

# *FRANKLIN-CEDAR/RIVERSIDE*

## *TRANSIT ORIENTED DEVELOPMENT MASTER PLAN*

*PREPARED FOR:*  
***CITY OF MINNEAPOLIS***

*BY:*

**SRF**  
CONSULTING GROUP, INC.

*WITH THE ASSISTANCE OF:*  
***OTAK ARCHITECTS***  
***&***  
***URBAN STRATEGIES, INC.***

**JANUARY 2002**

**FINAL REPORT**

## **Acknowledgements**

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The contributions and input from the following individuals and organizations played a significant role in the development of this Master Plan.

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### 1.1 What is a Transit Oriented Development Master Plan?

The opening of the Hiawatha LRT line for service in 2004 presents the City of Minneapolis with many challenges for areas adjacent to the LRT line and stations. Figure 1.1 illustrates the extent of the Hiawatha Line and station locations. In addition to considerations of how LRT will affect street operations, the City must also plan for how use of the LRT system will change how Minneapolis residents and workers will move through the City and how their changing patterns will affect their decisions about where to live, shop, work and play. In an era of growing traffic congestion and effects to the environment resulting from urban sprawl, the City would also like to take maximum advantage of this opportunity to promote use of this new transit system and the benefits it can provide its residents.

In response to these opportunities, the City of Minneapolis has undertaken master planning efforts around many of the proposed LRT stations in order to identify issues concerning access to the stations (by foot, by bus, by bike, by car) and the land uses occurring within a ten-minute walk of the stations – the distance used by most transportation planners as the distance an average transit user is willing to walk to a station to his or her destination. This ten-minute walk translates into an area approximately defined by a ½-mile radius from the station. Access pathways to the stations are critical – the stations will not be used if they cannot be accessed. Land uses within this “ten-minute walk” are also critical for taking maximum advantage of a transit system. Residents who live within a ten-minute walk of a station and who have destinations within a ten-minute walk of another station are the “ideal” user of the transit system, although others will use LRT for mid-day trips originating at work or to attend special events located along the system. By providing higher densities of “origins” (places where transit users live) and “destinations” (places where they work, shop and play) along the transit system, maximum benefits can be gained from the investment in an LRT system. However, these higher densities must be planned with care if they are also to promote quality development, a high degree of livability and compatibility with the neighborhood in which they reside.

A Transit Oriented Development (TOD) Master Plan examines the issues of access and land use within this ½-mile radius (see Figure 1.2) to provide guidance as to how areas around transit stations should be shaped if they are to achieve these goals.

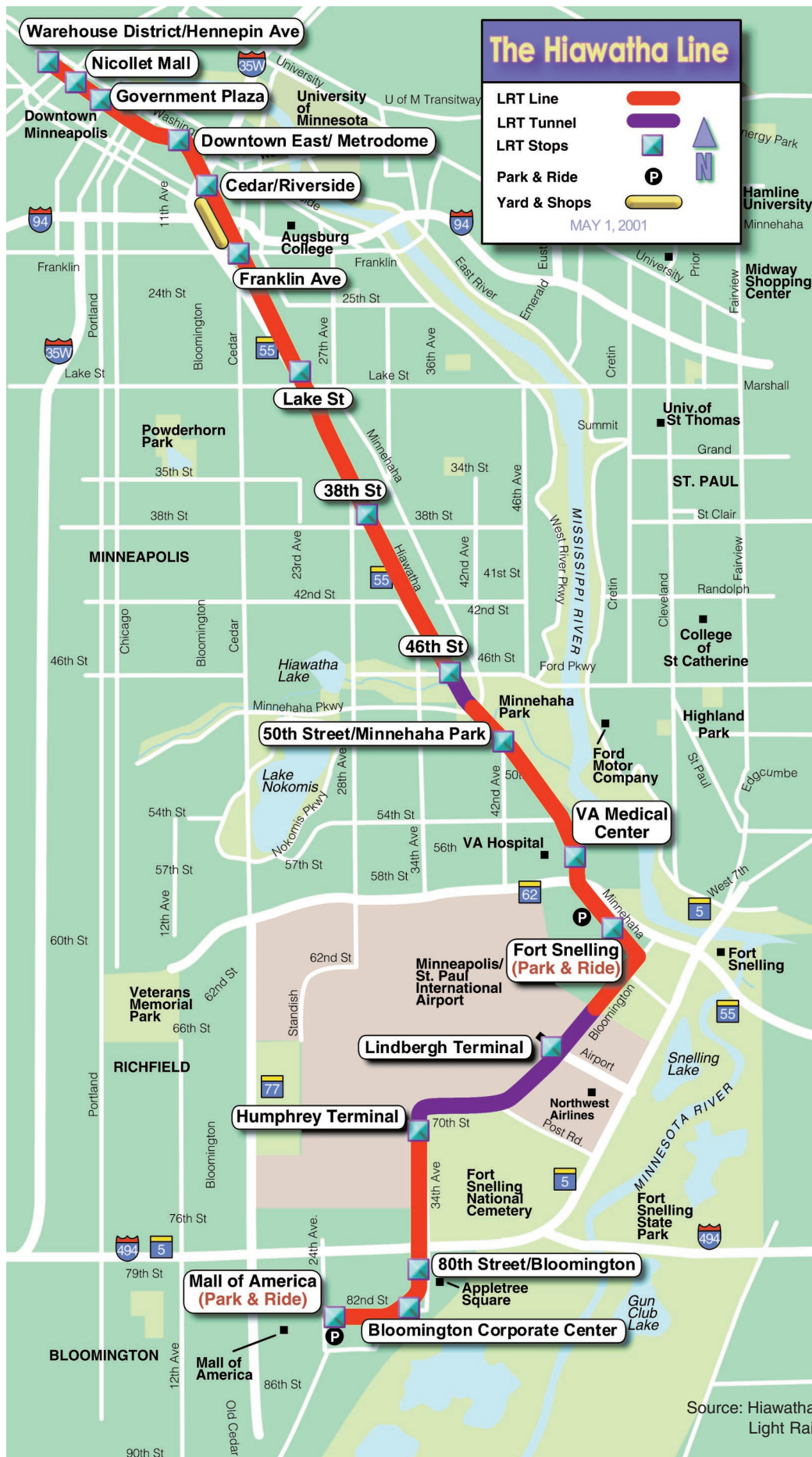


FIGURE 1.1 - MAP OF HIAWATHA LRT LINE

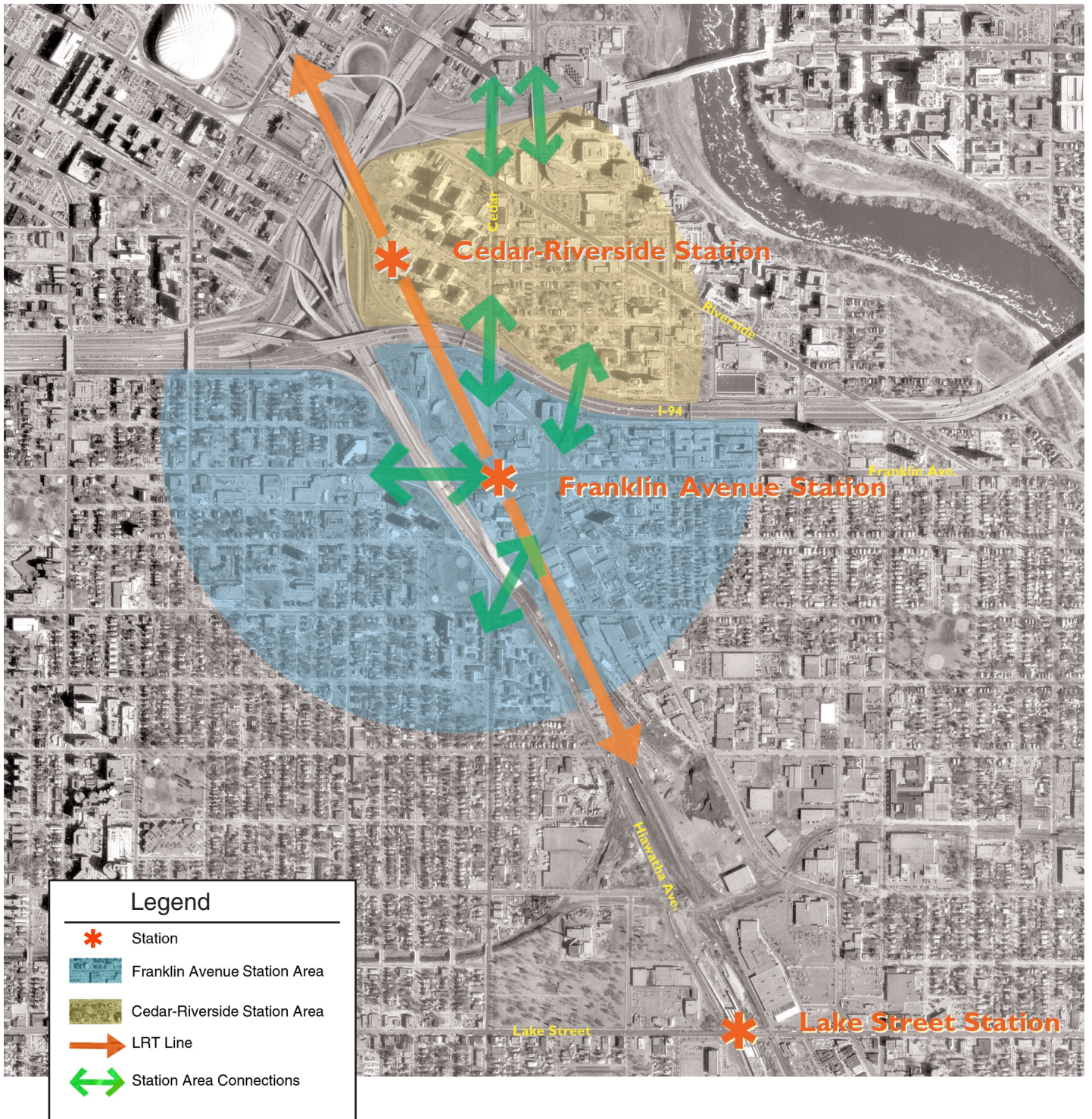


FIGURE 1.2 - FRANKLIN AND CEDAR/RIVERSIDE STATION STUDY AREAS



## **1.2 The Master Plan process**

A Project Steering Committee comprised of representatives of neighborhood organizations, community business groups, and area institutions guided the TOD Master Plan for the Franklin and Cedar-Riverside stations. A Project Management Committee whose members included staff representation from the City of Minneapolis, Hennepin County, and the Metropolitan Council, provided technical guidance. These committees met at key points throughout the process to shape the development of the master plan. Memberships on these committees is reflected in the acknowledgements section of this document.

A community workshop was held in November 2000 to allow area residents early input into the identification of issues to be addressed in the master plan as well as early master plan concepts. Meetings with individual neighborhood groups and key agencies were conducted to refine master plan concepts. A final open house was conducted in May 2001 to present the final master plan concept and solicit comments from the community.

### **Organizational Meetings/Presentations**

- West Bank Community Coalition  
Wednesday, February 28, 2001
- Minneapolis Public Housing Authority  
Thursday, March 1, 2001
- Metro Transit  
Tuesday, March 6, 2001
- Franklin Avenue Business Association  
Thursday, March 8, 2001
- East Phillips Improvement Coalition  
Thursday, March 8, 2001
- Ventura Village  
Tuesday, March 13, 2001
- Cedar-Riverside Residents  
Wednesday, March 14, 2001

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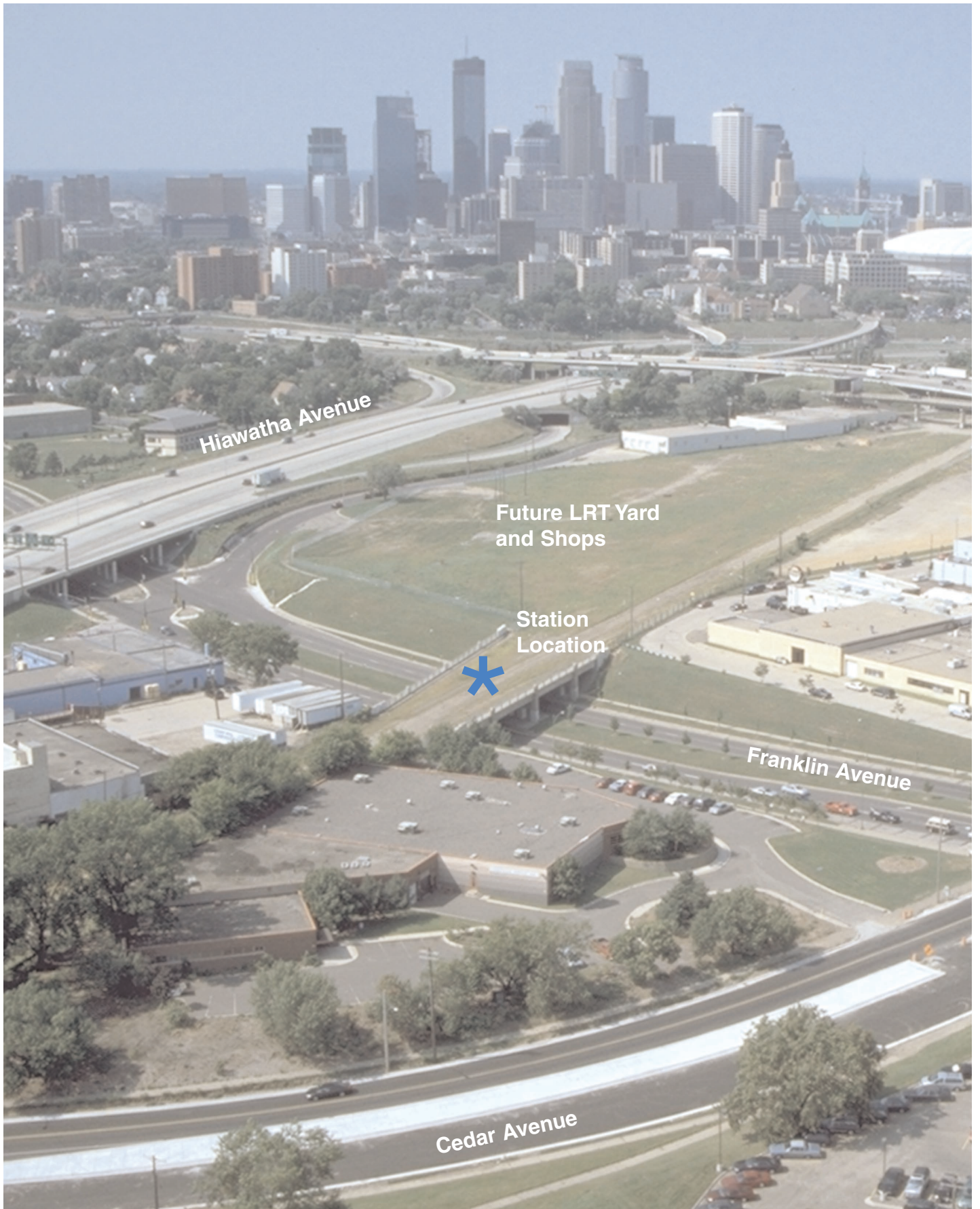
## 2.0 Station Area Conditions

### 2.1 Franklin Avenue Station Area

The Franklin Avenue LRT station lies perpendicular to and above Franklin Avenue just west of Franklin's intersection with Cedar Avenue. Figure 2.1 provides an oblique aerial photograph of the site. While the station is grade-separated from Franklin Avenue on a bridge, it sits at the same elevation as the land both immediately north and south of Franklin Avenue, which is depressed through the area. The station itself (as illustrated in Figures 2.2 and 2.3) will provide a covered center platform with tracks running to either side. Towers at either end of the platform provide stairways and handicap elevators, with pedestrian ramps extending both east and west down to Franklin Avenue. The LRT Maintenance Facility (Yard and Shops) will occupy the former railroad yard immediately northwest of the station. Commercial, institutional, and light industrial land uses occupy the land east of the station area, while light industrial use is also located south of the station across Franklin Avenue. A narrow strip of land on the north side of Franklin Avenue immediately west of the station is vacant.

Hiawatha Avenue forms a significant boundary to the west of the station area, and Interstate 94 separates the Franklin Station area from the Cedar-Riverside neighborhood to the north. East of the immediate station area, Cedar, Minnehaha, Franklin, and 20th Avenues come together in an awkward series of intersections. Remnants of the old Cedar Avenue alignment and connecting streets provide the framework for the area of light industrial, institutional, and commercial uses immediately east of station platform.

The station sits near the boundary of the Phillips neighborhood to the west and the Seward neighborhood to the east. Land uses within a ½ mile radius of the station are predominantly residential (see Figure 2.4). Commercial uses are concentrated along Franklin Avenue both east and west of the LRT station and along Cedar Avenue north of the station. Residential uses are generally located east of Minnehaha Avenue in the Seward neighborhood and west of Hiawatha Avenue in the Phillips neighborhood. While the residential uses in both neighborhoods are of mixed density, there is a stronger concentration of multiple family uses in the northern portion of the station area and along the western edge of Hiawatha Avenue.



**FIGURE 2.1 - OBLIQUE AERIAL PHOTOGRAPH OF FRANKLIN STATION SITE**

*FRANKLIN-CEDAR/RIVERSIDE TOD*





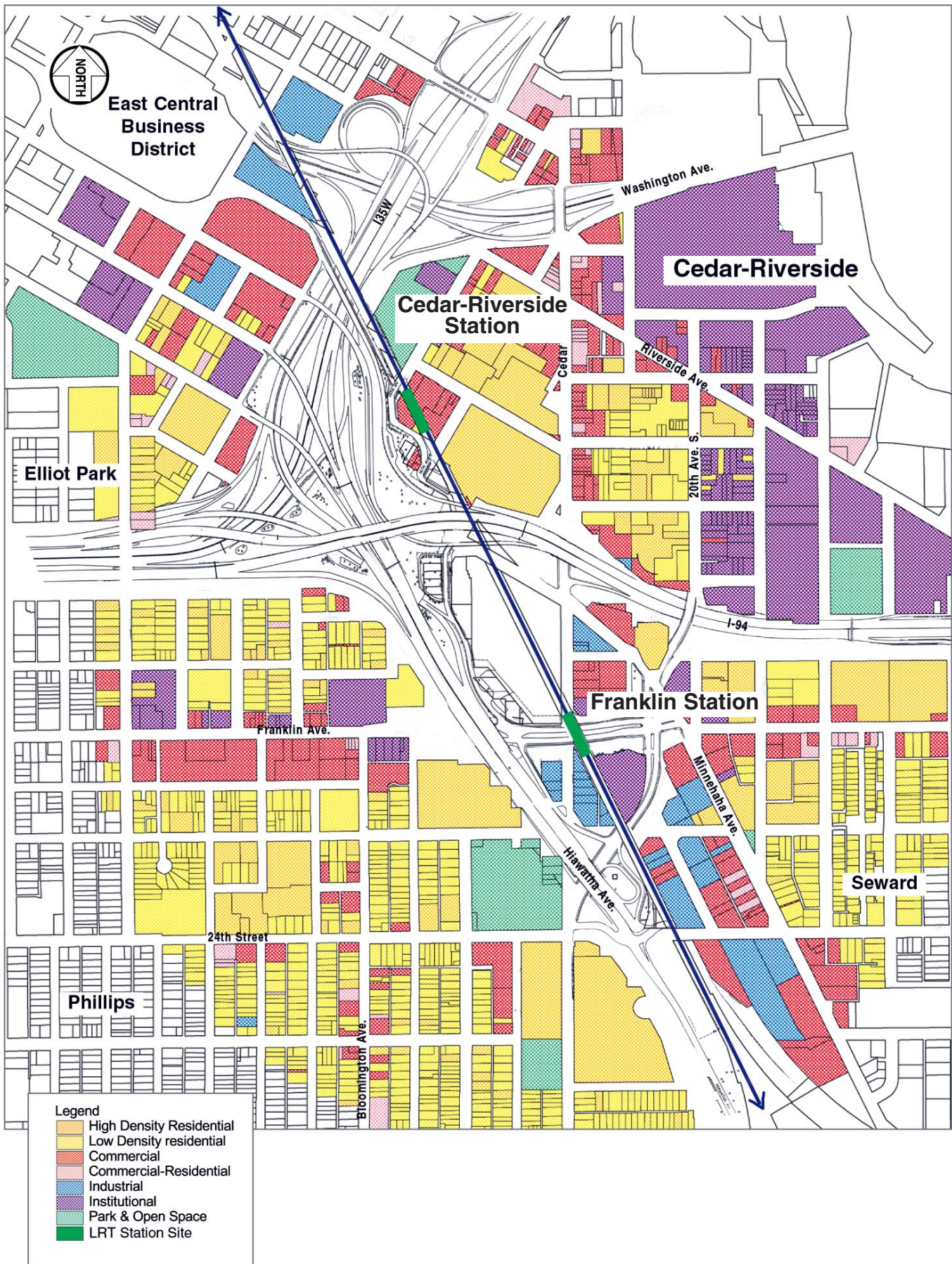


FIGURE 2.4 - EXISTING LAND USE WITHIN STATION AREAS

A large Native American Community resides within the Phillips neighborhood. Two Native American institutions occupy prominent sites near the station. These include the American Indian Opportunities Industrialization Center (AIOIC) located immediately adjacent to the LRT station south of Franklin Avenue, and the Minneapolis American Indian Center located just west of Hiawatha Avenue north of Franklin. Due to the proximity of Augsburg College and the West Bank Campus of the University of Minnesota, many university employees also live in these two neighborhoods.

Augsburg College occupies the northeast quadrant of the study area. Augsburg has recently constructed residential buildings approximately four blocks from the Franklin station, just north of I-94.

Anticipated travel times on LRT from this station to downtown range from three minutes to the Metrodome to nine minutes to the Nicollet Mall. In the opposite direction, anticipated travel time is 14 minutes to the airport and 22 minutes to the Mall of America.

### **Yard and Shops**

The Hiawatha Corridor Yard and Shops facility will be located on a former train yard site between the Cedar-Riverside and Franklin Avenue stations. The Yard and Shops will serve as the operations headquarters for the line providing vehicle maintenance and storage, materials storage, train crew facilities and dispatch services, and central control for the line. A staff of approximately 135 is expected to work at the facility by 2003.

The site is bounded by the LRT line to the east, I-94 to the north, and Hiawatha Avenue to the west. A narrow development parcel is located at the southern edge of the facility along Franklin Avenue.

## 2.2 Cedar-Riverside Station Area

The Cedar-Riverside Station lies diagonally through the block bounded by 6th Street South and 15th and 16th Avenues, approximately 1 ½ blocks from Cedar Avenue. Figure 2.5 provides an oblique aerial photograph depicting the site. The station (as illustrated in Figures 2.6 and 2.7) is a covered center platform flanked by the LRT tracks. Office, light manufacturing, and parking currently occupy the block. The station area is a mix of diverse residential, commercial, and institutional uses (see Figure 2.4). Dominating the landscape to the northeast of the proposed station are the Riverside Plaza high-rise towers and to the southeast the Cedar High Apartments, together housing more than 3,000 residents. The University of Minnesota West Bank campus and Augsburg College are located on the eastern periphery of the ½-mile station area. Currie Park and the Brian Coyle Community Center are located north of the proposed LRT station.

Commercial uses concentrated along Cedar and Riverside Avenues consist of a vibrant mix of ethnic restaurants, performing arts venues, and retail stores serving nearby residents as well as students and faculty of the University of Minnesota and Augsburg College. This diverse mix of activities creates a local and regional activity center. Theater and restaurant uses are clustered in the “Seven Corners” area at the intersection of Cedar and Washington Avenues. The intersection of Cedar and Riverside Avenues supports a number of ethnic and outdoor retail establishments, a performing arts venue, and ethnic restaurants. Closer to I-94 a lower density of commercial activity includes bar-restaurants and ethnically-oriented grocery stores.

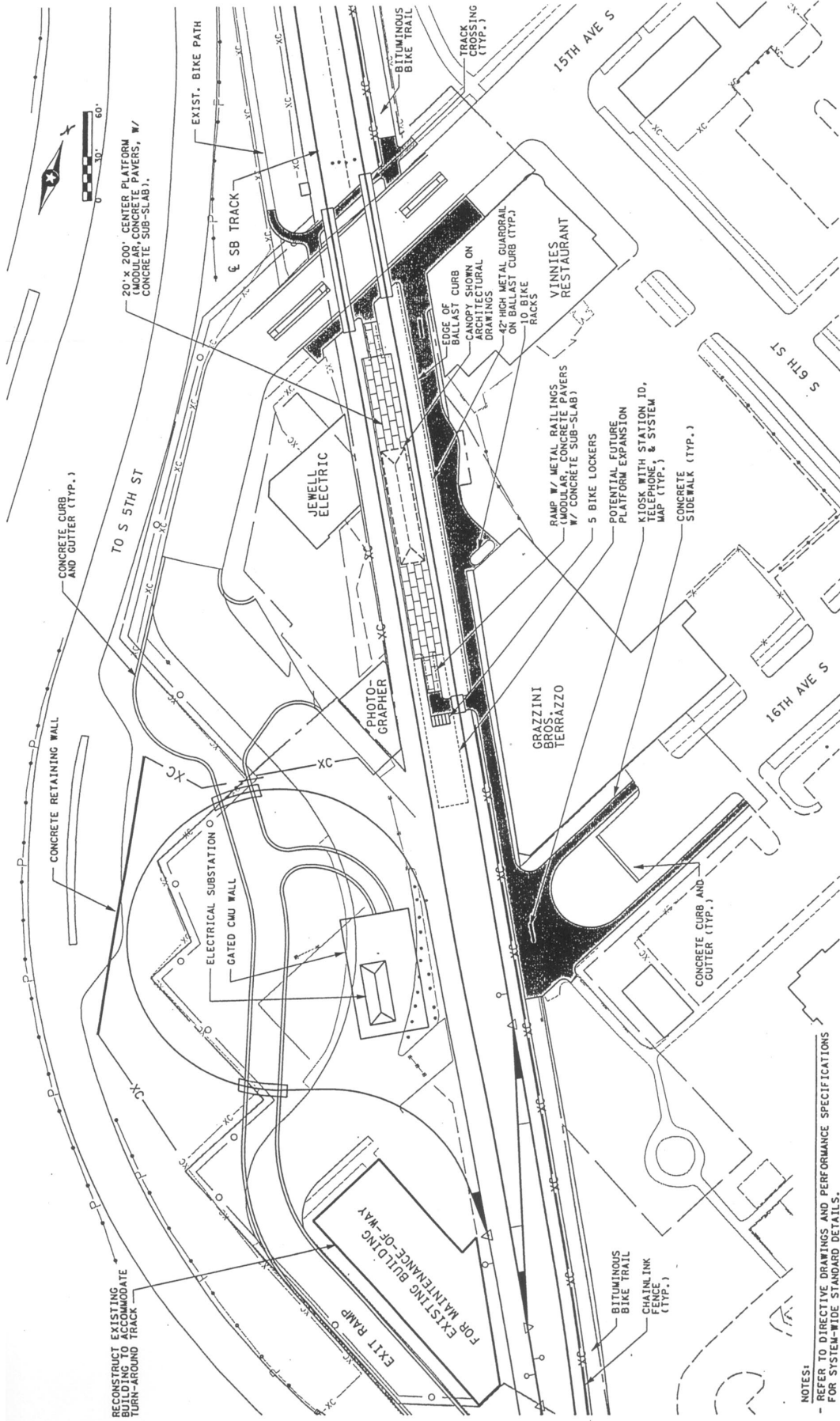
Other residential uses are located east of Cedar Avenue and include a mix of single-family, multiple-family and units above commercial storefronts. Residents of the Cedar-Riverside neighborhood are ethnically diverse and include significant African and Asian immigrant communities. Many of the area residents have low- to moderate-incomes. Approximately 50 percent of the households living in the high-rise towers receive rent subsidies. The number of residential units with the Cedar-Riverside station area represent the highest existing residential densities along the Hiawatha line.

The University of Minnesota recently constructed new student housing at the northern edge of the study area near Seven Corners. The University also plans to invest in additional facilities in the West Bank campus area. Augsburg College is also planning to expand its facilities adjacent to this area. Anticipated travel times on LRT from this station to downtown range from two minutes to the Metrodome to eight minutes to the Nicollet Mall. In the opposite direction, anticipated travel time is 15 minutes to the airport and 23 minutes to the Mall of America.





**FIGURE 2.5 - OBLIQUE AERIAL PHOTOGRAPH OF CEDAR/RIVERSIDE STATION SITE**



NOTES:  
 - REFER TO DIRECTIVE DRAWINGS AND PERFORMANCE SPECIFICATIONS FOR SYSTEM-WIDE STANDARD DETAILS.

NO.	DATE	BY	CD	APPR	REVISION



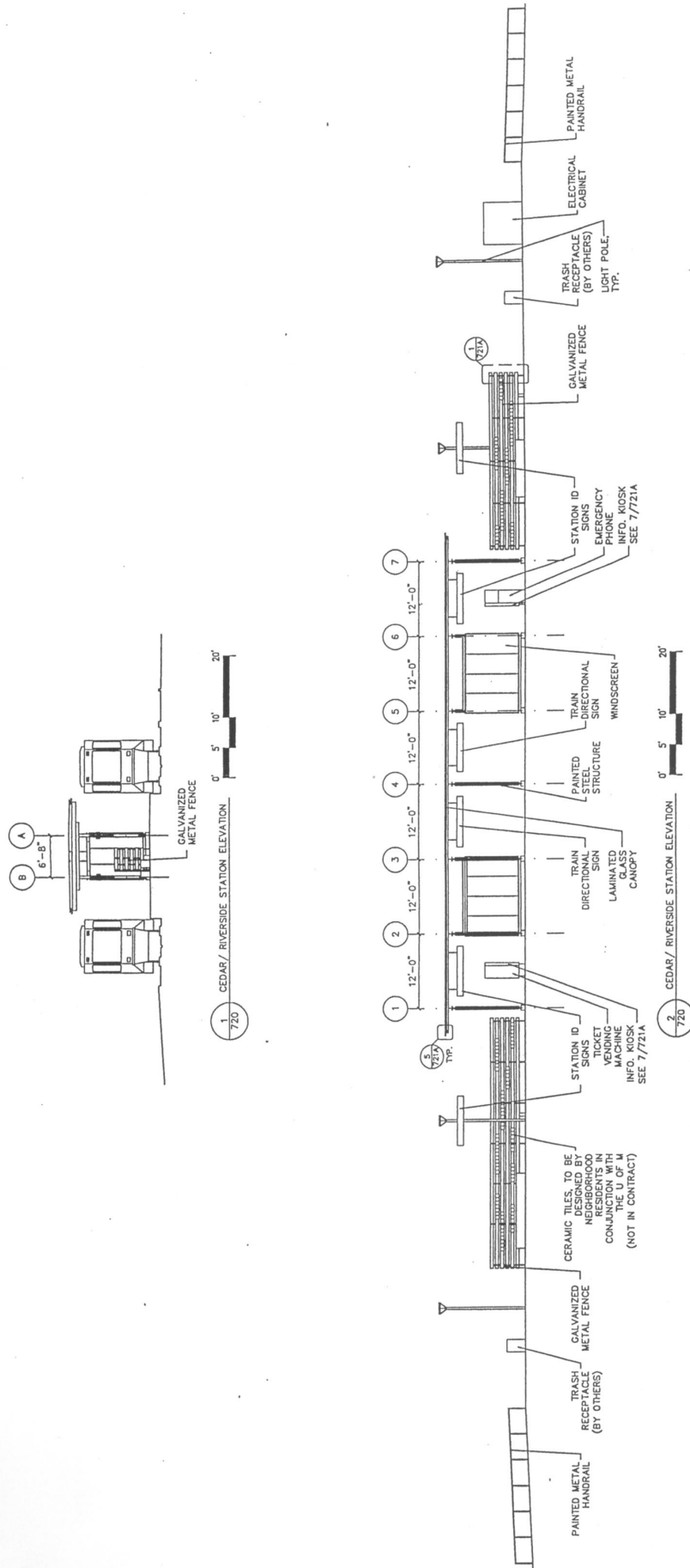
**CONTRACT DOCUMENTS**  
 NOT FOR CONSTRUCTION



MINNESOTA DEPARTMENT OF TRANSPORTATION SP 2724-111 SHEET 718  
 HIAWATHA CORRIDOR LRT.  
 SITE PLAN  
 CEDAR/RIVERSIDE  
 ARCHITECTURAL DRAWING NAME: S.P13  
 21. APR. 2000 16:00:38



FIGURE 2.6 - CEDAR/RIVERSIDE STATION SITE PLAN



NO.	DATE	BY	CD	APPR	REVISION	DRAWN BY	TGB	DESIGNED BY	JSA	CHECKED BY	RCM	MINNESOTA DEPARTMENT OF TRANSPORTATION	SP 2724-111	SHEET	720	
												HIAWATHA CORRIDOR LRT		OF	1382	
													MINNESOTA DEPARTMENT OF TRANSPORTATION		SP 2724-111	
													ARCHITECTURAL		DRAWING NAME: CRS-201	
													BRW		A DAVIS WOODRIDGE GROUP COMPANY	
													PB PARSONS BRINCKERHOFF		JULIE SNOW ARCHITECTS INC.	
													CONTRACT DOCUMENTS		NOT FOR CONSTRUCTION	
													HPO		HIAWATHA PROJECT OFFICE	

FIGURE 2.7 - CEDAR/RIVERSIDE STATION ELEVATIONS

### 3.1 Concurrent planning efforts

Additional planning efforts near both station areas have been conducted by neighborhood organizations and community institutions as well as Metro Transit for related aspects of the LRT development process. These processes will be briefly summarized here as they provide background and initial concepts for the master plan.

The **Franklin Avenue LRT Task Force**, comprised of residents, property owners, organizations and businesses from both the Phillips and Seward neighborhoods, initiated planning efforts in 1999 with the goal of influencing development in the Franklin Avenue LRT station area. The Task Force identified four critical issues for the Franklin Avenue LRT station including the impact of the LRT maintenance facility (shops and yards) on the Franklin Avenue LRT station area and adjacent neighborhoods; providing safe, convenient access through this isolated area for pedestrians and for those using wheelchairs, bikes, buses or cars; maximizing development potential in the station area through proactive public involvement; and providing effective public oversight to the LRT project to ensure a balanced approach to critical infrastructure and development decisions.

The final report of the Task Force, published in March 2000, prioritized the following development goals for the station area:

- 1) Enliven the station area with new development that creates a safe, inviting pedestrian environment 24 hours a day;
- 2) Bridge the gap between the Phillips and Seward neighborhoods;
- 3) Provide convenient integration of other transit modes with LRT;
- 4) Strengthen pedestrian connections from all directions;
- 5) Create/attract new living-wage jobs for local residents;
- 6) Create new mixed-income housing with at least 20 percent of units affordable at 30 percent of the metro median income; and
- 7) Create green connections to Midtown Greenway and nearby parks.

The **Ventura Village** neighborhood residents have also developed a community vision for the area west of Hiawatha including the following elements:

- Developing carriage and alley houses to put “eyes on the street” and create affordable housing and density;

- Creating a “yellow brick road” network of pedestrian/green pathways that connect individual blocks with city parks, amenities and services;
- Redesigning Park and Portland Avenues back to residential streets, rather than commercial thoroughfares;
- Maximizing parking in the public domain to create more public and green space;
- Coordinating planning activities regarding University Village, a planned higher density residential retail development centered around the Franklin LRT station; and
- Revitalizing Franklin Avenue with mixed-use buildings that have housing above commercial uses.

The **University of Minnesota** recently completed a Master Plan which includes goals for further development of the West Bank campus along Riverside Avenue. The north side of Riverside Avenue east of Cedar Avenue is recommended for redevelopment as mixed use include student housing with parking below, increasing the potential residential density of this corridor.

**Augsburg College** also recently completed a Master Plan confirming 20th Avenue as the western boundary of their campus, intensifying residential development along this western edge, and strengthening the Riverside Avenue edge of the campus.

In addition, the **Metropolitan Council** developed a number of planning documents related to station design and public art during the planning of the Hiawatha Line. A complete list of documents related to LRT planning for these station areas can be found in Appendix A.

### **3.2 Neighborhood groups conversations**

During the Master Planning process, conversations were held with neighborhood groups associated with both of the station areas as well as agencies with a vested interest in the neighborhood.

#### **Transit**

The character of the street network, bicycle routes and overall transit service were concerns shared by many groups. Efficient movement of vehicles through the area while slowing traffic and narrowing streets was desired as a means to improve the overall character of economic viability of the neighborhoods. Larger vehicle access to the LRT Yard and Shops via 15th Avenue was a particular concern to residents in the Cedar-Riverside area. Bicyclists also expressed concerns about existing facilities noting in particular the narrow roadway width on Franklin Avenue beneath the Hiawatha (TH 55) Bridge. Bicycle facilities are also desired for Cedar Avenue.

Area residents also desire good connections between bus facilities and the LRT stations. The potential for a circulator bus system was also raised, but cannot be supported by Metro Transit at this time. Nonetheless, on-street accommodations for a circulator system, perhaps supported by area institutions, were requested.

#### **Pedestrian Paths**

Area residents also want pedestrian paths to the stations to be attractive, safe, and as direct as possible. The area beneath TH 55 along Franklin was a particular area of concern. East Phillips residents asked for improved pedestrian connections to the station, possibly along Cedar Avenue. The Franklin “sound wall” at the southwest quadrant of the Franklin-TH 55 overpass is seen as a detriment to the pedestrian and bicycle environment by area residents as it creates an isolate area and reduces visibility. The Franklin-Minnehaha-Cedar Avenue intersection was identified as difficult for pedestrians. Litter and poor winter sidewalk maintenance were noted as detractors to pedestrian movement. Attractive icon-based signage to assist wayfinding was also noted as an important pedestrian element. The possibility of signing the “public path” through the Riverside Plaza complex was also raised.

#### **Green Space**

Preserving and improving green space, particularly at gateway locations and along Franklin Avenue was also desired. Concrete medians were also identified as “green opportunities.” Relocation of the “Korean Gardens” from the LRT Yard and Shops site is another important community issue.

### **Housing**

Housing was emphasized by many area residents as a desired land use around the Franklin station in particular as it would add “24-hour activity” to the station area and can support other commercial activity in the area. Some area residents did note that the sites adjacent to TH 55 were not well suited for housing.

### **Parking**

Cedar-Riverside residents near the station area also expressed concerns about the existing shortage of parking in the area and worried that the LRT station may worsen the problem.

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## 4.0 Issues, Opportunities and Constraints

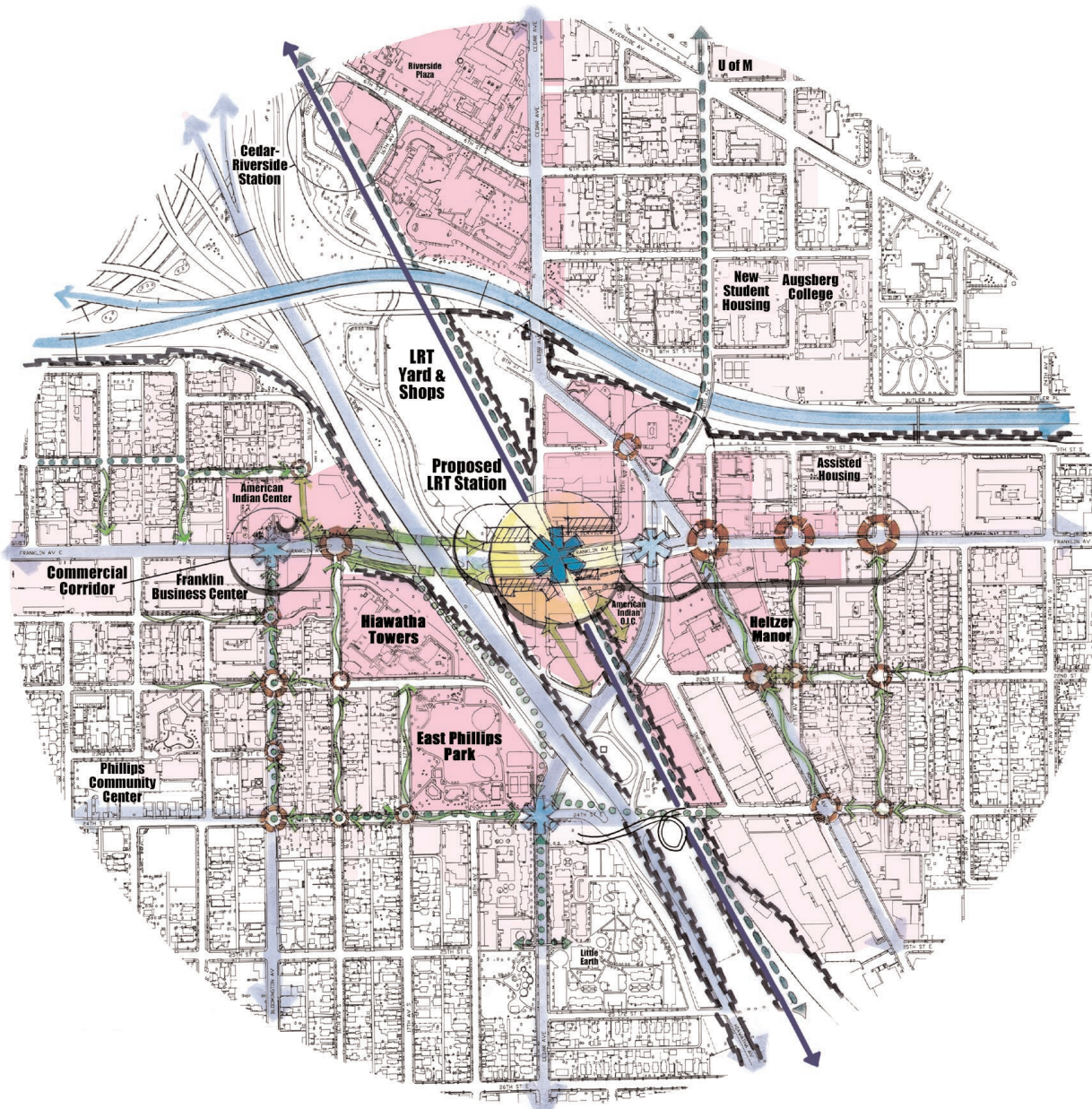
### 4.1 Site analysis: Franklin Avenue Station

The elevation difference between the Franklin station platform and Franklin Avenue creates challenges in providing pedestrian, bicycle and bus connections to the station platform from Franklin Avenue. Difficult grades resulting from the depression of Franklin Avenue, the fragmentation of the original street pattern, and the reconstruction of Hiawatha Avenue have left Franklin Avenue between Cedar Avenue and 16th Avenue devoid of development at the street edge. This environment does not provide destinations for transit riders, nor does it provide an attractive and safe facility to attract transit users.

The complexity of the Franklin-Minneha-Cedar intersection and Hiawatha Avenue access restrictions also further complicate connections to this station. To the west, the Hiawatha overpass creates a dark unattractive space which encourages undesired activity and makes the pedestrian environment appear unsafe and threatening. To the east, the large intersection is difficult for pedestrians to cross, especially for the handicapped and the elderly, and creates a large expanse of unattractive paving. These conditions discourage/diminish connections to the Ventura Village neighborhood to the west and Seward neighborhood to the east. Access to the light industrial parcels south of Franklin Avenue is circuitous and indirect (via Cedar Avenue) due to the reconstruction of Hiawatha Avenue. Existing development and Hiawatha Avenue also prohibit direct connections to the station from the East Phillips neighborhood, southwest of the station area.

The limitations of pedestrian connections to adjacent neighborhoods is well illustrated by the pedestrian “sheds” highlighted in pink in Figure 4.1. While the ½-mile radius circle illustrates the theoretical area within ten-minute walk of the station, the pink areas illustrate the actual five- and ten- minute walks via the current street grid. Commercial areas west of TH 55 are just beyond five minutes of the station. Pedestrian routes in the Phillips neighborhood, along Bloomington Avenue, Franklin Avenue, and 24th Streets, while generally safe and comfortable, are indirect to both the station and to commercial areas. A fair portion of the Franklin commercial area east of Cedar Avenue falls within five minutes’ walk of the station. The Augsburg College campus falls within a ten-minute walk of this station via 20th Avenue.


















- |   |                                  |   |                              |
|---|----------------------------------|---|------------------------------|
|  | PROPOSED LRT ROUTE               |  | TRANSIT CONNECTIONS          |
|  | EXISTING PEDESTRIAN ROUTE        |  | ACTIVATED PEDESTRIAN NODES   |
|  | BARRIER TO PEDESTRIAN TRAVEL     |  | INCREASED PEDESTRIAN TRAVEL  |
|  | BUS ROUTE (REGIONAL CONNECTIONS) |  | POTENTIAL NEW PEDESTRIAN WAY |
|  | BUS ROUTE (LOCAL CONNECTIONS)    |  | POTENTIAL REDEVELOPMENT SITE |
|  | EXISTING BICYCLE ROUTE           |  | 1/4 MILE WALK (15 MINUTES)   |
|   |                                  |  | 1/2 MILE WALK (10 MINUTES)   |

FIGURE 4.1 - SITE ANALYSIS - FRANKLIN STATION AREA

FRANKLIN-CEDAR/RIVERSIDE TOD

A bicycle trail will follow the LRT rail line through the TOD area providing pedestrian and bicycle access to downtown Minneapolis and the Seward neighborhood with connection to the Phillips neighborhood via the 24th Street overpass. One designated on-street bicycle route runs along 20th Avenue from the University of Minnesota ending abruptly at Franklin Avenue.

Interstate 94 and Trunk Highway (TH) 55, (Hiawatha Avenue), provide regional access to the Franklin Avenue TOD area. These corridors connect to a broader regional system, including I-35W, as well as routes to downtown Minneapolis. Access to TH 55 occurs south of the Franklin station at Cedar Avenue. Access to eastbound I-94 occurs north of the station along Cedar as well. Access to westbound I-94 can be obtained via the Cedar Avenue access to TH 55, but this route is not signed. Franklin, Cedar, and Minnehaha Avenues are arterial routes serving the TOD area. These routes make connections to I-94 and Highway 55, and to University Avenue to the north and Lake Street to the south. Franklin Avenue is fronted by primarily commercial uses within the TOD area, while heavier commercial and industrial businesses front on Minnehaha. Cedar Avenue transitions from commercial uses north of I-94 to residential uses south of 24th Street. Near the Franklin LRT station, Cedar Avenue is devoted almost exclusively to vehicular movement, with little capacity for pedestrian or bicycle movement. Alterations to these roadways to accommodate rail and highway corridors have created a complex, vehicle-dominated street environment.

Transit service within the TOD area is available along Franklin, Cedar, Minnehaha Avenues, Bloomington Avenue and 24th Street. Transfer connections to the Franklin LRT station will be made directly below the station bridge on Franklin for Routes 2 and 8, at the Franklin-Cedar Intersection for Route 19 and at the Franklin-Minnehaha intersection for Route 20. Routes 2, 8, and 20 currently run approximately every 20-30 minutes on weekdays. Route 19 runs approximately every 10-20 minutes on weekdays. Weekend routes run every 30 minutes on Saturdays, 60 minutes on Sundays.

Connections between Franklin Avenue and the station platform include exterior stairs, ramps and handicap elevators at both the north and south ends of the station platform.

## 4.2 Site Analysis: Cedar-Riverside Station

The key challenge of the Cedar-Riverside station rests in its location within the middle of a block, nearly 1,000 feet – and virtually invisible – from Cedar Avenue. While the majority of the buildings on the block are currently occupied, none are oriented toward the station location in the middle of the block and few generate the level of activity supportive of a transit station. The corner of the block somewhat visible from Cedar Avenue (at 6th Street and 15th Avenue) is occupied by a surface parking lot and does not provide a landmark to assist in wayfinding to the station. (See Figure 4.2.)

Sixth Street provides the primary pedestrian path to the station area, although it angles away from the station as it proceeds west from Cedar Avenue, requiring transit users to access the station platform from the 15th and 16th Avenue cross streets. These streets are quite comfortable for the pedestrian, narrow in scale and tree-lined. However, residents of the area report that they are poorly maintained in the winter and often littered with garbage. The six-foot sidewalks are somewhat narrow for anticipated volumes of pedestrian traffic. The preferred width for sidewalks on 6th Street is 8 feet.

Large residential developments lie to the north and south of 6th Street limiting other pedestrian access to the station. North of 6th Street, pedestrians can access the station by proceeding northwest on Riverside Avenue, then southwest on 16th Avenue. The Cedars Towers and I-94 block additional access from south of 6th Street. Public pedestrian pathways exist through the Riverside Plaza complex, but the paths require accessing a variety of levels within the interconnected plazas using ramps and stairways. The paths are confusing and not well marked.

Due to these access limitations, the station location is situated so that Cedar Avenue businesses are just within the range of a five-minute walk; however, areas east of Cedar Avenue fall beyond the five-minute range (as shown in Figure 4.2). The ten-minute walk area includes the boundaries of the University of Minnesota and Augsburg College campuses. Pedestrian access west, south and north of the station is limited by I-35W, I-94 and Washington Avenue (depressed), respectively. Cedar Avenue provides the only opportunity for proceeding north and south beyond ½ mile of the station. Due to these constraints, the pedestrian shed for this area is significantly limited within the ½ mile radius of the station and conditions emphasize the importance of Cedar Avenue as the principal corridor for access.
















- |   |                                  |   |                              |
|---|----------------------------------|---|------------------------------|
|  | PROPOSED LRT ROUTE               |  | TRANSIT CONNECTIONS          |
|  | EXISTING PEDESTRIAN ROUTE        |  | ACTIVATED PEDESTRIAN NODES   |
|  | BARRIER TO PEDESTRIAN TRAVEL     |  | INCREASED PEDESTRIAN TRAVEL  |
|  | BUS ROUTE (REGIONAL CONNECTIONS) |  | POTENTIAL NEW PEDESTRIAN WAY |
|  | BUS ROUTE (LOCAL CONNECTIONS)    |  | POTENTIAL REDEVELOPMENT SITE |
|  | EXISTING BICYCLE ROUTE           |  | 1/4 MILE WALK (5 MINUTES)    |
|   |                                  |  | 1/2 MILE WALK (10 MINUTES)   |

FIGURE 4.2 - SITE ANALYSIS - CEDAR/RIVERSIDE STATION AREA

FRANKLIN-CEDAR/RIVERSIDE TOD

The Hiawatha Trail following the LRT rail lines through the TOD area provides pedestrian and bicycle access to downtown Minneapolis, through the Cedar-Riverside neighborhood and designations to the south. One existing designated on-street bicycle route runs along 20th Avenue connecting to the University of Minnesota. A signed bike route connects 20th Avenue along 6th Street to the station area and the Hiawatha Trail.

Regional access to the Cedar-Riverside station area is provided by Interstate Highways 94 and 35W. Interstate 35W can be accessed via Washington Avenue north of the station area. Eastbound I-94 can be accessed from Cedar Avenue just south of the station area. Indirect access to I-94 westbound can be obtained south of Franklin Avenue via the Cedar Avenue ramp to TH 55. Washington Avenue serves the Cedar-Riverside area as an arterial connecting downtown Minneapolis and University of Minnesota campus. Riverside Avenue makes connections to both the University of Minnesota and Augsburg College campuses, and to regional hospital complexes. Cedar and Riverside Avenues are arterial streets serving the TOD area. Cedar Avenue is the primary commercial corridor, while Riverside Avenue supports secondary commercial activity.

The Cedar-Riverside area is served by bus service along Cedar and Riverside Avenues. The Route 19 connection with the Cedar-Riverside station will occur at the corner of 6th Street and Cedar Avenue. Buses will not directly access the LRT station. Route 2 connections can be made at Riverside Avenue. Broader local connections can be made via a connection to University Avenue from Cedar Avenue. Presently, Route 19 runs approximately every 10-20 minutes during the week, and every 30-60 minutes on the weekends. Route 2 currently runs every 20 minutes during peak weekday times, every 30 minutes during non-peak times, and every 30-60 minutes on weekends.

## 4.3 Economic Environment

### Preliminary Market Research

#### Cedar-Riverside Station

Preliminary market research analysis prepared by ZHA and Zimmerman/Volk Associates (“Hiawatha Corridor Transit Oriented Development Market Study,” Minneapolis Community Development Agency, December 1999) predicted limited potential for additional development at the Cedar-Riverside station over the next 20 years due to lack of available land, poor visibility, and lack of market demand. The report identified that 150 additional residential apartments (50 of which could occupy upper floors over ground floor commercial) and 30,000 square feet of commercial space (primarily retail) could be absorbed in the Cedar-Riverside station area. The report further noted that institutions, such as the University of Minnesota, may invest in new office space in the area.

#### Franklin Station

The ZHA-Zimmerman/Volk study predicted substantial redevelopment interest in the Franklin station area only under a “High Intervention” scenario envisioning substantial reorganization of the street network east of the station and public site assembly east of the tracks and west of Cedar/20th Avenue. Under these circumstances the report envisioned the potential for an 180,000 square feet research center or campus with an additional 15,000 square feet of associated commercial development. The report also acknowledges the potential for student housing or other residential development by an area institution. However, the report cautions that Transit Oriented Development near this station would require significant public intervention including land assembly, traffic circulation, building demolition, and financial incentives. The “Baseline” scenario assumed screening of the Yard and Shops facility only and minimal public investment in the station area yielding the potential for 30,000 square feet of light industrial use and 25,000 square feet of commercial use on the site northeast of the station to the east of the tracks.

### Additional Research

Additional research on market conditions for both station areas revealed further characteristics of predicted ridership patterns at both stations which influence market conditions in the area:

- Substantial two-way flow during morning and evening peaks: Because these station areas contain both sources (places where

people live) and destinations for LRT rides (places where people work), these two stations hold the potential for balanced activity both in the morning and the evening. Only one other station along the Hiawatha Line, Lake Street, shares this characteristic.

- Presence of higher educational institutions: Student riders' schedules can vary significantly from the typical home-to-work commute, resulting in greater "off-peak" (midday) traffic.
- High volume of pedestrian commuters: Of the 3,325 residents of the station areas who work, over 22 percent of them walk to work. While these are not potential transit riders, they may be drawn to the same types of services and facilities as those walking to transit stations.

Evaluations of the economic conditions suggest the following land uses near the station areas (see Figure 4.3):

#### Cedar-Riverside Station

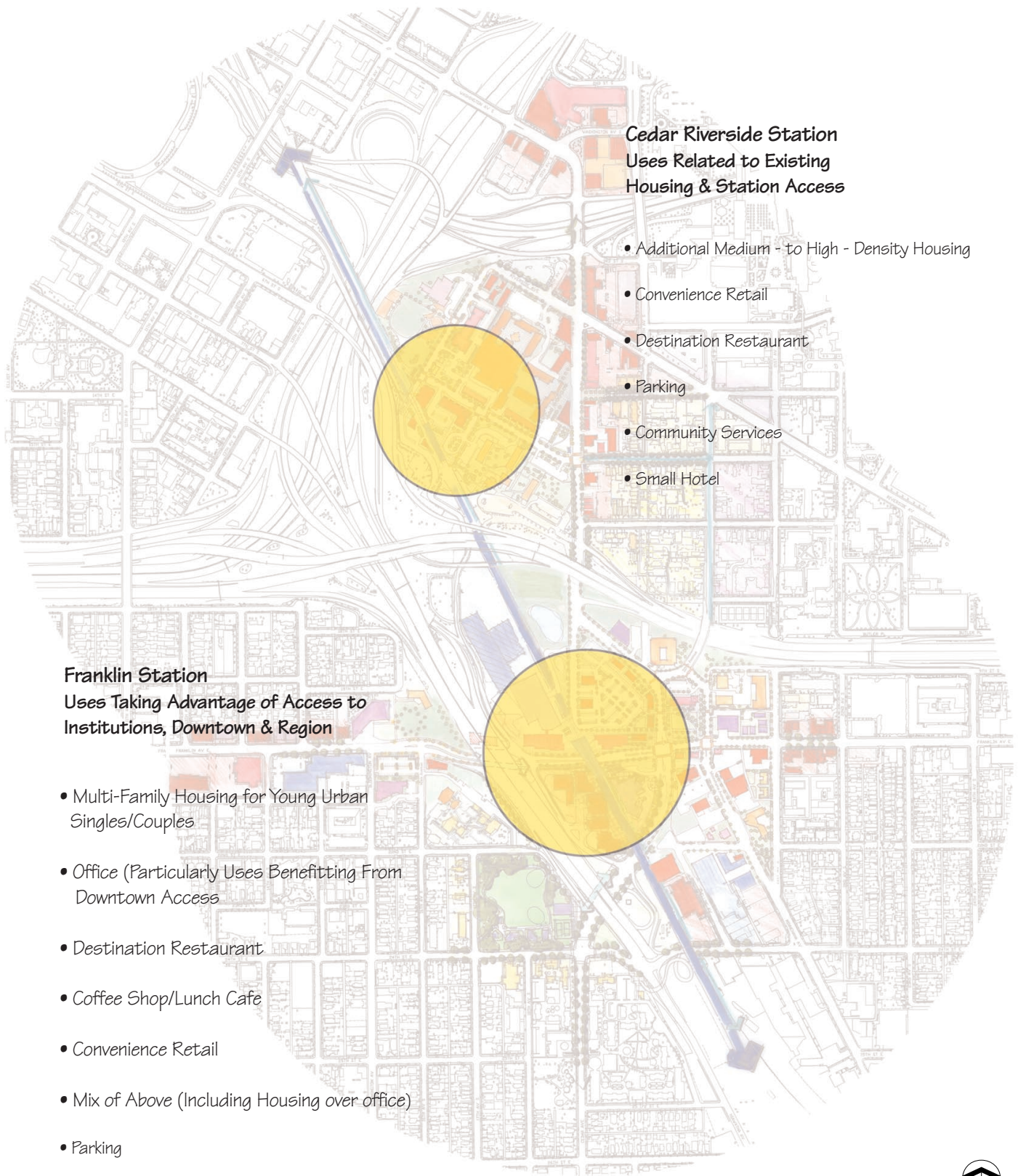
- ◆ Dramatic redevelopment is unlikely in the near-term because of the lack of available sites.
- ◆ Potential for balanced two-way and off-peak traffic could support modest service retail buildup.
- ◆ An inviting and safe connection to Cedar and the University could encourage greater U of M student traffic than is currently projected.
- ◆ In the future, if needs for public housing and senior housing were met elsewhere in the city, current uses near Cedar-Riverside could be converted to market rate and/or student housing.

#### Franklin Station

- ◆ Office development relating to downtown core is quite feasible.
- ◆ High-density residential rental aimed at singles and young couples would also receive market support.
- ◆ Mixed office/residential has the potential to work well here.
- ◆ Office and high-density residential uses would provide moderate support for some expansion of retail, mostly local services with, perhaps, some entertainment.
- ◆ Institutional uses should, in general, not take precedence over private, taxable development.

- ◆ The presence of government offices (Metropolitan Council, County, or City) would be positive for development in the station area.
- ◆ Development of flexible-use structured parking through leasing and facilities management methods would support a number of different development alternatives and serve changing needs as the area evolves.





**Cedar Riverside Station  
Uses Related to Existing  
Housing & Station Access**

- Additional Medium - to High - Density Housing
- Convenience Retail
- Destination Restaurant
- Parking
- Community Services
- Small Hotel

**Franklin Station  
Uses Taking Advantage of Access to  
Institutions, Downtown & Region**

- Multi-Family Housing for Young Urban Singles/Couples
- Office (Particularly Uses Benefitting From Downtown Access)
- Destination Restaurant
- Coffee Shop/Lunch Cafe
- Convenience Retail
- Mix of Above (Including Housing over office)
- Parking



**LEGEND**

- |                          |                          |
|--------------------------|--------------------------|
| LRT Platform             | Transit Oriented Use *   |
| LRT Line                 | High-Density Residential |
| Bicycle Route            | Low-Density Residential  |
| Pedestrian Plaza/Walkway | Public Institutional     |
| Parks                    | Industrial               |
| Commercial               |                          |
- \* Retail-Office-Residential Mix

**FIGURE 4.3 - ECONOMIC CONDITIONS: RECOMMENDED USES**

**FRANKLIN-CEDAR/RIVERSIDE TOD**

#### 4.4 Summary of issues

The following issues were identified through discussions with neighborhood groups, governmental agencies and the community as well as review of planning documents:

	<b>Cedar-Riverside</b>	<b>Franklin Avenue</b>
<b>Street network and multi-modal connections</b>	<ul style="list-style-type: none"> <li>• Connections to bus routes/stops: Easily navigable connections in pleasant surroundings will encourage use of local buses to access the Hiawatha line.</li> <li>• Opportunities for circulator buses and “kiss and ride” drop off areas are needed especially at the Cedar-Riverside station where Metro Transit buses will not have direct connections at the station.</li> <li>• Bicycle connections are important in the area, especially for Cedar-20th Avenue.</li> </ul>	<ul style="list-style-type: none"> <li>• Franklin and Minnehaha intersection: The intersection is confusing to motorists, difficult for pedestrians to cross and creates a large expanse of hard, undeveloped space.</li> <li>• Connections to bus routes/stops: Easily navigable connections in pleasant surroundings will encourage use of local buses to access the Hiawatha line.</li> <li>• Opportunities for circulator buses desirable.</li> <li>• Bicycle connections are important in the area, especially for Franklin Avenue.</li> </ul>
<b>Transit-supportive Land Use and Redevelopment Opportunities</b>	<ul style="list-style-type: none"> <li>• Uses at Cedar-Riverside station site: Community residents expressed desire for increased activity at this site, but voiced concerns regarding economic viability, displacement of current owners and impacts to litter and parking.</li> <li>• Residents in the Cedar-Riverside station areas expressed significant concern for current congested parking conditions near the station area and future impacts resulting from the station and additional development in the area.</li> </ul>	<ul style="list-style-type: none"> <li>• Uses adjacent to Franklin station: Some community members expressed interest in maximizing residential opportunities in this station area; others recognized that the presence of freeways and the LRT Yard and Shop may limit the attractiveness of the area for residential use, particularly west of Franklin station.</li> <li>• Parking: Business owners near the Franklin station expressed concerns regarding unwanted use of business lots as “park and ride” facilities, particularly during downtown events.</li> </ul>

	<b>Cedar-Riverside</b>	<b>Franklin</b>
<b>Pedestrian environment and visual quality</b>	<ul style="list-style-type: none"> <li>• 6th Street pedestrian environment: Cedar-Riverside residents expressed strong desires to keep the existing street trees and sidewalk widths.</li> </ul>	<ul style="list-style-type: none"> <li>• Hiawatha overpass on Franklin Avenue: Residents near the Franklin station expressed significant concerns that the poor aesthetic quality and perceptions of unsafe conditions at the Hiawatha overpass will discourage pedestrians from accessing the station. This problem could be exacerbated if Franklin Avenue is reduced to two-lanes, leaving additional space beneath the bridge vacant.</li> <li>• Franklin noise wall: Area residents perceive this wall as a barrier to the Franklin station area and a detriment to the pedestrian environment along Franklin.</li> <li>• Franklin green space: Residents expressed a desire to maintain and improve the quality of green space along Franklin Avenue.</li> <li>• Connection from East Phillips to Franklin station: Residents of East Phillips expressed concerns regarding circuitous connections to the Franklin station area.</li> </ul>

### 5.1 Guiding Principles

The following principles were developed during the master planning process to guide development of concepts. These principles should be used to guide further planning, design and implementation of transit-oriented elements in the station areas.

1. Parcels immediately adjacent to the station platform should contain uses that promote pedestrian activity and provide either destinations or origins for LRT and transit system patrons.
2. The immediate station area should provide convenient access to the station platform, provide an attractive environment for pedestrians and transit system users, and promote personal safety.
3. Development at the station areas should be compatible with the character of surrounding neighborhood, and should support the overall health of the community.
4. Pedestrian paths between the station and major LRT patron origins and destinations within a five-minute walk (1/4 mile) of the station should possess clear wayfinding to the station area, a comfortable and attractive walking environment to the station, and promote personal safety.
5. Bicycle routes within a ½ mile of the station should provide safe facilities for bicycle use and bicycle access should be considered when planning for development immediately adjacent to the station area.
6. Clear, attractive and safe access should be provided between nearby bus stops and the station platform.
7. Land uses within ½ mile of the station should provide opportunities for higher density housing, high employment work places, and other high activity uses (schools, entertainment and retail) which maximize the benefits of the LRT system.
8. Public infrastructure and land use immediately adjacent to station areas should be organized to take advantage of development opportunities immediately adjacent to the station.

9. The urban form of development near station areas should promote a high quality environment that provides an attractive pedestrian environment, facilitates bus, vehicle, and bicycle traffic, and promotes community values.

## 5.2 Master Plan Concepts

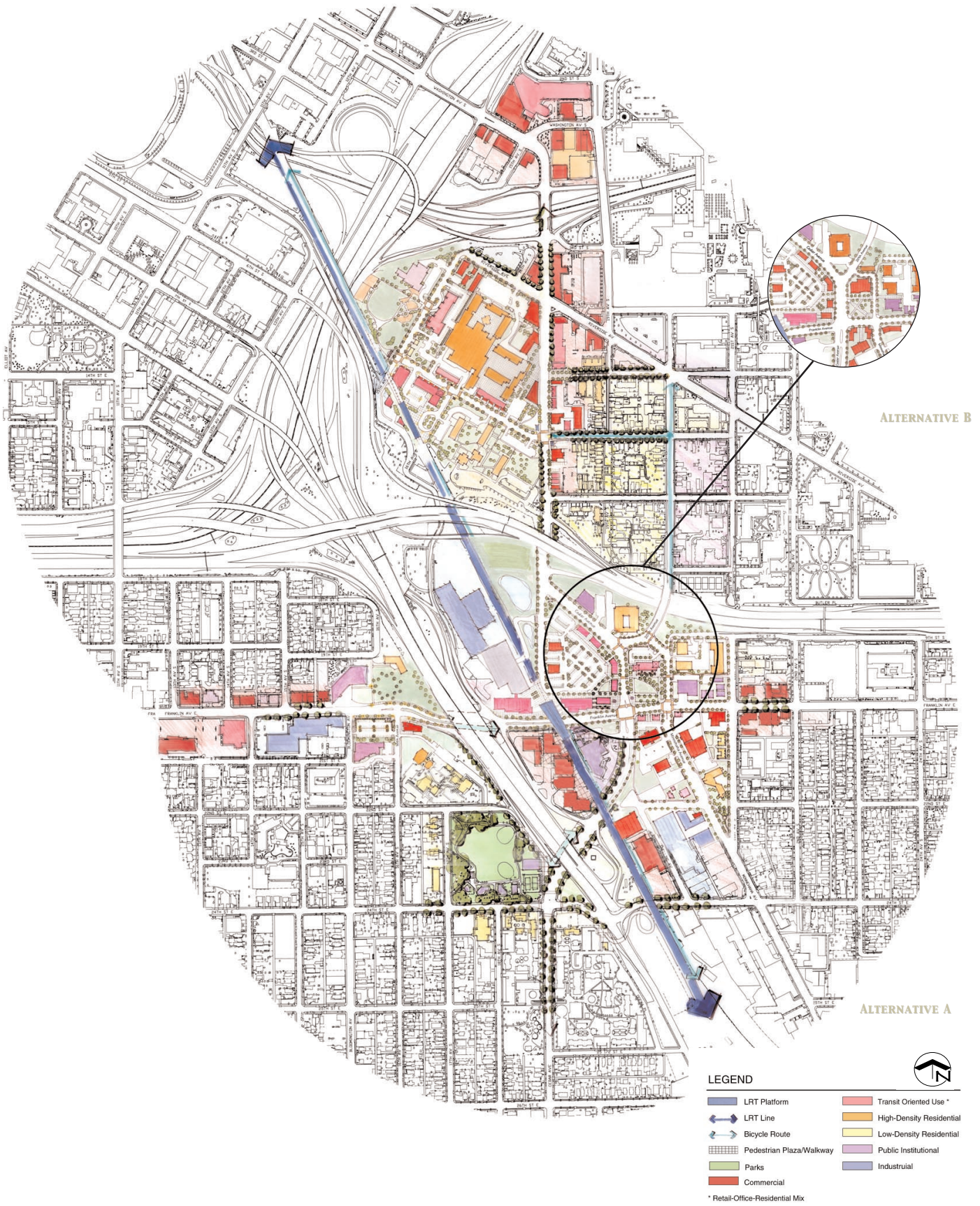
The Master Plan (see Figure 5.1) focuses on increasing the intensity of development in the immediate area of both stations, improving the visual quality, and improving pedestrian paths to station areas.

For the Cedar-Riverside station area (see Figure 5.2), the Master Plan suggests placement of a new development at the corner of 6th Street and 15th Avenue that will provide a “front door” to the station visible from Cedar Avenue and increase activity levels in the station block. Redevelopment of vacant and underutilized industrial buildings along 15th Avenue is also recommended to increase activity levels in the neighborhood. Infill at street-level development and pedestrian enhancements along 6th Street will encourage pedestrian movement. A “transit gateway” at 6th Street and Cedar Avenue assists in wayfinding and increases visibility for the LRT system.

For the Franklin station area, the Master Plan recommends realignment of Franklin Avenue to the south and reorganization of the Franklin-Cedar-Minneha intersection to set a new framework for development in the area (see Figure 5.3). Redevelopment of the areas immediately east and west of the station platform created by the new street network, at densities more supportive of transit, is proposed. The Master Plan also promotes improvements in the pedestrian connections from the Ventura Village and East Phillips neighborhoods.

Community efforts to promote appropriate commercial and residential infill along Franklin and Cedar Avenues are encouraged in the Master Plan as are residential rehabilitation efforts in the Ventura Village, East Phillips, Seward and Cedar-Riverside neighborhoods.

Pedestrian paths from the neighborhoods to the stations should include wide, well-maintained sidewalks, pedestrian scaled lighting, and trees/landscaping to provide aesthetic interest and weather protection.



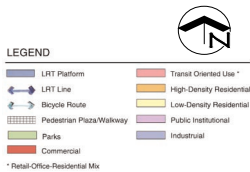
**FIGURE 5.1 - MASTER PLAN CONCEPT**  
*FRANKLIN-CEDAR/RIVERSIDE TOD*



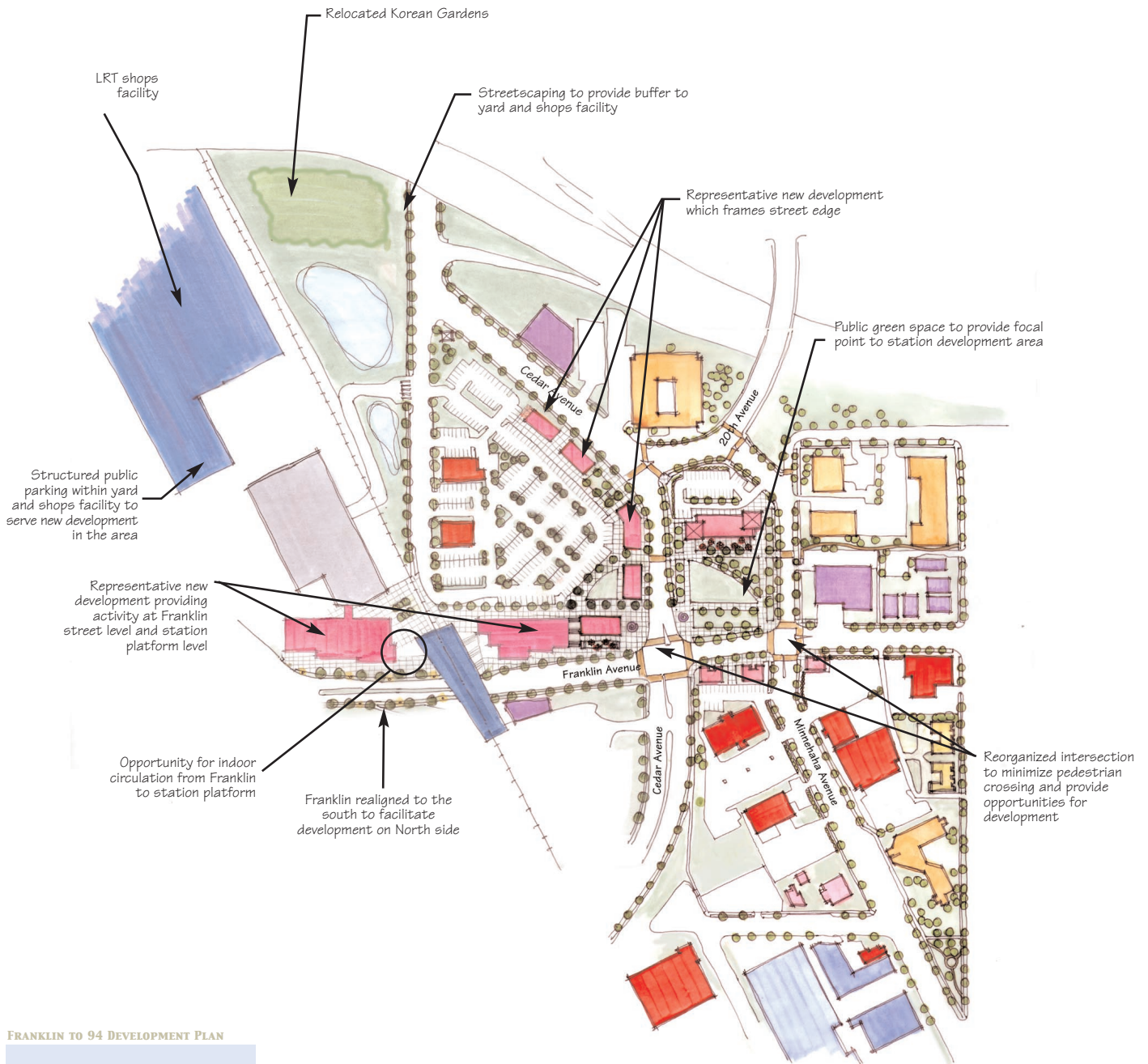
**PLAN AT  
CEDAR/RIVERSIDE STATION AREA**

**Cedar/Riverside Station Area  
Goals:**

- Provide better visual connections between Cedar Avenue and station location
- Enhance pedestrian connections to station area
- Promote safety by increasing at grade activity and "eyes on the street"







**FRANKLIN TO 94 DEVELOPMENT PLAN**

**Franklin Station Area Goals:**

- Provide activity adjacent to the station platform
- Bridge the gap between Franklin Avenue and the elevated station platform
- Simplify the Franklin-Cedar-Minnehaha intersection and improve pedestrian environment
- Bring buildings close to the street edge to create stronger urban form and enhance pedestrian environment

**LEGEND**

LRT Platform	Transit Oriented Use *
LRT Line	High-Density Residential
Bicycle Route	Low-Density Residential
Pedestrian Plaza/Walkway	Public Institutional
Parks	Industrial
Commercial	

\* Retail-Office-Residential Mix

**FIGURE 5.3 – FRANKLIN STATION AREA – EAST**

### 5.3 Discussion of key elements

#### Street Network and Transit Connections (Figure 5.4)

Franklin Avenue: The Master Plan reduces the width of Franklin Avenue providing two, instead of four, through-lanes and pushes Franklin Avenue to the south allowing commercial redevelopment along the northern edge of Franklin adjacent to the station platform. (See Figure 5.3.) As Franklin Avenue has only two through-lanes both east of Minnehaha and west of Bloomington, the narrowing through the short section of Franklin will not negatively impact overall traffic operations in this area. Development along the north side of Franklin will bridge the vertical separation between the street level and the station platform, potentially allowing for internal vertical circulation between the two levels, and will enhance the pedestrian environment along Franklin Avenue.

Cedar/Minnehaha/Franklin intersection: The Master Plan simplifies the street network at this intersection, reducing the street-crossing width for pedestrians and allowing for increased development opportunity. Alternative A (see Figures 5.1 and 5.3) creates a “traffic square” moving traffic in a counter-clockwise direction around the square. This concept is similar to a traffic circle in that it eliminates conflicting left turns, facilitating traffic movement within the network of streets. The “traffic square” creates an opportunity for a small development and green space within the square as discussed below.

Alternative B (see Figure 5.1) simplifies this intersection by truncating Minnehaha Avenue at Franklin Avenue. Truck traffic moving north from the Seward South Industrial Area would be redirected west on 24th Street and north on Snelling Avenue to access Cedar Avenue and ramps to eastbound Interstate 94. Cedar Avenue would continue through the area on its current alignment, with a “Y” intersection at 20th Avenue. Reconfiguration of this intersection will simplify vehicular movements and reduce the number of street crossings for pedestrians, creating a less confusing and safer environment.

A third alternative considered during the planning process included minor geometric improvements to the intersection and consolidation of the islands within the intersections, providing an improved pedestrian refuge and possibly an opportunity for landscaping.

A traffic operations study of these and other alternatives is included in the Appendix. Further discussion of these alternatives with Minneapolis Public Works and Hennepin County will need to occur before an alternative can be recommended.



Recommended Improvements Include:

- Narrowing of Franklin Avenue to increase Area for development near station.
- Reorganizing of the Cedar-Minnehaha-Franklin Intersection into a “Traffic Square.”
- Creation of a drop off area at Cedar-Riverside Station
- Attractive bus shelters, improved transit signage, and easy to understand and comfortable paths between bus stops and station platforms.

LEGEND

LRT Platform	Transit Oriented Use *
LRT Line	High-Density Residential
Bicycle Route	Low-Density Residential
Pedestrian Plaza/Walkway	Public Institutional
Parks	Industrial
Commercial	

\* Retail-Office-Residential Mix

Bus stops and connections to the station areas: Routes 19 and 20 provide north-south bus service along Cedar and Minnehaha Avenues respectively from neighborhoods further to the south connecting to Seven Corners and into downtown Minneapolis. Routes 2 and 8 along Franklin Avenue provide service from the Ventura Village neighborhood, the University of Minnesota and Downtown to the west of the station to Riverside Avenue and into St. Paul on the east.

Connections from Routes 2 and 8 to Franklin station will be made directly beneath the station on Franklin Avenue. Connections to the platform are provided with ramps, stairs and handicap elevators. Redevelopment of property on the north side of Franklin immediately adjacent to the station would provide an opportunity for public internal circulation via escalators with a new development.

Connections from the Route 19 and 20 buses to Franklin station require riders to walk from Cedar Avenue and Minnehaha Avenue intersections with Franklin Avenue. Metro Transit should be encouraged to locate bus stops on the north side of Franklin Avenue where a continuous high amenity walkway could be provided to the station platform. Walkway amenities should include trees for weather protection as well as pedestrian scaled lighting and benches and waste receptacles at bus stops. Landscaping, attractive pavement materials, and public art can further enhance the pedestrian experience. This walkway should continue along the north side of any new development at the northwest quadrant of Franklin and Cedar to avoid the downward slope of Franklin and provide at-grade access to the station platform without use of ramps or stairs. The green space within the traffic square also provides an opportunity for a transit plaza, providing additional amenities for bus riders and celebrating transit at Franklin station.

Connections from the Route 19 and 20 buses to the Cedar-Riverside station will both occur from Cedar Avenue near the 6th Street intersection. Metro Transit should locate these bus stops as close to the 6th Street intersection as possible to maximize visibility to the Cedar-Riverside station. Visually distinctive bus shelters should be used in this area to assist in wayfinding to the station and celebrate the bus—LRT connection.

16th Avenue Drop-off: The termination of 16th Avenue near the Cedar-Riverside station should be widened to provide a turnaround drop-off area for LRT riders (see Figure 5.2). This facility could also be used by circulator buses sponsored by area institutions to encourage transit use. An attractive plaza area should be provided connecting the drop-off area to the station platform.

## **Transit-Supportive Land Uses and Redevelopment**

See Figure 5.5 for site locations.

Franklin station, west (A): Development along the northern edge of Franklin (see Figure 5.6) will bridge the vertical separation between the street level and the station platform and allow for internal vertical circulation. Air rights above the southern portion of the LRT Yard and Shops are used for development of a parking structure to serve area development.

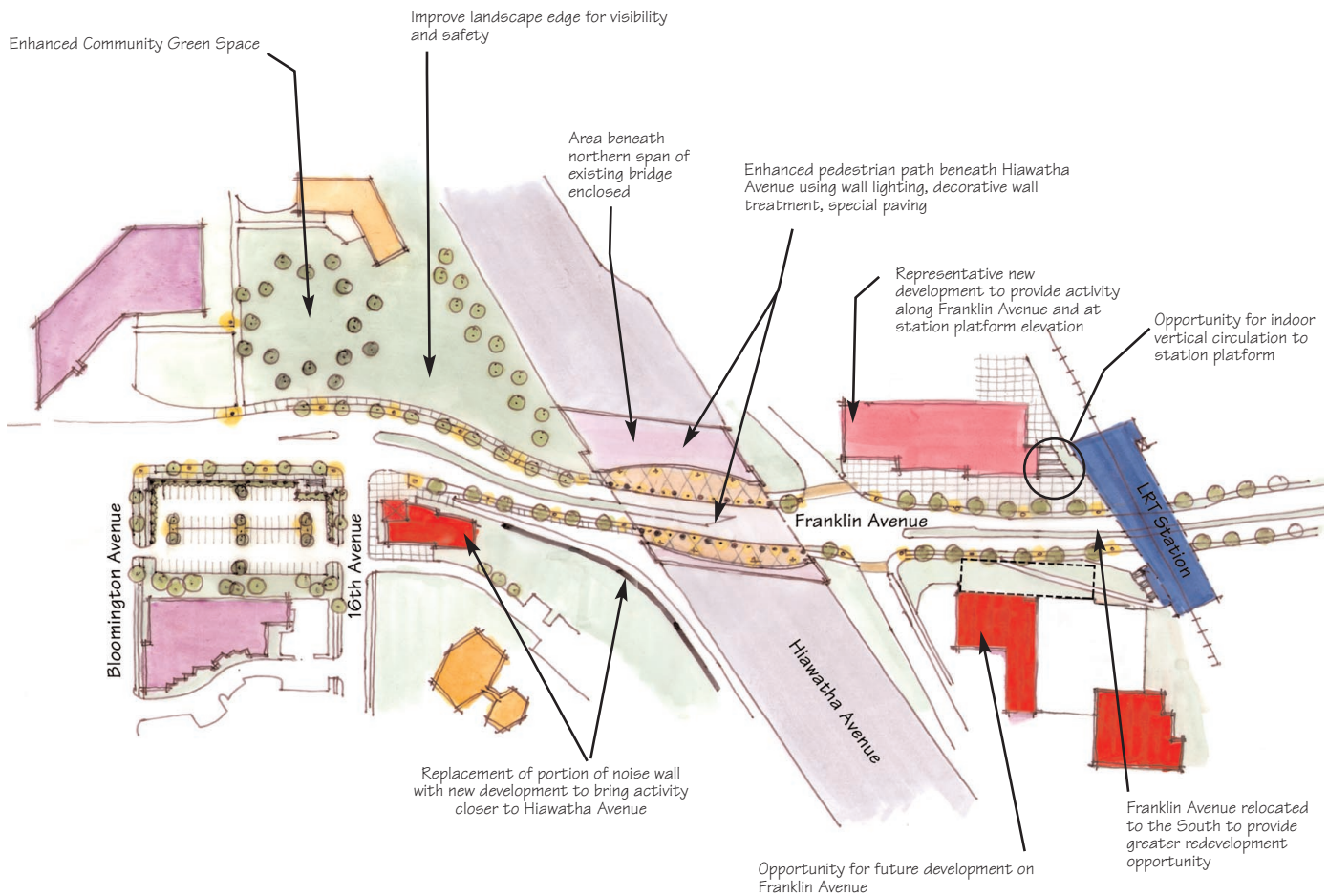
Franklin station, east (B): Figure 5.3 illustrates redevelopment of the industrial buildings east of the station platform, retaining the existing entertainment uses. The street edges of the reconfigured intersection are reinforced by additional commercial development. A public walkway should be provided just to the north of new development at the edge of Franklin Avenue to provide an at-grade path from Cedar Avenue to the station platform. A park or green space is suggested either within the traffic square (Alternative A) or at the northeast corner of Cedar and Franklin (Alternative B), providing a community amenity and focus for redevelopment in the area.

Cedar Box/Ambles Block (C): Limited access and a freeway environment hinder redevelopment of these parcels. Initially, efforts should be made to improve the appearance of outdoor storage at these facilities and identify opportunities for a public path through this area from the East Phillips neighborhood to the station platform. If economic conditions prove redevelopment of these parcels feasible, any new development should address the Franklin Avenue street edge similar to development on the north side of Franklin and allow for an East Phillips path to the station.

Traffic Square site (D): Should the traffic square concept be implemented at the Franklin-Cedar-Minnehaha intersection, the north end of the square could potentially accommodate a small development site. It is recommended that this site be used to encourage community gathering, either as a small restaurant, day care facility, library, or to promote pedestrian activity within the square.

Franklin, immediately west of Hiawatha (E): Replacement of the western portion of the Hiawatha noise wall at Franklin and 16th Avenue with a two-story mixed-use development (see Figure 5.6) would provide an opportunity to increase development in the area and remove a wall that is perceived by area residents to separate them from the station and adds to the long expanse of “unoccupied” space between Bloomington Avenue

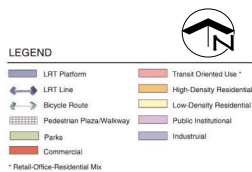




**PLAN AT  
FRANKLIN AVENUE UNDERPASS**

**Connections to Phillip  
Neighborhood along Hiawatha  
Avenue**

- Increase level of activity along Franklin Avenue between Bloomington Avenue and the Franklin Station
- Enhance pedestrian environment beneath the Hiawatha bridge
- Facilitate development immediately adjacent to platform and provide opportunity for indoor public vertical circulation



and Franklin station. The land is currently owned by Mn/DOT and would require acquisition by another party and modification of the Hiawatha Avenue Indirect Source Permit before development could proceed.

Franklin Avenue, west of Bloomington and east of Minnehaha (F): Neighborhood efforts have made great strides in rejuvenating these areas of Franklin both east and west of the station area. The mixed uses and densities found in both of these areas are quite supportive of transit, and continuing efforts to rehabilitate and rejuvenate these areas should be supported.

Seward residential area south of Franklin Avenue (G): Alternative B, which suggests removal of truck traffic from Minnehaha Avenue north of 24th Street, suggests the possibility of converting this stretch of Minnehaha Avenue to residential use, creating a stronger western edge to the Seward residential area.

Cedar-Riverside Station (H): The Master Plan indicates redevelopment of the eastern portion of station block to provide a visible front door and 24-hour activity to the station area (see Figure 5.7). Redevelopment should provide a visually distinctive entrance at the corner of 16th Avenue South and 6th Street South and internal or covered circulation to the station platform. This arrangement will bring the station “front door” closer to Cedar Avenue. If redevelopment of this block cannot occur immediately upon the station opening, efforts to create a distinctive visual sign or art piece at the corner should be explored. Efforts to enhance wayfinding from Cedar Avenue to the station and to address perceptions of safety issues in this block immediately at the opening of the LRT system are critical to the success of this station. The existing building at 15th Avenue and 6th Street (formerly Vinnie’s restaurant), and the brick Italian Renaissance Revival trapezoid building at 1516-18 7th Street South should be preserved. 1516-18 7th Street South and 1504 7th Street South, currently identified in the station area plan as “transit oriented uses” will not be acquired now or in the future, for development, by eminent domain.

6th Street (I) (Figure 5.8): Existing street trees between Cedar Avenue and 15th Avenue should be preserved. If it is possible to do so without harming the trees, efforts to widen the sidewalk in this area should be considered. Maintenance of sidewalks to station during the winter months and trash collection along this street are critical to access and should be a high priority. The Master Plan supports current efforts by Metro Transit’s Public Art Program to create a “sequential art gateway” along 6th Street to add interest to the pedestrian environment and improve wayfinding.





VIEW TO STATION



STREET SECTION AT  
6TH STREET

FIGURE 5.8 - SIXTH STREET IMPROVEMENTS

FRANKLIN-CEDAR/RIVERSIDE TOD

15th Avenue South (J): Additional residential or commercial development along the eastern street edge could eliminate several blighted properties, take advantage of views to Currie Park and downtown and add pedestrian activity and interest to this portion of the study area.

Cedar Avenue (K): The Master Plan suggests infill commercial development between 5th Street South and I-94 to enhance the pedestrian environment along Cedar Avenue and provide continued activity to the Franklin station area. An opportunity site for additional structured parking to serve Cedar Avenue businesses is illustrated east of Cedar Avenue at the northern edge of Riverside Avenue.

## **Pedestrian and Bicycle Connections (Figure 5.9)**

Pedestrian Paths from Ventura Village to Franklin station: Franklin Avenue provides the primary pedestrian path between the Ventura Village neighborhood and Franklin station. To provide greater continuity along this path, streetscape improvements recently installed to the west of Hiawatha Avenue should be continued east to Franklin station including pedestrian scaled street lighting and landscaping. The area beneath the Hiawatha overpass should be addressed with aesthetic wall treatments and lighting as illustrated in Figure 5.10. Mixed-use development along the north and south edges of Franklin, as discussed in the previous section, should be brought to the street edge and entrances and windows provided at the Franklin street level to provide more activity to the street. Maintenance of these sidewalks, particularly during winter months prior to redevelopment of the area, will be critical for preserving access to the station.

Pedestrian Paths from East Phillips to Franklin station: The desire of residents of East Phillips neighborhood to have a more direct access to Franklin station could be provided with a pedestrian bridge to the Cedar Box/Ambles site should an opportunity arise to redevelop the site and provide a public walkway to Franklin station. An alternative pedestrian connection could be provided with a stairway connecting Cedar Avenue to the pedestrian/bicycle path provided at the east side of the LRT line. Either of these connections should be enhanced with pedestrian scaled lighting, adequate sidewalk widths and attractive low-level plantings.

Pedestrian Paths from Seward to Franklin station: Franklin Avenue provides the primary access to Franklin station to the east. Emphasis should be placed on the north sidewalk where pedestrian crossing of the Cedar-Minnehaha intersection can be facilitated with a simplified intersection design as discussed above. This path should be continued on the north side of new development in the northwest quadrant of the intersection to maintain an at-grade connection to the station platform. Adequate sidewalk widths, pedestrian scaled lighting, and attractive plantings should be used to enhance the pedestrian experience.

Pedestrian Paths from Augsburg College campus to Franklin station: The primary connection between Augsburg College and Franklin station is 20th Avenue, also a primary bicycle route in the area. The redesign of the Franklin-Cedar-Minnehaha intersection should also plan for significant pedestrian crossings in this direction as well.

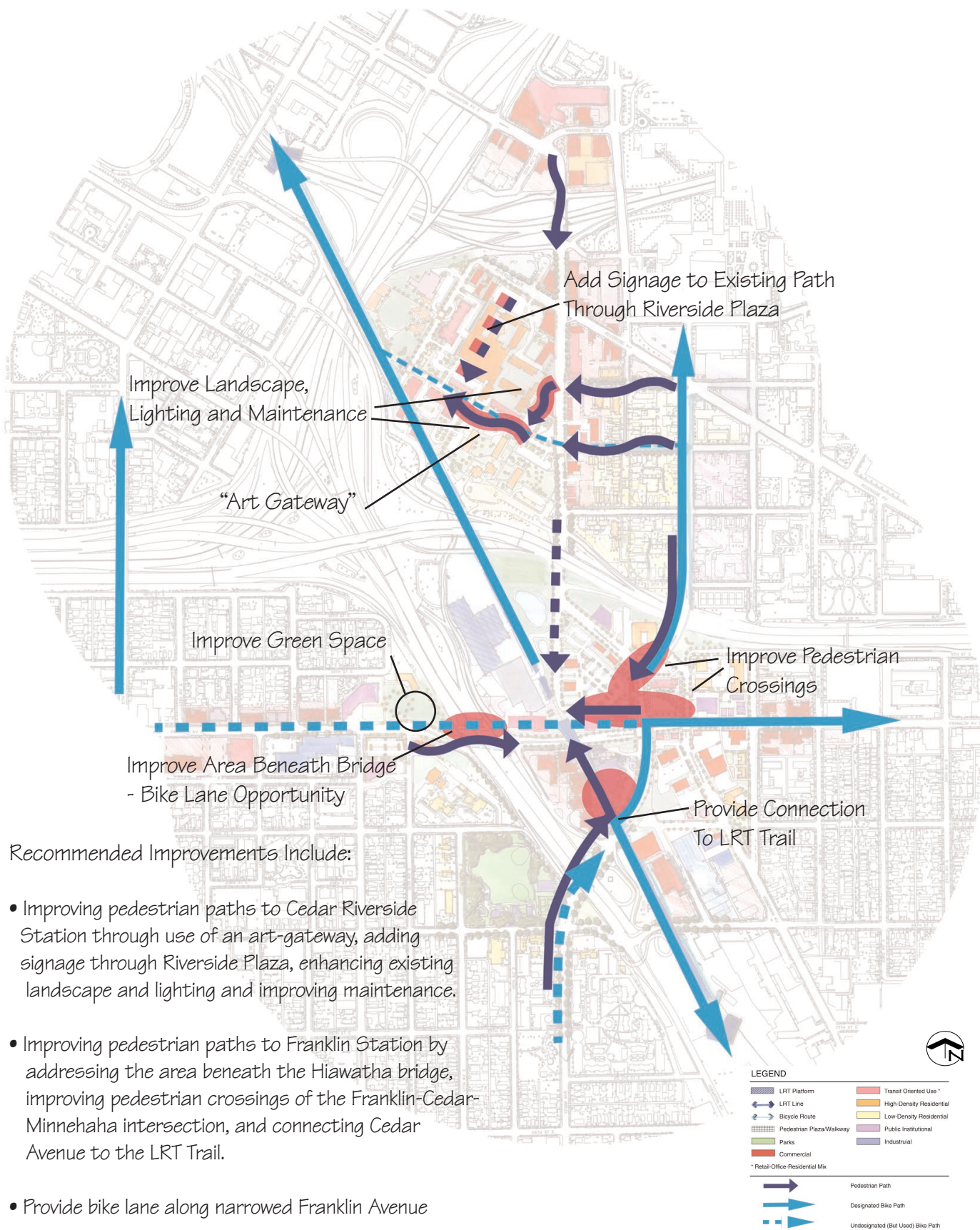


FIGURE 5.9 - PEDESTRIAN/BICYCLE CONNECTIONS

STREET SECTION AT  
FRANKLIN AVENUE UNDERPASS

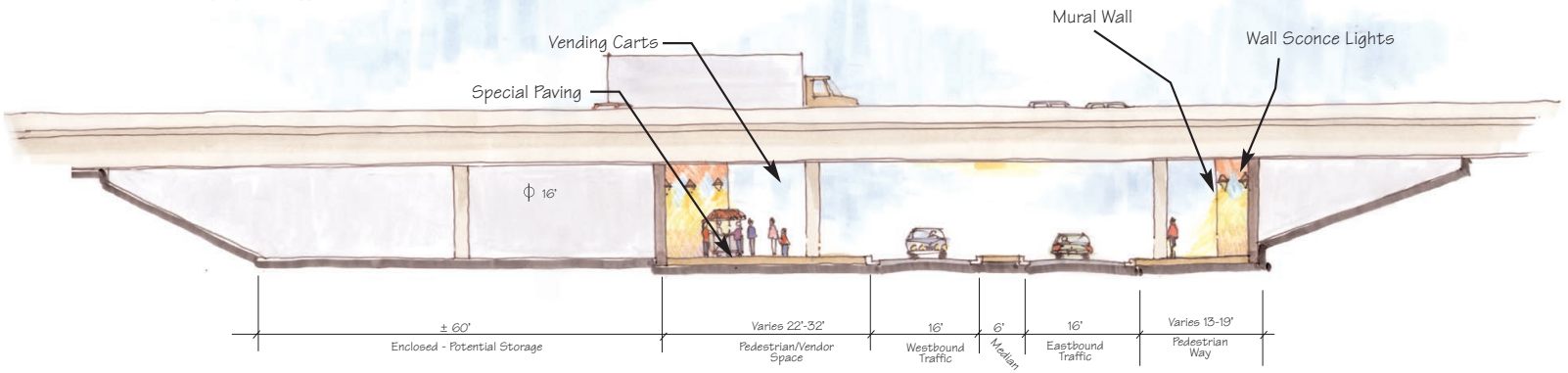


FIGURE 5.10 - IMPROVEMENTS TO FRANKLIN AVE. BENEATH HIAWATHA BRIDGE

Pedestrian Paths to the Cedar-Riverside station: Pedestrian movement to the Cedar-Riverside station will largely occur from the east on 6th Street and Riverside Avenue-15th Avenue due to the limited street network in the area. Sixth Street will provide the primary corridor to the station. Green space and open areas at the northwest corner of Cedar Avenue and 6th Street South and the south corner of 16th Avenue and 6th Street should be redesigned to provide better visibility between the station “front door” and Cedar Avenue. Lighted vertical elements (e.g. public art or signage) at Cedar and 6th Street and the station “front door” should be provided to assist wayfinding. The Master Plan also enhances safety and pedestrian enjoyment by suggesting additional commercial redevelopment at the ground level along 6th Street including infilling the ground floor of Riverside Plaza Building B with a commercial activity and additional commercial development at the corner of 16th Avenue South and 6th Street. Further, the Currie Park berm at the west end of 6th Street should be removed opening views to downtown, and a trail head/downtown gateway element added. Existing street trees along 6th Street should be preserved.

Redevelopment along 15th Avenue is also encouraged to remove blight and add activity to the street edge. Redevelopment of this area should also include adequate sidewalks, pedestrian scale lighting and attractive landscaping.

Pedestrian connections from the north could also be enhanced with the provision of signage to alert pedestrians to public paths through the Riverside Plaza complex and assist in wayfinding. Additional opportunities for pedestrian enhancements include improvements to the short pedestrian way that extends along the east side of Riverside Plaza from the 5th Street pedestrian way crossing to 6th Street and consideration of the creation of a pedestrian way from Cedar Avenue at 3rd Street South to Riverside Avenue along the former 16th Avenue alignment. (See Figure 5.9.)

Bicycle connections: The Master Plan supports the proposed City of Minneapolis Bikeways Master Plan which includes signed bike routes on 18th Avenue South, Franklin Avenue and 24th Street east of Hiawatha and striped bike lanes on Minnehaha Avenue, Bloomington Avenue, Riverside Avenue, 26th Street South, and 24th Street west of Minnehaha. The narrowing of Franklin Avenue between Cedar and Bloomington also provides the opportunity for either an on-street bike lane or shared bike/pedestrian trail through this segment of the roadway. These planned routes significantly expand the current bikeway network provided by

existing facilities on 20th Avenue, 6th Street and the 24th Street bike and pedestrian bridge as well as the programmed LRT trail. While bicycle facilities on Franklin Avenue west of Hiawatha and Cedar Avenue would be desirable, traffic volumes and restricted street widths do not provide an opportunity for such facilities. The redesign of the Cedar-Minnehaha-Franklin intersection should also take into consideration bicycle traffic on existing and proposed routes.



## 6.0 Development Standards

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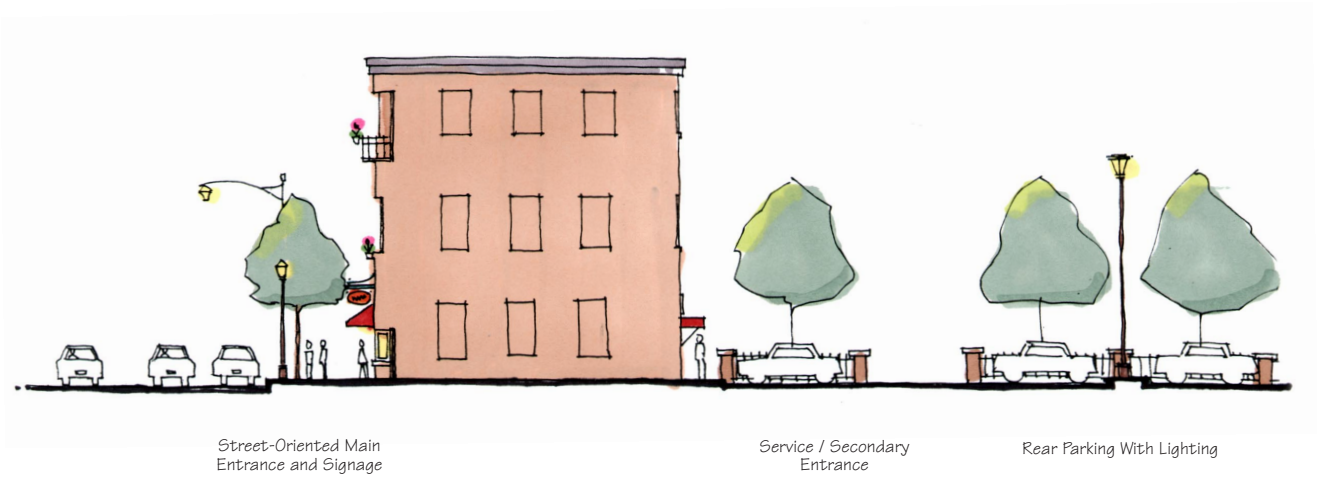
The following standards should be considered when developing transit-oriented land use overlays or reviewing development proposals. These standards do not replace existing requirements as defined in Minneapolis's Code of Ordinances.

### 6.1 Commercial Development

- A mix of commercial uses, including retail, office and service uses should be located at street-level within the station areas. Large blocks of single-use or same-type uses should be avoided to provide a diversity of destinations that will attract pedestrian traffic throughout the day.
- Retail, small office and service businesses should be oriented toward streets, plazas, and parks along primary pedestrian routes to the stations. Secondary and service entrances and parking areas should be located behind. (See Figure 6.1.)
- In cases where residential is incorporated with commercial uses, clear distinction must be made between commercial and residential building entries to ensure safety, and designated residential parking should be segregated from commercial use. (See Figure 6.2.)
- Buildings along secondary pedestrian routes and those that are served by large parking lots typical of sites along Minnehaha Avenue and Cedar Avenue south of I-94 and along 5th and 15th in the Cedar-Riverside area should also orient to the street. In these locations, buildings should present entrance doorways, visually permeable facades, and signage to the street.
- Entrances from parking areas may be emphasized but will not preclude street-facing doorways. Where space is tight, parking may occur beside commercial buildings. Any parking area immediately adjacent to a public sidewalk shall be screened with non-bermed landscape planting or decorative fencing.
- Setbacks for new commercial buildings should provide for adequate pedestrian circulation space.
- The scale of new buildings should relate vertically and horizontally with adjacent buildings and other neighborhood structures. Generally, two-and three-story commercial structures will be appropriate; however, topography suggests additional height can be supported at

the sites immediately adjacent to the Franklin Avenue station. Human scale in material and detail should be incorporated to provide visual interest and a sense of safety.

- Varied architectural elements including pedestrian height windows, articulated surfaces, entry porticos, exterior lighting, pedestrian-oriented signage, and amenities such as awnings, or attached planters are encouraged.



Street-Oriented Main  
Entrance and Signage

Service / Secondary  
Entrance

Rear Parking With Lighting



Commercial  
Entrance

Residential  
Entrance

Commercial  
Entrance

Residential  
Entrance

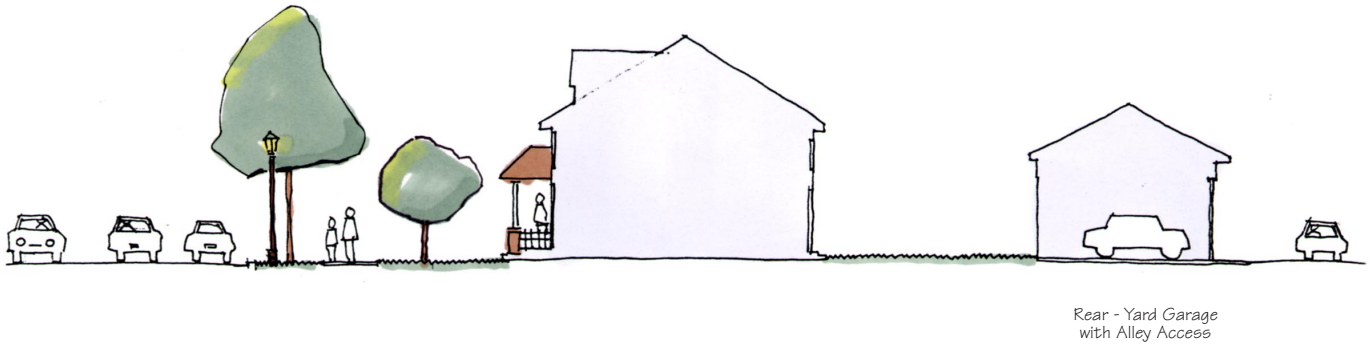
Commercial  
Entrance

Side Parking with  
Screening at Sidewalk

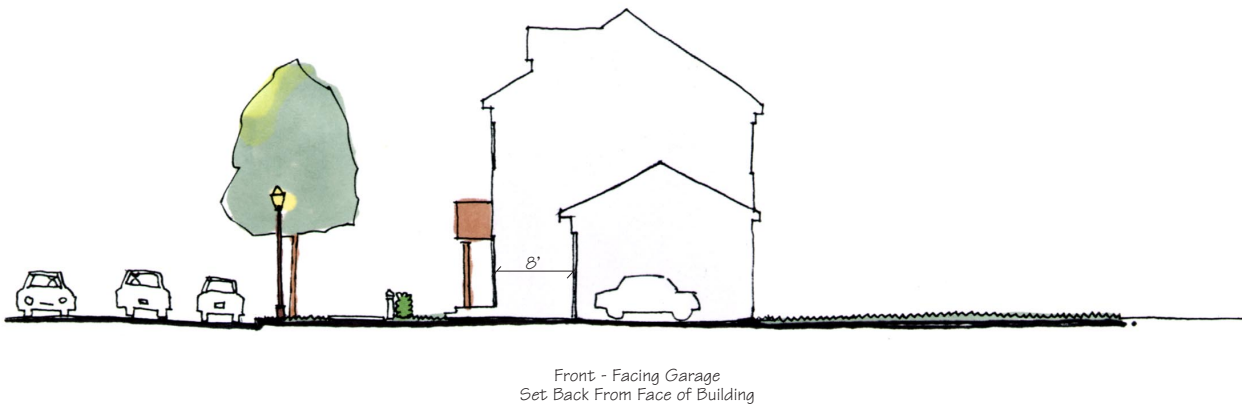
## **6.2 Residential Development**

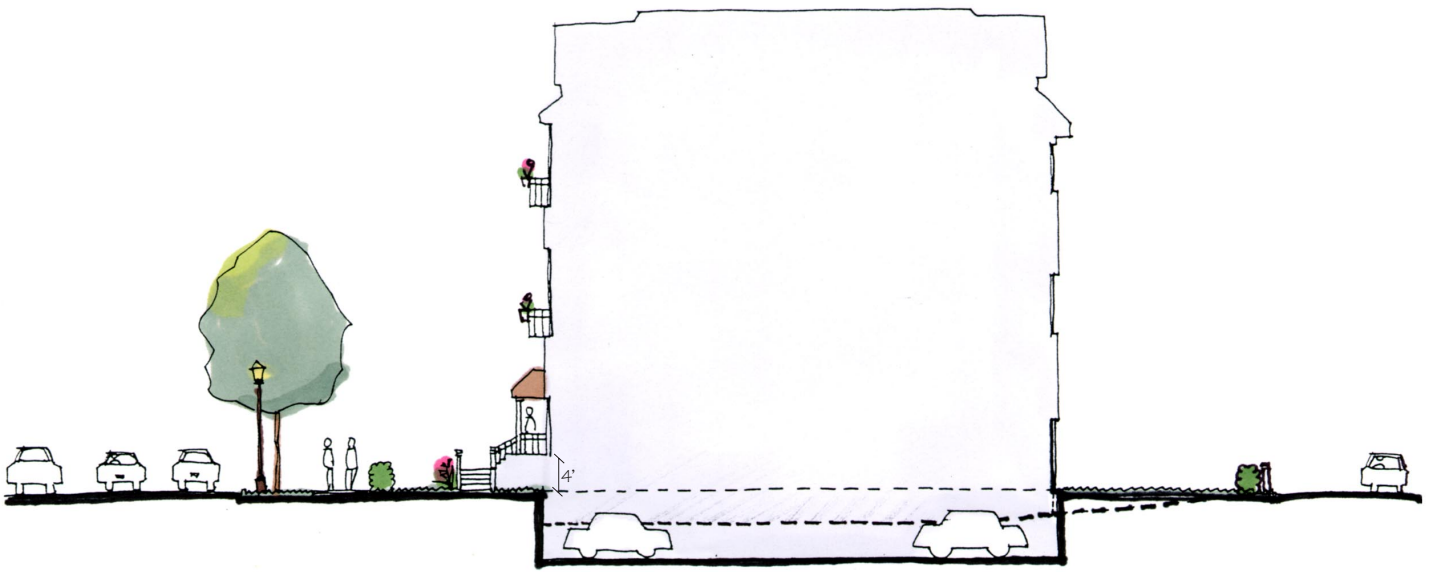
- A variety of residential housing types are encouraged within the TOD area including multi-story residential buildings, urban townhouses, and live-work facilities.
- As with commercial buildings within the TOD area, primary residential entrances should be located at ground level and be oriented to and visible from the street. Residences occurring above may be accessed from the rear of mixed-use buildings. Secondary and upper level entrances may orient to block interiors and alleys. (See Figure 6.1)
- Residential buildings on redeveloped sites should relate to adjacent setback distances. Garages located behind residential homes are encouraged and alley access is preferred where possible. (See Figure 6.3) Front-facing garage facades should occur not less than eight feet behind the face of residential buildings.
- Use of parking ramps and below-grade garages to serve residential buildings is encouraged and should be located at the rear of residential properties. Parking ramps and surface parking lots must be screened from view from the street. Where garages are sited below residences, front entry doors to the residence shall not be greater than four feet above finished grade. (See Figure 6.4)
- Building scale and materials should be varied and relate to existing residential character. Porches, landscaping and decorative fencing are encouraged.

## ALLEY ACCESS



## FRONT FACING ACCESS





Below - Grade Parking  
with Alley Access

## **6.3 Streets and Sidewalks**

### **Streets and crossings**

The Master Plan calls for street realignments within the Franklin Avenue station area that facilitate pedestrian connections and movement to the station. This includes the reduction of pedestrian crossing widths, clear accessible passage to the station from the Franklin-Cedar intersection, from 20th Avenue, at the Franklin-Minnehaha Avenue, proposed mid-block crossings to a new park space within the traffic square (Alternative A), or at the realigned Minnehaha Avenue (Alternative B).

Within the Cedar-Riverside station area, current street widths will be maintained. Pedestrian crossing widths will be reduced through the use of bump-outs where possible without compromising bus access to the station. This will help define and preserve street parking zones to be maintained on both sides of 6th Street, 15th Avenue and Riverside Avenue west of Cedar Avenue. Crossings will be added at the improved plaza areas at the 5th Street pedestrian way, and at the intersection of 6th Street and 16th Avenue. The use of special materials and colors to highlight crossings will be considered in both station areas.

### **Sidewalks**

Sidewalk widths in primary commercial areas such as along Cedar, Franklin, and Riverside Avenues should be 12 to 20 feet deep. On Sixth Street specifically, and on streets where a mix of commercial and residential uses occurs, walks' widths should be a minimum width of eight feet. In such cases, the walk should be separated from the curb by boulevard of a minimum of five feet in width. Generally, walks on residential streets will match existing adjacent walks widths to a minimum of five feet wide.

### **Boulevards and street trees**

Boulevards should match existing adjacent conditions to a width no less than five feet wide. Existing boulevard trees shall be preserved wherever possible. In primary commercial blocks, trees should be planted in grates to preserve a maximum amount of walk surface. These areas include Franklin Avenue east of Highway 55; Cedar Avenue between Franklin and 20th Avenue, and north of I-94; and 6th Street between 16th and 15th Avenues. Landscape elements should be included along plazas and pedestrian passages that will provide shade and seasonal color but not obstruct visibility to the stations or limit perception of safety. Ornamental shrubs or perennial planting should be considered along 6th Street to help draw attention toward the station building from Cedar Avenue.



## **6.4 Multi-modal connections**

Visibility, safety, accessibility and comfort are key considerations for nodes and connections for pedestrian, bicycle, bus and automobile connections to the stations. Station identification and wayfinding information are important to the success of the Franklin Avenue and Cedar-Riverside TOD areas. Architectural elements, lighting, signage, furnishings and public art should be used together to contribute a sense of identity and continuity throughout the TOD area. A language of signage and design elements should be developed identifying transit nodes and connective passages within the station area. Neighborhood or district identification and gateways to key institutions should also be considered in design development to build a sense of place in each TOD area.

### **Plazas & pedestrian passages**

Enhanced pedestrian plazas and walkways are planned to provide greater visibility, safety, and convenient access to the stations. Plazas at significant crossings and intersections will encourage public gathering, and provide opportunities for transit information and neighborhood identification. Key plaza locations where “gateway” elements should be included are at the intersections for Franklin and Cedar, Cedar and 6th Street, 6th Street at 16th Avenue and, at the west end of 16th Avenue connecting to the trail adjacent to the LRT line.

Plazas and pedestrian corridors should include paved surfaces not less than eight feet wide, include pedestrian-level lighting, and include wayfinding signage. Special attention should be paid to pedestrian lighting at passages under bridges and those crossing at the interiors of blocks. The pedestrian passage under Highway 55 should be enclosed on either side so as to allow between 13 to 32 feet of paved pedestrian area to allow for temporary vendor carts to use the space from time to time. Public art, special lighting, decorative elements or surface treatments should be incorporated at this location.

### **Bicycles**

Bicycle routes provide additional access to and from the station areas and are especially important in University areas. Bicycle routes in both station areas should be extended to connect directly to the stations and to complete the existing network. Completion of the existing network on 24th Street to the 11th Street designated route will extend connections between the Franklin Avenue station area, the Elliot Park neighborhood and downtown. A designated route on 6th street will connect the existing 20th Avenue route to the Cedar-Riverside station and the multi-modal trail along the LRT line.

Improvements to on-street facilities should include clear signage at a minimum and striping where possible. Where existing roadway widths allow and where roadways are being realigned, dedicated bicycle lanes should be accommodated within the roadway. Special attention should be paid to design for bicycle safety in the Franklin Avenue station area where bicycles must use arterial roadways to access the Franklin station. Bicycle racks should be provided at the stations, in plazas and parks, and adjacent to bus transfer points. Bicycle racks are also encouraged along sidewalks on core commercial corridors where space permits. Lockers should be included at plazas or at parking areas adjacent to the stations.

### **Buses**

Identification of stops as nodes for connection and transit information is important in both station areas. Bus stops and shelters should be included in the development of overall identity elements in station area design. Lighting, shelter from weather conditions, and places to sit and obtain transit information are basic elements to be incorporated at bus stops. Bus stops on Franklin Avenue below the LRT station will provide transfer links to the LRT line and new development in the station area. Vertical grade in this area require that public access to vertical circulation be provided through elevators, ramps and stairs. The Master Plan provides for a transit drop-off loop serving the station at a 16th Avenue plaza.

### **Parking facilities**

Pedestrian and transit travel is encouraged over automobile trips in TOD areas. Parking facilities should be planned to serve multiple land uses from a single parking space. Parking requirements should be calculated with staggered peak-use times considered to encourage efficient use within minimal space allocation.

Commercial use parking requirements may be reduced to as much as 80 percent of the city standard for lots immediately adjacent to the LRT stations to encourage transit use. Further reductions may be pursued over time as LRT trips to destinations adjacent to stations replace automobile trips. On-street parking spaces should be included in the number of spaces required to fulfill retail and service parking requirements.

Residential parking zones or permits should be considered in mixed-use areas. This strategy should be considered especially in the vicinity of the Universities and in the Cedar-Riverside area.

Parking facilities should not dominate the street but should connect via pedestrian ways to primary commercial corridors that are safe and clearly identified. Signage clearly directing motorists to vehicular access points is important for the efficient use of parking areas. Surface lots serving a large number of businesses should be segmented into smaller areas with street-like thoroughfares including walks and planted 'boulevards' that facilitate and encourage pedestrian movement between destinations.

## 7.0 Implementation

Implementation of this Master Plan will require prioritization of elements and extensive cooperation between the City of Minneapolis, the Minneapolis Community Development Agency (MCDA), the Metropolitan Council, the Minnesota Department of Transportation (Mn/DOT), Metro Transit, Hennepin County, and area neighborhood organizations and community development corporations. The following is a list of recommended implementation steps and suggested responsibilities.

<b>Street Network and Transit Connections</b>		
<b>Timeframe</b>	<b>Elements</b>	<b>Organization</b>
2001-2004  (prior to opening of LRT)	<ul style="list-style-type: none"> <li>• Finalize design for narrowing of Franklin Avenue coordinating final Franklin Avenue bus stop locations and potential off-road bike/pedestrian trail.</li> </ul>	Mpls. Public Works, Hennepin County, Metro Transit
	<ul style="list-style-type: none"> <li>• Coordinate with Mn/DOT and Hennepin County regarding enclosure of northern span of Hiawatha bridge over Franklin Avenue and finalize design.</li> </ul>	Mpls. Planning/ Public Works
	<ul style="list-style-type: none"> <li>• Complete additional studies as necessary and finalize conceptual approach for redesign of Franklin-Cedar-Minnehaha intersection. Finalize design.</li> </ul>	Mpls. Public Works, Hennepin County
	<ul style="list-style-type: none"> <li>• Finalize Route 19 and 20 bus stop locations for Franklin station per revised intersection design. Finalize plans for at-grade sidewalk connections to station platform.</li> </ul>	Metro Transit, Mpls. Planning
	<ul style="list-style-type: none"> <li>• Design 16th Avenue Drop-Off in conjunctions with redevelopment plans for Cedar-Riverside station site.</li> </ul>	Mpls. Planning, MCDA
2004-2009  (first five years of operation)	<ul style="list-style-type: none"> <li>• Implement at-grade sidewalk connections to Franklin station platform from the east as redevelopment occurs at the northwest quadrant of the Franklin-Cedar intersection.</li> </ul>	Mpls. Planning, MCDA

<b>Street Network and Transit Connections</b>		
<b>Timeframe</b>	<b>Elements</b>	<b>Organization</b>
2004-2009  (first five years of operation)	<ul style="list-style-type: none"> <li>• Implement narrowing of Franklin Avenue in conjunction with development west of Franklin Station.</li> </ul>	Mpls. Public Works, Hennepin County
	<ul style="list-style-type: none"> <li>• Construction redesigned intersection at Franklin, Minnehaha and Cedar Avenues.</li> </ul>	Mpls. Public Works, Hennepin County
	<ul style="list-style-type: none"> <li>• Construction 16th Avenue Drop-Off in conjunction with redevelopment of Cedar-Riverside Station block.</li> </ul>	MCDA, Mpls. Public Works, Hennepin County
<b>Transit Supportive Land Use and Redevelopment</b>		
<b>Timeframe</b>	<b>Elements</b>	<b>Organization</b>
2001-2004  (prior to opening of LRT)	<ul style="list-style-type: none"> <li>• Examine parking requirements for new development in transit areas and recommended safeguards to prevent unwanted “park-and-ride” use of commercial parking.</li> </ul>	Mpls. Planning, Mpls. Public Works
	<ul style="list-style-type: none"> <li>• Adopt “transit overlay” zoning for both station areas which provides for a range of residential and commercial uses including “minimum” density levels, “build to” lines, special parking ratios and provisions for pedestrian circulation.</li> </ul>	Mpls. Planning
	<ul style="list-style-type: none"> <li>• Prepare a study of redevelopment costs and assessment of redevelopment concerns for the Cedar-Riverside station block.</li> </ul>	Mpls. Planning, MDCA
	<ul style="list-style-type: none"> <li>• Design and implement distinctive signage or public art piece for the corner of 6th Street and 16th Avenue to assist in wayfinding to the Cedar-Riverside station prior to redevelopment of the station block.</li> </ul>	Metro Transit, Mpls. Planning, MCDA

<b>Transit Supportive Land Use and Redevelopment</b>		
<b>Timeframe</b>	<b>Elements</b>	<b>Organization</b>
2001-2004  (prior to opening of LRT)	<ul style="list-style-type: none"> <li>Continue to participate in efforts to facilitate development at the Franklin Square site at the southern end of the LRT Yards and Shops site.</li> </ul>	Mpls. Planning
	<ul style="list-style-type: none"> <li>Initiate efforts to clean up outdoor storage facilities at the Cedar Box/Ambles site.</li> </ul>	Mpls. Planning
	<ul style="list-style-type: none"> <li>Support neighborhood efforts to provide mixed-infill along Franklin and Cedar Avenues and to support residential redevelopment efforts in adjacent neighborhoods. (Ongoing through long term.)</li> </ul>	Mpls. Planning, MCDA
2004-2009  (first five years of operation)	<ul style="list-style-type: none"> <li>Facilitate redevelopment of the area north of Franklin station, east of Old Cedar Avenue as economic conditions warrant.</li> </ul>	Mpls. Planning, MCDA
	<ul style="list-style-type: none"> <li>Facilitate replacement of the western portion of the Hiawatha noise wall along Franklin Avenue with a two-story commercial development.</li> </ul>	Mpls. Planning, MCDA
	<ul style="list-style-type: none"> <li>Examine land uses east of Minnehaha Avenue in the Seward neighborhood should intersection redesign terminate Minnehaha at Franklin.</li> </ul>	Mpls. Planning
	<ul style="list-style-type: none"> <li>Facilitate redevelopment of blighted properties along 15th Avenue South.</li> </ul>	Mpls. Planning, MCDA
	<ul style="list-style-type: none"> <li>Design landscape improvements to, and examine development potential of area within traffic square should this concept be implemented for the Franklin-Cedar-Minnehaha intersection.</li> </ul>	Mpls Planning, MCDA, Mpls Public Works
Long Term	<ul style="list-style-type: none"> <li>Facilitate redevelopment of the Cedar Box/Ambles site including provision of a public walkway from the East Phillips neighborhood.</li> </ul>	Mpls. Planning, MCDA
	<ul style="list-style-type: none"> <li>Facilitate additional at-grade development along 6th Street including infill of Riverside Plaza Building B, development of east side of 6th between 15th and 16th Avenues, and any proposed additions to the Cedars residential complex.</li> </ul>	Mpls. Planning, MCDA, Mpls. Public Housing Authority

<b>Pedestrian and Bicycle Connections</b>		
<b>Timeframe</b>	<b>Elements</b>	<b>Organization</b>
2001-2004  (prior to opening of LRT)	<ul style="list-style-type: none"> <li>Design and implement improvements to Franklin Avenue beneath the Hiawatha bridge.</li> </ul>	Mpls. Public Works, Hennepin County, Mn/DOT
	<ul style="list-style-type: none"> <li>Examine feasibility of a stair connection to Hiawatha Trail from Cedar Avenue just south of Franklin Avenue to the Franklin Station platform.</li> </ul>	Mpls. Public Works, Metro Transit
	<ul style="list-style-type: none"> <li>Implement pedestrian enhancements to narrowed Franklin Avenue between Minnehaha and Bloomington Avenues.</li> </ul>	Mpls. Planning, Mpls. Public Works
	<ul style="list-style-type: none"> <li>Implement sequential art gateway and/or other pedestrian improvement to 6th Street corridor to Cedar-Riverside station. Open up green spaces at 6th and Cedar to provide opportunities for visual connections back to station block. Design and implement “gateway” transit shelters at 6th and Cedar.</li> </ul>	Metro Transit, Mpls. Planning, Mpls. Public Works
	<ul style="list-style-type: none"> <li>Provide pedestrian enhancements to “alley” between 5th Street and 6th Street east of Riverside Plaza.</li> </ul>	Mpls. Public Works
	<ul style="list-style-type: none"> <li>Provide signage indicating public path through Riverside Plaza complex.</li> </ul>	Mpls. Public Works, Riverside Plaza
	<ul style="list-style-type: none"> <li>Opportunities to provide a bike lane should be considered with the narrowing of Franklin Avenue.</li> </ul>	Mpls. Public Works
2004-2009  (first five years of operation)	<ul style="list-style-type: none"> <li>Examine feasibility of a direct connection from the East Phillips neighborhood to Franklin station via the Cedar Box/Ambles site.</li> </ul>	Mpls. Public Works, MCDA
	<ul style="list-style-type: none"> <li>Examine feasibility of providing a pedestrian connection along 16th Avenue alignment near Cedar Avenue and 3rd Street</li> </ul>	Mpls. Planning, Mpls. Public Works
	<ul style="list-style-type: none"> <li>Lower or eliminate Currie Park berms to open up views to downtown; provide trailhead or “gateway” element to downtown along LRT trail.</li> </ul>	Mpls. Planning, Mpls. Park Board
	<ul style="list-style-type: none"> <li>Signed bike routes should be provided along 18th Avenue South and Franklin and 24th Street east of Minnehaha; bike lanes should be provided on Riverside Avenue, Bloomington Avenue, and 24th west of Hiawatha.</li> </ul>	Mpls. Public Works

## **Appendix A: List of Related Documents**

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### ***Hiawatha Corridor documents***

Hiawatha LRT Corridor Transit-Oriented Development Market Study,

December 1999, Minneapolis Community Development Agency

Hiawatha Corridor Aesthetic Design Guide, March 21, 2000 BRW for Mn/DOT

Hiawatha Light Rail Corridor Public Art Opportunities and Locational Analysis, (no date), Metropolitan Council and LRT Public Art Task Force

Creating Transit-Oriented Development for Livable Communities and a Sustainable Region: A Handbook, September 1999, Metropolitan Council

Community Visioning for Station Design, December 16, 1999, Metropolitan Council.

### ***Design documents***

Hiawatha Corridor Preliminary Design, BRW

Yards and Shops Preliminary Design, BRW

Franklin Station design concept, Barbour LaDouceur Architects

Cedar-Riverside Station design concept, Julie Snow Architects

Franklin Station preliminary engineering plan set, BRW

Cedar-Riverside Station preliminary engineering plan set, BRW

### ***Community documents***

Franklin Avenue LRT Task Force, Final Report, March 1, 2000

Linking Light Rail Transit to the City: Six Neighborhood Station Districts, August 1999, University of Minnesota Center for Transportation Studies.

Light Right Transit and the Hiawatha Corridor, April 13, 2000, University of Minnesota Public Affairs 8583



**Appendix B: Station Profiles (economic analysis), May 2, 2001**

# Anton, Lubov & Associates, Inc.

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## MEMO

**Date:** May 2, 2001  
**To:** Team Members  
**From:** Paul Anton and Andrea Lubov  
**Subject:** Station Profiles

Here is our report on the whole LRT line and the role of our stations in the context of the whole line. We have used several sources, but the workforce and residence data come from the 1990 Census. Later we may be able to do the same analysis using data from the 2000 Census though the detailed data we need from the Census will not be available until 2002.

We think it likely that many of the characterizations and conclusions will be the same with the new data. However, it should be noted that the Mall of America was not operating when the last Census was taken. Therefore, there will be over 10,000 more people working in that part of Bloomington and some of them will be residents of the corridor. We could update all of the Census statistics in this memo as the 2000 Census data becomes available, but feel that this information, dated though it is, will be of use in this stage of the design process.

Here are some of the implications for land use near our stations:

### Cedar/Riverside Station

- ◆ Dramatic redevelopment unlikely in the near-term because of the lack of available sites.
- ◆ Potential for balanced two-way and off-peak traffic could support modest service retail buildup.
- ◆ An inviting and safe connection to Cedar and the University could encourage greater U of M student traffic than is currently projected.
- ◆ In the longer term, public housing and senior housing sites could be converted to market rate and/or student housing if need for current uses were being met elsewhere in the city.

## Franklin Station

- ◆ Office development relating to downtown core is quite feasible.
- ◆ High-density residential rental aimed at singles and young couples would also receive market support.
- ◆ Mixed office/residential has the potential to work well here.
- ◆ Above uses would provide moderate support for some expansion of retail, mostly local services with, perhaps, some entertainment.
- ◆ Institutional uses should, in general, not take precedence over private, taxable development.
- ◆ The movement of Metropolitan Council offices to the area would, however, be positive for development in the station area.
- ◆ Development of flexible-use structured parking in the station area would support a number of different development alternatives and serve changing needs as the area evolves.

The proposed Cedar/Riverside and Franklin stations are only two of the 16 stations that make up the proposed Hiawatha LRT line. In order to do the best job of land use planning around these two stations, it is important to understand how these stations relate to the other stations and to the LRT line as a whole. Here are some aspects of the line and of the Cedar/Riverside and Franklin stations that seem to have potentially important implications for station-area land use plans.

## **I. Physical Layout and Timing**

The proposed Hiawatha LRT line runs from downtown Minneapolis 11.4 miles southeast through residential Minneapolis past the Veterans Administration complex, the two terminals at the Minneapolis-Saint Paul airport and ends at a station directly east of the Mall of America (see enclosed map).

### **LRT Station Descriptions**

	<b><u>Station</u></b>	<b><u>Description of Half-Mile Radius Area</u></b>
1.	Entertainment District	Western edge of downtown loop near Target Center and restaurant district
2.	Nicollet Mall	Central downtown stop, mainly office buildings and center of downtown retailing
3.	Government Center	Central downtown stop, at Hennepin County Government Center high-rise office and courts tower linked by tunnel to

		Minneapolis City Hall
4.	Downtown East	Eastern Edge of downtown area across street from HHH Metrodome; near major employers Mpls Star-Tribune and Hennepin County Medical Center; also designed as place where U of Minn students can transfer to ride intercampus bus back to campus; current area residents are predominately low-income
5.	Cedar Riverside	Nearest to University of Minn (by foot); also near Augsburg College; public-housing high-rise and senior high-rise; many of residents are low-income/recent immigrants
6.	Franklin Avenue	Station located adjacent to proposed LRT maintenance/repair yards; bridges two neighborhoods -west Phillips largely low-income rental housing, heavily minority east Seward largely white homeowners, many college-educated and/or retirees. Near proposed Seward industrial park.
7.	Lake Street	Commercial intersection between two nearby strip shopping malls. Recently completed Hiawatha Avenue Bridge overpass. Residential neighborhoods: east Longfellow mainly middle-income homeowners west Corcoran middle to lower-income mainly single-family housing
8.	38 <sup>th</sup> Street	Mainly residential area; stable neighborhoods of homeowners with median family incomes around \$30,000 (in 1989\$); strip of industrial commercial uses along east side of right-of-way, chiefly grain silos.
9.	46 <sup>th</sup> Street	Mainly residential area, 80 percent owner-occupied homes with median income of \$40,000 (again in 1989\$) and high percentage of elderly homeowners (20%); some retail serving local residents
10.	Minnehaha Park	Stable residential area west of corridor; Minnehaha Park and Minnesota Soldiers Home (Vets Adm) east of station; no commercial development to speak of.
11.	VA Medical Center	Veterans Admin Hospital Campus leads employment of almost 6,000 in area. Small enclave of middle-class housing in northwest quadrant.
12.	Fort Snelling	No significant employment or population; plans for a 900-car park-and ride lot.
13.	Lindbergh Terminal	Main MSP air terminal. Station is ___ feet from baggage claim or ticketing.
14.	HHH Terminal	HHH Terminal for charter flights, some international flights and, now, Sun Country scheduled domestic flights. Station is ___ feet from baggage claim or ticketing.
15.	80 <sup>th</sup> Street	Almost entirely commercial and industrial; nearby office park
16.	Mall of America	Large shopping mall, station is two-block walk from door to Mall; Mall has two large parking ramps but parking is off limits to transit riders; a 200-car parking lot is planned near the station

If we number the stations starting with 1 downtown and ending with 16 at the Mall of America, then Cedar/Riverside and Franklin Avenue are stations number 5 and 6 in line.

- ◆ Today Cedar/Riverside and Franklin relate much more easily to downtown than to the southern reaches of the line.

The LRT line is designed to run largely along a currently operating bus route, line 7. Plans are for this line to continue to operate parallel to the LRT line, presumably to handle local traffic between stations and to service small areas where the bus line and the LRT line diverge.

- ◆ The Hiawatha corridor is already focused on transit and access to transit (in the form of buses) has influenced residential development in the corridor.

Several other bus routes that run to downtown Minneapolis run funnel into the Hiawatha corridor south of our two stations. Thus, area residents riding to downtown have a choice of bus lines 7, 19 and 20. During rush hour waiting times are probably no more than 5 minutes.

- ◆ Our stations are currently served by multiple bus routes that connect them easily to downtown.

The chief advantage of the LRT over the current bus service will be speed and, in some cases, convenience. For example, the current #7 bus does not stop at the HHH terminal but the LRT would. Travel times between selected stations are shown in the following table which compares projected LRT travel times with current bus travel times taken from the #7 bus schedule for morning rush hour buses.

**Comparison of Bus and LRT Travel Times  
For Selected LRT Station Locations  
(Northbound buses and trains  
in morning rush hour)**

Station	Station Name	#7 Bus time to Nicollet Mall	LRT time to Nicollet Mall	Projected time savings
2.	Nicollet Mall			
5.	Cedar/Riverside	12 minutes	8 minutes	4 minutes
6.	Franklin	15 minutes	9 minutes	6 minutes
7.	Lake Street*	27 minutes	12 minutes	15 minutes
8.	38 <sup>th</sup> Street*	30 minutes	14 minutes	16 minutes
11.	VA Med Center	47 minutes	19 minutes	28 minutes
13.	Lindbergh Terminal	62 minutes	23 minutes	39 minutes

16. Mall of America 73 minutes 31 minutes 42 minutes

\* #7 buses currently stop at intersections of these streets and Minnehaha Avenue, 2 blocks east of Hiawatha

The change from bus to LRT has, understandably, the greatest impact on travel times over longer distances, cutting the time from the Mall of America to downtown by more than half. On the other hand, times to downtown from our stations are not impacted very much. So residents of the areas near our stations who work downtown will not be impacted very much by the LRT. Since the LRT station at Cedar/Riverside is somewhat less convenient to many residents than are the buses on Cedar Avenue, there may still be considerable bus ridership from Cedar/Riverside to downtown after the opening of LRT.

In contrast, the LRT will have a major impact on traffic from the Cedar/Riverside and Franklin stations to the southern reaches of the train line. Southbound travel times are similar in both the morning and the evening. By subtraction it is easy to see that the travel time from Cedar/Riverside to the Mall of America will be cut from 61 minutes to 23 minutes by the introduction of LRT. Time from Cedar/Riverside to the VA Hospital will be cut from 35 minutes to 11 minutes.

- ◆ The introduction of LRT will bring the Mall of America, the airport and the VA Med Center much “closer” to our stations but will not alter their relationship to downtown significantly.

## II. In and Out Traffic at Stations

There will pronounced differences in the timing and nature of traffic at different stations. Some of the proposed transit stations, those in residential areas, will be primarily sources of travelers with commuters getting on in the morning and returning in the evening. Others such as downtown will be primarily destinations where riders will get off in the morning and get back on to return to their homes. A few stations have the potential to be both sources and destinations.

To compare the balance between ingoing and outgoing commuter flows at the different stations, we used 1990 Census data to estimate the employment and working age population in a circular area with a half-mile radius at each station.

**Employment and Population  
within a half-mile of each station  
(Downtown stations combined into one)**

<u>Station</u>	<u>Employment</u>	<u>Population (16+)</u>	<u>Pop/Emp (%)</u>	<u>Type</u>
CBD (3 stops combined)	84,246	3,188	4%	Destination
Downtown East	28,205	4,389	16%	Destination
Cedar Riverside	1,143	2,994	262%	Both
Franklin Avenue	4,901	4,759	97%	Both
Lake Street	2,488	4,652	187%	Both
38 <sup>th</sup> Street	1,641	5,684	346%	Source
46 <sup>th</sup> Street	913	4,303	471%	Source
Minnehaha Park	280	2,528	904%	Source
VA Medical Center	5,969	1,447	24%	Destination
Fort Snelling	88	229	247%	Source
Lindbergh Terminal	6,491	0	0%	Destination
HHH Terminal	421	0	0%	Destination
80 <sup>th</sup> Street	2,426	0	0%	Destination
Mall of America*	12,247	2,758	18%	Destination

\*includes 10,000 jobs added as an adjustment for Mall of America employment

Source: 1990 Census

Based on the population and employment estimates for the different station areas, we classified the stations as destination, source, or both. In our view, only three stations seem likely to have a substantial two-way flow in both the morning and the evening: Cedar/Riverside, Franklin, and

Lake Street. (We classified Fort Snelling as a source in consideration of the 900-car park-and-ride lot that is planned for the station area.)

- ◆ Our two stations have a very different character from almost all of the other stations in that they have the potential to have substantial two-way traffic in both the morning and the evening.

In addition to those transit riders who will alight during the morning rush hour to get to their jobs, the Cedar/Riverside and Franklin stations have the potential to serve college students arriving for classes at either the University of Minnesota or Augsburg. Franklin is the closest station for Augsburg students and, even though official plans are for U of M students to ride to Downtown East, some may choose to walk from the Cedar/Riverside or Franklin stations.

This potential student population may not be as concentrated at rush hour as the commuter traffic, raising the possibility that these two stations may see more riders at off-peak hours than the source or destination stations.

- ◆ Our two stations may have greater off-peak traffic due to the presence of college student transit riders.

This two-way flow and off-peak flow carries implications for land use around the stations. It would seem to increase the chance that successful retail development and/or local services might be sited near the station. Perhaps, additional implications will follow from further consideration of this difference in character.

The detailed projections of LRT flows made in 1998 included estimates of the rush hours flows at the different stations. Our stations are projected to have moderate but balanced flows during peak periods. For example during the peak afternoon hour, 75 people are expected to board at Cedar/Riverside and 100 are expected to alight. At Franklin, 75 are projected to board while 125 are expected to get on the train. In contrast, at 38<sup>th</sup> Street (which we have labeled a “source” station) the traffic model projects 100 riders boarding the train during the afternoon rush hour while 350 will be getting off.

It should be noted that the traffic projections done in 1998 do not break out how many of the projected riders are college students. Moreover, the proposed configuration of the line at that time included only 2 downtown stops and did not have a stop at Downtown East where it is currently planned that U of M students alight and transfer to campus buses. The actual number of students who will go through the two stations being studied here is somewhat of an unknown and could changed substantially over time.



### **III. Connections of Our Stations**

Data on residence and workplace and mode of commute furnish additional information about the connection of our station areas to other parts of the corridor and the city. The data from the new Census may modify this picture significantly but here are some of the things that the 1990 Census tells us (or told us) about the Cedar/Riverside and Franklin Station areas. The data on modes of transportation are not as accurate as population counts because questions on commuting are only asked in the Census long form that is filled out by one household in six. The responses of those households are then grossed up to provide totals that square with the population census counts. Nevertheless, these data are the best we have and have proven to be useful in understanding the broad patterns of commuter flow.

In the previous section, we discussed station areas and gave estimates of employment and population in half-mile-radius areas around each station. However, in the next two sections we use a slightly different breakdown of the data. In discussing the area around our two stations, we have lumped the two areas together and considered data from the four traffic assignment zones that include both stations and contain the half-mile-radius circles around each. Thus, this a somewhat bigger area than just the circles around each station and so the employment in this area is about 9,000 compared to the roughly six thousand we get by adding employment in the two station areas reported in the last section.

Similarly, we have defined the corridor as also including more than just the station areas reported in the previous section. In compiling the corridor data we have used data on all of the TAZs that cover Hiawatha Avenue and the half-mile-radius circles around the stations. This results in a corridor that is at least one mile wide ( a half-mile on either side). However, the corridor is irregularly shaped. Because of the shape of some TAZs there are places where residents who live as much a mile and a half from Hiawatha are being counted. There is no practical way to avoid this.

#### ***A. Residents***

According to the 1990 Census, there were 3,325 residents of the area around our two stations who are recorded as working away from home. About 23 percent of that group also work in the station areas. Nineteen percent work elsewhere in the LRT corridor and 58 percent work outside of the corridor. The 625 area residents who work elsewhere in the LRT corridor would be prime candidates for using LRT to commute to and from the workplace (See following table.) Some of the additional 763 who work and live within the consolidated area of our two stations might live near one of our two stations but work closer to the other. Some of them might choose to take the train from one station to the other on occasion.

**Place of Work  
Residents of Our Station Areas**

<u>Workplace</u>	<u>No. of people</u>	<u>Percent</u>
Our Stations	763	23%
Elsewhere in Corridor	625	19%
Outside of Corridor	<u>1,937</u>	<u>58%</u>
Total	3,325	100%

Very few of the current residents who work in the proposed LRT corridor use transit to get to their workplaces. The following table shows the reported method of commute for station area residents broken down by location.

**Method of Commute  
Residents of Our Station Areas**

<u>Workplace</u>	<u>Number</u>	<u>Ride Bus</u>	<u>Drive Alone</u>	<u>Carpool</u>	<u>Walk</u>	<u>Other</u>
Our Stations	763	39	134	25	543	22
Elsewhere in Corridor	625	51	374	132	44	24
Outside of Corridor	<u>1,937</u>	<u>209</u>	<u>1274</u>	<u>237</u>	<u>150</u>	<u>67</u>
Total	3,325	299	1,782	394	737	113

The overwhelming majority of the residents who also work in our station areas do not use any motorized transportation. Over 70 percent of them walk to work and a small additional number ride bicycles. About 20 percent go to work by car, most of them driving alone. And only 39 (roughly 5 percent) now go to work by bus.

The percentages are much different for the station area residents who work elsewhere in the corridor. Roughly 80 of these people (506) drive to their jobs. And three-quarters of those who commute by car do so alone. About 8 percent (51) of these residents use public transit with the remaining 11 percent walking or using other means to get to work.

Finally, most of the station area residents who work outside of the LRT corridor now commute by car. In fact, the distribution of residents among different forms of transportation is very similar to that for area residents who work elsewhere in the corridor. The commuters have a mix

of roughly 80-10-10; 80 percent drive, 10 percent take the bus and 10 percent walk or use other means.

- ◆ If all of the residents of the TAZs around our two stations who now take the bus to jobs in the corridor were to convert to riding the LRT, they would only total about 90 riders.
- ◆ For there to be substantial outbound traffic from our stations in the morning rush hour, at least one of four possibilities need to occur:
  1. Residents who now commute by car to jobs in the LRT corridor will convert to LRT ridership.
  2. Over time, people who work in the corridor will move into the area near our stations.
  3. Residents who work outside the corridor will switch to jobs in the corridor.
  4. There will be substantial parking at one or both of our stations which will lure park-and-riders who work, most likely, in downtown Minneapolis.

The model-driven projections from 1998 which were based on existing residential and work patterns do not show large outflows of commuters from our station areas, only about 75 from each station in the morning rush hour.

## **B. Workers**

Over 9,000 people work in the areas near our two LRT stations. Only about one in five of those workers lives in the LRT corridor. Eight percent (763) live in the two station areas; another 12 percent come from elsewhere in the corridor. The remaining 80 percent of workers in our station areas come from outside of the LRT corridor

### **Place of Residence Workers in Our Station Areas**

<u>Residence</u>	<u>No. of people</u>	<u>Percent</u>
Our Stations	763	8%
Elsewhere in Corridor	1,145	12%
Outside of Corridor	<u>7,326</u>	79%
Total	9,234	100%

To scope out the likely (or possible) use of LRT by workers in our two station areas, it is useful to start with existing commuting patterns. If those patterns are unchanged since the 1990 Census, then there substantial number of LRT riders arriving at our stations on their way to work. (See the following table.)

The following table shows the methods of commuting for the 9,234 people who work in the TAZs around our two station areas. Separate lines show the commuting methods for residents of our station areas, workers who reside elsewhere in the corridor, and those who commute from outside of the LRT corridor to either the Cedar/Riverside or Franklin Station areas

**Method of Commute  
Workers in Our Station Areas**

<u>Residence</u>	<u>Number</u>	<u>Ride Bus</u>	<u>Drive Alone</u>	<u>Carpool</u>	<u>Walk</u>	<u>Other</u>
Our Stations	763	39	134	25	543	22
Elsewhere in Corridor	1,247	515	500	158	*	74
Outside of Corridor	<u>7,326</u>	<u>59</u>	<u>5898</u>	<u>985</u>	<u>319</u>	<u>65</u>
Total	9,336	613	6,532	1,168	862	161

\*Census data have an unexplained error in that the number walking from elsewhere in the corridor to our stations is negative. That entry is, therefore, meaningless, and not included in the totals for either this row or this column.

We have already discussed the people who both live and work in the area in a previous section. Of the 1,145 area workers who reside elsewhere in the LRT corridor and work near our stations, a surprisingly large number currently ride transit. In fact, about 45 percent of those workers report that they come to work by bus. This probably reflects both the good bus service that currently serves the corridor and also the premium on parking spaces on the West Bank. About 650 report that they drive with about three-quarters of that number driving alone. (There is an unresolved data problem that makes the walking numbers meaningless.)

In contrast, almost none of the 80 percent of area workers who come from outside of the proposed LRT corridor do so by bus. A mere 59 workers (less than 1 percent) come via public transit. Only about another 6 percent come via foot or other means. The vast majority of about 93 percent drive to their jobs near our two stations. A greater share of those who commute to by car to our area seem to do so alone. Those who drive alone outnumber those who carpool by almost 6 to 1.

- ◆ Many workers who commute into our two station areas from inside of the LRT corridor already ride the bus. If all of these were to convert to LRT riders, the inbound traffic (or workers, not students) would be about 500 per day at the two stations.
- ◆ Perhaps some portion of the corridor residents who work near our stations might convert to riding the LRT, but there is probably not a lot of potential for increased ridership from this group because it is rather small and these people have already chosen not to use the relatively good bus service in the corridor.

- ◆ The vast majority of area workers commute to our station areas from outside of the corridor by car, usually alone. Bringing a substantial number of these workers in by LRT would depend on where they are coming from as well as a number of other factors. The most likely method would be if there were convenient park-and-ride locations at other places along the line (such as Fort Snelling). Then commuters from the southeast might park there rather than continue to our station areas.

This discussion of inbound traffic at our stations focuses only on workers and does not include student populations from either the University of Minnesota. When those populations are included, it is very likely that during the morning rush hour, the inbound traffic is likely to be significantly greater than the outbound traffic. The outbound traffic may build up over time as the composition of the residents of the area changes and as more of those residents may find jobs in the job concentrations along the corridor, namely downtown, the Veteran's complex, the airport and the Mall of America.

- ◆ The presence of college student commuters should provide these stations with substantial off-peak traffic relative to other stations along the line. While the station has the potential for substantial two-way traffic, the initial flow is likely to be predominately inbound in the morning and outbound during the evening rush hour. The development of ridership flow in the opposite direction will depend on changes in travel patterns and employment patterns. The 2000 Census results may show that some of those changes have already occurred.

## IV. Corridor-wide Ridership Considerations

While we have described some of the likely characteristics of ridership at the Cedar/Riverside and Franklin stations, it is also useful to have some perspective on the larger context, that is, on ridership issues in the corridor as a whole. The official projections are for 19,300 trips per day. To think about commuter trips on LRT, we divide the types of trips into three categories; trips within the corridor, trips that end in the corridor, and trips that begin in the corridor.

*Trips within the corridor* are trips by residents of the corridor to workplaces located within the corridor. This is the most fertile ground for finding riders for the LRT. There are currently 2,417 commuters who travel within the LRT corridor by bus and 7,061 who commute within the corridor by car.

Many of the bus riders may convert to LRT. However, it should be pointed out that the LRT will be time-saving but not cost-saving for these people. Since the existing buses stop every block and the LRT stations can be a mile apart, some of these riders may face a longer walk which may act as deterrent. And the current plan is for the buses in the corridor to continue to run after the introduction of LRT.

The residents who commute by car are currently choosing driving over riding buses. The reasons that cause them to choose car transport over transit will still be in place after the introduction of LRT. LRT will be faster (especially for longer trips) but may involve longer walks at either or both ends of the trip.

There are, in total, approximately 9,500 people who both live and work in the corridor served by the LRT. This is a primary audience from which light rail transit riders will be drawn. If ALL of these people were to convert to LRT riders that would produce about the total traffic projected for the line. The 1998 modeling called for upwards of 70 % of the ridership to come from people who walked to the stations. That proportion seems somewhat high to us and implies quite a high conversion rate for both bus and car commuters inside the corridor.

*Trips beginning in the corridor* are those trips by residents of the corridor to jobs located outside of the corridor. There are 2,034 residents of the corridor who currently ride buses to jobs located outside of the corridor. Since the corridor, as we have defined it, includes all of downtown Minneapolis, these riders are going to jobs in the non-downtown parts of the Twin Cities Metro area. Those workplaces may be rather widely dispersed. If bus rider from the corridor currently rides an east-west bus to work, the LRT may not be of much advantage. However, those who currently ride a bus inside the corridor initially and then transfer to another bus to reach a destination outside of the corridor might find it easier or faster to take the LRT as the first leg of their trip and then transfer. The same convenience considerations with regard to that first bus stopping each block would apply to these riders as well. Therefore, some of these commuters might well choose to begin their commute using the LRT.

There are 16,235 commuters who leave the LRT corridor by car for jobs outside of the corridor, probably scattered across the Twin Cities. Since LRT doesn't serve any new areas not already served by buses, it is hard to envision much conversion of these commuters to LRT. Many probably work in places that are not conveniently served by transit at the current time. It is hard to believe that any substantial number of these commuters would find that LRT fits into their travel plans.

We do not expect that there will be many residents of the LRT corridor who will begin their commutes to jobs outside the corridor by riding light rail transit. This will not be major source of riders for the train.

*By trips ending in the corridor* we are referring to trips to workplaces inside the corridor by workers who reside elsewhere in the Twin Cities. Since the corridor includes downtown Minneapolis, there are over 25,000 bus commuters and over 125,000 car commuters who make trips into the corridor each day. The vast majority work in downtown and come from directions such that the LRT would not alter their commuting options at all. However, those who come from south and southeast of downtown Minneapolis could choose to end their commute on the LRT. To do so they would either have to transfer from buses, be dropped off by another driver, or park near a station.

The projections for ridership include a substantial number of transfers from bus lines serving the LRT station areas. There are number of bus lines that either currently stop at the station locations or will stop there after the line is built. However, the likely "drain field" for transit riders who transfer from bus to the LRT to reach their destination is probably not very large. For example, a downtown worker who lives near Cedar and Lake about a mile and a half west of the Lake Street station will have a shorter trip if he or she rides a bus directly to downtown on Cedar as opposed to riding a Lake Street bus to the LRT and then waiting for a train to downtown. Surveying the transit corridor and the bus map, there are a few points where a significant number of bus-to-train transfers may take place. These include Franklin and Lake Street stations (principally serving bus travelers coming from the east) and the Mall of America (serving bus riders from the southern suburbs). However, there would probably need to be expanded commuter service from those suburbs to the MOA to encourage such ridership. The 1998 projections estimated that about 20 percent of the riders will come from feeder buses. That proportion could be raised or lowered depending on how the linkages are actually designed and possible judicious changes in routes to facilitate access to the LRT.

With the exception the park-and ride facilities at Fort Snelling and Mall of America, current plans do not call for parking at any of the stations along the line. Therefore, other riders who connect with the LRT at these other stations must either be driven by someone else and dropped off or ride a bus to connect with the train. We have no idea how many "drop-offs" there will be. We expect the answer is "not many" but the possibility that there may be significant numbers at some stations complicates design of the stations.

Finally there are commuters who will drive to a park-and-ride facility located along the LRT line and then ride to work. There are two such facilities being planned currently. The largest is for 900 spaces in a parking ramp located at Fort Snelling (station 12). The second is 200-car surface parking lot located adjacent to the Mall of America. It should be noted that the large parking ramps at the Mall of America will NOT be available for commuter parking. We assume these two park-and-ride lots will be fully utilized. They will serve workers who work downtown (or elsewhere in the corridor) and who live chiefly in the southeast quadrant of the city of Minneapolis, the corresponding quadrant of Saint Paul across the Mississippi River, and suburban residents who live in suburbs south and east of the Mall or America.

We expect that these two planned park-and-ride lots will be fully utilized very early in the life of the LRT and that there will be significant excess demand for additional parking at both locations. The initial 1998 projections estimated that 7 percent of riders would park near the stations and ride. However, the planned facilities, if full utilized, would serve a little over 5 percent of the projected ridership.

There will be strong excess demand for parking spaces near LRT stations, in our view. The strongest pressure will probably be at Mall of America where the planned 200-car lot is nowhere near adequate to meet the demand from commuters who live to the south. But there will be other areas of demand pressure as well.

At Fort Snelling, we believe a larger population could be served. Parkers at Fort Snelling could be headed to jobs either downtown or at the southern end of the line. And, the initial modeling of traffic flows did assume that there would be a 1,600-car facility at Fort Snelling. No refinements to the projections have been made since the 900-car size was incorporated into plans.

At Franklin and at Lake Street, we believe there will be demand for park-and-ride facilities. These would be the natural points for residents who live east of the line (especially those from across the river) to connect with light rail transit and complete their journeys either to downtown or to the employment centers further south on the LRT line.

Finally, at many of the other stations in residential neighborhoods, we think it is likely that some riders will try to park on neighborhood streets. This has been a problem in other cities and some thought will need to be given to appropriate enforcement and balancing of the needs of neighborhood residents and riders. The pressure on neighborhood streets will be all the greater if there are not sufficient park-and-ride facilities at a few stations sprinkled along the line.<sup>1</sup>

The park-and-ride facilities currently being planned are likely to be fully utilized but, even if fully utilized, will probably produce less than the 7 percent of total riders that was projected in 1998. However, we think that it is likely that a good deal MORE than 7 percent of the ridership would come as “park-and-riders” if more parking spaces were made available.

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<sup>1</sup> In the San Francisco Bay Area, for example, offstreet parking at Bay Area Rapid Transit (BART) stations is fully utilized and people who live near the stations are complaining about commuters parking on the neighborhood streets.



Based on these numbers and our understanding of conditions and plans along the line, we draw the following conclusions which may impact land use and design thinking in our two stations to some degree.

- ◆ The two planned park-and-ride facilities are likely to be fully utilized with demand for more parking at those locations.
- ◆ There is likely to be especially strong pressure for either structured parking at the Mall of America station or use of part of the Mall's parking during weekday daytime hours.
- ◆ There will be demand for parking at stations located in residential neighborhoods and friction will residents as some LRT riders attempt to park on residential streets.
- ◆ A park-and-ride facility or multi-use parking ramp with some park-and-ride spaces at either the Franklin or Lake Street station could help ease the parking pressure at some other stations.

## **V. Land Use Implications**

The economic considerations lead to some conclusion regarding land use at the two stations we are studying.

### **Cedar/Riverside**

In the near-term and intermediate-term future, the implications for Cedar/Riverside are limited by the lack of easily redevelopable sites in the station area. In the near-term,

- ◆ Station-area design should take account of the two-way flow of commuter traffic and the potential for significant off-peak traffic.
- ◆ U of M student traffic may be higher than expected especially if an inviting connection to Cedar and the University can be developed.

In the long term, economic forces would suggest that the public and senior housing near the station would be candidates for conversion or replacement by student or market-rate housing. However, that could only come about if comparable numbers of similar public and senior housing were developed in other areas, a scenario that would take time and significant resources to accomplish.

### **Franklin**

The Franklin station area is much more amenable to near-term development and there is a wider range of alternatives that are feasible in the Franklin station environs. There are available and underused parcels and a reconfiguration of the intersection would create even more usable space.

*Office development* would be one possible use in the area near the Franklin station. The main attraction of this location for offices would be convenient daytime access to downtown without

the need to be IN downtown. While access to the area by light rail might be a small plus, it would be important to provide adequate parking for any office development and not overestimate the percentage of workers who would arrive by rail.

*Residential development* is also feasible in the Franklin area. We believe the market would favor the primary focus of residential development being high-density rental aimed at young urban singles and young couples. Convenient access to downtown for work, shopping and recreation would appeal to this audience, as would the nearness to the two colleges.

Some expansion of retail development in the area could be supported by the combination of the new station and office or residential development, But the expansion would be limited mainly to businesses providing services and necessities to residents and commuters. Residential development would tend to provide somewhat more support for retail than office development, but neither option would be transformative for retail. There is the possibility of attracting people from outside the area to some entertainment uses that might be developed (most likely, bar/restaurant) especially if there is prior residential growth for the groups mentioned above.

Perhaps not surprisingly, we believe that a mix of office and residential would also be feasible. This mix would also benefit from and contribute to a greater perception of safety in the area, especially when combined with the presence of the planned police station.

In general, we believe *institutional uses* are less desirable than office or residential in redevelopment plans because, while requiring subsidies like other uses, they do not produce a flow of tax revenues by bringing new properties onto the tax rolls. And, therefore, expansion of the educational institutions and healthcare institutions in the area should be a lower priority than encouraging taxable development.

One exception to this general preference should be noted, however. There is continued discussion of the possibility of a government agency moving its offices to the Franklin station area using as much as 300,000 square feet of space for office development. If the agency were the owner, rather than a tenant, of such a building, it may not bring the tax revenues associated with private development. However, in any case, it would be good for the area overall. The station area would quickly reach a critical mass that would probably mean that private office and/or retail development would proceed more quickly than if those uses were to lead the non-station development in the area.

The development of any or all of these alternatives should be accompanied by addition of adequate parking facilities. In addition, there is the need to provide parking for workers in the rail yard who arrive by car and, we believe, potential demand for a park-and-ride type of facility serving the rail line. And the ongoing development of the Seward industrial park might also produce additional demand for parking spaces.

We believe that area development would benefit from the introduction of structured parking that could be flexibly allocated to different uses as development proceeds and the travel preferences of the public change over time. Many of the residents of high-density housing would still drive to

work, freeing up spaces that could be used during the day by workers who commute by car. And the appetite for park-and-ride use could be tested by allocating a portion of the facility to that use on an experimental basis before office and residential development was complete. Over time, the allocation of parking to support different uses would change as demand changes.

**Appendix C: Franklin Avenue TOD Master Plan Traffic Study**

**FINAL MEMORANDUM**

TO: Larry Blackstad  
HENNEPIN COUNTY

FROM: Marie Cote, P.E., Senior Associate  
Kathryn Knutson, Senior Planner

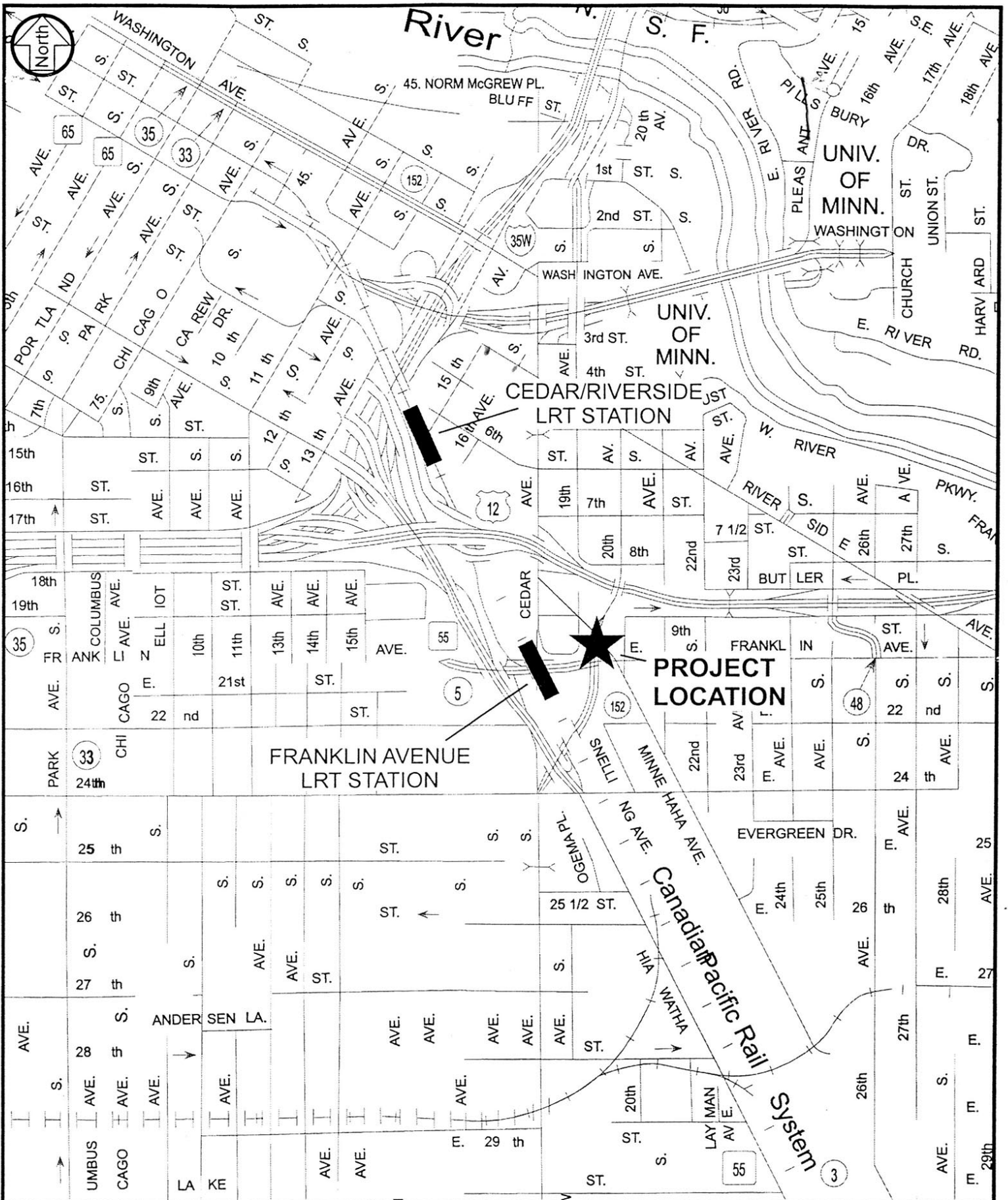
DATE: July 30, 2001

SUBJECT: FRANKLIN AVENUE TOD MASTER PLAN TRAFFIC STUDY

**Introduction**

In order to identify the impacts of proposed redevelopment occurring in conjunction with Light Rail Transit (LRT) provisions in the vicinity of Franklin Avenue and the Cedar/Riverside neighborhood in the City of Minneapolis, a traffic study of existing and future conditions was completed by SRF Consulting Group, Inc. As defined in the Franklin Avenue Transit-oriented Development (TOD) Master Plan, the proposed redevelopment will take place within the general vicinity of the two LRT station locations in the study area and will be a mix of office, commercial and residential land uses (see Figure 1: Project Location). Some development will occur in parcels of land currently vacant of use; other development is proposed to replace existing land uses.

This traffic study includes an operations analysis during the a.m. and p.m. peak hours for existing and future (2010) build conditions. Two alternatives are analyzed here, the differentiating factor being a change in the configuration of the street system. Concept A includes the existing roadway network with a direct connection of Minnehaha Avenue to Cedar Avenue (just north of Franklin Avenue). Concept B eliminates the segment of Minnehaha Avenue between Cedar and Franklin Avenues. Under this alternative, traffic is routed to/from Cedar Avenue along 22<sup>nd</sup> Street and Franklin Avenue. In both instances, development assumptions as to intensity, type and location of land uses are similar. In addition, this memo analyzes traffic impacts associated with the construction of a roundabout placed in the vicinity of the existing confluence of Cedar, Minnehaha and Franklin Avenues. Several different concepts for such a design have been developed by SRF and the impacts and operations of these alternatives are discussed.



**SRF** CONSULTING GROUP, INC.

CITY OF MINNEAPOLIS  
**PROJECT LOCATION**

**FIGURE**

**1**

FRANKLIN TOD MASTER PLAN ALTERNATIVES  
 TRAFFIC STUDY

## Existing Conditions

Traffic operations in the study area were analyzed for existing conditions at the following key intersections:

- Cedar Avenue and 20<sup>th</sup> Avenue
- Franklin Avenue and Cedar Avenue
- Franklin Avenue and Minnehaha Avenue
- Minnehaha Avenue and 22<sup>nd</sup> Street
- Cedar Avenue and the I-94 North Ramp
- Cedar Avenue and the I-94 South Ramp

Turning movement counts were collected at all key intersections for both the a.m. and p.m. peak hours in March 2001. Current traffic controls include signal control for all intersections except for Minnehaha Avenue/22<sup>nd</sup> Street, which is unsignalized and Cedar Avenue/I-94 South Ramps which has no traffic control. Existing a.m. and p.m. peak hour traffic volumes for the key intersections are shown in Figure 2.

A traffic operations analysis for a.m. and p.m. peak hours was conducted for the key intersections in order to determine existing traffic operations within the study area. Key signalized intersections were analyzed using Synchro/SimTraffic and key unsignalized intersections were analyzed using the Highway Capacity Software (HCS)/SimTraffic.

Intersection operations analysis identifies the quality of traffic flow, with a ranking assigned from Level of Service (LOS) A through F. LOS A through D is usually considered acceptable in the Twin Cities metropolitan area. LOS E indicates that the intersection is operating at or very near capacity and that vehicles experience substantial delays. LOS F indicates that the intersection is operating at capacity with significant delays.

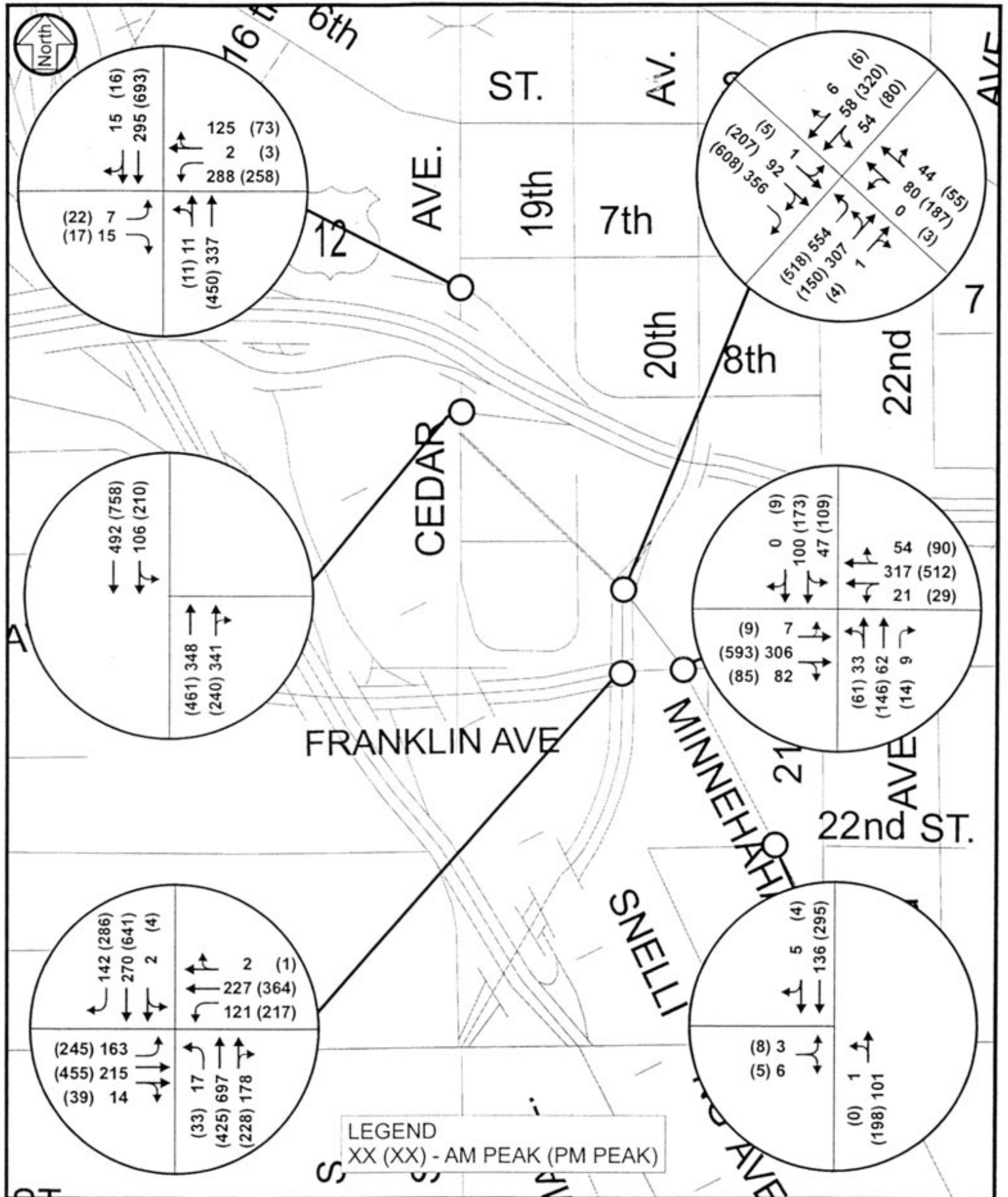
Results of the analysis shown in Table 1 indicate that all key intersections currently operate at an acceptable level of service with existing traffic controls and geometric layout.

**Table 1**  
**Level of Service for Existing Conditions**

INTERSECTION	AM PEAK	PM PEAK
Cedar Avenue and I-94 North Ramp	B	B
Cedar Avenue and I-94 South Ramp~	A	A
Cedar Avenue and 20 <sup>th</sup> Avenue	B	B
Franklin Avenue and Cedar Avenue	B	B
Franklin Avenue and Minnehaha Avenue	B	B
Minnehaha Avenue and 22 <sup>nd</sup> Street*	A/A	A/A

\* Indicates an unsignalized intersection. The overall level of service is shown followed by the worst approach.

~ Indicates an intersection with no traffic control.





## Future Redevelopment Conditions

The redevelopment proposed as part of the Franklin Avenue TOD Master Plan will take place in the Franklin Avenue and the Cedar/Riverside station areas. In all instances where final land use types and intensities may still be under discussion, a “worst-case” land use scenario from a trip generation standpoint was assumed. Assumptions regarding types and intensities of proposed redevelopment are discussed below.

### Franklin Avenue Station Area

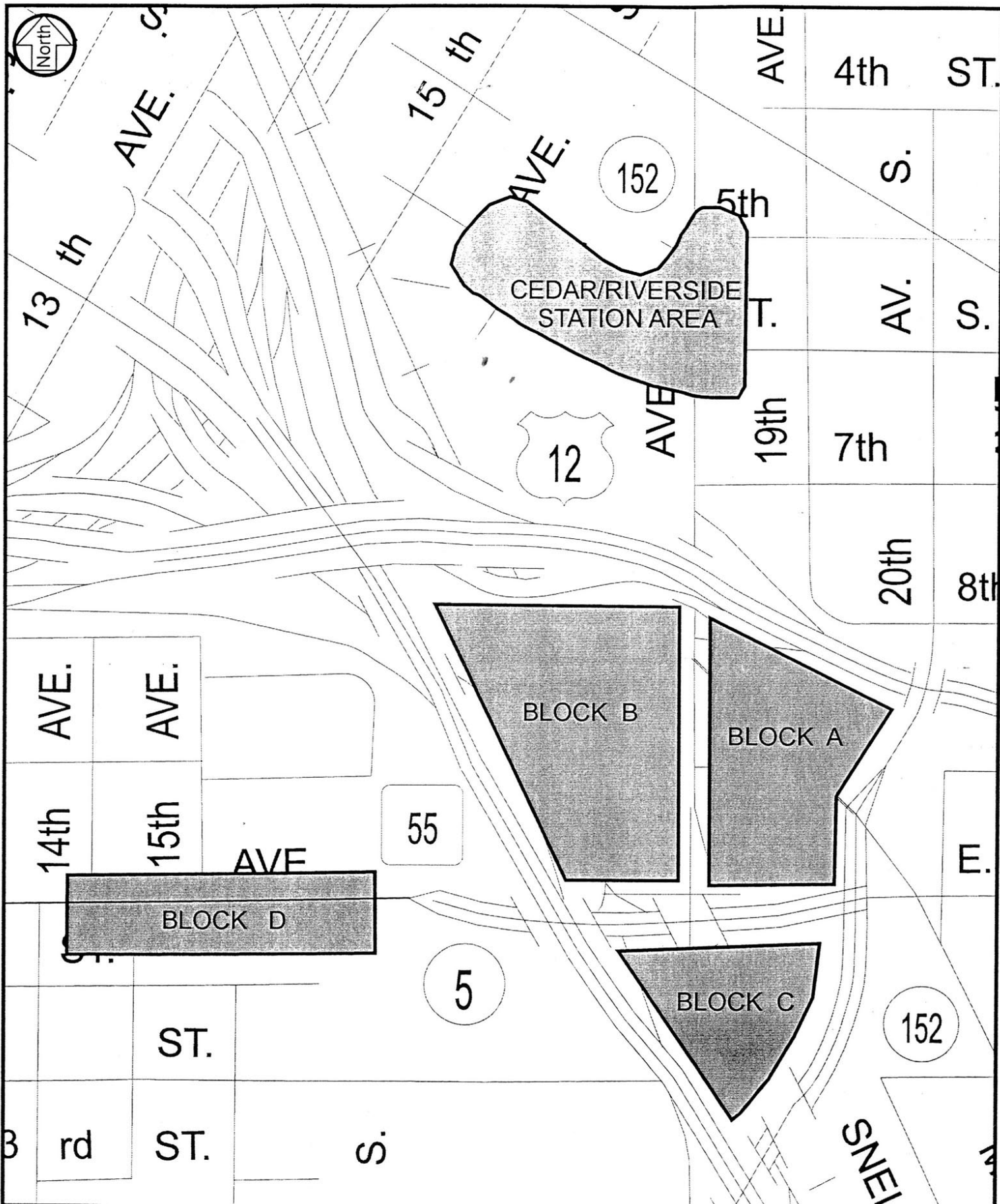
Redevelopment within the Franklin Avenue station area was assumed to consist of a mix of commercial/retail and office uses (see Figure 3: Land Use Blocks and Table 2: Summary of Land Uses and Intensities).

**Table 2**  
**Summary of Land Uses and Intensities**

<b>BLOCK</b>	<b>LAND USE TYPE</b>	<b>SIZE</b>
Block A	Office	91,000 sq. ft.
	Commercial/Retail	51,000 sq. ft.
Block B	Office	288,000 sq. ft.
	Commercial/Retail	12,000 sq. ft.
	LRT Yards & Shops	135 employees
Block C	Office	75,000 sq. ft.
	Commercial/Retail	15,000 sq. ft.
Block D	Office	33,250 sq. ft.
	Commercial/Retail	23,250 sq. ft.

Redevelopment taking place in Block A, currently bounded by Franklin Avenue, Old Cedar Avenue and Cedar Avenue, consists of a total of 142,000 sq. ft. of proposed new development, in addition to the 8,400 sq. ft. of existing bar/entertainment space (Whiskey Junction and the Cabooze) that will remain. Of the 142,000 sq. ft. of new development, it was assumed that 51,000 sq. ft. will be retail/commercial use and the remainder (91,000 sq. ft.) would be office space.

The defining land use in Block B will be the LRT Yards and Shops facility built to service light-rail vehicles for the Hiawatha Line with some excess capacity available to serve a second light-rail line, should one be developed in the future. Other land uses for Block B include a 194-space parking lot for employees and visitors to the LRT Yards and Shops facility, a 750-car parking structure with egress/ingress from Old Cedar Avenue, and a 300,000 sq. ft. development fronting Franklin Avenue (12,000 sq. ft. of retail/commercial space with 288,000 sq. ft. of office space) with space for a 168-car parking structure.



Some limited redevelopment will take place on Block C, currently a mix of industrial and commercial properties. A total of 90,000 sq. ft. of redevelopment is being proposed here with 75,000 sq. ft. of office space and 15,000 sq. ft. of retail/commercial use.

New development proposed for Block D consists of three new structures all fronting Franklin Avenue. A total of 56,500 sq. ft. of development is assumed with 23,250 sq. ft. of retail/commercial space and 33,250 sq. ft. of office space.

### Cedar/Riverside Station Area

Redevelopment in the vicinity of the Cedar/Riverside LRT station is being proposed as a mix of residential, commercial and office uses (see Table 3: Summary of Land Uses and Intensities). A total of 57,950 sq. ft. of new space will be constructed with 5,000 sq. ft. of restaurant use, 10,000 sq. ft. of office, 14,150 sq. ft. of retail, and 28,800 sq. ft. of residential use.

**Table 3**  
**Summary of Land Uses and Intensities**

<b>BLOCK</b>	<b>LAND USE TYPE</b>	<b>SIZE (SQUARE FEET)</b>
Cedar/Riverside Station Area*	Restaurant	5,000
	Office	10,000
	Commercial/Retail	21,650
	Residential	68,800

\*Trips for this area include additional development along Cedar Avenue and 15<sup>th</sup> Avenue.

Additional redevelopment is proposed in scattered sites along Cedar and 15<sup>th</sup> Avenues. Two residential structures totaling 32,500 sq. ft. will be constructed on 15<sup>th</sup> Avenue. One structure consisting of 7,500 sq. ft. of retail and 7,500 sq. ft. of residential uses will be constructed on Cedar Avenue.

### Traffic Forecasts

Future traffic conditions were defined for the year 2010 based on the redevelopment assumptions described in the previous section of the report. Two alternatives were analyzed based on changes to the configuration of local streets. Concept A includes the existing roadway network with a connection between Minnehaha Avenue and Cedar Avenue. Concept B eliminates the segment of Minnehaha Avenue between Cedar and Franklin Avenues.

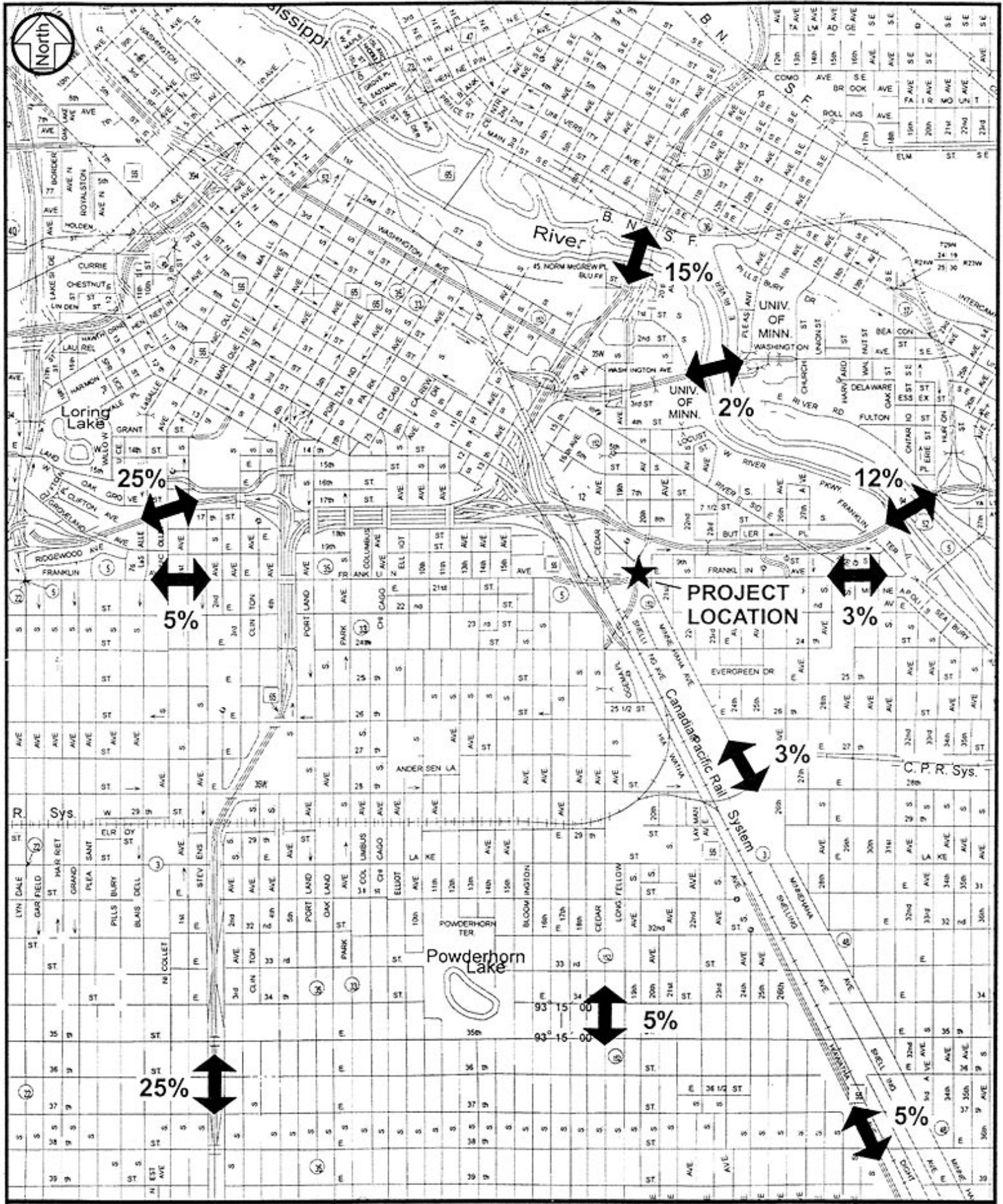
Traffic forecasts were developed for the proposed redevelopment for year 2010 conditions. Trip generation estimates for the a.m. and p.m. peak hours were calculated based on land use type and size, and trip generation rates from the 1997 ITE Trip Generation Reports (see Table 4: Trip Generation Estimates for Future Development). A nine-percent reduction was applied to the trips generated to account for high transit use adjacent to the study area. The total trips were then assigned to the adjacent roadways for each concept. These trips were distributed to the adjacent roadways based on the regional distribution of population and employment, as well as current travel patterns in the area (see Figure 4: Directional Distribution).

**Table 4**  
**Trip Generation Estimates for Future Development**

BLOCK	LAND USE TYPE	SIZE	A.M. PEAK HOUR		P.M. PEAK HOUR	
			Trips In	Trips Out	Trips In	Trips Out
A	Office	90,000 sq. ft.	115	16	21	104
	Commercial/Retail	51,000 sq. ft.	32	20	84	91
B	Office	288,000 sq. ft.	360	49	66	324
	Commercial/Retail	12,000 sq. ft.	7	4	20	21
	LRT Yards & Shops	135 employees	36	8	20	25
C	Office	75,000 sq. ft.	94	13	17	85
	Commercial/Retail	15,000 sq. ft.	9	6	24	26
D	Office	33,250 sq. ft.	30	4	5	26
	Commercial/Retail	23,250 sq. ft.	20	13	55	59
Cedar/ Riverside station area *	Restaurant	5,000 sq. ft.	22	21	26	24
	Office	10,000 sq. ft.	13	2	2	11
	Commercial/Retail	21,650 sq. ft.	14	9	28	39
	Residential	68,800 sq. ft.	15	50	40	31
Total			767	215	408	866

\* Trips for the Cedar/Riverside station area also reflect development along Cedar Avenue and 15<sup>th</sup> Avenue

Various existing buildings will be replaced in the process of redevelopment. The trips generated by the existing land uses were calculated using the 1997 ITE Trip Generation Reports (see Table 5: Trip Generation Rates for Existing Land Uses). Removal of these establishments will reduce the total number of trips generated in the area. This reduction was taken into account when future traffic volumes were assigned to the adjacent roadways for each scenario.



**SRF** CONSULTING GROUP, INC.

CITY OF MINNEAPOLIS  
**DIRECTIONAL DISTRIBUTION**

**FIGURE**

FRANKLIN TOD MASTER PLAN ALTERNATIVES  
 TRAFFIC STUDY

**4**

**Table 5**  
**Trip Generation Estimates for Existing Land Uses**

BLOCK	LAND USE TYPE	SIZE	A.M. PEAK HOUR		P.M. PEAK HOUR	
			Trips In	Trips Out	Trips In	Trips Out
A	Industrial	25,000	18	3	2	20
	Office	24,000	30	4	6	27
	Commercial/Retail	11,000	16	6	17	26
C	Industrial	12,500	10	1	1	10
Total			74	14	26	83

Background historical growth along major roadways within the study area ranges between a decline in growth, no growth and a two-percent yearly growth. This traffic study includes a significant amount of redevelopment/development that will increase trips on the adjacent roadway system. Due to the variation in historical background growths and the amount of development trips added to the roadway system, an additional increase in trips due to future background growth was not included in this analysis.

Future a.m. and p.m. peak hour volumes for the key intersections are shown in Figures 5 and 6.

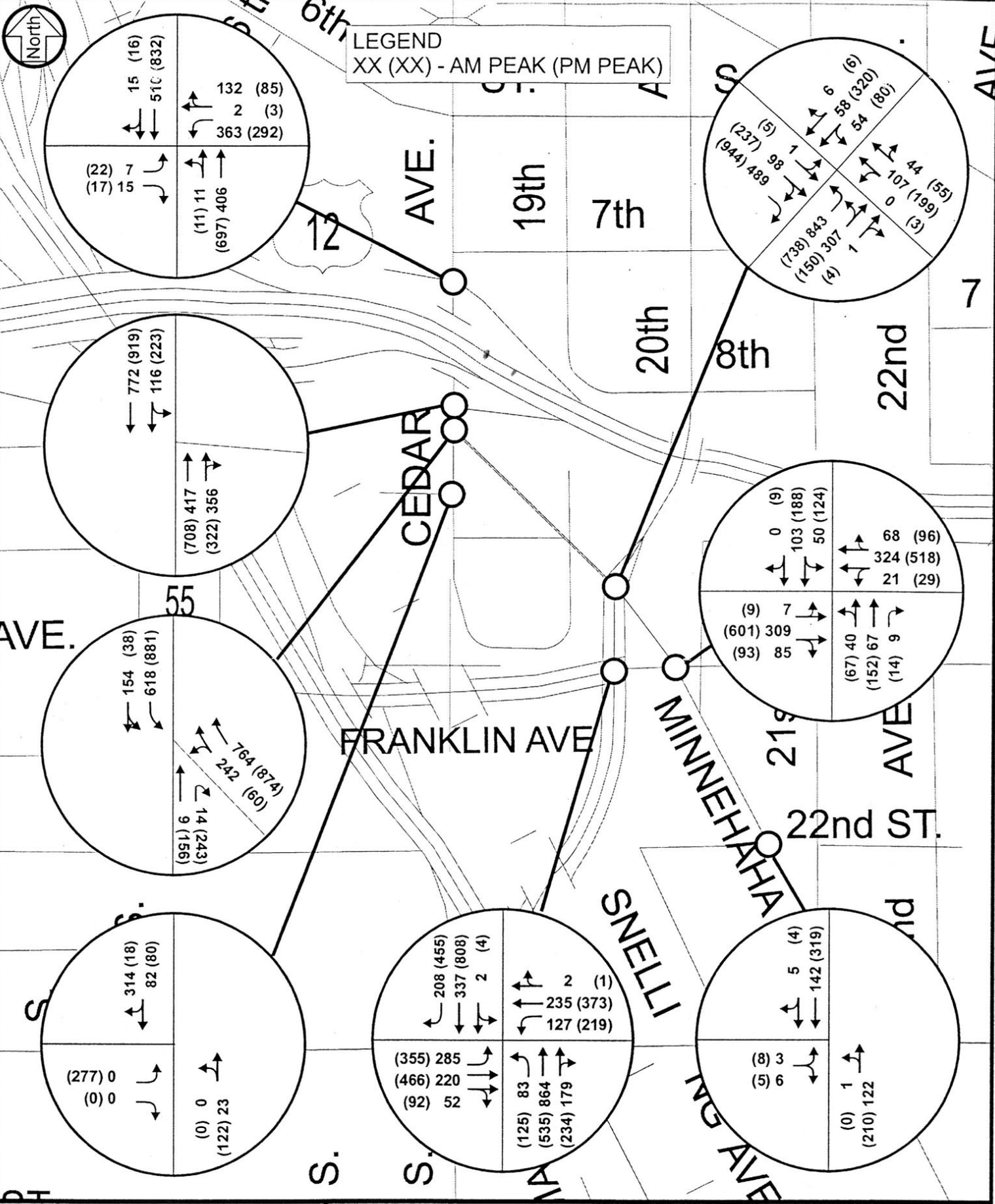
### **Future Traffic Operations Analysis**

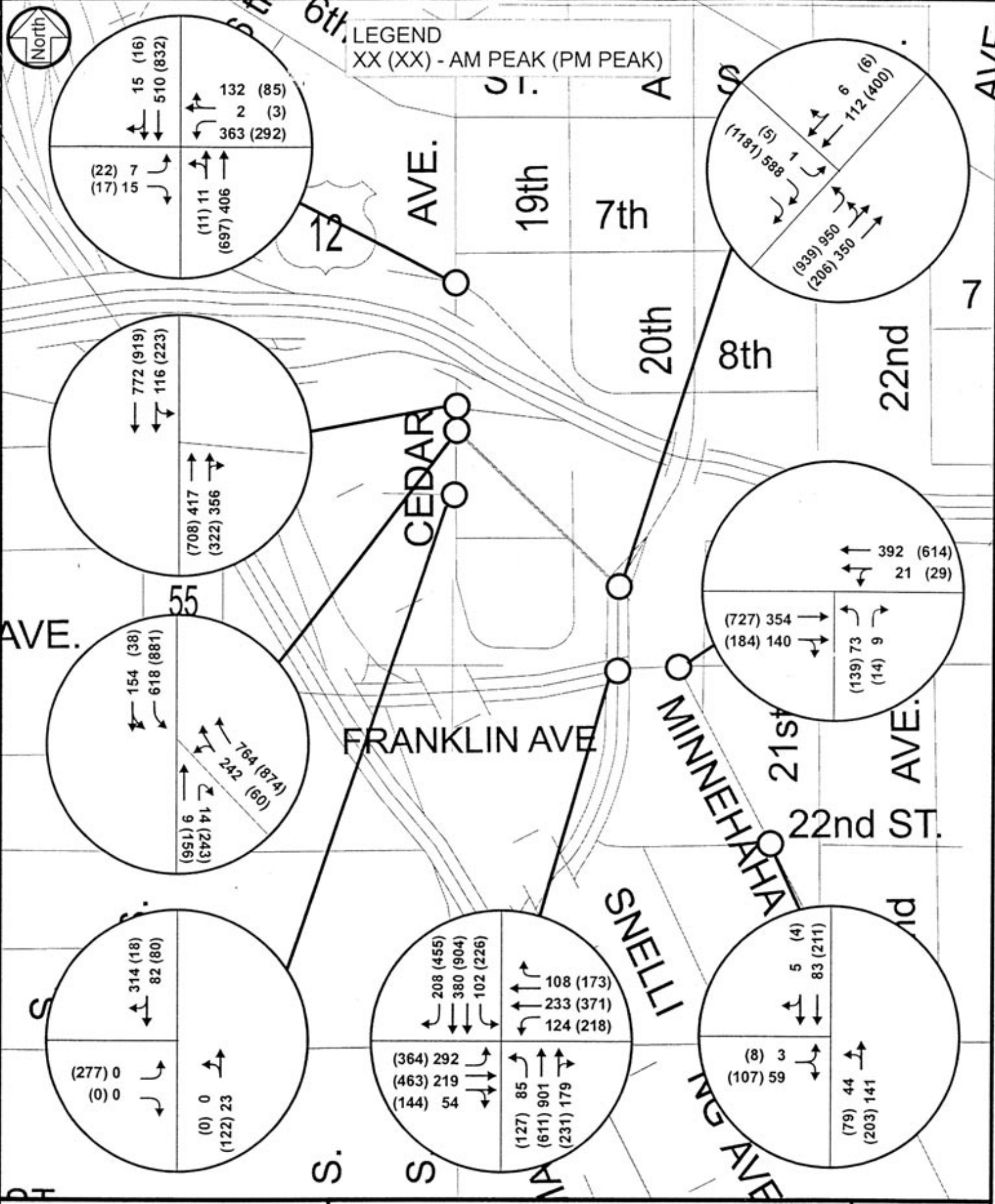
To determine how well the existing roadways will accommodate the proposed redevelopment, a traffic operations analysis was conducted for Concepts A and B for year 2010 build conditions. A Level of Service (LOS) analysis was performed on the key intersections for 2010 Build conditions using Synchro/SimTraffic for the signalized intersections and the Highway Capacity Software/SimTraffic for the unsignalized intersections previously mentioned

For future traffic conditions, the unsignalized intersections of Cedar Avenue/Old Cedar Avenue and Old Cedar Avenue/Ramp Driveway were included in the operations analysis. At the intersection of Cedar Avenue/Old Cedar Avenue, northbound traffic on Old Cedar Avenue is required to stop for southbound/westbound traffic on Cedar Avenue.

### **Concept A Results**

Results from the analysis shown in Table 5 indicate that all intersections operate at an acceptable level of service for the a.m. and p.m. peak hours, with the exception of the intersection of Old Cedar Avenue and the proposed parking ramp driveway during the p.m. peak hour. The close proximity of the signalized intersection of Cedar Avenue/ I-94 South Ramp to the unsignalized intersection of Cedar Avenue/Old Cedar Avenue results in poor traffic operations along this section of Cedar Avenue. The high volume of southbound traffic on Cedar Avenue limits gaps for westbound traffic to make left turns







onto Old Cedar Avenue during the a.m. peak hour. This creates a significant amount of queuing for westbound traffic on Cedar Avenue. Likewise, northbound traffic on Old Cedar Avenue has difficulty finding available gaps in traffic to continue northbound on Cedar Avenue during the p.m. peak hour. This results in extensive queuing which spills back into the parking ramp driveway intersection of Old Cedar Avenue. This delay is reflected in an unacceptable LOS F for the intersection of Old Cedar Avenue/Ramp Driveway during the p.m. peak hour. Further analysis was done assuming that the intersections of Cedar Avenue/I-94 South Ramp and Cedar Avenue/Old Cedar Avenue operate as one signalized intersection. All intersections are expected to operate at an acceptable level of service with this improvement.

**Table 5**  
**2010 Capacity Analysis-Concept A<sup>(1)</sup>**

<b>INTERSECTION</b>	<b>A.M. PEAK HOUR</b>	<b>P.M. PEAK HOUR</b>
Cedar Avenue and I-94 North Ramp	B	B
Cedar Avenue and I-94 South Ramp <sup>(2)</sup>	A (B)	B (C)
Cedar Avenue and Old Cedar Avenue* <sup>(2)</sup>	A/F (B)	C/F (C)
Old Cedar Avenue and Ramp Driveway* <sup>(2)</sup>	A/A (A/A)	F/F (A/A)
Cedar Avenue and 20 <sup>th</sup> Avenue	B	C
Franklin Avenue and Cedar Avenue	B	C
Franklin Avenue and Minnehaha Avenue	C	C
Minnehaha Avenue and 22 <sup>nd</sup> St*	A/A	A/A

\* Indicates an unsignalized intersection; Overall intersection LOS/LOS of the worst approach.

<sup>(1)</sup> LOS with existing traffic control and geometrics followed by LOS with improved traffic control and geometric in parenthesis.

<sup>(2)</sup> LOS with recommended improvement to operate the intersections of Cedar Avenue/I-94 South Ramp Cedar Avenue/Old Cedar Avenue as one signalized intersection.

### Concept B Results

Concept B eliminates the section of Minnehaha Avenue that connects Franklin Avenue to Cedar Avenue. Currently this section of roadway carries a high volume of trucks which will require an alternate route to provide the necessary access to the study area. Therefore, 22<sup>nd</sup> Street located south of the study area is proposed to be extended westerly to connect with Cedar Avenue. Currently there is a median on Cedar Ave at this point which would need to be cut to allow southbound left turns from Cedar Avenue onto 22<sup>nd</sup> Street East without impact to the existing bridge to the south. In addition, there is a grade change between 22<sup>nd</sup> Street and Cedar Avenue and a close spaced signalized intersection on Cedar Avenue at the Hiawatha Avenue east ramp that would need to be considered with the extension of 22<sup>nd</sup> Street. Motorists who would normally use Minnehaha Avenue to access Cedar Avenue would need to travel through the intersection of Franklin and Cedar Avenues.

Results from the analysis shown in Table 6 indicate that all intersections operate at an acceptable level of service for the a.m. peak hour. However, the level of service for the p.m. peak hour is unacceptable at five of the eight intersections. Similar to Concept A, it is recommended that the intersections of Cedar Avenue/I-94 South Ramp and Cedar Avenue/Old Cedar Avenue operate as one signalized intersection. The intersection of Franklin Avenue/Cedar Avenue operates at a LOS F due to the increase in trips that are diverted through this intersection as a result of the closure of Minnehaha Avenue at Franklin Avenue. The current geometrics do not have the capacity necessary to serve this increase in volume. In addition, the lack of capacity at this intersection has a significant impact on the operations at adjacent intersections. It is recommended that a westbound right-turn lane and southbound left-turn lane be added to the intersection of Franklin Avenue/Cedar Avenue. All intersections are expected to operate at an acceptable level of service with these recommended improvements. However, it is expected that there will still be some queuing at the intersection of Franklin Avenue/Cedar Avenue, which will impact adjacent intersections since short storage lengths exist between these intersections.

**Table 6**  
**2010 Capacity Analysis-Concept B<sup>(1)</sup>**

<b>INTERSECTION</b>	<b>A.M. PEAK HOUR</b>	<b>P.M. PEAK HOUR</b>
Cedar Avenue and I-94 North Ramp	B	B
Cedar Avenue and I-94 South Ramp <sup>(2)</sup>	A (B)	B (C)
Cedar Avenue and Old Cedar Avenue <sup>*(2)</sup>	A/F (B)	C/F (C)
Old Cedar Avenue and Ramp Driveway <sup>*(2)</sup>	A/A	F/F (A/A)
Cedar Avenue and 20 <sup>th</sup> Avenue <sup>(3)</sup>	B	F (C)
Franklin Avenue and Cedar Avenue <sup>(3)</sup>	C	F (D)
Franklin Avenue and Minnehaha Avenue <sup>(3)</sup>	B	E (D)
Minnehaha Avenue and 22 <sup>nd</sup> St <sup>*(3)</sup>	A/A	F/F (A/C)

\* Indicates an unsignalized intersection; Overall intersection LOS/LOS of the worst approach

(1) LOS with proposed traffic control and geometrics followed by LOS with improved traffic control and geometrics in parenthesis

(2) LOS with recommended improvement to operate the intersections of Cedar Avenue/I-94 South Ramp and Cedar Avenue/Old Cedar Avenue as one signalized intersection

(3) LOS with recommended improvement of a westbound right-turn lane and southbound left-turn lane at Franklin Avenue/Cedar Avenue

### **Franklin Avenue Roundabout Operations Analysis**

Installing a traffic roundabout at the current confluence of Franklin, Cedar, and Minnehaha Avenues is one way to maintain current levels of study area access and connectivity while providing some alternative means of providing urban design amenities. SRF Consulting Group, Inc. developed and analyzed three alternative roundabout designs in this area. The concepts and their respective impacts on traffic operations in the study area are summarized below.

### Roundabout Alternative One

Roundabout Alternative One is a “six-legged” roundabout in which eastbound/westbound Franklin Avenue, northbound/southbound Cedar Avenue and north/southbound Minnehaha Avenue traffic is cycled through one large roundabout (see Figure 7: Roundabout Alternative One).

This concept was originally presented in the Franklin TOD Master Plan. The British have had over 25 years of experience with modern roundabout design principles and they strongly advise against having more than four legs entering a roundabout. Adding legs to a roundabout increases the diameter and thereby making merging and weaving more difficult.

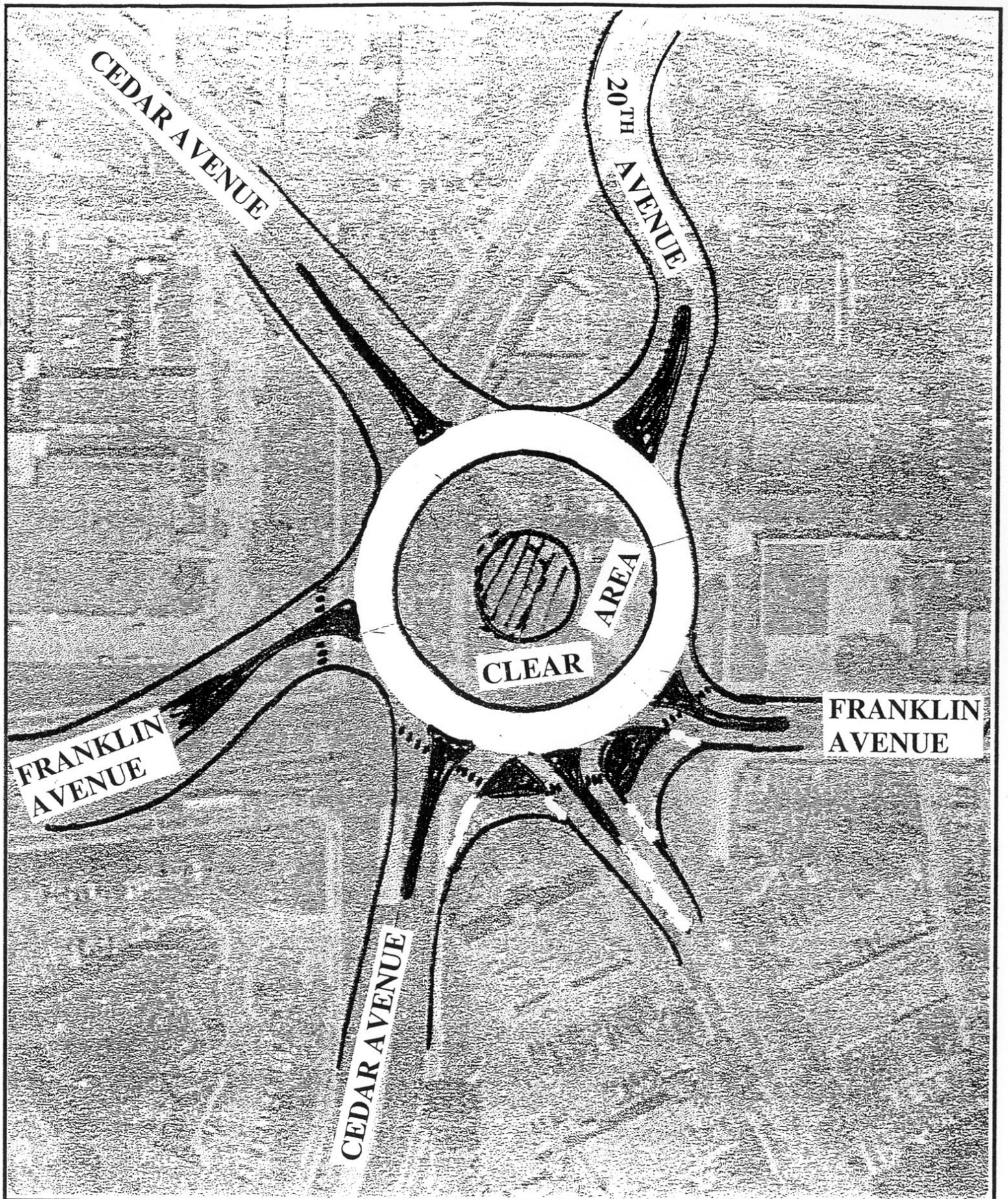
For analytical purposes, the advice against four legs was ignored and a volume versus capacity analysis was performed for the six-legged concept. Analysis results indicate that this concept was not a viable option in this area. With a two-lane roundabout configuration, capacity would be exceeded (overall operations at LOS F). An overall LOS D would be obtained with a three-lane roundabout configuration, but this option is not an attractive one due to pedestrian impacts, as well as driver impacts. Six-legged roundabouts are not commonly found in the United States and the unusual nature of this concept, in addition to maneuvering through three lanes of traffic, may cause difficulties to both drivers and traveling in this area.

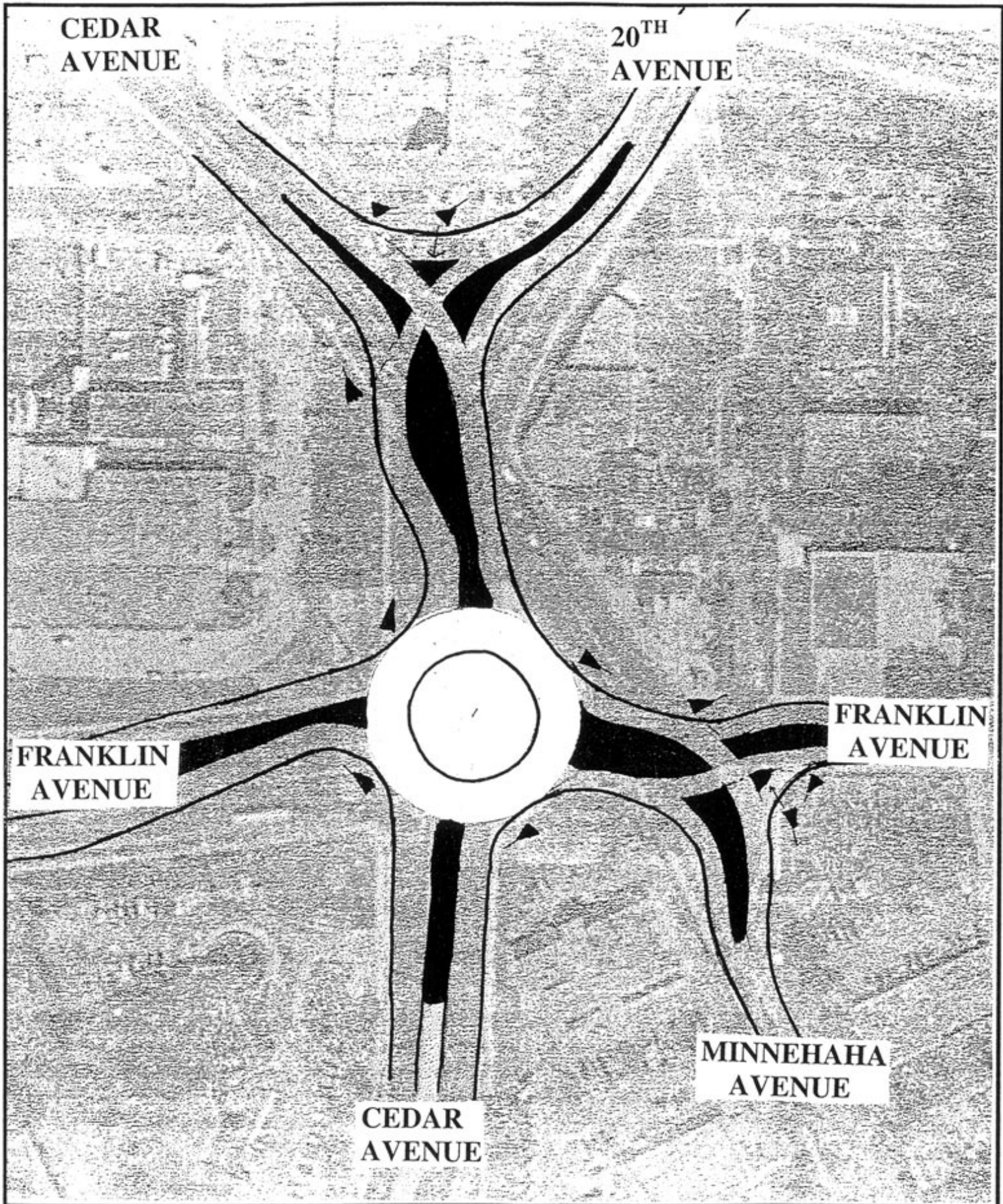
No pedestrian access should be provided to the central island of any roundabout. Only limited landscaping (ensuring that sight lines were maintained) would be allowed for any roundabout design.

### Roundabout Alternative Two

Roundabout Alternative Two seeks to mitigate some of the operational problems of a “six-legged” roundabout (as discussed above) by off-setting some of the turning movements to the intersection of Minnehaha and Cedar Avenues to the north and to the intersection of Franklin and Minnehaha Avenues to the east, thereby achieving a “four-legged” roundabout (see Figure 8: Roundabout Alternative Two).

With the elimination of two “legs”, a four-lane roundabout configuration could be maintained and may be optimal to address pedestrian and urban design issues. During the a.m. peak hour, no capacity constraints would be experienced under this alternative. However, during the p.m. peak hour, the capacity of a two-lane roundabout would be reached and delays would begin to be experienced. Adding right turn bypass connections to some of the approaches can create additional capacity. However the design would then become less pedestrian friendly.





## “Village Green” Alternative

This alternative is called the “Village Green” alternative for the resemblance it may bear to the traditional village green of a New England town. Another example is the Capitol Square in Madison, Wisconsin. As do the traffic roundabout alternatives described above, this alternative concept provides for one-way traffic movement about a defined, central space, eliminating any possibility of left-turning conflicts.

This concept assumes that four traffic signals would be placed at the quadrants of the “village green” (see Figure 9: Village Green Alternative). Pedestrian crossings could be accommodated mid-block with additional signals. The four traffic signals would be operated with a central coordination plan to promote the circulating flow around the “village green” at the appropriate speeds for the character of the area. Of the traffic roundabout alternatives, this concept allows for the best overall level of service (LOS C), and may in fact provide better levels of service than those described under Concepts A and B with intersection improvements. In addition, this concept allows for some intriguing urban design options not accommodated under any of the other concepts.

The central “village green” defined by the one-way roadway would be accessible and developable space. It could be green space, or another land use based on the desires and needs of the community and the City of Minneapolis. However, this roundabout concept would have significant right-of-way impacts. Although only two lanes of roadway are needed for traffic operations, on-street parking would be allowable on the one-way roadway surrounding the “village green”.

Based on this preliminary level of analysis, it would appear that the traffic benefits of this alternative concept, especially when viewed in conjunction with the urban design possibilities afforded by the developable “village green” would make this a concept worth further analysis.

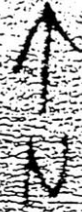
## Summary and Conclusions

Based on this traffic analysis, the following comments and recommendations are offered for your consideration:

- Analysis results of the existing a.m. and p.m. peak hour volumes indicate that all key intersections currently operate at an overall LOS C or better, with existing traffic controls and geometric layout.
- All key intersections for Concept A are expected to operate at an overall LOS C or better, with the exception of the intersection of Old Cedar Avenue/Ramp Driveway. With the recommended improvement to generate the intersections of Cedar Avenue/I-94 South Ramp and Cedar Avenue/Old Cedar Avenue as one signalized intersection, all key intersections will operate at an acceptable level of service.

CEDAR AVENUE

20<sup>TH</sup> AVENUE

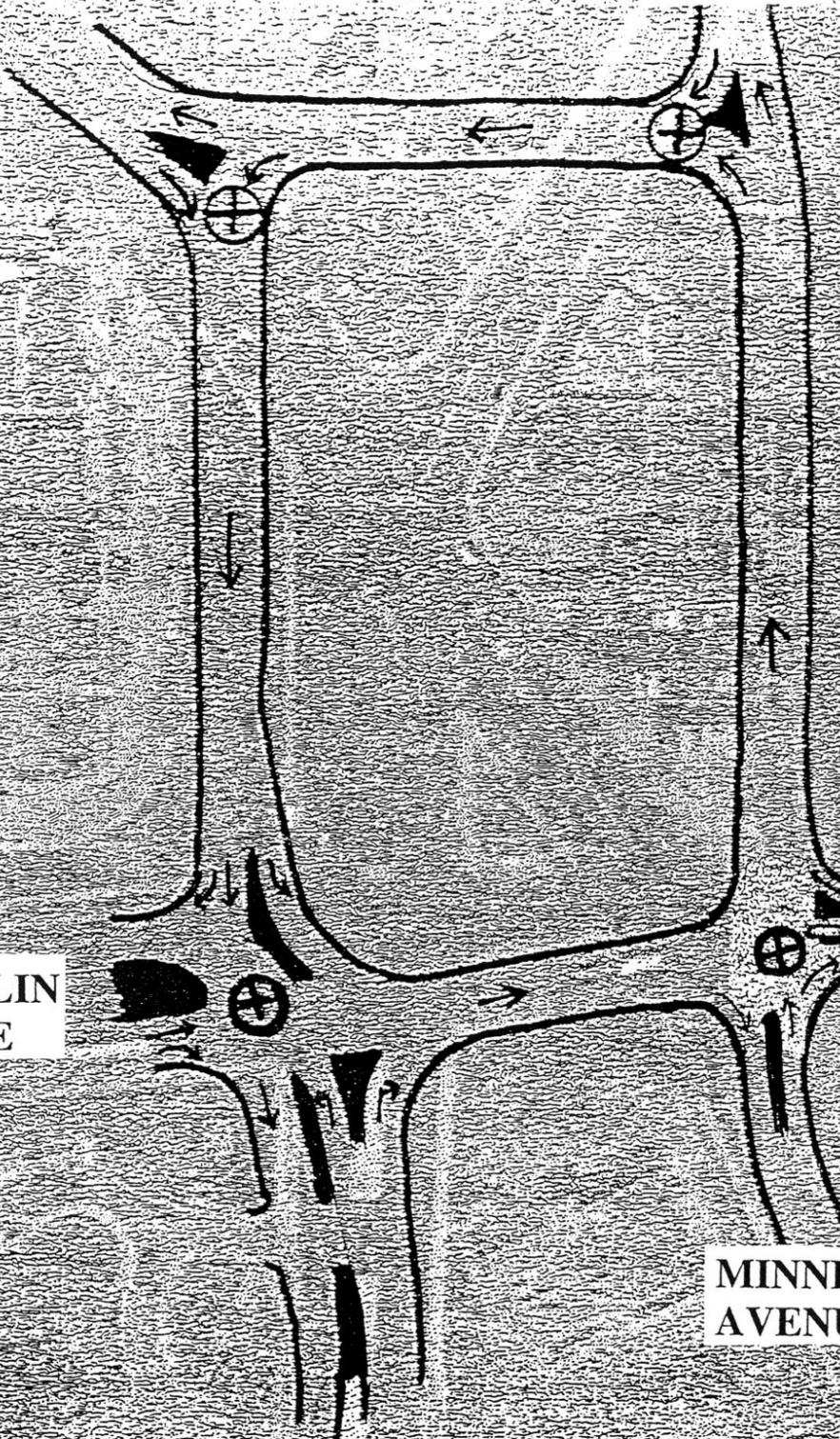


FRANKLIN AVENUE

FRANKLIN AVENUE

MINNEHAHA AVENUE

CEDAR AVENUE



- All key intersections for Concept B are expected to operate at an overall LOS C or better during the a.m. peak hour, with existing traffic controls and geometrics. Most of the key intersections will operate at unacceptable levels of service during the p.m. peak hour, with existing traffic controls and geometrics. Similar to Concept A, it is recommended that the intersections of Cedar Avenue/I-94 South Ramp and Cedar Avenue/Old Cedar Avenue operate as one signalized intersection. In addition, a westbound right-turn lane and a southbound left-turn lane is recommended at the Franklin Avenue/Cedar Avenue intersection. With these improvements, all key intersections are expected to operate at acceptable levels for year 2010. However, some queuing is expected during the p.m. peak hour due to the high volume of traffic traveling through the intersection of Franklin Avenue/Cedar Avenue.
- For Roundabout Alternative One, traffic volumes exceed the capacity for a two-lane roundabout. A three-lane roundabout would provide the capacity sufficient to serve the expected volumes, and result in an acceptable LOS D. However, the combination of the three lanes of traffic with a six-legged roundabout configuration may lead to operational difficulties for drivers and pedestrians.
- Roundabout Alternative Two provides sufficient capacity for the traffic volumes during the a.m. peak hour. However, traffic volumes during the p.m. peak hour would be at capacity creating significant delays. Although right-turn bypass connections could be constructed to increase capacity, the roundabout design would become less pedestrian friendly.
- The “Village Green” alternative allows for the best overall level of service (LOS C) of the roundabout alternatives, and may in fact operate better than the proposed Concepts A and B. In addition, it promotes a pedestrian friendly environment and allows for urban design options not available under the other alternatives. Although this alternative provides a developable space created by the one-way roadway, it would have significant right-of-way impacts. Further analysis is needed to determine the feasibility of this alternative.



**Appendix D: Yards and Shops Mitigation Study**

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# Hiawatha Corridor LRT Yards and Shops Mitigation Study

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November 2000

prepared for the City Minneapolis

by Otak Architects  
and SRF Consulting Group, Inc.

# Hiawatha Corridor LRT Yards and Shops Mitigation Study

## **Description**

The LRT maintenance facility and yards (Yards and Shops) will be located on a large site between the Franklin Avenue Station location and the Cedar-Riverside Station location. The size, scale, and function of the Yards and Shops facility will have a major impact on the surrounding neighborhood and its future development. A number of stakeholders, including Hennepin County, Metro Transit, HPO/MNDOT, Seward Redesign, and the City of Minneapolis have been involved in discussions of 'site mitigation concepts' since the decision was made to locate the Yards and Shops on this site.

The intent of the mitigation measures is to ensure that this facility contributes to the area's redevelopment potential. A number of significant efforts are being made to optimize transit oriented development at these station areas. Therefore, all aspects of the LRT project require proper design attention to make the area attractive for development and to fit into the neighborhoods. This review and the recommendations have been made with the understanding that the current design and footprint for the Yards and Shops is the most efficient design possible and that the shop dimensions cannot be altered. The recommendations and observations address the maintenance building exterior design, the Yards and Shops site elements, the trackway, and the adjoining property frontages. A three dimensional visualization of the Yards and Shops has been prepared from the drawings available and placed in context for a more complete understanding of the magnitude of this facility.

## **Site Mitigation Concepts**

The Yards and Shops facility is one of the largest structures to be built in this area and by definition is very industrial in nature. The operations of this facility are 'introverted' by nature due to the large volume of space required to store and service the vehicles, and minimal interactions with area streets and community facilities. However, this particular site has premier frontage towards Cedar Avenue calling for extroverted interaction with the community. The design of the Yards and Shops facility will play a critical role in the transit-oriented development potential of the area. Attention and commitment to design details will determine whether this facility will be a detriment or a catalyst for development in the area.



# Hiawatha Corridor LRT Yards and Shops Mitigation Study

The Yards and Shops facility occupies such a large area that it is not practical to attempt to completely screen the view of it. A more effective approach will be to offer 'filtered views' of it as a neutral backdrop. This can be accomplished by calling attention to 'foreground' elements that become more prominent such as fencing, railings, light fixtures, catenary poles, and landscape elements. The concept for the Yards and Shops site edge recognizes that the site is dominated by tracks and ballast, catenary poles, asphalt, a large volume building, and that the most effective aesthetic treatment of the site will be at the perimeter. The site mitigation concept also 'prioritizes' the eastern edge along the trackway as the highest priority since it has the greatest pedestrian orientation and a direct relationship with the future development sites. It has the greatest exposure to Cedar Avenue and the adjoining community.

The southern edge is the next highest priority as it faces Franklin Avenue. The western edge along Hiawatha Avenue will be viewed primarily at vehicle speeds and does not have a direct interface with future development. The lowest priority is the north edge as it faces the I-94 overpass.

The eastern edge requires the most intense design detail and should be designed as a pedestrian-bikeway 'boulevard' from the Franklin Avenue Station to the Cedar-Riverside Station. This treatment would focus the design detail and attention to the east side of the trackway and allow the interior Yards and Shops area to be very utilitarian. The east side of the tracks would be 'urban' in design and contribute to preparing attractive adjacent development sites. The necessary elements in this 'boulevard' treatment are identified on the attached 'Concept Yards and Shops Edge' sketch and are further defined as follows:

## ***Fencing***

The trackway and the Yards and Shops area is required to be fenced for safety and security reasons. The baseline fence proposed calls for 'galvanized chain link' fencing. Since the Yards and Shops is in a more 'urban development' area we recommend that a 'black vinyl coated chain link' fencing be used to enclosed the Yards and Shops and along the trackway from Franklin Station to the Cedar-Riverside Station. This fence type will offer a more 'tailored' appearance and is more appropriate in an urban setting.

## ***Cost Implication***

6'-0" galvanized chain link at \$8.00 to \$10.00 per linear foot.

6'-0" black vinyl coated chain link at \$10.00 to \$12.00 per linear foot.

# Hiawatha Corridor LRT Yards and Shops Mitigation Study

## ***Bike Trail***

A bituminous bike trail approximately 10 to 12 feet wide will be constructed along the entire rail corridor. In the section from Franklin Station to Cedar-Riverside Station, we recommend a combined 15-foot minimum width 'scored concrete' pedestrian boulevard/bikeway be constructed. The 'boulevard' will serve as an urban edge for development to 'front' on and help connect the two neighborhoods that are bisected by the I-94 overpass. The 'boulevard' will encourage more 'eyes on the street' for safety and security along the corridor.

## ***Cost Implication***

10- to 12-foot wide bituminous bike trail at \$2.00 to \$300 per square foot.

15-foot wide concrete boulevard at \$5.00 to \$6.00 per linear foot.

## ***Catenary Poles***

Center pole OCS with standard galvanized steel components are called for along this line section. At Yards and Shops facilities there is a maze of catenary poles to serve the storage tracks, the shop functions, and an increased density because of the tight curve radii. Where aesthetics are important, such as in urban areas or in development areas, side-mounted, tapered tubular steel poles painted black, dark blue, or dark green should be used. Since this is an urban neighborhood where we are trying to define an 'edge' between the Yards and Shops and the potential development sites, we recommend using two types of poles. Catenary Type 'A' would be the side-mounted, tapered tubular steel poles along the edge of the pedestrian boulevard. The poles typically range from 9 to 17 inches in diameter. The poles can have light fixtures attached and/or brackets to hang banners to enliven the pedestrian way. These poles should be used from the Franklin Station to the Cedar-Riverside Station to strengthen this pedestrian corridor. Catenary Type 'B' poles would be galvanized, wide-flanged H-beams mounted between tracks as typically found at Yards and Shops facilities.

## ***Cost Implication***

Catenary Type 'A' at approximately \$1,500 premium per pole.

# Hiawatha Corridor LRT Yards and Shops Mitigation Study



Type 'A' Poles



Type 'A' Poles



Type 'B' Poles

# Hiawatha Corridor LRT Yards and Shops Mitigation Study

## ***Lighting***

Lighting is a very important safety and security consideration as well as a critical aesthetic consideration. The lighting fixtures help form and define the 'eastern edge' and contribute significantly to the urban design along the boulevard. The Hiawatha Corridor Aesthetic Design Guidelines (page 31), dated March 21, 2000, call for a very specific pedestrian scale light fixture along the bike trail that we find to be attractive and very appropriate. The fixture is specified to be painted black and the luminaire mounting height (bottom of light fixture) should be no lower than 12 feet and no higher than 14 feet above adjacent grade.

## ***Cost Implication***

None; adopt as specified.

## ***Tie and Ballast***

The trackway is specified to be 'open tie and ballast,' which is appropriate in this location. However, we do recommend that an 'extended crossing panel' area be considered at the northern end of the Franklin Station platform for a more 'urban' transition and connection of the two development parcels east and west of the Franklin Station.

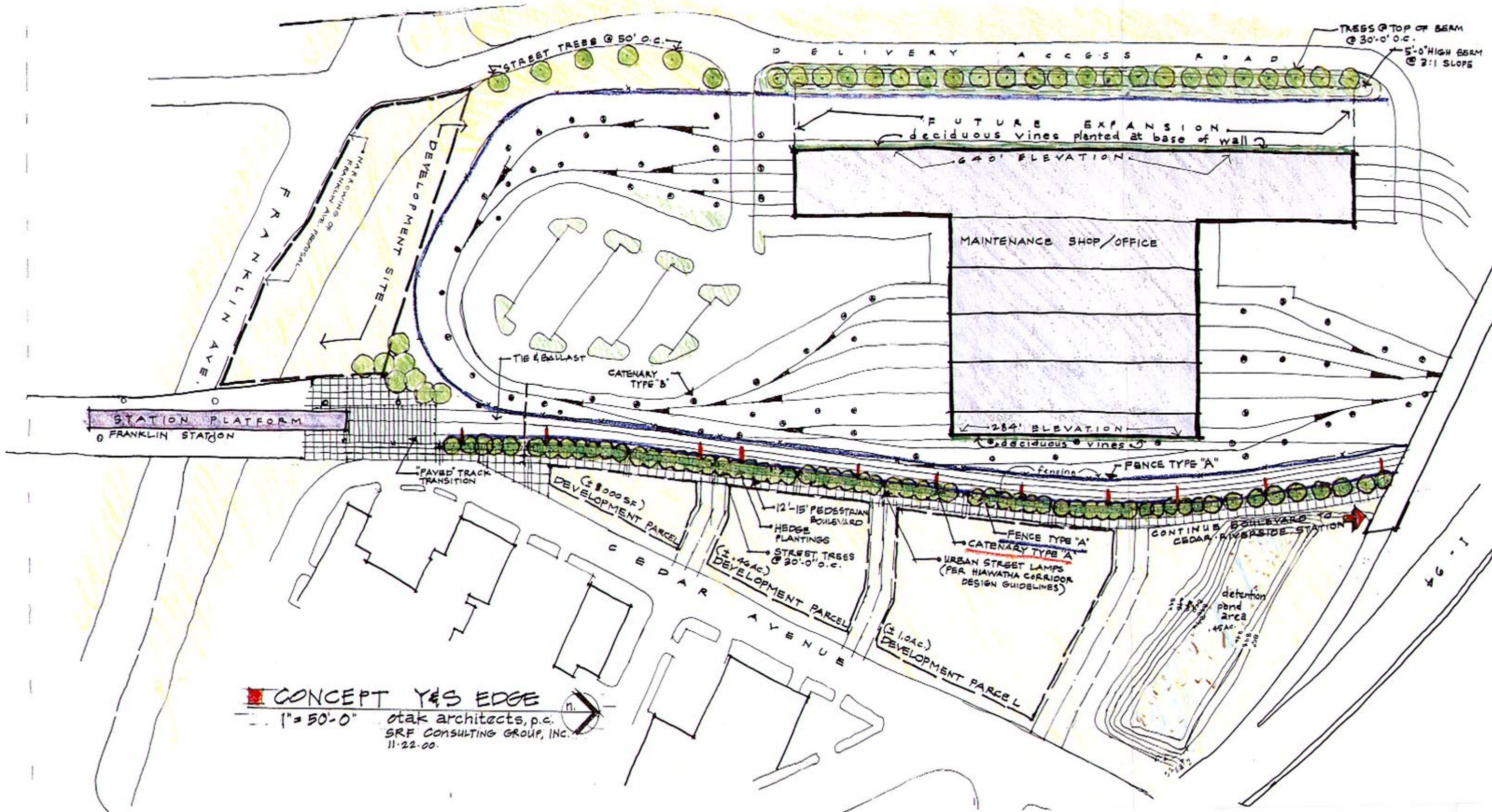
## ***Cost Implication***

Approximate range of \$10.00 to \$12.00 per square foot hard surface area.

## ***Landscape Edge***

The Hiawatha Corridor Aesthetic Design Guidelines (page 43) indicates a mix of trees, shrubs, and hedges for this area to be used as screening materials. We recommend using approximately the same density of plant materials, but in a more formalized urban structure to strengthen the eastern edge and to provide a significant foreground feature that 'filters' the views to the Yards and Shops facility. As recommended in the Hiawatha Corridor Aesthetic Design Guidelines (page 42), we also recommend a hedge be planted against the black vinyl coated chain link fence along the entire frontage of the Yards and Shops site. Along this same frontage 'street trees' should be planted at a spacing of 30'-0" on center and can be opened to 50'-0" on center past the Yards and Shops. Trees should be planted initially at 2½-inch to 3-inch caliper for more immediate impact and to reduce vandalism and replacement. These trees are arguably the most effective 'mitigation value' and should not be compromised.





**CONCEPT YES EDGE**  
 1" = 50'-0"  
 otak architects, p.c.  
 SRF CONSULTING GROUP, INC.  
 11-22-00

# Hiawatha Corridor LRT Yards and Shops Mitigation Study

## *Cost Implication*

No increase in cost anticipated; only a 'reallocation' and focus of landscape budget.

## *Drainage*

The PE drawings indicate a more 'oval shaped' detention pond in the middle of the triangular shaped parcel along Cedar Avenue. We propose a more linear detention pond paralleling I-94 to optimize the development potential of the triangular site. It could be developed as one site or divided into smaller parcels. Our design team drainage engineers' preliminary calculations indicate an area of approximately a half acre be reserved (see attached report). We envisioned 'land-sculpting' along the slope to form a landscape feature detention pond. It could be an excellent 'artist-design team' collaboration opportunity.

## *Cost Implication*

None anticipated if design criteria is outlined before final design.

Along the southern edge of the Yards and Shops, we do not anticipate site mitigation. It is very exposed to Franklin Avenue and would require significant landscape screening if the Franklin Avenue frontage was not being anticipated as a development site. Significant efforts are being made to optimize the area available for future development. Hennepin County has proposed a narrowing of Franklin Avenue to expand the land area available for development. Intense building development along this frontage would be the most effective mitigation of the Yards and Shops and would help muffle the sound of the inevitable 'wheel squeal' at the tight curve radii in the Yards. Every effort should be made to encourage development of this site.

The western edge parallels Hiawatha Avenue, so the view of the Yards and Shops is primarily from vehicles at highway speeds. However, some screening is necessary because the maintenance building presents a 640-foot long unbroken elevation to Hiawatha Avenue. We propose an approximately four- to five-foot high berm along the access road with deciduous trees planted on top of the berm at 30'-0" on center. Once past the building, tree spacing can be opened to 50'-0" on center spacing. Trees of 2½-inch to 3-inch caliper should be planted to provide more immediate impact and to minimize vandalism and replacement. Deciduous vines should be planted at the base of the wall, to climb the wall for added texture and color.

# Hiawatha Corridor LRT Yards and Shops Mitigation Study

## *Cost Implication*

None anticipated; recommend reallocation of landscape budget and focus on this critical area.

The northern edge of the site is not as exposed to future development areas or to the immediate neighborhood due to the I-94 overpass. The continuous 'boulevard' along the eastern edge contributes the most meaningful mitigation for this exposure.

## *Cost Implication*

None anticipated.

## *Turn-around Loop Area*

The 'turn-around loop area' is a very utilitarian yard area that includes a 'maintenance of way building' and a traction power substation building that is placed on a 'grounding mat' that has limitations for landscape materials, etc. The loop area will probably store a lot of LRT materials and requires a detailed screening plan to minimize its impact on the area. The plan needs to be developed as final design proceeds to outline appropriate yard screening areas. The most effective overall mitigation concept is to continue the 'boulevard' treatment from the Franklin Station to the Cedar-Riverside Station to establish the 'eastern edge' to define and separate transit-oriented development sites from maintenance storage yard functions.

## *Cost Implication*

Fencing upgrade to 'black vinyl coated chain link.'

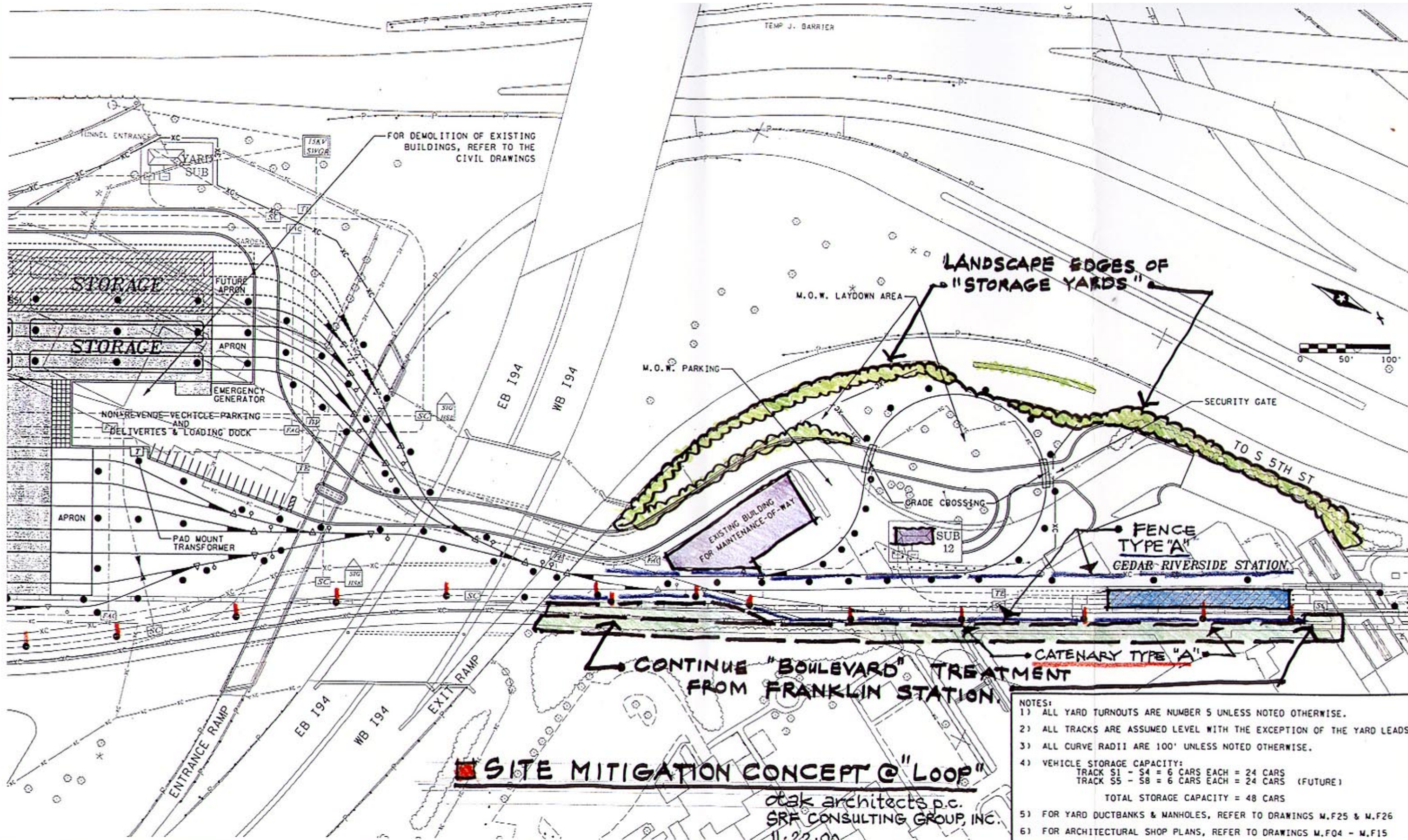
Pedestrian/bikeway boulevard upgrade.

Catenary Type 'A' upgrade (approximately 12 to 15).

## **Maintenance Building**

The Yards and Shops facility is one of the largest structures to be built in this area and by definition is very industrial in nature. The operations of this facility are 'introverted' by nature due to the large volume of space required to store and service the vehicles and have minimal interactions with area streets and community facilities. Therefore, it is not the ideal neighbor to attract transit oriented development.

The design and image of the Yards and Shops facility will play a critical role in the transit-oriented development potential of the area. While aesthetic decisions do not



**SITE MITIGATION CONCEPT @ "LOOP"**

oak architects p.c.  
 SRF CONSULTING GROUP, INC.  
 11.22.00

NO	DATE	BY	CHKD	APPR	REVISION

DRAWN BY  
SCA

DESIGNED BY  
SCA

CHECKED BY



**CONTRACT DOCUMENTS**

NOT FOR CONSTRUCTION



MINNESOTA DEPARTMENT OF TRANSPORTATION SP 2724-111

HIAWATHA CORRIDOR LRT

MAINTENANCE FACILITY YARD & SHOP

YARD GENERAL SITE PLAN - SHEET 2 OF 2

SYSTEMS DRAWING NAME: M.F03

SHEET 813 OF 1382

## Hiawatha Corridor LRT Yards and Shops Mitigation Study

need to impact the function of the facility, attention to design details will determine whether this facility will be a detriment or a catalyst for development in the area. A number of significant efforts are underway to optimize the potential for transit-oriented development from narrowing Franklin Avenue to gain more space, revising traffic intersections to be more pedestrian friendly, pre-development planning for air-rights development over the maintenance yard, and master planning efforts for the Franklin and Cedar-Riverside Station areas to name a few. The momentum and energy is strong and the maintenance building has a responsibility to be a good, respectful neighbor, and participant in these efforts.

The previous sections have outlined recommended perimeter screening ideas to filter the views of the yards and the buildings, but it is almost impossible to entirely hide this large structure in this neighborhood. No one is expecting to see lavish materials to mimic a 'Class A' office building, but simple, artful detailing of the industrial materials normally found on maintenance facilities can present a dignified, economical building to the neighborhood and one that development interests would not mind being next to.

The current concept for this building (dated August 18, 2000) requires significant revision and design attention to meet this basic requirement. The original concept building, part of the PE package, even though it needed refinements, presented a more acceptable building for this prominent site. We understand that the masonry materials and the roof forms could not be achieved in the given budget. However, the current proposal has stripped the building to the lowest level of design and offers an unrefined, extremely austere mass of precast concrete panels.

This building presents an east elevation to the Cedar Avenue frontage that is 284 feet long and 32 feet high that is one solid unbroken wall. The west elevation facing Hiawatha Avenue is 640 feet long and 32 feet high and is largely unbroken except for some access doors. Some articulation of the buildings is necessary to make this building acceptable in the neighborhood. Some suggestions to consider and that are commonly included on other transit maintenance facilities should include clerestory lighting to light the work bays; introduce other materials to accentuate massing changes or to articulate the large walls; detail and accentuate the panel connections; industrial details; forms; and use color as an accent (see the following photos).

# Hiawatha Corridor LRT Yards and Shops Mitigation Study



Ruby Junction; Gresham, Oregon



Ruby Junction; Gresham, Oregon

*Prepared for: City of Minneapolis*

12  
otak  
SRF

# Hiawatha Corridor LRT Yards and Shops Mitigation Study



Elmonica; Beaverton, Oregon



Elmonica; Beaverton, Oregon

*Prepared for: City of Minneapolis*

13  
otak  
SRF

## Hiawatha Corridor LRT Yards and Shops Mitigation Study

In addition to precast concrete panels, a number of interesting metal panels are available that are commonly used in maintenance facilities and normally are possible in reasonable building budgets. A sketch elevation is included that illustrates a number of the suggestions as one possible approach. Also note two examples of maintenance facilities in other cities that use simple, economical forms, materials, and color to present acceptable buildings to a neighborhood. These buildings have a long life span and will impact the neighborhood for several generations.

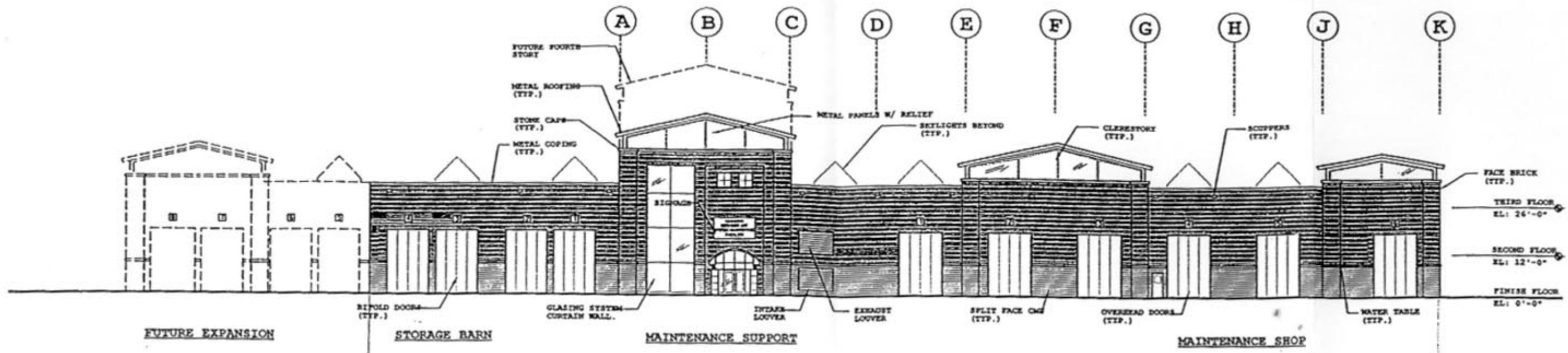
While all the facades of the building require additional design attention, priorities can be established based on the exposures and relationship to the neighborhood. The east elevation is most important since it will face the future development sites, and the existing immediate neighborhood. The long wall needs articulation. In addition to a mix of construction materials, consider planting deciduous vines that can climb the wall to add another texture and color to the wall.

The south elevation is a close second priority because it is the 'front door' of the facility and is the facade that is presented to the Franklin Avenue development sites and the transit station. This elevation offers a number of possibilities because of the overhead doors, openings, and the office functions.

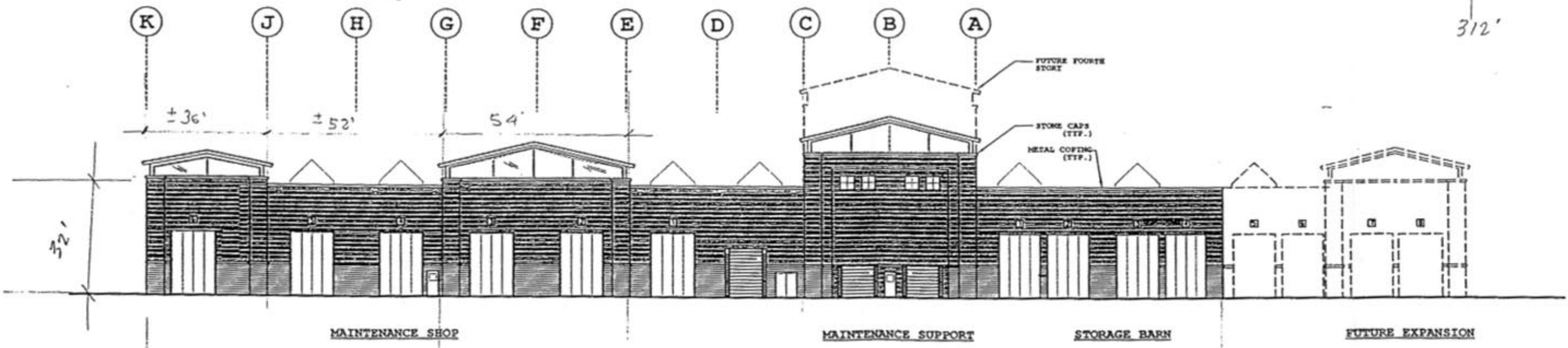
The west elevation is important because it faces Hiawatha Avenue. It will be viewed mainly from vehicles at highway speeds but it is 640 feet long; approximately two city blocks. Landscape berming and tree planting will help mitigate the impact of this long unbroken wall. Deciduous vines should be planted at the base of this wall and wires attached to the wall to allow the vines to climb the wall for added texture and interest.

The north elevation has less of a priority because of its exposure to the I-94 overpass. However, the north elevation has the same opportunities as the south elevation for detailing and articulation. The perimeter screening outlined previously will minimize the impact of this elevation.





1 SOUTH ELEVATION



2 NORTH ELEVATION



30  
4  
152  
160  
312

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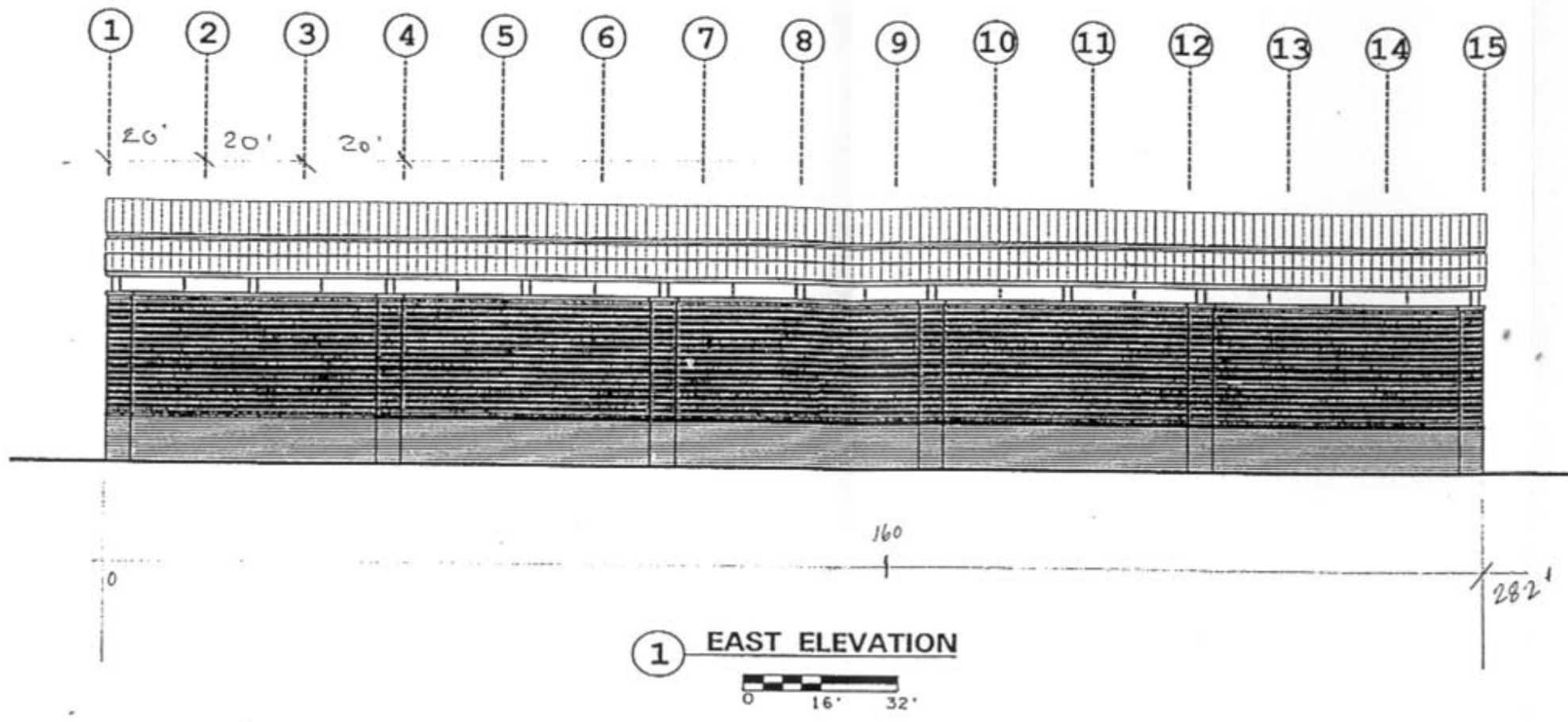


**CONTRACT DOCUMENTS**  
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MINNESOTA DEPARTMENT OF TRANSPORTATION SP 2724-111  
 HIAWATHA CORRIDOR LRT  
 MAINTENANCE FACILITY YARD & SHOP  
 EXTERIOR ELEVATIONS - SHEET 1 OF 2  
 SYSTEMS DRAWING NAME: M.F16

SHEET 826 OF 1382



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120  
180

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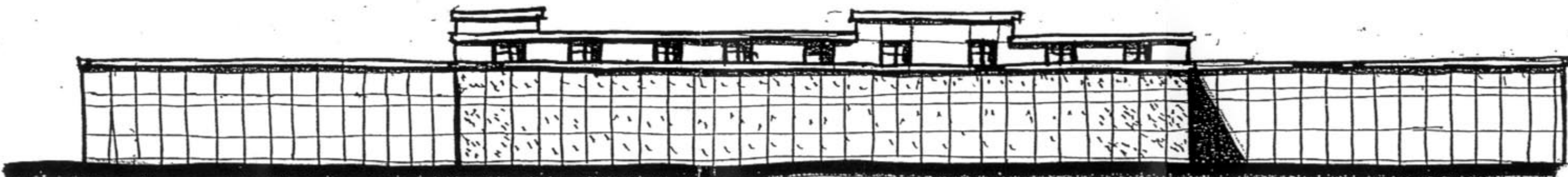
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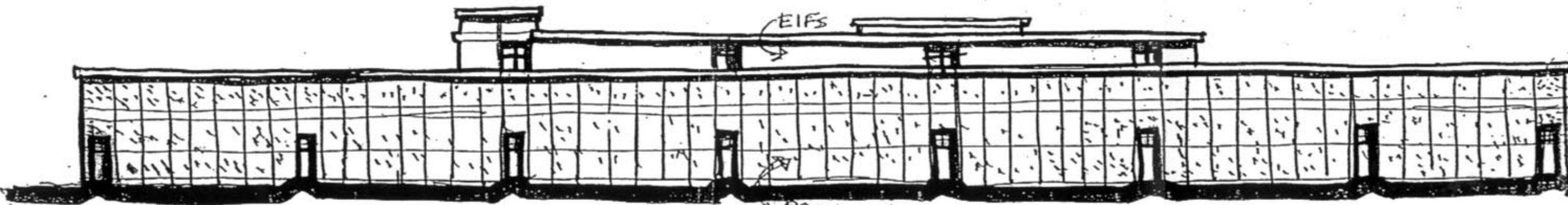
MINNESOTA DEPARTMENT OF TRANSPORTATION SP 2724-111		SHEET
HIAWATHA CORRIDOR LRT		827
MAINTENANCE FACILITY YARD & SHOP		OF
EXTERIOR ELEVATIONS - SHEET 2 OF 2		1382
SYSTEMS	DRAWING NAME: M.F17	



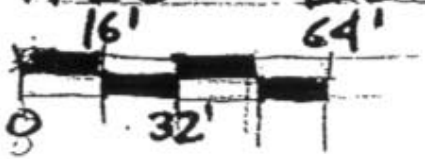
SOUTH ELEVATION



EAST ELEVATION



WEST ELEVATION

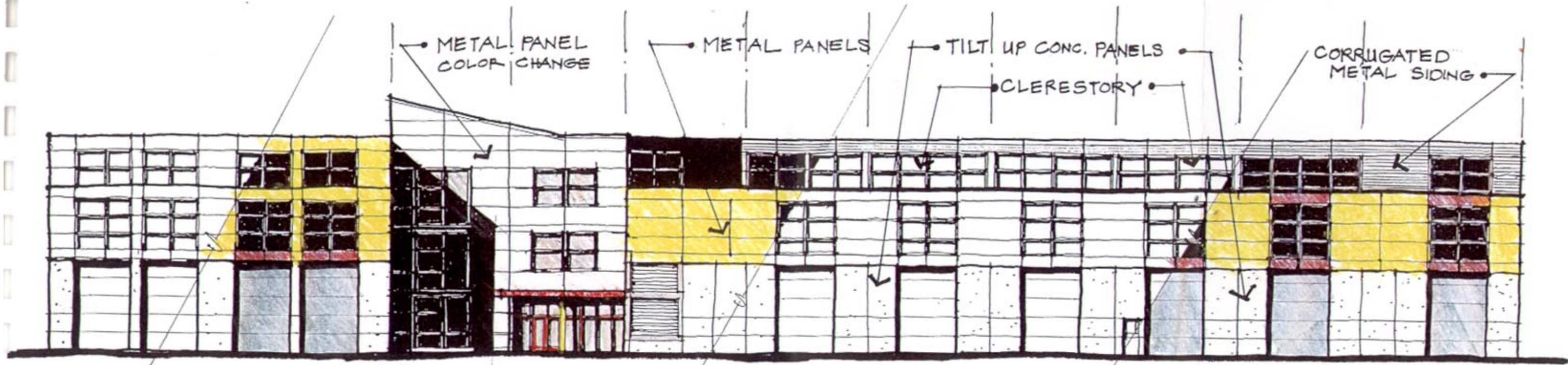


EIFS

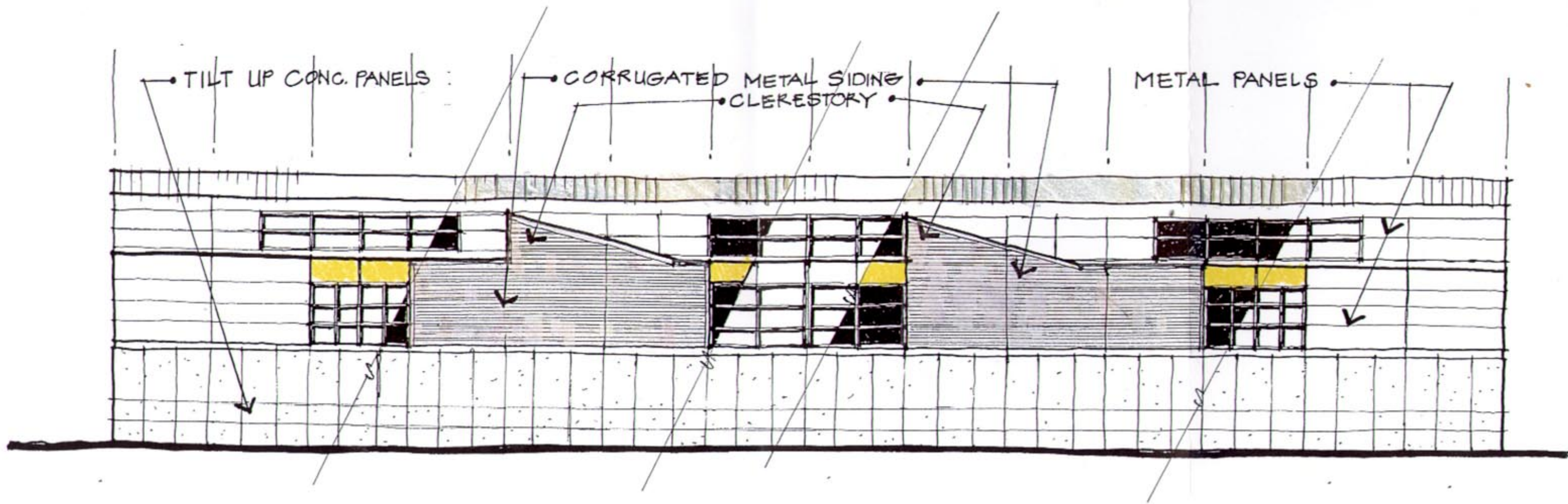
PRECAST CONCRETE

8/18/00

Current Concept  
Elevations  
Yards & Shops



ELEVATION STUDY: SOUTH ELEVATION  
1/6" = 1'-0"      otak architects p.c.  
11.20.00.



ELEVATION STUDY · EAST ELEVATION

1/6" = 1' - 0"

otak architects, p.s.

11.20.00

**MEMORANDUM**

TO: File

FROM: David W. Filipiak, P.E.  
Senior Associate  
Robert J. Leba  
Engineer

DATE: November 29, 2000

SUBJECT: STORM WATER MANAGEMENT PLAN FOR LRT YARDS AND SHOPS

**PURPOSE:**

The purpose of this memorandum is to develop a Storm Water Management Plan for the LRT development site. This involves identifying existing and proposed drainage areas, computing their discharge rates, and developing mitigation for water quality and quantity.

**CRITERIA**

Water Quality City of Minneapolis Stormwater Ordinance

- 70% Total Suspended Solids (TSS) removal (Interim Discharge Standards to Mississippi River)
- MPCA Best Management Practices

Water Quantity Limit rate of discharge to existing rates or to an acceptable level for downstream conveyance system.

**ANALYSIS****HYDROLOGY****EXISTING SITE (FIGURE 1)**

	<b>Area (ac)</b>	<b>C</b>	<b>Tc (min)</b>	<b>Q<sub>10</sub> (cfs)</b>
Area 1	6.5	0.45	30	10
Area 2	8.2	0.45	30	13
Area 3	5.2	0.60	10	17
Area 4	4.9	0.50	15	12

**PROPOSED SITE (FIGURE 2)**

	<b>Area</b>	<b>C</b>	<b>Tc</b>	<b>Q<sub>10</sub> - in (cfs)</b>	<b>Q<sub>10</sub> - out (cfs)</b>
Area A (1,2,3)	19.9	0.50	20	42	17
Area B (4)	4.9	0.50	15	12	12

**PROPOSED MITIGATION**Water Quality:

Area A Wet pond with permanent pool volume  $\geq$  Runoff from the 2" storm event (0.93 ac-ft)<sup>(1)</sup>

Area B Grit chamber<sup>(2)</sup>

Water Quantity:

Area A Pond discharge  $\leq$  17 cfs (Requires 1.3 ac-ft of active pond storage to attenuate inflow)

Area B No mitigation required (no runoff increase)

**CONCLUSIONS**




- Drainage of Area A is directed to a wet detention basin for water quality treatment and attenuation to match the existing discharge rate. The pond will discharge to the existing storm sewer located on Cedar Avenue<sup>(3)</sup>. The existing storm sewer in Cedar Avenue appears adequate for this discharge.
- Normal water level (NWL) is approximate and may be adjusted once a site grading plan is prepared.
- Drainage area B is directed to a grit chamber for water quality treatment. No attenuation is necessary because the runoff in the proposed condition will not increase substantially. The discharge is directed to the existing storm sewer located on 15th Avenue.

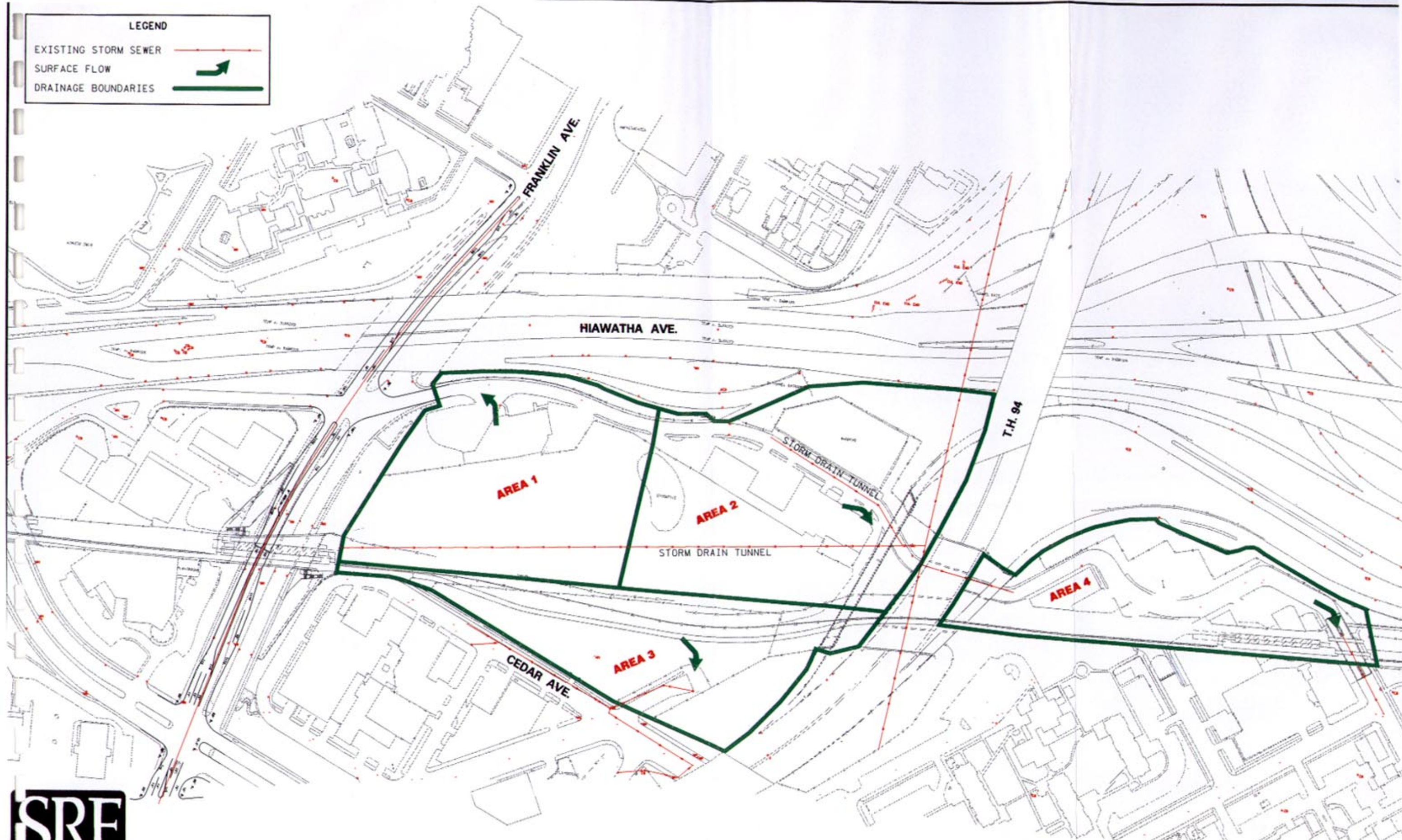
<sup>(1)</sup>Expected removal efficiency of 80 to 90% TSS

<sup>(2)</sup>Expected removal efficiency of 40 to 50% TSS

<sup>(3)</sup>Alternate connection to a drop shaft connected to a 6 x 6 storm drain tunnel located on the north end of the building

LEGEND

- EXISTING STORM SEWER 
- SURFACE FLOW 
- DRAINAGE BOUNDARIES 

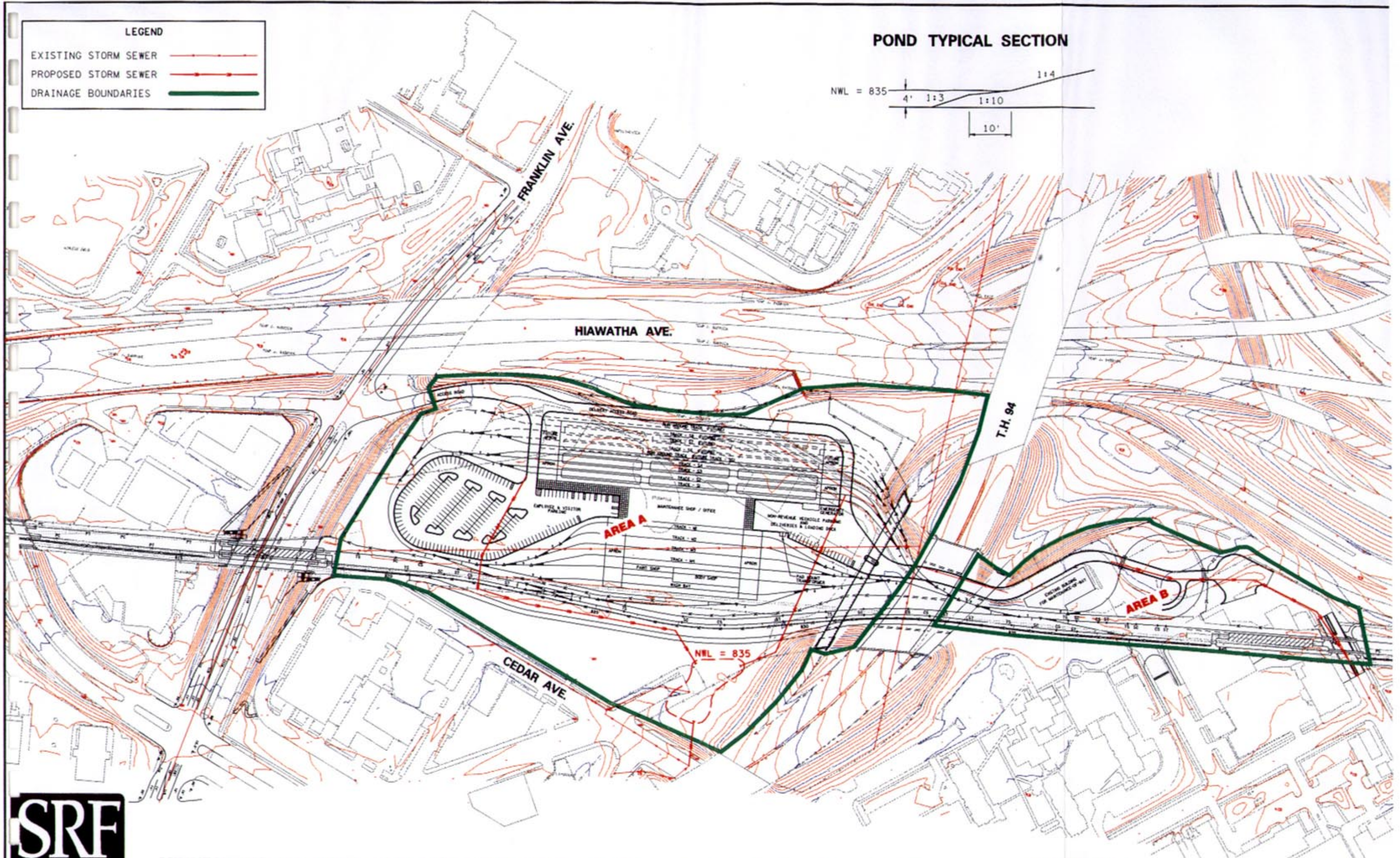
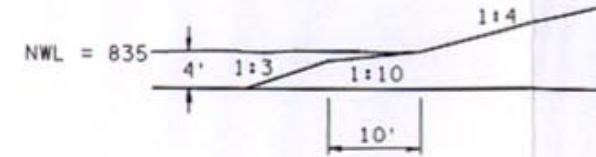




LEGEND

- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- DRAINAGE BOUNDARIES

POND TYPICAL SECTION



onsulting Group, Inc.

PLANNING\3725\DATA\LAYOUTPROP.DGN

Date: 11-21-00

MINNEAPOLIS LRT YARDS AND SHOPS  
MITIGATION STUDY

PROPOSED DRAINAGE AREA MAP

FIGURE 2  
OF 2