

# **TRAVEL DEMAND MANAGEMENT PLAN**



**STS**

**Swing Traffic Solutions**

**Lexington Parkway Apartments**

**in**

**ST. PAUL, MN**

**November 18, 2020**

# Travel Demand Management Plan

For  
Lexington Parkway Apartments  
St. Paul, MN

Swing Traffic Solutions, LLC Project No. 2019043  
November 18, 2020

**I hereby certify that this plan, specification, or report was prepared by me, or under my direct supervision, and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota:**

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Vernon E. Swing, PE

Date: November 18, 2020 Lic. No.: 41417

# Travel Demand Management Plan

For  
Lexington Parkway Apartments  
St. Paul, MN

November 18, 2020

Prepared For:

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Project # 2019043

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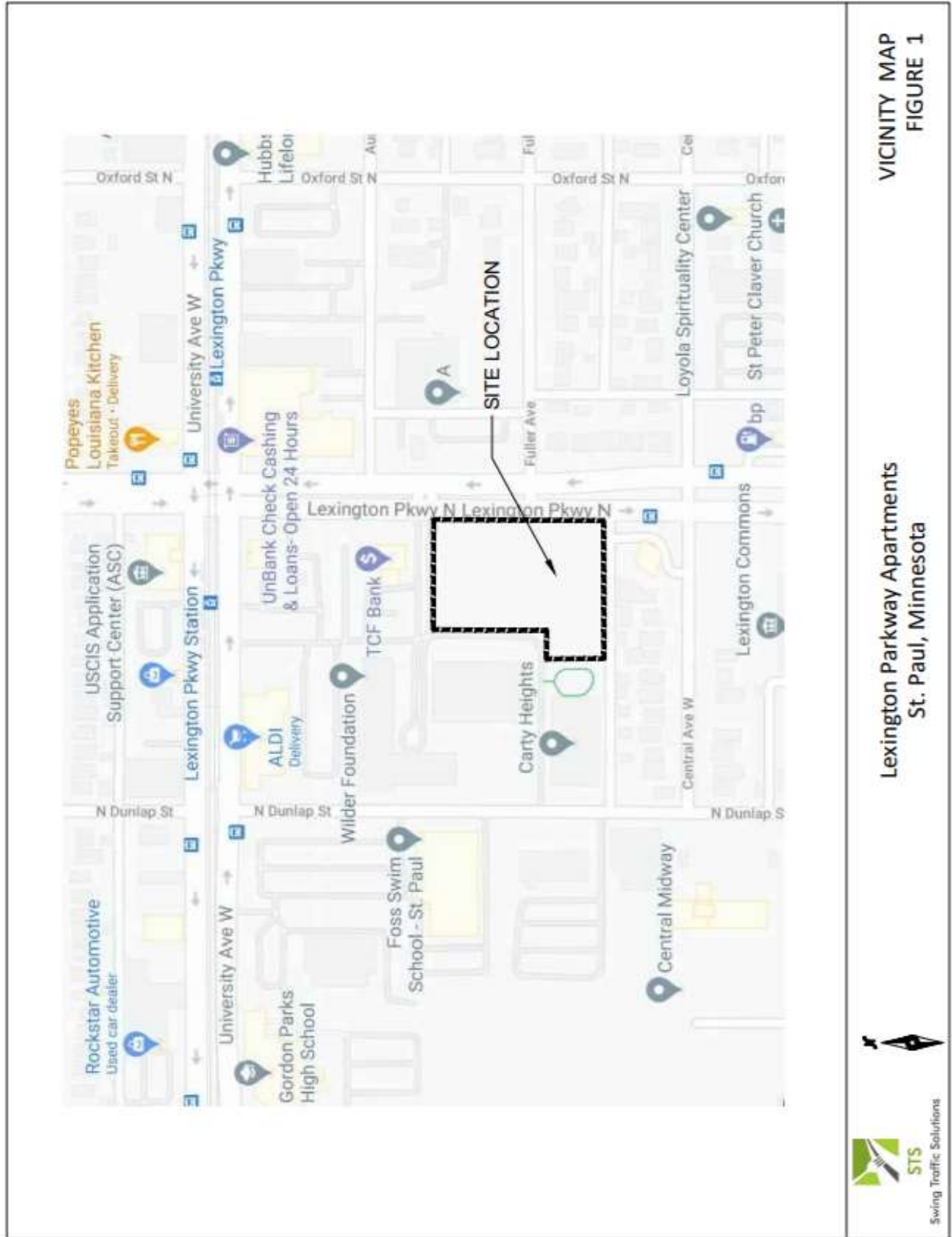
## 1.0 INTRODUCTION

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Alatus proposes to develop the remaining parcel on the property formerly referred to as the Wilder Property located in the southwest quadrant of the University Avenue and Lexington Parkway intersection. The site is west of Lexington Parkway N, south of University Avenue N, east of N Dunlap Street, and north of Central Avenue N. The proposed transit oriented project will construct an apartment building with 285 units and 3,000 square feet of commercial space, a connection to the pedestrian facilities on Lexington Avenue, a connection to and extension of the local bicycle trail in the vicinity of the site, and an internal 134 space vehicle parking garage. The project will also include 285 bicycle parking spaces. It is noted the site Wilder site is adjacent to the Green Line LRT with access to the Lexington Station. (See Vicinity Map, Figure 1.)

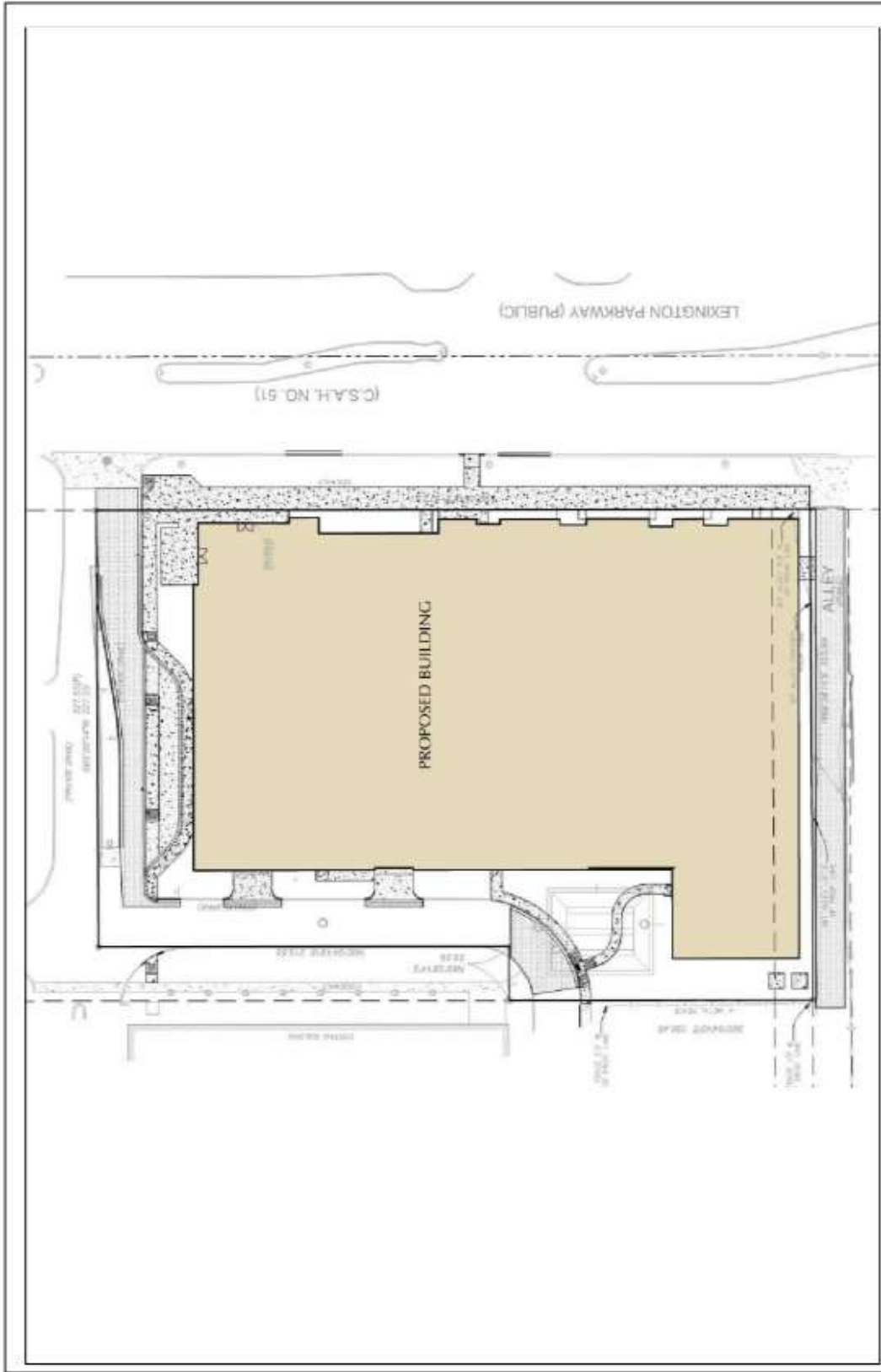
Vehicle access to the site is currently available from Lexington Parkway to the east and from Dunlap Street to the west. The project will be south of the Lexington Parkway access, and east of the Dunlap Street access. This access drive also serves other uses on site including TCF Bank, Aldi's, White Castle, and the Wilder Foundation offices. (See Site Plan, Figure 2).

As a transit-oriented development it is expected that the residents will seek alternative transportation options. In keeping with the transit oriented development intent, the commercial use is expected to serve the residents and pedestrian traffic in the area and is not expected to generate vehicle trips. This TDMP will identify alternative transportation options in the vicinity of the site, will discuss the new site generated traffic, and will include strategies to encourage the use of these alternative modes.



VICINITY MAP  
FIGURE 1

Lexington Parkway Apartments  
St. Paul, Minnesota



SITE MAP  
FIGURE 2

Lexington Parkway Apartments  
St. Paul, Minnesota



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## 2.0 PEDESTRIAN, BICYCLE AND TRANSIT CONSIDERATIONS

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The proposed Lexington Parkway Apartments location on Lexington Parkway and University Avenue affords the residents many opportunities for the use of alternative transportation modes. It is noted the 3,000 square foot commercial use is intended to serve the residents of the building and pedestrians in the area and is not expected to generate vehicle additional traffic. The site is adjacent to roadways with sidewalks with bike trails located within a couple of blocks. (See Exhibit 1.) Located just north of the site along University Avenue is the Lexington Parkway Green Line LRT station, and Metro Transit uses University Avenue and Lexington Parkway for buses with stops near the site. (See Exhibits 2 and 3.)

The designated bike routes in the site vicinity tie into the elaborate bike trail system of St. Paul. The development will provide a route through the site for future connectivity with the on-street route currently existing on Griggs Street, approximately one block west of the site. This system will enable the Lexington Parkway Apartment residents to easily travel to other downtown locations such as the Xcel Center, St. Thomas University, Concordia College and other institutions of higher learning in the area, as well as connecting to the west across the Mississippi River to Minneapolis. There are 285 bike parking location planned within the building. **Also, the development is planned to include a bicycle tuning area.**

Sidewalks exist along the public streets that are adjacent to the project site. These sidewalks provide pedestrian access to the robust sidewalk and pedestrian trail network in City of St. Paul and connect to the transit system. The proposed development will enhance the sidewalk connectivity by providing a 12 foot wide sidewalk section along Lexington Parkway N and along the Access Road from Lexington Parkway N (See Figure 2).

Another non-traditional transportation option is HOURCAR, which provides an hourly rental of a fuel-efficient vehicle. There is a currently a hub for HOURCAR located at 450 Syndicate St, about two blocks to the west of the site, plus the developer is considering the provision of an HOURCAR on this site. Use of HOURCAR would also be a viable strategy for travel demand management. For those residents who do not own a personal vehicle and who typically rely on transit or non-motorized transportation, an HOURCAR option within walking distance would be a positive amenity when a personal vehicle is needed on a temporary basis.

There are numerous transit opportunities in the vicinity of the site. The Green Line LRT Lexington Parkway Station is adjacent to the Lexington Parkway Apartments site, which connects downtown St. Paul to downtown Minneapolis and offers multiple transfer opportunities. Also, Metro Transit bus routes have stops in the vicinity of the site on University Avenue and Lexington Parkway. Table 1 lists the routes that are near to the site, as well as those that are accessible via stops on University Avenue and Lexington Parkway.

**Table 1  
Bus Routes Serving Lexington Parkway Apartments**

| ROUTE #    | TYPE OF SERVICE | DESTINATIONS                 | WEEKDAY                | MIDDAY SERVICE w/≤ 30 MIN HEADWAYS | SATURDAY               | SUNDAY                 |
|------------|-----------------|------------------------------|------------------------|------------------------------------|------------------------|------------------------|
| Green Line | Local           | St. Paul to Minneapolis      | 4:30 a.m. – 12:30 a.m. | Yes                                | 4:30 a.m. – 12:30 a.m. | 4:30 a.m. – 12:30 a.m. |
| 83         | Local           | Roseville to St. Paul        | 6:00 a.m. – 7:30 p.m.  | No                                 | 8:00 a.m. – 7:30 p.m.  | 8:00 a.m. – 7:30 p.m.  |
| 16         | Local           | Allianz to downtown St. Paul | 6:30 a.m. – 9:30 p.m.  | No                                 | 6:30 a.m. – 9:00 p.m.  | 6:30 a.m. – 8:30 p.m.  |



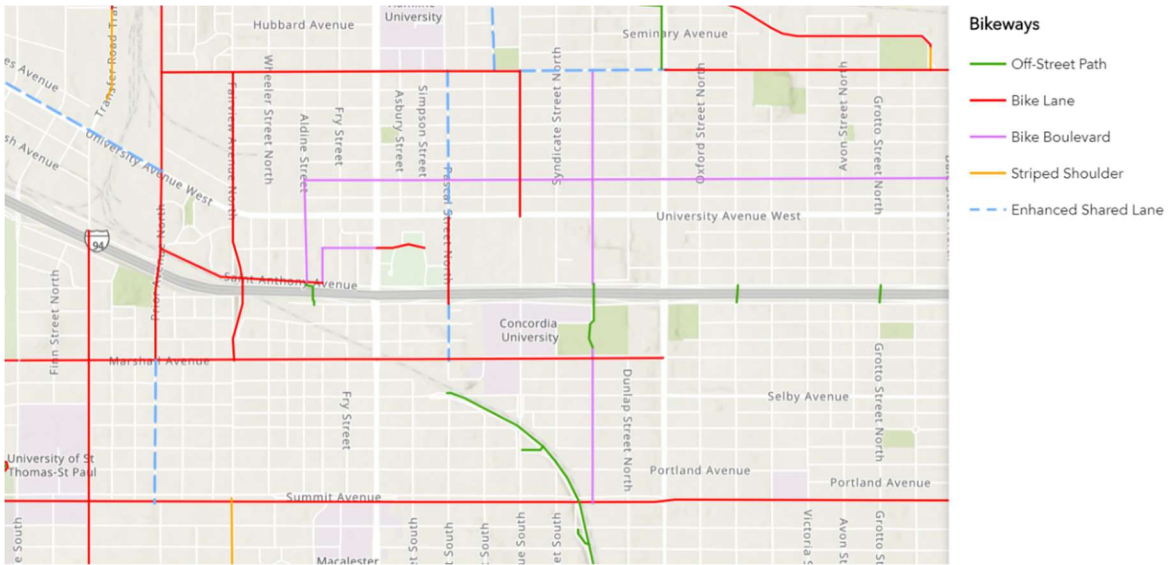


Exhibit 1 – Bike Routes

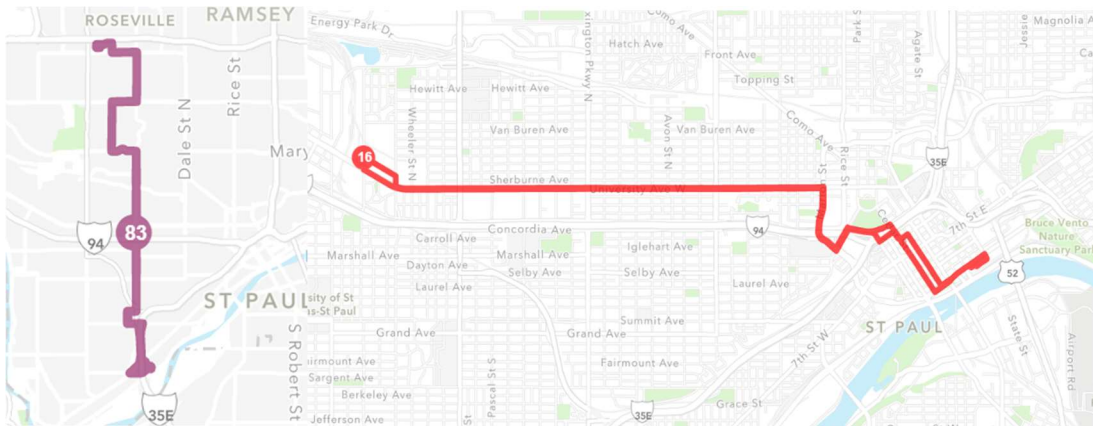


Exhibit 2 – Transit Routes 83 & 16

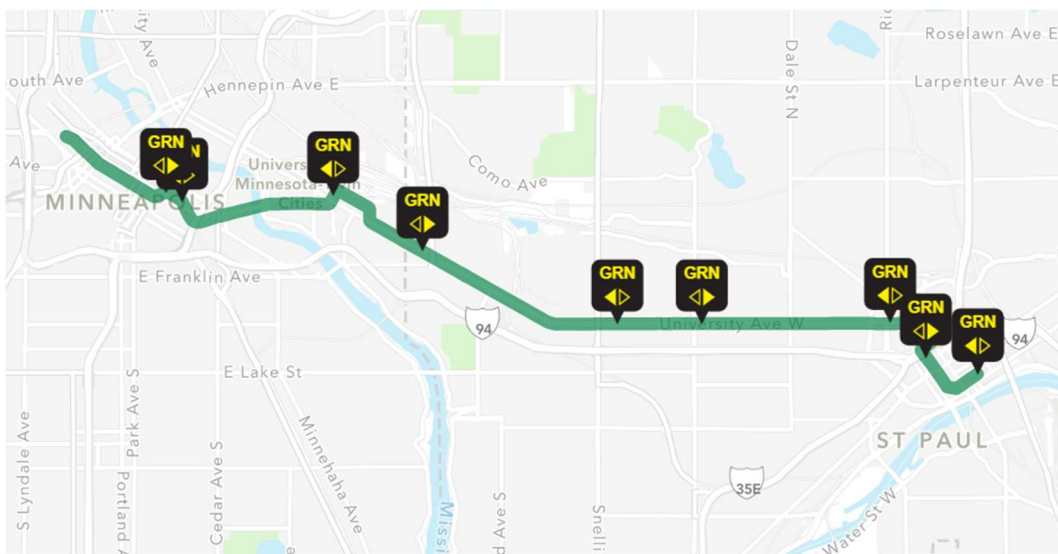


Exhibit 3 – Green Line LRT

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### 3.0 PARKING CONSIDERATIONS

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The Lexington Parkway Apartments development is proposed to occupy the remaining parcel in the site formerly known as the Wilder site located in the southwest corner of the Lexington Parkway and University Avenue intersection. The development plan includes a mid-rise apartment building with 285 units, a 3,000 square foot commercial space, and an internal parking garage with 134 parking spaces. It is expected 120 spaces will be dedicated for resident parking with the remainder available for guests.

The site is less than a quarter mile from University Avenue, therefore, per section 63.207 of the City of St. Paul Code of Ordinances is not required to provide a minimum number of on-site parking spaces. Given the proximity of the site to the Green Line LRT, many residents may not own vehicles requiring parking.

Also, the development will provide 285 bicycle parking spaces. Section Sec. 63.210 in the Municipal Code describes bicycle parking requirements, which stipulate that “for dwelling units, a minimum of one (1) secure bicycle parking space shall be provided for every fourteen (14) dwelling units.” With 285 dwelling units, a minimum of 21 secured bicycle parking spaces will be required. This project will have sufficient bicycle parking.

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## 4.0 TRAFFIC CONSIDERATIONS

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The urban area where this Transit Oriented Development is proposed is characterized by the Institute of Transportation Engineers as Dense Mixed-Use Urban, –

**Dense Multi-Use Urban**—a fully developed area (or nearly so), with diverse and interacting complementary land uses, good pedestrian connectivity, and convenient and frequent transit. This area type can be a well-developed urban area outside a major metropolitan downtown or a moderate size urban area downtown. The land use mix typically includes office, retail, residential, and often entertainment, hotel, and other commercial uses. The residential uses are typically multifamily or single-family on lots no larger than one-fourth acre. The commercial uses often have little or no setback from the sidewalk. Because the motor vehicle still represents the primary mode of travel to and from the area, there typically is on-street parking and often off-street public parking. The complementary land uses provide the opportunity for short trips within the Dense Multi-Use Urban area, made convenient by walking, biking, or transit. The area is served by significant transit (either rail or bus) that enables a high level of transit usage to and from area development.

The area characteristics and alternative transportation opportunities impact the trip generation tendencies for proposed land developments. In this case ITE provides vehicle trip generation data and person trip generation data as current research suggest residents within Transit Oriented Development do not drive as much as in more suburban or rural area. Table 2 summarizes the vehicle trip generation estimate calculated for the proposed Lexington Parkway Apartments using the Institute of Transportation Engineers' (ITE's) Trip Generation Manual, 10<sup>th</sup> Edition. While the 3,000 square foot commercial space is expected to serve the residents and pedestrian traffic and is not expected to generate vehicular traffic, for the purposes of this study it is assumed the space will be occupied by a restaurant/bar use. The numbers shown reflect the statistics associated with Dense Mixed Use Urban type of development.

**Table 2  
Trip Generation Estimates – Proposed Land Use**

| Land Use             | ITE Code | Size        | AM Peak Hour |           | PM Peak Hour |           |
|----------------------|----------|-------------|--------------|-----------|--------------|-----------|
|                      |          |             | Enter        | Exit      | Enter        | Exit      |
| Apartment            | 221      | 285 Units   | 7            | 50        | 37           | 14        |
| Restaurant/Bar       | 931      | 3,000 sq.ft | 1            | 1         | 16           | 7         |
| Gross Total Trips    |          |             | 8            | 51        | 53           | 21        |
| Shared Trips         |          |             | -1           | -1        | -11          | -5        |
| <b>Net New Trips</b> |          |             | <b>7</b>     | <b>50</b> | <b>42</b>    | <b>16</b> |

The ITE Trip Generation Handbook, 3<sup>rd</sup> Edition, outlines a procedure to account for shared trips and pass-by trips. Shared trips are trips that visit more than one use within a multi-use development. For example, a resident of an apartment may also be a patron of a coffee shop within a development and would not generate a new trip to visit the coffee shop. Also, since the proposed development is within a shopping district in an urban environment, visitors to the area may eat at the restaurant within this development and may go to shop at the Aldi’s all in one “shared” trip. Pass-by trips are those trips already using the adjacent roadway and enter the site as an intermediate stop on their way to another destination. The estimated trip generation is not adjusted for pass-by trips in this analysis. The proposed redevelopment is expected to generate 57 AM Peak hour vehicle trips, and 58 PM Peak hour vehicle trips.

Swing Traffic Solutions analyzed several intersections around the Lexington Parkway Apartments site and assessed for traffic operational performance. Intersections analyzed include:

- a) University Avenue W and Lexington Parkway N
- b) Lexington Parkway N and Site Access

- c) Lexington Parkway N and Fuller Avenue
- d) Lexington Parkway N and Central Avenue W
- e) Lexington Parkway N and St Anthony Avenue
- f) Lexington Parkway N and Concordia Avenue
- g) University Avenue W and N Dunlap Street
- h) University Avenue W and Aldi's Access
- i) N Dunlap Street and Site Access
- j) N Dunlap Street and Central Avenue W

The distributed traffic destined to and from the proposed Lexington Parkway Apartments site was added to the roadway network. Operations at the intersections were again reviewed and compared to the No-Build conditions. The intersection operational analysis shows that the project traffic does not change the Level of Service at the studied intersections. A full traffic impact study detailing the methodology and results of the analysis has been completed and is attached as Appendix A.

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## 5. TRAVEL DEMAND MANAGEMENT STRATEGIES

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### A. City of St. Paul 2040 Plan

The City of St. Paul has established a vision of the future with that supports the listed core values:

**Equity and opportunity.** We are a city where opportunities in education, employment, housing, health and safety are equitably distributed and not pre-determined by race, gender identity, sexual orientation or age; we are a city that creates opportunities for all residents to achieve their highest potential.

**Building on our assets.** We are a city that recognizes and builds on the unique human, physical and cultural assets of our diverse residents and neighborhoods.

**Resiliency and sustainability.** We are a city that understands the importance of environmental stewardship of our abundant natural resources.

**Celebrating parks.** We are a city that ensures its parks and open space system meets the needs of a growing and more diverse population and is accessible to all.

**Innovation.** We are a city that builds on a strong core of innovation and creativity to address our challenges, celebrate our strengths, and take advantage of our assets.

**People-centered.** We are a city that puts people first, recognizes and celebrates our complex and interrelated histories, and treasures our young and older residents as integral members of our community.

**Health.** We are a city that recognizes that everything we do impacts the health of our residents, and that housing, transportation, land use, parks and economic development opportunities need to be designed to enhance personal health.

**Welcoming and safe.** We are a city that welcomes all, where everyone feels safe and empowered to participate in decisions that impact them.

**Growth and prosperity through density.** We are a city that supports well-designed development that responds to its neighborhood context, fosters diversity and prosperity, and brings economic opportunity to all residents.

**Integration and coordination.** We are a city where policies, programs and departments collaborate and coordinate to provide an integrated set of services for all residents.

With these values in mind, the City of St Paul has key goals including:

- A. Investment that reflects the City's priorities.
- B. Safety and accessibility for all users.
- C. A transportation system that supports access to employment and economic opportunity.
- D. True transportation choice throughout the city, with a shift from single-occupant vehicles toward other modes.
- E. Sustainable and equitable maintenance models.
- F. Environmentally sustainable design.
- G. Functional and attractive Parkways.
- H. A system that responds to technology and shapes its implementation.

Further, the City has implemented the following policies to assist with achieving true transportation choices and shifting from single-occupant vehicles toward other modes:

**Policy T-21.** Reduce vehicle miles traveled (VMT) by 40% by 2040 by improving transportation options beyond single-occupant vehicles.

**Policy T-22.** Shift mode share towards walking, biking, public transit, carpooling, ridesharing and carsharing in order to reduce the need for car ownership.

**Policy T-23.** Formulate responses to traffic issues identified through traffic studies based on desired, rather than current, mode share.

**Policy T-24.** Implement the Bicycle Plan to make bicycling safe and comfortable throughout the city, and to increase bicycling mode share.

**Policy T-25.** Implement the forthcoming Pedestrian Plan to make walking safe and comfortable throughout the city, increase pedestrian mode share for short trips, and increase physical activity in people's daily routines. Until the Pedestrian Plan is adopted, focus pedestrian infrastructure improvements in areas with acute pedestrian safety hazards, with existing or anticipated high pedestrian activity, and/or in racially concentrated areas of poverty.

**Policy T-26.** Provide sidewalks throughout the city, generally on both sides of the street, except potentially in portions of Highwood as directed via other officially adopted City plans (See Map T-1).

**Policy T-27.** Improve public transit mode share and support quality public transit in all parts of the city through strategic establishment of transit-supportive land use intensity and design, increased traffic signal optimization for transit, working with transit providers to improve their service offerings and supporting transit facilities (See Maps T-5 and T-6).

**Policy T-28.** Facilitate intermodal trips at mobility hubs (where walking, biking, public transit, ridesharing and carsharing are intentionally designed to connect) by providing enhanced security, lighting, information, shelter, placemaking, comfort and convenience.

**Policy T-29.** Expand commuter options with Travel Demand Management (TDM) and support of carpooling facilities.

1. Require a TDM Plan for all large developments and large employers.
2. Create incentives, employer programs and parking policies that encourage and accelerate use of walking, biking, transit and carshare.
3. Support the work of other agencies, organizations and the private sector to market and support transit, carshare, rideshare, carpooling, biking, walking, flexible work hours and telecommuting.
4. Consider options to enforce and improve implementation of TDM Plans.

**Policy T-30.** Design holistically for all mode users, especially pedestrians and bicycles, in any bridge reconstruction or maintenance project such as for bridges (or lids) over interstate highways or the Mississippi River. Ensure that the project scope incorporates adjacent intersections as necessary.

**Policy T-31.** Establish (or re-establish) the right of-way grid with block lengths of 300 to 600 feet as redevelopment occurs on large sites in order to increase neighborhood connectivity and accommodate pedestrian-oriented, higher density development.

**Policy T-32.** Accommodate access to community events and around construction projects by all mode users, including by working with Metro Transit to provide additional transit service, providing sufficient bicycle parking, generally avoiding the closure of bicycle lanes and sidewalks and providing detours for all modes.

**Policy T-33.** Improve pedestrian and recreational connections to the Mississippi River.

**Policy T-34.** Promote safe walking and bicycling to school by supporting Safe Routes to School efforts and investing in sidewalk connectivity and crossing enhancements near schools.

## **B. Goal of the Travel Demand Management Plan**

To succeed, this Travel Demand Management (TDM) plan must assist the City of St. Paul 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 3  
Mode Split Goals**

| <b>Mode Split</b> | <b>Goal</b> |
|-------------------|-------------|
| Auto              | 40%         |
| Transit           | 40%         |
| Bike/Walk         | 20%         |

The owners and/or TDM Liaison will work to achieve a mode share goal percentage of 40% non-single-occupant-vehicles for the office development.

**D. Specific Travel Demand Management Strategies**

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. Lexington Parkway Apartments, by accepting the responsibility of implementing the items below, desire to help St. Paul 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. Lexington Parkway Apartments specifically commits to the implementation of the following measures:

1. The OWNER will designate a Travel Demand Management (TDM) Liaison to contact and work with Move Minnesota to coordinate the various TDM strategies that require ongoing attention. The responsibilities of the Coordinator will include upkeep of transit information displays and other communications, bicycle/pedestrian commuter information and/or maps.
2. Monitor the implementation of the proposed TDM actions and progress made toward achieving the TDM mode split goals outlined in Table 6 of this report. The monitoring program shall include the following actions:
  - Conduct statistically valid baseline resident commuter surveys within the first six months of opening of the proposed development.
  - Conduct resident commuter surveys every two years after the original baseline survey, for five years or until the TDM mode split goals for alternative modes of transportation are met.
  - After each year of biennial commuter surveys, review the TDMP to determine its effectiveness. As part of the review, consider providing a status report for Move Minnesota and City of Saint Paul PED and Public Works to review.
3. Provide welcome/orientation packets to new residents detailing ways to reduce vehicle travel and travel-associated costs, including information on and website links to nearby transit, and bicycle/pedestrian amenities.
4. Promote use of transit for residents by maintaining information on available transportation alternatives through a variety of mediums such as an informational kiosk in the building’s lobby and common space, Facebook page, and periodic distribution of pamphlets and brochures. Provide internet links, route maps, and information regarding the Metro Transit bus and future BRT system, transit go-cards, and other relevant transportation alternatives.

5. Install and maintain an electronic monitor in the lobby of apartment building that displays ‘real-time’ transit information.
6. Promote development of a Rideshare program by working with Move Minnesota to set up a rideshare program tailored for the residents. Metro Transit offers a free rideshare database for Twin Cities residents to help identify others looking to share a ride to work.



7. Promote biking as a mode of transportation for residents by encouraging them to use the on-site bicycle parking spaces. Promote bicycle use through regularly updated presentation of maps and information on the kiosks in the building lobby and common spaces.

8. Promote biking as a viable transportation mode by installing and maintaining a bicycle tuning station in the garages on Level 1 that include a repair stand, tire pump, and attached tools.



9. Coordinate with tenants moving into and out of dwelling units to encourage them to schedule moving vans to arrive at times where traffic congestion within the study area is low (during off-peak periods). This does not include FedEx/UPS-type deliveries. Ensure that designated on-site areas for loading and unloading are available during these off-peak times of the day.

10. Set aside funding for the above actions. All costs associated with implementation of the above TDM commitments will be borne by the OWNER, who will set aside funding for the expressed purpose of implementing the identified, site-specific TDM strategies.

11. A member of the OWNER’s on-site management team will serve as the TDM Liaison. The team will be responsible for conducting research and collecting data that will inform the development of its site-specific TDM program. The management team will also be responsible for implementing the identified site-specific TDM strategies.

12. It is estimated that approximately \$9,500 in first-year costs will be required for:

- Monitoring and survey activities
- Development, printing, and distribution of welcome/orientation packets
- Coordination with Metro Transit and Move Minnesota to encourage participation in Metro Pass and ridesharing programs
- Updating and distributing TDM-related information that will be displayed on-site for review by users of the proposed development
- Installation and maintenance of monitor that displays ‘real-time’ transit information
- Installation and maintenance of bicycle tuning stations

The estimated first-year costs of implementing the above actions are detailed by line item below.



| <b>TDM Activity</b>  | <b>Estimated Budget</b> |
|--|-------------------------|
| Monitor implementation of the TDMP actions and progress made toward satisfying the TDMP mode split goals | \$1,500                 |
| Production and distribution of welcome packets   | \$1,000                 |
| Interact with residents to promote increased use of alternative travel modes                             | \$2,000                 |
| Coordinate with public agencies/Move MN and prepare reports  | \$1,500                 |
| 'Real-time' transit display monitor  | \$1,500                 |
| Bicycle tuning station   | \$2,000                 |
| <b>TOTAL</b>   | <b>\$9,500</b>          |

**TRAVEL DEMAND MANAGEMENT PLAN  
LEXINGTON PARKWAY APARTMENTS  
ST. PAUL, MN**

**PLAN APPROVAL**

**Alatus**

By: \_\_\_\_\_ Dated: \_\_\_\_\_  
Alatus

**City of St. Paul**

By: \_\_\_\_\_ Dated: \_\_\_\_\_  
Planning Director

# APPENDIX A

## TRAFFIC IMPACT STUDY

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### A-1. EXISTING TRAFFIC CONDITIONS

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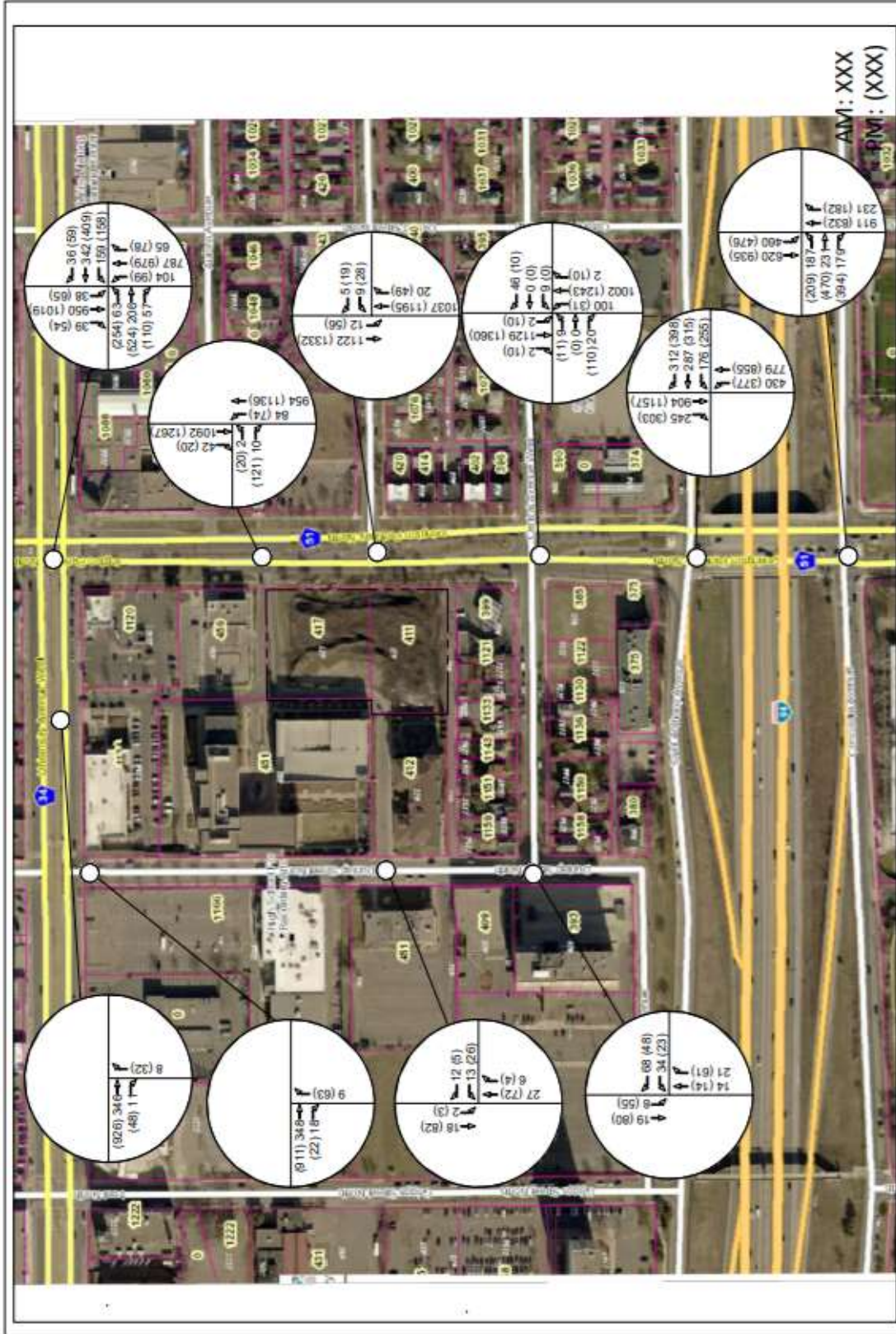
#### A. Data Collection

Traffic volumes were analyzed at the following intersections adjacent to the Lexington Parkway Apartment development:

- a) University Avenue W and Lexington Parkway N
- b) Lexington Parkway N and Site Access
- c) Lexington Parkway N and Fuller Avenue
- d) Lexington Parkway N and Central Avenue W
- e) Lexington Parkway N and St Anthony Avenue
- f) Lexington Parkway N and Concordia Avenue
- g) University Avenue W and N Dunlap Street
- h) University Avenue W and Aldi's Access
- i) N Dunlap Street and Site Access
- j) N Dunlap Street and Central Avenue W

Vehicle turning movement counts were conducted by Westwood Professional Services on behalf of Swing Traffic Solutions during the week of May 10, 2019 and the 2018 counts at the I-94 and Lexington Parkway/St Anthony Avenue/Concordia Avenue Ramps were provided by MnDOT for use in our analysis. Figure 3 illustrates the existing AM Peak Hour and PM Peak Hour vehicle turning movement traffic counts.

Also, a review of ADT traffic counts from MnDOT on the Lexington Parkway corridor was conducted revealing that traffic in the area has declined over the last 20 years at a rate of approximately 0.67 percent per year.



EXISTING  
FIGURE 3

Lexington Parkway Apartments  
St. Paul, Minnesota



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## A-2. NO-BUILD ALTERNATIVE

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To quantify 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. The anticipated construction completion date for this development is 2022, thus the year 2023 was selected for analysis so as to compare traffic conditions after initial traffic patterns to and from the Lexington Parkway Apartments site have become established. Therefore, the 2023 No-Build will serve as the basis of comparison with the 2023 Build scenario.

### A. Background Growth

Review of daily traffic counts conducted by MnDOT on Lexington Parkway N indicated the overall daily traffic in the area has declined over the last 20 years. With the existing Green Line LRT it is likely this trend will continue. However, to remain consistent with other studies in the area, an annual background growth rate of one half percent (0.5%) was used for this study. The 0.5% annual rate of growth assumed for background traffic was applied to 2019 traffic volumes to arrive at the estimate of the 2023 No-Build AM and PM Peak hour traffic volumes shown on Figure 4.

It is note, the analysis conducted reflect pre-COVID 19 conditions and may well be conservative as preliminary projections from the Transportation Research Board and ITE indicate peak traffic flows after the pandemic may be 15-20 percent lower on average from pre-pandemic conditions due to increased telecommuting and other changes in driving demand.

### B. Operational Analysis Methodology

Traffic operations for peak hour conditions within the study area were analyzed using the industry-standard Synchro/SimTraffic 10 software package, which uses the data and methodology contained in the 6<sup>th</sup> Edition, Highway Capacity Manual, published by the Transportation Research Board. The software model includes input of speed limit, number of lanes, signal timing, and peak hour factor using existing 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 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 Chart below summarizes the level of service and delay criteria for signalized and unsignalized intersections.

| LOS Designation | Signalized Intersection<br>Average Delay/Vehicle (Sec.) | Unsignalized Intersection<br>Average Delay/Vehicle (Sec.) |
|-----------------|---|---|
| A               | ≤ 10  | ≤ 10  |
| B               | > 10-20   | > 10-15   |
| C               | > 20-35   | > 15-25   |
| D               | > 35-55   | > 25-35   |
| E               | > 55-80   | > 35-50   |
| F               | > 80  | > 50  |

The acceptable threshold for a particular movement at an intersection is defined by the agency and 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 “D”, while LOS “F” on a low-priority/low-volume urban movement might be appropriate. For side-street stop-controlled intersections, a key measure of operational effectiveness is the side-street LOS. 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.

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.

### C. Results of Analysis; 2023 No-Build Scenario

The existing roadway infrastructure, in terms of roadway cross sections and intersection control, has the capacity to support the area through the 2023 design year, although the intersection of University Avenue W and Lexington Parkway N is operating near capacity. It is noted, the Green Line LRT impacts the flow of traffic on Lexington Parkway N, as during the peak times the trains travel on University Avenue with six minute headways extending the University Avenue W green time by as much as 30 seconds during these cycles. While this interruption was not accounted for in the Synchro/Simtraffic modeling, it will benefit the side street operations along Lexington Parkway W by creating longer gaps in traffic for left turning movements thus the results of the analysis reported in Tables A and B, which summarize the 2023 No-Build operational analysis, are more conservative than what is currently occurring. The results in the Tables include the overall LOS for each study area intersection, and the LOS for the worst movement at the intersections. It is noted that the original signal timings were incorporated into the No-Build analysis. The complete operational analysis output is available upon request.

**Table A  
2023 AM No-Build Operations Table**

| <b>Intersection</b>             | <b>Level of Service<sup>1</sup></b> | <b>Notes/95<sup>th</sup> Percentile Queues<sup>2</sup></b> |
|---------------------------------|-------------------------------------|--|
| University Ave/Lexington Pkwy N | C (24.9 sec)/D (46.1 sec) EBL       | SBT queue is forecast at 402 feet                          |
| Lexington Pkwy N/Site Access    | a (2.2 sec)/f (50.6 sec) ebl        | NBL queue is forecast at 64 feet                           |
| Lexington Pkwy N/Fuller Ave     | a (0.6 sec)/f (60.0 sec) wbl        | WB queue is forecast at 30 feet                            |
| Lexington Pkwy N/Central Ave W  | a (2.5 sec)/f (69.9 sec) ebl        | NBL queue is forecast at 88 feet                           |
| Lexington Pkwy N/St Anthony Ave | B (13.4 sec)/C (31.2 sec) WBL       | WBLT queue is forecast at 262 feet                         |
| Lexington Pkwy N/Concordia Ave  | B (17.1 sec)/D (42.7 sec) EBL       | EBLT queue is forecast at 281 feet                         |
| University Ave/N Dunlap St      | a (0.2 sec)/a (2.8 sec) nbr         | NB queue is forecast at 31 feet                            |
| University Ave/Aldi’s Access    | a (1.0 sec)/a (3.0 sec) nbr         | NB queue is forecast at 33 feet                            |
| N Dunlap St/Site Access         | a (0.8 sec)/a (4.4 sec) wbl         | WB queue is forecast at 40 feet                            |
| N Dunlap St/Central Ave W       | a (1.0 sec)/a (6.0 sec) wbl         | WB queue is forecast at 65 feet                            |

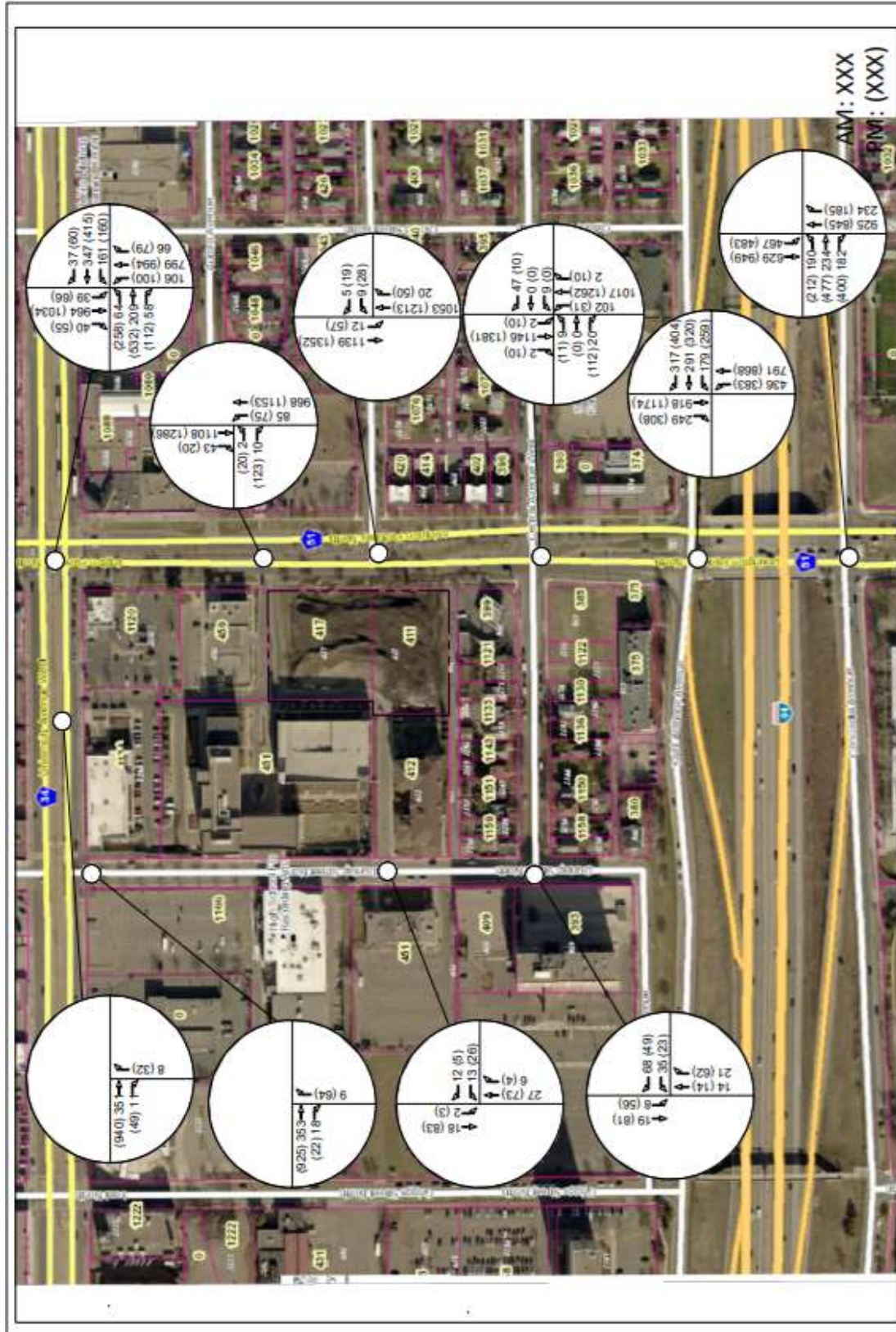
1. Overall LOS reported from SimTraffic delay calculations. First letter represents intersection LOS, while second letter represents worst LOS of individual approach. Upper case letters indicate signalized intersections, and lower case letters indicate unsignalized intersections.
2. 95<sup>th</sup> percentile queues are a result from an average of 10 SimTraffic simulations.

**Table B**  
**2023 PM No-Build Operations Table**

| <b>Intersection</b>             | <b>Level of Service<sup>1</sup></b> | <b>Notes/95<sup>th</sup> Percentile Queues<sup>2</sup></b> |
|---------------------------------|-------------------------------------|--|
| University Ave/Lexington Pkwy N | E (65.1 sec)/F (199.0 sec) SBR      | SBT queue is forecast at 1108 feet                         |
| Lexington Pkwy N/Site Access    | a (3.2 sec)/f (98.7 sec) ebl        | EBL queue is forecast at 79 feet                           |
| Lexington Pkwy N/Fuller Ave     | a (4.4 sec)/f (279.0 sec) wbl       | WB queue is forecast at 171 feet                           |
| Lexington Pkwy N/Central Ave W  | a (1.6 sec)/e (36.9 sec) ebl        | EB queue is forecast at 75 feet                            |
| Lexington Pkwy N/St Anthony Ave | B (16.7 sec)/C (27.8 sec) NBL       | WBLT queue is forecast at 254 feet                         |
| Lexington Pkwy N/Concordia Ave  | B (19.3 sec)/C (31.9 sec) EBL       | EBLT queue is forecast at 298 feet                         |
| University Ave/N Dunlap St      | a (0.6 sec)/a (5.4 sec) nbr         | NB queue is forecast at 51 feet                            |
| University Ave/Aldi's Access    | a (2.1 sec)/b (10.8 sec) nbr        | NB queue is forecast at 63 feet                            |
| N Dunlap St/Site Access         | a (0.9 sec)/a (4.7 sec) wbl         | WB queue is forecast at 44 feet                            |
| N Dunlap St/Central Ave W       | a (1.7 sec)/a (5.1 sec) wbl         | WB queue is forecast at 40 feet                            |

1. Overall LOS reported from SimTraffic delay calculations. 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. 95<sup>th</sup> percentile queues are a result from an average of 10 SimTraffic simulations.

Results of the analysis contained in Tables A and B indicate that all study area intersections are projected to operate at an acceptable overall LOS for 2023 No-Build conditions. However, the intersection of University Avenue W and Lexington Parkway N is operating at capacity during the PM Peak time with long vehicle queues in the southbound direction. Also, the side street operations of the Lexington Parkway N intersections with Site Access, Fuller Avenue and Central Avenue W are shown to have long delays during both the AM and PM peak times. Field observation of existing conditions reveal these delays are over estimated as the LRT operation is creating gaps for these movements.



2023 NO BUILD

Lexington Parkway Apartments  
St. Paul, Minnesota

Swing Traffic Solutions

ST5

FIGURE 4



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### A-3. BUILD ALTERNATIVE

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#### A. Site-Generated Traffic

The urban area where this Transit Oriented Development is proposed is characterized by the Institute of Transportation Engineers as Dense Mixed-Use Urban:

**Dense Multi-Use Urban**—a fully developed area (or nearly so), with diverse and interacting complementary land uses, good pedestrian connectivity, and convenient and frequent transit. This area type can be a well-developed urban area outside a major metropolitan downtown or a moderate size urban area downtown. The land use mix typically includes office, retail, residential, and often entertainment, hotel, and other commercial uses. The residential uses are typically multifamily or single-family on lots no larger than one-fourth acre. The commercial uses often have little or no setback from the sidewalk. Because the motor vehicle still represents the primary mode of travel to and from the area, there typically is on-street parking and often off-street public parking. The complementary land uses provide the opportunity for short trips within the Dense Multi-Use Urban area, made convenient by walking, biking, or transit. The area is served by significant transit (either rail or bus) that enables a high level of transit usage to and from area development.

The area characteristics and alternative transportation opportunities impact the trip generation tendencies for proposed land developments. In this case ITE provides vehicle trip generation data and person trip generation data as current research suggest residents within Transit Oriented Development do not drive as much as in more suburban or rural area. Table C summarizes the vehicle trip generation estimate calculated for the proposed Lexington Parkway Apartments using the Institute of Transportation Engineers' (ITE's) Trip Generation Manual, 10<sup>th</sup> Edition. While the 3,000 square foot commercial space is expected to serve the residents and pedestrian traffic and is not expected to generate vehicular traffic, for the purposes of this study it is assumed the space will be occupied by a restaurant/bar use. The numbers shown reflect the statistics associated with Dense Mixed Use Urban type of development.

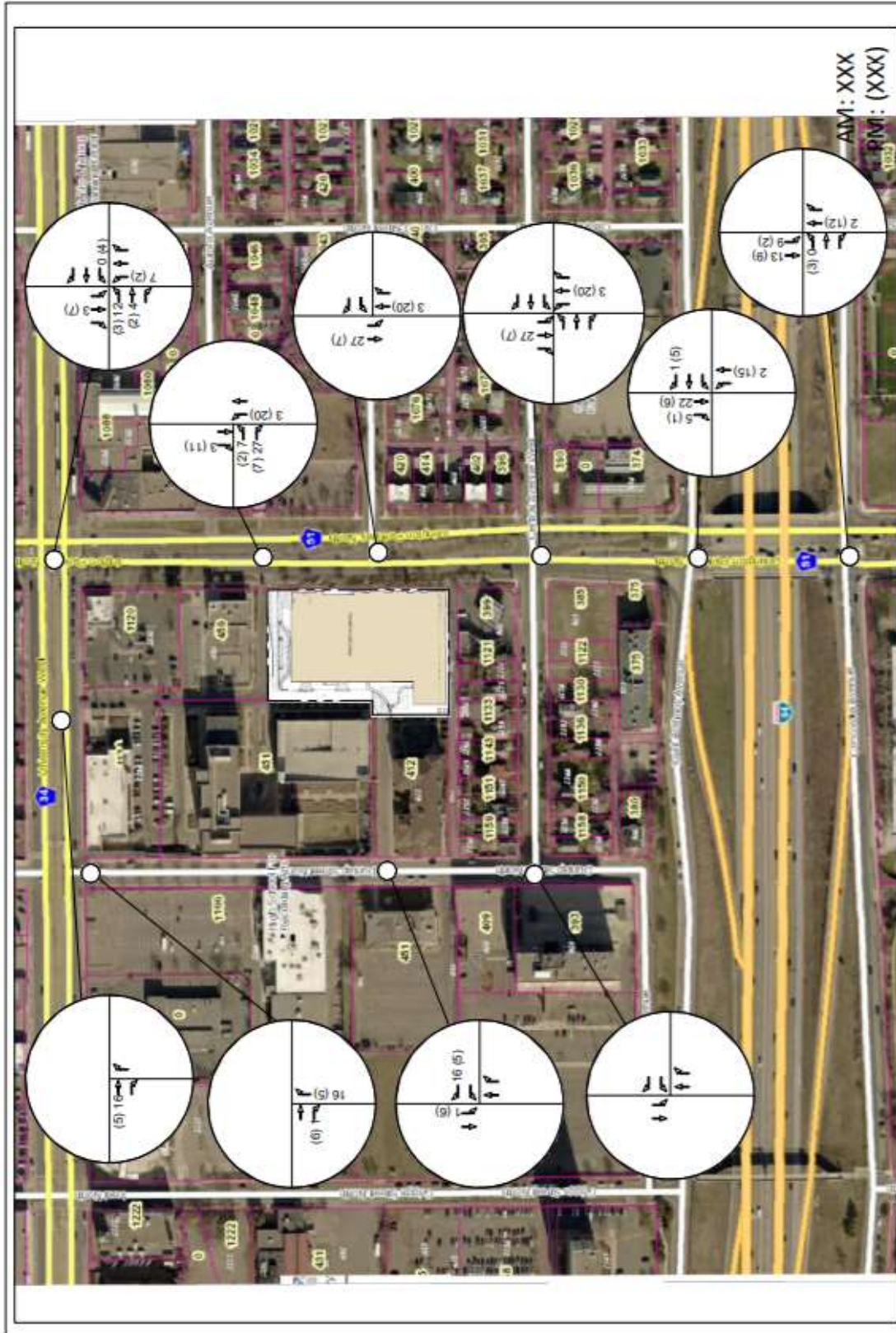
**Table C**  
**Trip Generation Estimates – Proposed Land Use**

| Land Use             | ITE Code | Size        | AM Peak Hour |           | PM Peak Hour |           |
|----------------------|----------|-------------|--------------|-----------|--------------|-----------|
|                      |          |             | Enter        | Exit      | Enter        | Exit      |
| Apartment            | 221      | 285 Units   | 7            | 50        | 37           | 14        |
| Restaurant/Bar       | 931      | 3,000 sq.ft | 1            | 1         | 16           | 7         |
| Gross Total Trips    |          |             | 8            | 51        | 53           | 21        |
| Shared Trips         |          |             | -1           | -1        | -11          | -5        |
| <b>Net New Trips</b> |          |             | <b>7</b>     | <b>50</b> | <b>42</b>    | <b>16</b> |

The ITE Trip Generation Handbook, 3<sup>rd</sup> Edition, outlines a procedure to account for shared trips and pass-by trips. Shared trips are trips that visit more than one use within a multi-use development. For example, a resident of an apartment may also be a patron of a coffee shop within a development and would not generate a new trip to visit the coffee shop. Also, since the proposed development is within a shopping district in an urban environment, visitors to the area may eat at the restaurant within this development and may go to shop at the Aldi's all in one "shared" trip. Pass-by trips are those trips already using the adjacent roadway and enter the site as an intermediate stop on their way to another destination. The estimated trip generation is not adjusted for pass-by trips in this analysis. The proposed redevelopment is expected to generate 57 AM Peak hour vehicle trips, and 58 PM Peak hour vehicle trips.

## **B. Trip Distribution and Assignment**

The distribution of site-generated traffic to the study area from and to the adjacent street system is based on existing distribution patterns within the area. Figure 5 the assigned site generated traffic destined to the proposed Lexington Parkway Apartments site. These trips were combined with the 2023 No-Build peak hour volumes to represent the 2023 Build volumes. Figures 6 illustrates the 2023 Build AM and PM Peak hour volumes through the study area.

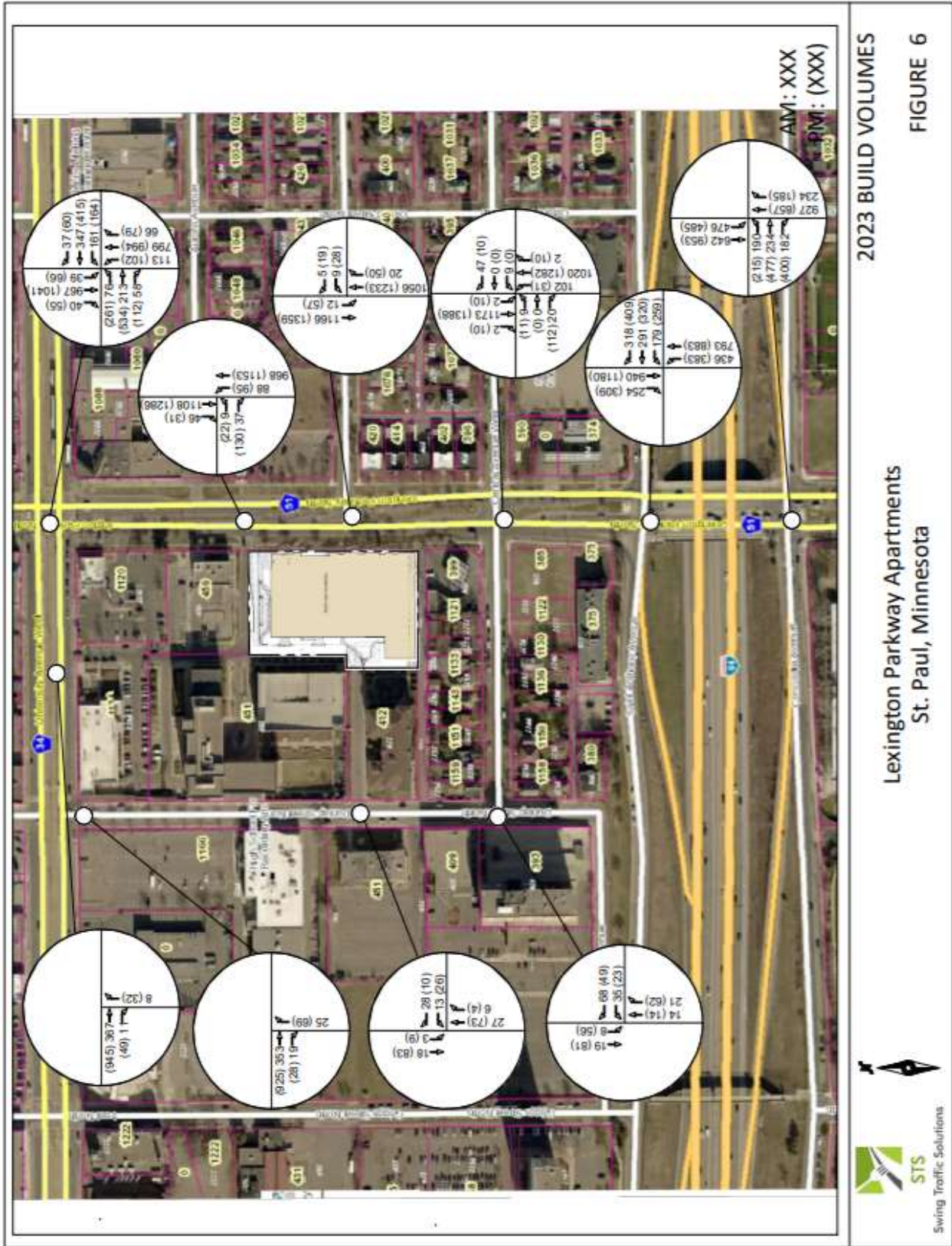


TRIP ASSIGNMENT

FIGURE 5

Lexington Parkway Apartments  
St. Paul, Minnesota





**C. Results of Analysis: Build Scenario**

This section contains the results of the 2023 Build intersection operational analyses and provides recommendations for mitigating project-related traffic impacts, as necessary. It is noted that the existing signal timing plans were initially utilized in the Build analysis. A summary of the results from the analysis representing the 2023 Build conditions are presented in Tables D for the AM Peak hour and E for the PM Peak hour.

**Table D  
2023 AM Build Operations Table**

| <b>Intersection</b>             | <b>Level of Service<sup>1</sup></b> | <b>Notes/95<sup>th</sup> Percentile Queues<sup>2</sup></b> |
|---------------------------------|-------------------------------------|--|
| University Ave/Lexington Pkwy N | C (28.2 sec)/D (49.0 sec) EBL       | SBT queue is forecast at 411 feet                          |
| Lexington Pkwy N/Site Access    | a (2.6 sec)/e (48.3 sec) ebl        | NBL queue is forecast at 63 feet                           |
| Lexington Pkwy N/Fuller Ave     | a (0.9 sec)/f (84.7 sec) wbl        | WB queue is forecast at 48 feet                            |
| Lexington Pkwy N/Central Ave W  | a (2.1 sec)/f (61.3 sec) ebl        | NBL queue is forecast at 71 feet                           |
| Lexington Pkwy N/St Anthony Ave | B (13.4 sec)/C (28.7 sec) WBL       | WBLT queue is forecast at 272 feet                         |
| Lexington Pkwy N/Concordia Ave  | B (17.6 sec)/D (42.3 sec) EBL       | EBLT queue is forecast at 246 feet                         |
| University Ave/N Dunlap St      | a (0.3 sec)/a (2.8 sec) nbr         | NB queue is forecast at 47 feet                            |
| University Ave/Aldi's Access    | a (1.0 sec)/a (2.9 sec) nbr         | NB queue is forecast at 26 feet                            |
| N Dunlap St/Site Access         | a (0.9 sec)/a (4.1 sec) wbl         | WB queue is forecast at 49 feet                            |
| N Dunlap St/Central Ave W       | a (2.7 sec)/a (5.3 sec) wbl         | WB queue is forecast at 52 feet                            |

1. Overall LOS reported from SimTraffic delay calculations. 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. 95<sup>th</sup> percentile queues are a result from an average of 10 SimTraffic simulations.

**Table E  
2023 AM Build Operations Table**

| <b>Intersection</b>             | <b>Level of Service<sup>1</sup></b> | <b>Notes/95<sup>th</sup> Percentile Queues<sup>2</sup></b> |
|---------------------------------|-------------------------------------|--|
| University Ave/Lexington Pkwy N | E (67.8 sec)/F (207.2 sec) SBR      | SBT queue is forecast at 1001 feet                         |
| Lexington Pkwy N/Site Access    | a (3.4 sec)/f (63.7 sec) ebl        | EBR queue is forecast at 86 feet                           |
| Lexington Pkwy N/Fuller Ave     | a (9.5 sec)/f (409.3 sec) wbl       | WB queue is forecast at 323 feet                           |
| Lexington Pkwy N/Central Ave W  | a (2.2 sec)/f (64.7 sec) ebl        | EB queue is forecast at 102 feet                           |
| Lexington Pkwy N/St Anthony Ave | B (16.8 sec)/C (26.8 sec) WBL       | WBLT queue is forecast at 276 feet                         |
| Lexington Pkwy N/Concordia Ave  | C (22.0 sec)/C (32.7 sec) EBL       | EBLT queue is forecast at 329 feet                         |
| University Ave/N Dunlap St      | a (0.6 sec)/a (5.1 sec) nbr         | NB queue is forecast at 51 feet                            |
| University Ave/Aldi's Access    | a (1.8 sec)/a (7.1 sec) nbr         | NB queue is forecast at 91 feet                            |
| N Dunlap St/Site Access         | a (0.8 sec)/a (4.2 sec) wbl         | WB queue is forecast at 47 feet                            |
| N Dunlap St/Central Ave W       | a (1.6 sec)/a (5.6 sec) wbl         | WB queue is forecast at 46 feet                            |

1. Overall LOS reported from SimTraffic delay calculations. 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. 95<sup>th</sup> percentile queues are a result from an average of 10 SimTraffic simulations.

The results reported in Tables D and E of the 2023 Build conditions for the proposed plan indicate that all study area intersections are projected to operate at the same overall levels of service with essentially no change in delay or vehicle queuing with the addition of site-generated vehicle traffic.

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## A-4. CONCLUSIONS

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The preceding analysis has evaluated the potential traffic impacts of the proposed Lexington Parkway Apartments development with a 285 unit apartment building and 3,000 square feet of commercial space on the operations of the study area intersections surrounding the site in St. Paul.

Two scenarios, 2023 No-Build and Build, were analyzed and compared to assess the development's impact to vehicular traffic on the roadway system. The design year of 2023 was chosen, corresponding to the year after build-out of the site.

The Proposed Plan consists of a 285-unit apartment building including a 3,000 square foot commercial space (assumed to be a restaurant/bar for this analysis) located west of Lexington Parkway N, south of University Avenue W, east of N Dunlap Street, and north of Central Avenue W. The building will also include a parking garage with 134 vehicle parking spaces and 285 bicycle parking spaces to serve the residents and guests.

Development of the Proposed Plan is expected to generate 57 new AM Peak hour trips and 58 new PM Peak hour trips on the study area roadways. Traffic along Lexington Parkway N has declined over the last twenty year, however, to account for potential increases in traffic due to redevelopment in the area, growth in background traffic at an annual rate of 0.5% was accounted for in the analysis.

Results of the operational analyses indicate that under the 2023 and 2023 Build scenarios, all study area intersection will operate acceptably with essentially no change in vehicle delay or vehicle queueing. It is noted, the Lexington Parkway N north approach to the University Avenue W intersection has and will continue to have long vehicle queues associated with longer cycle lengths during LRT transit operation.

The Lexington Parkway Apartments development is a Transit Oriented Development consistent with the City's long range goals to provide a more walkable and connected community. It will have a negligible impact to the vehicle traffic operations of the surrounding roadway network. Further, with all the bicycle, pedestrian and transit opportunities present in and around the site, vehicular trip generation will remain low.