations.

Both plans identified the Southwest Corridor, with proposed operation from Hopkins to downtown Minneapolis. A number of alignments were analyzed for the Southwest Corridor:

- 1 – Kenilworth
- 2 – Hennepin Ave.
- 3 – LaSalle and 1st Ave.
- 4 – Nicollet Avenue
- 5 – I-35W
- 6 – Portland/Park Avenues

The Comprehensive Plan concluded that the 29.1 miles of the Stage I System would meet one or more significant travel needs, would be within the financial capacity of the HCRRA and was buildable within a six-to eight-year time frame.

Hennepin County Stage I LRT System Scoping Decision Document, HCRRA (November 8, 1988)

The system studied in preparation for the EIS is based on the adopted *Comprehensive LRT System Plan for Hennepin County – Stage I*.

Two LRT alternatives were selected for detailed analysis in the EIS:

Alternative 1: Build an LRT system generally based on the adopted Comprehensive LRT System Plan for Hennepin County – Stage I. In addition, they had three options for the Central Area Alignment:

Option A – a tunnel between the Metrodome and 29th Street and Nicollet Avenue
Option B – an east/west tunnel in downtown, and routing the Southwest Corridor through Kenilworth.
Option C – an at-grade option

Alternative 2: No-build.

Issues the EIS would not address:

- Other transit modes – Other modes had previously been studied and it was determined that LRT was appropriate in the corridors identified in the Hennepin County LRT System Plan.
- Consistency with existing local comprehensive and other adopted plans – LRT was not a component of any comprehensive plans of any cities within the Stage I LRT system, therefore could not be examined.

Draft Environmental Impact Statement (DEIS), Hennepin County Light Rail Transit System, HCRRA (November 1989)

The Draft Environmental Impact Statement for the Hennepin County Regional Railroad Authority's proposed 33.9 – 35.55-mile Hennepin County Light Rail Transit System covered four corridors radiating from downtown Minneapolis: University Corridor, Hiawatha Corridor, Southwest Corridor and the Northwest Corridor. All the corridors in the proposed Hennepin County LRT system were identified in the adopted *Comprehensive LRT System Plan for Hennepin County* (June 1988) as part of the Stage I System Plan.

The Southwest Corridor would operate between 5th Avenue in Hopkins and downtown Minneapolis. The alignment options consisted of:

- Tunnel Option – following the Midtown Corridor, where it would enter the tunnel at Portland Avenue, cross under I-35W at 26th Street and continue under ground under 3rd Avenue to Marquette Avenue and to downtown.
- Option A: Nicollet At-Grade – The Southwest Corridor (coming from the West) and the Hiawatha Corridor (coming from the East) would converge in the Midtown Corridor at Nicollet Avenue and travel north at-grade.
- Option B: HCRRA Alignment through Kenwood – The Southwest would travel on the HCRRA's right-of-way in the Kenilworth Corridor.

Alternatives Considered:

- Build LRT – Build system based on the adopted Comprehensive LRT System Plan for Hennepin County. The routes built may be composed of a combination of system links as identified in the alignment options.
- No Build – Regular transit service would continue.

Overriding Principles:

- LRT must be competitive with cars.
- LRT service must efficiently serve trips between corridors.

LRT Preliminary Design Plans: Stage I System in Minneapolis, HCRRA, (May 1990)

This document contains the alignment and station plans for the Southwest Corridor and other corridors from the *Comprehensive System Plan for Hennepin County* (June 1988). The plans are for the stretch of the Southwest Corridor from the St. Louis Park/Minneapolis border to the Nicollet Avenue Station. What is referred to as the "Central Corridor" is the underground connection to downtown, via Portland, 3rd, Marquette and Nicollet Avenues.

Preliminary Design of the Stage I LRT System in Minneapolis, HCRRA, (June 1990)

This technical memorandum presents the Preliminary Design Plan for LRT in five proposed major areas for the Stage I System. It includes completion of design activities to approximately a ten percent level for the LRT plans, including the Southwest Corridor. The Southwest Corridor was assumed to begin at 5th Avenue in Hopkins and terminate at 4th Street (Library)/Nicollet Avenue in Minneapolis. The segment from 5th Avenue to I-35W was assumed to operate at-grade in the Soo Line right-of-way. From that point the route was assumed to join with the Hiawatha LRT line in a tunnel beginning at the intersection of Portland Avenue and the Midtown Corridor and ending at First Avenue North and First Street South.

Stations were proposed to include: Excelsior Boulevard, Tyler Avenue, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, Abbott Avenue, Hennepin Avenue, Lyndale Avenue, Nicollet Avenue, Portland Avenue, Franklin Avenue, Convention Center, 7th Street and the Library Station.

Preliminary Design of the Southwest LRT Corridor in the Cities of St. Louis Park and Hopkins, HCRRA (November 1990)

This report is the technical memorandum for the Preliminary Design Plan for the proposed Southwest Corridor in St. Louis Park and Hopkins. These plans present the

4.4-mile long alignment on the existing Soo Line right-of-way from the Minneapolis/St. Louis Park border to 5th Avenue in Hopkins.

The report addresses adequacy of bridges and structures along the route, proposed station locations and facilities, their site descriptions, a preliminary feeder bus plan, street system interface and railroad coordination.

Light Rail Transit Regional Coordination Plan, Regional Transit Board, (December 1990)

This plan provided guidelines for the design, construction and operation of LRT in the Twin Cities, and was a companion document to the *LRT Development and Financial Plan,* published by the Regional Transit Board[3] in February 1990. The proposed 10-year plan identified 83 miles of LRT, including the Southwest Corridor (defined as Hopkins to downtown Minneapolis), implementation of which would cost a total of $1.6 billion (1991 dollars).

HCRRA Baseline Cost Estimate, HCRRA (1991)

This document outlines the estimated baseline costs for the Hennepin County Stage I Light Rail Transit System, which includes the Southwest Corridor.

St. Louis Park Railroad Study, St. Louis Park, (January 1999)

St. Louis Park's primary objective was to reduce the impacts of train movement through the city. The tasks conducted by the consultants included reviewing the future of railroad transportation in the St. Louis Park area. The report provides a factual account of railroad infrastructure and operations in 1999. In addition, it includes future projections of railroad companies currently operating in the town, as well as light rail and commuter rail considerations. It documents those who were affected by railroad operations, the NL/Golden Auto Site Redevelopment and an identification of alternatives, with cost estimates for mitigation.

After completion of the report, the St. Louis Park City Council issued a position statement that included their acceptance of the rerouting of freight trains at such a time as they are displaced in the Kenilworth Corridor by mass transit.

Transit 2020 Master Plan, Metropolitan Council (February 2000)

In February of 2000, the Metropolitan Council published the Transit 2020 Master Plan, the region's long-range plan for improving transit. This plan states the overall goal is to double transit ridership in the region by 2020 through doubling the capacity of the bus system, which will remain the backbone of the transit system, and the development of a network of dedicated transit corridors.

The Southwest Corridor from Eden Prairie to downtown Minneapolis was identified in Transit 2020 as an exclusive busway for implementation prior to 2010. The Metropolitan Council estimated that an exclusive busway in the Southwest Corridor would serve approximately 19,500 passengers/day and would cost approximately $ 120 to 150 million (2000 dollars) to construct.

[3] The Regional Transit Board was formerly a separate entity, charged with mid-range transportation planning. In 1995 the board was disbanded and responsibilities were transferred to the Metropolitan Council.

Twin Cities Exclusive Busway Study, MN/DOT (August 2000)

In 2000, the Commissioner of Transportation directed staff to conduct a study to determine the cost of constructing and operating an exclusive busway system by the Year 2020. Mn/DOT estimated the construction costs for the Southwest Corridor, defined as Eden Prairie to downtown Minneapolis, would serve approximately 19,500 passengers in year 2020 and would cost approximately $124 million (2000 dollars) and $6 million/year to operate the system.

This study recommended three exclusive busway corridors for implementation by 2010. Those corridors included the Southwest Corridor, St. Paul Northeast Corridor and the Minneapolis Northwest Corridor.

29th Street and Southwest Busway Feasibility Study, Hennepin County & Metro Transit (February 2000)

Hennepin County and Metro Transit commissioned the busway feasibility study in May 1999 to determine if the construction and operation of a limited-stop, rapid transit busway within the Southwest and Midtown (29th Street) Corridors was feasible and to determine if it would be a practical first step towards light rail transit. Feasibility for this analysis was defined in terms of ridership forecasts and cost assumptions.

SRF Consulting, Inc. was hired to conduct this analysis. The analysis assumed that busway infrastructure would be compatible with LRT use after conversion and that bicycle/pedestrian trails in use in the corridor would remain. Sufficient space exists for both. The consultants found that exclusive limited-stop busways in both corridors were "technically" feasible based on ridership forecasts and cost estimates. Based on capital costs, constructing a busway will not preclude conversion to LRT in the future.

29th Street and Southwest Vintage Rail Trolley Study, HCRRA & Metropolitan Council (October 2000)

Hennepin County Regional Railroad Authority (HCRRA) and the Metropolitan Council initiated the Addendum in April 2000 at the request of the Midtown Greenway Coalition. The purpose of the study was to determine the feasibility (defined in terms of ridership forecasts and costs) of constructing and operating a vintage trolley and to determine whether vintage trolley is a practical step toward future LRT. The consultants found that based solely on ridership forecasts and cost estimates, a vintage trolley in the 29th Street/Midtown Corridor (defined as West Lake Street to Hiawatha Avenue) and Southwest Corridor (defined as Hopkins to downtown Minneapolis) was technically feasible and would not preclude future conversion to LRT.

(TPP), Metropolitan Council (January 2001)

A is a federal requirement and must be updated every three years. The aim of the Metropolitan Council's was to[4]:

- **Sharpen the region's economic competitiveness** by ensuring the convenient, affordable movement of people and the timely efficient movement of goods.
- **Enhance community and neighborhood livability** with connected streets, sidewalks and bikeways and convenient development that incorporate offices, homes and retail in ways that are conducive to transit services.
- **Expand mobility options** besides the car to connect jobs, services and housing.
- **Improve environmental quality** of the region's air and water.

[4] Metropolitan Council. *Transportation Policy Plan.* January 24, 2001, p. i.

- **Promote savings** through cost-effective use of regional and local infrastructure.

With congestion mounting, Metropolitan Council cited Smart Growth as an important strategy in mitigating the problems associated with explosive growth and keeping the region livable and mobile. The Twin Cities region needed a variety of transportation options and the bus system needed to be greatly expanded and organized. A network of dedicated corridors would have supported smart growth. The report maintained that the bus would remain the future of transit services, with capacity being doubled by 2025.

Adequate and stable funding remained a critical issue, because without an adequate funding source, the region would not be able to meet its mobility needs and achieve its Smart Growth goals. In comparison with nine peer cities, the Twin Cities metropolitan area ranked second to last in per capita transit spending for transit.

According to the *Transit 2020 Plan*, the Metropolitan Council planned for two dedicated busways by 2010 and three more by 2025. Corridors included: Riverview, Midtown Greenway/Southwest, Minneapolis Northwest, St. Paul Northeast and Minneapolis Northeast. In addition to the Hiawatha line, the region would have two new LRT lines by 2025, with another under construction. By 2025, there would be three new commuter rail lines with a fourth under construction. Potential corridors included Northstar, Red Rock, Dan Patch and Central, with connections to the Northstar and Red Rock lines.

Transit 2025 Map, Metropolitan Council (September 2002)
The Metropolitan Council's Transit 2025 map was revised to define the Southwest Corridor as "technology unspecified" rather than Busway.

Southwest Rail Transit Study, HCRRA, (October 2003)
The Hennepin County Regional Railroad Authority (HCRRA), in partnership with Eden Prairie, Minnetonka, Hopkins, St. Louis Park and Minneapolis conducted the *Southwest Rail Transit Study*. The purpose of the study was to determine if rail transit was a feasible component to the overall transportation solution for the southwestern metro area.

The HCRRA hired URS, Corporation to conduct the Southwest Rail Transit Study. URS worked with the Southwest Technical Advisory Committee (TAC) to evaluate various routes for both light rail transit (LRT) and diesel multiple unit (DMU) rail transit technologies. The routes were evaluated based upon ridership forecasts, capital and operating cost estimates, potential environmental impacts, and potential social/community impacts.

The Southwest Policy Advisory Committee (SWPAC) recommended the following four light rail transit alternatives:

1A: from TH 312 in Eden Prairie to downtown Minneapolis via the HCRRA property and the Kenilworth Corridor.

2A: from the SouthWest Station in Eden Prairie to downtown Minneapolis via I-494, the HCRRA property, and the Kenilworth Corridor.

3A: from the SouthWest station in Eden Prairie to downtown Minneapolis via the Eden Prairie Center Mall, the Golden Triangle, Opus, downtown Hopkins, the HCRRA property, and the Kenilworth Corridor.

4A: from downtown Hopkins to downtown Minneapolis via the HCRRA property and the Kenilworth Corridor.

In addition, the next study phase will address a rail transit connection along the Midtown Corridor, environmental impacts and mitigation measures, public involvement, and retention of the trails.

The SWPAC recommended that an LRT alignment at-grade on Lyndale Avenue, and LRT alignment in the TH 100 right-of-way, and the Diesel Multiple Unit (DMU) not be retained for further study.

The SWPAC's rationale for not retaining the Lyndale Avenue LRT option included:

- Traffic impacts through the elimination of two traffic lanes for median running LRT.
- Bryant and Aldrich bridges over the Midtown Corridor would need to be removed for LRT to accomplish grade change.
- 300 on-street parking spaces would be consolidated into new parking structure.
- Access restrictions to Lyndale Ave. businesses in the vicinity of Franklin Avenue.
- Elevated LRT structure would be required from south of Franklin Avenue to north of the Basilica, which would have to go over the Harriet Irene Huxley Pedestrian Bridge linking the Sculpture Garden with Loring Park.
- Would cost $100 million more than Kenilworth option.

The SWPAC's rationale for not retaining the Diesel Multiple Unit option included:

- Higher capital and operating/maintenance costs than LRT.
- Might take longer to implement than LRT.
- Lack of seamless connection to downtown Minneapolis, the U of M, the airport, the Mall of America or downtown St. Paul.
- Slower travel times than LRT.
- DMU not designed to stop every ½ mile to a mile.
- At the time of study, DMU still in demonstration phase and not in operation anywhere in the country.

Southwest Rail Transit Study: Addendum, Modified LRT 3A Alignment Alternatives
HCRRA, (April 2004)

The Modified LRT 3A Alignment Alternatives Report is an addendum to the *Southwest Rail Transit Study* (October 2003). The Southwest Policy Advisory Committee (SWPAC) recommended and the HCRRA concurred that an additional analysis be conducted to reroute alternative LRT 3A to more directly serve major employment centers in Minnetonka and Eden Prairie.

The HCRRA hired IBI to conduct this analysis. IBI working with the Southwest Technical Advisory Committee (TAC) developed three potential routes: LRT 3A-1, LRT 3A-2 and LRT 3A-3.

The results of the analysis for LRT 3A-1, LRT 3A-2, and LRT 3A-3 were inconclusive. The Southwest TAC recommended that more in-depth analysis to develop a routing that combines the travel time advantage of the original LRT 3A alternative with the access and economic development potential of the modified LRT 3A alternatives while

minimizing impacts to areas the route traverses be developed as part of the proposed Southwest Alternatives Analysis (AA) Study.

Appendix C: Agency/Stakeholder Meetings to Refine Initial Alternatives

Public Open Houses (Non-NEPA Scoping)

May 10, 2005	SouthWest Metro Transit Station
May 11, 2005	Hopkins Depot Coffee House
May 12, 2005	Kenwood Recreation Center

Partner Cities

August 17, 2005	St. Louis Park Staff
August 18, 2005	Hopkins
September 15, 2005	Edina Transportation Committee
September 22, 2005	Minnetonka
September 27, 2005	Eden Prairie
November 1, 2005	Minneapolis

Partner Agencies

	Mn/DOT
August 17, 2005	Metro Transit Staff
February 23, 2006	SouthWest Metro Transit

Neighborhood Groups

May 18, 2005	Bryn Mawr Neighborhood Association
June 6, 2005	Kenwood Isles Neighborhood Association
June 13, 2005	Whittier Neighborhood Association
October 11, 2006	West Calhoun Neighborhood Association
November 22, 2006	Citizens for Loring Park

Other Interested Parties

May 9, 2005	Midtown Greenway Land Use/Transportation Committee
June 8, 2005	I-494 Corridor Commission
January 22, 2006	League of Women Voters – West Tonka
February 1, 2006	Riley Purgatory Creek
September 12, 2006	Cedar Lakes Park Association
November 12, 2006	League of Women Voters - Minnetonka

Business Groups

Aug 16, 2005	Hopkins Business Council
September 1, 2005	Hopkins Rotary Club
September 2, 2005	St. Louis Park Sunrise Rotary

Appendix D: Definition of Refined Alternatives

The following section describes the refined alternatives evaluated in the Southwest Transitway Alternatives Analysis. These alternatives incorporate the modifications resulting from public and community input and the comments of the study partner cities and partner agencies (MnDOT, Metro Transit, SouthWest Metro Transit). Each description identifies the major infrastructure improvements required and connecting transit service assumed.

The development of the feeder bus network for the BRT and LRT alternatives took into account the coverage and frequencies of the existing bus network in the corridor and improvements recommended in the enhanced bus network. In addition, the corridor was examined to identify where connections might be improved or strengthened to support the build alternatives. The alternatives incorporate changes to the bus network recommended by Metro Transit and SouthWest Metro. Route alignments were lengthened or truncated to better connect to transit stations, and route frequencies were increased or, in a few cases, reduced to levels appropriate to their new, additional function as feeders to a light rail or bus rapid transit network. Several new routes are proposed, or discontinued routes reinstated, to improve or strengthen connections to the transit stations and provide additional service to the network.

In a limited number of cases under the BRT and LRT alternatives, bus routes currently operating into downtown Minneapolis were truncated at a station, which requires passengers to transfer from the feeder bus to the rail or BRT service to complete their trips downtown. However, bus routes which offer faster service to downtown Minneapolis than that offered through transferring at BRT or LRT stations continue to operate through to downtown Minneapolis on their highway alignments, to provide maximum benefit to all transit users. Where these conditions occur, the buses may not connect at a station. In addition, at a number of stations where feeder bus service was not seen as beneficial or necessary and where coverage is provided by buses feeding adjacent stations, no feeder bus service was provided.

Each alternative is illustrated on a map following the text description.

No Build Alternative

The No Build Alternative represents existing and committed infrastructure, facilities and services expected to be in place and operating for the forecast year, 2030. Future projects included in a financially constrained regional plan are considered elements of a no build alternative. The Twin Cities *2030* was developed under a constrained funding scenario. The No Build alternative is incorporated in the 2030 Twin Cities regional travel demand forecasting model, used to forecast ridership for the Southwest Transitway AA. The following description is provided as background information on the level of transportation investment already programmed by the region.

The Twin City metropolitan area surrounding Minneapolis and St. Paul is planning for rapid population growth, growing congestion and limited prospects for major freeways by 2030. The region's 2030 Transportation Plan identifies the 2030 system as multi-modal, geographically balanced, cost-effective and supportive of the Regional Development Framework. Roadway infrastructure and service improvements are focused on maintaining and managing the existing system, removing or relieving bottlenecks, and

adding capacity. The Transit System Plan, a major component of the overall Transportation Plan, is designed and scaled to strongly support the region's economic vitality by promoting mobility, access to opportunities, and more efficient use of land and public infrastructure.

For the highway network, each major corridor improvement undergoes intense planning through the Minnesota Department of Transportation (MnDOT), host county and cities in and FHWA planning process comparable in scope and schedule to the FTA process. Highway improvements include planning for roadway-based transit. Through a partnership called Team Transit, Mn/DOT, Metropolitan Council, transit agencies, cities and counties continuously cooperate to provide a system of advantages for transit vehicles to help improve the efficiency of the region's roadway system. These advantages include authorized use of shoulders for bus operations during congested periods, ramp meter bypasses, bus-only freeway ramps, and High Occupancy Vehicle (HOV) lanes. Currently, there are 223 miles of shoulder bus operations, 88 ramp meter bypasses, 4 bus-only freeway ramps, and HOV lanes on I-394 and I-35W. Team Transit has also constructed a network of park-and-ride lots throughout the study area, positioned to offer efficient access to the regional highway system.

In the vicinity of the Southwest Transitway study area, major improvements programmed for implementation under the constrained funding scenario include the following:

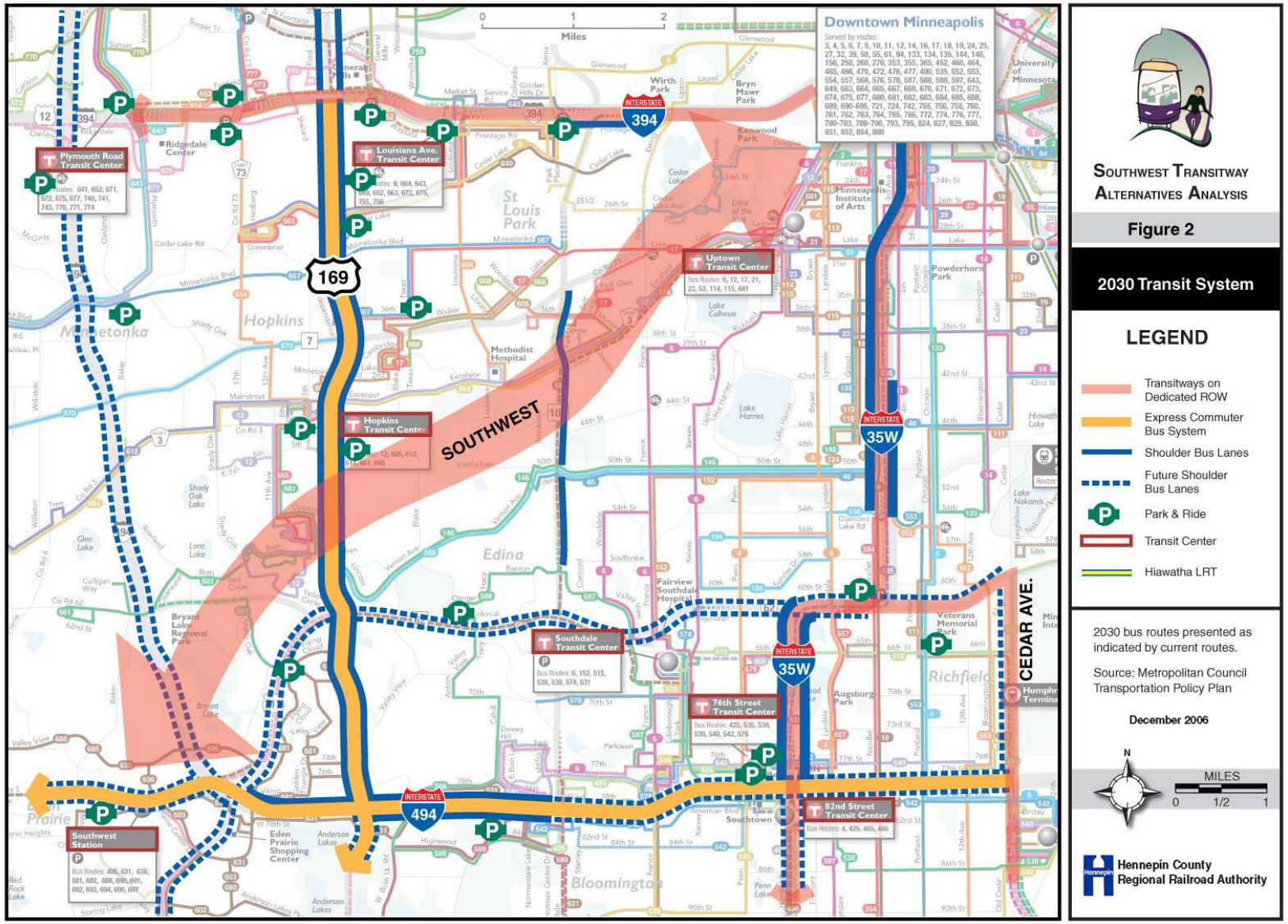
- Lane Additions: Additional highway lanes on I-494, TH 100, and I-35W
- HOV lanes: Fully implemented on I-35W through Richfield and Minneapolis, with on-line stations for BRT service
- Construction of new TH 212 from I-494 in Hennepin County into Carver County
- Bus Shoulder lanes expansions on TH 62, I-494, TH 100, TH 169, TH 212, and TH 5, facilitating the planned Express Commuter Bus System on I-494, TH 5 and TH 169
- Southwest Transitway
- Park-and-ride lots: County Road 60/Minnetonka Boulevard, TH 212/TH 101, TH 212/CSAH 41
- TH 212 SouthWest Metro Transit bus service to TH 101, Chanhassen and CSAH 41, Chaska

Within the Southwest study area, existing and planned transit service centers on a dense local bus route structure. Metro Transit operates twenty-two routes within the study area: seven local, two limited stop, and thirteen express routes. SouthWest Metro Transit operates a total of twenty-three routes: eleven local and twelve express routes. In addition, the Metropolitan Council contracts for services on several routes serving the area, such as Routes 604 and 615. As the Twin Cities metropolitan area does not have dedicated funding for transit, transit operators in the region modify routes regularly to better target transit service to the markets served and to match available funding. The entire Southwest Transitway study area is within the regional Transit Taxing District.

The 2030 No Build Alternative assumes the future service network will closely resemble the dense route structure and extensive facilities of the existing system, with additions noted above and reflected in the regional travel model maintained by the Metropolitan Council. The 2030 No Build transit system is graphically represented in the figure which follows. Major additions to the regional transit system outside the Southwest Transitway study area planned to be in place by 2030 include Northstar commuter rail service

between Minneapolis and Big Lake, Central Corridor LRT service between downtown Minneapolis, the University of Minnesota, and downtown St. Paul, Bottineau Boulevard BRT service between Rogers and downtown Minneapolis, Cedar Avenue BRT service between Dakota County and the Mall of America in Bloomington, the Red Rock commuter rail service between Hastings and St. Paul, and the Rush Line transitway between Pine County and St. Paul.

Figure D-1 2030 No Build Alternative



Enhanced Bus Alternative

The Enhanced Bus alternative includes minor modifications to the existing express service, and augments Metro Transit and SouthWest Metro Transit service with two limited-stop bus routes providing bi-directional service to Eden Prairie, Minnetonka, Hopkins and St. Louis Park. Local service is restructured to provide access to the new limited stop service. These routes begin by serving selected stops, then travel non-stop on the regional highways using bus shoulder lanes and HOV lanes into downtown Minneapolis. This allows the limited stop services to offer more attractive travel times, and increases options for commuters in the corridor.

In addition to the new routes, the enhanced bus alternative includes increases in service frequency for many Metro Transit and SouthWest Metro bus routes to improve the overall level of transit service in the corridor. These changes form the basis for the bus service enhancements recommended in all the alternatives, and in most cases are carried through as elements of all of the "build" alternatives. There are also several new routes, mostly shuttle or circulator routes that operate as neighborhood circulators and feeders to the longer distance routes in the enhanced bus alternative, and function as feeder-distributor routes for the rail or bus alternatives under the BRT and LRT alternatives.

Station stop facilities under the Enhanced Bus Alternative are assumed to be consistent with current Metro Transit bus pulloffs and shelters. For stops with park-and-ride lots, access is assumed from the cross-street.

The approximate line length between the SouthWest Station and the edge of downtown Minneapolis is 16 miles. The fastest portions of the route are expected to be along TH 169, I-394 and I-35W, and in the express segment along TH 212. The slowest portions are in the Minneapolis and Hopkins central business districts, and on the arterials between TH 212 and SouthWest Station.

Existing Express Bus Routes

SouthWest Station Express Route 690 via I-394

Starting from SouthWest Station in Eden Prairie, this route uses TH 5, TH 212, and TH 169, using shoulder lanes on TH 169 where available, to access the I-394 HOV lane. Buses exit I-394 at 12th Street to enter downtown Minneapolis, where buses would make multiple downtown stops at locations to be determined at a later stage of project development

SouthWest Station Express Route 681 via I-35W

Starting from SouthWest Station in Eden Prairie, this route uses TH 5, TH 212, and TH 62, using shoulder lanes where available, to access the I-35W HOV lane. Buses exit I-35W at 11th Street to enter downtown Minneapolis, where buses would make multiple downtown stops at locations to be determined at a later stage of project development.

SouthWest Metro Transit is considering future changes to its express routes, including eliminating the off-highway portions of Route 681 and its routing through Uptown Station. Routes 681 and 690 will continue to operate as high-frequency express routes between SouthWest Station and downtown Minneapolis, although exact routings may change.

New Limited Stop Routes

Limited-Stop Route "A" – Eden Prairie, Hopkins, St. Louis Park to downtown Minneapolis

This route begins at the park-and-ride lot at Mitchell Road and Technology Drive. The route enters TH 5 to SouthWest Station on Technology Drive to Singletree Lane to Prairie Center Drive to Flying Cloud Drive to the bus-only shoulder lanes on TH 212. From the bus-only shoulder lanes of TH 212 the route enters the bus-only shoulder lanes on TH 169 to Excelsior Boulevard in Hopkins. The route continues in mixed traffic along Excelsior Boulevard then northbound in mixed traffic on Blake Road to TH 7. The route continues in mixed traffic along TH 7 to TH 100. From TH 100 the route enters the I-394 High Occupancy Vehicle (HOV) lanes to downtown Minneapolis, where buses would make multiple stops at locations to be determined at a later stage of project development.

Limited-Stop Route "A" would stop at the following locations:

- Mitchell Road (park-and-ride lot), Eden Prairie
- SouthWest Station (park-and-ride lot), Eden Prairie
- Flying Cloud Drive, Eden Prairie
- TH 212 at Shady Oak Road (park-and-ride lot), Eden Prairie
- TH 169 at Bren Road, Minnetonka
- TH 169 at Excelsior Boulevard, Hopkins
- Excelsior Boulevard at Blake Road, Hopkins
- Blake Road just south of TH 7, Hopkins
- TH 7 at Texas Avenue (park-and-ride lot),
- Louisiana Avenue, St. Louis Park
- Wooddale Avenue, St. Louis Park

Limited-Stop Route "B" – Minnetonka, Hopkins, St. Louis Park to downtown Minneapolis

This route begins at the intersection of Shady Oak Road and Excelsior Boulevard. The route then travels in mixed traffic along Excelsior Boulevard to Blake Road. From Blake Road the route travels north to TH 7, then westbound on TH 7 to TH 100. From TH 100 the route enters the I-394 High Occupancy Vehicle (HOV) lanes to downtown Minneapolis, where buses make multiple stops at locations to be determined at a later stage of project development.

Limited-Stop Route "B" would stop at the following locations:

- Shady Oak Road and Excelsior Boulevard, Minnetonka
- Excelsior Boulevard at 8th Avenue/downtown Hopkins (park-and-ride lot)
- Excelsior Boulevard at TH 169, Hopkins
- Excelsior Boulevard at Blake Road, Hopkins
- Blake Road at TH 7, Hopkins
- TH 7 at Texas Avenue, St. Louis Park (park-and-ride lot)
- TH 7 at Louisiana Avenue, St. Louis Park
- TH 7 at Wooddale Avenue, St. Louis Park

The approximate line length between the Hopkins Transit Center and the edge of downtown Minneapolis is 9.5 miles.

Minor Infrastructure Improvements

The following minor infrastructure improvements are not included in the region's long-range transportation plan, the TPP, and are therefore assumed as capital costs required to implement the Enhanced Bus alternative:

- A queue-bypass ramp connecting TH 100 and I-394 to ensure that this area can be traversed with a minimum of delay.

- New or expanded park-and-ride lots at Mitchell Road/TH 5, TH 212/Shady Oak Road, 8th Avenue (downtown Hopkins), and TH 7/Texas Avenue.

Service Plan

The weekday service frequencies are listed below. When combined for the overlapping segment from Hopkins to downtown Minneapolis, the resulting frequencies are 10 minutes in the early morning, 7.5 minutes during the morning peak, 10 minutes for the mid-day, 7.5 minutes during afternoon peak, and 15 minutes during the evening.

Table 1 Enhanced Bus Service Plan

Weekdays	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Route "A"	20	15	20	15	30
Route "B"	20	15	20	15	30
Combined	10	7.5	10	7.5	15
Weekends	20-60 minutes	20-60 minutes	20-60 minutes	20-60 minutes	20-60 minutes

Source: Parsons Brinckerhoff, 2006

Enhanced Bus Connecting Transit Service

The following identifies routes that intersect with Limited Stop Routes A and B at the stops specified between Eden Prairie and downtown Minneapolis, and indicates changes to those routes recommended under the Enhanced Bus alternative.

Mitchell Road/TH 5: Route 631 connects to this park-and-ride lot.

Route 631 is a circulator that connects Eden Prairie and surrounding communities to Eden Prairie Town Center and SouthWest Stations. (Note: the City of Eden Prairie requested in September 2006 that "Town" be added to this station name.) Service on route 631 increases from an hourly service to a frequency of 15 minutes during peak periods, and operates hourly in the evenings until 10:00 PM.

SouthWest Station: SouthWest Metro Transit Routes 603, 631, 636, 680, 681, 681 Circulator, 685, 685A, 690, 690A, 690B, 691, 694, 698, and 699A connect with Limited Stop Route A at this transit park-and-ride station, which also serves as the hub of SouthWest Metro Transit's bus operations.

Route 603 is a circulator that serves the area surrounding Eden Prairie Town Center. The circulator, which currently operates only in the clockwise direction, operates in both directions under the Enhanced Bus operating plan, effectively doubling the existing 30 minute peak, 60 minute off-peak frequency. Service also changes to bi-directional serves with an hourly headway in the evenings until 10:00 PM.

Changes to Route 631 are described above under Mitchell Road/TH 5.

Route 636 is a circulator servicing Eden Prairie. Route 636 remains unchanged during peak periods, and midday service is eliminated.

Route 680 is not changed under this alternative.

Route 681 combines with 690 and 690A to operate a high frequency bi-directional service between SouthWest Station and downtown Minneapolis. The off-highway segment of its alignment serving the Golden Triangle area is eliminated.

Route 681 Circulator is a new route serving Eden Prairie and Golden Triangle, replacing the eliminated segment of the existing route 681 serving the Golden Triangle area. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Routes 690, 690A and 690B are combined with route 681 to provide high frequency, bi-directional service between SouthWest Station and downtown Minneapolis. Connecting with the Limited Stop Route A at the SouthWest Station allows these bus routes to take advantage of the bus only ramp that connects eastbound TH 5 with the station. In addition to 681 and 690, SouthWest Metro Transit Express Routes 685, 685A, 691, 694, 698, and 699A operate between SouthWest Station and Downtown Minneapolis.

Flying Cloud Drive: Route 685 connects with Limited Stop Route A at this stop. Route 685 is not changed under this alternative.

TH 212/Shady Oak: Route 681 connects with Limited Stop Route A at this stop. Route 681 is described above under SouthWest Station.

Bren: Route 568 connects with Limited Stop Route A at this stop. This route is not changed under this alternative.

Shady Oak: Route 664 connects with Limited Stop Route B at this stop. Route 664 is extended from its current terminus south on CR 101 to cover a portion of the former alignment of the recently discontinued route 612. Route 664 will offer an off-peak service similar to the discontinued 612. Under the Enhanced Bus alternative, the route alternative operates on its former alignment and schedule.

Hopkins: Routes 12,615, 661, 664 and 665 connect with Limited Stop Route B at this park-and-ride lot station.

Service frequencies on route 12 are increased slightly to 15 minutes bi-directional, all day on the trunk portion of the route (frequencies on the branches remain unchanged).

Peak service frequency on route 615 increase from 60 to 30 minutes, and off peak frequency is 60 minutes. The route operates to midnight.

Route 661 is a recently discontinued Metro Transit route that is reinstated in the Enhanced Bus alternative with a slightly modified alignment (eliminating its branch to Golden Triangle) and operates at a 30 minute peak/60 minute off-peak service frequency. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Changes to Route 664 are described under Shady Oak.

Service frequency on Route 665 is increased from 3 trips during each peak period, in the peak direction only, to a 30 minute headway (6 trips) during each peak period in the peak direction, and a 60 minute headway (3 trips) during each peak period, in the off peak direction.

TH 169: Limited Stop Routes A and B connect to Route 12, Changes to these Route 12 are described above under Hopkins.

Excelsior at Blake: Limited Stop Routes A and B connect to Routes 12, 17 and 668 at this stop.

Changes to these Route 12 are described above under Hopkins.

Route 17 Lake Street branch is extended to Blake and Excelsior to serve this stop. Service frequency increases from 3 trips in the peak direction and 2 trips in the off-peak during each peak period to 30 minute headways (6 trips in each direction) during the peak period.

Route 668 is extended to connect to Excelsior and Blake and the Library-Lane loop is eliminated.

Blake at TH 7: Limited Stop Routes A and B connect to Routes 17.

Route 17 Lake Street branch serves the stop. Changes to Route 17 are described under Excelsior at Blake.

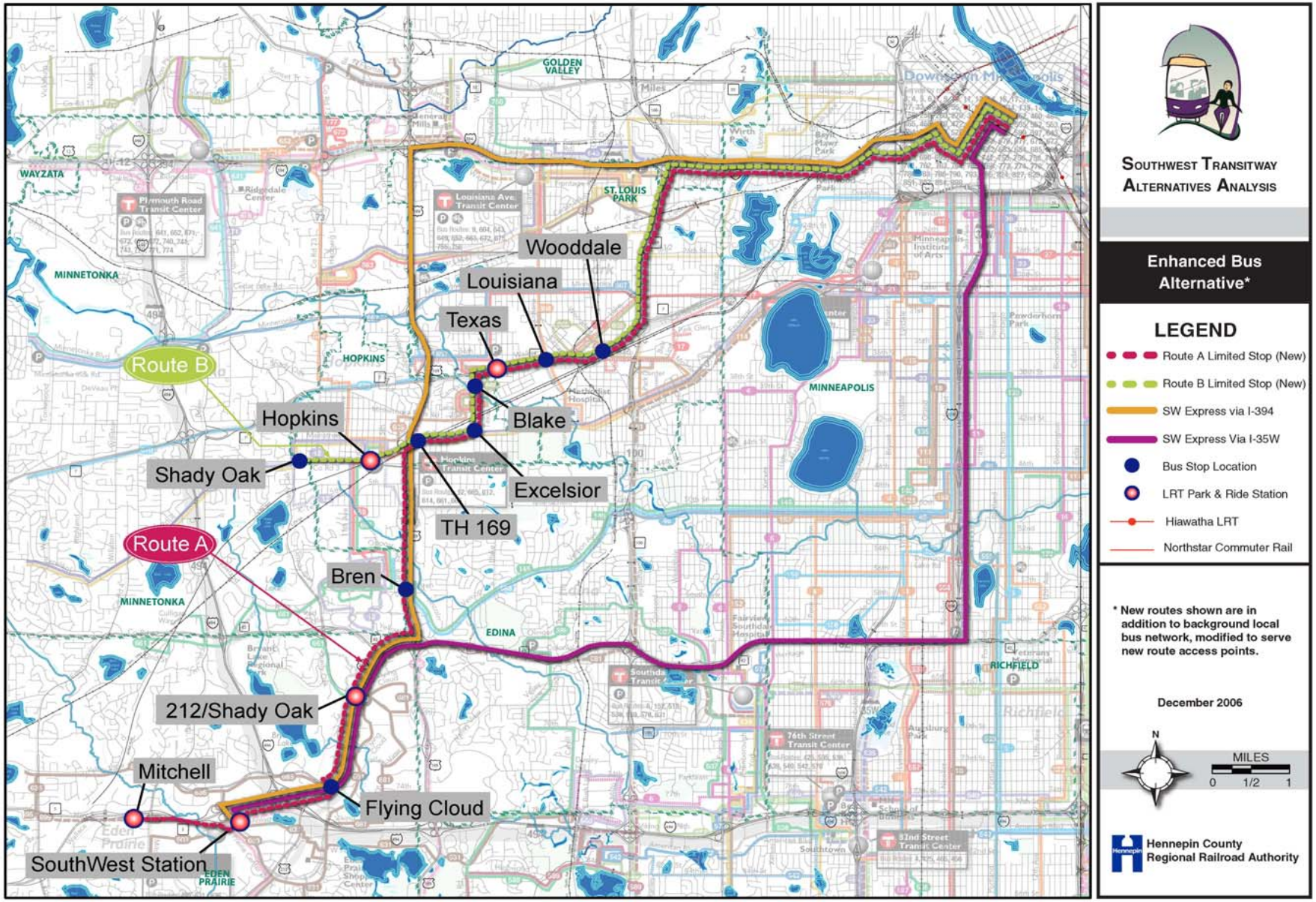
Texas: Limited Stop Routes A and B would connect to Route 668 at this stop.

Route 668 connects to the stop at Blake and TH 7 and the Library-Lane loop is eliminated. Changes to Route 668 are described under Excelsior at Blake.

Louisiana: Limited Stop Routes A and B connect with route 604 at this stop. Route 604 is increased in service frequency under this alternative, from 2 trips in each direction during each peak period to a 30 minute headway (6 trips) in each direction during each peak period.

Wooddale: Route 615 connects to Limited Stop Routes A and B at this location. Changes to Route 615 are described under Hopkins.

Figure D-2 Enhanced Bus Alternative



Source: Parsons Brinckerhoff, 2006.

Bus Rapid Transit Alternatives

Two BRT alternatives are described below. The two primary routes under the Enhanced Bus alternative, Limited Stop Routes "A" and "B", operate as the principal BRT routes under the BRT alternatives. In addition, a number of SouthWest Metro and Metro Transit routes use the BRT alignment for portions of their routes.

BRT 1: HCRRA Right-of-Way, TH 5 to Downtown Minneapolis

BRT 1 operates from TH 5 in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis. BRT 1 uses a new two-lane roadway located in existing HCRRA right-of-way to bus-only lanes in downtown Minneapolis.

BRT 1 begins at SouthWest Station, proceeding west via TH 5 on bus shoulder lanes, exiting at Mitchell Road to follow local streets to the intersection of TH 5 and the HCRRA's Southwest Corridor. From that point the route enters a new exclusive bus-only guideway in the HCRRA's Southwest Corridor to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive bus-only guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive LRT guideway in the HCRRA's Cedar Lake Park Corridor. When it reaches the new Van White Boulevard, the route exits the exclusive bus-only guideway and follows new reserved bus-only lanes along Dunwoody Boulevard and Hennepin Avenue into downtown Minneapolis. The route ends at the intersection of 5th Street and Hennepin Avenue, adjacent to the existing Hiawatha LRT line.

Stations

BRT 1 station locations are listed below. All stations west of Van White Boulevard in Minneapolis are assumed to include park-and-ride facilities. A center platform configuration is proposed unless otherwise noted.

- SouthWest Station, Eden Prairie - The proposed station expands the current SouthWest Metro Transit Station parking facility in the northwest corner of Technology Drive and Prairie Center Drive. Access to and from the site would be via Technology Drive.
- TH 5, Eden Prairie – The proposed site is located in the northeast corner of TH 5 and the HCRRA Southwest Corridor LRT Trail right-of-way. Access to and from the site would be via re-routed Venture Lane.
- TH 62, Eden Prairie/Minnetonka – The proposed site is located south of TH 62, in the southeast corner of West 62nd Street and the HCRRA Southeast Corridor property, between Industrial Drive on the west and Carlson Drive on the east. Access to and from the site would be via Carlson Drive and West 62nd Street.
- Rowland Road, Minnetonka – The proposed site is located in the southeast corner of Rowland and Baker Roads, just east of I-494 and west of the HCRRA Southwest Corridor property. Access would be via Rowland and Baker Roads. An alternative site, required as part of the potential route variation, is located in the northeast corner of Rowland Road and the HCRRA Southwest Corridor property and is accessed via Rowland Road.
- Shady Oak Road, Minnetonka – The proposed site is located west of Shady Oak Road and north of the HCRRA Southwest Corridor property, at the site of Hennepin Technical College. Access to and from the site would be via extended 17th Avenue.

- 8th Avenue, Hopkins – The proposed site is located between 8th and 5th Avenues South, north of the HCRRA Southwest Corridor property. Access to the site would be via a reconstructed intersection at 8th Avenue.
- Blake Road, Hopkins - The proposed site is located northwest of the Blake Road/HCRRA Southwest Corridor intersection. Access to the site would be via Blake Road and 2nd Avenue NE.
- Louisiana Avenue, St. Louis Park - The proposed site is located in the northeast corner of Louisiana Avenue and the HCRRA Southwest Corridor property. Access to the site would be via Louisiana Avenue.
- Wooddale Avenue, St. Louis Park - The proposed site is located in the southeast corner of the Wooddale Avenue intersection with the HCRRA Southwest Corridor property. Access to the site would be via Wooddale and Yosemite Avenues and West 36th Street.
- Beltline Boulevard, St. Louis Park - The proposed site is located in the southeast corner of the Beltline Boulevard intersection with the HCRRA Southwest Corridor property. Access to the site would be via Beltline Boulevard and Park Glen Road.
- West Lake Street, Minneapolis - The proposed site is located between the HCRRA Southwest Corridor property and Whole Foods grocery store, on the southeast side of the HCRRA Southwest Corridor property. Access to the site would be via re-routed West 31st Street and Abbott Avenue South.
- 21st Street, Minneapolis - The proposed site is located in the southwest corner of West 21st Street and the HCRRA Southwest Corridor property. Access to the site would be via West 21st Street and Upton Avenue South.
- Penn Avenue, Minneapolis – The proposed site is located north of the HCRRA Southwest Corridor property, south of Penn Avenue and south of I-394. Access to the station area would be via Penn Avenue. Pedestrian access to the station platforms would be via a bridge over the BNSF freight railroad adjacent to the HCRRA Southwest Corridor property.
- Van White Boulevard, Minneapolis - The proposed site is located north of the HCRRA Southwest Corridor property, adjacent to the planned Van White Boulevard. This station is assumed to be constructed in coordination with planned mixed-use development in that location. Access to the station area would be via Van White Boulevard.
- Hennepin Avenue at 12th, 8th and 4th Streets, downtown Minneapolis –These stations are proposed to be located on Hennepin Avenue, in the blocks between 11th and 12th Streets, 7th and 8th Streets, and 4th and 5th Streets.

Infrastructure Improvements Required

BRT 1 requires the construction of a new two-lane bus-only roadway (busway) approximately 28 feet wide, and on-line stations within the guideway, in HCRRA right-of-way through the Southwest, Kenilworth and Cedar Lake Corridors, beginning at TH 5 in Eden Prairie. A grade separation is required at the TC&W Railroad crossing near TH 62 in Minnetonka, and at Excelsior Boulevard in Hopkins. BRT 1 also is assumed to require addition of a reserved bus-only lane in each direction along Dunwoody Boulevard in Minneapolis.

Service Plan

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Route "A"	20	15	20	15	30
Route "B"	20	15	20	15	30
Combined	10	7.5	10	7.5	15
Weekend				(to 7:30 pm)	
Route "A"	30-60	30-60	20	20	30-60
Route "B"	30-60	30-60	20	20	30-60
Combined	15-30	15-30	10	10	15-30

Freight Rail Relocation
Under alternative BRT 1 it would be necessary to remove the existing freight railroad track from the HCRRA Kenilworth Corridor. In 1999, St. Louis Park in partnership with Hennepin County and Mn/DOT convened the Southwest Railroad Advisory Task Force to study freight rail issues affecting St. Louis Park. After the task force concluded their work, the St. Louis Park City Council adopted a position that "freight rail from the west headed for St. Paul should continue to travel through the Kenilworth corridor in Minneapolis unless and until such time as a viable form of mass transit displaces it….If at a future date, it is determined that the Kenilworth Corridor is the most feasible route for mass transit and that freight rail and a mass transit system cannot coexist in that corridor, freight rail traffic will be re-routed through St. Louis Park. This is to be accomplished by constructing a northerly connection on the Golden Auto Site and a connection on the iron triangle property." (citation Page 1, May 23, 2001)

Consistent with the conclusion of the St. Louis Park Rail Task Force position statement, since mass transit is assumed the freight rail traffic in Kenilworth would be relocated to the Canadian Pacific's north-south line (the MNS Subdivision) located west of TH 100, then east on the BNSF's Wayzata Subdivision. This requires construction of a new connection on the Golden Auto Site in the northwest corner between the CP Bass Lake Subdivision and the MNS Subdivision, and restoration of the Iron Triangle, a former connection in the southeast corner between the BNSF Wayzata Subdivision and the MNS Subdivision.

BRT 1 Connecting Transit Service
TH 5 Station: Routes 631, 636 681, 685, 685A, 690, 690A, 690B, 691, 694, 698, and 699A serve this station.

Routes 631 and 636 are circulators that connect Eden Prairie and surrounding communities to Eden Prairie Town Center and SouthWest Stations. (Note: the City of Eden Prairie requested in September 2006 that "Town" be added to this station name.) Service on route 631 is increased from hourly service to a frequency of 15 minutes during peak periods, and service operates hourly in the evenings until 10:00 PM. Route 636 remains unchanged during peak periods, and midday service will be eliminated.

SouthWest Metro Transit Express Routes 681, 685, 685A, 690, 690A, 690B, 691, 694, 698, and 699A operate from the existing SouthWest Station via TH 5 shoulder lanes to enter the BRT right-of-way at TH 5 station.

TH 62 Station: Routes 661, 681 Circulator serve this station.

Route 661 is a recently discontinued Metro Transit route that is reinstated with a slightly modified alignment (eliminating its branch to Golden Triangle) in the BRT 1 alternative and operates at a 30 minute peak/60 minute off-peak service frequency. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Route 681 Circulator is a proposed new route serving Eden Prairie and Golden Triangle, replacing part of the alignment of existing route 681, which will not operate from SouthWest Station on TH 212. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Rowland Station: No routes serve this station.

Shady Oak Station: Route 12 serves this station. Changes to route 12 are described below under West Lake Station.

Hopkins Station: Routes 12, 615,661, 664 and 665 serve this station.

Changes to Route 12 are described below under West Lake Station.

Route 615, which currently runs between the Ridgedale Shopping Center in Minnetonka and Excelsior and Grand, is extended to the Beltline Station (which is near Excelsior and Grand). Peak frequency increases from 60 to 30 minutes, and off peak frequency is be 60 minutes. The route operates to midnight.

Changes to Route 661 are described above under TH 62 Station.

Route 664 is extended from its current terminus south on CR 101 to cover a portion of the former alignment of the recently discontinued route 612. Route 664 will offer an off-peak service similar to the discontinued 612. Peak period service operates on the BRT alignment between Hopkins Station and downtown Minneapolis. Off-peak service operates between Hopkins Station and the terminal on CR 101. Off-peak riders with destinations east of Hopkins Station transfer to other services at the Hopkins Station. The route operates on the BRT alignment between Hopkins Station and downtown Minneapolis.

Route 665 is rerouted from its current highway alignment and enters the BRT alignment at Hopkins Station for its connection to downtown Minneapolis. Service frequency be increases from 3 trips during each peak period, in the peak direction only, to a 30 minute headway (6 trips) during each peak period in the peak direction, and a 60 minute headway (3 trips) during each peak period, in the off peak direction.

Blake Station: Routes 17, 615, 664, 665, 668 and 670 serve this station.

Route 17 Lake Street branch is extended to Blake Station, and service frequency increases from 3 trips in the peak direction and 2 trips in the off-peak during each peak period to 30 minute headways (6 trips in each direction) during the peak period.

Changes to Routes 615, 664 and 665 are described above under Hopkins Station.

Route 668 is extended to connect to Blake Station and the Library-Lane loop is eliminated. The route operates on the BRT right-of-way between West Lake Station and downtown Minneapolis.

Route 670 is rerouted to operate on the BRT alignment between Blake Station and downtown Minneapolis. The route, which now operates as a peak period, peak direction route on a one hour peak period headway, operates bi-directionally at half hour headways in the BRT 1 alternative and is given midday and evening (to midnight) service at a one hour headway.

Louisiana Avenue Station: Route 604 serves this station.

Route 604 is extended to Beltline Station, and increases in service frequency from 2 trips in each direction during each peak period to a 30 minute headway (6 trips) in each direction during each peak period.

Wooddale Station: The 36th Street branch of Route 17 and Route 615 serve this station. Changes to this route are described above under Blake Station. Changes to Route 615 are described under Hopkins Station.

Beltline Station: The 36th Street branch of route 17, route 604 and route 615 serve this station.

Changes to Route 17 are described above under Blake Station.

Changes to Route 604 are described above under Louisiana Station.

Changes to Route 615 are described above under Hopkins Station.

West Lake Station: The 6 Shuttle route and routes 12, 17, 21, 25, and 53 serve this station.

The 6 Shuttle is a new route that operates along France Avenue serving Edina between Southdale and the West Lake Station. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Route 12 terminates at this station and its segment connecting to downtown Minneapolis is eliminated, and service frequencies are increased slightly to 15 minutes bi-directional, all day on the trunk portion of the route (frequencies on the branches remain unchanged).

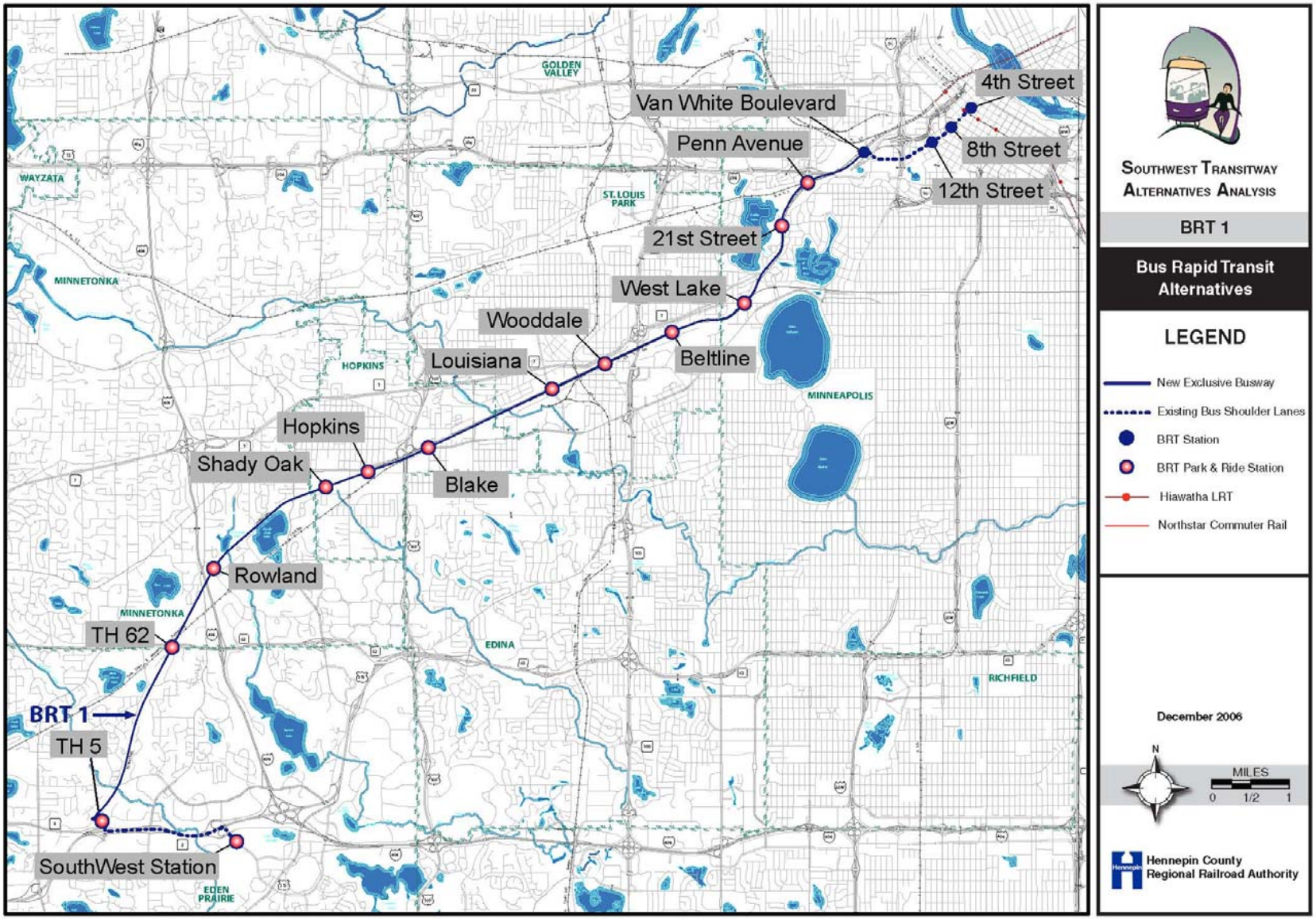
Changes to Route 17 are described above under Blake Station.

Routes 21 and 53 are extended from Uptown Station to connect to this station to provide crosstown connectivity along Lake Avenue.

Route 25 is extended south to connect to this station to provide service to the Kenwood Park area.

21st Street Station: Route 25 connects to this station. Changes to Route 25 are described above under West Lake Station.

Figure D-3 BRT 1 Alternative



Source: Parsons Brinckerhoff, 2006

BRT 2: Eden Prairie Center/Golden Triangle/Opus/Hopkins, HCRRA Right-of-Way to Downtown Minneapolis

BRT 2 operates from Mitchell Road in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

The alignment begins near the intersection of TH 5 and Mitchell Road in Eden Prairie. From that point the route uses the existing bus-only shoulders along TH 5 to the Prairie Center Drive interchange, where it enters new reserved bus-only lanes along Prairie Center Drive. It follows Prairie Center Drive south, then turns east into new reserved bus-only lanes along Singletree Lane. When the route reaches the intersection of Singletree Lane and Flying Cloud Drive, it turns north and continues in bus-only shoulders along Flying Cloud Drive. At Valley View Road the route enters an exclusive bus-only guideway along the east side of the TH 212 right-of-way, then swings east and north along new right-of-way through the Golden Triangle area.

After crossing Shady Oak Road, the exclusive guideway crosses over TH 212 into the City West area, then crosses over TH 62 into the Opus area of Minnetonka. At Bren Road the route leaves the bus-only guideway and follows new reserved bus-only lanes along Bren Road to the TH 169 interchange. At TH 169 the route follows the existing bus-only shoulders north to Excelsior Boulevard, where it then enters an exclusive bus-only guideway located in the HCRRA's Southwest Corridor.

For this alternative, the exclusive bus-only guideway along the HCRRA's Southwest Corridor begins near Shady Oak Road. It continues east, passing under TH 169, where it is joined by the route branch coming north from Bren Road. The combined route continues in the exclusive bus-only guideway to West Lake Street in Minneapolis.

Just north of West Lake Street the route enters an exclusive bus-only guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive LRT guideway in the HCRRA's Cedar Lake Park Corridor. When it reaches the new Van White Boulevard, the route exits the exclusive bus-only guideway and follows new reserved bus-only lanes along Dunwoody Boulevard and Hennepin Avenue into downtown Minneapolis. The route ends at the intersection of 5th Street and Hennepin Avenue, adjacent to the existing Hiawatha LRT line.

Potential Route Variations

This alternative includes a route variation in Eden Prairie. After serving the SouthWest station, the route would continue east in bus-only shoulders along TH 5. Once it has passed under I-494 and Valley View Road, the route enters an exclusive bus-only guideway that carries it into the Golden Triangle area. The variation does not include an Eden Prairie Center station.

The recommended BRT 2 alignment also includes an extension of the exclusive busway west of TH 169 to Shady Oak Road. This branch is intended to provide service to downtown Hopkins and to intercept park-and-ride traffic at the Minnetonka/Hopkins border.

Stations

BRT 2 stations locations are listed below. All stations west of Van White Boulevard in Minneapolis are assumed to include park-and-ride facilities. A center platform configuration is proposed unless otherwise noted.

- Mitchell Road/TH 5, Eden Prairie – The proposed site is located west of Mitchell Road, south of TH 5, north of Lone Oak Road. Access would be via Mitchell and Loan Oak Roads.
- SouthWest Station, Eden Prairie - The proposed station expands the current SouthWest Metro Transit Station parking facility in the northwest corner of Technology Drive and Prairie Center Drive. Access to the site would be via Technology Drive.
- Eden Prairie Town Center, Eden Prairie – The proposed site is located north of Singletree Lane, west of a new extended Main Street. Access to and from the site would be via Singletree Lane and the new Main Street extension.
- Golden Triangle, Eden Prairie - The proposed site is located west of TH 212 at the east edge of the former Best Buy Site. Access would be via an extended West 70th Street.
- City West, Eden Prairie - The proposed site is located on the southwest side of TH 62, adjacent to or constructed in conjunction with the planned City West development at this location. Access would be via Shady Oak Road,West 62nd Street, and new development roads.
- OPUS, Minnetonka – The proposed site is located in the southeast corner of the Bren Road East and Bren Road West one-way-pair divergence. Access would be from the two Bren Roads.
- Shady Oak Road, Minnetonka – The proposed site is located east of Shady Oak Road and north of the HCRRA Southwest Corridor property, at the site of Hennepin Technical College. Access to and from the site would be via extended 17th Avenue.
- 8thAvenue, Hopkins – The proposed site is located between 8th and 5th Avenues South, north of the HCRRA Southwest Corridor property. Access to the site would be via a reconstructed intersection at 8th Avenue.
- Blake Road, Hopkins - The proposed site is located northeast of the Blake Road/HCRRA Southwest Corridor intersection. Access to the site would be via Blake Road and 2nd Avenue NE.
- Louisiana Avenue, St. Louis Park - The proposed site is located in the northeast corner of Louisiana Avenue and the HCRRA Southwest Corridor property. Access to the site would be via Louisiana Avenue.
- Wooddale Avenue, St. Louis Park - The proposed site is located in the southeast corner of the Wooddale Avenue intersection with the HCRRA Southwest Corridor property. Access to the site would be via Wooddale and Yosemite Avenues and West 36th Street.
- Beltline Boulevard, St. Louis Park - The proposed site is located in the southeast corner of the Beltline Boulevard intersection with the HCRRA Southwest Corridor property. Access to the site would be via Beltline Boulevard and Park Glen Road.
- West Lake Street, Minneapolis - The proposed site is located between the HCRRA Southwest Corridor property and Whole Foods grocery store, on the southeast side of the HCRRA Southwest Corridor property. Access to the site would be via re-routed West 31st Street and Abbott Avenue South.
- 21st Street, Minneapolis - The proposed site is located in the southwest corner of West 21st Street and the HCRRA Southwest Corridor property. Access to the site would be via West 21st Street and Upton Avenue South.
- Penn Avenue, Minneapolis – The proposed site is located north of the HCRRA Southwest Corridor property, south of Penn Avenue and south of I-394. Access to the station area would be via Penn Avenue. Pedestrian access to the station

platforms would be via a bridge over the BNSF freight railroad adjacent to the HCRRA Southwest Corridor property.

- Van White Boulevard, Minneapolis - The proposed site is located north of the HCRRA Southwest Corridor property, adjacent to the planned Van White Boulevard. This station is assumed to be constructed in coordination with planned mixed-use development in that location. Auto access to the station area would be via Van White Boulevard.
- Hennepin Avenue at 12th, 8th and 4th Streets, downtown Minneapolis – These stations are proposed to be located on Hennepin Avenue, in the blocks between 11th and 12th Streets, 7th and 8th Streets, and 4th and 5th Streets.

Infrastructure Improvements Required

BRT 2 requires the Kenilworth Corridor freight rail relocation described previously. BRT 2 requires the construction of a new two-lane busway approximately 28 feet wide, and on-line stations within the guideway, in HCRRA right-of-way through the Southwest, Kenilworth and Cedar Lake Corridors, beginning at Shady Oak Road in Minnetonka. A grade separation is required at Excelsior Boulevard in Hopkins. The addition of new reserved bus-only lanes is assumed along Prairie Center Drive from TH 5 to Singletree Lane, and along Singletree Lane from Prairie Center Drive to Flying Cloud Drive in Eden Prairie. A new right-of-way with exclusive two-lane busway is required beginning at Valley View Road, crossing over Flying Cloud Drive into the Golden Triangle, over TH 212 to City West, and over TH 62 to Opus, with on-line stations in this segment. New reserved bus-only lanes are required on Bren Road to the connection with TH 169. BRT 2 also is assumed to require addition of a reserved bus-only lane in each direction along Dunwoody Boulevard in Minneapolis.

Service Plan

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Route “A”	20	15	20	15	30
Route “B”	20	15	20	15	30
Combined	10	7.5	10	7.5	15
Weekend				(to 7:30 pm)	
Route “A”	30-60	30-60	20	20	30-60
Route “B”	30-60	30-60	20	20	30-60
Combined	15-30	15-30	10	10	15-30

BRT 2 Connecting Transit Service

Mitchell Road Station: Routes 631 and 636 serve this station.

Routes 631 and 636 are circulators that connect Eden Prairie and Surrounding communities to Eden Prairie Town Center and SouthWest Stations. Service on route 631 is increased from hourly service to a frequency of 15 minutes during peak periods, and service would operate hourly in the evenings until 10:00 PM. Route 636 remains unchanged during peak periods, and midday service is eliminated.

SouthWest Station: SouthWest Metro Transit Routes 603, 631, 636, 680, 681, 681 Circulator, 685, 685A, 690, 690A, 690B, 691, 694, 698, and 699A serve this station, which also serves as the hub of SouthWest Metro Transit's bus operations.

Route 680 is not changed under this alternative.

Route 603 is a circulator that serves the area surrounding Eden Prairie Town Center. The circulator, which currently operates only in the clockwise direction, operates in both directions in the BRT 2 alternative, effectively doubling the existing 30 minute peak, 60 minute off-peak frequency. Service also operates bi-directionally on an hourly headway in the evenings until 10:00 PM.

Changes to Routes 631 and 636 are described above under TH 5.

Route 681 is combined with 690 and 690A to operate a high frequency bi-directional service between SouthWest Station and downtown Minneapolis via the BRT alignment, and the off-highway segment of its alignment serving the Golden Triangle area is eliminated.

Route 681 Circulator is a new route serving Eden Prairie and Golden Triangle, replacing the eliminated segment of the existing Route 681 serving the Golden Triangle area. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

As noted above, Routes 690, 690A and 690B are combined with Route 681 to provide high frequency, bi-directional service between SouthWest Station and downtown Minneapolis via the BRT alignment. In addition to 681 and 690, SouthWest Metro Transit Express Routes 685, 685A, 691, 694, 698, and 699A operate on the BRT alignment between SouthWest Station and Downtown Minneapolis.

Eden Prairie Town Center Station: Routes 636 and 681 Circulator serve this station. Route 636 is described above under TH5 Station. Route 681 is described above under SouthWest Station.

Golden Triangle Station: Routes 631 and 681 Circulator serve this station. Route 631 is described above under TH 5 Station. Route 681 is described above under SouthWest Station.

City West Station: No bus routes serve this station.

Opus Station: Routes 12 and 661 serve this station. Changes to Route 12 are described below under West Lake Station.

Route 661 is a recently discontinued Metro Transit route that is reinstated with a slightly modified alignment (eliminating its branch to Golden Triangle) and operates at a 30 minute peak/60 minute off-peak service frequency. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Shady Oak Station: Route 12 serves this station. Changes to route 12 are described below under West Lake Station.

Hopkins Station: Routes 12, 615, 661, 664 and 665 serve this station. Changes to route 12 are described below under West Lake Station.

Route 615, which currently runs between the Ridgedale Shopping Center in Minnetonka and Excelsior and Grand, is extended to the Beltline Station (which is near Excelsior and Grand) in the BRT 2 alternative. Peak frequency increases from 60 to 30 minutes, and off peak frequency is 60 minutes. The route operates to midnight.

Changes to route 661 are described above under TH 62 Station.

Route 664 is extended from its current terminus south on CR 101 to cover a portion of the former alignment of the recently discontinued route 612. Route 664 will offer an off-peak service similar to the discontinued 612. Peak period service operates on the BRT alignment between Hopkins Station and downtown Minneapolis. Off-peak service operates between Hopkins Station and the terminal on CR 101. Off-peak riders with destinations east of Hopkins Station transfer to other services at the Hopkins Station. The route operates on the BRT alignment between Hopkins Station and downtown Minneapolis.

Route 665 is rerouted from its current highway alignment and enters the BRT alignment at Hopkins Station for its connection to downtown Minneapolis. Service frequency is increased from 3 trips during each peak period, in the peak direction only, to a 30 minute headway (6 trips) during each peak period in the peak direction, and a 60 minute headway (3 trips) during each peak period, in the off peak direction.

Blake Station: Routes 17, 615, 664, 665, 668 and 670 serve this station.

Route 17 Lake Street branch is extended to Blake Station, and service frequency increases from 3 trips in the peak direction and 2 trips in the off-peak during each peak period to 30 minute headways (6 trips in each direction) during the peak period.

Changes to routes 615, 664 and 665 are described above under Hopkins Station.

Route 668 is extended to connect to Blake Station and the Library-Lane loop is eliminated. The route would operate on the BRT guideway between West Lake station and downtown Minneapolis.

Route 670 is rerouted to operate on the BRT guideway between Blake Station and downtown Minneapolis. The route, which now operates as a peak period, peak direction route on a one hour peak period headway, operates bi-directionally at half hour headways and operates midday and evening (to midnight) service at a one hour headway.

Louisiana Avenue Station: Route 604 serves this station. Route 604 is extended to Beltline Station, and is increased in service frequency from 2 trips in each direction during each peak period to a 30 minute headway (6 trips) in each direction during each peak period.

Wooddale Station: The 36th Street branch of Route 17 and Route 615 serve this station. Changes to this route are described above under Blake Station. Changes to Route 615 are described under Hopkins Station.

Changes to route 615 are described above under Blake station.

Beltline Station: The 36th Street branch of route 17, route 604 and route 615 serves this station. Changes to route 17 are described above under Blake Station.

Changes to route 604 are described above under Louisiana Avenue Station.

Changes to route 615 are described above under Hopkins Station.

West Lake Station: The 6 Shuttle route and Routes 12, 17, 21, 25, and 53 serve this station.

The 6 Shuttle is a new route that operates along France Avenue serving Edina between Southdale and the West Lake Station. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Route 12 terminates at this station and its segment connecting to downtown Minneapolis is eliminated, and service frequencies increase slightly to 15 minutes bi-directional, all day on the trunk portion of the route (frequencies on the branches remain unchanged).

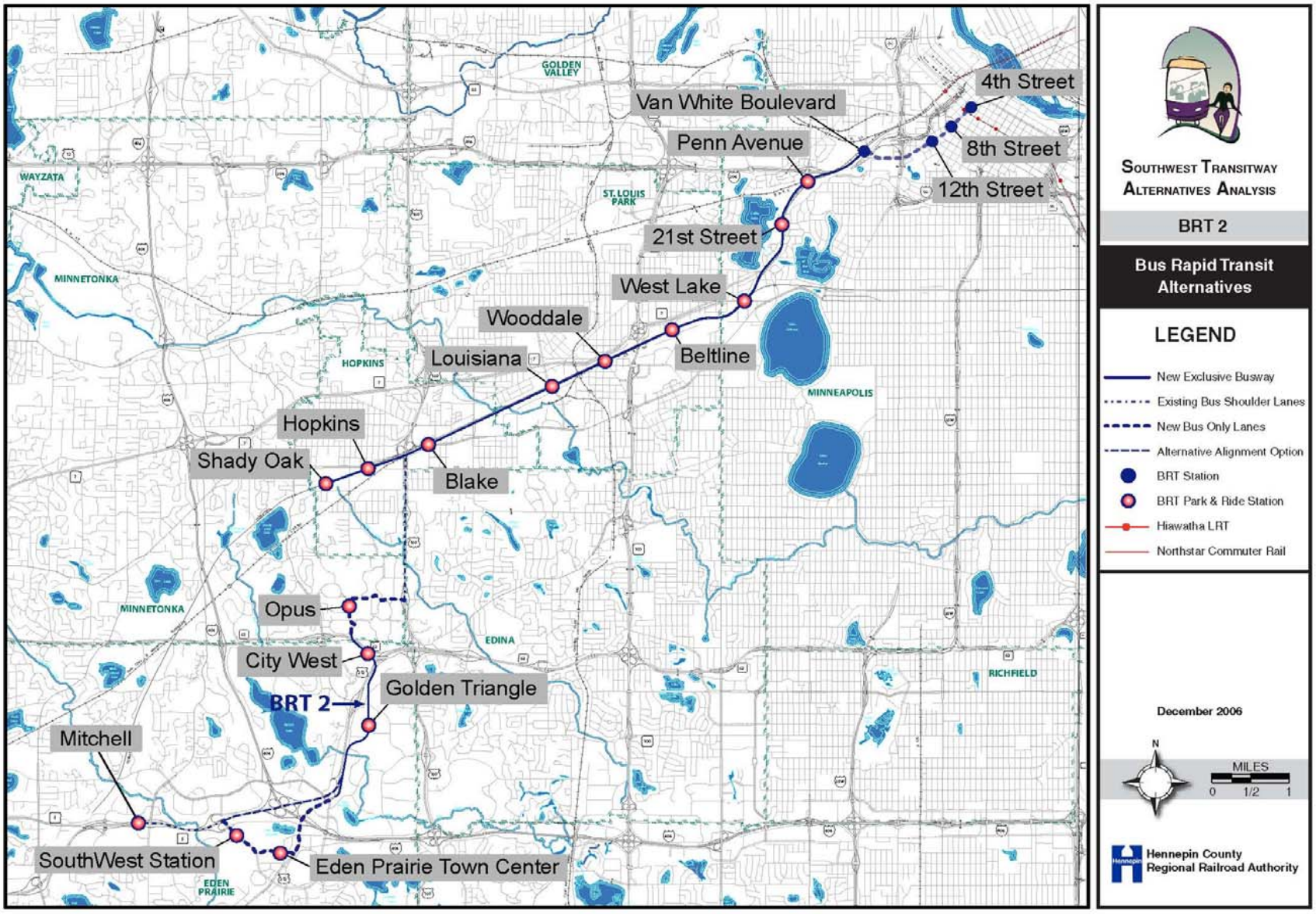
Changes to Route 17 are described above under Blake Station.

Routes 21 and 53 are extended from Uptown Station to connect to this station to provide crosstown connectivity along Lake Avenue.

Route 25 is extended south to connect to this station to provide service to the Kenwood Park area.

21st Street Station: Route 25 connects to this station. Changes to route 25 are described above under West Lake Station.

Figure D-4 BRT 2 Alternative



Source: Parsons Brinckerhoff, 2006

Light Rail Transit Alternatives

The eight LRT alternatives are described using a combination of a numeric (1,2,3,or 4) and alphabetic (A or C) designation. The numbers designate the four possible routings west of Louisiana Avenue in St. Louis Park. The letters designate the two possible routes east of Louisiana Avenue in St. Louis Park.

Alternatives numbered "1" designate routes that use the HCRRA's Southwest Corridor through Eden Prairie, Minnetonka, Hopkins, to Louisiana Avenue in St. Louis Park. Alternatives numbered "2" designate routes that use TH 5 and I-494 rights-of-way through Eden Prairie and Minnetonka and HCRRA's Southwest Corridor through Hopkins to Louisiana Avenue in St. Louis Park. Alternatives numbered "3" use a combination of new exclusive rights-of-way through Eden Prairie, Minnetonka and part of Hopkins, then use the HCRRA's Southwest Corridor through Hopkins to Louisiana Avenue in St. Louis Park. Alternatives numbered "4" designate shortened routes using the HCRRA's Southwest Corridor from Shady Oak Road in Minnetonka to Louisiana Avenue in St. Louis Park. These alternatives do not provide direct LRT service to areas of Minnetonka west of Shady Oak Road and Eden Prairie. LRT alternatives 1 through 4 mirror those resulting from the HCRRA's *Southwest Rail Transit Study, 2003*.

Alternatives with the letter "A" designate routes that use the HCRRA's Southwest Corridor through St. Louis Park, and the HCRRA's Kenilworth and Cedar Lake Corridors in Minneapolis. Alternatives with the letter "C" designate routes that use the HCRRA's Southwest Corridor in St. Louis Park, the HCRRA's Midtown Corridor in Minneapolis, and a shallow tunnel under Nicollet Avenue in Minneapolis. In general, the "A" and "C" routings are similar to those contained in the HCRRA's Draft Environmental Impact Statement (DEIS) Hennepin County LRT System, 1988.

Light Rail Transit – A Alternatives

LRT A alternatives enter downtown Minneapolis from the northwest, either connecting to the Intermodal Station or along Hennepin Avenue, from there turning into the Hiawatha LRT line at 5th Street. LRT A options have the ability to interline with Hiawatha trains, for a seamless trip between Eden Prairie and Minneapolis-St. Paul International Airport and the Mall of America in Bloomington.

Under all LRT A alternatives it would be necessary to remove the existing freight railroad track from the HCRRA Kenilworth Corridor. In 1999, St. Louis Park in partnership with Hennepin County and Mn/DOT convened the Southwest Railroad Advisory Task Force to study freight rail issues affecting St. Louis Park. After the task force concluded their work, the St. Louis Park City Council adopted a position that "freight rail from the west headed for St. Paul should continue to travel through the Kenilworth corridor in Minneapolis unless and until such time as a viable form of mass transit displaces it….If at a future date, it is determined that the Kenilworth Corridor is the most feasible route for mass transit and that freight rail and a mass transit system cannot coexist in that corridor, freight rail traffic will be re-routed through St. Louis Park. This is to be accomplished by constructing a northerly connection on the Golden Auto Site and a connection on the iron triangle property." (citation Page 1, May 23, 2001)

Consistent with the conclusion of the St. Louis Park Rail Task Force position statement, since mass transit is assumed the freight rail traffic in Kenilworth would be relocated to the Canadian Pacific's north-south line (the MNS Subdivision) located west of TH 100,

then east on the BNSF's Wayzata Subdivision. This requires construction of a new connection on the Golden Auto Site in the northwest corner between the CP Bass Lake Subdivision and the MNS Subdivision, and restoration of the Iron Triangle, a former connection in the southeast corner between the BNSF Wayzata Subdivision and the MNS Subdivision.

LRT 1A
The LRT 1A alternative operates from TH 5 in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

The alignment begins near the intersection of TH 5 and the HCRRA's Southwest Corridor. From that point the route enters a new exclusive light rail transit (LRT) guideway in the HCRRA's Southwest Corridor to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive LRT guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive LRT guideway in the HCRRA's Cedar Lakes Corridor to Glenwood Avenue in Minneapolis. At Glenwood Avenue the route climbs from the Cedar Lakes Corridor to street level, where it enters Royalston Avenue. In Royalston Avenue the route operates on exclusive LRT guideway in the median of Royalston Avenue to 7th Street. At 7th Street the route enters a shallow tunnel under 7th Street to 5th Street. At 5th Street the route connects directly to the Intermodal Station at end of the existing Hiawatha LRT tracks though downtown Minneapolis.

Potential Route Variations
Two route variations are included in the LRT 1A alternative, one in Eden Prairie and the other in downtown Minneapolis.

Under the LRT 1A alternative as described above, the LRT route must cross the TC&W Railroad tracks near TH 62. The TH 62 overpass and the existing grades in that area make the crossing difficult. To avoid this potentially difficult and costly crossing, a minor route variation that uses the TC&W and Canadian Pacific right-of-way will be evaluated. Under this variation the route would turn into the railroad right-of-way after passing below TH 62, and run next to the railroad tracks to a location near the Minnetonka-Hopkins city limits. At that point the route would cross beneath the freight tracks and turn north, following new right-of-way until it reaches the HCRRA's Southwest Corridor. The route then enters the HCRRA's Southwest Corridor and proceeds towards Minneapolis.

The second route variation uses Dunwoody Boulevard and Hennepin Avenue rather than Royalston Avenue to access downtown Minneapolis. Under this variation the route leaves the HCRRA's Cedar Lake Park Corridor at the new Van White Boulevard and enters Dunwoody Boulevard and Hennepin Avenue to 5th Street in downtown Minneapolis. While this route variation can interline with the Hiawatha LRT line eastbound it cannot interline with the Hiawatha LRT line westbound to access the Warehouse and Intermodal stations.

Stations
LRT 1A station locations are listed below. All stations west of Van White Boulevard in Minneapolis are assumed to include park-and-ride facilities. A center platform configuration is proposed unless otherwise noted.

- TH 5, Eden Prairie – The proposed site is located in the northeast corner of TH 5 and the HCRRA Southwest Corridor LRT Trail right-of-way. Access to and from the site would be via re-routed Venture Lane.
- TH 62, Eden Prairie/Minnetonka – The proposed site is located south of TH 62, in the southeast corner of West 62nd Street and the HCRRA Southwest Corridor property, between Industrial Drive on the west and Carlson Drive on the east. Access to and from the site would be via Carlson Drive and West 62nd Street.
- Rowland Road, Minnetonka – The proposed site is located in the southeast corner of Rowland and Baker Roads, just east of I-494 and west of the HCRRA Southwest Corridor property. Access would be via Rowland and Baker Roads. An alternative site, required as part of the potential route variation, is located in the northeast corner of Rowland Road and the HCRRA Southwest Corridor and is accessed via Rowland Rd.
- Shady Oak Road, Minnetonka – The proposed site is located east of Shady Oak Road and north of the HCRRA Southwest Corridor property, at the site of Hennepin Technical College. Access to and from the site would be via extended 17th Avenue.
- 8thAvenue, Hopkins – The proposed site is located between 8th and 5th Avenues South, north of the HCRRA Southwest Corridor property. Access to the site would be via a reconstructed intersection at 8th Avenue.
- Blake Road, Hopkins - The proposed site is located northwest of the Blake Road/HCRRA Southwest Corridor intersection. Access to the site would be via Blake Road and 2nd Avenue NE.
- Louisiana Avenue, St. Louis Park - The proposed site is located in the northeast corner of Louisiana Avenue and the HCRRA Southwest Corridor property. Access to the site would be via Louisiana Avenue.
- Wooddale Avenue, St. Louis Park - The proposed site is located in the southeast corner of the Wooddale Avenue intersection with the HCRRA Southwest Corridor property. Access to the site would be via Wooddale and Yosemite Avenues and West 36th Street.
- Beltline Boulevard, St. Louis Park - The proposed site is located in the southeast corner of the Beltline Boulevard intersection with the HCRRA Southwest Corridor property. Access to the site would be via Beltline Boulevard and Park Glen Road.
- West Lake Street, Minneapolis - The proposed site is located southeast of the HCRRA Southwest Corridor property. Access to the site would be via re-routed West 31st Street and Abbott Avenue South.
- 21st Street, Minneapolis - The proposed site is located in the southwest corner of West 21st Street and the HCRRA Southwest Corridor property. Access to the site would be via West 21st Street and Upton Avenue South.
- Penn Avenue, Minneapolis – The proposed site is located north of the HCRRA Southwest Corridor property, south of Penn Avenue and south of I-394. Access to the station area would be via Penn Avenue. Pedestrian access to the station platforms would be via a bridge over the BNSF freight railroad adjacent to the HCRRA Southwest Corridor property.
- Van White Boulevard, Minneapolis - The proposed site is located north of the HCRRA Southwest Corridor property, adjacent to the planned Van White Boulevard. This station is assumed to be constructed in coordination with planned mixed-use development in that location. Access to the station area would be via Van White Boulevard.

- Royalston Avenue North, Minneapolis – the proposed site is located within Royalston Avenue south of 5th Avenue North, southwest of 7th Street North. Access would be via Royalston, 5th, 7th, and Olson Memorial Highway
- (Hennepin Avenue Variation) – Under this variation, these stations are proposed to be located on Hennepin Avenue, in the blocks between 11th and 12th Streets and between 7th and 8th Streets.

Infrastructure Improvements Required
LRT 1A requires the Kenilworth Corridor freight rail relocation described previously. LRT 1A requires the construction of a new two-track rail line approximately 30 feet wide in HCRRA right-of-way through the Southwest, Kenilworth and Cedar Lake Park Corridors, and the construction of on-line stations within the guideway. LRT 1A requires a grade separation to cross the TC&W Railroad, either at TH 62 or near the Hopkins-Minnetonka city limits, and a grade separation at Excelsior Boulevard in Hopkins. LRT 1A requires realignment of Glenwood Avenue and new structures over the BNSF Railroad to transition from the Cedar Lake Corridor to street level at Royalston Avenue, and a short shallow tunnel under 7th Street to 5th Street. The Hennepin Avenue variation of LRT 1A is assumed to require the widening of Dunwoody Boulevard, and reconstruction of Hennepin Avenue from I-94 to 5th Street in Minneapolis.

Service Plan

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Freight Rail Relocation
LRT 2A requires the Kenilworth Corridor freight rail relocation described previously.

Connecting Transit Service - LRT 1A
TH 5 Station: Routes 631 and 636 serve this station.

Routes 631 and 636 are circulators that connect Eden Prairie and surrounding communities to Eden Prairie Town Center and SouthWest Station. Service on Route 631 is increased from hourly service to a frequency of 15 minutes during peak periods, and service operates hourly in the evenings until 10:00 PM. Route 636 remains unchanged during peak periods, and midday service is eliminated.

TH 62 Station: Routes 661 and 681 Circulator serve this station.

Route 661 is a recently discontinued Metro Transit route that is reinstated with a slightly modified alignment (eliminating its branch to Golden Triangle) and operates at a 30

minute peak/60 minute off-peak service frequency. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Route 681 Circulator is a new route serving Eden Prairie and Golden Triangle, replacing part of the alignment of existing route 681, which will not operate from SouthWest Station on TH 212. The route separates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Rowland Station: No routes serve this station. .

Shady Oak Station: Route 12 serves this station. Changes to Route 12 are described below under West Lake Station.

Hopkins Station: Routes 12, 661, 615, 664 and 665 serve this station. Changes to Route 12 are described below under West Lake Station. Changes to route 661 are described above under TH 62 Station.

Route 615, which currently runs between the Ridgedale Shopping Center in Minnetonka and Excelsior and Grand, is extended to the Beltline Station (which is near Excelsior and Grand) in the LRT 1A alternative. Peak frequency increases from 60 to 30 minutes, and off peak frequency is 60 minutes. The route operates to midnight.

Route 664 is extended from its current terminus south on CR 101 to cover a portion of the former alignment of the recently discontinued route 612. Route 664 will offer an off-peak service similar to the discontinued 612. The route terminates at Hopkins Station, with passengers completing their travel to downtown Minneapolis on the Light rail line.

Route 665 is increased in service frequency from 3 trips during each peak period, in the peak direction only, to a 30 minute headway (6 trips) during each peak period in the peak direction, and a 60 minute headway (3 trips) during each peak period, in the off peak direction.

Blake Station: Routes 17, 615, and 668 serve this station.

Route 17 Lake Street branch is extended to Blake Station, and service frequency increases from 3 trips in the peak direction and 2 trips in the off-peak during each peak period to 30 minute headways (6 trips in each direction) during the peak period.

Changes to route 615 are described above under Hopkins Station.

Route 668 is extended to connect to Blake Station and the Library-Lane loop is eliminated.

Louisiana Avenue Station: Route 604 serves this station.

Route 604 is extended to Beltline Station, and is increased in service frequency from 2 trips in each direction during each peak period to a 30 minute headway (6 trips) in each direction during each peak period.

Wooddale Station: The 36th Street branch of route 17 and Route 615 serve this station. Changes to this route are described above under Blake Station. Changes to Route 615 are described under Hopkins Station.

Beltline Station: The 36th Street branch of is Route 17, Route 604 and Route 615 would serve this station.

Changes to Route 17 are described above under Blake Station.

Changes to Route 604 are described above under Louisiana Avenue Station.

Changes to Route 615 are described above under Hopkins Station.

West Lake Station: The 6 Shuttle route and Routes 12, 17, 21, 25, and 53 serve this station.

The 6 Shuttle is a new route that operates along France Avenue serving Edina between Southdale and the West Lake Station. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and would operate from 6:00 am to midnight.

Route 12 terminates at this station and its segment connecting to downtown Minneapolis is eliminated, and service frequencies are increased slightly to 15 minutes bi-directional, all day on the trunk portion of the route (frequencies on the branches remain unchanged).

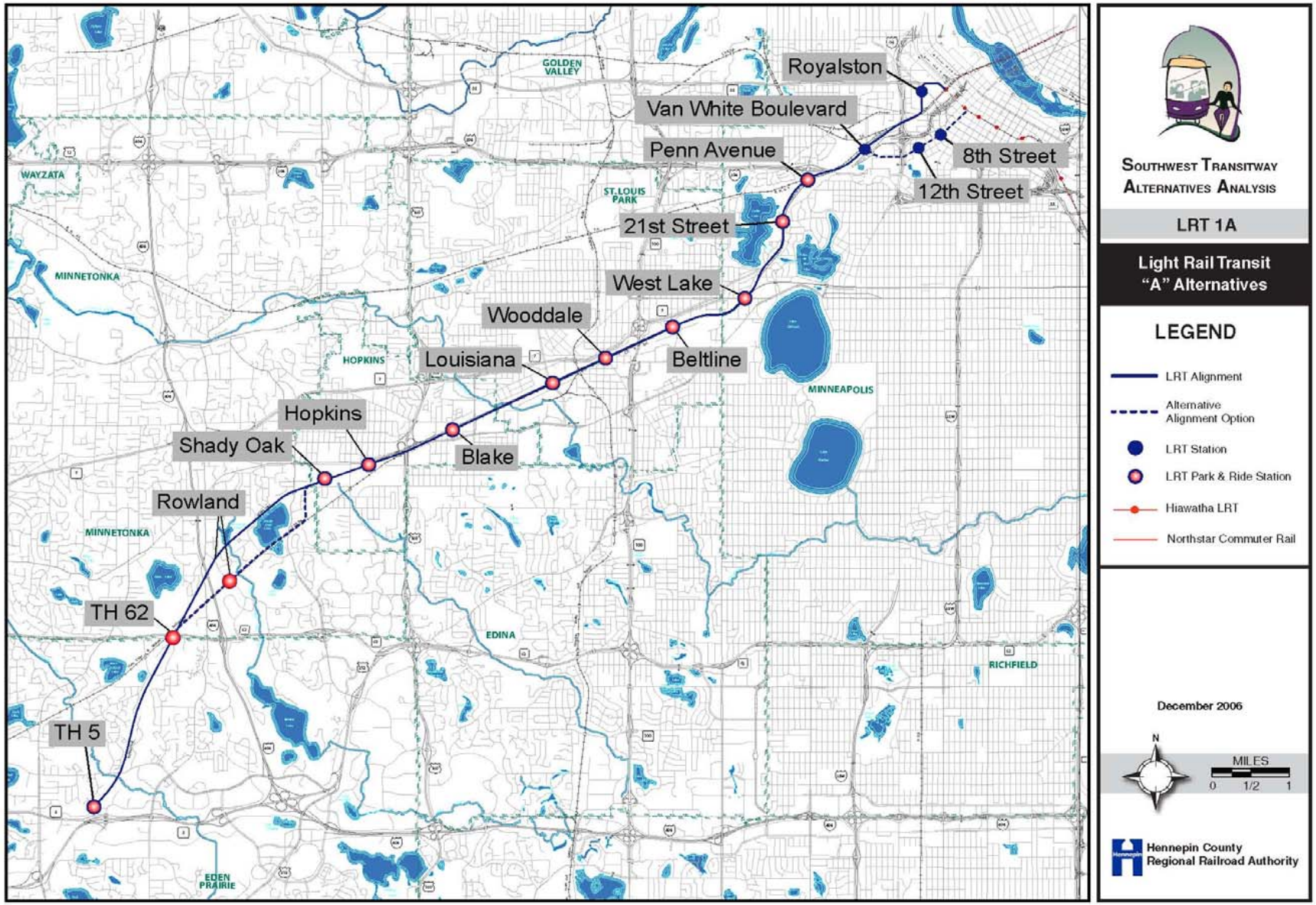
Changes to Route 17 are described above under Blake Station.

Routes 21 and 53 are extended from Uptown Station to connect to this station to provide crosstown connectivity along Lake Avenue.

Route 25 is extended south to connect to this station to provide service to the Kenwood Park area.

21st Street Station: Route 25 connects to this station. Changes to route 25 are described above under West Lake Station.

Figure D-5 LRT 1A Alternative



Source: Parsons Brinckerhoff, 2006

LRT 2A

LRT 2A operates from Mitchell Road in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

The alignment begins south of TH 5 at Mitchell Road in Eden Prairie. From that point the route follows along the south side of TH 5, crossing under Prairie Center Drive. As it approaches the I-494/TH 5 interchange, the route climbs and crosses over TH 5, descending along the west side of the I-494 exit ramp to TH 5. It continues north along the west side of I-494 to the HCRRA's Southwest Corridor, where it turns east and crosses under the freeway.

After entering the Southwest Corridor, the route continues in an exclusive LRT guideway to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive LRT guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive LRT guideway in the HCRRA's Cedar Lake Park Corridor to Glenwood Avenue in Minneapolis. At Glenwood Avenue the route climbs from the Cedar Lakes Corridor to street level where it enters Royalston Avenue. In Royalston Avenue the route operates on exclusive LRT guideway in the median of Royalston Avenue to 7th Street. At 7th Street the route enters a shallow tunnel under 7th Street to 5th Street. At 5th Street the route connects directly to the end of the existing Hiawatha LRT tracks through downtown Minneapolis.

Potential Route Variation

This route variation uses Dunwoody Boulevard and Hennepin Avenue rather than Royalston Avenue to access downtown Minneapolis. Under this variation the route leaves the HCRRA's Cedar Lakes Corridor at the new Van White Boulevard and enters Dunwoody Boulevard and Hennepin Avenue to 5th Street in downtown Minneapolis. While this route variation can interline with the Hiawatha LRT line eastbound it cannot interline with the Hiawatha LRT line westbound to access the Warehouse and Intermodal stations.

Stations

LRT 2A station locations are listed below. All stations west of Van White Boulevard are assumed to include park-and-ride facilities. A center platform configuration is assumed unless otherwise noted.

- Mitchell Road, Eden Prairie – The proposed site is located west of Mitchell Road, south of TH 5, north of Lone Oak Road. Access would be via Mitchell and Loan Oak Roads.
- SouthWest Station, Eden Prairie - The proposed station expands the current SouthWest Metro Transit Station parking facility in the northwest corner of Technology Drive and Prairie Center Drive. Access to the site would be via Technology Drive.
- Valley View Road, Eden Prairie - The proposed site is located near the northwest corner of I-494 and Plaza Drive. Access would be from Valley View Road to Plaza Drive and a new drive connected to Plaza Drive.
- TH 62, Eden Prairie/Minnetonka – The proposed site is located south of TH 62, just west of I-494, east of Baker Road and north of Holesek Lane. Access would be via Baker Road and Pinnacle Drive.

- Rowland Road, Minnetonka – The proposed site is located in the southeast corner of Rowland and Baker Roads, just east of I-494. Access would be via Rowland and Baker Roads.
- Shady Oak Road, Minnetonka – The proposed site is located east of Shady Oak Road and north of the HCRRA Southwest Corridor property, at the site of Hennepin Technical College. Access to and from the site would be via extended 17th Avenue.
- 8thAvenue, Hopkins – The proposed site is located between 8th and 5th Avenues South, north of the HCRRA Southwest Corridor property. Access to the site would be via a reconstructed intersection at 8th Avenue.
- Blake Road, Hopkins - The proposed site is located northwest of the Blake Road/HCRRA Southwest Corridor intersection. Access to the site would be via Blake Road and 2nd Avenue NE.
- Louisiana Avenue, St. Louis Park - The proposed site is located in the northeast corner of Louisiana Avenue and the HCRRA Southwest Corridor property. Access to the site would be via Louisiana Avenue.
- Wooddale Avenue, St. Louis Park - The proposed site is located in the southeast corner of the Wooddale Avenue intersection with the HCRRA Southwest Corridor property. Access to the site would be via Wooddale and Yosemite Avenues and West 36th Street.
- Beltline Boulevard, St. Louis Park - The proposed site is located in the southeast corner of the Beltline Boulevard intersection with the HCRRA Southwest Corridor property. Access to the site would be via Beltline Boulevard and Park Glen Road.
- West Lake Street, Minneapolis - The proposed site is located between the HCRRA Southwest Corridor property and Whole Foods grocery store, on the southeast side of the HCRRA Southeast Corridor property. Access to the site would be via re-routed West 31st Street and Abbott Avenue South.
- 21st Street, Minneapolis - The proposed site is located in the southwest corner of West 21st Street and the HCRRA Southwest Corridor property. Access to the site would be via West 21st Street and Upton Avenue South.
- Penn Avenue, Minneapolis – The proposed site is located north of the HCRRA Southwest Corridor property, south of Penn Avenue and south of I-394. Access to the station area would be via Penn Avenue. Pedestrian access to the station platforms would be via a bridge over the BNSF freight railroad adjacent to the HCRRA Southwest Corridor property.
- Van White Boulevard, Minneapolis - The proposed site is located north of the HCRRA Southwest Corridor property, adjacent to the planned Van White Boulevard. This station is assumed to be constructed in coordination with planned mixed-use development in that location. Auto access to the station area would be via Van White Boulevard.
- Royalston Avenue North, Minneapolis – the proposed site is located within Royalston Avenue south of 5th Avenue North, southwest of 7th Street North. Access would be via Royalston, 5th, 7th, and Olson Memorial Highway
- (Hennepin Avenue Variation) – Under this variation, these stations are proposed to be located on Hennepin Avenue, in the blocks between 11th and 12th Streets and between 7th and 8th Streets.

Infrastructure Improvements Required

LRT 2A requires the Kenilworth Corridor freight rail relocation described previously. LRT 2A requires the construction of a new two-track rail line approximately 30 feet wide along the south side of TH 5 and the east side of I-494 through Eden Prairie and Minnetonka,

and within HCRRA right-of-way through the Southwest, Kenilworth and Cedar Lake Park Corridors, and the construction of on-line stations within the guideway. LRT 2A requires a short tunnel under Prairie Center Drive, a flyover structure across TH 5, and new bridges in the I-494 right-of-way at the Valley View exit ramp, TH 62, and the TC&W Railroad. It also requires a grade separation at Excelsior Boulevard in Hopkins. LRT 2A requires realignment of Glenwood Avenue and a new structure over the BNSF Railroad to transition from the Cedar Lake Corridor to street level at Royalston Avenue, and a short shallow tunnel under 7th Street to 5th Street. The Hennepin Avenue variation of LRT 2A is assumed to require the widening of Dunwoody Boulevard, and reconstruction of Hennepin Avenue from I-94 to 5th Street in Minneapolis.

Service Plan

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 (to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Freight Rail Relocation
LRT 2A requires the Kenilworth Corridor freight rail relocation described previously.

Connecting Transit Service - LRT 2A
Mitchell Road Station: Routes 631 and 636 serve this station.

Routes 631 and 636 are circulators that connect Eden Prairie and Surrounding communities to Eden Prairie Town Center and SouthWest Station. Service on Route 631 is increased from hourly service to a frequency of 15 minutes during peak periods, and service operates hourly in the evenings until 10:00 PM. Route 636 remains unchanged during peak periods, and midday service is eliminated.

SouthWest Station: SouthWest Metro Transit Routes 603, 631, 636, 680, 681, 681 Circulator, 685, 685A, 690, 690A, 690B, 691, 694, 698, and 699A serve this station, which also serves as the hub of SouthWest Metro Transit's bus operations.

Routes 680, 685, 685A, 691, 694, 698 and 699A are not changed under this alternative.

Route 603 is a circulator that serves the area surrounding Eden Prairie Town Center. The circulator, which now operates only in the clockwise direction, operates in both directions in the LRT 2A alternative, effectively doubling the existing 30 minute peak, 60 minute off-peak frequency. Service also operates bi-directionally on an hourly headway in the evenings until 10:00 PM.

Changes to Routes 631 and 636 are described above under TH 5.

Route 681 is combined with 690 and 690A to operate a high frequency bi-directional service between SouthWest Station and downtown Minneapolis via TH 212, TH 62, and I-35W, and the off-highway segment of its alignment serving the Golden Triangle area is eliminated.

Route 681 Circulator is a new route serving Eden Prairie and Golden Triangle, replacing the eliminated segment of the existing route 681 serving the Golden Triangle area. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

As noted above, Route 690, 690A and 690B are combined with route 681 to provide high frequency, bi-directional service between SouthWest Station and downtown Minneapolis. 690 continues to use its existing alignment of TH 212 to TH 169 and I-394.

Valley View Station: Routes 685 and 685A serve this station. Apart from a stop at the station, these routes are not be changed under this alternative.

TH 62 Station: Routes 661 and the 681 Circulator serve this station.

Route 661 is a recently discontinued Metro Transit route that is reinstated with a slightly modified alignment (eliminating its branch to Golden Triangle) and operates at a 30 minute peak/60 minute off-peak service frequency. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

The 681 Circulator is described above under SouthWest Station.

Rowland Station: No routes serve this station.

Shady Oak Station: Route 12 serves this station. Changes to route 12 are described below under West Lake Station.

Hopkins Station: Routes 12, 615, 661, 664 and 665 serve this station. Changes to route 12 are described below under West Lake Station. Changes to route 661 are described above under TH 62 Station.

Route 615, which currently runs between the Ridgedale Shopping Center in Minnetonka and Excelsior and Grand, is extended to the Beltline Station (which is near Excelsior and Grand). Peak frequency increases from 60 to 30 minutes, and off peak frequency would be 60 minutes. The route operates to midnight.

Route 664 is extended from its current terminus south on CR 101 to cover a portion of the former alignment of the recently discontinued route 612. Route 664 will offer an off-peak service similar to the discontinued 612. The route terminates at Hopkins Station, with passengers completing their travel to downtown Minneapolis on the Light rail line.

Route 665 increases in service frequency from 3 trips during each peak period, in the peak direction only, to a 30 minute headway (6 trips) during each peak period in the

peak direction, and a 60 minute headway (3 trips) during each peak period, in the off peak direction.

Blake Station: Routes 17, 615, and 668 serve this station.

Route 17 Lake Street branch is extended to Blake Station, and service frequency increases from 3 trips in the peak direction and 2 trips in the off-peak during each peak period to 30 minute headways (6 trips in each direction) during the peak period.

Changes to route 615 are described above under Hopkins Station.

Route 668 is extended to connect to Blake Station and the Library-Lane loop is eliminated.

Louisiana Avenue Station: Route 604 serves this station.

Route 604 is extended to Beltline Station, and is increased in service frequency from 2 trips in each direction during each peak period to a 30 minute headway (6 trips) in each direction during each peak period.

Wooddale Station: The 36th Street branch of route 17 and Route 615 serve this station. Changes to this route are described above under Blake Station. Changes to Route 615 are described under Hopkins Station.

Beltline Station: The 36th Street branch of Route 17, Route 604 and Route 615 serve this station.

Changes to Route 17 are described above under Blake Station.

Changes to Route 604 are described above under Louisiana Avenue Station.

Changes to Route 615 are described above under Hopkins Station.

West Lake Station: The 6 Shuttle route and Routes 12, 17, 21, 25, and 53 serve this station.

The 6 Shuttle is a new route that operates along France Avenue serving Edina between Southdale Station and the West Lake Station. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and would operate from 6:00 am to midnight.

Route 12 terminates at this station and its segment connecting to downtown Minneapolis would be eliminated. Service frequency increases slightly to 15 minutes bi-directional, all day on the trunk portion of the route (frequencies on the branches remain unchanged).

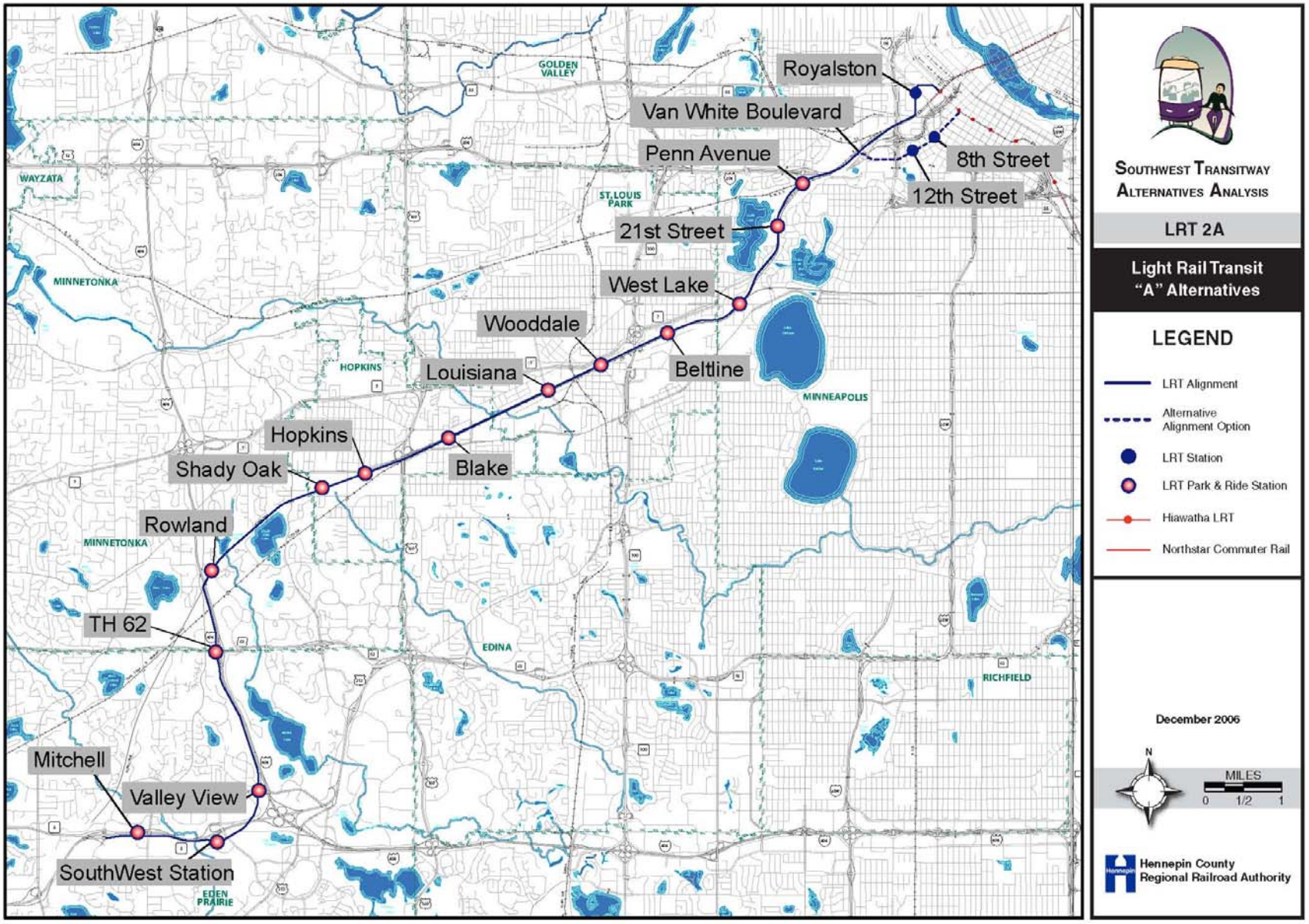
Changes to Route 17 are described above under Blake Station.

Routes 21 and 53 are extended from Uptown Station to connect to this station to provide crosstown connectivity along Lake Avenue.

Route 25 is extended south to connect to this station to provide service to the Kenwood Park area.

21st Street Station: Route 25 connects to this station. Changes to route 25 are described above under West Lake Station.

Figure D-6 LRT 2A Alternative



Source: Parsons Brinckerhoff, 2006

LRT 3A

LRT 3A operates from Mitchell Road in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

The route begins south of TH 5 at Mitchell Road in Eden Prairie. From that point the route follows along the south side of TH 5, crossing under Prairie Center Drive. It turns south along the east side of Prairie Center Drive, then turns east into new right-of-way located behind the existing properties on the north side of Singletree Lane. The route continues along the south side of Leona Road to Flying Cloud Drive, where it turns north. It runs along the east side of Flying Cloud Drive, over I-494 and into the east side of the TH 212 right-of-way.

The route then swings east and north along new right-of-way through the Golden Triangle area. After crossing Shady Oak Road, the route crosses over TH 212 into the City West area, then crosses over TH 62 into the Opus area of Minnetonka. The route follows new right-of-way through Opus, crossing under Smetana Road and continuing north along the Minnetonka-Hopkins city limits. After reaching the HCRRA's Southwest Corridor, the route turns east and follows an exclusive LRT guideway to West Lake Street in Minneapolis.

Just north of West Lake Street the route enters an exclusive LRT guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive LRT guideway in the HCRRA's Cedar Lake Park Corridor to Glenwood Avenue in Minneapolis. At Glenwood Avenue the route climbs from the Cedar Lakes Corridor to street level where it enters Royalston Avenue. In Royalston Avenue the route operates on exclusive LRT guideway in the median of Royalston Avenue to 7th Street. At 7th Street the route enters a shallow tunnel under 7th Street to 5th Street. At 5th Street the route connects directly to the end of the existing Hiawatha LRT tracks through downtown Minneapolis.

Potential Route Variation

This alternative includes a route variation in Eden Prairie. After serving the SouthWest station, the route would cross under Prairie Center Drive and continue along the north side of Technology Drive. It then turns northeast, crossing over I-494 and intersecting Flying Cloud Drive. The route follows along the east side of Flying Cloud Drive and into the east side of the TH 212 right-of-way. The variation does not include an Eden Prairie Town Center station.

LRT 3A also includes a route variation using Dunwoody Boulevard and Hennepin Avenue rather than Royalston Avenue to access downtown Minneapolis. Under this variation the route leaves the HCRRA's Cedar Lake Park Corridor at the new Van White Boulevard and enters Dunwoody Boulevard and Hennepin Avenue to 5th Street in downtown Minneapolis. While this route variation can interline with the Hiawatha LRT line eastbound it cannot interline with the Hiawatha LRT line westbound to access the Warehouse and Intermodal stations.

Stations

LRT 3A station locations are listed below. All stations west of Van White Boulevard are assumed to include park-and-ride facilities. A center platform consideration is assumed unless otherwise noted.

- Mitchell Road, Eden Prairie – The proposed site is located west of Mitchell Road, south of TH 5, north of Lone Oak Road. Access would be via Mitchell and Loan Oak Roads.
- SouthWest Station, Eden Prairie - The proposed station expands the current SouthWest Metro Transit Station parking facility in the northwest corner of Technology Drive and Prairie Center Drive. Access to the site would be via Technology Drive.
- Eden Prairie Town Center, Eden Prairie – The proposed site is located north of Singletree Lane, and east of a new north-south roadway. Access to and from the site would be via Singletree Lane and the new roadway extension.
- Golden Triangle, Eden Prairie - The proposed site is located west of TH 212 at the east edge of the former Best Buy Site. Access would be via an extended West 70th Street.
- City West, Eden Prairie - The proposed site is located on the southwest side of TH 62, adjacent to or constructed in conjunction with the planned City West development at this location. Access would be via Shady Oak Rd, West 62nd Street, and new development roads.
- OPUS, Minnetonka – The proposed site is located in the southeast corner of the Bren Road East and Bren Road West one-way-pair divergence. Access would be from the two Bren Roads.
- Shady Oak Road, Minnetonka – The proposed site is located east of Shady Oak Road and north of the HCRRA Southwest Corridor property, at the site of Hennepin Technical College. Access to and from the site would be via extended 17th Avenue.
- 8thAvenue, Hopkins – The proposed site is located between 8th and 5th Avenues South, north of the HCRRA Southwest Corridor property. Access to the site would be via a breconstructed intersection at 8th Avenue.
- Blake Road, Hopkins - The proposed site is located northwest of the Blake Road/HCRRA Southwest Corridor intersection. Access to the site would be via Blake Road and 2nd Avenue NE.
- Louisiana Avenue, St. Louis Park - The proposed site is located in the northeast corner of Louisiana Avenue and the HCRRA Southwest Corridor property. Access to the site would be via Louisiana Avenue.
- Wooddale Avenue, St. Louis Park - The proposed site is located in the southeast corner of the Wooddale Avenue intersection with the HCRRA Southwest Corridor property. Access to the site would be via Wooddale and Yosemite Avenues and West 36th Street.
- Beltline Boulevard, St. Louis Park - The proposed site is located in the southeast corner of the Beltline Boulevard intersection with the HCRRA Southwest Corridor property. Access to the site would be via Beltline Boulevard and Park Glen Road.
- West Lake Street, Minneapolis - The proposed site is located between the HCRRA Southwest Corridor property and Whole Foods grocery store, on the southeast side of the HCRRA Southwest Corridor property. Access to the site would be via re-routed West 31st Street and Abbott Avenue South.
- 21st Street, Minneapolis - The proposed site is located in the southwest corner of West 21st Street and the HCRRA Southwest Corridor property. Access to the site would be via West 21st Street and Upton Avenue South.
- Penn Avenue, Minneapolis – The proposed site is located north of the HCRRA Southwest Corridor property, south of Penn Avenue and south of I-394. Access to the station area would be via Penn Avenue. Pedestrian access to the station

platforms would be via a bridge over the BNSF freight railroad adjacent to the HCRRA Southwest Corridor property.

- Van White Boulevard, Minneapolis - The proposed site is located north of the HCRRA Southwest Corridor property, adjacent to the planned Van White Boulevard. This station is assumed to be constructed in coordination with planned mixed-use development in that location. Auto access to the station area would be via Van White Boulevard.
- Royalston Avenue North, Minneapolis – the proposed site is located within Royalston Avenue south of 5th Avenue North, southwest of 7th Street North. Access would be via Royalston, 5th, 7th, and Olson Memorial Highway
- (Hennepin Avenue Variation) – Under this variation, these stations are proposed to be located on Hennepin Avenue, in the blocks between 11th and 12th Streets and between 7th and 8th Streets.

Infrastructure Improvements Required

LRT 3A requires the Kenilworth Corridor freight rail relocation described previously. LRT 3A requires the construction of a new two-track rail line approximately 30 feet wide through the Southwest Corridor, Kenilworth and Cedar Lake Park Corridors, and the construction of on-line stations within the guideway. New right-of–way and tracks are required along the south side of TH 5 from Mitchell Road to Prairie Center Drive, through the Eden Prairie Center area, along Flying Cloud Drive over I-494, through the Golden Triangle area, across TH 212 to City West, across TH 62 to Opus, and along the Hopkins-Minnetonka city limits to the HCRRA Southwest Corridor. LRT 3A requires grade separations at Prairie Center Drive, I-494, Flying Cloud Drive, TH 212, TH 62, Smetana Road, the TC&W Railroad, and Excelsior Boulevard. LRT 3A requires realignment of Glenwood Avenue and a new structure over the BNSF Railroad to transition the alignment from the Cedar Lake Park Corridor to street level at Royalston Avenue, and a short shallow tunnel under 7th Street to 5th Street. The Hennepin Avenue variation of LRT 3A is assumed to require the widening of Dunwoody Boulevard, and reconstruction of Hennepin Avenue from I-94 to 5th Street in Minneapolis.

Service Plan

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 (to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Freight Rail Relocation

LRT 3A requires the Kenilworth Corridor freight rail relocation described previously.

LRT 3A Connecting Transit Service

Mitchell Road Station: Routes 631 and 636 serve this station.

Routes 631 and 636 are circulators that connect Eden Prairie and Surrounding communities to Eden Prairie Town Center and SouthWest Station. Service on Route 631 is increased from hourly service to a frequency of 15 minutes during peak periods, and service operates hourly in the evenings until 10:00 PM. Route 636 remains unchanged during peak periods, and midday service will be eliminated.

SouthWest Station: SouthWest Metro Transit Routes 603, 631, 636, 680, 681, 681 Circulator, 685, 685A, 690, 690A, 690B, 691, 694, 698, and 699A serve this station, which also serves as the hub of SouthWest Metro Transit's bus operations.

Routes 680, 685, 685A, 691, 694, 698 and 699A are be changed under this alternative.

Route 603 is a circulator that serves the area surrounding Eden Prairie Town Center. The circulator, which now operates only in the clockwise direction, operates in both directions in the LRT 3A alternative, effectively doubling the existing 30 minute peak, 60 minute off-peak frequency. Service also is operates bi-directionally on an hourly headway in the evenings until 10:00 PM.

Changes to routes 631 and 636 are described above under TH 5.

Route 681 is combined with 690 and 690A to operate a high frequency bi-directional service between SouthWest Station and downtown Minneapolis via TH 212, TH 62, and I-35W, and the off-highway segment of its alignment serving the Golden Triangle area is eliminated.

Route 681 Circulator is a new route serving Eden Prairie and Golden Triangle, replacing the eliminated segment of the existing route 681 serving the Golden Triangle area. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

As noted above, routes 690, 690A and 690B are combined with route 681 to provide high frequency, bi-directional service between SouthWest Station and downtown Minneapolis. Route 690 continues to use its existing alignment of TH 212 to TH 169 and I-394.

Eden Prairie Town Center Station: Routes 636 and 681 Circulator serve this station. Route 636 is described above under TH5 Station. Route 681 is described above under SouthWest Station.

Golden Triangle Station: Routes 631 and 681 Circulator serve this station. Route 631 is described above under TH5 Station. Route 681 is described above under SouthWest Station.

City West Station: No bus routes serve this station.

Opus Station: Routes 12 and 661 serve this station. Changes to Route 12 are described below under West Lake Station.

Route 661 is a recently discontinued Metro Transit route that is reinstated with a slightly modified alignment (eliminating its branch to Golden Triangle) and operates at a 30 minute peak/60 minute off-peak service frequency. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Shady Oak Station: Route 12 serve this station. Changes to route 12 are described below under West Lake Station.

Hopkins Station: Routes 12, 615, 661, 664 and 665 serve this station. Changes to Route 12 are described below under West Lake Station. Changes to route 661 are described above under TH 62 Station.

Route 615, which currently runs between the Ridgedale Shopping Center in Minnetonka and Excelsior and Grand, is extended to the Beltline Station (which is near Excelsior and Grand). Peak frequency increases from 60 to 30 minutes, and off peak frequency is 60 minutes. The route operates to midnight.

Route 664 is extended from its current terminus south on CR 101 to cover a portion of the former alignment of the recently discontinued route 612. Route 664 will offer an off-peak service similar to the discontinued 612. The route terminates at Hopkins Station, with passengers completing their travel to downtown Minneapolis on the Light rail line.

Route 665 increases in service frequency from 3 trips during each peak period, in the peak direction only, to a 30 minute headway (6 trips) during each peak period in the peak direction, and a 60 minute headway (3 trips) during each peak period, in the off peak direction.

Blake Station: Routes 17, 615, and 668 serve this station.

Route 17 Lake Street branch is extended to Blake Station, and service frequency increases from 3 trips in the peak direction and 2 trips in the off-peak during each peak period to 30 minute headways (6 trips in each direction) during the peak period.

Changes to Route 615 are described above under Hopkins Station.

Route 668 is extended to connect to Blake Station and the Library-Lane loop is eliminated.

Louisiana Avenue Station: Route 604 serves this station.

Route 604 is extended to Beltline Station, and is increased in service frequency from 2 trips in each direction during each peak period to a 30 minute headway (6 trips) in each direction during each peak period.

Wooddale Station: The 36th Street branch of route 17 and Route 615 serve this station. Changes to this route are described above under Blake Station. Changes to Route 615 are described under Hopkins Station.

Beltline Station: The 36th Street branch of Route 17, Route 604 and Route 615 would serve this station.

Changes to Route 17 are described above under Blake Station.

Changes to Route 604 are described above under Louisiana Avenue Station.

Changes to Route 615 are described above under Hopkins Station.

West Lake Station: The 6 Shuttle route and Routes 12, 17, 21, 25, and 53 serve this station.

The 6 Shuttle is a new route that operates along France Avenue serving Edina between Southdale Station and the West Lake Station. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Route 12 terminates at this station and its segment connecting to downtown Minneapolis is eliminated, and service frequencies are increased slightly to 15 minutes bi-directional, all day on the trunk portion of the route (frequencies on the branches remains unchanged).

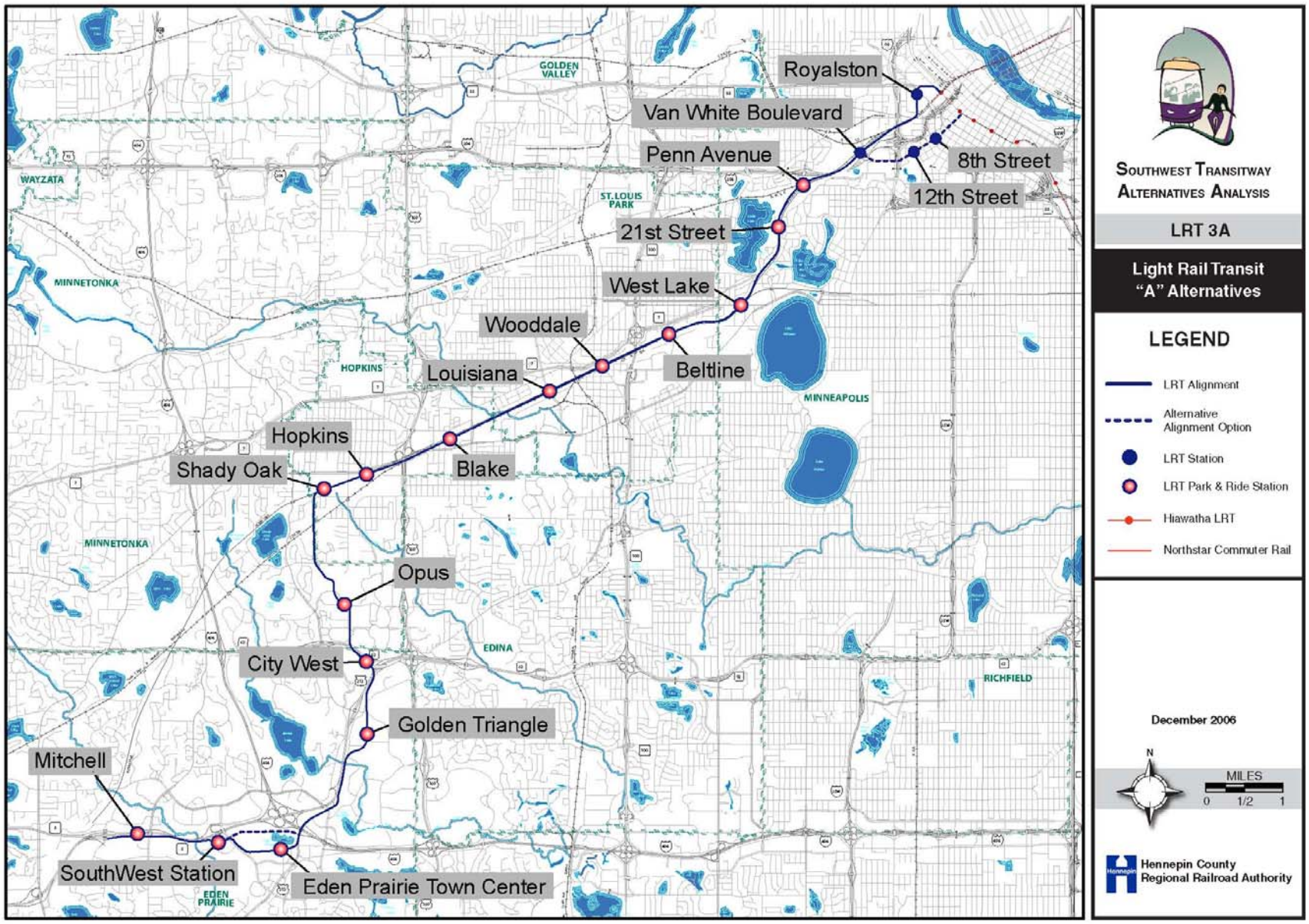
Changes to Route 17 are described above under Blake Station.

Routes 21 and 53 are extended from Uptown Station to connect to this station to provide crosstown connectivity along Lake Avenue.

Route 25 is extended south to connect to this station to provide service to the Kenwood Park area.

21st Street Station: Route 25 connects to this station. Changes to Route 25 are described above under West Lake Station.

Figure D-7 LRT 3A Alternative



Source: Parsons Brinckerhoff, 2006

LRT 4A

The LRT 4A alternative is assumed to operate from Shady Oak Road in Minnetonka to downtown Minneapolis, providing service to Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

The route begins near the intersection of Shady Oak Road and the HCRRA's Southwest Corridor. From Shady Oak Road the route enters a new exclusive light rail transit (LRT) guideway in the HCRRA's Southwest Corridor to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive LRT guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive LRT guideway in the HCRRA's Cedar Lake Park Corridor to Glenwood Avenue in Minneapolis. At Glenwood Avenue the route climbs from the Cedar Lakes Corridor to street level where it enters Royalston Avenue. In Royalston Avenue the route operates on exclusive LRT guideway in the median of Royalston Avenue to 7th Street. At 7th Street the route enters a shallow tunnel under 7th Street to 5th Street. At 5th Street the route connects directly to the end of the existing Hiawatha LRT tracks through downtown Minneapolis.

LRT 4A includes a route variation using Dunwoody Boulevard and Hennepin Avenue rather than Royalston Avenue to access downtown Minneapolis. Under this variation the route leaves the HCRRA's Cedar Lake Park Corridor at the new Van White Boulevard and enters Dunwoody Boulevard and Hennepin Avenue to 5th Street in downtown Minneapolis. While this route variation can interline with the Hiawatha LRT line eastbound it cannot interline with the Hiawatha LRT line westbound to access the Warehouse and Intermodal stations.

Stations

LRT 4A station locations are listed below. All stations west of Van White Boulevard are assumed to include park-and-ride facilities. A center platform configuration is assumed unless otherwise noted.

- Shady Oak Road, Minnetonka – The proposed site is located east of Shady Oak Road and north of the HCRRA Southwest Corridor property, at the site of Hennepin Technical College. Access to and from the site would be via extended 17th Avenue.
- 8thAvenue, Hopkins – The proposed site is located between 8th and 5th Avenues South, north of the HCRRA Southwest Corridor property. Access to the site would be via a reconstructed intersection at 8th Avenue.
- Blake Road, Hopkins - The proposed site is located northwest of the Blake Road/HCRRA Southwest Corridor intersection. Access to the site would be via Blake Road and 2nd Avenue NE.
- Louisiana Avenue, St. Louis Park - The proposed site is located in the northeast corner of Louisiana Avenue and the HCRRA Southwest Corridor property. Access to the site would be via Louisiana Avenue.
- Wooddale Avenue, St. Louis Park - The proposed site is located in the southeast corner of the Wooddale Avenue intersection with the HCRRA Southwest Corridor property. Access to the site would be via Wooddale and Yosemite Avenues and West 36th Street.
- Beltline Boulevard, St. Louis Park - The proposed site is located in the southeast corner of the Beltline Boulevard intersection with the HCRRA Southwest Corridor property. Access to the site would be via Beltline Boulevard and Park Glen Road.

- West Lake Street, Minneapolis - The proposed site is located between the HCRRA Southwest Corridor property and Whole Foods grocery store, on the southeast side of the HCRRA Southwest Corridor property. Access to the site would be via re-routed West 31st Street and Abbott Avenue South.
- 21st Street, Minneapolis - The proposed site is located in the southwest corner of West 21st Street and the HCRRA Southwest Corridor property. Access to the site would be via West 21st Street and Upton Avenue South.
- Penn Avenue, Minneapolis – The proposed site is located north of the HCRRA Southwest Corridor property, south of Penn Avenue and south of I-394. Access to the station area would be via Penn Avenue. Pedestrian access to the station platforms would be via a bridge over the BNSF freight railroad adjacent to the HCRRA Southwest Corridor property.
- Van White Boulevard, Minneapolis - The proposed site is located north of the HCRRA Southwest Corridor property, adjacent to the planned Van White Boulevard. This station is assumed to be constructed in coordination with planned mixed-use development in that location. Auto access to the station area would be via Van White Boulevard.
- Royalston Avenue North, Minneapolis – the proposed site is located within Royalston Avenue south of 5th Avenue North, southwest of 7th Street North. Access would be via Royalston, 5th, 7th, and Olson Memorial Highway
- (Hennepin Avenue Variation) – Under this variation, these stations are proposed to be located on Hennepin Avenue, in the blocks between 11th and 12th Streets and between 7th and 8th Streets.

Infrastructure Improvements Required

LRT 4A requires the Kenilworth Corridor freight rail relocation described previously. LRT 4A requires the construction of a new two-track rail line approximately 30 feet wide in HCRRA right-of-way through the Southwest, Kenilworth and Cedar Lake Park Corridors, and the construction of on-line stations within the guideway. It also requires a grade separation at Excelsior Boulevard in Hopkins. LRT 4A requires realignment of Glenwood Avenue and a new structure over the BNSF Railroad to transition the alignment from the Cedar Lake Park Corridor to street level at Royalston Avenue, and a short shallow tunnel under 7th Street to 5th Street. The Hennepin Avenue variation of LRT 4A is assumed to require the widening of Dunwoody Boulevard, and reconstruction of Hennepin Avenue from I-94 to 5th Street in Minneapolis.

Service Plan

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Freight Rail Relocation
LRT 4A requires the Kenilworth Corridor freight rail relocation described previously.

LRT 4A Connecting Transit Service
Shady Oak Station: Route 12 serves this station. Changes to Route 12 are described below under West Lake Station.

Hopkins Station: Routes 12, 615, 661, 664, 665 and Limited Stop Route "A" serve this station. Changes to route 12 are described below under West Lake Station.

Route 615, which currently runs between the Ridgedale Shopping Center in Minnetonka and Excelsior and Grand, is extended to the Beltline Station (which is near Excelsior and Grand) in the LRT 4A alternative. Peak frequency increases from 60 to 30 minutes, and off peak frequency is 60 minutes. The route operates to midnight.

Route 664 is extended from its current terminus south on CR 101 to cover a portion of the former alignment of the recently discontinued Route 612. Route 664 will offer an off-peak service similar to the discontinued 612. The route terminates at Hopkins Station, with passengers completing their travel to downtown Minneapolis on the Light rail line.

Route 661 is a recently discontinued Metro Transit route that is reinstated with a slightly modified alignment (eliminating its branch to Golden Triangle) and would operate at a 30 minute peak/60 minute off-peak service frequency. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Route 665 is increased in service frequency from 3 trips during each peak period, in the peak direction only, to a 30 minute headway (6 trips) during each peak period in the peak direction, and a 60 minute headway (3 trips) during each peak period, in the off peak direction.

Limited Stop Route "A" is a version of the new long-distance service route from Eden Prairie that features as one of the key new routes in the Enhanced Bus and BRT alternatives. In this alternative, the route terminates at Hopkins Station. Travelers to downtown Minneapolis transfer there to the light rail line. The route operates from the TH 5 park-and-ride at Wallace Road to Hopkins via TH 5, TH 212, and TH 169. The route essentially meets every other LRT trip, operating at a 20 minute headway early morning and midday, 15 minutes during the peak periods and 30 minutes in the evenings.

Blake Station: Routes 17, 615, and 668 serve this station.

Route 17 Lake Street branch is extended to Blake Station, and service frequency would increase from 3 trips in the peak direction and 2 trips in the off-peak during each peak period to 30 minute headways (6 trips in each direction) during the peak period.

Changes to Route 615 are described above under Hopkins Station.

Route 668 is extended to connect to Blake Station and the Library-Lane loop is eliminated.

Louisiana Avenue Station: Route 604 serves this station.

Route 604 is extended to Beltline Station, and is increased in service frequency from 2 trips in each direction during each peak period to a 30 minute headway (6 trips) in each direction during each peak period.

Wooddale Station: The 36th Street branch of route 17 and Route 615 serve this station. Changes to this route are described above under Blake Station. Changes to Route 615 are described under Hopkins Station.

Beltline Station: The 36th Street branch of Route 17, Route 604 and Route 615 serve this station.

Changes to Route 17 are described above under Blake Station.

Changes to Route 604 are described above under Louisiana Avenue Station.

West Lake Station: The 6 Shuttle route and Routes 12, 17, 21, 25, and 53 serve this station.

The 6 Shuttle is a new route that operates along France Avenue serving Edina between Southdale Station and the West Lake Station. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Route 12 terminates at this station and its segment connecting to downtown Minneapolis is eliminated, and service frequencies are increased slightly to 15 minutes bi-directional, all day on the trunk portion of the route (frequencies on the branches remains unchanged).

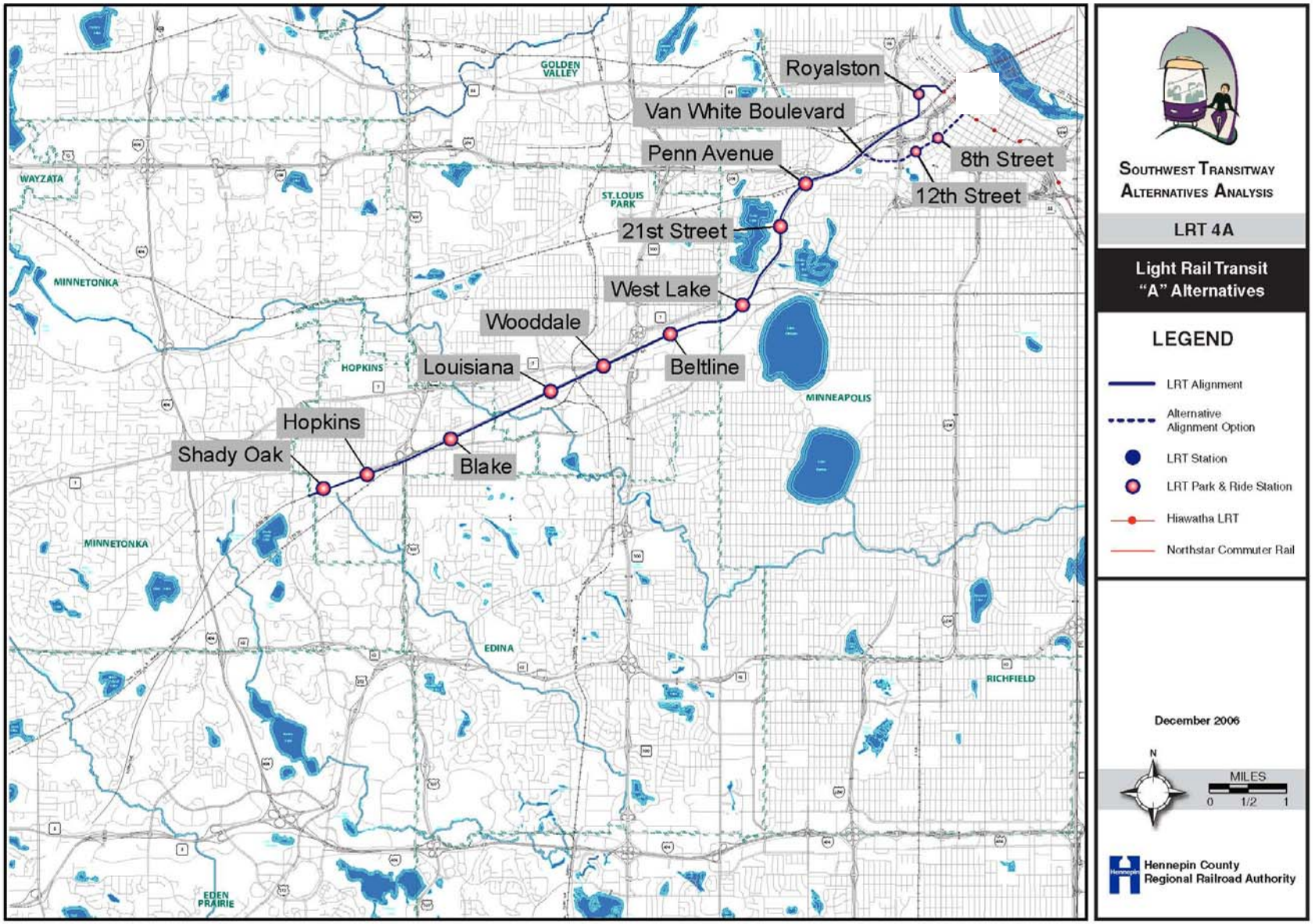
Changes to Route 17 are described above under Blake Station.

Routes 21 and 53 are extended from Uptown Station to connect to this station to provide crosstown connectivity along Lake Avenue.

Route 25 is extended south to connect to this station to provide service to the Kenwood Park area.

21st Street Station: Route 25 connects to this station. Changes to route 25 are described above under West Lake Station.

Figure D-8 LRT 4A Alternative



Source: Parsons Brinckerhoff, 2006

Light Rail Transit – C Alternatives

LRT C alternatives enter downtown Minneapolis from the Midtown Corridor to the south, connecting to Hiawatha LRT through a transfer at 4th Street. LRT C alternatives penetrate the core of downtown Minneapolis perpendicular to Hiawatha LRT, providing service to the Minneapolis Convention Center and several major hotels.

Under all "C" alternatives, in order to serve the proposed stations at Wooddale Avenue, Beltline Boulevard, and West Lake Street the rights-of-way owned by the HCRRA and the Canadian Pacific (CP) freight rail company must be exchanged and a grade separated crossing of the LRT and freight rail tracks must be constructed between Louisiana Avenue and Wooddale Avenue. This exchange allows freight rail operations to be located to the north of the LRT service. Under this alternative freight rail service is assumed to continue to operate in the HCRRA's Kenilworth Corridor in Minneapolis.

LRT 1C

LRT 1C operates from TH 5 in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

The route begins near the intersection of TH 5 and the HCRRA's Southwest Corridor. From that point the route enters a new exclusive light rail transit (LRT) guideway in the HCRRA's Southwest Corridor to West Lake Street in Minneapolis. Just east of West Lake Street the route enters a new exclusive LRT guideway in the HCRRA's Midtown Corridor to Nicollet Avenue. At Nicollet Avenue the route turns northward entering a new exclusive LRT guideway in a cut and cover tunnel under Nicollet Avenue to Franklin Avenue. At Franklin Avenue the route exits the shallow tunnel and operates at-grade on Nicollet Avenue to Grant Street. At Grant the route will either operate two-way on Nicollet Mall or as a one-way paired loop on 2nd and Marquette Avenues.

Potential Route Variation

Under the LRT 1C alignment described above, the LRT route must cross the TC&W Railroad tracks near TH 62. The TH 62 overpass and the existing grades in that area make the crossing difficult. To avoid this potentially difficult and costly crossing, a minor route variation that uses the TC&W and Canadian Pacific right-of-way will be evaluated. Under this variation the route would turn into the railroad right-of-way after passing below TH 62, and run next to the railroad tracks to a location near the Minnetonka-Hopkins city limits. At that point the route would cross beneath the freight tracks and turn north, following new right-of-way until it reaches the HCRRA's Southwest Corridor. The route then enters the HCRRA's Southwest Corridor and proceeds towards Minneapolis.

Stations

LRT 1C station locations are listed below. All stations west of Van White Boulevard are assumed to include park-and-ride facilities. A center platform configuration is assumed unless otherwise noted.

- TH 5, Eden Prairie – The proposed site is located in the northeast corner of TH 5 and the HCRRA Southwest Corridor LRT Trail right-of-way. Access to and from the site would be via re-routed Venture Lane.
- TH 62, Eden Prairie/Minnetonka – The proposed site is located south of TH 62, in the southeast corner of West 62nd Street and the HCRRA Southeast Corridor property, between Industrial Drive on the west and Carlson Drive on the east. Access to and from the site would be via Carlson Drive and West 62nd Street.

- Rowland Road, Minnetonka – The proposed site is located in the southeast corner of Rowland and Baker Roads, just east of I-494 and west of the HCRRA Southwest Corridor property. Access would be via Rowland and Baker Roads. An alternative site, required as part of the potential route variation, is located in the northeast corner of Rowland Road and the HCRRA Southwest Corridor and is accessed by Rowland Road.
- Shady Oak Road, Minnetonka – The proposed site is located east of Shady Oak Road and north of the HCRRA Southwest Corridor property, at the site of Hennepin Technical College. Access to and from the site would be via extended 17th Avenue.
- 8thAvenue, Hopkins – The proposed site is located between 8th and 5th Avenues South, north of the HCRRA Southwest Corridor property. Access to the site would be via a reconstructed intersection at 8th Avenue.
- Blake Road, Hopkins - The proposed site is located northwest of the Blake Road/HCRRA Southwest Corridor intersection. Access to the site would be via Blake Road and 2nd Avenue NE.
- Louisiana Avenue, St. Louis Park - The proposed site is located in the northeast corner of Louisiana Avenue and the HCRRA Southwest Corridor property. Access to the site would be via Louisiana Avenue.
- Wooddale Avenue, St. Louis Park - The proposed site is located in the southeast corner of the Wooddale Avenue intersection with the HCRRA Southwest Corridor property. Access to the site would be via Wooddale and Yosemite Avenues and West 36th Street.
- Beltline Boulevard, St. Louis Park - The proposed site is located in the southeast corner of the Beltline Boulevard intersection with the HCRRA Southwest Corridor property. Access to the site would be via Beltline Boulevard and Park Glen Road.
- West Lake Street, Minneapolis - The proposed site is located between the HCRRA Southwest Corridor property and Whole Foods grocery store, on the southeast side of the HCRRA Southwest Corridor property. Access to the site would be via re-routed West 31st Street and Abbott Avenue South.
- Uptown/Hennepin Avenue South, Minneapolis – The proposed site is located on the east side of Hennepin Avenue within the HCRRA Midtown Corridor property. This station may be developed in coordination with proposed development in the southeast corner of Hennepin Avenue and the Midtown Corridor. Access to the site would be via vertical circulation from the existing Uptown Transit Station and/or the proposed development.
- Lyndale Avenue South, Minneapolis – The proposed site extends beneath the Lyndale Avenue South roadway overpass to the east toward Girard Avenue South, within the HCRRA Midtown Corridor property. Access would be via vertical circulation from Lyndale.
- 28th Street, Minneapolis – The proposed site is north of 28th Street in a shallow open cut within the Nicollet Avenue South right-of-way. Access would be via 27th Street and 28th Street.
- Franklin Avenue, Minneapolis - The proposed site is south of Franklin Avenue in a shallow open cut within the Nicollet Avenue South right-of-way. Access would be via Franklin Avenue and 22nd Street.
- Nicollet Mall at 12th, 8th and 4th Streets, downtown Minneapolis – These stations are proposed to be located on the Nicollet Mall, in the blocks between 11th and 12th Streets, 7th and 8th Streets, and 4th and 5th Streets.
- Marquette/Second Avenues at 12th and 7th Streets, downtown Minneapolis – The alignment is split at these stations, with eastbound trains on 2nd Avenue and

westbound trains on Marquette Avenue. The stations are proposed to be located on 2nd Avenue and Marquette Avenue, in the blocks between 11th and 12th Streets and between 6th and 7th Streets.

Infrastructure Improvements Required
LRT 1C requires the construction of a new two-track rail line approximately 30 feet wide in HCRRA right-of-way through the Southwest and Midtown Corridors, and the construction of on-line stations within the guideway. LRT 1C requires grade separations at the TC&W crossing near TH 62 in Minnetonka, at Excelsior Boulevard in Hopkins, and back across to the south side of the freight tracks near Wooddale Avenue. The existing freight track would be reconstructed from Wooddale Avenue to West Lake Street. LRT 1C requires a shallow tunnel under Nicollet Avenue between 28th Street and Franklin Avenue in Minneapolis, and reconstruction of either Nicollet Mall or the Marquette/2nd pair in downtown.

Service Plan

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Freight Rail Right-of-Way Exchange
LRT 1 C requires the freight rail right-of-way exchange described previously.

LRT 1 C Connecting Transit Service
TH 5 Station: Routes 631 and 636 serve this station.

Routes 631 and 636 are circulators that connect Eden Prairie and Surrounding communities to Eden Prairie Town Center and SouthWest Station. Service on Route 631 increases from hourly service to a frequency of 15 minutes during peak periods, and service operates hourly in the evenings until 10:00 PM. Route 636 remains unchanged during peak periods, and midday service will be eliminated.

TH 62 Station: Routes 661, 681 Circulator serve this station.

Route 661 is a recently discontinued Metro Transit route that is reinstated with a slightly modified alignment (eliminating its branch to Golden Triangle) in the LRT 1C alternative and operates at a 30 minute peak/60 minute off-peak service frequency. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Route 681 Circulator is a new route serving Eden Prairie and Golden Triangle, replacing part of the alignment of existing route 681, which will not operate from SouthWest Station on TH 212. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Rowland Station: No routes serve this station.

Shady Oak Station: Route 12 serves this station. Changes to Route 12 are described below under Uptown Station.

Hopkins Station: Routes 12, 615, 661, 664 and 665 serve this station. Changes to Route 12 are described below under Uptown Station. Changes to route 661 are described above under TH 62 Station.

Route 615, which currently runs between the Ridgedale Shopping Center in Minnetonka and Excelsior and Grand, is extended to the Beltline Station (which is near Excelsior and Grand). Peak frequency increases from 60 to 30 minutes, and off peak frequency is 60 minutes. The route operates to midnight.

Route 664 is extended from its current terminus south on CR 101 to cover a portion of the former alignment of the recently discontinued route 612. Route 664 will offer an off-peak service similar to the discontinued 612. The route terminates at Hopkins Station, with passengers completing their travel to downtown Minneapolis on the light rail line.

Route 665 is increased in service frequency from 3 trips during each peak period, in the peak direction only, to a 30 minute headway (6 trips) during each peak period in the peak direction, and a 60 minute headway (3 trips) during each peak period, in the off peak direction.

Blake Station: Routes 17, 615, and 668 serve this station.

Route 17 Lake Street branch is extended to Blake Station, and service frequency increases from 3 trips in the peak direction and 2 trips in the off-peak during each peak period to 30 minute headways (6 trips in each direction) during the peak period.

Changes to Route 615 are described above under Hopkins Station.

Route 668 is extended to connect to Blake Station and the Library-Lane loop is eliminated.

Louisiana Avenue Station: Route 604 serves this station.

Route 604 is extended to Beltline Station, and increases in service frequency from 2 trips in each direction during each peak period to a 30 minute headway (6 trips) in each direction during each peak period.

Wooddale Station: The 36th Street branch of route 17 and Route 615 serve this station. Changes to this route are described above under Blake Station. Changes to Route 615 are described under Hopkins Station.

Beltline Station: The 36th Street branch of Route 17, Route 604 and Route 615 serve this station.

Changes to Route 17 are described above under Blake Station.

Changes to Route 604 are described above under Louisiana Avenue Station.

Changes to Route 615 are described above under Hopkins Station.

West Lake Station: The 6 Shuttle route and Routes 12, 17, and 25 serve this station.

The 6 Shuttle is a new route that operates along France Avenue serving Edina between Southdale and the West Lake Station. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Changes to Route 12 are described below under Uptown Station.

Changes to Route 17 are described above under Blake Station.

Route 25 is extended south to connect to this station to provide service to the Kenwood Park area.

Uptown Station: Routes 6, 12, 17, 21, 23, 53, 114, and 115 serve this station. Routes 6, 21, 23, 53, 114 and 115 are unchanged under this alternative.

Route 12 terminates at this station and its segment connecting to downtown Minneapolis is eliminated, and service frequencies are increased slightly to 15 minutes bi-directional, all day on the trunk portion of the route (frequencies on the branches remains unchanged).

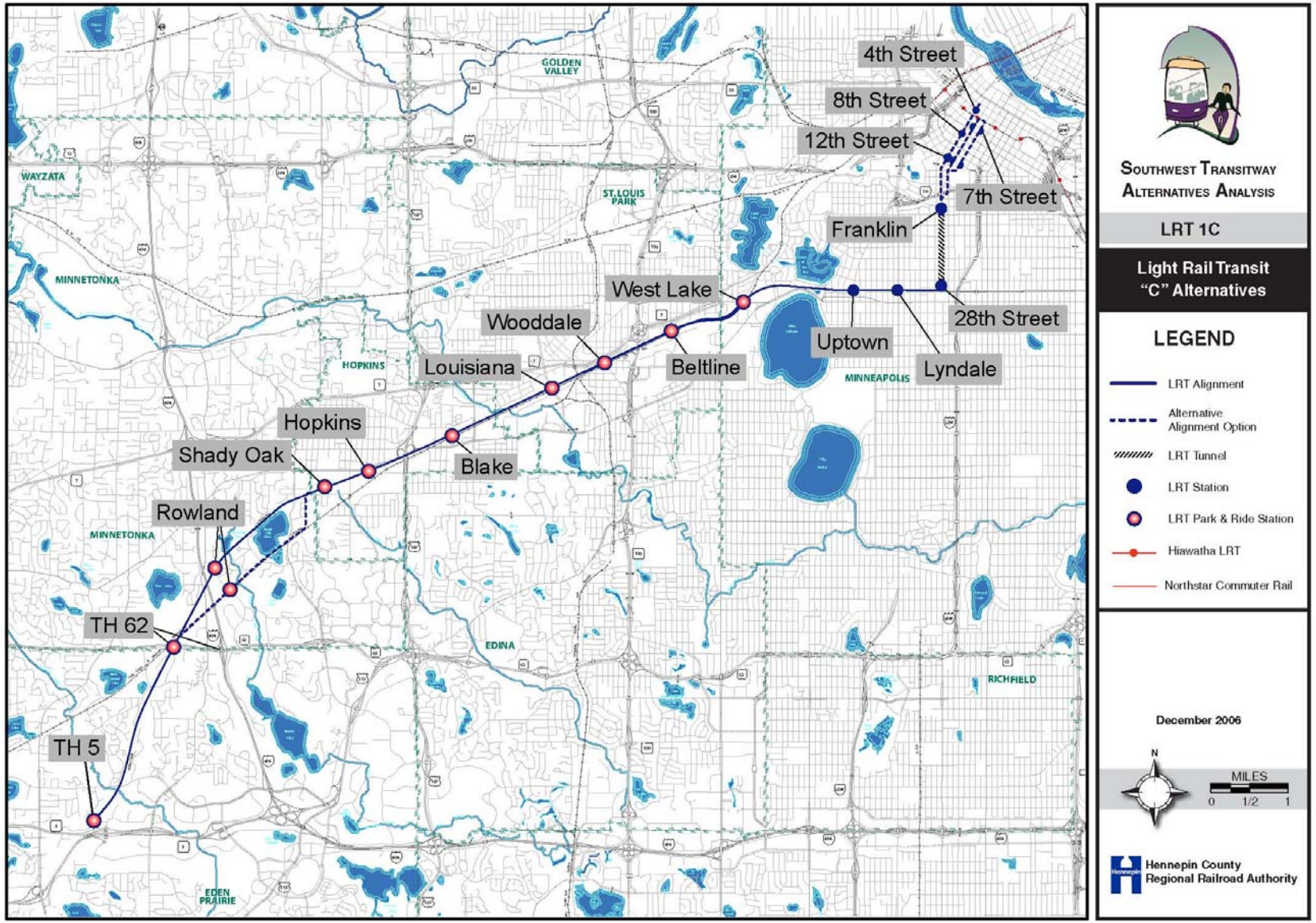
Changes to Route 17 are described above under Blake Station.

Lyndale Station: Routes 4, 21, 53, and 113 serve this station. These routes are unchanged under the alternative.

28th Street Station: Routes 18, 21, 53 and 568 serve this station. These routes are unchanged under the alternative.

Franklin Station: Routes 2, 18, 53 and 568 serve this station. These routes are unchanged under the alternative.

Figure D-9 LRT 1C Alternative



Source: Parsons Brinckerhoff, 2006

LRT 2C

LRT 2C operates from Mitchell Road in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

The alignment begins south of TH 5 at Mitchell Road in Eden Prairie. From that point the route follows along the south side of TH 5, crossing under Prairie Center Drive. As it approaches the I-494/TH 5 interchange, the route climbs and crosses over TH 5, descending along the west side of the I-494 exit ramp to TH 5. It continues north along the west side of I-494 to the HCRRA's Southwest Corridor, where it turns east and crosses under the freeway.

After entering the Southwest Corridor, the route continues in an exclusive LRT guideway to West Lake Street in Minneapolis. Just east of West Lake Street the route enters a new exclusive LRT guideway in the HCRRA's Midtown Corridor to Nicollet Avenue. At Nicollet Avenue the route turns northward entering a new exclusive LRT guideway in a cut and cover tunnel under Nicollet Avenue to Franklin Avenue. At Franklin Avenue the route exits the shallow tunnel and operates at-grade on Nicollet Avenue to Grant Street. At Grant the route will either operate two-way on Nicollet Mall or as a one-way paired loop on 2nd and Marquette Avenues.

Stations

LRT 2C station locations are listed below. All stations west of Van White Boulevard are assumed to include park-and-ride facilities. A center platform configuration is assumed unless otherwise noted.

- Mitchell Road, Eden Prairie – The proposed site is located west of Mitchell Road, south of TH 5, north of Lone Oak Road. Access would be via Mitchell and Loan Oak Roads.
- SouthWest Station, Eden Prairie - The proposed station expands the current SouthWest Metro Transit Station parking facility in the northwest corner of Technology Drive and Prairie Center Drive. Access to the site would be via Technology Drive.
- Valley View Road, Eden Prairie - The proposed site is located in the northwest corner of I-494 and Plaza Drive. Access would be via a new drive connected to Plaza Drive.
- TH 62, Eden Prairie/Minnetonka – The proposed site is located south of TH 62, just west of I-494, east of Baker Road and north of Holesek Lane. Access would be via Baker Road and Pinnacle Drive.
- Rowland Road, Minnetonka – The proposed site is located in the southeast corner of Rowland and Baker Roads, just east of I-494. Access would be via Rowland and Baker Roads.
- Shady Oak Road, Minnetonka – The proposed site is located east of Shady Oak Road and north of the HCRRA Southwest Corridor property, at the site of Hennepin Technical College. Access to and from the site would be via extended 17th Avenue.
- 8thAvenue, Hopkins – The proposed site is located between 8th and 5th Avenues South, north of the HCRRA Southwest Corridor property. Access to the site would be via a reconstructed intersection at 8th Avenue.
- Blake Road, Hopkins - The proposed site is located northwest of the Blake Road/HCRRA Southwest Corridor intersection. Access to the site would be via Blake Road and 2nd Avenue NE.

- Louisiana Avenue, St. Louis Park - The proposed site is located in the northeast corner of Louisiana Avenue and the HCRRA Southwest Corridor property. Access to the site would be via Louisiana Avenue.
- Wooddale Avenue, St. Louis Park - The proposed site is located in the southeast corner of the Wooddale Avenue intersection with the HCRRA Southwest Corridor property. Access to the site would be via Wooddale and Yosemite Avenues and West 36th Street.
- Beltline Boulevard, St. Louis Park - The proposed site is located in the southeast corner of the Beltline Boulevard intersection with the HCRRA Southwest Corridor property. Access to the site would be via Beltline Boulevard and Park Glen Road.
- West Lake Street, Minneapolis - The proposed site is located between the HCRRA Southwest Corridor property and Whole Foods grocery store, on the southeast side of the HCRRA Southwest Corridor property. Access to the site would be via re-routed West 31st Street and Abbott Avenue South.
- Uptown/Hennepin Avenue South, Minneapolis – The proposed site is located on the east side of Hennepin Avenue within the HCRRA Midtown Corridor property. This station may be developed in coordination with proposed development in the southeast corner of Hennepin Avenue and the Midtown Corridor. Access to the site would be via vertical circulation from the existing Uptown Transit Station and/or the proposed development.
- Lyndale Avenue South, Minneapolis – The proposed site extends beneath the Lyndale Avenue South roadway overpass to the east toward Girard Avenue South, within the HCRRA Midtown Corridor property. Access would be via vertical circulation from Lyndale.
- 28th Street, Minneapolis – The proposed site is north of 28th Street in a shallow open cut within the Nicollet Avenue South right-of-way. Access would be via 27th Street and 28th Street.
- Franklin Avenue, Minneapolis - The proposed site is south of Franklin Avenue in a shallow open cut within the Nicollet Avenue South right-of-way. Access would be via Franklin Avenue and 22nd Street.
- Nicollet Mall at 12th, 8th and 4th Streets, downtown Minneapolis – These stations are proposed to be located on the Nicollet Mall, in the blocks between 11th and 12th Streets, 7th and 8th Streets, and 4th and 5th Streets.
- Marquette/Second Avenues at 12th and 7th Streets, downtown Minneapolis – The alignment is split at these stations, with eastbound trains on 2nd Avenue and westbound trains on Marquette Avenue. The stations are proposed to be located on 2nd Avenue and Marquette Avenue, in the blocks between 11th and 12th Streets and between 6th and 7th Streets.

Infrastructure Improvements Required

LRT 2C requires the construction of a new two-track rail line approximately 30 feet wide along the south side of TH 5 and the east side of I-494 through Eden Prairie and Minnetonka, and within HCRRA right-of-way through the Southwest and Midtown Corridors, and the construction of on-line stations within the guideway. LRT 2C requires a short tunnel under Prairie Center Drive, a flyover structure across TH 5, and new bridges in the I-494 right-of-way at the Valley View exit ramp, TH 62, and the TC&W Railroad. It also requires grade separations at Excelsior Boulevard in Hopkins and back across to the south side of the freight tracks near Wooddale Avenue. The existing freight track would be reconstructed from Wooddale Avenue to West Lake Street. LRT 2C requires a shallow tunnel under Nicollet Avenue between 28th Street and Franklin

Avenue in Minneapolis, and reconstruction of either Nicollet Mall or the Marquette/2nd pair in downtown.

Service Plan

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Freight Rail Right-of-Way Exchange
LRT 2 C requires the freight rail right-of-way exchange described previously.

LRT 2C Connecting Transit Service
Mitchell Road Station: Routes 631 and 636 serve this station.

Routes 631 and 636 are circulators that connect Eden Prairie and Surrounding communities to Eden Prairie Town Center and SouthWest Station. Service on Route 631 increases from hourly service to a frequency of 15 minutes during peak periods, and service operates hourly in the evenings until 10:00 PM. Route 636 remains unchanged during peak periods, and midday service is eliminated.

SouthWest Station: SouthWest Metro Transit Routes 603, 631, 636, 680, 681, 681 Circulator, 685, 685A, 690, 690A, 690B, 691, 694, 698, and 699A serve this station, which also serves as the hub of SouthWest Metro Transit's bus operations.

Routes 680, 685, 685A, 691, 694, 698 and 699A are unchanged under this alternative.

Route 603 is a circulator that serves the area surrounding Eden Prairie Town Center. The circulator, which now operates only in the clockwise direction, is operated in both directions in the LRT 2C alternative, effectively doubling the existing 30 minute peak, 60 minute off-peak frequency. Service also is operated bi-directionally on an hourly headway in the evenings until 10:00 PM.

Changes to Routes 631 and 636 are described above under TH 5.

Route 681 is combined with 690 and 690A to operate a high frequency bi-directional service between SouthWest Station and downtown Minneapolis via TH 212, TH 62, and I-35W, and the off-highway segment of its alignment serving the Golden Triangle area is eliminated.

Route 681Circulator is a new route serving Eden Prairie and Golden Triangle, replacing the eliminated segment of the existing Route 681 serving the Golden Triangle area. The route operates at a 30 minute headway in each direction during each peak period and a

60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

As noted above, route 690, 690A and 690B is combined with route 681 to provide high frequency, bi-directional service between SouthWest Station and downtown Minneapolis. 690 continues to use its existing alignment of TH 212 to TH 169 and I-394.

Valley View Station: Routes 685 and 685A. Apart from a stop at the station, these routes are not be changed under this alternative.

TH 62 Station: Routes 661 and the 681 Circulator serve this station.

Route 661 is a recently discontinued Metro Transit route that would be reinstated with a slightly modified alignment (eliminating its branch to Golden Triangle) and would operate at a 30 minute peak/60 minute off-peak service frequency. The route would operate at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and would operate from 6:00 am to midnight.

The 681 Circulator is described above under SouthWest Station.

Shady Oak Station: Route 12 serves this station. Changes to Route 12 are described below under Uptown Station.

Rowland Station: No routes serve this station.

Hopkins Station: Routes 12, 615, 661, 664 and 665 serve this station.

Changes to Route 12 are described below under Uptown Station.

Route 615, which currently runs between the Ridgedale Shopping Center in Minnetonka and Excelsior and Grand, is extended to the Beltline Station (which is near Excelsior and Grand). Peak frequency increases from 60 to 30 minutes, and off peak frequency is 60 minutes. The route would operate to midnight.

Changes to Route 661 are described above under TH 62 Station.

Route 664 is extended from its current terminus south on CR 101 to cover a portion of the former alignment of the recently discontinued route 612. Route 664 will offer an off-peak service similar to the discontinued 612. The route terminates at Hopkins Station, with passengers completing their travel to downtown Minneapolis on the Light rail line.

Route 665 increases in service frequency from 3 trips during each peak period, in the peak direction only, to a 30 minute headway (6 trips) during each peak period in the peak direction, and a 60 minute headway (3 trips) during each peak period, in the off peak direction.

Blake Station: Routes 17, 615, and 668 serve this station.

Route 17 Lake Street branch is extended to Blake Station, and service frequency increases from 3 trips in the peak direction and 2 trips in the off-peak during each peak period to 30 minute headways (6 trips in each direction) during the peak period.

Changes to Route 615 are described above under Hopkins Station.

Route 668 is extended to connect to Blake Station and the Library-Lane loop is eliminated.

Louisiana Avenue Station: Route 604 serves this station.

Route 604 is extended to Beltline Station, and increases in service frequency from 2 trips in each direction during each peak period to a 30 minute headway (6 trips) in each direction during each peak period.

Wooddale Station: The 36th Street branch of route 17 and Route 615 serve this station. Changes to this route are described above under Blake Station. Changes to Route 615 are described under Hopkins Station.

Beltline Station: The 36th Street branch of Route 17, Route 604 and Route 615 serve this station.

Changes to Route 17 are described above under Blake Station.

Changes to Route 604 are described above under Louisiana Avenue Station.

Changes to Route 615 are described above under Hopkins Station.

West Lake Station: The 6 Shuttle route and Routes 12, 17, and 25 serve this station.

The 6 Shuttle is a new route operates along France Avenue serving Edina between Southdale and the West Lake Station. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Changes to Route 12 are described below under Uptown Station.

Changes to Route 17 are described above under Blake Station.

Route 25 is extended south to connect to this station to provide service to the Kenwood Park area.

Uptown Station: Routes 6, 12, 17, 21, 23, 53, 114, and 115 serve this station. Routes 6, 21, 23, 53, 114 and 115 are unchanged under this alternative.
Route 12 terminates at this station and its segment connecting to downtown Minneapolis is eliminated, and service frequencies are increased slightly to 15 minutes bi-directional, all day on the trunk portion of the route (frequencies on the branches remains unchanged).

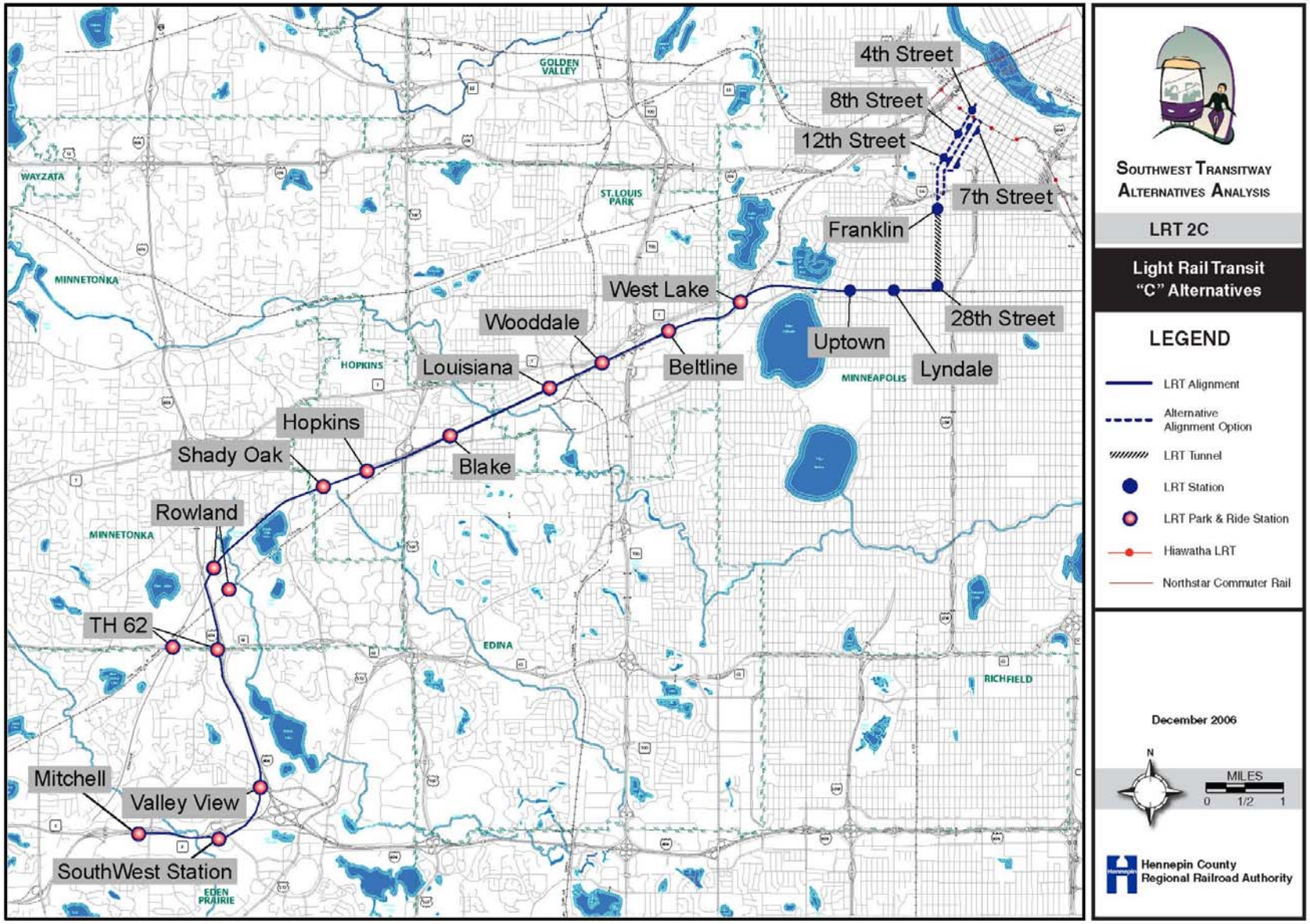
Changes to Route 17 are described above under Blake Station.

Lyndale Station: Routes 4, 21, 53, and 113 serve this station. These routes are unchanged under the alternative.

28th Street Station: Routes 18, 21, 53 and 568 serve this station. These routes are be unchanged under the alternative.

Franklin Station: Routes 2, 18, 53 and 568 serve this station. These routes are unchanged under the alternative.

Figure D-10 LRT 2C Alternative



Source: Parsons Brinckerhoff, 2006

LRT 3C

LRT 3C operates from Mitchell Road in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

The route begins south of TH 5 at Mitchell Road in Eden Prairie. From that point the route follows along the south side of TH 5, crossing under Prairie Center Drive. It turns south along the east side of Prairie Center Drive, then turns east into new right-of-way located behind the existing properties on the north side of Singletree Lane. The route continues along the south side of Leona Road to Flying Cloud Drive, where it turns north. It runs along the east side of Flying Cloud Drive, over I-494 and into the east side of the TH 212 right-of-way. The route then swings east and north along new right-of-way through the Golden Triangle area.

After crossing Shady Oak Road, the route crosses over TH 212 into the City West area, then crosses over TH 62 into the Opus area of Minnetonka. The route follows new right-of-way through Opus, crossing under Smetana Road and continuing north along the Minnetonka-Hopkins city limits. After reaching the HCRRA's Southwest Corridor, the route turns east and follows an exclusive LRT guideway to West Lake Street in Minneapolis.

Just east of West Lake Street the route enters a new exclusive LRT guideway in the HCRRA's Midtown Corridor to Nicollet Avenue. At Nicollet Avenue the route turns northward entering a new exclusive LRT guideway in a cut and cover tunnel under Nicollet Avenue to Franklin Avenue. At Franklin Avenue the route exits the shallow tunnel and operates at-grade on Nicollet Avenue to Grant Street. At Grant the route will either operate two-way on Nicollet Mall or as a one-way paired loop on 2nd and Marquette Avenues.

Potential Route Variation

This alternative includes a route variation in Eden Prairie. After serving the SouthWest station, the route would cross under Prairie Center Drive and continue along the north side of Technology Drive. It then turns northeast, crossing over I-494 and intersecting Flying Cloud Drive. The route follows along the east side of Flying Cloud Drive and into the east side of the TH 212 right-of-way. The variation does not include an Eden Prairie Center station.

Stations

LRT 3C station locations are listed below. All stations west of Van White Boulevard are assumed to include park-and-ride facilities. A center platform configuration is assumed unless otherwise noted.

- Mitchell Road, Eden Prairie – The proposed site is located west of Mitchell Road, south of TH 5, north of Lone Oak Road. Access would be via Mitchell and Loan Oak Roads.
- SouthWest Station, Eden Prairie - The proposed station expands the current SouthWest Metro Transit Station parking facility in the northwest corner of Technology Drive and Prairie Center Drive. Access to the site would be via Technology Drive.
- Eden Prairie Town Center, Eden Prairie – The proposed site is located north of Singletree Lane, and east of a new extended north-south roadway. Access to and from the site would be via Singletree Lane and the new roadway extension.

- Golden Triangle, Eden Prairie - The proposed site is located west of TH 212 at the east edge of the former Best Buy Site. Access would be via an extended West 70th Street.
- City West, Eden Prairie - The proposed site is located on the southwest side of TH 62, adjacent to or constructed in conjunction with the planned City West development at this location. Access would be via Shady Oak Road, West 62nd Street, and new development roads.
- OPUS, Minnetonka – The proposed site is located in the southeast corner of the Bren Road East and Bren Road West one-way-pair divergence. Access would be from the two Bren Roads.
- Shady Oak Road, Minnetonka – The proposed site is located west of Shady Oak Road and north of the HCRRA Southwest Corridor property, at the site of Hennepin Technical College. Access to and from the site would be via extended 17th Avenue.
- 8thAvenue, Hopkins – The proposed site is located between 8th and 5th Avenues South, north of the HCRRA Southwest Corridor property. Access to the site would be via a breconstructed intersection at 8th Avenue.
- Blake Road, Hopkins - The proposed site is located northwest of the Blake Road/HCRRA Southwest Corridor intersection. Access to the site would be via Blake Road and 2nd Avenue NE.
- Louisiana Avenue, St. Louis Park - The proposed site is located in the northeast corner of Louisiana Avenue and the HCRRA Southwest Corridor property. Access to the site would be via Louisiana Avenue.
- Wooddale Avenue, St. Louis Park - The proposed site is located in the southeast corner of the Wooddale Avenue intersection with the HCRRA Southwest Corridor property. Access to the site would be via Wooddale and Yosemite Avenues and West 36th Street.
- Beltline Boulevard, St. Louis Park - The proposed site is located in the southeast corner of the Beltline Boulevard intersection with the HCRRA Southwest Corridor property. Access to the site would be via Beltline Boulevard and Park Glen Road.
- West Lake Street, Minneapolis - The proposed site is located between the HCRRA Southwest Corridor property and Whole Foods grocery store, on the southeast side of the HCRRA Southwest Corridor property. Access to the site would be via re-routed West 31st Street and Abbott Avenue South.
- Uptown/Hennepin Avenue South, Minneapolis – The proposed site is located on the east side of Hennepin Avenue within the HCRRA Midtown Corridor property. This station may be developed in coordination with proposed development in the southeast corner of Hennepin Avenue and the Midtown Corridor. Access to the site would be via vertical circulation from the existing Uptown Transit Station and/or the proposed development.
- Lyndale Avenue South, Minneapolis – The proposed site extends beneath the Lyndale Avenue South roadway overpass to the east toward Girard Avenue South, within the HCRRA Midtown Corridor property. Access would be via vertical circulation from Lyndale.
- 28th Street, Minneapolis – The proposed site is north of 28th Street in a shallow open cut within the Nicollet Avenue South right-of-way. Access would be via 27th Street and 28th Street.
- Franklin Avenue, Minneapolis - The proposed site is south of Franklin Avenue in a shallow open cut within the Nicollet Avenue South right-of-way. Access would be via Franklin Avenue and 22nd Street.

- Nicollet Mall at 12th, 8th and 4th Streets, downtown Minneapolis – These stations are proposed to be located on the Nicollet Mall, in the blocks between 11th and 12th Streets, 7th and 8th Streets, and 4th and 5th Streets.
- Marquette/Second Avenues at 12th and 7th Streets, downtown Minneapolis – The alignment is split at these stations, with eastbound trains on 2nd Avenue and westbound trains on Marquette Avenue. The stations are proposed to be located on 2nd Avenue and Marquette Avenue, in the blocks between 11th and 12th Streets and between 6th and 7th Streets.

Infrastructure Improvements Required
LRT 3C requires the construction of a new two-track rail line approximately 30 feet wide through the Southwest and Midtown Corridors, and the construction of on-line stations within the guideway. New right-of–way and tracks are required along the south side of TH 5 from Mitchell Road to Prairie Center Drive, through the Eden Prairie Center area, along Flying Cloud Drive over I-494, through the Golden Triangle area, across TH 212 to City West, across TH 62 to Opus, and along the Hopkins-Minnetonka city limits to the HCRRA Southwest Corridor. LRT 3C requires grade separations at Prairie Center Drive, I-494, Flying Cloud Drive, TH 212, TH 62, Smetana Road, and the TC&W Railroad. It also requires grade separations at Excelsior Boulevard in Hopkins and back across to the south side of the freight tracks near Wooddale Avenue. LRT 3C requires a shallow tunnel under Nicollet Avenue between 28th Street and Franklin Avenue in Minneapolis, and reconstruction of either Nicollet Mall or the Marquette/2nd pair in downtown.

Service Plan

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Freight Rail Right-of-Way Exchange
LRT 3 C requires the freight rail right-of-way exchange described previously.

LRT 3C Connecting Transit Service
Mitchell Road Station: Routes 631 and 636 serve this station.

Routes 631 and 636 are circulators that connect Eden Prairie and surrounding communities to Eden Prairie Town Center and SouthWest Stations. Service on Route 631 increases from hourly service to a frequency of 15 minutes during peak periods, and service operates hourly in the evenings until 10:00 PM. Route 636 remains unchanged during peak periods, and midday service is eliminated.

SouthWest Station: SouthWest Metro Transit Routes 603, 631, 636, 680, 681, 681 Circulator, 685, 685A, 690, 690A, 690B, 691, 694, 698, and 699A serve this station, which also serves as the hub of SouthWest Metro Transit's bus operations.

Routes 680, 685, 685A, 691, 694, 698 and 699A are unchanged under this alternative.

Route 603 is a circulator that serves the area surrounding Eden Prairie Town Center. The circulator, which now operates only in the clockwise direction, operates in both directions in the LRT 3C alternative, effectively doubling the existing 30 minute peak, 60 minute off-peak frequency. Service also is operated bi-directionally on an hourly headway in the evenings until 10:00 PM.

Changes to Routes 631 and 636 are described above under TH 5.

Route 681 is combined with 690 and 690A to operate a high frequency bi-directional service between SouthWest Station and downtown Minneapolis via TH 212, TH 62, and I-35W, and the off-highway segment of its alignment serving the Golden Triangle area is eliminated.

Route 681 Circulator is a new route serving Eden Prairie and Golden Triangle, replacing the eliminated segment of the existing route 681 serving the Golden Triangle area. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

As noted above, Routes 690, 690A and 690B are combined with route 681 to provide high frequency, bi-directional service between SouthWest Station and downtown Minneapolis. 690 continues to use its existing alignment of TH 212 to TH 169 and I-394.

Eden Prairie Town Center Station: Routes 636 and 681 Circulator serve this station. Route 636 is described above under TH5 Station. Route 681 is described above under SouthWest Station.

Golden Triangle Station: Routes 631 and 681 Circulator would serve this station. Route 631 is described above under TH5 Station. Route 681 is described above under SouthWest Station.

City West Station: No bus routes serve this station.

Opus Station: Routes 12 and 661 serve this station. Changes to Route 12 are described below under Uptown Station.

Route 661 is a recently discontinued Metro Transit route that is reinstated with a slightly modified alignment (eliminating its branch to Golden Triangle) and operates at a 30 minute peak/60 minute off-peak service frequency. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Shady Oak Station: Route 12 serves this station. Changes to Route 12 are described below under Uptown Station.

Hopkins Station: Routes 12, 615, 661, 664 and 665 serve this station. Changes to Route 12 are described below under Uptown Station. Changes to Route 661 are described above under TH 62 Station.

Route 615, which currently runs between the Ridgedale Shopping Center in Minnetonka and Excelsior and Grand, is extended to the Beltline Station (which is near Excelsior and Grand). Peak frequency increases from 60 to 30 minutes, and off peak frequency is 60 minutes. The route operates to midnight.

Route 664 is extended from its current terminus south on CR 101 to cover a portion of the former alignment of the recently discontinued Route 612. Route 664 will offer an off-peak service similar to the discontinued 612. The route terminates at Hopkins Station, with passengers completing their travel to downtown Minneapolis on the light rail line.

Route 665 be increases in service frequency from 3 trips during each peak period, in the peak direction only, to a 30 minute headway (6 trips) during each peak period in the peak direction, and a 60 minute headway (3 trips) during each peak period, in the off peak direction.

Blake Station: Routes 17, 615, and 668 serve this station.

Route 17 Lake Street branch is extended to Blake Station, and service frequency increases from 3 trips in the peak direction and 2 trips in the off-peak during each peak period to 30 minute headways (6 trips in each direction) during the peak period.

Changes to route 615 are described above under Hopkins Station.

Route 668 is extended to connect to Blake Station and the Library-Lane loop is eliminated.

Louisiana Avenue Station: Route 604 serves this station.

Route 604 is extended to Beltline Station, and increases in service frequency from 2 trips in each direction during each peak period to a 30 minute headway (6 trips) in each direction during each peak period.

Wooddale Station: The 36th Street branch of route 17 and Route 615 serve this station. Changes to this route are described above under Blake Station. Changes to Route 615 are described under Hopkins Station.

Beltline Station: The 36th Street branch of Route 17, Route 604 and Route 615 serve this station.

Changes to Route 17 are described above under Blake Station.

Changes to Route 604 are described above under Louisiana Avenue Station.

Changes to Route 615 are described above under Hopkins Station.

West Lake Station: The 6 Shuttle route and Routes 12, 17, and 25 serve this station.

The 6 Shuttle is a new route t operates along France Avenue serving Edina between Southdale and the West Lake Station. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Changes to Route 12 are described below under Uptown Station.

Changes to Route 17 are described above under Blake Station.

Route 25 is extended south to connect to this station to provide service to the Kenwood Park area.

Uptown Station: Routes 6, 12, 17, 21, 23, 53, 114, and 115 serve this station. Routes 6, 21, 23, 53, 114 and 115 are unchanged under this alternative.

Route 12 terminates at this station and its segment connecting to downtown Minneapolis is eliminated, and service frequencies increase slightly to 15 minutes bi-directional, all day on the trunk portion of the route (frequencies on the branches remain unchanged).

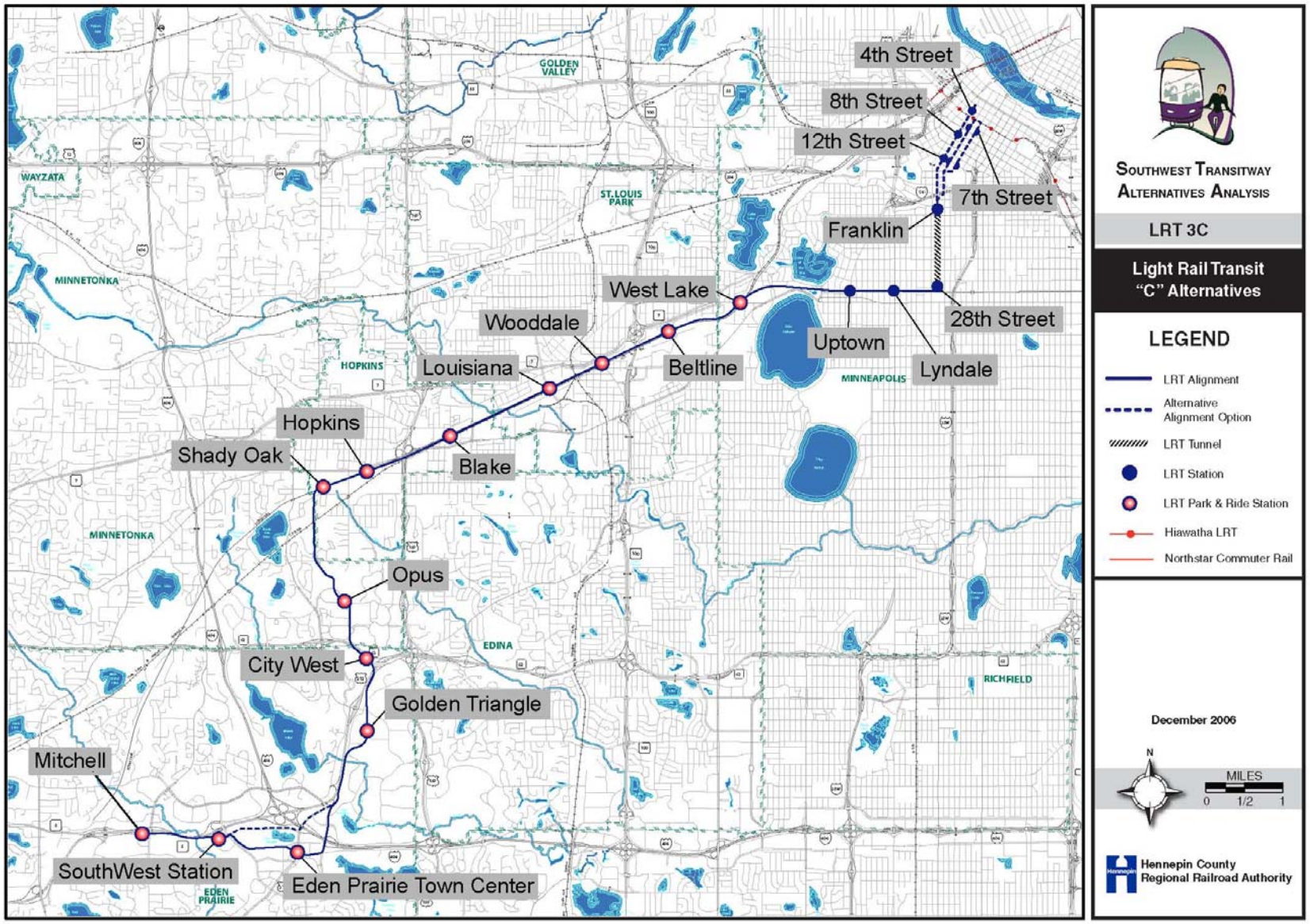
Changes to Route 17 are described above under Blake Station.

Lyndale Station: Routes 4, 21, 53, and 113 serve this station. These routes are unchanged under the alternative.

28th Street Station: Routes 18, 21, 53 and 568 serve this station. These routes are unchanged under the alternative.

Franklin Station: Routes 2, 18, 53 and 568 serve this station. These routes are unchanged under the alternative.

Figure D-11 LRT 3C Alternative



Source: Parsons Brinckerhoff, 2006.

LRT 4C

LRT 4C operates from Shady Oak Road in Minnetonka to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

The alignment begins near the intersection of Shady Oak Road and the HCRRA's Southwest Corridor. From Shady Oak Road the route enters a new exclusive light rail transit (LRT) guideway in the HCRRA's Southwest Corridor to West Lake Street in Minneapolis. Just east of West Lake Street the route enters a new exclusive LRT guideway in the HCRRA's Midtown Corridor to Nicollet Avenue. At Nicollet Avenue the route turns northward entering a new exclusive LRT guideway in a cut and cover tunnel under Nicollet Avenue to Franklin Avenue. At Franklin Avenue the route exits the shallow tunnel and operates at-grade on Nicollet Avenue to Grant Street. At Grant the route will either operate two-way on Nicollet Mall or as a one-way paired loop on 2nd and Marquette Avenues.

Infrastructure Improvements Required

LRT 4C requires the construction of a new two-track rail line approximately 30 feet wide in HCRRA right-of-way through the Southwest and Midtown Corridors, and the construction of on-line stations within the guideway. It also requires grade separations at Excelsior Boulevard in Hopkins and back across to the south side of the freight tracks near Wooddale Avenue. LRT 4C requires a shallow tunnel under Nicollet Avenue between 28th Street and Franklin Avenue in Minneapolis, and reconstruction of either Nicollet Mall or the Marquette/2nd pair in downtown.

Stations

LRT 4C station locations are listed below. All stations west of Van White Boulevard are assumed to include park-and-ride facilities. A center platform configuration is assumed unless otherwise noted.

- Shady Oak Road, Minnetonka – The proposed site is located east of Shady Oak Road and north of the HCRRA Southwest Corridor property, at the site of Hennepin Technical College. Access to and from the site would be via extended 17th Avenue.
- 8thAvenue, Hopkins – The proposed site is located between 8th and 5th Avenues South, north of the HCRRA Southwest Corridor property. Access to the site would be via a reconstructed intersection at 8th Avenue.
- Blake Road, Hopkins - The proposed site is located northwest of the Blake Road/HCRRA Southwest Corridor intersection. Access to the site would be via Blake Road and 2nd Avenue NE.
- Louisiana Avenue, St. Louis Park - The proposed site is located in the northeast corner of Louisiana Avenue and the HCRRA Southwest Corridor property. Access to the site would be via Louisiana Avenue.
- Wooddale Avenue, St. Louis Park - The proposed site is located in the southeast corner of the Wooddale Avenue intersection with the HCRRA Southwest Corridor property. Access to the site would be via Wooddale and Yosemite Avenues and West 36th Street.
- Beltline Boulevard, St. Louis Park - The proposed site is located in the southeast corner of the Beltline Boulevard intersection with the HCRRA Southwest Corridor property. Access to the site would be via Beltline Boulevard and Park Glen Road.
- West Lake Street, Minneapolis - The proposed site is located between the HCRRA Southwest Corridor property and Whole Foods grocery store, on the southeast side

of the HCRRA Southwest Corridor property. Access to the site would be via re-routed West 31st Street and Abbott Avenue South.

- Uptown/Hennepin Avenue South, Minneapolis – The proposed site is located on the east side of Hennepin Avenue within the HCRRA Midtown Corridor property. This station may be developed in coordination with proposed development in the southeast corner of Hennepin Avenue and the Midtown Corridor. Access to the site would be via vertical circulation from the existing Uptown Transit Station and/or the proposed development.
- Lyndale Avenue South, Minneapolis – The proposed site extends beneath the Lyndale Avenue South roadway overpass to the east toward Girard Avenue South, within the HCRRA Midtown Corridor property. Access would be via vertical circulation from Lyndale.
- 28th Street, Minneapolis – The proposed site is north of 28th Street in a shallow open cut within the Nicollet Avenue South right-of-way. Access would be via 27th Street and 28th Street.
- Franklin Avenue, Minneapolis - The proposed site is south of Franklin Avenue in a shallow open cut within the Nicollet Avenue South right-of-way. Access would be via Franklin Avenue and 22nd Street.
- Nicollet Mall at 12th, 8th and 4th Streets, downtown Minneapolis – These stations are proposed to be located on the Nicollet Mall, in the blocks between 11th and 12th Streets, 7th and 8th Streets, and 4th and 5th Streets.
- Marquette/Second Avenues at 12th and 7th Streets, downtown Minneapolis – The alignment is split at these stations, with eastbound trains on 2nd Avenue and westbound trains on Marquette Avenue. The stations are proposed to be located on 2nd Avenue and Marquette Avenue, in the blocks between 11th and 12th Streets and between 6th and 7th Streets.

Service Plan

	Morning (4:00 - 6:00 AM)	Morning Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM – 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30	7.5	10	7.5	15-30
Saturday	15-30	15-30	10	10 to 7:30 PM)	15-30
Sunday/ Holiday	15-30	15-30 (to 10:00 AM)	10	10	15-30

Freight Rail Right-of-Way Exchange
LRT 4C requires the freight rail right-of-way exchange described previously.

LRT 4C Connecting Transit Service
Shady Oak Station: Route 12 serves this station. Changes to route 12 are described below under Uptown Station.

Hopkins Station: Routes 12, 615, 661, 664, 665 and Limited Stop Route "A" serve this station. Changes to route 12 are described below under Uptown Station.

Route 615, which currently runs between the Ridgedale Shopping Center in Minnetonka and Excelsior and Grand, is extended to the Beltline Station (which is near Excelsior and Grand). Peak frequency increases from 60 to 30 minutes, and off peak frequency is 60 minutes. The route operates to midnight.

Route 661 is a recently discontinued Metro Transit route that is reinstated with a slightly modified alignment (eliminating its branch to Golden Triangle) and operates at a 30 minute peak/60 minute off-peak service frequency. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Route 664 is extended from its current terminus south on CR 101 to cover a portion of the former alignment of the recently discontinued route 612. Route 664 will offer an off-peak service similar to the discontinued 612. The route terminates at Hopkins Station, with passengers completing their travel to downtown Minneapolis on the Light rail line.

Route 665 increases in service frequency from 3 trips during each peak period, in the peak direction only, to a 30 minute headway (6 trips) during each peak period in the peak direction, and a 60 minute headway (3 trips) during each peak period, in the off peak direction.

Limited Stop Route "A" is a version of the new long-distance service route from Eden Prairie that features as one of the key new routes in the Enhanced Bus and BRT alternatives. In this alternative, the route terminates at Hopkins Station. Travelers to downtown Minneapolis transfer there to the light rail line. The route operates from the TH 5 park-and-ride at Wallace Road to Hopkins Station via TH 5, TH 212, and TH 169. The route would essentially meet every other LRT trip, operating at a 20 minute headway early morning and midday, 15 minutes during the peak periods and 30 minutes in the evenings.

Blake Station: Routes 17, 615, and 668 serve this station.

Route 17 Lake Street branch is extended to Blake Station, and service frequency increases from 3 trips in the peak direction and 2 trips in the off-peak during each peak period to 30 minute headways (6 trips in each direction) during the peak period.

Changes to Route 615 are described above under Hopkins Station.

Route 668 is extended to connect to Blake Station and the Library-Lane loop is eliminated.

Louisiana Avenue Station: Route 604 serves this station.

Route 604 is extended to Beltline Station, and increases in service frequency from 2 trips in each direction during each peak period to a 30 minute headway (6 trips) in each direction during each peak period.

Wooddale Station: The 36th Street branch of route 17 and Route 615 serve this station. Changes to this route are described above under Blake Station. Changes to Route 615 are described under Hopkins Station.

Beltline Station: The 36th Street branch of Route 17, Route 604 and Route 615 would serve this station.

Changes to Route 17 are described above under Blake Station.

Changes to Route 604 are described above under Louisiana Avenue Station.

Changes to Route 615 are described above under Hopkins Station.

West Lake Station: The 6 Shuttle route and routes 12, 17, and 25 serve this station.

The 6 Shuttle is a new route that operates along France Avenue serving Edina between Southdale Station and the West Park Station. The route operates at a 30 minute headway in each direction during each peak period and a 60 minute headway during the midday and evening period, and operates from 6:00 am to midnight.

Changes to Route 12 are described below under Uptown Station.

Changes to Route 17 are described above under Blake Station.

Routes 21 and 53 are extended from Uptown to connect to this station to provide crosstown connectivity along Lake Avenue.

Route 25 is extended south to connect to this station to provide service to the Kenwood Park area.

Uptown Station: Routes 6, 12, 17, 21, 23, 53, 114, and 115 serve this station. Routes 6, 21, 23, 53, 114 and 115 are unchanged under this alternative.

Route 12 terminates at this station and its segment connecting to downtown Minneapolis is eliminated, and service frequencies increase slightly to 15 minutes bi-directional, all day on the trunk portion of the route (frequencies on the branches remain unchanged).

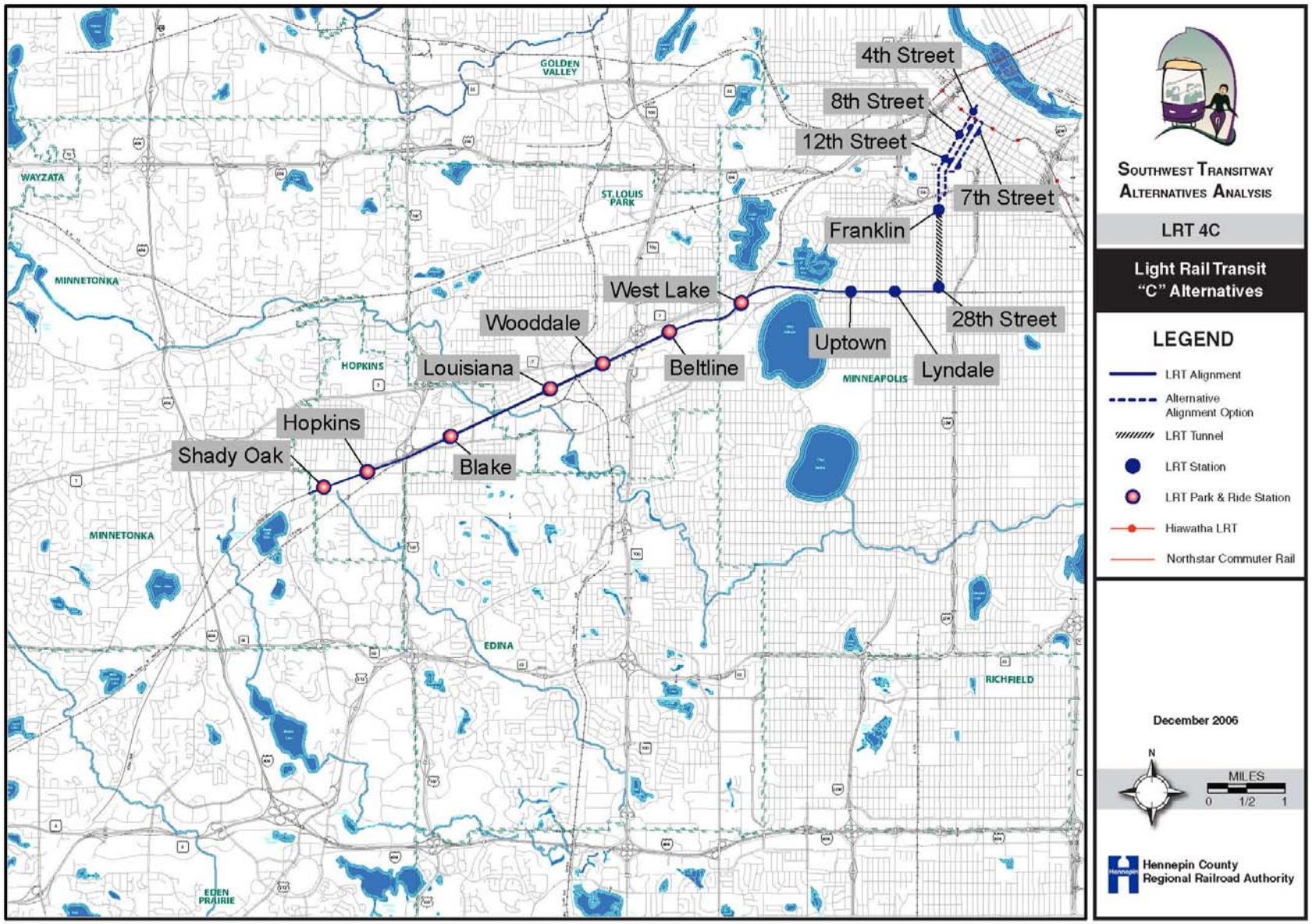
Changes to Route 17 are described above under Blake Station.

Lyndale Station: Routes 4, 21, 53, and 113 serve this station. These routes are unchanged under the alternative.

28th Street Station: Routes 18, 21, 53 and 568 serve this station. These routes are unchanged under the alternative.

Franklin Station: Routes 2, 18, 53 and 568 serve this station. These routes are unchanged under the alternative.

Figure D-12 LRT 4C Alternative



Source: Parsons Brinckerhoff, 2006

Appendix E: References

Stage 1 Hennepin County LRT System Plan

29th Street and Southwest Busway Feasibility Study

Mn/DOT Exclusive Busway Study

Southwest Rail Transit Study

Advanced Transit Association
http://www.advancedtransit.org/news.aspx

Central Arkansas Transit Authority
http://www.cat.org/rrail/

Las Vegas Monorail
http://www.lvmonorail.com/

Miami Dade Transit
http://www.co.miami-dade.fl.us/transit/

North American Light Rail Terminology
http://www.lightrail.com/terminology.htm#C

Presbyterian College
http://web.presby.edu/~jtbell/transit/Miami/Metromover/

Rail: Connecting Communities by Moving People. 7th Edition.

Rhode Island Public Transit Authority
http://www.ripta.com/schedules/index.php/section/70

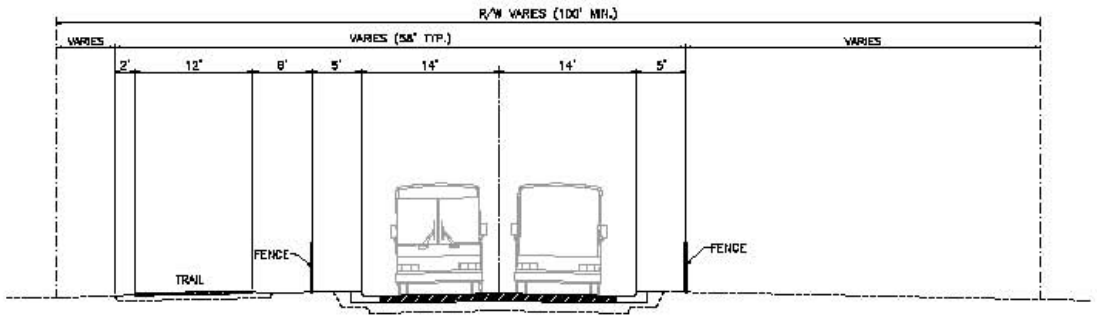
San Francisco Municipal Railway (MUNI)
http://www.sfmuni.com/home/home50.htm

Seattle Monorail Project
http://www.elevated.org/

Sound Transit
http://www.soundtransit.org/sounder/sounder.htm

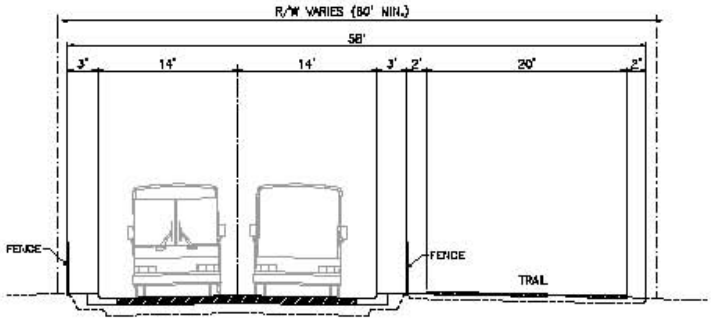
Taxi 2000 Corporation
http://www.skywebexpress.com/

Appendix F: BRT Alternatives Typical Sections



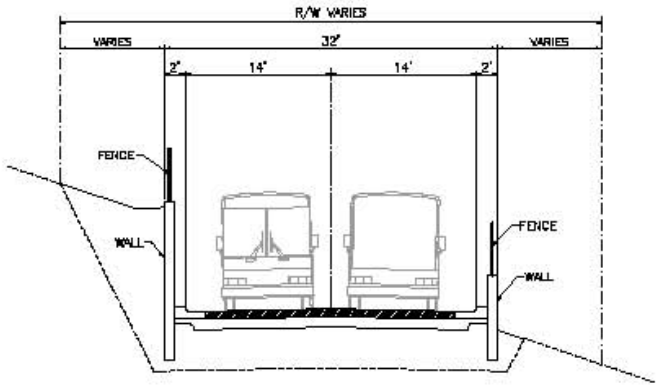
100' R/W AT-GRADE BRT
TYPICAL SECTION

Hennepin County Regional Railroad Authority		Southwest Transitway Alternatives Analysis	BRT ALTERNATIVES	SHEET BRT-1
	1/16" = 1'		TYPICAL SECTIONS AT-GRADE 100' R/W	
			DATE: 12-22-06 DWG: BRTSA01	



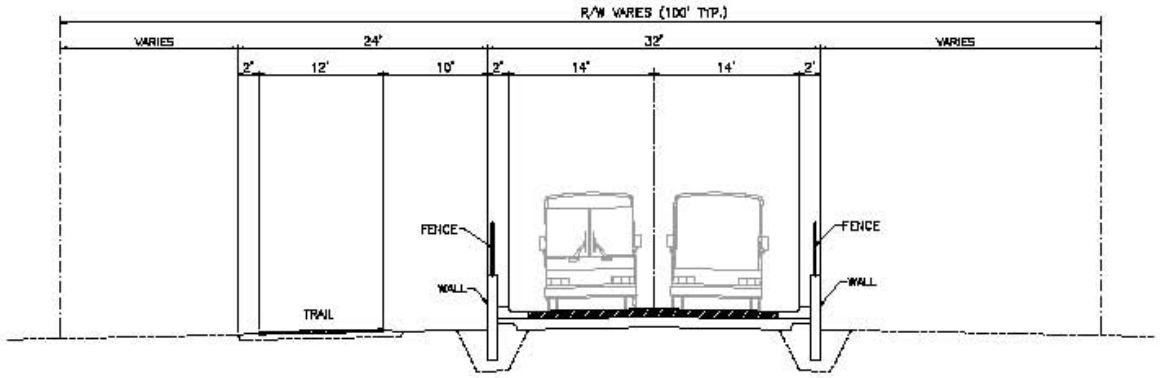
60' R/W AT-GRADE BRT
TYPICAL SECTION

Hennepin County Regional Railroad Authority		Southwest Transitway Alternatives Analysis	BRT ALTERNATIVES
PB LTK DCHQ	1/16" = 1'		TYPICAL SECTIONS AT-GRADE 60' R/W
			DATE: 12-22-06 DWG: BRTSA02
			SHEET BRT-2



RETAINED CUT AND FILL BRT
TYPICAL SECTION

Hennepin County Regional Railroad Authority		BRT ALTERNATIVES	
PB LTK DAVIS	1/16" = 1'	Southwest Transitway Alternatives Analysis	TYPICAL SECTIONS RETAINED CUT AND FILL
		DATE: 12-22-06	DWG: BRTSA03
			SHEET BRT-3



RETAINED FILL BRT
TYPICAL SECTION

Hennepin County
Regional Railroad Authority

PB | LTK | DAILY

1/16" = 1'

Southwest Transitway Alternatives Analysis

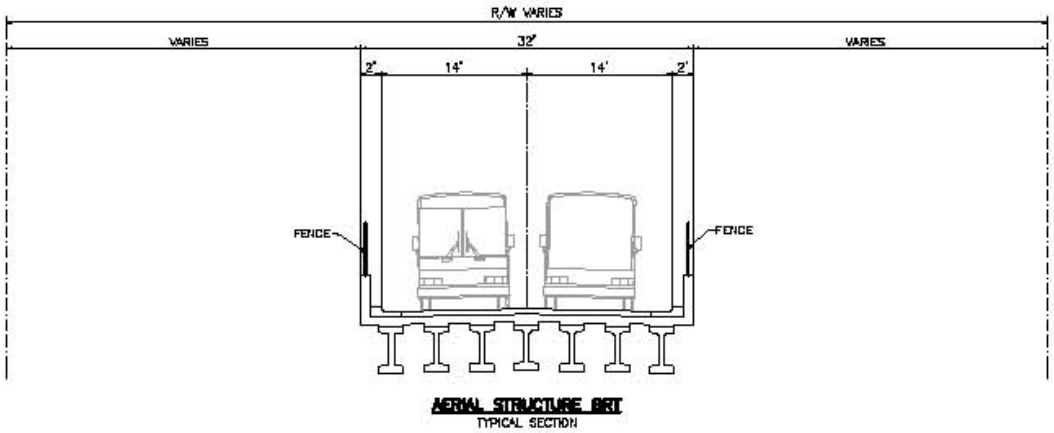
BRT ALTERNATIVES

TYPICAL SECTIONS
RETAINED FILL

DATE: 12-22-06

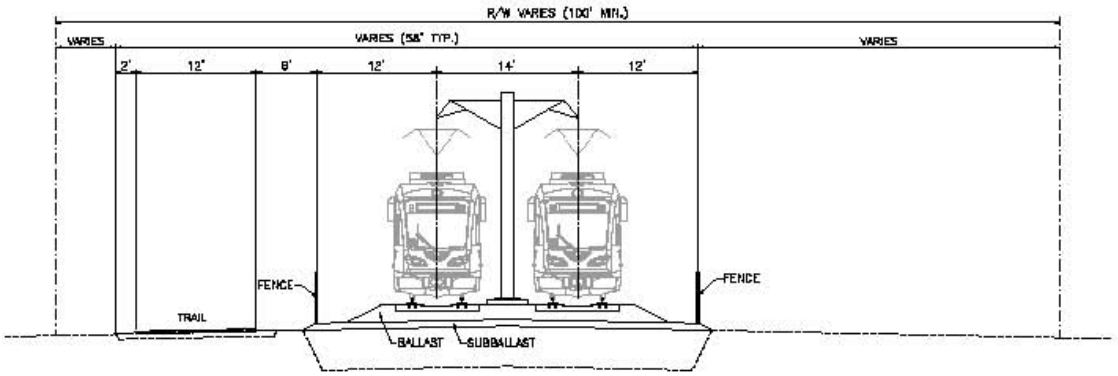
DWG: BRTSA04

SHEET
BRT-4



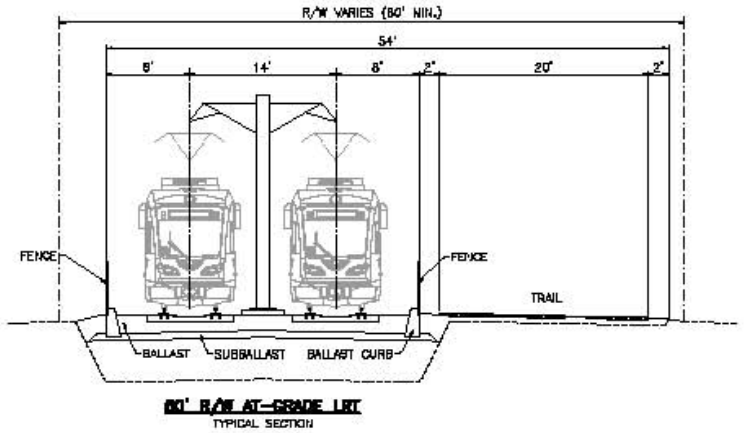
Hennepin County Regional Railroad Authority PB LTK DAHLIN	1/16" = 1'	Southwest Transitway Alternatives Analysis	BRT ALTERNATIVES TYPICAL SECTIONS AERIAL STRUCTURE DATE: 12–22–06 DWG: BRTSA05	SHEET BRT–5

Appendix G: LRT Alternatives Typical Sections



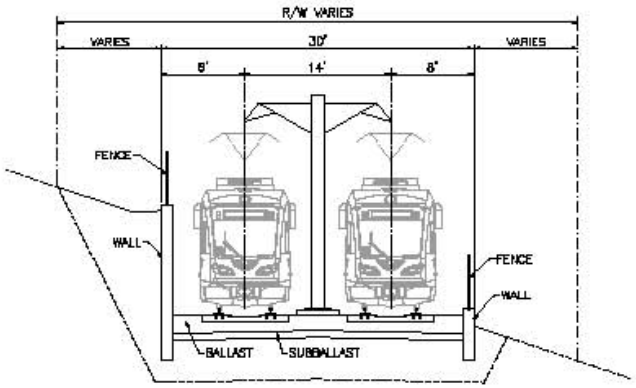
100' R/W AT-GRADE LRT
TYPICAL SECTION

Hennepin County Regional Railroad Authority PB · LTK · HDR	1/16" = 1'	**Southwest Transitway Alternatives Analysis**	LRT ALTERNATIVES TYPICAL SECTIONS AT-GRADE 100' R/W DATE: 12-22-06 · DWG: LRTSA01	SHEET LRT-1



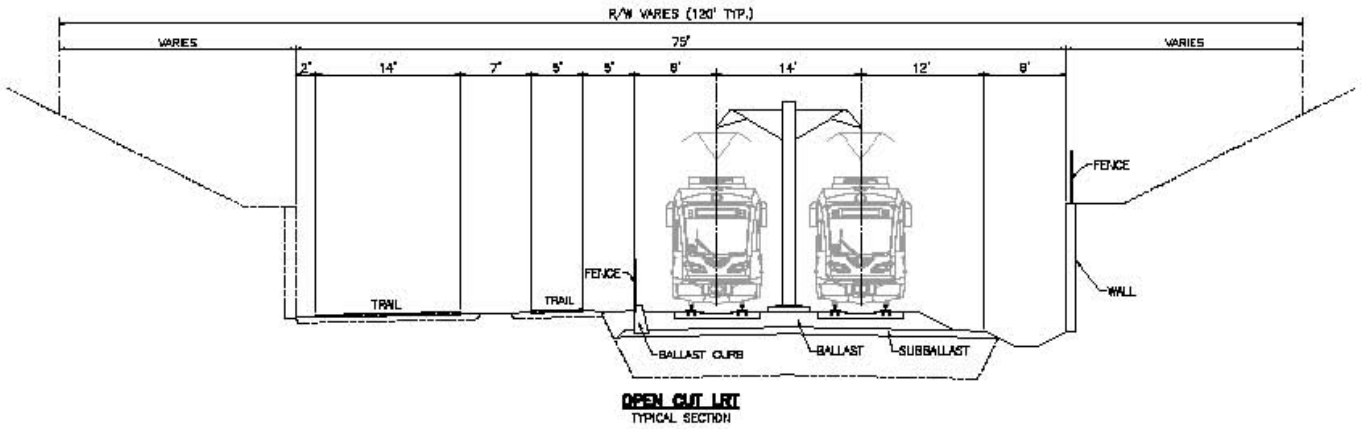
60' R/W AT-GRADE LRT
TYPICAL SECTION

Hennepin County Regional Railroad Authority		Southwest Transitway Alternatives Analysis	LRT ALTERNATIVES	SHEET LRT-2
	1/16" = 1'		TYPICAL SECTIONS AT-GRADE 60' R/W	
			DATE: 12-22-06	DWG: LRTSA02



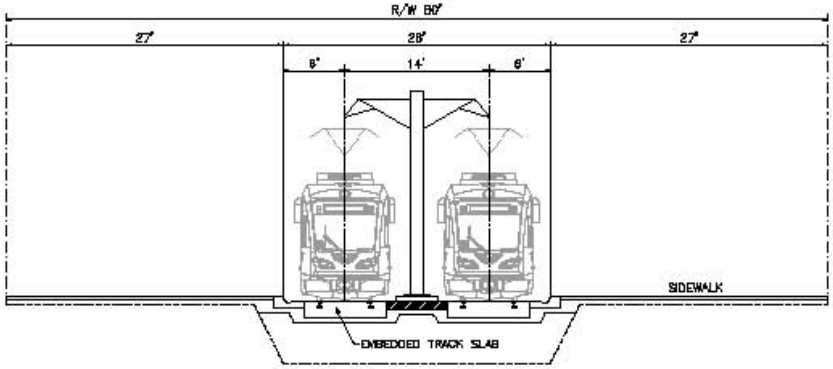
RETAINED CUT AND FILL LRT
TYPICAL SECTION

Hennepin County Regional Railroad Authority PB LTK DAILY	1/16" = 1'	Southwest Transitway Alternatives Analysis	LRT ALTERNATIVES TYPICAL SECTIONS RETAINED CUT AND FILL DATE: 12–22–06 DWG: LRTSA03	SHEET LRT–3



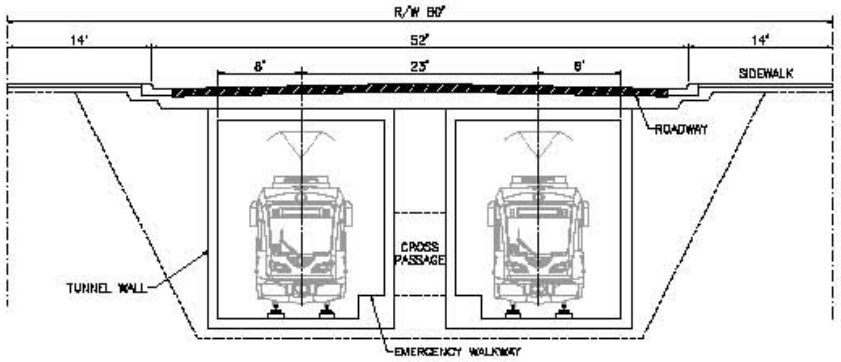
OPEN CUT LRT
TYPICAL SECTION

Hennepin County Regional Railroad Authority		Southwest Transitway Alternatives Analysis	LRT ALTERNATIVES TYPICAL SECTIONS OPEN CUT	SHEET LRT–4
	1/16" = 1'		DATE: 12–22–06	DWG: LRTSA04



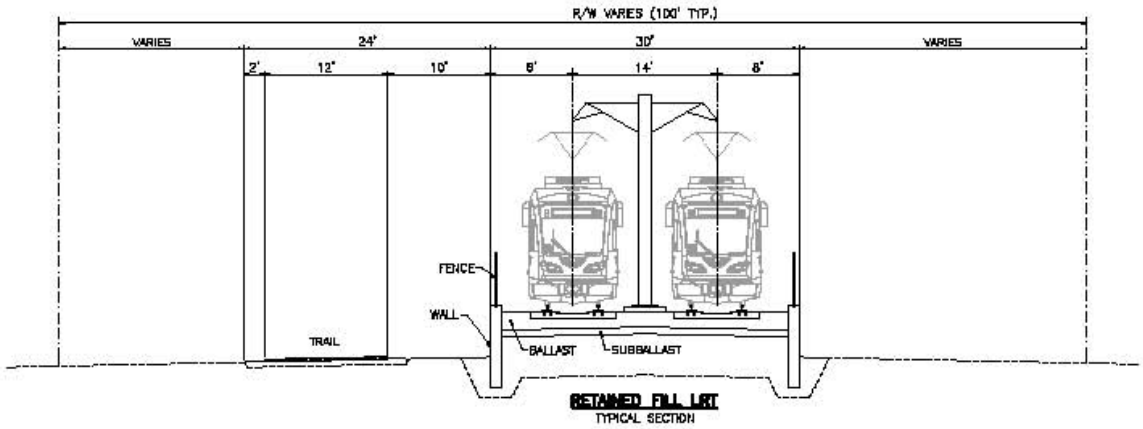
EMBEDDED TRACK LRT
TYPICAL SECTION

Hennepin County Regional Railroad Authority		Southwest Transitway Alternatives Analysis	LRT ALTERNATIVES TYPICAL SECTIONS EMBEDDED TRACK	SHEET LRT–5
	1/16" = 1'		DATE: 12–22–06	DWG: LRTSA05



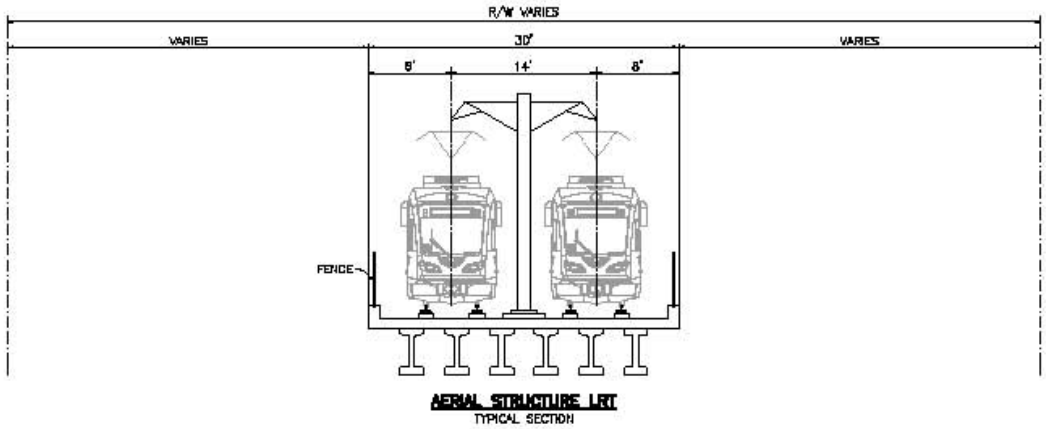
CUT-AND-COVER TUNNEL LRT
TYPICAL SECTION

Hennepin County Regional Railroad Authority	1/16" = 1'	Southwest Transitway Alternatives Analysis	LRT ALTERNATIVES TYPICAL SECTIONS CUT AND COVER TUNNEL	SHEET LRT-6
			DATE: 12-22-06 DWG: LRTSA06	



RETAINED FILL LRT
TYPICAL SECTION

Hennepin County Regional Railroad Authority		Southwest Transitway Alternatives Analysis	LRT ALTERNATIVES TYPICAL SECTIONS RETAINED FILL	SHEET LRT–7
	1/16" = 1'		DATE: 12–22–06	DWG: LRTSA07



AERIAL STRUCTURE LRT
TYPICAL SECTION

Hennepin County Regional Railroad Authority		Southwest Transitway Alternatives Analysis	LRT ALTERNATIVES	SHEET LRT–8
	1/16" = 1'		TYPICAL SECTIONS AERIAL STRUCTURE	
			DATE: 12–22–06 DWG: LRTSA08	