

TRAVEL DEMAND MANAGEMENT PLAN

L&H Station

Minneapolis, Minnesota

December 12, 2014



Prepared For:



HENNEPIN COUNTY

Prepared By:



Westwood

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I. INTRODUCTION

For several years, the City of Minneapolis and the adjacent neighborhood has struggled with ideas, suggestions, plans and proposals for the development for the area south of East Lake Street and west of Hiawatha Avenue (MN Trunk Highway 55) in Minneapolis, Minnesota. The completion of the Hiawatha Light Rail Transit Line (now known as the BLUE Line), and its Lake Street / Midtown Station, have escalated these planning efforts.

During this period, the Corcoran Neighborhood Association (CNO) has worked with the University of Minnesota's Center for Urban and Regional Affairs (CURA), with the City of Minneapolis, and with other stakeholders to develop initiatives for prudent neighborhood-compatible transit-oriented development (TOD).

In response, Hennepin County's Real Estate Division has proposed to redevelop the 6-1/2 acre site bounded by East Lake Street (County Road 3) to the north, Hiawatha Avenue and Metro Transit's BLUE Line to the east, 31st Street East to the south and 22nd Avenue South to the west. The redevelopment, currently referred as "L&H Station", is a residential, civic and commercial transit-oriented development at 2225 East Lake Street, comprising the following elements:

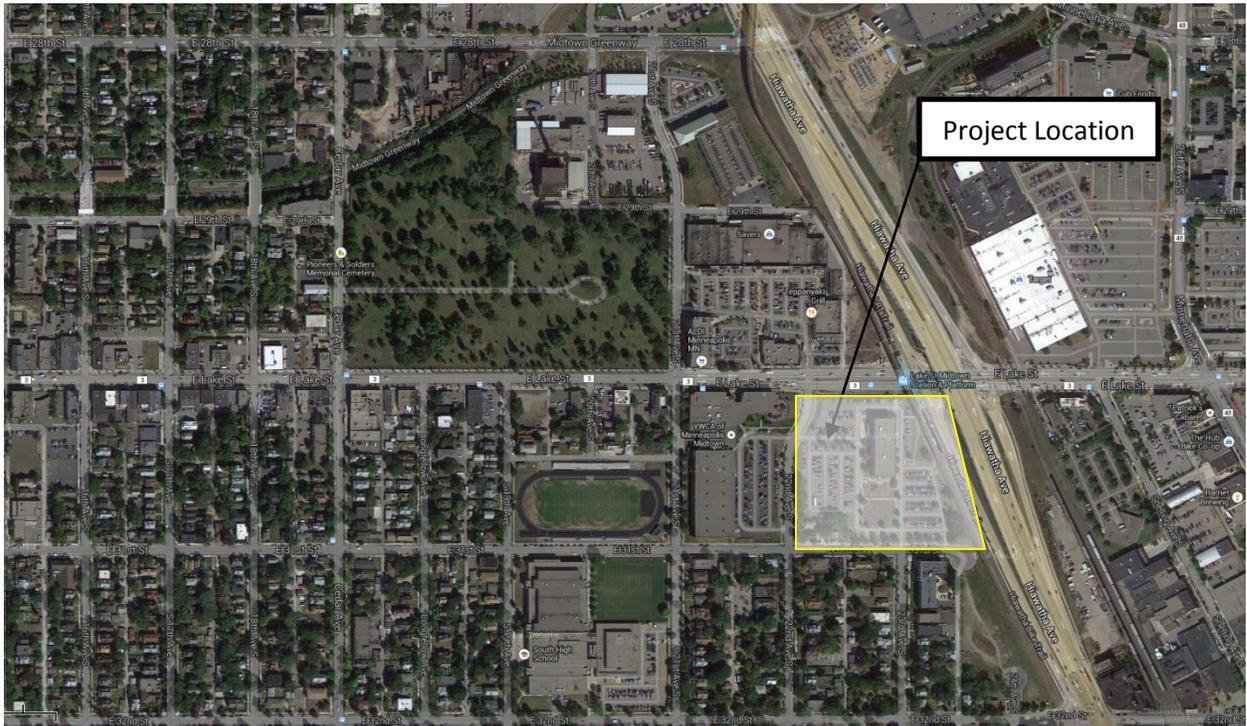
- A 100,000 square-foot office space for the proposed Hennepin County South Minneapolis Regional Service Center;
- Commercial/Retail area encompassing 16,075 square feet;
- 565 units of market rate and affordable rental housing;
- A public promenade/plaza open space (with space for the Midtown Farmers Market and transit plaza)
- Structured parking for 840 vehicles

Figure 1 shows the Corcoran Neighborhood area and the vicinity where the L&H Station development is proposed.

The overall development includes six buildings; one building for office/commercial use and five buildings dedicated to residential housing. Each building will have below grade parking for tenants, residents and visitors. The housing densities will be at the highest levels allowed by the City of Minneapolis in order to take full advantage of the site. There is an existing Midtown Farmers Market that operates on the site on Tuesdays and Saturday that will be remaining on the site after reconstruction.

L&H Station represents a unique opportunity to create the largest transit-oriented development in Minneapolis, and potentially the whole of the state of Minnesota. The site plan shows the building layout with the off-street parking proposed through entrances from 31st Street South and a main internal circulation drive between 22nd Avenue South and 23rd Avenue South. The access driveways will connect to a system of structured parking on site.

FIGURE 1 – VICINITY MAP



Source: Google Maps

Two main phases of development are proposed for the site:

- Phase 1 involves the construction of a building housing 100,000 square feet of government service center and 8,000 square feet of retail as well as a 125-unit market-rate rental housing building. To the east, the existing Minneapolis Continuing Education building will stay throughout the extent of Phase 1 (at least five years, with a possible extension to eight years). Further, the Midtown Farmers Market will continue to operate on the site on Tuesdays and Saturdays.
- Phases 2 through 4 will occur when classes at the Minneapolis Public School building site are moved and the building is razed. In its stead will be an additional 440 affordable and market rate housing units and an additional 8,075 sq. ft. of commercial to be constructed in four buildings. The Farmers Market will be expanded onto a public promenade/plaza area at the former school building site.

Figures 2A and 2B show site layouts of the L&H Station project for Phase 1 and for full build-out.

FIGURE 2A – SITE LAYOUT FOR PHASE 1

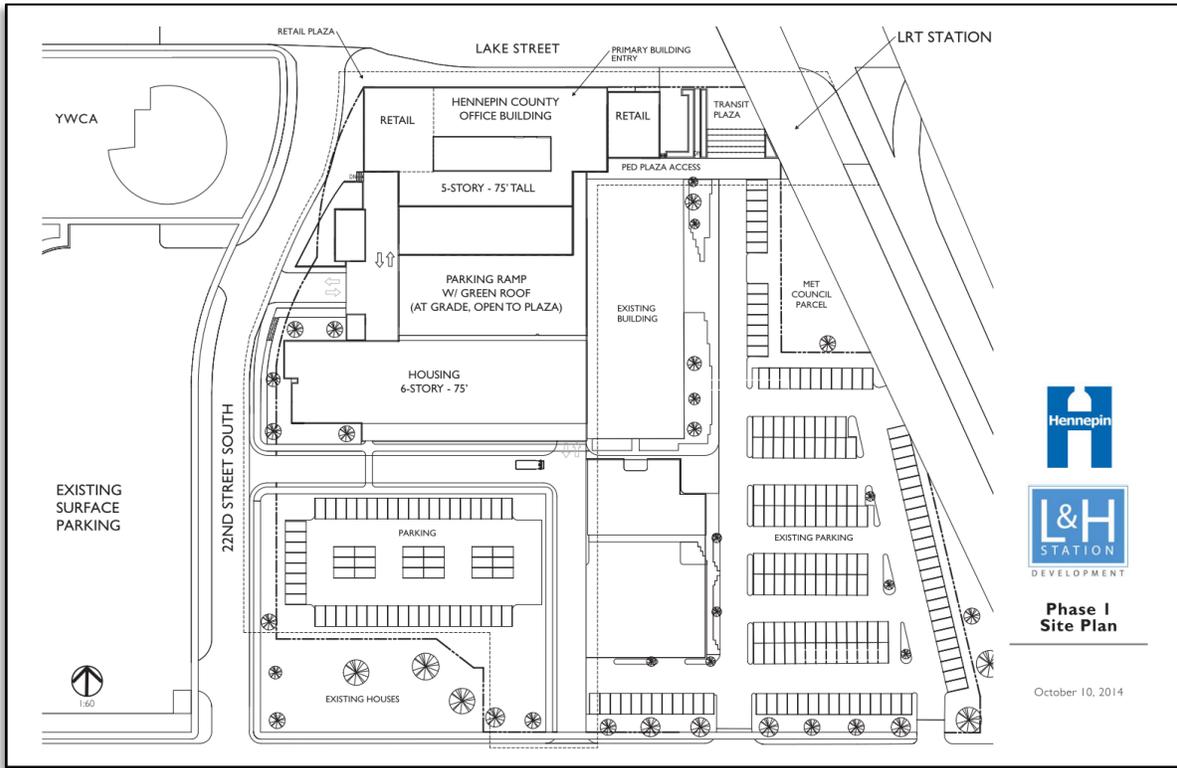
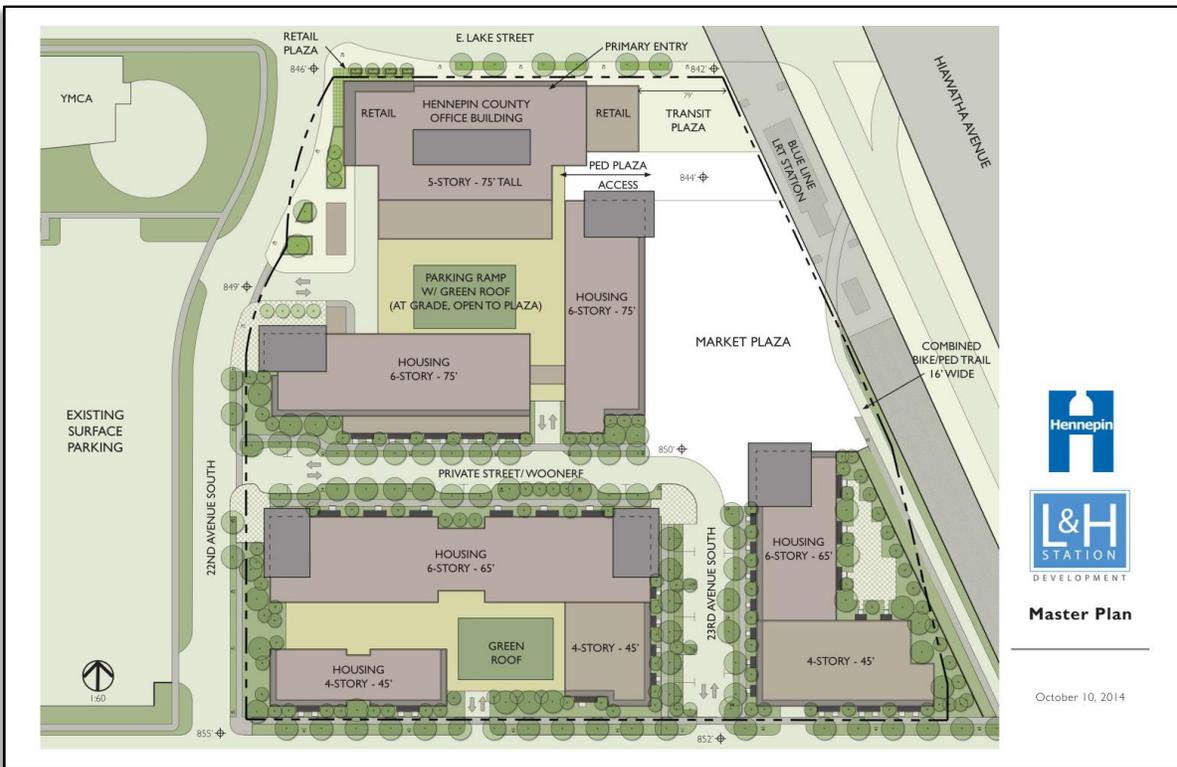


FIGURE 2B – SITE LAYOUT FOR FULL BUILD-OUT



Source of both Site Plans: L&H Station, Minneapolis, MN, BKV Group, 10/10/2014.

This Travel Demand Management Plan (TDMP) outlines the ways in which the proposed redevelopment will help Minneapolis achieve their goals of enhancing the local transportation system. These goals are to be achieved by proper land use selection, site design and implementation of specific vehicular demand reduction strategies to encourage use of alternate modes of travel, enhance pedestrian friendliness, and achieve a balance in the needs of all users of the transportation system.

Furthermore, the TDMP provides the developer and the surrounding neighborhood with a framework of current and projected traffic impacts – both with and without the development. The results of the TDMP will include strategies that can be implemented and measured throughout the development to promote alternate transportation modes.

The project proposer and City staff are continuing to discuss possible reduction in the total number of parking spaces at the site. If this discussion and further analysis allows a reduction in the total number of spaces, this will be reflected in the final TDMP. In no case will the number of parking spaces be increased from the number analyzed in this version of the TDMP.

II. LAND USES AND ZONING

A. Existing Land Use and Zoning

Travel Demand Management analysis begins with a determination of existing and proposed land uses and zoning. The project site lies within a C3A, Community Activity Center, zoning district. The Minneapolis Zoning Code notes the following about the C3A district:

- The **C3A Community Activity Center District** is established to provide for the development of major urban activity and entertainment centers with neighborhood scale retail sales and services. In addition to entertainment and commercial uses, residential uses, institutional and public uses, parking facilities, limited production and processing and public services and utilities are allowed.

The site is also within a PO, Pedestrian Oriented, overlay zoning district. Minneapolis' Zoning Code describes the PO Overlay Zoning District as follows:

- The **PO Pedestrian Oriented Overlay District** is established to preserve and encourage the pedestrian character of commercial areas and to promote street life and activity by regulating building orientation and design and accessory parking facilities, and by prohibiting certain high impact and automobile-oriented uses.

At this time, the entire six-acre site is dominated by surface parking, with a three-story building encompassing 51,000 square feet placed near the center of the site. The building is owned and in use by the Minneapolis Public School district (MPS) for their adult education programs.

The structure was once erected as the first part of a now-defunct college campus, and is currently limiting full use of the site's potential. Connections to the City street grid and nearby amenities are significantly hampered by poor site usages, including a retaining wall that obstructs the streetscape and a berm that obscures access to the LRT station platform.

The existing surface parking on the site also encompasses a 143-space **31st Street Park & Ride Lot** leased by Metro Transit. This Park & Ride Lot comprises the eastern wedge of the redevelopment site bounded East 31st Street on the south, an extension of 23rd Avenue on the west and the noise wall for the Hiawatha LRT on the east. An additional 20 stalls designated for Metro Transit parking extend north from the Park & Ride along the east side of the MPS Building toward Lake Street.

B. Proposed Land Use and Zoning

The redevelopment, as it is currently proposed, fits within the C3A and PO zoning district descriptions above. Table 1 describes the changes that will occur with redevelopment of the site.

TABLE 1 – EXISTING AND PROPOSED SITE LAND USES

Existing Land Use	Proposed Land Use - Phase 1	Proposed Land Use - Full Build-Out
Office/Classroom Building - 51,000 sq. ft.	Office/Classroom Building - 51,000 sq. ft.	
Farmer's Market - 45,000 sq. ft.	Farmer's Market - 45,000 sq. ft.	Farmer's Market - 45,000 sq. ft.
	Government Service Center - 100,00 sq. ft.	Government Service Center - 100,00 sq. ft.
	Retail - 8,000 sq. ft.	Retail - 16,075 sq. ft.
	Multi-Family Housing - 125 units	Multi-Family Housing - 565 units
Off- Street Parking - 287 surface stalls	441 new parking stalls; 312 existing stalls to remain	Off-Street Parking - 840
Metro Transit stalls (143 Park & Ride stalls; 20 other stalls)	135 stalls in Park & Ride Lot repurposed for school parking	

Source: BKV, October 9, 2014.

Phase 1 involves the construction of a five-story building comprising 100,000 square feet of office space, 8,000 square feet of retail and a six-story building comprising 125 units of multi-family housing. The large office space is proposed to house the Hennepin County Human Services and Public Health Department South Minneapolis Hub. In addition, the Minneapolis Community Education Services Building will remain for at least five years (with a possible extension to eight years) until another site for its services has been developed. The Midtown Farmers Market will continue to operate in the site parking lot on Tuesdays and Saturdays.

Phases 2 through 4 of the development will be added incrementally between 2017 and 2025. Market-rate and affordable housing units will be added to the site, as well as some additional neighborhood retail. The Midtown Farmers Market will move to the Market Plaza area once the school building has been razed. At-grade and below grade parking will be added for each residential building as it is constructed.

C. Proposed Parking

Phase 1: The site will include 441 parking stalls for the office, retail and housing units, with an existing 312 parking spaces to remain. The 135-stall Park-and-Ride lot will be closed, with these stalls being reallocated for use by the Minneapolis Public School building. Further, the County will use the 108 space lot directly to the south of Phase 1 for overflow parking.

- Structured parking count is 441
 - 92 at ground floor
 - 349 below-grade

Future Phases: 440 market rate and affordable housing units to be built on the remainder of the L&H Station site. The future phases will include 399 structured parking spaces. Removal of 312 existing parking spaces.

D. The Minneapolis Public School Building

Throughout Phase 1 of the L&H Station development, the Minneapolis Public School Building will remain in operation. The lease has been extended for the school to continue offering classes on the site for at least five years, with a possible extension to eight years. Therefore, The land use, parking and trip generation impact of the school must be included with Phase 1 of the L&H Station development.

The Minneapolis Public School Building provides Adult Basic Education and Continuing Education classes for a broad sector of the community. According to Mr. Tim Rowe, Program Coordinator for Adult Education for Minneapolis Public Schools:

- The building houses 30 classrooms. The maximum number of classrooms in use at any one time is 26.
- Classes are held during three sessions -- 8:30-12:30; 12:30-3:00; 5:00-9:00 (morning and evening sessions are peak times; they only offer 10 afternoon classes)
- The maximum number of students at any one time is approximately 450 students (8:30-12:30: 450 students / 6:00-9:00: 350 students).
- Approximately 55% of the students drive or carpool, while 45% arrive by other means (primarily public transportation).

By the end of Phase 1, it is anticipated that Minneapolis Public Schools will have found an alternate site for offering Adult Education classes in the area. Regardless, the new school building is not planned for the future phases of L&H Station. If and when a new school site is determined, the school district will be required to submit its own Travel Demand Management Plan for the new school site.

III. PEDESTRIAN, BICYCLE AND TRANSIT USE

Due to its location just southeast of Downtown Minneapolis, adjacent to the Lake Street LRT Station and other Metro Transit bus lines, and within walking distance of several commercial, educational and recreational centers, the L&H Station Redevelopment site is well-situated to facilitate use of alternate modes of transportation.

A. Pedestrian

The Corcoran Midtown Revival Plan (page 5.5) calls for the following improvements to promote pedestrian use in the vicinity of the site:

- Maintain standards for sidewalk width.
- Create pedestrian connections between Lake Street commercial uses and residential areas to the south.
- Buildings should have storefronts and pedestrian-scaled throughout the neighborhood.
- Attention should be paid to every aspect of the public realm in the neighborhood.

In the redevelopment plan, the Market Square and Transit Plaza will serve the dual purposes of community/civic space for the Midtown Farmers Market and other public uses as well as reconnecting and reinforcing neighborhood and transit uses. Figure 3A illustrates the connectivity for pedestrians and cyclists through and around the site. Review of the site plan reveals the following characteristics in support of the goals noted in the Revival Plan:

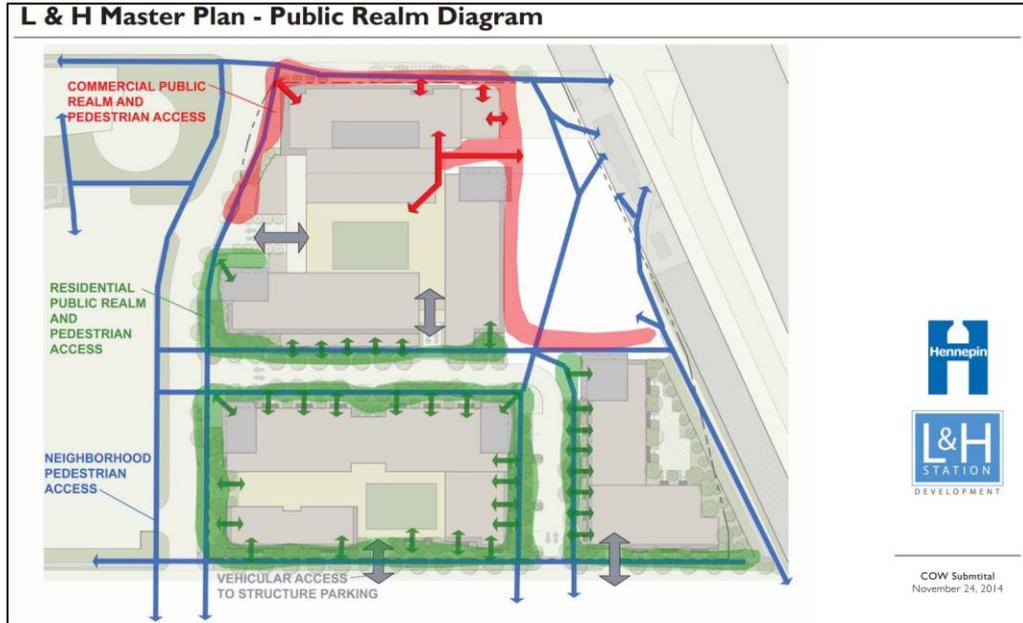
- Pedestrian movement patterns will be re-introduced by the extension of 23rd Avenue and its related sidewalks to and through the Market Square to the LRT station. Urban street patterns are reflected in the east/west connection to 22nd Avenue South, providing access to the Market Square, transit and a pedestrian promenade from the west elevation.
- The Market Square is envisioned as a Dutch-style '*woonerf*,' which is a shared space between cars and people, but oriented towards pedestrians and cyclists. Pedestrians and cyclists will have the right of way, and official vendor vehicles (i.e., Midtown Farmers Market vendors) will be the only traffic allowed, and then only on market days. (See Figure 3B for details.)

In addition, the following will promote pedestrian activity along Lake Street:

- With redevelopment, the L&H Station site will be re-graded to bring building entrances to grade level and create a public pedestrian promenade along Lake Street. The promenade includes widened sidewalks, landscaped traffic buffers, pedestrian-scale lighting, and cantilevered canopies.

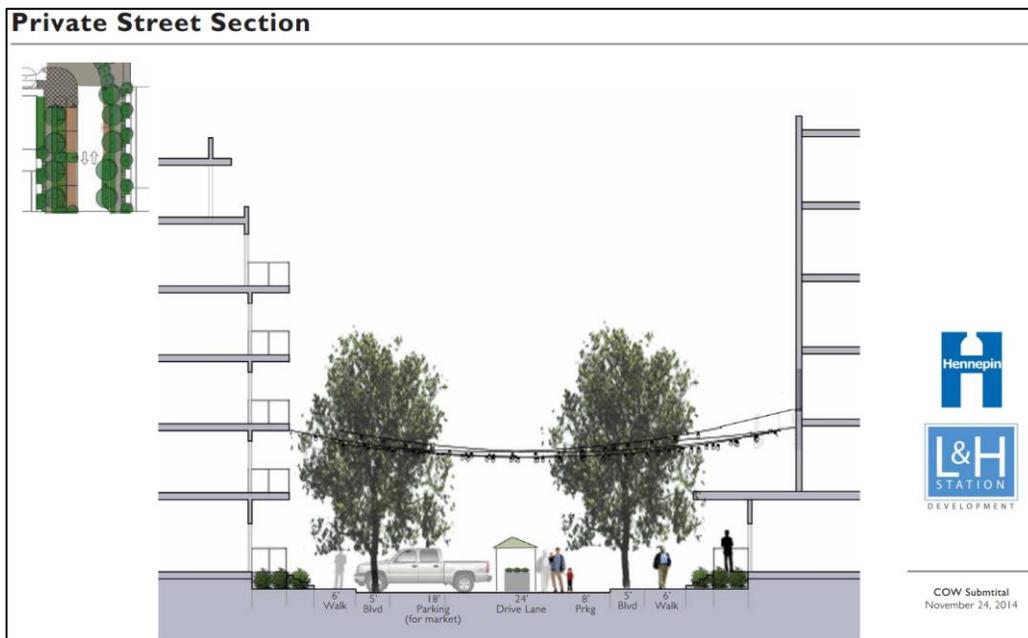
- ADA-accessibility options will be provided throughout the extent of the pedestrian facilities.
- L&H Station features enhanced Transit Plaza access to the Lake Street LRT Station where the pedestrian promenade and the Market Square meet. A wide, gently sloping staircase leads from street level to the Market Square and up to meet the station platform.

FIGURE 3A – PEDESTRIAN AND CYCLIST CONNECTIVITY



Source: BKV , 2014.

FIGURE 3B – DETAILS OF 'WOONERF' AND PEDESTRIAN PROMENADE



Source: BKV , 2014.

B. Bicycle

Figure 3C illustrates the Minneapolis Bike Trail system near the project site. The Midtown Greenway lies to the north of the site, and the Hiawatha LRT Trail crosses Lake Street just east of this redevelopment area. There is also a NiceRide Minnesota shared bike facility at the southwest corner of East Lake Street and 22nd Avenue South, just across the street from this proposed development.

Several other shared lanes and bike boulevards crisscross the study area. The proximity of this site to these bicycle facilities will enable riders to easily commute to downtown and to connect to the Mississippi River trails. From there bicyclists will be able to branch out throughout the extensive and growing metro bicycle trail and bike lane network.

There is a Nice Ride Minnesota station in the southwest corner of 22nd Avenue and Lake Street. According to their statistics, this station has 15 docks and was placed in operation in 2011. Since then, usage has risen steadily each year. Through September 2014, nearly 1500 bicycle rentals have taken place – a 19% increase over 2013 usage. These statistics show demand for bicycle usage is rising.

FIGURE 3C – MINNEAPOLIS BICYCLE MAP IN AREA OF L&H STATION



Source: Minneapolis Bicycle Map, Hedberg Maps, Inc., <http://www.hedbergmaps.com/gw/mplsbike>, 2013.

C. Transit

The Corcoran Midtown Revival Plan for the area east of 21st Avenue defines the “Corcoran Transit Zone” as the area adjoining the Lake Street Hiawatha LRT Station and is bounded on the north by Lake Street, on the west by 21st Avenue, on the south by 32nd Street, and on the east by Hiawatha Avenue.¹

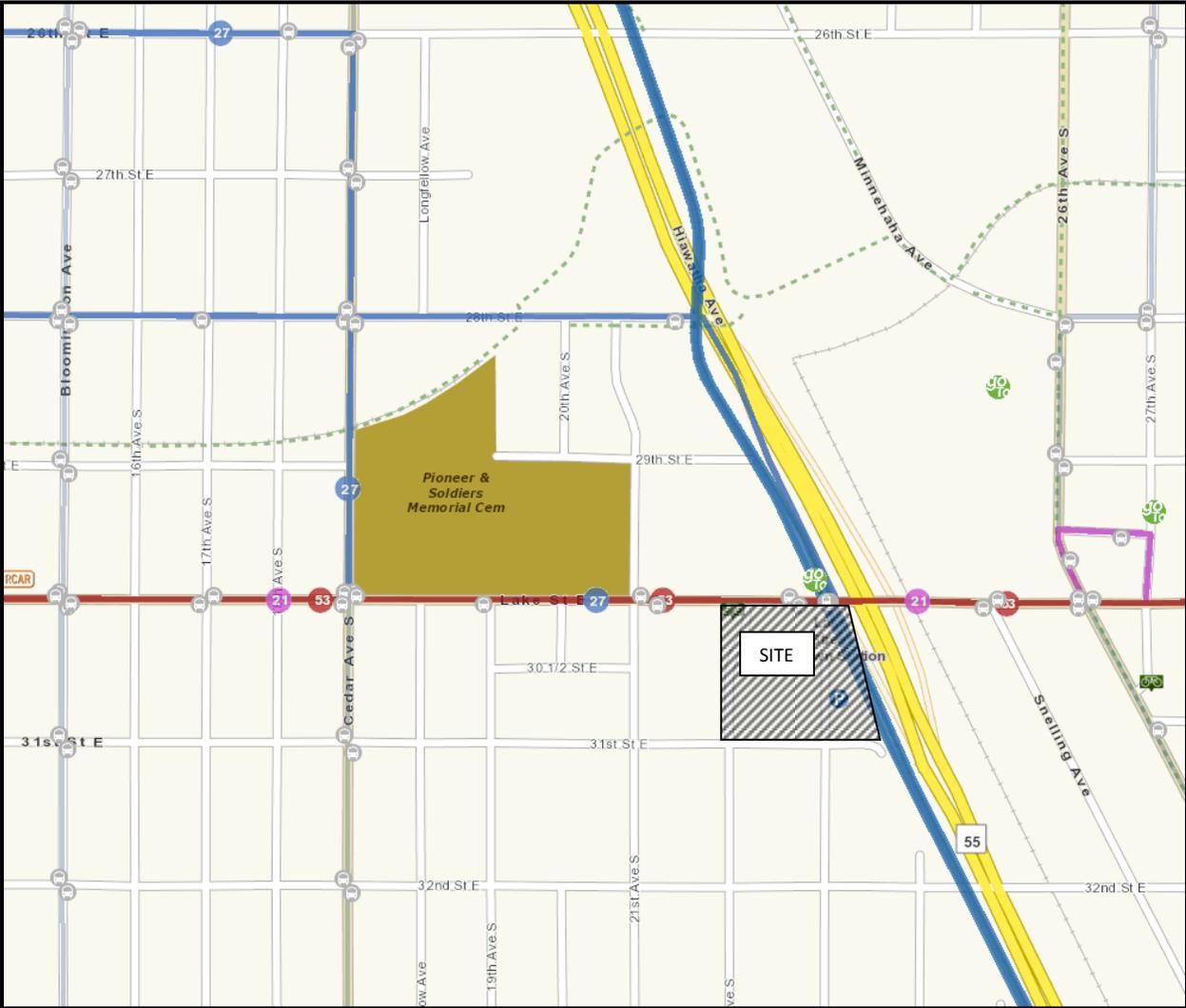
The L&H Station redevelopment is a true Transit-Oriented Development (TOD) within the Corcoran Transit Zone. This site will be adjacent to the Lake Street/Midtown station of the Hiawatha LRT line. In addition, Lake Street serves Metro Transit Bus Route #21. Figure 4 schematically diagrams transit routes served by bus and LRT that will service the site. Use of these routes will provide residents quick access throughout the metro area seven days per week, 365 days per year, either directly or by transfer. Other locations throughout the metro will be reachable via transfer.

The nearest bus stops are located on both sides of East Lake Street between 22nd Avenue and the Lake Street/Midtown LRT Station. The transit routes serving the area include the following:

- **Route 21;** A local high-frequency bus route along Lake Street connecting the Uptown area in Minneapolis and Selby Avenue in downtown Saint Paul. Service is offered 7 days per week, 365 days per year. Busses on this route run from 4:00 AM to 2:00 AM with time between busses ranging from 10-15 minutes during weekday peak periods to 20-30 minutes on Sundays and Holidays.
- **Route 27:** A local bus route along Lake Street connecting I-35W and Hiawatha Avenue. This weekday only route runs busses from 5:00 AM to 7:35 P.M., with 20-30 minute times between busses.
- **Route 53:** This is a limited stop bus route that follows the same path as Route 21, but runs from the Uptown Transit Station to downtown Saint Paul between 6:00 A.M. and 9:30 A.M. on weekday mornings. The route then runs westbound from downtown Saint Paul to the Uptown Transit Station from 2:30 P.M. to 7:00 P.M. on weekday afternoons. Headway times are 20-30 minutes.
- **Route 55; the BLUE Line LRT:** The Metro’s BLUE Line LRT route connects Downtown Minneapolis with the Mall of America via MSP Airport. Service is available 7 days per week/365 days per year from 5:00 AM to 1:00 AM. During peak periods, lead times average 8 minutes. During off-peak times (including weekends and holidays), lead times average 13 minutes.

¹ CNO Policy on Public Parking and the Pedestrian Realm for the Corcoran Midtown Revival Plan area east of 21st Avenue, Passed by the Corcoran Neighborhood Organization Board, 11/3/2010.

FIGURE 4 – METRO TRANSIT SERVICE MAP IN AREA OF L&H STATION



Source: Metro Transit Route Map, www.metrotransit.org, 2014.

IV. PARKING

The existing and proposed land uses generate traffic and parking demand – both off-street and on-street, that must be accommodated by the existing or proposed infrastructure, or by modal shift. Parking demand has been analyzed both by this study and by a 2010 analysis of prepared for the CNO by the Center for Urban & Regional Affairs.²

A. Existing Off-Street Parking

There are currently several parcels of off-street parking lots in and adjacent to the Minneapolis Public School site. In total, there are 450 surface parking stalls on the redevelopment site (see Figure 5). Of this total, 143 stalls are identified as being leased by Metro Transit for its 31st Street Park & Ride Lot, with an additional 20 stalls designated for Metro Transit Parking on the east side of the Minneapolis Public School building. Drivers are consistently parking at undesignated locations within the Park & Ride lot. The remaining 287 available stalls are shared parking stalls for the MPS building, the Midtown Farmers Market (Tuesday and Saturday) and any overflow for the YWCA to the west of the redevelopment site.

While the Minneapolis Public School Lot is signed for staff and student parking only, YWCA members are also allowed to park in the lot during certain times. According to a sign on the fence near the entrance to the parking lot (see right), shared parking is allowed at certain times, and at the discretion of the Minneapolis Public Schools.

Attention YWCA Members	
EFFECTIVE MARCH 1 st , 2014	
YMCA [<i>sic</i>] PARKING ALLOWED ONLY DURING	
FOLLOWING TIMES	
Monday – Thursday	7pm – 11:30
Friday	1pm – 11:30
Saturday & Sunday	All Day
VIOLATORS TOWED AT SOLE DISCRETION OF MPS	

For this study, Westwood performed a field analysis of the parking demand in and around the L&H Station site. Westwood recorded the number of stalls existing in each of the lots, and compared them with those recorded in the 2010 CURA Parking Report (see Table 2). The counts listed in the CURA Report were conducted between June and August 2010 before the start of school. Peak parking occupancy averaged about 35% in the off-street lots. The Westwood survey was conducted between August and early September, 2014.

² Bergman, Sasha, “Assessing Public Parking Demand at Southwest Lake and Hiawatha”, Center for Urban & Regional Affairs, University of Minnesota, prepared for the Corcoran Neighborhood Association, Minneapolis, MN, September 2010.

FIGURE 5 – EXISTING OFF-STREET PARKING CAPACITIES

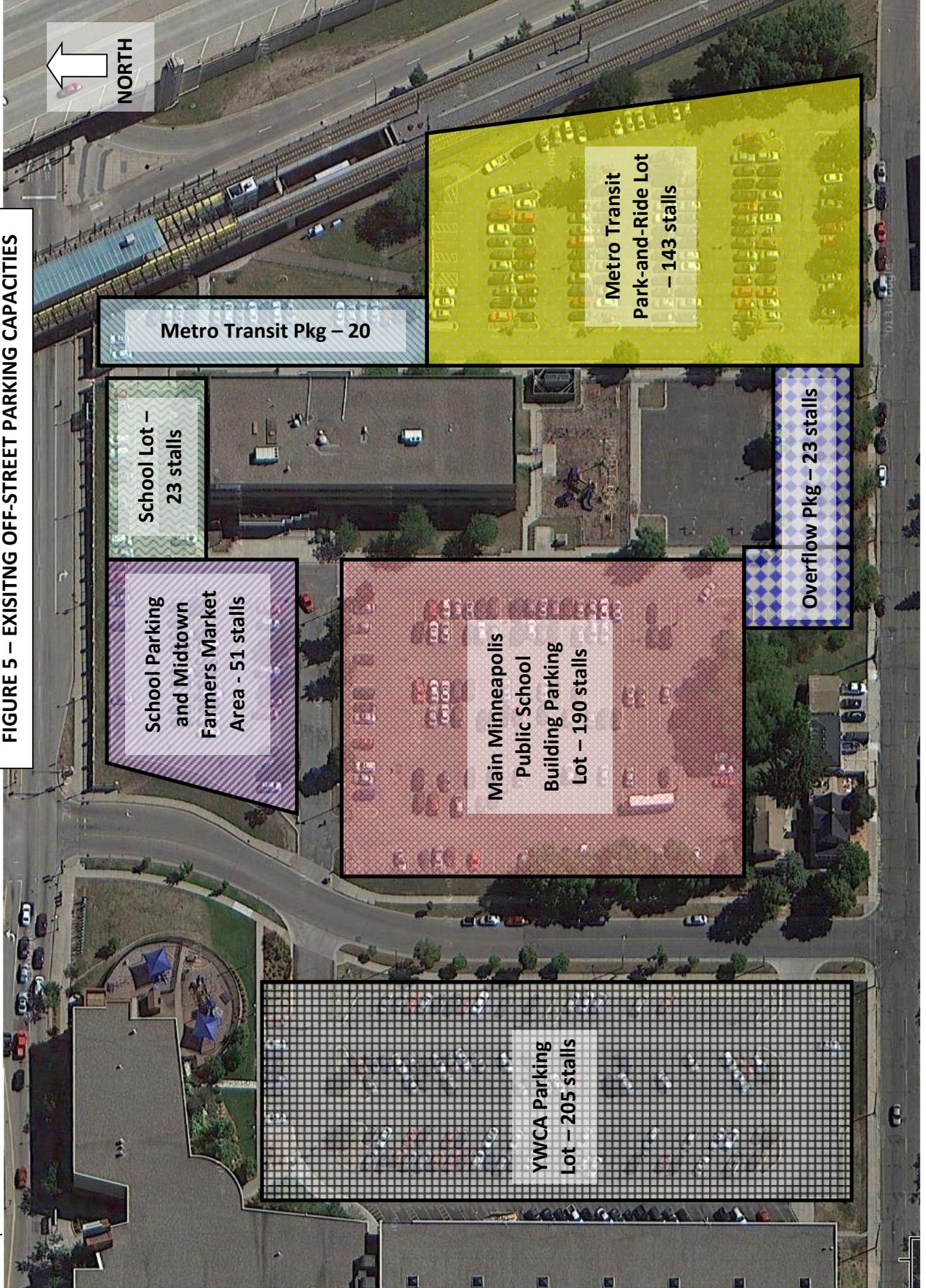


TABLE 2 – EXISTING OFF-STREET PARKING CAPACITY

Existing Parking Lot	Westwood Survey (August 2014)	2010 CURA Report
YWCA Lot	205 stalls	206 stalls
Farmers Market /N.W. School Lot	51 stalls	261 stalls
School Lot	23 stalls	
Main School Lot	190 stalls	
Overflow Lot	23 stalls	
31 st Street Park-and-Ride Lot	143 stalls	171 stalls
Metro Transit Parking	20	
Total	655 stalls	638 stalls

Source: Westwood Professional Services, 2014, and CURA Parking Report, 2010.

The CURA Report lists 209 of the 261 Minneapolis Public School parking stalls being available on days when the Farmers Market is in operation. The Farmers Market operates on Saturdays from 8AM to 1PM from May through October, and on Tuesdays from 3PM to 7PM from June through October. The CURA report also reports that the market draws up to 2,000 attendees.

Table 3 illustrates the existing off-street parking usage on a typical morning and afternoon in the lots in and adjacent to the Minneapolis Public School Building. Similarly, Table 4 illustrates the existing off-street parking occupancy on a Farmers Market Tuesday evening.

Other recent studies give a picture of the parking demand in the area. According to the CURA report from 2010, the total average weekday AM peak parking occupancy was recorded as 380 stalls (M&W-F) and 421 stalls (Tuesday). In 2011, RLK Incorporated performed a parking study in the area with similar findings – 317 stalls occupied (Thursday 8/25/11) and 459 occupied (Tuesday 9/27/11).

The average weekday PM peak parking however differed with the CURA showing 307 stalls occupied (Tuesday) and 431 stalls occupied (Tuesday 9/27/11). The RLK analysis conducted also showed much larger Saturday parking occupancy for the YWCA parking lot, averaging 94% capacity during the 9 am – 12 pm period. The CURA Report recorded approximately 50% parking occupancy. This high capacity count was due to both the Farmers Market and the YWCA creating higher parking demands.

A representative inventory of off-street parking demand during a school day was conducted. Table 5 illustrates a slightly higher occupancy of off-street parking during a school day afternoon than was illustrated in Table 3, but a lesser occupancy than during the Farmers Market.

TABLE 3 – EXISTING OFF-STREET PARKING USAGE

	Time	YWCA		Farmers Market / N.W. School Lot		Main School Lot & Overflow Lot		North School Lot		Park & Ride & Metro Transit Pkg		Total	
	CAPACITY	205	Percentage Occupied	51	Percentage Occupied	213	Percentage Occupied	23	Percentage Occupied	163	Percentage Occupied	655	Percentage Occupied
WEEKDAY MORNING	9:10	131	64%	4	8%	9	4%	5	22%	182	112%	331	51%
	9:25	122	60%	3	6%	10	5%	5	22%	182	112%	322	49%
	9:40	120	59%	3	6%	10	5%	5	22%	182	112%	320	49%
	9:55	116	57%	3	6%	11	5%	6	26%	182	112%	318	49%
	10:10	122	60%	3	6%	12	6%	6	26%	182	112%	325	50%
	10:25	131	64%	5	10%	12	6%	7	30%	182	112%	337	51%
	10:35	137	67%	3	6%	12	6%	8	35%	181	111%	341	52%
	10:50	142	69%	5	10%	11	5%	8	35%	182	112%	348	53%
	A.M. AVERAGE	136	62%	9	7%	33	5%	8	27%	180	112%	366	50%
WEEKDAY AFTERNOON	2:10	67	33%	8	16%	9	4%	5	22%	182	112%	271	41%
	2:25	62	30%	8	16%	9	4%	5	22%	183	112%	267	41%
	2:35	70	34%	8	16%	9	4%	5	22%	182	112%	274	42%
	2:50	70	34%	6	12%	9	4%	6	26%	178	109%	269	41%
	3:00	67	33%	7	14%	8	4%	5	22%	173	106%	260	40%
	3:15	74	36%	7	14%	8	4%	6	26%	166	102%	261	40%
	3:30	76	37%	8	16%	9	4%	6	26%	166	102%	265	40%
	3:45	73	36%	9	18%	12	6%	8	35%	164	101%	266	41%
	3:55	73	36%	8	16%	15	7%	9	39%	162	99%	267	41%
	P.M. AVERAGE	70	34%	8	15%	10	5%	6	27%	173	106%	267	41%

Source: Westwood Professional Services, 08/20/2014.

TABLE 4 – EXISTING OFF-STREET PARKING USAGE – MIDTOWN FARMERS MARKET

	Time	YWCA		Farmers Market /		Main School Lot &		North School Lot		Park & Ride &		Total	
	CAPACITY	205	Percentage Occupied	51	Percentage Occupied	213	Percentage Occupied	23	Percentage Occupied	163	Percentage Occupied	604	Percentage Occupied
TUESDAY AFTERNOON/EVENING	4:55	102	50%	Market Use		54	25%	7	30%	109	67%	272	42%
	5:05	98	48%	Market Use		60	28%	8	35%	100	61%	266	41%
	5:15	108	53%	Market Use		50	23%	8	35%	97	60%	263	40%
	5:25	114	56%	Market Use		58	27%	6	26%	81	50%	259	40%
	5:35	118	58%	Market Use		62	29%	9	39%	72	44%	261	40%
	5:45	131	64%	Market Use		84	39%	11	48%	55	34%	281	43%
	5:55	148	72%	Market Use		108	51%	21	91%	47	29%	324	49%
	6:05	142	69%	Market Use		137	64%	23	100%	50	31%	352	54%
	6:15	152	74%	Market Use		163	77%	23	100%	59	36%	397	61%
	6:25	155	76%	Market Use		181	85%	22	96%	49	30%	407	62%
	6:35	159	78%	Market Use		180	85%	23	100%	53	33%	415	63%
	6:45	166	81%	Market Use		186	87%	23	100%	50	31%	425	65%
P.M. AVERAGE	138	65%	Market Use		118	52%	16	67%	76	42%	348	50%	

Source: Westwood Professional Services, Tuesday afternoon/evening, 09/02/2014.

TABLE 5 – REPRESENTATIVE EXISTING OFF-STREET PARKING USAGE – SCHOOL DAY

SCHOOL DAY	Time	YWCA		Farmers Market / N.W. School Lot		Main School Lot & Overflow Lot		North School Lot		Park & Ride & Metro Transit Pkg		Total	
	CAPACITY	205	Percentage Occupied	51	Percentage Occupied	213	Percentage Occupied	23	Percentage Occupied	163	Percentage Occupied	655	Percentage Occupied
	2:00 P.M.	64	31%	18	35%	46	22%	10	43%	152	93%	290	44%

Source: Westwood Professional Services, 09/11/2014.

B. Existing On-Street Parking

The City of Minneapolis has made the parking analysis of this site a priority. Part of this analysis includes the inventory of parking availability along the following streets:

- 19th Avenue south between Lake Street and 32nd Street E.
- 21st Avenue South between Lake Street and 32nd Street E.
- 22nd Avenue South between Lake Street and 32nd Street E.
- 23rd Avenue South between 31st Street E. and 32nd Street E.
- Lake Street (s. Side only) between 19th Avenue S. and terminus at Hiawatha Ave.
- 31st Street East between 19th Avenue S and terminus at Hiawatha Ave.

Westwood conducted an on-street parking occupancy inventory during a typical weekday in August, 2014. As with the off-street parking analysis, the on-street parking analysis consisted of mid-morning and mid-afternoon time periods during a typical August weekday. Results appear in Table 6 below.

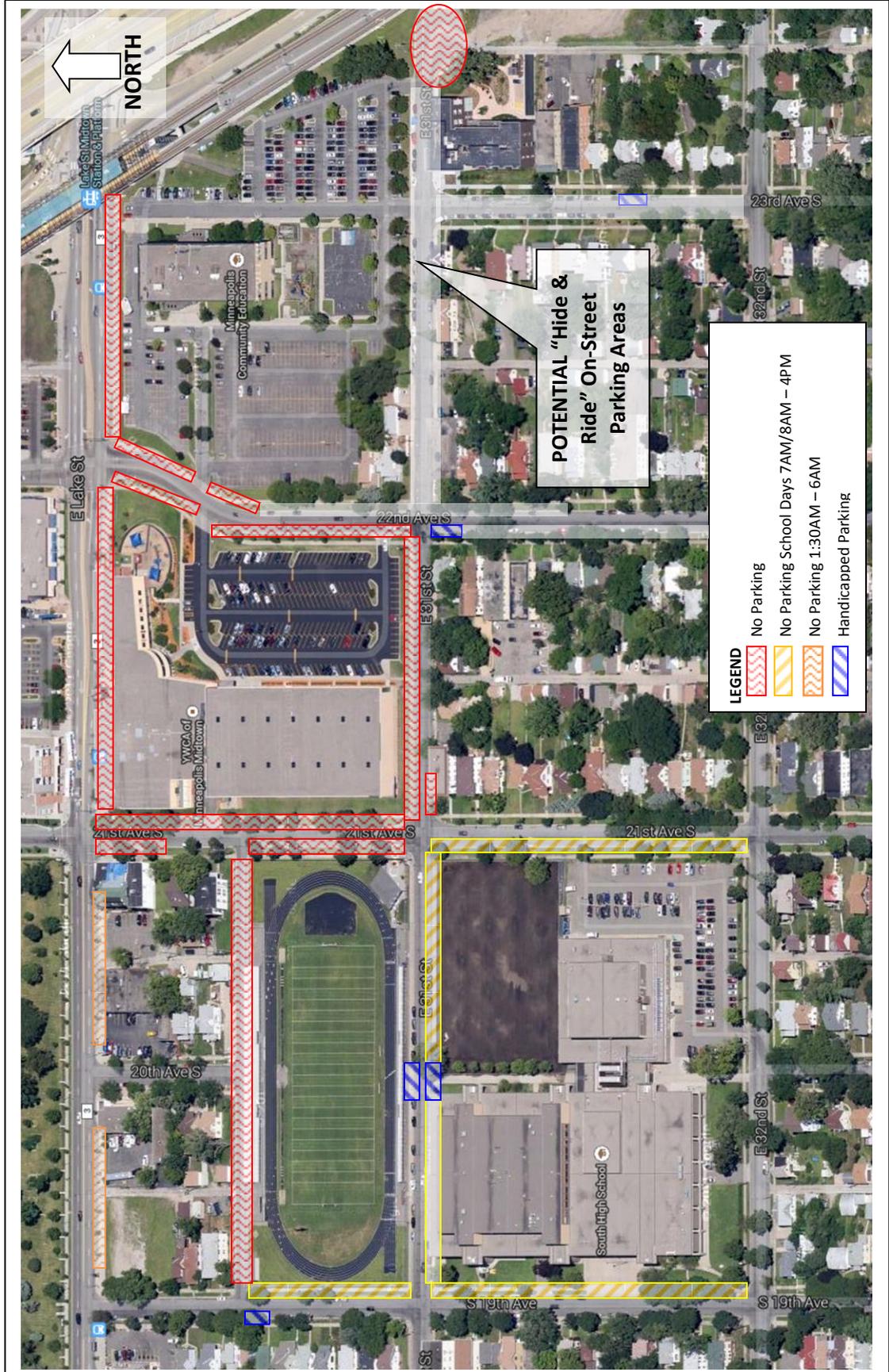
TABLE 6 – EXISTING ON-STREET PARKING INVENTORY AND OCCUPANCY (No School)

	Time	19th Avenue		21st Avenue		22nd Avenue		23rd Avenue		30-1/2 Street		Lake Street		31st Street		Total	
	CAPACITY	126	Percentage Occupied	61	Percentage Occupied	72	Percentage Occupied	65	Percentage Occupied	0	Percentage Occupied	19	Percentage Occupied	105	Percentage Occupied	448	Percentage Occupied
WEEKDAY MORNING	9:10	48	38%	14	23%	24	33%	23	35%	0	0%	0	0%	46	44%	155	35%
	9:25	45	36%	14	23%	25	35%	22	34%	0	0%	0	0%	47	45%	153	34%
	9:40	46	37%	13	21%	25	35%	25	38%	0	0%	0	0%	45	43%	154	34%
	9:55	45	36%	14	23%	26	36%	28	43%	0	0%	0	0%	45	43%	158	35%
	10:10	47	37%	13	21%	28	39%	26	40%	0	0%	0	0%	48	46%	162	36%
	10:25	44	35%	13	21%	23	32%	27	42%	0	0%	0	0%	48	46%	155	35%
	10:35	44	35%	12	20%	24	33%	29	45%	0	0%	0	0%	48	46%	157	35%
	10:50	41	33%	11	18%	24	33%	30	46%	0	0%	0	0%	48	46%	154	34%
A.M. AVERAGE	45	36%	13	21%	25	35%	26	40%	0	0%	0	0%	47	45%	156	35%	
WEEKDAY AFTERNOON	2:10	36	29%	14	23%	23	32%	30	46%	0	0%	0	0%	44	42%	147	33%
	2:25	34	27%	11	18%	25	35%	29	45%	0	0%	0	0%	45	43%	144	32%
	2:35	36	29%	12	20%	23	32%	28	43%	0	0%	0	0%	46	44%	145	32%
	2:50	36	29%	12	20%	26	36%	28	43%	0	0%	1	5%	43	41%	145	32%
	3:00	34	27%	11	18%	27	38%	30	46%	0	0%	2	11%	44	42%	146	33%
	3:15	34	27%	11	18%	30	42%	28	43%	0	0%	1	5%	40	38%	143	32%
	3:30	34	27%	11	18%	25	35%	29	45%	0	0%	1	5%	40	38%	139	31%
	3:45	31	25%	10	16%	26	36%	29	45%	0	0%	1	5%	39	37%	135	30%
	3:55	27	21%	10	16%	29	40%	29	45%	0	0%	0	0%	40	38%	135	30%
P.M. AVERAGE	34	27%	11	19%	26	36%	29	44%	0	0%	1	4%	42	40%	142	32%	

Source: Westwood Professional Services, 08/20/2014.

Existing parking restrictions are shown graphically on Figure 6.

FIGURE 6 – EXISTING ON-STREET PARKING RESTRICTIONS



Source: Westwood Professional Services, September 2014

It should be noted that posted parking regulations prohibit parking along certain streets adjacent to South High School during school days only. These areas include:

- The east side of 19th Avenue South during the hours of 8AM to 4PM between 31st Street and 32nd Street;
- The east side of 19th Avenue South during the hours of 7AM to 4PM between 30^{1/2} Street and 31st Street;
- The west side of 21st Avenue South during the hours of 8AM to 4PM between 31st Street and 32nd Street; and,
- The south side of 31st Street South during the hours of 8AM to 4PM between 19th Avenue South and 21st Avenue South.

When school is in session, the number of available parking spaces decreases due to parking restrictions, but the overall percentage of vehicles parked on-street increases (see Table 7).

TABLE 7 – EXISTING ON-STREET PARKING INVENTORY AND OCCUPANCY (School Day)

SCHOOL DAY	Time	19th Avenue		21st Avenue		22nd Avenue		23rd Avenue		30-1/2 Street		Lake Street		31st Street		Total	
	CAPACITY	78	Percentage Occupied	33	Percentage Occupied	72	Percentage Occupied	65	Percentage Occupied	0	Percentage Occupied	19	Percentage Occupied	79	Percentage Occupied	346	Percentage Occupied
	2:10 P.M.	43	55%	24	73%	23	32%	28	43%	0	0%	2	11%	58	73%	178	51%

Source: Westwood Professional Services, 09/11/2014.

There are other posted parking regulations that restrict on-street parking in the area:

- No Parking is posted along the one-way street of 30^{1/2} Street between 19th Avenue and 21st Avenue.
- No Parking is posted along the west side of 21st Avenue South from Lake Street to the first business property line;
- No Parking is posted along the west side of 21st Avenue south from 30^{1/2} Street to 31st Street;
- No Parking is posted along the east side of 21st Avenue from 31st Street to Lake Street;
- No Parking is posted along the west side of 22nd Avenue from Lake Street to 31st Street;
- No Parking is posted along the east side of 22nd Avenue from a point 300 feet north of 31st Street of Lake Street;
- No Parking during the hours of 1:30 AM to 6AM is posted along the south side of Lake Street between 19th Avenue South and 21st Avenue South;
- No Parking is posted along the south side of Lake Street between 21st Avenue South and Hiawatha Avenue.
- No parking in the cul-de-sac on the east end of 31st Street at Hiawatha LRT.

There are other miscellaneous parking restrictions also posted:

- An on-street Handicapped Parking space is signed in front of 3024 19th Avenue South;
- On-street Handicapped Parking Only is signed along the frontage of 3100 22nd Avenue South;
- On-street Handicapped Parking Only is signed along the frontage of 3139 23rd Avenue South;
- Two on-street Handicapped Parking Only spaces are signed on the north side of East 31st Street midway between 19th Avenue South and 21st Avenue South;
- Two on-street Handicapped Parking Only spaces are signed on the south side of East 31st Street midway between 19th Avenue South and 21st Avenue South; and
- No Parking Bus Stop is signed along the south side of East 31st Street easterly from the intersection with 21st Avenue South for 90 feet.

The 2010 CURA Study looked at the effect of “hide-and-ride” users of the 31st Street Park & Ride Lot. The study states, “...A large percentage of Park and Ride patrons live within a mile of the station, according to analysis of license plate data. Similar to other stops along the Hiawatha Line, the issue of “hide and ride” has been observed, and in the last count taken in fall of 2008, there were 66 hide and ride vehicles observed along the streets adjacent to the Park and Ride (Carlson and Hengtes, 18 June 2010). Based on outreach to neighborhood residents, hide and riders have created a sense of congestion for some of the neighbors living on blocks adjacent to the Park and Ride, and critical/permitted parking options have been explored through neighborhood public meetings between residents and Minneapolis Public Works.”³

While no license plate matching or observation of Park & Ride patrons took place in the current analysis, it seems likely that a significant number of these parked vehicles would be “hide and ride” patrons. Of the streets in the study area, 31st Street and 23rd Avenue recorded the highest numbers of vehicles parked on-street. While one cannot specifically tie each vehicle parked on street as a “hide-and-ride” vehicle, there did appear to be as many as 22 parked vehicles along the north side and as many as 19 vehicles parked on the south side of 31st Street between the Park & Ride driveways and 22nd Avenue. Further, there were 65 vehicles parked along 23rd Avenue between 31st Street and 32nd Street. Other streets in the area may also be affected.

C. Proposed Off-Street Parking

According to the Corcoran Neighborhood Organization, abundant free parking in recent years in the Corcoran Transit Zone has been counter-productive in creating a pedestrian friendly Transit-Oriented Development (TOD) comprised of urban mixed-uses. The CNO states that the Metro Transit’s free 31st Street Park & Ride Lot was established in 2004 as a “temporary amenity” that was to be phased out with the construction of Park & Ride structures outside the urban core. The CNO Policy on Public Parking and the Pedestrian Realm states that while auto-dependent uses and abundant surface parking have existed in the Corcoran Transit Zone since the 1960s, recent City planning and zoning policies have been put in place to reduce the abundant free off-street parking along urban transit corridors. To that end, the Lake Street and Hiawatha corridors have been rezoned to limit automotive-based uses and to encourage transit-oriented developments.

In 2010, the CNO Board of Directors adopted a car parking policy that supports the principles of TOD. That policy included several parking statements that the board endorses:

1. Eliminate the Park and Ride
2. Discourage Free Parking
3. Eliminate Surface Parking
4. Minimize New Parking Construction
5. Encourage Alternatives to Car Use
6. Design Streets for People, Not Cars
7. Deploy Traffic Calming Design
8. Use Parallel Parking for Temporary On-Street Car Storage
9. Design New Streets as Two-Way, “Complete Streets”.

³ Bergman, Sasha, CURA Parking Study, September 2010.

Keeping in mind the parking policy of the CNO, the developers of the L&H Station project have proposed systematically reducing the amount of surface parking in each of the project phases:

- In Phase 1 of the L&H Station redevelopment, there are 441 structured parking stalls proposed. Also proposed is the temporary retention of an existing 312 at-grade off-street parking stalls. Overall, a total of 753 off-street parking stalls are proposed for Phase 1 of this development. These are stalls that will be dedicated for the residents, employees and customers of the proposed redevelopment.

Metro Transit will not be renewing their lease on the existing Park-and-Ride Lot as part of this development. In order to promote alternative forms of transportation, the City of Minneapolis has established a policy not to allow park-and-ride lots within the City proper. The stalls in the existing park-and-ride facility will be converted to parking for the Minneapolis Public School building only. These stalls will combine with the other at-grade stalls south of the Phase 1 building and south of the basketball courts to provide parking for school building and Midtown Farmers Market use, as well as overflow parking for the County Service Center.

- As market-rate and affordable housing buildings are built in Phases 2 through 4, there will be an incremental reduction of at-grade parking, but there will also be the increase of structured parking to serve the residents. There will be a handful of at-grade parking stalls installed along the internal street for residential and guest use.
- The final off-street parking projection is 758 structured parking stalls for the full build-out condition.

In consideration of this site for redevelopment, Hennepin County Property Services sponsored a study of the parking requirements for a proposed South Minneapolis Regional Service Center (SMRSC).⁴ (A copy of the memo appears in the Appendix of this report.)

For the study, Hennepin County's Human Services and Public Health Department (HSPHD) provided a total count of staff, clients and trainees anticipated at the proposed service center. It is anticipated that the HSPHD will employ approximately 500 staff, and will see approximately 275 clients on a daily basis. Multimodal reductions were taken per City of Minneapolis off-street parking ordinances. The memo states, "...Current Onboarding staff and trainees were surveyed and forty percent (40%) take transit... Additionally, twenty-five percent (25%) of the SMRSC's clients live within one mile of the site and, therefore, a higher multimodal reduction was assumed." The memo concluded that the total parking requirement for the Hennepin County SMRSC will be 399 spaces, which exceeds the maximum allowed by Minneapolis City Code for a 100,000 sq. ft. office building of 375 spaces (after applying the 25% Parking Overlay District Reduction). In conclusion, the memo recommended that the City of Minneapolis Zoning Administrator consider the actual parking demand of 399 off-street parking spaces for the SMRSC portion of the development.

⁴ Hennepin Co. South Minneapolis Regional Service Center Parking Requirements, a memo prepared for Lee Anderson, Hennepin County Property Services by Katie Schmidt, PE, Alliant Engineering, May 26, 2014.

Since this use is a major trip and parking generator for all phases of the development, the recommendation of 399 stalls for this use has been carried forward in the calculation of parking requirements for Phase 1 and for Full Build-Out (incorporating Phases 2-4).

The number of parking spaces required for the proposed redevelopment was calculated by two methods. The first source is Minneapolis City Code. The second source is the Institute of Transportation Engineers Parking Generation, 4th Edition.

D. Parking Requirements per Minneapolis City Code

Westwood has calculated the Off-Street Parking Requirements for Phase 1 and for Full Build-Out (including Phases 2-4) of the L&H Station development using the requirements of Table 541-1 of the Minneapolis Code of Ordinances.⁵

The City of Minneapolis has considered the effect of pedestrian-oriented development in transit station areas. The City has identified PO-Pedestrian Oriented Overlay Districts for transit station areas including the Lake Street/Midtown LRT Station area. According to Article II of the Minneapolis Code of Ordinances,

“The PO Pedestrian Oriented Overlay District is established to preserve and encourage the pedestrian character of commercial areas and to promote street life and activity by regulating building orientation and design and accessory parking facilities, and by prohibiting certain high impact and automobile-oriented uses.”⁶

The PO District designates reductions for accessory parking for various land uses:

“Minimum and maximum number of accessory parking spaces. The minimum off-street parking requirement for nonresidential uses shall be seventy-five (75) percent of the minimum requirement specified in Chapter 541, Off-Street Parking and Loading. The maximum off-street parking allowance for nonresidential uses shall be seventy-five (75) percent of the maximum allowed as specified in Chapter 541, Off-Street Parking and Loading, provided that a development with one (1) or more nonresidential uses shall not be restricted to fewer than ten (10) total accessory parking spaces on a zoning lot.”⁷

In addition, for off-street parking, the following reduction is allowed:

⁵ Article II, Section 551 -- Off-Street Parking Requirements, Code of Ordinances, City of Minneapolis, MN, as of June 27, 2014.

⁶ Section 551.60 PO District Purpose, Minneapolis Code of Ordinances, 2014.

⁷ Section 551.60 PO District Purpose, Minneapolis Code of Ordinances, 2014

“Multiple-family dwellings. The minimum off-street parking requirement shall be ninety (90) percent of the number specified in Chapter 541, Off-Street Parking and Loading.”⁸

Tables 8A and 8B details the minimum and maximum parking requirements per Minneapolis City Code with reductions, as well as the number of stalls to be provided.

It should be noted that the developer has based the number of spaces to be provided at a rate of 0.9 times the City’s minimum requirement, except as noted. This has been done to discourage free parking and to eliminate surface parking – both of which are parking policy statements of the CNO for new developments in the Corcoran Transit Zone.

During Phase 1, a 441 space structured parking area will be constructed to serve the County’s regional service center, any leased office or retail spaces and parking for the residential building. During Phase One the County will also use the present 108 space surface parking lot located directly south of Phase One as overflow parking.

In addition, the Minneapolis Public Schools Adult Education program will continue to use the existing building as its South Campus. The use of the 171 parking spaces along the east edge of the site now leased for a park and ride lot will cease. The MPS Adult Education program will now use 135 of these spaces, replacing the parking spaces lost to the Adult Education program by the Phase One development and the areas of many of the remaining spaces will be used for Market activity and pedestrian circulation.

⁸ Section 551.60 PO District Purpose, Minneapolis Code of Ordinances, 2014

TABLE 8A – PARKING REQUIREMENTS – PHASE 1

Land Use	Units	Minimum Requirement	Min. Req'd by Code	PO Reduction Percentage	Min Req'd w/PO Reduction	Maximum Requirement	Max. Req'd by Code	PO Reduction Percentage	Max Req'd w/PO Reduction	Parking Stalls Provided
Residential	125	1 space/dwelling unit	125	90% of minimum requirement	113	No max.	No max.	90% of minimum requirement	No max.	100
Office	100,000	1 space/500 SF in excess of 4,000 SF	192	75% of minimum requirement	144	1 space per 200 sq. ft. of GFA	500	75% of minimum requirement	375	335
General Retail	8,000	1 space/500 SF in excess of 4,000 SF	8	75% of minimum requirement	6	1 space per 200 sq. ft. of GFA	40	75% of minimum requirement	30	6
School, vocational or business	51,000 sq. ft.; 30 classrooms; 450 students (8:30 - 12:30)	1 space per classroom + 1 space per 5 students based on the max # of students attending classes at any one (1) time	120	75% of minimum requirement	90	1 space per classroom + 1 space per 3 students based on the max # of students attending classes at any one (1) time	180	75% of minimum requirement	135	312
Farmer's Market	45,000	1 space per 2,000 sq. ft. of sales area, except where approved as a temporary use	23	75% of minimum requirement	17	1 space per 200 sq. ft. of GFA + 1 space per 500 sq. ft. of outdoor sales or display area	90	75% of minimum requirement	68	shared with school
TOTAL			468		369		No max.		No max.	753

1. From Minneapolis City Code, Table 541-2.

TABLE 8B – PARKING REQUIREMENTS – FULL BUILD-OUT

Land Use	Units	Minimum Requirement	Min. Req'd by Code	PO Reduction Percentage	Min Req'd w/PO Reduction	Maximum Requirement	Max. Req'd by Code	PO Reduction Percentage	Max Req'd w/PO Reduction	Parking Stalls Provided
Residential	565	1 space/dwelling unit	565	90% of minimum requirement	509	No max.	No max.	90% of minimum requirement	No max.	499
Office	100,000	1 space/500 SF in excess of 4,000 SF	192	75% of minimum requirement	144	1 space per 200 sq. ft. of GFA	500	75% of minimum requirement	375	323
General Retail	16,075	1 space/500 SF in excess of 4,000 SF	24	75% of minimum requirement	18	1 space per 200 sq. ft. of GFA	80.375	75% of minimum requirement	60	18
Farmer's Market	45,000	1 space per 2,000 sq. ft. of sales area, except where approved as a temporary use	23	75% of minimum requirement	17	1 space per 200 sq. ft. of GFA + 1 space per 500 sq. ft. of outdoor sales or display area	90	75% of minimum requirement	68	shared with office
TOTAL			804		687		No max.		No max.	840

1. From Minneapolis City Code, Table 541-2.

Due to the complementary nature of the land uses in the proposed site, shared parking reductions can be taken to the required number of required parking spaces. Shared parking reductions are based on the City's shared parking requirement percentages by time and type of day detailed in Table 9, below.

TABLE 9 – CITY OF MINNEAPOLIS SHARED PARKING PERCENTAGES¹

Use	Weekday			Weekends		
	1AM - 7AM	7AM - 6PM	6PM – 1AM	1AM - 7AM	7AM -6PM	6PM – 1AM
Residential	100%	60%	100%	100%	75%	90%
Office	5%	100%	5%	0%	10%	0%
Retail	0%	90%	80%	0%	100%	60%
School, vocational or business ²	0%	80%	60%	0%	30%	0%
Farmer’s Market ³	0%	90%	25%	0%	100%	0%

1. From Minneapolis City Code, Table 541-4.
2. Assumed based on hours of operation
3. Assumed from Farmer’s Market hours of operation (Tuesday and Saturday only).

Table 10 details the shared parking calculations, using the minimum parking requirements, based on the time and type of day to determine the most critical time period for parking design purposes. These calculations indicate the weekday time period of 7AM to 6PM represents the highest demand and is therefore used for parking design purposes.

TABLE 10A – SHARED PARKING CALCULATIONS – PHASE 1

Use	Weekday			Weekends		
	1AM - 7AM	7AM - 6PM	6PM – 1AM	1AM - 7AM	7AM -6PM	6PM – 1AM
Residential	113	68	113	113	84	101
Office	7	144	7	0	14	0
Retail	0	5	5	0	6	4
School	0	72	54	0	27	0
Farmer’s Market	0	15	4	0	17	0
Totals	120	304	183	113	149	105

Source: Minneapolis City Code, Table 541-4.

TABLE 10B – SHARED PARKING CALCULATIONS – FULL BUILD-OUT

Use	Weekday			Weekends		
	1AM - 7AM	7AM - 6PM	6PM – 1AM	1AM - 7AM	7AM - 6PM	6PM – 1AM
Residential	509	305	509	509	381	458
Office	7	144	7	0	14	0
Retail	0	16	14	0	18	11
Farmer’s Market	0	15	4	0	17	0
Totals	516	481	534	509	431	469

Source: Minneapolis City Code, Table 541-4.

Based on the shared parking calculations per Minneapolis City Code, the 753 proposed parking spaces will reflect a parking surplus of 449 spaces during the critical weekday 7AM to 6 PM time period in Phase 1. In addition, during Full Build-Out, the 840 proposed parking spaces will reflect a parking surplus of 306 spaces during the critical 6 PM to 1 AM time period. It is noted that parking can be accommodated on-site during all time periods.

The Minneapolis City Code allows parking incentives for proximity to transit service. According to the Code, “The minimum parking requirement may be reduced ten (10) percent if the proposed use is located within three hundred (300) feet of a transit stop with midday service headways of thirty (30) minutes or less in each direction”. An LRT station exists just 300 feet from the L&H Station (development) where midday service headways are less than thirty minutes. Thus, the 10% transit incentive reduction may be applied here.

Further, the Code allows an incentive to the overall parking requirements if certain bicycle parking requirements are met for non-residential uses. In the case of this development, there will be more bicycle parking than is required (see below), but the incentive targets non-residential uses that compares with more than 25% of the overall vehicular parking – which is not the case here. Therefore, but the bicycle parking incentive may not be applied here.

Taking these reductions into account, the off-street parking required by this development will be **534 stalls**. The site plan provides parking in excess of the minimum requirements per the Minneapolis Code.

E. Parking Requirements per Institute of Transportation Engineers

The second source to calculate the number of required parking spaces, for comparison purposes only is Parking Generation, 4th Edition, published by ITE. Calculations using this source with the weekday 7 AM to 6 PM City of Minneapolis shared parking percentages are detailed in Table 5. Based on these requirements 276 stalls will be necessary to serve the site.

TABLE 11A – REQUIRED PARKING GUIDELINES PER ITE – PHASE 1

Land Use	GLA (SF)	Requirement	Required Spaces	Shared Parking	
				7AM – 6PM %	Required Spaces
Residential	125 Units	1 space/dwelling unit	125	60%	75
Office	100,000 sq. ft.	2.84 spaces/1,000 SF GFA	284	100%	284
Retail	8,000 sq. ft.	2.4 spaces/1,000 SF GFA ¹	19	90%	17
School	450 students	0.18 veh/school pop.	81	80%	65
Farmer’s Market	45,000 sq. ft.	2.4 spaces/1,000 SF GFA ¹	108 (shared)	90%	97 (shared)
TOTALS			617		538

Supplemented with Data from Parking, by Weant and Levinson, 1990. Assumed for Retail Use (Tuesday and Saturday only).

TABLE 11B – REQUIRED PARKING GUIDELINES PER ITE – BUILD-OUT

Land Use	GLA (SF)	Requirement	Required Spaces	Shared Parking	
				6PM - 1AM %	Required Spaces
Residential	565 Units	1 space/dwelling unit	565	100%	565
Office	100,000 sq. ft.	2.84 spaces/1,000 SF GFA	284	5%	14
Retail	16,075 sq. ft.	2.4 spaces/1,000 SF GFA ¹	34	80%	27
Farmer's Market	45,000	2.4 spaces/1,000 SF GFA ¹	108	25%	27
TOTALS			991		633

Supplemented with Data from Parking, by Weant and Levinson, 1990. Assumed for Retail Use (Tuesday and Saturday only).

Comparing these calculations for required parking, the L&H Station Development will meet and exceed the required number of off-street parking spaces. The City's parking requirements indicate the need for 546 stalls, while the ITE analysis indicates a need of **633 stalls**. The development is proposing 840 off-street stalls. Therefore, the parking need is met.

(PLEASE NOTE: The project proposer and City staff are continuing to discuss possible reduction in the total number of parking spaces at the site. If this discussion and further analysis allows a reduction in the total number of spaces, this will be reflected in the final TDMP. In no case will the number of parking spaces be increased from the number analyzed in this version of the TDMP.)

F. Transit Incentives

As stated in Section D, transit incentives may apply to a portion of the L&H Station development. The housing unit just west of the Market Plaza will lie just at 300 feet from the BLUE Line Lake Street/Midtown Station. All other multi-family dwelling units will lie outside of this 300-foot requirement. Therefore, a portion of the structured parking allocated for this building may be subject to the ten percent reduction.

Regarding the parking requirement for the non-residential uses, a transit incentive may be requested since there are adequate sheltered transit stops at the Lake Street/Midtown station and along the BLUE Line and along Lake Street just below the LRT station. Therefore, the minimum parking requirement may be reduced, as determined by the zoning administrator; but, because this development exceeds the minimum number of stalls, no reduction is required.

G. Bicycle Parking

The project will meet the minimum bike parking requirements, as stipulated in the Minneapolis Code of Ordinances. Table 541-3 specifies bicycle parking requirements based on land uses. Tables 12A and 12B list the bicycle parking requirements based on the land uses proposed in the L&H Station project.

TABLE 12A – MINIMUM BICYCLE PARKING REQUIREMENT – PHASE 1

Land Use	UNITS	Minimum Bicycle Parking Requirement	Required Bicycle Parking Spaces
Multi-family Dwellings	125 Units	1 space/2 dwelling unit	63
Office	100,000 sq. ft.	3 spaces or 1 space per 15,000 sq. ft. of GFA, whichever is greater	7
Retail	8,000 sq. ft.	3 spaces or 1 space per 5,000 sq. ft. of GFA, whichever is greater	3
School	30 classrooms	1 space per classroom provided the requirement shall not exceed 40	30
Farmer's Market	45,000	1 space per 2,000 sq. ft. of sales area, except where approved as a temporary use	0 (temporary use)
TOTALS			100

Source: Minneapolis City Code, Table 541-4.

TABLE 12B – MINIMUM BICYCLE PARKING REQUIREMENT – FULL BUILD-OUT

Land Use	UNITS	Minimum Bicycle Parking Requirement	Required Bicycle Parking Spaces
Multi-family Dwellings	565 Units	1 space/2 dwelling unit	283
Office	100,000 sq. ft.	3 spaces or 1 space per 15,000 sq. ft. of GFA, whichever is greater	7
Retail	16,075 sq. ft.	3 spaces or 1 space per 5,000 sq. ft. of GFA, whichever is greater	3
Farmer's Market	45,000	1 space per 2,000 sq. ft. of sales area, except where approved as a temporary use	0 (temporary use)
TOTALS			293

Source: Minneapolis City Code, Table 541-4.

H. Critical Parking Area

The City of Minneapolis has established “Critical Parking Areas” as a means of handling outside drivers who “park and hide” in neighborhoods adjacent to “park and ride” locations and other uses where the parking that is provided may be overwhelmed by demand. According to the City of Minneapolis Public Works website:

Critical Parking Areas are residential on-street permit parking areas that are intended to provide relief to neighborhood residents from parked vehicles by persons who have no association with the residents or businesses in the neighborhood.

Minneapolis Ordinance (Title 18, Chapter 478) states that no Critical Parking Area may be established unless the following findings have been made as determined by an engineering study from the Minneapolis Public Works Department:

- The area is detrimentally impacted by parking of commuter, student, customer or visitor/guest vehicles generated by area businesses, institutions or recreational/entertainment facilities during the proposed hours of restriction;
- The area does not have sufficient off-street vehicular parking for the use and convenience of the residents thereof in the vicinity of their homes;
- Vehicle noise, pollution or congestion will work unacceptable hardships on the residents of the area if present parking is allowed to continue unregulated;
- The health, safety and welfare of residents of the area and the city as a whole and the attractiveness and livability of specific neighborhoods will be promoted by a system of preferential parking enacted under this section

Critical Parking Permits are required to park in designated Critical Parking Areas during the posted times. Permits are only for licensed drivers who are residents and businesses at qualified addresses.

Participation is optional. It is not necessary for residents or businesses to purchase a Critical Parking Permit if they do not plan to park on the street during restricted hours.

The process for establishing a Critical Parking Area includes:

- Getting a written petition (issued by Minneapolis Public Works) signed by at least 75% of the residents within the proposed critical parking area
- An engineering study to determine if the area meets the criteria for the selected type of Critical Parking Area as set forth by the City Ordinance.
- The City Clerk’s office must approve the petition and the City Council must approve the establishment of the Critical Parking Area.

Based on the existing parking demand of the 31st Street Park and Ride, as well as the “park and hide” volume both noted in the CURA study and evidenced by the high on-street parking occupancy found in this study along nearby streets, the neighborhood may be “...detrimentally impacted by parking of commuter, student, customer or visitor/guest vehicles generated by area businesses, institutions or recreational/entertainment facilities.” This demand for on-street parking may escalate once Metro Transit decommissions the 31st Street Park and Ride, and the parking lot reverts to Minneapolis Public Schools. These relocated commuters may become as many as 200 “park and hide” commuters overwhelming the neighborhood’s on-street parking supply.

While the L&H Station development will have dedicated off-street parking for its residents, customers and other patrons, the greater neighborhood area may not have sufficient off-street vehicular parking for non-residential use. If transit users relocate from parking their vehicles at the Park & Ride to neighborhood on-street parking stalls, the mix of legitimate residential parking with “park-and-hide” users, congestion may create unacceptable hardships on the residents of the area if left unregulated.

Therefore, the initiation of the process to establish a Critical Parking Area may be recommended, not to regulate the L&H Station development, but to regulate displaced drivers who have been accustomed to parking their vehicles at the 31st Street Park and Ride lot or on-street nearby. The CNO may then facilitate the petition process among the neighborhood for the establishment of this Critical Parking Area after to the decommissioning of the 31st Street Park and Ride lot. This will allow the City to verify through an engineering study that the criteria for the Critical Parking Area are met as set forth in the City Ordinance. The City Clerk may then approve the petition and present it to the City Council for formal establishment of the Critical Parking Area.

V. TRAFFIC OPERATIONS, ACCESS AND SITE CIRCULATION

Traffic operations at the site accesses and nearby intersections were studied to determine if the addition of site-generated traffic would have adverse impacts. As identified in cooperation with the City of Minneapolis, the intersections most likely to be affected were:

- a. East Lake Street and Hiawatha Avenue (MN 55)
- b. East Lake Street and 21st Avenue South
- c. East Lake Street and 22nd Avenue South
- d. 21st Avenue South and 31st Street East
- e. 22nd Avenue South and 31st Street East
- f. East Lake Street and Cedar Avenue South

Adjusted year 2012 traffic volumes were supplemented with current year turning movement counts at these intersections are found on Figure 7. To forecast the impact of site-generated traffic, existing operations at these intersections were first reviewed. Traffic to be generated by the site was then estimated, and added to the roadway network. Operations at the intersections were again reviewed and compared to existing conditions. In general, results of the operational analysis show that the addition of site-generated traffic to the local roadway network does not result in unacceptable, congested or unsafe operations.

Four alternatives were considered in evaluating traffic operations near the site. These four alternatives are:

- a. Build alternatives. Phase 1 of completion is assumed for 2016. Typically, the year after completion is used for design purposes allowing traffic patterns time to readjust after construction. Accordingly, **2017** is assumed as the design year for Phase 1 study. Build-out is assumed 5 to 7 years later, thus **2025** was used as the Full Build-out design year.
- b. No-Build alternatives. This alternative assumes the site will maintain its current land uses while the surrounding area continues to develop to the design years of **2017** and **2025**.

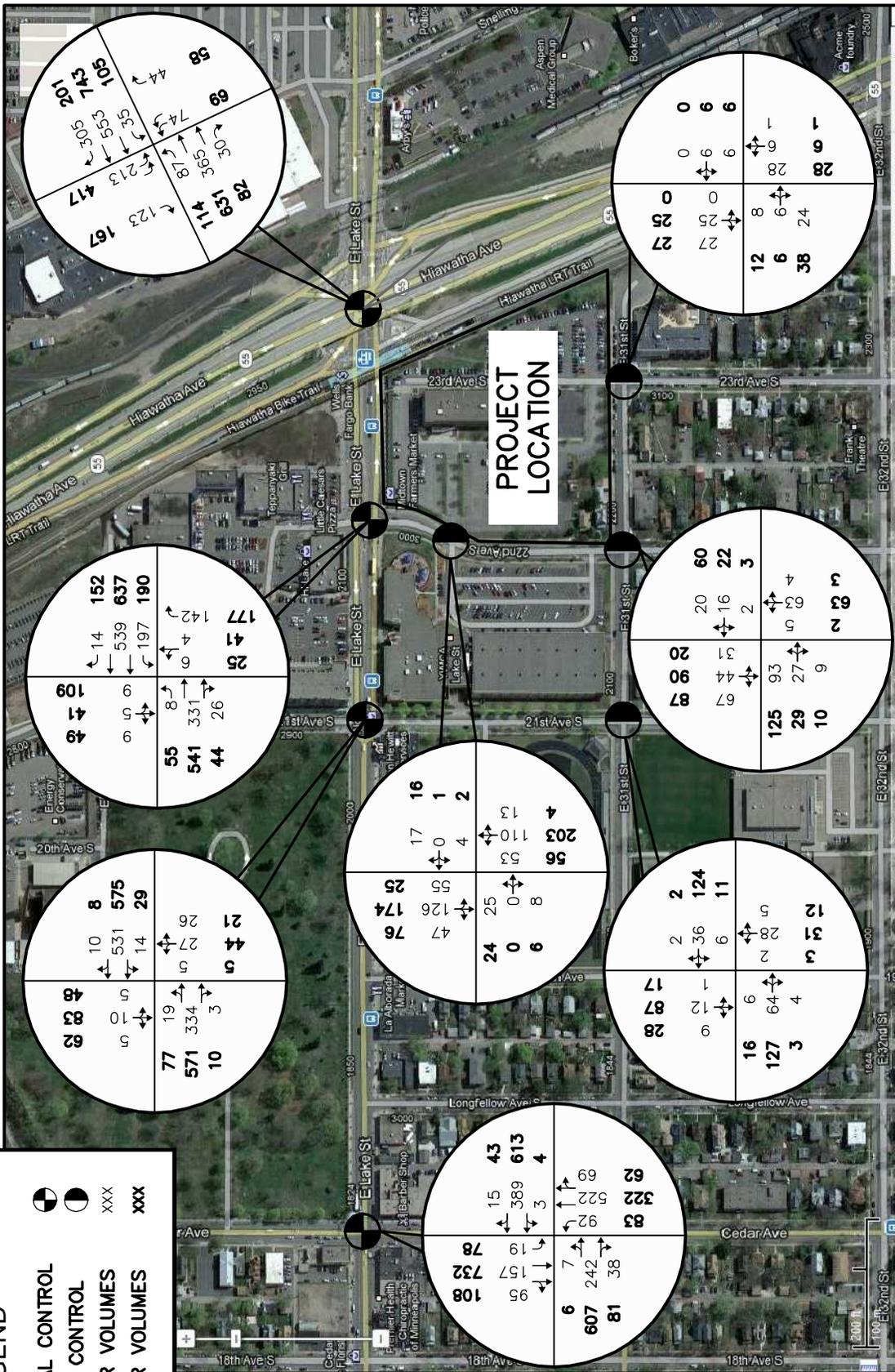
In order to assess the traffic impacts associated with the proposed redevelopment, a two-step approach is presented in this report. First, an analysis of the predicted 2017 No-Build conditions is presented. After establishing the **2017 No-Build** scenario as a means for comparison, the **2017 Build** scenario analysis is presented. Similar analysis is then performed for the **2025 No-Build** and **2025 Build** conditions. In each case, a **0.5% background growth factor** was used to project future traffic conditions on the network. Finally, conclusions of the traffic operations are detailed.

A. No-Build Alternative

To address the impacts of a development on the surrounding roadway system, it is necessary to first analyze traffic conditions that would be present on the roadway system without the inclusion of the proposed development. This is considered the No-Build scenario, and serves as a basis with which to compare the Build scenario.

LEGEND

- EXISTING SIGNAL CONTROL
- EXISTING STOP CONTROL
- AM PEAK HOUR VOLUMES **XXX**
- PM PEAK HOUR VOLUMES **xxx**



L & H STATION

2014 EXISTING TRAFFIC VOLUMES

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It is anticipated that no new improvements to the surrounding roadway network will be undertaken in the 2017 and 2025 No-Build and Build scenarios. The 2017 and 2025 projected No-Build volumes are shown on Figures 8A and 8B, and as stated above, reflect the background annual growth rate of 0.5%.

B. Operational Analysis Methodology

Traffic operations for peak hour conditions within the study area were analyzed using the industry-standard Synchro/SimTraffic software package (Version 9.0), which uses the data and methodology contained in the 2010 Highway Capacity Manual, published by the Transportation Research Board. The software model was calibrated using existing conditions before being used to assess future conditions.

The operating conditions of transportation facilities, such as traffic signals and stop-controlled intersections, are evaluated based on the relationship of the theoretical capacity of a facility to the actual traffic volumes on that facility. Various factors affect capacity, including travel speed, roadway geometry, grade, number and width of travel lanes, and intersection control. The current standards for evaluating capacity and operating conditions are contained in the 2010 Highway Capacity Manual (HCM). The procedures describe operating conditions in terms of a Level of Service (LOS). Facilities are given letter designations from "A," representing the best operating conditions, to "F," representing the worst. Generally, Level of Service "D" represents the threshold for acceptable overall intersection operating conditions during a peak hour.

The acceptable threshold for a particular movement at an intersection depends on both the priority assigned to that movement and its traffic volume. In general, the higher the priority and the higher the traffic volume, the more stringent the acceptable threshold will be. For example, the acceptable threshold for a high-priority/high-volume suburban movement might be "C," while LOS "F" on a low-priority/low-volume urban movement might be appropriate.

For two-way stop-controlled intersections, a key measure of operational effectiveness is the side street LOS. Since the mainline does not have to stop, the majority of delay is attributed to the side-street/minor approaches. Long delays and poor LOS can sometimes result on the side street, even if the overall intersection is functioning well, making it a valuable design criterion.

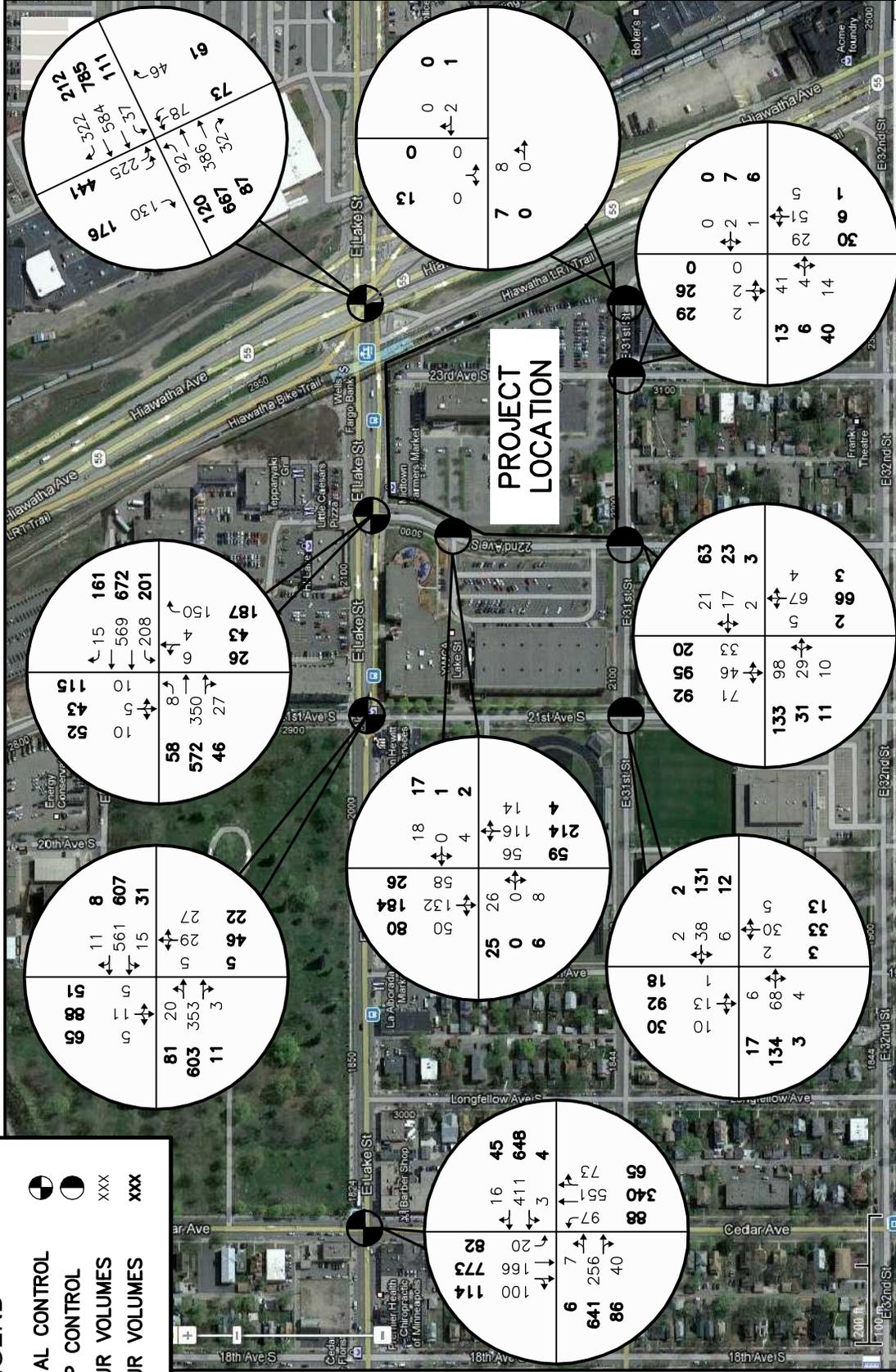
As the side-street/minor approach delay approaches and exceeds 60 seconds per vehicle, drivers may divert to another route or become impatient and accept gaps in the mainline traffic that are less than acceptable/safe gaps resulting in the potential for traffic safety concerns.

Again, depending on priority and traffic volume, acceptable side-street LOS can range from D to F. Side streets can operate at LOS F without the intersection warranting a change in traffic control.

A final fundamental component of operational analyses is a study of vehicular queuing, or the lineup of vehicles waiting to pass through an intersection. An intersection can operate with an acceptable level of service, but if queues from the intersection extend back to block entrances to turn lanes or accesses to adjacent land uses, unsafe operating conditions could result. The 95th percentile queue, or the length of queue with a 5% chance of occurring during the peak hour, is considered the standard for design purposes.

LEGEND

- EXISTING SIGNAL CONTROL
- EXISTING STOP CONTROL
- AM PEAK HOUR VOLUMES **XXX**
- PM PEAK HOUR VOLUMES **XXX**



C. Results of the Analysis for the Existing Condition

Table 13 summarizes the operational analysis of the site in the existing condition. Overall Levels of Service (LOS) for each study area intersection is listed along with the critical 95th percentile queues.

TABLE 13 – EXSTING CONDITION OPERATIONAL ANALYSIS RESULTS
(Overall Intersection Levels of Service and Comments)¹.

Intersection	2014		Critical Peak Delay and 95 th Percentile Queue
	AM LOS	PM LOS	
Lake & Hiawatha	B/C	B/C	Existing AM – SB Left 27.1 sec/veh; 114' queue Existing PM – WB Thru 24.1 sec/veh; 219' queue
Lake & 21 st Ave	A/A	B/C	Existing AM – SB Left 18.1 sec/veh; 30' queue Existing PM – EB Left 24.1sec/veh; 152' queue
Lake and 22 nd Ave	A/B	B/C	Existing AM – NB Thru 17.9 sec/veh; 56' queue Existing PM – SB Left 33.1 sec/veh; 184' queue
22 nd Ave & YWCA/School Dwy	a/a	a/a	Existing AM – NB Left 4.0 sec/veh; 47' queue Existing PM - EB Left 5.3 sec/veh; 39' queue
21 st Ave & 31 st St	a/a	a/a	Existing AM – EB Thru 6.8 sec/veh; 60' queue Existing PM – SB Left 8.4 sec/veh; 62' queue
22 nd Ave & 31 st St	a/b	a/c	Existing AM – NB Thru 7.5 sec/veh; 59' queue Existing PM – NB Left 9.1 sec/veh; 50' queue
Lake St & Cedar Ave	A/C	B/D	Existing AM – EB Left 32.6 sec/veh; 170' queue Existing PM – EB Left 40.0 sec/veh; 278' queue

1. Overall LOS reported from Synchro. First letter represents intersection LOS, while second letter represents worst LOS of individual approach. Upper case letters indicate signalized intersections, and lower case letters indicate unsignalized intersections.

Results of the Existing Condition analysis indicates that all study area intersections operate at acceptable overall Levels of Service.

(NOTE: A separate four-way stop warrant analysis was conducted for the intersection of 31st Street and 22nd Avenue South. Results of this analysis appear later in this report.)

D. Results of the Analysis for the No-Build Scenarios

Table 14 summarizes the results of the 2017 and 2032 No-Build operational analysis. The overall LOS for each study area intersection is listed along with the critical 95th percentile queues.

TABLE 14 – 2017 & 2025 NO-BUILD ALTERNATE OPERATIONAL ANALYSIS RESULTS
(Overall Intersection Levels of Service and Comments)

Intersection	2017		2025		95 th Percentile Queue Comments ²
	AM LOS ¹	PM LOS ¹	AM LOS ¹	PM LOS ¹	
Lake & Hiawatha	A/C	B/C	B/C	B/C	2017 AM – WB T 210’; 2025 AM – WB T 187’ 2017 PM – SB L 170’; 2032 PM – WB T 241’
Lake & 21 st Ave	A/C	A/D	A/C	A/B	2017 AM – NB LTR 70’ ; 2032 AM – WB LT 69’ 2017 PM – SB LTR 147’; 2032 PM – SB LTR 121’
Lake and 22 nd Ave	A/C	B/C	A/C	B/C	2017 AM – WB L 103’ ; 2032 AM – WB L 61’ 2017 PM – SB 139’; 2032 PM – SB LT 155’
22 nd Ave & YWCA/School Dwy	a/a	a/b	a/a	a/a	2017 AM – NB LTR 35’ ; 2032 AM – EB LTR 39’ 2017 PM – NB LTR 44’; 2032 PM – NB 41’
21 st Ave & 31 st St	a/a	a/a	a/a	a/a	2017 AM – NB LTR 56’; 2032 AM – EB LTR 61’ 2017 PM – SB LTR 70’; 2032 PM – WB LTR 77’
22 nd Ave & 31 st St	a/a	a/a	a/a	a/a	2017 AM – SB LTR 70’; 2032 AM – SB LTR 66’ 2017 PM - SB LTR 75’; 2032 PM – SB LTR 79’
Lake St & Cedar Ave	B/D	B/D	A/D	B/C	2017 AM – EB LT 140’; 2032 AM – NB T 152’ 2017 PM – EB LT 268’’; 2032 AM – SB T 246’

- Overall LOS reported from Synchro. First letter represents intersection LOS, while second letter represents worst LOS of individual approach. Upper case letters indicate signalized intersections, and lower case letters indicate unsignalized intersections.
- L = Left; T=Through; R=Right; LT = Left & Through; TR = Through & Right; LTR = Left, Through & Right Movements

Results of the 2017 and 2025 No-Build analyses indicate that all study area intersections are projected to operate at acceptable overall Levels of Service for the 2017 and 2025 No-Build conditions. Nevertheless, certain off-site intersections experience significant queuing (e.g., Eastbound left turn movement at Lake Street & Cedar Avenue in the 2017 No-Build PM Peak Hour, etc.).

E. Site-Generated Traffic

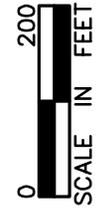
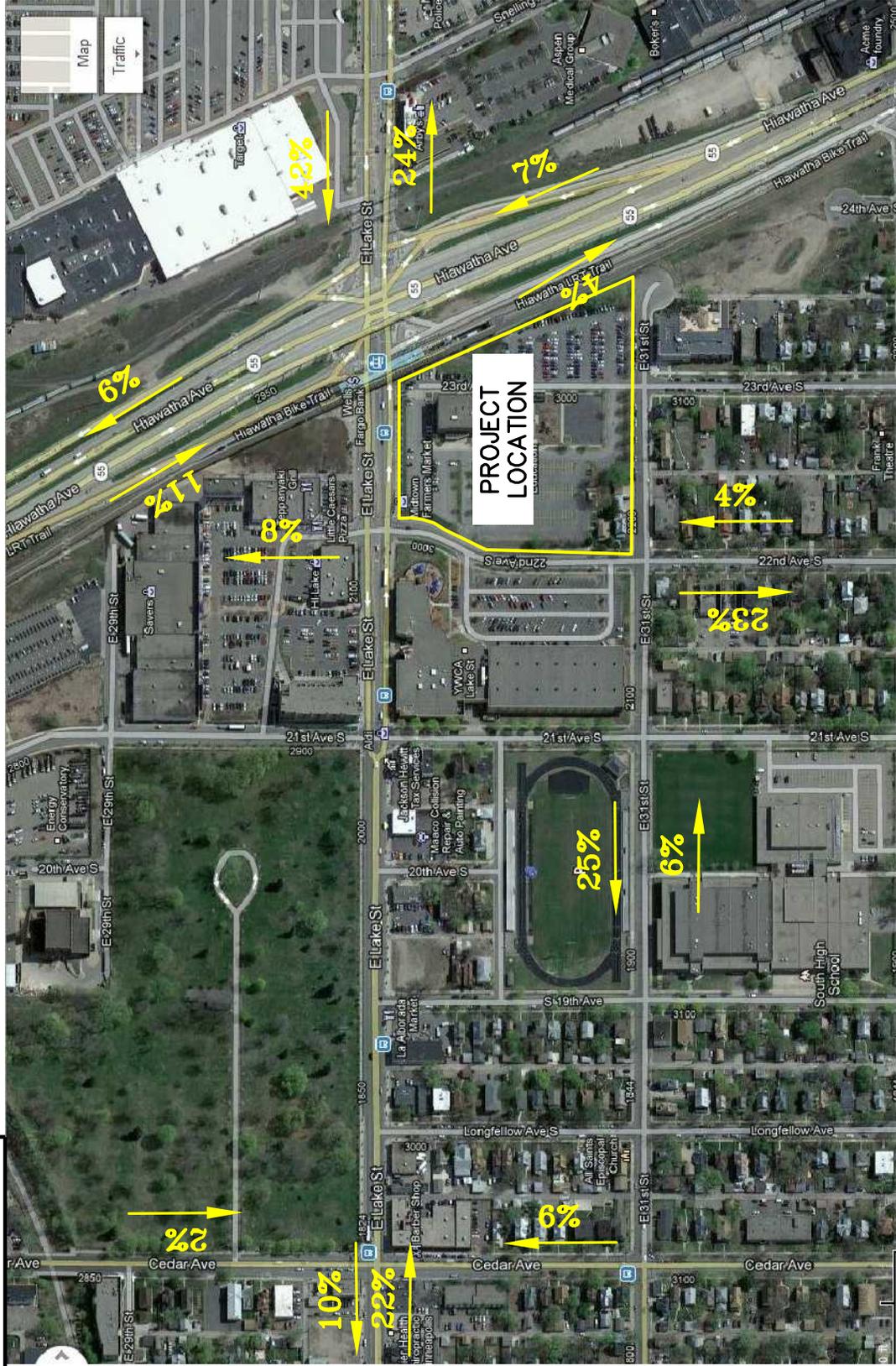
In determining the effects of the site development traffic, one must take into consideration the existing trip generators on the site. This traffic must be removed from the background traffic pattern before the new land uses can be considered.

Westwood reviewed the existing land uses and determined that the trips for the Metro Transit Park & Ride should be deleted from Phase 1 consideration, and the Minneapolis School District building should be deleted from the Full Build-out consideration. The Midtown Farmers Market is intended to remain on the site as part of the future development, therefore any trip generation for the Farmers Market was not removed from the background traffic analysis.

Westwood reviewed the existing traffic patterns and formulated percentages to determine the trip distribution. These percentages were adjusted based on the proposed uses in each design scenario. Figure 9 illustrates the trip distribution percentages assumed in this analysis.

LEGEND

DISTRIBUTION PERCENTAGE 0%



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L & H STATION
 TRIP DISTRIBUTION

The number of vehicle trips generated by the proposed redevelopment has been estimated for the weekday AM and PM peak hours using the data and methodologies contained in the 9th Edition of Trip Generation Manual, published by the Institute of Transportation Engineers (ITE). The trip generation estimates for the project as a whole have been developed by combining the trip generation characteristics of the individual land uses. The estimated volume of site-generated trips for each land use is summarized in Tables 15A and 15B. Additionally, the resulting “New” trips to be added to the roadway network are also shown on Figures 10A and 10B for 2017 and 2025 Assignments, respectively.

It should be noted that the Midtown Farmers Market is an activity that will be retained as part of the new L&H Station development. The Farmers Market operates in the parking lot on Tuesdays and Saturdays, and attracts 50 to 70 vendors. This market is being incorporated into the design of the L&H Station, and will continue to accommodate the 50-70 vendor spaces.

TABLE 15A – TRIP GENERATION ESTIMATES¹ – PHASE 1

Land Use ¹	ITE Land Use Code	Size	Weekday Trips Generated:				Weekday ADT
			AM Peak Hour		PM Peak Hour		
			Enter	Exit	Enter	Exit	
Adult Learning Center	540	30 classrooms	68	21	29	19	553
Mid-Rise Apartment	223	125 units	12	26	28	20	882
Office	710	100,000 sq. ft.	168	23	32	158	1312
Specialty Retail	814	8,000 sq. ft.	0	0	10	12	354
Farmers Market (Sat/Tues only)	814	45,000 sq. ft.	n.a.	n.a.	54	68	n.a.
Totals			248	70	128	228	3,101
			318		456		

1. Per the data and methodologies in Trip Generation, 9th Edition, published by ITE; except Vocational School which was based on actual AM and PM Peak Hour trips recorded for the site. Farmers Market use is Saturday morning only and Tuesday afternoon/evening only.

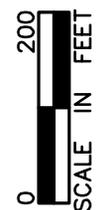
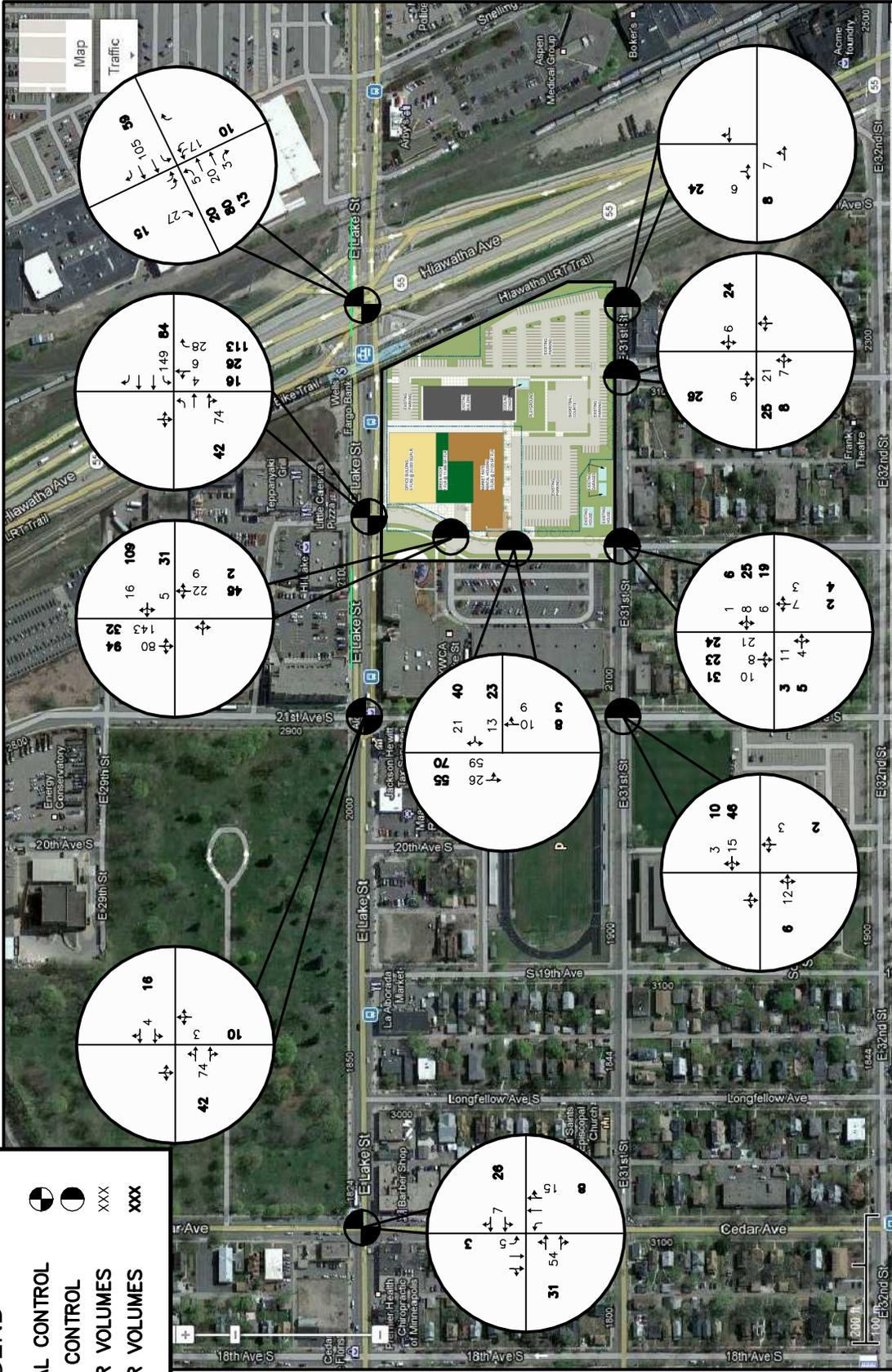
TABLE 15B – TRIP GENERATION ESTIMATES¹ – PROPOSED LAND USES

Land Use	ITE Land Use Code	Size	Weekday Trips Generated:				Weekday ADT
			AM peak		PM Peak		
			Enter	Exit	Enter	Exit	
Mid-Rise Apartment	223	565 units	53	117	128	93	2,327
Office	710	100,000 sq. ft.	168	23	32	158	661
Specialty Retail	814	16,075 sq. ft.	0	0	24	30	886
Farmers Market (Specialty Retail)	814	45,000 sq. ft.	n.a.	n.a.	54	68	n.a.
Totals			125	102	135	173	3,824
			227		308		

1. Per the data and methodologies in Trip Generation, 9th Edition, published by ITE. Farmers Market operates on Saturday mornings and Tuesday afternoons/evenings only.

LEGEND

- EXISTING SIGNAL CONTROL
- EXISTING STOP CONTROL
- AM PEAK HOUR VOLUMES **XXX**
- PM PEAK HOUR VOLUMES **XXX**



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L & H Station

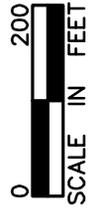
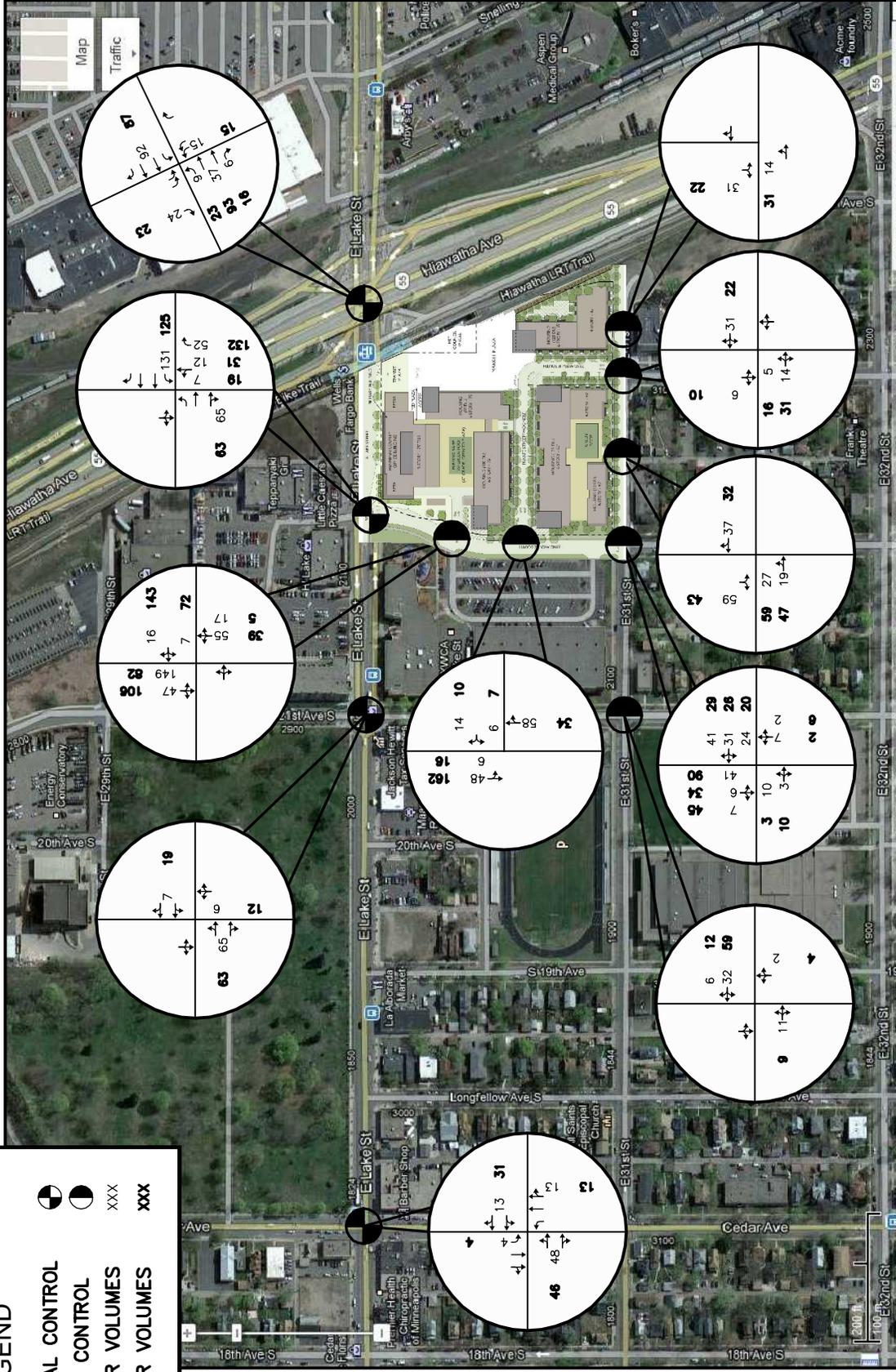
2017 Trip Assignment

SHEET #
10A

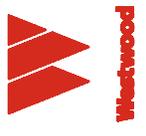
PROJ #
R0003982

LEGEND

- EXISTING SIGNAL CONTROL
- EXISTING STOP CONTROL
- AM PEAK HOUR VOLUMES **XXX**
- PM PEAK HOUR VOLUMES **XXX**



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L & H Station

2025 Trip Assignment

SHEET#
10B

PROJ#
R0003982

F. Results of the Analysis for the Build Scenarios

Figures 11A and 11B show the 2017 and 2025 Build traffic volumes for the study area. These volumes assume the trip assignments being overlaid onto no-build traffic volumes in each case.

Table 16 summarizes the results of the 2017 and 2025 Build operational analysis. The overall LOS for each study area intersection is listed along with the critical 95th percentile queues.

TABLE 16 – 2017 & 2025 BUILD ALTERNATE OPERATIONAL ANALYSIS RESULTS
(Overall Intersection Levels of Service and Comments)

Intersection	2017		2025		95 th Percentile Queue Comments ²
	AM LOS ¹	PM LOS ¹	AM LOS ¹	PM LOS ¹	
Lake & Hiawatha	B/C	B/C	B/C	B/C	2017 AM – SB L 94'; 2025 AM – SB L 121' 2017 PM – SB L 161'; 2025 PM – SB L 165'
Lake & 21 st Ave	A/C	A/C	A/C	A/C	2017 AM – NB LTR 77'; 2025 AM – NB LTR 73' 2017 PM – SB LTR 144'; 2025 PM – SB LTR 137'
Lake and 22 nd Ave	A/C	B/D	A/C	B/C	2017 AM – SB LT 31'; 2025 AM – SB LT 34' 2017 PM – SB LT 148'; 2025 PM – SB LT 159'
22 nd Ave & YWCA/School Dwy	a/b	a/b	a/b	a/b	2017 AM – EB LTR 50'; 2025 AM – WB LTR 61' 2017 PM – EB LTR 39'; 2025 PM – WB LTR 89'
21 st Ave & 31 st St	a/a	a/a	a/a	a/a	2017 AM – NB LTR 45'; 2025 AM – EB LTR 66' 2017 PM – SB LTR 56'; 2025 PM – SB LTR 79'
22 nd Ave & 31 st St	a/a	a/a	a/a	a/b	2017 AM – SB LTR 97'; 2025 AM – SB LTR 93' 2017 PM – SB LTR 96'; 2025 PM – SB LTR 138'
Lake St & Cedar Ave	B/C	B/D	B/C	B/D	2017 AM – EB LT 150'; 2025 AM – EB LT 151' 2017 PM – EB LT 260'; 2025 AM – EB LT 267'

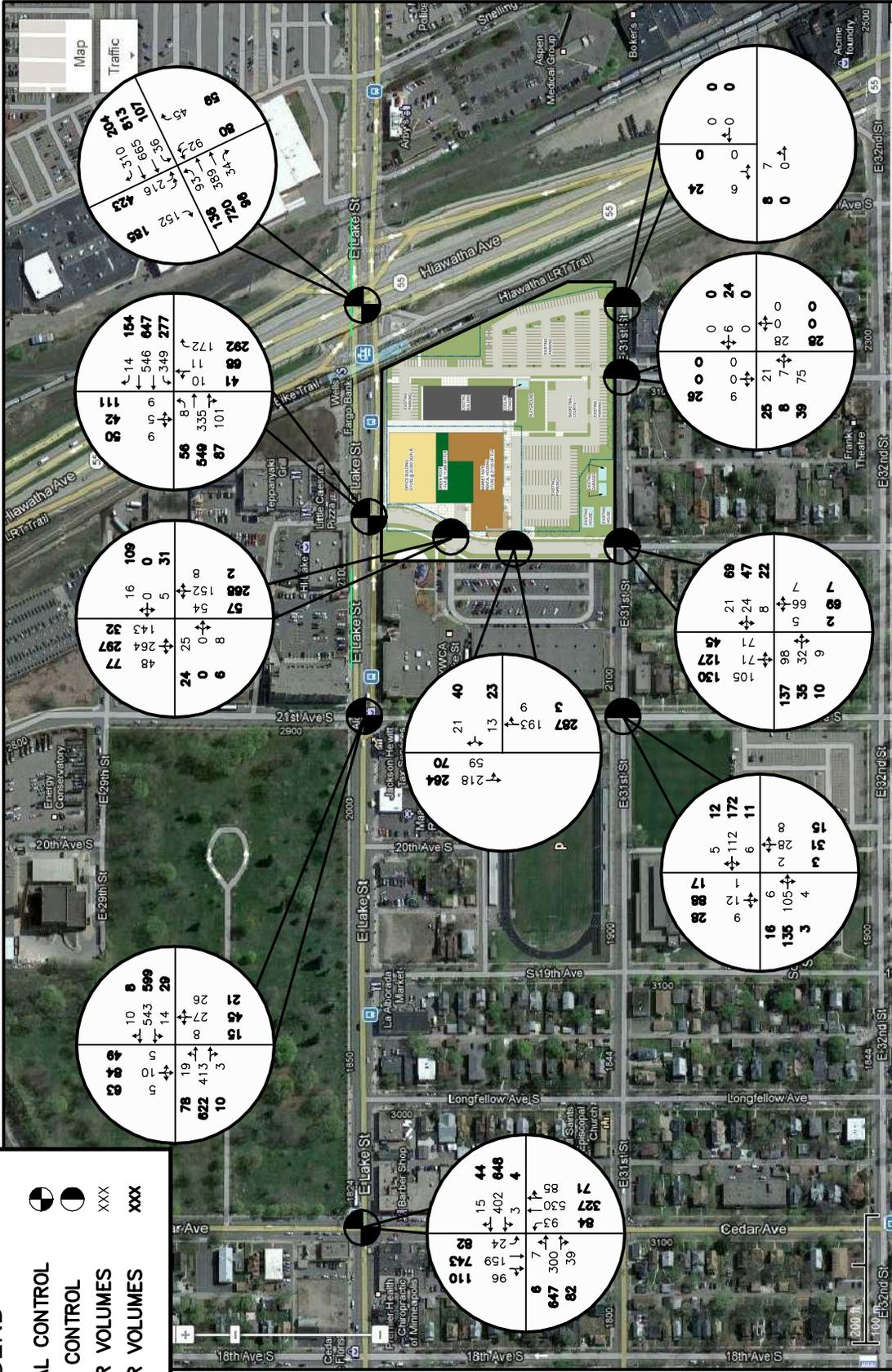
1. Overall LOS reported from Synchro. First letter represents intersection LOS, while second letter represents worst LOS of individual approach.

Upper case letters indicate signalized intersections, and lower case letters indicate unsignalized intersections.

2. L = Left; T=Through; R=Right; LT = Left & Through; TR = Through & Right; LTR = Left, Through & Right Movements

LEGEND

- EXISTING SIGNAL CONTROL 
- EXISTING STOP CONTROL 
- AM PEAK HOUR VOLUMES **XXX**
- PM PEAK HOUR VOLUMES **XXX**



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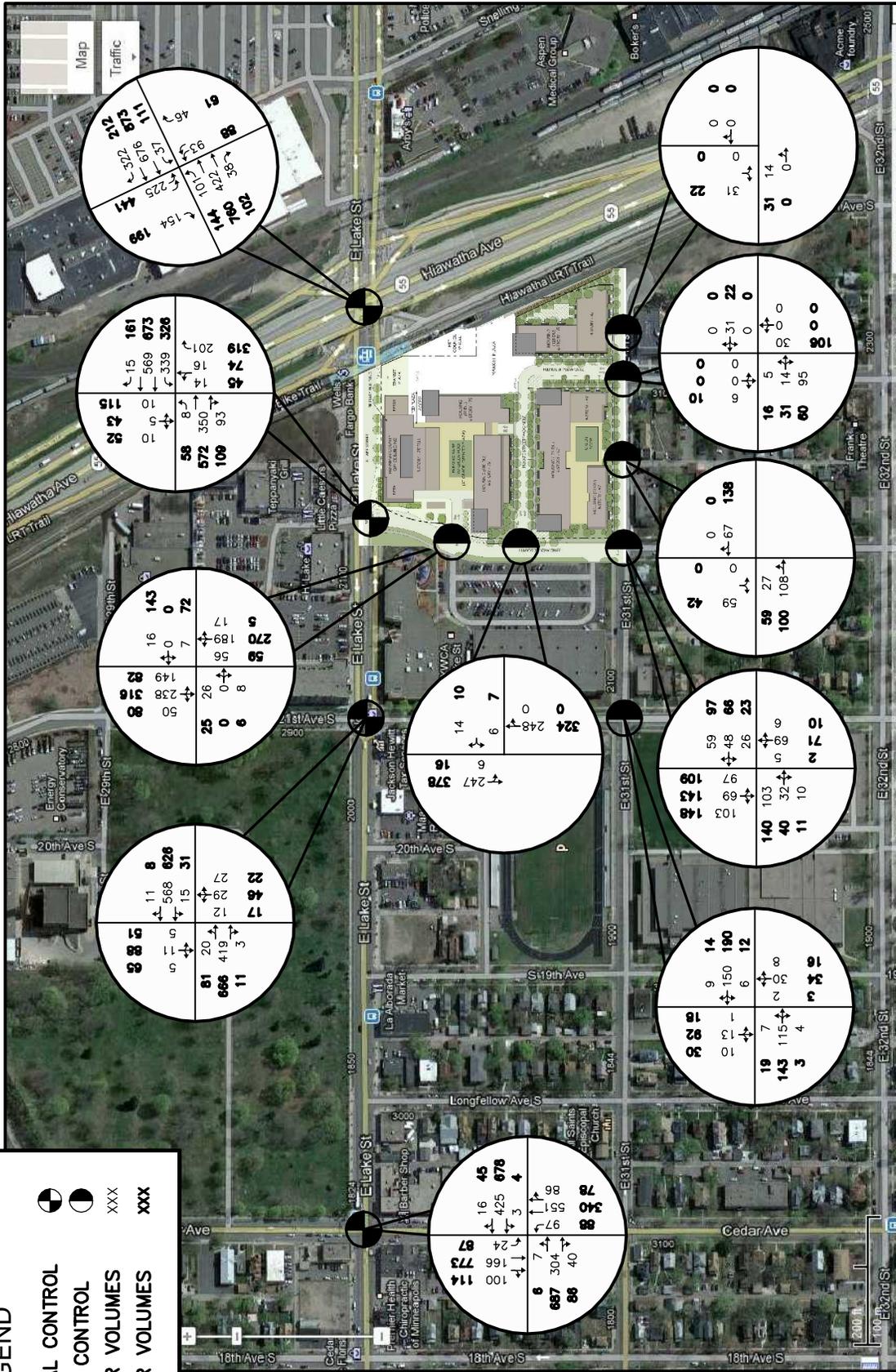


L & H Station
2017 Build Traffic Volumes

SHEET # **11A**
 PROJ # **R0003982**

LEGEND

- EXISTING SIGNAL CONTROL
- EXISTING STOP CONTROL
- AM PEAK HOUR VOLUMES
- PM PEAK HOUR VOLUMES



L & H Station

2025 Build Traffic Volumes

SHEET#
11B

PROJ#
R0003982

G. Traffic Control Warrant Analysis

Westwood tested whether warrants exist for a change in traffic control at the intersection of 31st Street and 22nd Avenue southwest of the proposed L&H Station development. The Minnesota Manual on Uniform Traffic Control Devices (MnMUTCD) specifies warrants for all-way stop control based on approach volumes. Table 17 lists approach volumes and periods when both volume warrants are met. In this case, warrants are met for only one hour, not the eight required for all-way stop installation.

TABLE 17 – ALL-WAY STOP WARRANT ANALYSIS – 31ST STREET & 22ND AVENUE

Volumes: Hour:	31st Street		22 nd Avenue			Overall Total	Meets Warrant:
	Eastbound	Westbound	Northbound	Southbound	Total		
12:00 AM	6	2	2	13	15	23	/
1:00 AM	3	1	2	9	11	15	/
2:00 AM	0	1	1	10	11	12	/
3:00 AM	3	0	4	4	8	11	/
4:00 AM	3	3	2	6	8	14	/
5:00 AM	26	14	15	18	33	73	/
6:00 AM	49	25	26	50	76	150	/
7:00 AM	99	31	47	120	167	297	/
8:00 AM	150	41	74	152	226	417	/X
9:00 AM	72	43	54	108	162	277	/
10:00 AM	89	35	33	91	124	248	/
11:00 AM	51	39	33	103	136	226	/
12:00 PM	55	62	28	128	156	273	/
1:00 PM	42	36	36	115	151	229	/
2:00 PM	53	38	50	162	212	303	/X
3:00 PM	121	67	77	197	274	462	/X
4:00 PM	91	81	61	210	271	443	/X
5:00 PM	198	101	68	242	310	609	X/X
6:00 PM	148	66	53	108	161	375	/
7:00 PM	99	39	46	183	229	367	/X
8:00 PM	61	36	24	126	150	247	/
9:00 PM	47	76	26	101	127	250	/
10:00 PM	19	12	12	49	61	92	/
11:00 PM	10	10	6	26	32	52	/
Hours Met: 1 Hours Required: 8 Result: Not satisfied							

Source: Westwood Traffic Counts, 09/10/14

It should be noted that under each of the Build scenarios, traffic at the intersection increases at the intersection, especially in the southbound approach. While delay seems manageable (e.g., 14 seconds for the southbound approach), the 95th percentile queue extends beyond 150 feet. Therefore, there is a heavy southbound demand at the stop approach, but the queue is being served relatively quickly. It is recommended that the City continue to monitor conditions at this intersection for changes in traffic control.

VI. TRAVEL DEMAND MANAGEMENT STRATEGIES

A. City of Minneapolis Transportation Policy Points

The following policy points for transportation are included in Chapter 2 of the Minneapolis Plan for Sustainable Growth:

Policy 1: Encourage growth and reinvestment by sustaining the development of a multi-modal transportation system.

Policy 2: Support successful streets and communities by balancing the needs of all modes of transportation with land use policy.

Policy 3: Encourage walking throughout the city by ensuring that routes are safe, comfortable, pleasant, and accessible.

Policy 4: Make transit a more attractive option for both new and existing riders.

Policy 5: Ensure that bicycling throughout the city is safe, comfortable and pleasant.

Policy 6: Manage the role and impact of automobiles in a multi-modal transportation system.

Policy 7: Ensure that freight movement and facilities throughout the city meet the needs of the local and regional economy while remaining sensitive to impacts on surrounding land uses.

Policy 8: Balance the demand for parking with objectives for improving the environment for transit, walking and bicycling, while supporting the city's business community.

Policy 9: Promote reliable funding and pricing strategies to manage transportation demand and improve alternative modes.

Policy 10: Support the development of a multi-modal Downtown transportation system that encourages an increasingly dense and vibrant regional center.

Policy 11: Minneapolis recognizes the economic value of Minneapolis-St. Paul International Airport and encourages its healthy competition to reach global markets in an environmentally responsible manner.

B. Goal of the Travel Demand Management Plan

The purpose of this Travel Demand Management (TDM) plan is to assist the City of Minneapolis to achieve their overall transportation goals discussed earlier. The plan encourages employees and visitors to utilize alternative modes of transportation other than driving alone. This Travel Demand Management plan identifies actions to manage and minimize the vehicle trips and parking generation by the development.

C. Specific Travel Demand Management Strategies

To succeed, this Travel Demand Management (TDM) plan must assist the City of Minneapolis to achieve their transportation goals. Based on previous TDM Plans in the area and the types of proposed land uses, the following mode split goals for the project have been identified by the developer:

TABLE 18 – MODE SPLIT GOALS

Mode Split	Goal
Auto	55%
Transit	35%
Bike/Walk	10%

This section outlines specific Travel Demand Management strategies to be implemented by the owner/end user/property manager/etc. of this site. The strategies detail the responsibilities of the site's responsible party in addressing the issues regarding transportation cited above.

The Hennepin County Property Services Department and its successors, by accepting the responsibility of implementing the items below, desire to help Minneapolis to achieve their goals of enhancing the local transportation system. Implementation of the items noted will help to encourage use of alternate modes of travel, enhance pedestrian friendliness, and achieve a balance in the needs of all users of the transportation system.

The Hennepin County Property Services Department and its successors specifically commit to the implementation of the following measures:

Transportation Coordinator

The developer will designate an employee or contractor to act as the Transportation Coordinator. That employee will maintain and monitor TDM activities as well as serve as liaison to Metro Commuter Services and Metro Transit. The Transportation Coordinator will serve as the conduit for providing up-to-date information on alternative commute programs and incentives to building residents, employees and patrons. At a minimum, the Transportation Coordinator will:

1. Provide a "move-in package" for all new residents. The move in package will provide, at a minimum:
 - a. Information on various bus incentive programs (e.g. Metro Transit Go-To Cards, U-Pass and Commuter Challenge program) as well as vanpool incentives (e.g., Metro Vanpool program).
2. Information on various car sharing programs that are available in the area. Set up and maintain a display of commuter information near the entrance or in an accessible part of each building. This information, which will be supplied by Metro Transit, will include

transit schedules, rideshare applications, bike information, Guaranteed Ride Home Program brochures, etc. To maintain an awareness of alternative modes of transportation, information may be distributed through e-mail, flyers, posters in frequented locations, etc. This information will also be provided in the offices, locker area, or break rooms in the office or retail areas.

3. Distribute information on Mn/DOT's real-time traveler information program: 5-1-1 or www.511mn.org.

General

1. The owners/property managers of the site shall maintain clear, well-lit sidewalks for pedestrian ease of use.
2. Sidewalks impacted by construction shall be rebuilt with ADA-compliant tactile dome curb ramps, encouraging use by broad cross-section of pedestrian types.
3. The employers and operators of the development shall encourage alternative modes of transportation primarily through information dissemination through a variety of mediums (bulletin board, flyers, maps and transit schedules) on-site at key locations.

Transit/Carpool

1. The BLUE Line light rail transit has a stop at the Lake Street/Midtown Station just to the east of the L&H Station site. In addition, three Metro transit bus routes (21, 27 and 53) provide service to the site. The nearest bus stops are along East Lake Street to the north of the site. The developer will actively promote the use of the Metro Transit routes through the creation of a Transit Plaza where riders can gather, get transit information and transfer between transit modes.
2. The owners/property managers will post LRT and bus stop information in each residential and office lobby and in employee break rooms.
3. Wayfinding signs will be posted directing users to the Midtown Greenway bicycle and pedestrian corridor and all its related amenities.
4. HOURCAR and Car2Go, are hourly, fuel efficient car rental options that are located near the L&H Station development. HOURCAR has a hub at Plaza Verde four blocks west of the redevelopment. Car2Go offers vehicles for use wherever the previous user has left it. The developer will actively promote the use of these options by posting information in its lobby and employee break rooms.

5. Hennepin County will subsidize a portion for transit fares for its employees. The employers shall work with employees to coordinate with transit schedules and to minimize peak hour vehicular trip generation.
6. The employers shall provide a package of information on alternative commuter and transportation modes to new employees.

Bicycles

1. The developer will actively promote biking as a mode of transportation to and from the site by providing outdoor bicycle rack spaces and repair station for patrons and employees will be provided with indoor bicycle storage space.
2. The developer will provide wayfinding signs and maps in the promenade/market area to direct riders through the area and to adjacent bicycle trails.
3. The developer will provide bike shelters and racks at main entrances to public buildings and in proximity to market areas. The developer will work with the Farmers Market management to determine the best locations for such bike facilities.
4. A Nice Ride Station exists to the northwest of the L&H Station development. Nice Ride is a non-profit bike sharing system, and anyone can become a member. The rider simply takes a bike when needed, and returns it to any station in the system when he or she arrives at his or her destination. Nice Ride bicycles are available 24 hours a day, 7 days a week from April to November. Usage at this this Nice Ride station has increased significantly over the years, leading to a continuation of the program. The developer will promote Nice Ride to employees, residents and customers in the site.
5. The developer will actively promote biking by posting a bicycle network map within residential and employee common areas.
6. The developer will actively promote biking by providing shower/locker facilities for County employees who commute via bicycle.

Pedestrians

1. The developer will create pedestrian connections between Lake Street commercial uses and residential areas to the south. Pedestrian movement patterns will be re-introduced by the extension of 23rd Avenue and its related sidewalks through the Market Square to the LRT station. Urban street patterns are reflected in the east/west connection through to 22nd Avenue South, providing access to the Market Square, transit and new Lake Street pedestrian promenade from the west elevation.
2. The developer will maintain standards for sidewalk width. The Market Square is envisioned as a Dutch-style '*woonerf*,' which is a shared space between cars and people, but oriented

towards pedestrians and cyclists. Pedestrians and cyclists will have the right of way, and official vendor vehicles will be the only traffic allowed, and then only on market days.

3. With redevelopment, the L&H Station site will be re-graded to bring building entrances to grade level and create a public pedestrian promenade along Lake Street. Buildings will have storefronts and be pedestrian-scaled throughout the neighborhood. The promenade includes widened sidewalks, landscaped traffic buffers, pedestrian-scale lighting, and cantilevered canopies.

Deliveries

1. Owners/property managers shall develop and maintain a policy that provides for truck and service deliveries to occur outside of peak traffic times. 80% of truck and service deliveries will occur before noon, which is outside the peak hour. This would not include FedEx/UPS-type deliveries.

Parking

1. Appropriate signage will be used to designate parking spaces for patrons only.
2. Parking will be structured except for some limited parallel parking within the 'woonerf' area.
3. The owners/property managers will support the creation of a critical parking area in the neighborhood south of the development. This will discourage the occurrence of "park-and-hide" transit users.
4. The owners/property managers will work with the County to determine whether on-street parking can be allowed along the south side of Lake Street between 22nd Avenue and Hiawatha. Although there is a turn lane and a bus stop in this area, close-in parking adjacent to the proposed retail is considered vital to the success of the small businesses.

**TRAVEL DEMAND MANAGEMENT PLAN
L&H STATION DEVELOPMENT
2225 EAST LAKE STREET
MINNEAPOLIS, MN**

PLAN APPROVAL

Hennepin County Planning and Project Development Division

By: _____ Dated: _____

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Senior Department Administrator
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By: _____ Dated: _____

Doug Kress, CPED Development Services Director

Minneapolis Public Works Department

By: _____ Dated: _____

Steve Mosing, Traffic Operations Engineer

APPENDIX

Synchro/SimTraffic Output for the following periods:

1. Existing AM & PM Peak LOS
2. 2017 No-Build AM & PM Peak LOS
3. 2025 No-Build AM & PM Peak LOS
4. 2017 Build AM & PM Peak LOS
5. 2025 Build AM & PM Peak LOS

APPENDIX

Synchro/SimTraffic Output for the following periods:

1. Existing AM & PM Peak LOS
2. 2017 No-Build AM & PM Peak LOS
3. 2025 No-Build AM & PM Peak LOS
4. 2017 Build AM & PM Peak LOS
5. 2025 Build AM & PM Peak LOS

2: Hiawatha Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.2	0.3	1.7	0.1	2.9	0.1	2.9	0.7
Total Del/Veh (s)	6.9	7.3	1.3	20.4	23.5	2.6	27.9	4.6	27.3	2.9	14.1

3: 23rd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1
Total Del/Veh (s)	2.4	0.6	0.5	1.3	0.3	4.4	5.7	0.7	0.3	1.3

5: 21st Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.2
Total Del/Veh (s)	14.9	7.7	3.9	9.4	5.6	1.7	13.1	9.9	4.2	5.1	11.2	3.7

5: 21st Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	6.6

6: 21st Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.4	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1
Total Del/Veh (s)	4.7	6.2	4.1	4.6	3.4	4.3	5.7	2.5	5.0	3.9	3.6	4.5

9: 22nd Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	4.2
Total Del/Veh (s)	11.0	3.7	2.0	12.6	4.8	3.8	17.5	26.1	5.6	24.3	17.5	10.2

9: 22nd Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	6.2

10: 22nd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	3.0	1.6	1.4	1.8	0.6	0.5	4.5	6.6	2.5	7.6	8.2	4.4

10: 22nd Ave S & 31st St E Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	4.2

20: Cedar Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.2	0.2	0.0	0.0	2.4	0.1	0.2	3.8	0.1	0.2	0.3
Total Del/Veh (s)	20.7	21.0	6.8	5.2	5.0	11.5	8.0	4.7	10.4	10.2	6.4	9.2

22: 31st St E & E P & R Performance by movement

Movement	EBL	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1
Total Del/Veh (s)	1.4	0.9	2.1	1.7

24: W P & R Performance by movement

Movement	EBT	NBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	0.0	0.8	0.2

27: 22nd Ave S & YWCA/School Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	2.6	0.5	2.0	0.2	4.0	1.7	1.4	2.4	1.5	0.6	1.8

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	20.5

Intersection: 2: Hiawatha Ave & E Lake St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	L	T	T	L	L	L	L
Maximum Queue (ft)	62	85	102	150	251	209	85	47	109	88
Average Queue (ft)	15	28	39	35	133	96	29	8	65	32
95th Queue (ft)	43	68	84	114	195	161	65	30	109	68
Link Distance (ft)		461	461		1569	1569	1297	1297	1189	1189
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	300			125						
Storage Blk Time (%)						9				
Queuing Penalty (veh)						3				

Intersection: 3: 23rd Ave S & 31st St E

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	50	44
Average Queue (ft)	23	21
95th Queue (ft)	49	35
Link Distance (ft)	535	
Upstream Blk Time (%)		1
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: 21st Ave S & E Lake St

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	119	91	71	94	72	53
Average Queue (ft)	37	35	33	42	20	11
95th Queue (ft)	78	76	65	84	51	37
Link Distance (ft)	1249	1249	447	447	584	377
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: 21st Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	55	55	50	31
Average Queue (ft)	33	25	26	11
95th Queue (ft)	49	52	47	36
Link Distance (ft)	300	381	626	584
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: 22nd Ave S & E Lake St

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	25	45	46	99	127	43	19	28	67	46	24
Average Queue (ft)	4	6	13	58	7	21	1	3	39	12	5
95th Queue (ft)	19	25	34	103	46	41	6	17	66	36	19
Link Distance (ft)		447	447		461	461		155		312	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100			75			150		50		50
Storage Blk Time (%)				4					3		1
Queuing Penalty (veh)				12					0		0

Intersection: 10: 22nd Ave S & 31st St E

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	31	55	80
Average Queue (ft)	1	33	44
95th Queue (ft)	10	50	73
Link Distance (ft)	381	475	358
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 20: Cedar Ave & E Lake St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	161	126	77	92	74	136	122	49	96	133
Average Queue (ft)	87	47	30	42	36	79	62	16	47	42
95th Queue (ft)	141	88	65	80	67	130	110	42	87	90
Link Distance (ft)	305	305	1249	1249		1409	1409		918	918
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					50			150		
Storage Blk Time (%)					3	15				
Queuing Penalty (veh)					7	14				

Intersection: 22: 31st St E & E P & R

Movement	SB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	8
95th Queue (ft)	28
Link Distance (ft)	282
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 24: W P & R

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 27: 22nd Ave S & YWCA/School

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	30	27	69	44
Average Queue (ft)	6	2	14	8
95th Queue (ft)	24	13	43	29
Link Distance (ft)	151		358	155
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 36

2: Hiawatha Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.6	0.3	1.6	0.2	2.7	0.2	2.6	0.5
Total Del/Veh (s)	12.8	14.0	2.1	20.4	23.1	2.5	24.6	5.3	26.0	3.3	16.6

3: 23rd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1
Total Del/Veh (s)	1.8	0.9	0.5	1.1	0.5	4.4	5.7	3.2	0.8	0.3	1.5

5: 21st Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2
Total Del/Veh (s)	24.8	10.3	4.5	27.9	9.2	6.0	16.4	12.4	6.1	13.1	13.2	7.4

5: 21st Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	11.0

6: 21st Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0
Total Del/Veh (s)	6.3	7.0	4.5	4.2	6.6	5.0	4.5	6.6	3.5	7.9	8.2	4.2

6: 21st Ave S & 31st St E Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	6.7

9: 22nd Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.3	0.3	3.8
Total Del/Veh (s)	11.0	6.5	5.6	19.6	6.6	5.2	20.9	21.3	9.2	30.2	30.7	13.2

9: 22nd Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	10.4

10: 22nd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.1	2.4	2.1	2.2	1.0	0.4	7.9	2.8	7.9	7.8	3.8	4.6

20: Cedar Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.5	0.2	0.2	0.0	0.0	0.0	2.5	0.1	0.1	2.7	0.2	0.3
Total Del/Veh (s)	32.0	24.4	16.2	11.5	13.2	8.6	14.2	10.2	8.2	10.1	10.6	10.9

20: Cedar Ave & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	14.4

22: 31st St E & E P&R Performance by movement

Movement	EBL	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.0
Total Del/Veh (s)	1.4	0.6	2.2	1.6

24: W P & R Performance by movement

Movement	EBT	NBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	0.0	0.6	0.2

27: 22nd Ave S & YWCA/School Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	3.1	0.0	1.9	0.1	4.0	1.5	0.3	2.8	1.5	0.9	1.6

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	28.5

Intersection: 2: Hiawatha Ave & E Lake St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	T	L	T	T	L	L	R	L	L	R
Maximum Queue (ft)	151	166	153	149	298	233	66	49	98	240	227	151
Average Queue (ft)	37	80	87	46	137	125	34	20	7	109	91	5
95th Queue (ft)	88	135	140	100	232	204	60	43	40	172	169	51
Link Distance (ft)		461	461		1569	1569	1297	1297		1189	1189	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			125					80			300
Storage Blk Time (%)				0	9	0			0			
Queuing Penalty (veh)				0	10	0			0			

Intersection: 3: 23nd Ave S & 31st St E

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	68	39
Average Queue (ft)	23	17
95th Queue (ft)	52	32
Link Distance (ft)	535	
Upstream Blk Time (%)		1
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: 21st Ave S & E Lake St

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	200	144	150	160	181	138
Average Queue (ft)	86	49	72	69	28	55
95th Queue (ft)	165	117	119	124	84	105
Link Distance (ft)	1249	1249	447	447	584	377
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: 21st Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	80	69	79	77
Average Queue (ft)	37	36	31	44
95th Queue (ft)	57	53	52	66
Link Distance (ft)	300	381	626	584
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: 22nd Ave S & E Lake St

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	67	87	83	98	45	65	47	159	75	180	75
Average Queue (ft)	21	32	35	62	11	26	13	48	49	85	44
95th Queue (ft)	49	71	81	95	34	59	34	118	78	153	91
Link Distance (ft)		447	447		461	461		155		312	
Upstream Blk Time (%)								1			
Queuing Penalty (veh)								2			
Storage Bay Dist (ft)	100			75			150		50		50
Storage Blk Time (%)		0		9				7	7	36	2
Queuing Penalty (veh)		0		29				13	4	18	3

Intersection: 10: 22nd Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	54	31	75	68
Average Queue (ft)	13	2	35	44
95th Queue (ft)	38	13	63	64
Link Distance (ft)	381	391	475	358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 20: Cedar Ave & E Lake St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	269	194	158	160	74	155	150	174	182	160
Average Queue (ft)	171	131	80	91	42	71	56	39	121	102
95th Queue (ft)	236	199	135	139	72	129	106	91	170	157
Link Distance (ft)	305	305	1249	1249		1409	1409		918	918
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					50			150		
Storage Blk Time (%)					4	15			1	
Queuing Penalty (veh)					7	12			1	

Intersection: 22: 31st St E & E P&R

Movement	SB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	5
95th Queue (ft)	22
Link Distance (ft)	282
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 24: W P & R

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 27: 22nd Ave S & YWCA/School

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	52	27	51	42
Average Queue (ft)	6	1	15	5
95th Queue (ft)	28	9	42	21
Link Distance (ft)	151		358	155
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 100

2: Hiawatha Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.7	0.3	1.2	0.1	2.7	0.2	2.6	0.5
Total Del/Veh (s)	15.2	16.9	1.7	22.9	24.7	2.4	24.3	5.4	26.9	3.1	18.0

3: 23rd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.1
Total Del/Veh (s)	2.4	1.4	0.5	1.3	0.5	4.9	6.4	2.4	0.9	0.2	1.5

5: 21st Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.2
Total Del/Veh (s)	16.1	6.0	7.5	8.4	2.9	0.9	35.4	19.3	11.0	20.0	19.4	13.1

5: 21st Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	6.8

6: 21st Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	6.0	6.8	3.9	5.4	6.4	7.6	5.1	6.6	4.0	7.7	8.2	5.8

6: 21st Ave S & 31st St E Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	6.7

9: 22nd Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.3	0.3	4.0
Total Del/Veh (s)	12.8	8.0	5.7	20.1	6.3	5.6	19.8	26.7	8.6	29.6	22.1	10.6

9: 22nd Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	10.4

10: 22nd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.1	3.4	2.2	2.4	0.5	0.4	7.3	4.5	9.9	7.7	4.5	4.8

20: Cedar Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.6	0.2	0.2	0.0	0.0	0.1	1.9	0.1	0.2	2.7	0.2	0.2
Total Del/Veh (s)	47.1	20.6	10.4	21.1	8.7	8.0	20.9	13.2	8.1	15.5	16.6	14.7

20: Cedar Ave & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	14.9

22: 31st St E & E P&R Performance by movement

Movement	EBL	SBR	All
Denied Del/Veh (s)	0.0	0.2	0.1
Total Del/Veh (s)	1.5	2.6	2.0

24: W P & R Performance by movement

Movement	EBT	NBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	0.0	0.6	0.2

27: 22nd Ave S & YWCA/School Performance by movement

Movement	EBL	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	4.2	0.1	12.8	0.4	0.4	4.1	1.7	0.7	2.7	1.5	0.9	1.8

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	28.2

Intersection: 2: Hiawatha Ave & E Lake St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	L	T	T	L	L	R	L	L
Maximum Queue (ft)	93	200	213	150	244	211	61	47	28	172	178
Average Queue (ft)	45	104	110	70	150	126	25	13	1	118	84
95th Queue (ft)	85	172	175	157	220	185	51	37	9	170	155
Link Distance (ft)		461	461		1569	1569	1297	1297		1189	1189
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300			125					80		
Storage Blk Time (%)				0	13						
Queuing Penalty (veh)				0	13						

Intersection: 3: 23nd Ave S & 31st St E

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	30	31	20
Average Queue (ft)	1	17	17
95th Queue (ft)	10	42	29
Link Distance (ft)	117	535	
Upstream Blk Time (%)			1
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: 21st Ave S & E Lake St

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	162	95	74	94	53	178
Average Queue (ft)	60	33	33	30	30	77
95th Queue (ft)	121	79	69	67	57	147
Link Distance (ft)	1249	1249	447	447	584	377
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: 21st Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	72	79	71	99
Average Queue (ft)	40	36	30	39
95th Queue (ft)	64	56	51	70
Link Distance (ft)	300	381	626	584
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: 22nd Ave S & E Lake St

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	69	87	147	99	146	63	64	160	75	140	75
Average Queue (ft)	20	44	54	73	25	24	17	51	56	67	33
95th Queue (ft)	50	77	109	109	82	52	45	107	83	114	79
Link Distance (ft)		447	447		461	461		155		312	
Upstream Blk Time (%)								0			
Queuing Penalty (veh)								1			
Storage Bay Dist (ft)	100			75			150		50		50
Storage Blk Time (%)		0		10	0			9	11	27	1
Queuing Penalty (veh)		0		33	0			16	8	14	2

Intersection: 10: 22nd Ave S & 31st St E

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	52	54	103
Average Queue (ft)	15	32	45
95th Queue (ft)	42	42	75
Link Distance (ft)	381	475	358
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 20: Cedar Ave & E Lake St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	269	209	140	159	74	119	114	174	282	216
Average Queue (ft)	185	113	56	73	45	73	59	62	153	122
95th Queue (ft)	268	203	104	120	76	123	94	153	228	192
Link Distance (ft)	305	305	1249	1249		1409	1409		918	918
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					50			150		
Storage Blk Time (%)					9	19		0	5	
Queuing Penalty (veh)					15	15		0	4	

Intersection: 22: 31st St E & E P&R

Movement	SB
Directions Served	LR
Maximum Queue (ft)	53
Average Queue (ft)	6
95th Queue (ft)	28
Link Distance (ft)	282
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 24: W P & R

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 27: 22nd Ave S & YWCA/School

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	52	27	50	42
Average Queue (ft)	14	2	13	6
95th Queue (ft)	40	11	44	27
Link Distance (ft)	151		358	155
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 121

2: Hiawatha Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.3	0.3	1.4	0.1	2.8	0.1	3.0	0.7
Total Del/Veh (s)	7.4	8.9	1.2	24.6	24.4	2.4	29.1	5.1	27.1	2.8	14.9

3: 23rd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.1	0.1	0.1
Total Del/Veh (s)	2.2	0.9	0.4	0.1	4.7	5.9	3.1	0.6	0.3	3.7

5: 21st Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	12.1	4.6	1.2	3.7	1.6	0.4	13.5	18.6	8.5	26.1	4.4	2.4

5: 21st Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	3.8

6: 21st Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1
Total Del/Veh (s)	4.3	6.2	2.4	4.6	2.8	6.8	3.2	6.0	2.7	4.6

9: 22nd Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	4.2
Total Del/Veh (s)	7.9	5.5	3.6	13.7	4.7	6.4	12.6	32.4	5.8	33.4	32.1	7.1

9: 22nd Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	6.9

10: 22nd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	3.3	1.6	1.8	2.7	0.8	0.4	5.4	6.4	3.4	6.0	7.1	4.1

10: 22nd Ave S & 31st St E Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	4.3

20: Cedar Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	2.3	0.1	0.1	3.9	0.1	0.2
Total Del/Veh (s)	40.4	17.2	4.7	1.6	5.9	6.4	13.5	11.5	9.1	12.2	11.6	7.0

20: Cedar Ave & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	10.2

22: 31st St E & E P & R Performance by movement

Movement	EBL	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	1.2	0.2	0.7	1.0

24: W P & R Performance by movement

Movement	EBT	NBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	0.0	1.1	0.6

27: 22nd Ave S & YWCA/School Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	2.6	0.1	2.7	0.1	3.3	1.5	1.5	2.2	1.5	0.7	1.7

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	21.2

Intersection: 2: Hiawatha Ave & E Lake St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	L	T	T	L	L	R	L	L
Maximum Queue (ft)	86	125	81	148	234	245	87	47	56	127	76
Average Queue (ft)	14	38	44	26	134	103	31	10	2	73	38
95th Queue (ft)	46	84	78	75	210	191	60	33	19	111	74
Link Distance (ft)		461	461		1569	1569	1297	1297		1189	1189
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300			125					80		
Storage Blk Time (%)					8	0					
Queuing Penalty (veh)					3	0					

Intersection: 3: 23rd Ave S & 31st St E

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	55	20
Average Queue (ft)	29	5
95th Queue (ft)	46	18
Link Distance (ft)	535	
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: 21st Ave S & E Lake St

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	73	72	108	51	96	53
Average Queue (ft)	33	21	20	12	34	9
95th Queue (ft)	66	51	62	40	70	33
Link Distance (ft)	1249	1249	447	447	584	377
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: 21st Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	56	55	55	31
Average Queue (ft)	28	26	25	17
95th Queue (ft)	52	47	56	41
Link Distance (ft)	300	381	626	584
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: 22nd Ave S & E Lake St

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	26	47	64	100	172	44	19	54	68	27	24
Average Queue (ft)	5	19	22	61	16	18	2	8	40	12	5
95th Queue (ft)	22	43	56	103	79	41	11	34	62	32	20
Link Distance (ft)		447	447		461	461		155		312	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100			75			150		50		50
Storage Blk Time (%)				5				0	4		
Queuing Penalty (veh)				15				0	0		

Intersection: 10: 22nd Ave S & 31st St E

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	31	79	98
Average Queue (ft)	2	32	43
95th Queue (ft)	15	54	70
Link Distance (ft)	381	475	358
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 20: Cedar Ave & E Lake St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	136	120	130	139	74	138	150	49	121	96
Average Queue (ft)	86	32	48	52	44	89	88	12	47	46
95th Queue (ft)	140	74	104	101	77	132	135	38	95	84
Link Distance (ft)	305	305	1249	1249		1409	1409		918	918
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					50			150		
Storage Blk Time (%)					6	22				
Queuing Penalty (veh)					15	20				

Intersection: 22: 31st St E & E P & R

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 24: W P & R

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 27: 22nd Ave S & YWCA/School

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	30	27	50	66
Average Queue (ft)	8	2	10	6
95th Queue (ft)	29	14	35	28
Link Distance (ft)	151		358	155
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 53

2: Hiawatha Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.4	0.3	1.6	0.1	2.9	0.1	3.0	0.7
Total Del/Veh (s)	8.8	8.4	1.0	20.5	23.7	2.9	23.9	4.8	27.5	2.7	14.4

3: 23rd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1
Total Del/Veh (s)	2.3	0.5	0.5	0.9	4.9	6.3	3.2	0.6	0.3	3.8

5: 21st Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	10.5	4.3	4.0	3.5	1.3	0.5	33.1	20.7	6.4	16.9	26.9	10.8

5: 21st Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	3.8

6: 21st Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1
Total Del/Veh (s)	4.8	6.2	3.3	5.8	2.6	4.2	6.4	3.3	4.1	5.1	4.5

9: 22nd Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.2	0.1	0.1	4.2
Total Del/Veh (s)	9.3	5.1	2.7	13.3	4.6	2.7	18.2	13.0	5.0	28.2	6.9	5.0

9: 22nd Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	6.2

10: 22nd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0
Total Del/Veh (s)	3.2	2.0	1.9	1.8	0.4	0.5	6.4	7.0	3.3	6.0	7.1	3.5

10: 22nd Ave S & 31st St E Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	4.3

20: Cedar Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	2.2	0.2	0.1	3.3	0.1	0.1
Total Del/Veh (s)	35.9	16.4	5.9	10.2	4.9	5.6	12.2	11.0	7.9	12.7	11.6	6.1

20: Cedar Ave & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	9.7

22: 31st St E & E P & R Performance by movement

Movement	EBL	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	1.3	1.3

24: W P & R Performance by movement

Movement	EBT	NBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	0.0	1.1	0.6

27: 22nd Ave S & YWCA/School Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	3.8	0.1	1.2	0.2	3.8	1.6	0.9	2.1	1.4	0.6	1.7

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	19.9

Intersection: 2: Hiawatha Ave & E Lake St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	L	T	T	L	L	L	L
Maximum Queue (ft)	66	104	121	66	216	196	65	50	109	92
Average Queue (ft)	21	30	41	17	128	91	27	10	65	42
95th Queue (ft)	50	65	81	45	187	166	56	33	97	79
Link Distance (ft)		461	461		1569	1569	1297	1297	1189	1189
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	300			125						
Storage Blk Time (%)					8					
Queuing Penalty (veh)					3					

Intersection: 3: 23rd Ave S & 31st St E

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	58	20
Average Queue (ft)	33	4
95th Queue (ft)	54	17
Link Distance (ft)	535	
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: 21st Ave S & E Lake St

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	94	52	50	50	74	74
Average Queue (ft)	27	15	14	5	31	14
95th Queue (ft)	69	44	44	25	57	45
Link Distance (ft)	1249	1249	447	447	584	377
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: 21st Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	79	79	52	31
Average Queue (ft)	36	24	26	17
95th Queue (ft)	61	56	49	42
Link Distance (ft)	300	381	626	584
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: 22nd Ave S & E Lake St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	LT	R	LT	R
Maximum Queue (ft)	26	65	64	98	45	65	56	61	46	24
Average Queue (ft)	4	26	21	52	7	18	12	37	12	8
95th Queue (ft)	17	60	45	90	28	47	47	56	35	26
Link Distance (ft)		447	447		461	461	155		312	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	100			75				50		50
Storage Blk Time (%)				3			0	2	0	
Queuing Penalty (veh)				9			1	0	0	

Intersection: 10: 22nd Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	79	22	55	79
Average Queue (ft)	6	1	34	42
95th Queue (ft)	34	7	55	66
Link Distance (ft)	381	391	475	358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 20: Cedar Ave & E Lake St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	
Directions Served	LT	TR	LT	TR	L	T	TR	L	T	TR	
Maximum Queue (ft)	159	144	120	97	75	184	143	50	96	74	
Average Queue (ft)	78	45	39	46	49	97	84	11	47	37	
95th Queue (ft)	130	98	92	86	83	152	134	36	87	65	
Link Distance (ft)	305	305	1249	1249		1409	1409		918	918	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)					50				150		
Storage Blk Time (%)					4	23					
Queuing Penalty (veh)					10	22					

Intersection: 22: 31st St E & E P & R

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 24: W P & R

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 27: 22nd Ave S & YWCA/School

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	55	18	28	44
Average Queue (ft)	11	1	9	4
95th Queue (ft)	39	6	30	23
Link Distance (ft)	151		358	155
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 45

2: Hiawatha Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.5	0.3	1.5	0.2	3.2	0.2	2.5	0.6
Total Del/Veh (s)	15.1	15.9	1.8	21.9	24.0	3.0	23.0	5.0	28.4	3.2	17.9

3: 23rd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	2.2	1.4	0.4	2.0	0.2	4.3	5.4	2.7	0.7	0.5	1.4

5: 21st Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2
Total Del/Veh (s)	15.6	6.4	4.5	9.3	3.4	2.3	13.5	19.3	11.7	19.5	18.2	12.8

5: 21st Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	7.2

6: 21st Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.2	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0
Total Del/Veh (s)	6.6	7.3	3.9	6.5	7.3	6.2	4.9	6.4	3.1	7.3	8.5	5.2

6: 21st Ave S & 31st St E Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	7.2

9: 22nd Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.1	0.3	0.3	4.0
Total Del/Veh (s)	12.9	9.2	8.0	24.1	7.0	5.6	25.0	20.4	9.5	31.4	28.3	12.9

9: 22nd Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	11.6

10: 22nd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	4.3	2.7	2.5	2.2	0.8	0.4	8.2	6.7	3.1	7.6	8.4	4.1

10: 22nd Ave S & 31st St E Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	4.7

20: Cedar Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.5	0.2	0.3	0.0	0.0	0.0	2.1	0.1	0.2	2.7	0.2	0.2
Total Del/Veh (s)	14.1	18.3	8.6	34.7	9.5	8.7	22.5	14.3	6.7	15.5	18.5	14.1

20: Cedar Ave & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	15.0

22: 31st St E & E P&R Performance by movement

Movement	EBL	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1
Total Del/Veh (s)	1.5	0.7	2.1	1.8

24: W P & R Performance by movement

Movement	EBT	NBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	0.0	0.5	0.2

27: 22nd Ave S & YWCA/School Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	3.9	0.1	4.8	0.5	4.0	1.5	0.3	2.9	1.4	0.9	1.7

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	28.8

Intersection: 2: Hiawatha Ave & E Lake St

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	L	T	T	R	L	L	R	L	L
Maximum Queue (ft)	104	186	204	149	234	282	275	88	50	54	194	180
Average Queue (ft)	44	92	104	55	161	156	9	33	16	2	129	109
95th Queue (ft)	81	148	161	134	234	241	92	69	40	18	184	178
Link Distance (ft)		461	461		1569	1569		1297	1297		1189	1189
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			125			250			80		
Storage Blk Time (%)				0	15	0	0					
Queuing Penalty (veh)				0	17	0	0					

Intersection: 3: 23nd Ave S & 31st St E

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	30	54	57
Average Queue (ft)	1	21	21
95th Queue (ft)	10	47	43
Link Distance (ft)	117	535	
Upstream Blk Time (%)			1
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: 21st Ave S & E Lake St

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	118	114	110	96	76	119
Average Queue (ft)	58	34	36	40	36	75
95th Queue (ft)	104	85	86	79	67	121
Link Distance (ft)	1249	1249	447	447	584	377
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: 21st Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	57	95	55	72
Average Queue (ft)	41	45	25	41
95th Queue (ft)	60	77	55	63
Link Distance (ft)	300	381	626	584
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: 22nd Ave S & E Lake St

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	89	129	122	100	178	86	40	116	75	174	75
Average Queue (ft)	24	39	50	64	47	29	12	43	56	84	34
95th Queue (ft)	60	86	93	107	137	65	30	87	87	155	84
Link Distance (ft)		447	447		461	461		155		312	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100			75			150		50		50
Storage Blk Time (%)	0	1		13	0			9	11	32	0
Queuing Penalty (veh)	0	1		45	0			17	7	17	0

Intersection: 10: 22nd Ave S & 31st St E

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	54	54	115
Average Queue (ft)	16	30	48
95th Queue (ft)	43	42	79
Link Distance (ft)	381	475	358
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 20: Cedar Ave & E Lake St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	247	236	139	150	74	158	121	174	280	271
Average Queue (ft)	156	101	69	91	52	93	66	60	164	138
95th Queue (ft)	228	188	130	148	86	148	116	150	246	205
Link Distance (ft)	305	305	1249	1249		1409	1409		918	918
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					50			150		
Storage Blk Time (%)					10	23		0	9	
Queuing Penalty (veh)					17	21		0	7	

Intersection: 22: 31st St E & E P&R

Movement	SB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	10
95th Queue (ft)	32
Link Distance (ft)	282
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 24: W P & R

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 27: 22nd Ave S & YWCA/School

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	30	27	50	20
Average Queue (ft)	13	3	13	3
95th Queue (ft)	37	16	41	15
Link Distance (ft)	151		358	155
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 149

2: Hiawatha Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.7	0.3	1.4	0.1	3.0	0.1	2.8	0.7
Total Del/Veh (s)	9.8	10.7	1.3	16.5	22.4	2.7	26.5	4.7	26.8	2.9	14.8

3: 22nd Ave S & YWCA/Entrance Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	16.0	11.3	8.5	3.0	3.1	0.6	0.1	2.0	1.4	0.2	2.2

4: 31st St E & Apt. Entry E Performance by movement

Movement	EBL	SBR	All
Denied Del/Veh (s)	0.0	0.1	0.0
Total Del/Veh (s)	1.0	2.4	1.3

5: 21st Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Total Del/Veh (s)	10.9	4.8	2.4	3.1	2.5	1.1	24.0	15.6	7.0	24.9	24.1	10.0

5: 21st Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	4.5

6: 21st Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1
Total Del/Veh (s)	4.2	6.4	3.0	4.7	6.1	3.7	2.2	6.1	2.3	4.5	3.8	5.7

9: 22nd Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	4.2
Total Del/Veh (s)	8.6	6.7	4.8	17.6	5.2	4.2	27.4	21.4	6.5	24.9	4.7	3.8

9: 22nd Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	8.8

10: 22nd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	3.8	2.6	2.2	2.3	0.9	0.4	6.4	7.1	4.0	6.7	6.6	4.4

10: 22nd Ave S & 31st St E Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	4.9

18: 23rd Ave S/23rd Ave & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBT	NBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	2.2	1.1	0.8	0.2	4.2	1.5	1.6

20: Cedar Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.2	0.0	0.0	0.0	2.1	0.2	0.2	3.5	0.1	0.3
Total Del/Veh (s)	25.5	18.8	7.6	22.4	5.5	4.1	14.5	11.4	7.9	14.4	12.3	6.1

20: Cedar Ave & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	10.4

26: 22nd Ave S & Apt. Entrance Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.2	0.0	0.1	0.0	0.0	0.0
Total Del/Veh (s)	6.3	3.2	1.1	0.3	2.5	1.0	1.4

29: Apt. Entrance Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.1	0.1

33: 23rd Ave Performance by movement

Movement	NBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.0	0.0

34: 23rd Ave Performance by movement

Movement	WBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.0	0.0

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	23.3

Intersection: 2: Hiawatha Ave & E Lake St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	L	T	T	L	L	L	L
Maximum Queue (ft)	127	146	115	149	318	254	106	51	130	116
Average Queue (ft)	21	44	51	25	154	108	42	8	67	43
95th Queue (ft)	68	104	97	97	260	210	85	31	110	96
Link Distance (ft)		420	420		1570	1570	1306	1306	1195	1195
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	300			125						
Storage Blk Time (%)					13	0				
Queuing Penalty (veh)					5	0				

Intersection: 3: 22nd Ave S & YWCA/Entrance

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	73	27	52	67
Average Queue (ft)	26	12	15	18
95th Queue (ft)	50	34	45	51
Link Distance (ft)	142	167	102	46
Upstream Blk Time (%)				1
Queuing Penalty (veh)				6
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: 31st St E & Apt. Entry E

Movement	SB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	2
95th Queue (ft)	14
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: 21st Ave S & E Lake St

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	96	53	75	73	79	55
Average Queue (ft)	25	25	16	29	31	18
95th Queue (ft)	62	57	49	59	64	52
Link Distance (ft)	1249	1249	446	446	590	377
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: 21st Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	53	79	50	54
Average Queue (ft)	34	37	27	19
95th Queue (ft)	45	56	50	46
Link Distance (ft)	300	385	626	590
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: 22nd Ave S & E Lake St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	B28	SB	SB
Directions Served	L	T	TR	L	T	T	LT	R	T	LT	R
Maximum Queue (ft)	26	129	130	100	270	236	132	55	60	24	20
Average Queue (ft)	1	28	38	78	73	25	32	43	3	9	3
95th Queue (ft)	9	75	94	122	210	96	95	61	22	26	16
Link Distance (ft)		446	446		420	420	55		46	157	
Upstream Blk Time (%)							5	5	1		
Queuing Penalty (veh)							10	0	1		
Storage Bay Dist (ft)	100			75				50			50
Storage Blk Time (%)		0		16			5	8			
Queuing Penalty (veh)		0		43			9	2			

Intersection: 10: 22nd Ave S & 31st St E

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	31	53	97
Average Queue (ft)	4	30	52
95th Queue (ft)	22	50	76
Link Distance (ft)	385	583	203
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 18: 23rd Ave S/23rd Ave & 31st St E

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	49	28
Average Queue (ft)	17	8
95th Queue (ft)	44	29
Link Distance (ft)	465	
Upstream Blk Time (%)		1
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 20: Cedar Ave & E Lake St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	160	142	77	97	74	188	164	53	114	97
Average Queue (ft)	85	59	36	49	38	96	84	9	49	43
95th Queue (ft)	142	119	68	81	85	161	147	33	93	78
Link Distance (ft)	305	305	1249	1249		1408	1408		918	918
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					50			150		
Storage Blk Time (%)					5	22				
Queuing Penalty (veh)					13	21				

 Intersection: 26: 22nd Ave S & Apt. Entrance

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	56	56
Average Queue (ft)	24	11
95th Queue (ft)	48	41
Link Distance (ft)		102
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

 Intersection: 29: Apt. Entrance

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

 Intersection: 33: 23rd Ave

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 34: 23rd Ave

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 108

2: Hiawatha Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.8	0.4	1.4	0.1	2.6	0.2	2.7	0.7
Total Del/Veh (s)	9.0	7.9	1.6	18.7	23.3	3.1	25.2	4.5	28.2	3.1	14.6

3: 22nd Ave S & YWCA/Entrance Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	12.0	5.7	10.4	3.9	3.5	0.7	0.1	1.7	1.3	0.6	1.9

4: 31st St E & Apt. Entry E Performance by movement

Movement	EBL	SBR	All
Denied Del/Veh (s)	0.0	0.1	0.1
Total Del/Veh (s)	0.8	2.5	1.9

5: 21st Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1
Total Del/Veh (s)	11.5	5.0	5.0	5.9	2.8	0.7	25.4	20.3	12.8	10.3	20.3	2.2

5: 21st Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	5.0

6: 21st Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1
Total Del/Veh (s)	4.5	6.2	3.3	5.2	5.8	2.8	4.7	6.3	3.2	6.0	3.3	5.7

9: 22nd Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.2	4.0
Total Del/Veh (s)	9.8	7.4	4.3	18.4	4.8	3.6	36.6	15.0	6.0	26.0	25.2	7.4

9: 22nd Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	8.9

10: 22nd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	3.6	1.9	1.5	2.4	0.8	0.4	9.0	6.8	2.7	6.5	8.7	4.8

10: 22nd Ave S & 31st St E Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	4.8

18: 23rd Ave S/23rd Ave & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBT	NBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.1	0.0
Total Del/Veh (s)	2.5	0.5	0.7	0.3	4.4	1.3	1.6

20: Cedar Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.1	0.0	0.0	0.0	2.2	0.1	0.2	3.9	0.1	0.2
Total Del/Veh (s)	14.1	16.3	7.0	14.9	5.9	6.4	13.5	11.8	8.6	14.6	12.4	5.1

20: Cedar Ave & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	10.6

26: 22nd Ave S & Apt. Entrance Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	6.8	2.7	1.1	1.3	2.2	1.0	1.3

29: Apt. Entrance Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.1	0.1

33: 23rd Ave Performance by movement

Movement	NBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.0	0.0

34: 23rd Ave Performance by movement

Movement	WBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.0	0.0

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	23.2

Intersection: 2: Hiawatha Ave & E Lake St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	L	T	T	L	L	L	L
Maximum Queue (ft)	65	102	81	150	254	203	88	76	158	104
Average Queue (ft)	24	32	35	19	165	117	35	14	71	43
95th Queue (ft)	60	79	68	81	245	205	67	44	111	83
Link Distance (ft)		420	420		1570	1570	1306	1306	1195	1195
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	300			125						
Storage Blk Time (%)					16			1		
Queuing Penalty (veh)					6			0		

Intersection: 3: 22nd Ave S & YWCA/Entrance

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	53	27	102	87
Average Queue (ft)	21	14	18	17
95th Queue (ft)	48	36	59	57
Link Distance (ft)	142	167	102	46
Upstream Blk Time (%)			0	1
Queuing Penalty (veh)			0	3
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: 31st St E & Apt. Entry E

Movement	SB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	11
95th Queue (ft)	35
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: 21st Ave S & E Lake St

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	112	98	78	96	141	52
Average Queue (ft)	35	33	27	28	40	10
95th Queue (ft)	79	82	67	69	89	38
Link Distance (ft)	1249	1249	446	446	590	377
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: 21st Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	53	55	68	55
Average Queue (ft)	35	33	32	17
95th Queue (ft)	48	43	51	46
Link Distance (ft)	300	385	626	590
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: 22nd Ave S & E Lake St

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	26	72	124	100	192	47	19	95	55	24	20
Average Queue (ft)	3	29	46	79	55	17	1	31	43	7	5
95th Queue (ft)	15	69	100	118	169	39	6	73	61	23	18
Link Distance (ft)		446	446		420	420		55		157	
Upstream Blk Time (%)								2	4		
Queuing Penalty (veh)								3	0		
Storage Bay Dist (ft)	100			75			150		50		50
Storage Blk Time (%)				18				2	6		
Queuing Penalty (veh)				49				3	1		

Intersection: 10: 22nd Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	31	31	53	119
Average Queue (ft)	6	1	32	53
95th Queue (ft)	26	10	46	86
Link Distance (ft)	385	380	583	203
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 18: 23rd Ave S/23rd Ave & 31st St E

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	50	28
Average Queue (ft)	22	9
95th Queue (ft)	50	31
Link Distance (ft)	465	
Upstream Blk Time (%)		1
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 20: Cedar Ave & E Lake St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	158	122	72	119	74	212	222	73	96	118
Average Queue (ft)	95	45	40	54	45	104	87	25	48	42
95th Queue (ft)	147	98	68	93	84	166	166	57	83	85
Link Distance (ft)	305	305	1249	1249		1408	1408		918	918
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					50			150		
Storage Blk Time (%)					3	24				
Queuing Penalty (veh)					9	22				

 Intersection: 26: 22nd Ave S & Apt. Entrance

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	52	72
Average Queue (ft)	17	9
95th Queue (ft)	43	39
Link Distance (ft)		102
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

 Intersection: 29: Apt. Entrance

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

 Intersection: 33: 23rd Ave

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 34: 23rd Ave

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 97

2: Hiawatha Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.3	0.3	1.5	0.1	2.8	0.2	2.7	0.7
Total Del/Veh (s)	8.3	9.6	1.0	21.1	23.5	2.8	26.0	4.9	29.1	2.9	15.0

3: 22nd Ave S & Entrance Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	7.1	3.1	11.3	6.0	2.7	0.6	0.0	2.7	1.7	1.0	2.0

4: 31st St E & Apt. Entry E Performance by movement

Movement	EBL	SBR	All
Denied Del/Veh (s)	0.0	0.1	0.1
Total Del/Veh (s)	1.5	2.5	2.3

5: 21st Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Total Del/Veh (s)	12.2	4.5	3.8	8.7	1.9	1.1	32.0	18.7	11.2	28.6	19.0	3.1

5: 21st Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	4.6

6: 21st Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1
Total Del/Veh (s)	6.2	6.9	2.4	5.3	6.8	3.5	6.5	3.1	5.9	5.1	6.4

9: 22nd Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	4.2
Total Del/Veh (s)	13.2	6.1	4.1	21.0	5.0	2.6	19.7	17.5	6.5	21.7	10.5	3.2

9: 22nd Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	8.8

10: 22nd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	4.2	2.5	1.7	1.9	0.6	0.2	8.9	7.5	4.5	7.4	8.6	6.1

10: 22nd Ave S & 31st St E Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	5.0

18: 23rd Ave & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBT	NBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	1.7	1.5	0.1	0.2	4.4	1.7	1.0

20: Cedar Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.2	0.0	0.0	0.0	2.1	0.2	0.2	3.3	0.1	0.2
Total Del/Veh (s)	23.6	17.3	4.7	13.3	5.9	6.0	11.5	11.4	10.8	11.7	10.8	4.5

20: Cedar Ave & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	10.2

24: 31st St E & Apt. Entry W Performance by movement

Movement	EBL	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	2.5	0.8	0.4	2.4	1.1

26: 22nd Ave S & Apt. Entrance Performance by movement

Movement	WBL	WBR	NBT	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	5.7	3.3	1.0	2.6	0.6	0.9

27: Apt. Entrance Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.3	0.3

34: 23rd Ave Performance by movement

Movement	NBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.0	0.0

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	23.1

Intersection: 2: Hiawatha Ave & E Lake St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	L	T	T	L	L	L	L
Maximum Queue (ft)	81	85	149	149	284	217	103	28	170	142
Average Queue (ft)	27	40	56	31	172	114	38	9	66	38
95th Queue (ft)	62	87	103	104	259	195	78	29	125	92
Link Distance (ft)		440	440		1569	1569	1297	1297	1189	1189
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	300			125						
Storage Blk Time (%)						14				
Queuing Penalty (veh)					5					

Intersection: 3: 22nd Ave S & Entrance

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	54	71	72	108
Average Queue (ft)	21	11	13	21
95th Queue (ft)	48	41	45	67
Link Distance (ft)	126	23	88	168
Upstream Blk Time (%)		3	0	
Queuing Penalty (veh)		0	0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: 31st St E & Apt. Entry E

Movement	SB
Directions Served	LR
Maximum Queue (ft)	56
Average Queue (ft)	27
95th Queue (ft)	53
Link Distance (ft)	109
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: 21st Ave S & E Lake St

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	153	180	68	52	99	52
Average Queue (ft)	27	24	19	22	41	13
95th Queue (ft)	88	86	51	47	88	38
Link Distance (ft)	1249	1249	468	468	584	377
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: 21st Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	74	92	55	55
Average Queue (ft)	39	38	23	20
95th Queue (ft)	60	67	52	46
Link Distance (ft)	300	396	626	584
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: 22nd Ave S & E Lake St

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	LT	R	LT	R
Maximum Queue (ft)	25	87	87	100	308	85	111	74	46	19
Average Queue (ft)	6	22	28	82	59	18	29	50	7	3
95th Queue (ft)	23	57	61	111	209	48	75	72	30	13
Link Distance (ft)		468	468		440	440	168		157	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	100			75				50		50
Storage Blk Time (%)		0		17	0		4	6	1	
Queuing Penalty (veh)		0		49	0		8	2	0	

Intersection: 10: 22nd Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	31	30	56	164
Average Queue (ft)	18	1	34	69
95th Queue (ft)	42	10	51	112
Link Distance (ft)	396	188	583	220
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 18: 23rd Ave & 31st St E

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	31	29
Average Queue (ft)	20	8
95th Queue (ft)	44	29
Link Distance (ft)	616	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 20: Cedar Ave & E Lake St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	201	163	95	90	75	156	182	31	96	74
Average Queue (ft)	104	50	50	53	36	94	90	14	52	39
95th Queue (ft)	157	110	91	84	72	152	158	39	89	65
Link Distance (ft)	305	305	1249	1249		1409	1409		918	918
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					50			150		
Storage Blk Time (%)					2	22				
Queuing Penalty (veh)					5	21				

 Intersection: 24: 31st St E & Apt. Entry W

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	31	76
Average Queue (ft)	4	27
95th Queue (ft)	21	52
Link Distance (ft)	188	88
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

 Intersection: 26: 22nd Ave S & Apt. Entrance

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	30	30
Average Queue (ft)	8	1
95th Queue (ft)	30	10
Link Distance (ft)		88
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

 Intersection: 27: Apt. Entrance

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 34: 23rd Ave

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 91

2: Hiawatha Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.5	0.4	1.5	0.1	2.9	0.2	2.4	0.5
Total Del/Veh (s)	12.4	16.2	2.5	24.9	26.8	3.0	24.0	5.5	28.3	3.6	18.9

3: 22nd Ave S & Entrance Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	15.2	13.5	16.7	12.8	3.4	1.2	0.0	3.8	2.3	1.3	5.1

4: 31st St E & Apt. Entry E Performance by movement

Movement	EBL	SBR	All
Denied Del/Veh (s)	0.0	0.1	0.0
Total Del/Veh (s)	1.4	2.2	1.7

5: 21st Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3
Total Del/Veh (s)	15.4	6.1	5.3	5.7	3.0	1.1	25.0	20.1	16.8	23.3	21.5	14.9

5: 21st Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	7.5

6: 21st Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.2	0.5	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	6.0	7.2	4.9	6.1	7.0	4.3	5.6	7.0	3.3	7.6	9.1	7.1

6: 21st Ave S & 31st St E Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	7.2

9: 22nd Ave S & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.3	0.3	3.7
Total Del/Veh (s)	24.9	20.6	18.8	39.8	12.1	7.5	20.0	21.4	10.7	24.8	27.0	8.9

9: 22nd Ave S & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	18.8

10: 22nd Ave S & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0
Total Del/Veh (s)	4.6	3.1	3.1	1.9	0.9	0.4	9.6	5.8	14.2	12.9	9.0	7.9

18: 23rd Ave & 31st St E Performance by movement

Movement	EBL	EBT	EBR	WBT	NBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.1	0.1
Total Del/Veh (s)	1.7	1.3	0.2	0.3	5.6	1.7	2.5

20: Cedar Ave & E Lake St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.9	0.2	0.3	0.0	0.0	0.0	2.2	0.1	0.2	2.8	0.2	0.2
Total Del/Veh (s)	39.4	20.3	16.2	41.2	10.0	12.9	22.4	15.1	10.6	17.2	19.3	16.6

20: Cedar Ave & E Lake St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	16.5

24: 31st St E & Apt. Entry W Performance by movement

Movement	EBL	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	2.2	0.8	0.7	2.5	1.3

26: 22nd Ave S & Apt. Entrance Performance by movement

Movement	WBL	WBR	NBT	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.2	2.7	1.0	2.1	1.0	1.1

27: Apt. Entrance Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.1	0.1

34: 23rd Ave Performance by movement

Movement	NBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.0	0.0

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	35.3

Intersection: 2: Hiawatha Ave & E Lake St

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	L	T	T	R	L	L	R	L	L
Maximum Queue (ft)	126	225	257	150	299	303	275	85	72	93	175	153
Average Queue (ft)	39	102	119	89	198	165	9	35	18	5	125	99
95th Queue (ft)	93	175	203	178	293	264	92	70	48	39	178	148
Link Distance (ft)		438	438		1569	1569		1297	1297		1189	1189
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			125			250			80		
Storage Blk Time (%)			0	0	23	1	0		0	0		
Queuing Penalty (veh)			0	0	26	2	0		0	0		

Intersection: 3: 22nd Ave S & Entrance

Movement	EB	WB	B17	NB	SB
Directions Served	LTR	LTR	T	LTR	LTR
Maximum Queue (ft)	56	95	162	88	144
Average Queue (ft)	18	69	24	23	27
95th Queue (ft)	46	104	99	67	79
Link Distance (ft)	126	24	147	88	168
Upstream Blk Time (%)		50	1	0	
Queuing Penalty (veh)		0	0	0	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: 31st St E & Apt. Entry E

Movement	SB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	13
95th Queue (ft)	37
Link Distance (ft)	109
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: 21st Ave S & E Lake St

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	154	133	79	79	96	160
Average Queue (ft)	66	37	41	34	51	86
95th Queue (ft)	116	86	76	71	91	140
Link Distance (ft)	1249	1249	468	468	584	377
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: 21st Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	58	72	55	81
Average Queue (ft)	43	41	29	48
95th Queue (ft)	62	64	51	77
Link Distance (ft)	300	396	626	584
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: 22nd Ave S & E Lake St

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	124	259	249	100	421	368	67	182	75	153	75
Average Queue (ft)	29	88	113	92	127	70	19	100	68	76	25
95th Queue (ft)	70	176	212	114	300	205	42	198	84	134	72
Link Distance (ft)		468	468		438	438		168		157	
Upstream Blk Time (%)					0			2		1	
Queuing Penalty (veh)					0			11		0	
Storage Bay Dist (ft)	100			75			150		50		50
Storage Blk Time (%)		5		49	2	1		14	21	24	0
Queuing Penalty (veh)		3		165	8	1		46	25	13	0

Intersection: 10: 22nd Ave S & 31st St E

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	74	30	56	219
Average Queue (ft)	24	4	33	102
95th Queue (ft)	53	19	51	169
Link Distance (ft)	396	188	583	220
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 18: 23rd Ave & 31st St E

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	90	29
Average Queue (ft)	37	5
95th Queue (ft)	61	23
Link Distance (ft)	616	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 20: Cedar Ave & E Lake St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	319	318	137	159	74	131	116	174	273	300
Average Queue (ft)	191	148	76	87	49	75	64	55	163	146
95th Queue (ft)	284	253	117	137	81	111	110	137	249	223
Link Distance (ft)	305	305	1249	1249		1409	1409		918	918
Upstream Blk Time (%)	1	0								
Queuing Penalty (veh)	0	0								
Storage Bay Dist (ft)					50			150		
Storage Blk Time (%)					11	22		0	10	
Queuing Penalty (veh)					19	19		0	8	

Intersection: 24: 31st St E & Apt. Entry W

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	78	29	84
Average Queue (ft)	6	1	26
95th Queue (ft)	33	10	55
Link Distance (ft)	188	165	88
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 26: 22nd Ave S & Apt. Entrance

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	54	31
Average Queue (ft)	11	4
95th Queue (ft)	36	22
Link Distance (ft)		88
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 27: Apt. Entrance

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 34: 23rd Ave

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 348