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From: Matt Pacyna, PE, Principal  
Transportation Collaborative & Consultants, LLC

Date: May 22, 2025

Subject: 800 53<sup>rd</sup> Avenue Redevelopment Traffic Study; Columbia Heights, MN

**INTRODUCTION**

TC2 completed a traffic study for the proposed 800 53<sup>rd</sup> Avenue redevelopment in Columbia Heights. The site under consideration, shown in Figure 1, was a former Medtronic office building that is generally south of 53<sup>rd</sup> Avenue and west of Central Avenue (Highway 65). The main objectives of the study are to quantify existing area operations, identify transportation impacts associated with the proposed redevelopment, and recommend improvements, if necessary, to ensure safe and efficient operations for all users. This study supports the transportation section of the corresponding environmental assessment worksheet (EAW). The following study assumptions, methodology, and findings are offered for consideration.

Figure 1 Subject Site



## EXISTING CONDITIONS

Existing conditions were reviewed within the study area to establish current traffic conditions to help determine impacts associated with the proposed redevelopment. The evaluation of existing conditions included collecting traffic volumes, observing transportation characteristics, and analyzing crash history and intersection capacity, which are described in the following sections.

### Traffic Volumes

Vehicular intersection turning movement and pedestrian / bicycle counts were collected at the following locations on Wednesday, April 9, 2025. The counts were generally collected from 7 to 9 a.m. and 4 to 6 p.m. at each location, but also included 13-hour counts (i.e., 6 a.m. to 7 p.m.) as indicated. Note that two (2) historical turning movement counts from March 2024 and October 2024 were utilized for the University Avenue (Hwy 47) and 53<sup>rd</sup> Avenue intersection.

- 53<sup>rd</sup> Avenue and University Avenue (Hwy 47)\*
- 53<sup>rd</sup> Avenue and Monroe Street NE
- 53<sup>rd</sup> Avenue and West Site / Target Access\*
- 53<sup>rd</sup> Avenue and East Site / Target Access\*
- 53<sup>rd</sup> Avenue and US Bank Access
- 53<sup>rd</sup> Avenue and Discount Tire / West Starbucks Access
- 53<sup>rd</sup> Avenue and Bank of America / East Starbucks Access
- 53<sup>rd</sup> Avenue and Central Avenue (Hwy 65)\*

*\* Denotes a 13-hour count location*

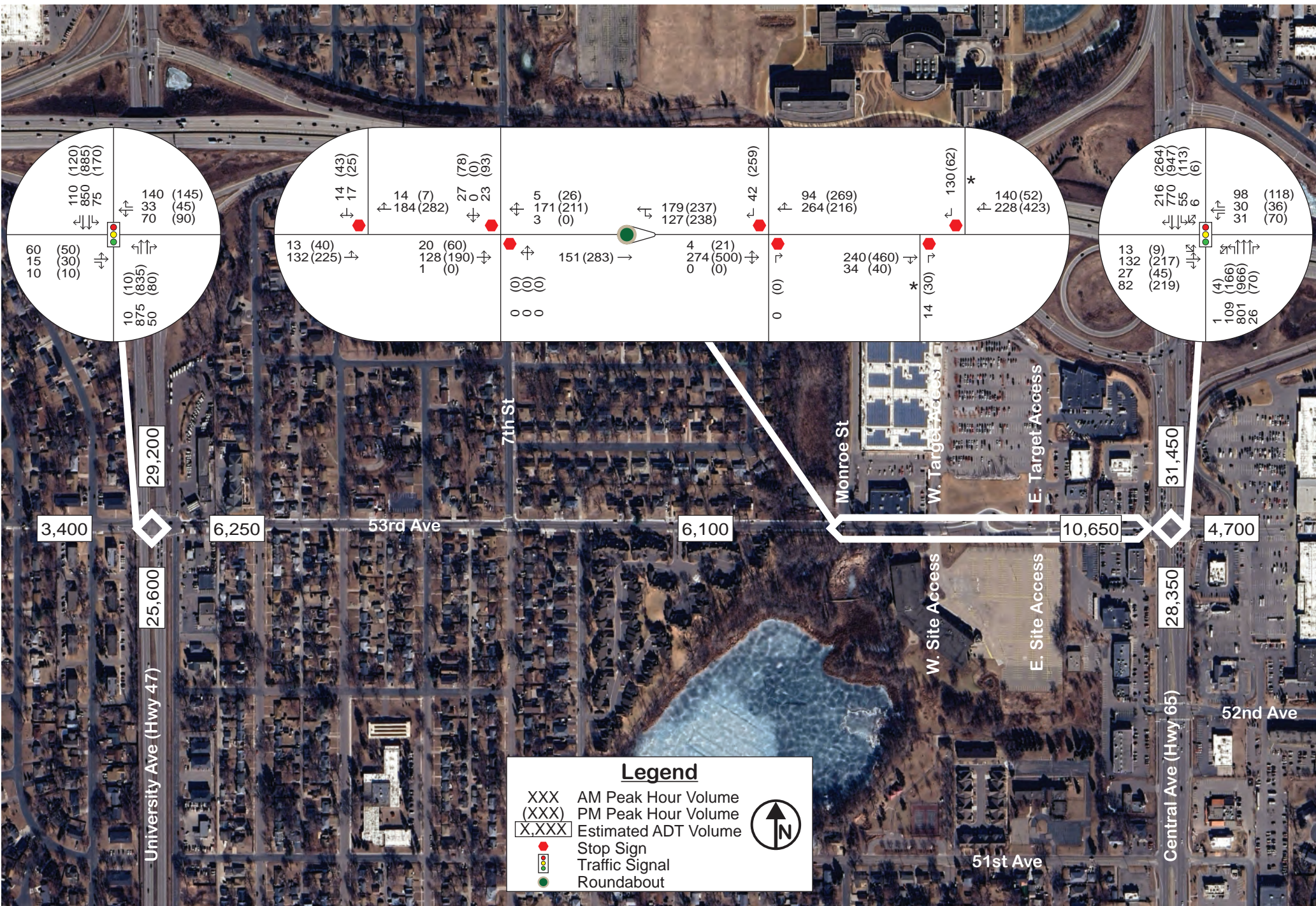
Average daily traffic (ADT) volumes were provided by MnDOT or estimated based on the data collected.

### Transportation Characteristics

Observations were conducted within the study area to identify various transportation characteristics such as roadway geometry, traffic controls, speed limits, and multimodal facilities. A general overview of key roadways within the study area is as follows:

- **University Avenue (Hwy 47)** – a 4-lane divided minor arterial roadway with left- and right-turn lanes. There are no multimodal facilities, except for transit stops at the 53<sup>rd</sup> Avenue intersection. The speed limit is 50-mph.
- **Central Avenue (Hwy 65)** – generally a 4-lane divided minor arterial roadway with left- and right-turn lanes. There is multiuse trail along the west side of the roadway north of 53<sup>rd</sup> Avenue, and sidewalk along both sides of the roadway south of 53<sup>rd</sup> Avenue; there is also a transit stop in the southwest quadrant of the 53<sup>rd</sup> Avenue intersection. The speed limit is 40-mph.
- **53<sup>rd</sup> Avenue** – generally a 2-lane undivided major collector roadway west of the Target access with limited turn lanes and a 2-lane divided roadway east of the Target access with dedicated turn lanes. There is a multiuse trail along the south side of the roadway and a sidewalk along the north side; Metro Transit Route 10 runs along 53<sup>rd</sup> Avenue about every 30-minutes throughout most of the day. The speed limit is 30-mph. Note that this roadway was reconstructed in 2023.

All other study roadways are 2-lane undivided local facilities or commercial driveways with limited turn lanes and/or multimodal facilities. The 53<sup>rd</sup> Avenue intersections at University Avenue (Hwy 47) and Central Avenue (Hwy 65) are signalized, while all other study intersections have two-way stop control. Note that a median U-turn / partial roundabout is located along 53<sup>rd</sup> Avenue between the west and east Target driveways. Existing conditions are illustrated in [Figure 2](#).



\*Approach represents multiple commercial access points within a short distance

### Crash History

Five years of crash history within the study area (January 2020 through December 2024) was reviewed using data from *MnDOT's Crash Mapping Analysis Tool* (MnCMAT). There was a total of 29 crashes reported along 53<sup>rd</sup> Avenue between University Avenue (Hwy 47) and Central Avenue (Hwy 65) during the review period; none of the crashes were defined as a “severe” crash (i.e., a fatal or serious injury). Most of the reported crashes (i.e., 26 of the 29) occurred between Monroe Street and Central Avenue (Hwy 65) with 21 of the 26 occurring prior to the 53<sup>rd</sup> Avenue reconstruction (i.e., ~ 7 crashes per year). Since the 53<sup>rd</sup> Avenue reconstruction there have been five (5) reported crashes, which equates to approximately 2.5 crashes per year. Note that other intersection crashes at University Avenue (Hwy 47) and Central Avenue (Hwy 65) were not reviewed in detail given MnDOT’s future planning efforts in this area associated with the *Hwy 47 & Hwy 65 Planning Study*.

### Intersection Capacity

Intersection capacity was evaluated using Synchro / SimTraffic Software (version 11), which uses methods outlined in the *Highway Capacity Manual, 6th Edition*. The software is used to develop calibrated models that simulate observed traffic operations and identify key metrics such as intersection Level of Service (LOS) and queues. These models incorporate collected traffic, pedestrian, and bicyclist volumes, traffic controls, peaking characteristics, and driver behavior factors. Level of Service (LOS) quantifies how an intersection is operating. Intersections are graded from LOS A to LOS F, which corresponds to the average delay per vehicle values shown. An overall intersection LOS A through LOS D is generally considered acceptable in the study area. LOS A indicates the best traffic operation, while LOS F indicates an intersection where demand exceeds capacity.

For side-street stop-controlled intersections, special emphasis is given to providing an estimate for the level of service of the side-street approach. Traffic operations at an unsignalized intersection with side-street stop control can be described in two ways. First, consideration is given to the overall intersection level of service, which takes into account the total number of vehicles entering the intersection and the capability of the intersection to support the volumes. Second, it is important to consider the delay on the minor approach. Since the mainline does not have to stop, most delay is attributed to the side-street approaches. It is typical of intersections with higher mainline traffic volumes to experience high-levels of delay (i.e., poor levels of service) on the side-street approaches, but an acceptable overall intersection level of service during peak hour conditions.

Level of Service	Average Delay / Vehicles	
	Unsignalized	Signalized
A	< 10 seconds	< 10 seconds
B	10 to 15 seconds	10 to 20 seconds
C	15 to 25 seconds	20 to 35 seconds
D	25 to 35 seconds	35 to 55 seconds
E	35 to 50 seconds	55 to 80 seconds
F	> 50 seconds	> 80 seconds

The existing capacity analysis results, summarized in [Table 1](#), indicate that all study intersections and approaches generally operate at an acceptable LOS D or better during the typical weekday a.m. and p.m. peak hours. The eastbound approaches of 53<sup>rd</sup> Avenue at both University Avenue (Hwy 47) and Central Avenue (Hwy 65) operate near the LOS D / E threshold during the p.m. peak hour, although these operations are relatively common and don’t typically warrant mitigation. Note that peak westbound queues along 53<sup>rd</sup> Avenue from University Avenue (Hwy 47) can extend approximately 300’ during the p.m. peak hour (i.e., about 10 to 15-vehicles), but generally dissipate within one signal cycle length. Thus, there are no significant existing intersection capacity issues in the study area.

Table 1 Existing Intersection Capacity

Intersection	Traffic Control	Level of Service (Delay)	
		AM Peak Hour	PM Peak Hour
53 <sup>rd</sup> Avenue and University Avenue (Hwy 47)	Signal	B (15 sec)	C (22 sec)
53 <sup>rd</sup> Avenue and Monroe Street	SSS	A / A (5 sec)	A / A (6 sec)
53 <sup>rd</sup> Avenue and West Site / Target Access	SSS	A / A (5 sec)	A / A (9 sec)
53 <sup>rd</sup> Avenue and Roundabout / U-Turn	RAB	A / A (4 sec)	A / A (9 sec)
53 <sup>rd</sup> Avenue and East Site / Target Access	SSS	A / A (2 sec)	A / A (7 sec)
53 <sup>rd</sup> Avenue and Central Avenue (Hwy 65)	Signal	C (25 sec)	C (33 sec)

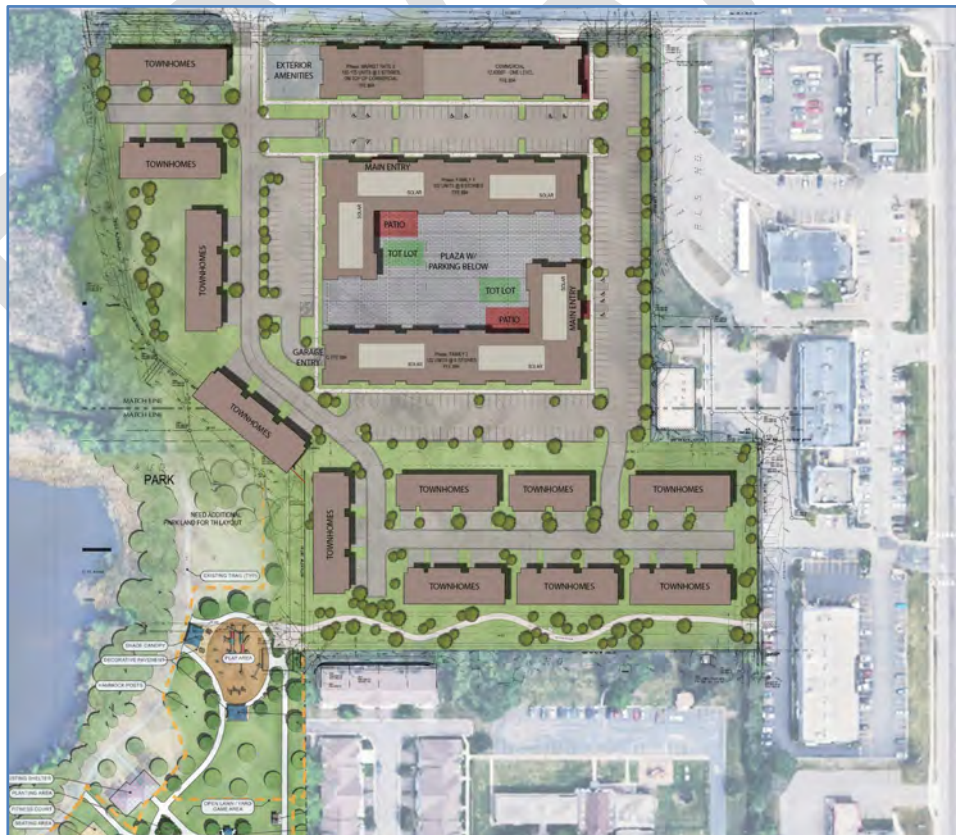
SSS – Side-Street-Stop

RAB - Roundabout

**PROPOSED REDEVELOPMENT**

The proposed redevelopment, which is shown in Figure 3, is south of 53<sup>rd</sup> Avenue and west of Central Avenue (Hwy 65). The project would replace the former 144,000 square foot Medtronic office building with a total of 439 multifamily apartments, 58 townhomes, and approximately 12,000 square feet of retail space. Two (2) access locations along 53<sup>rd</sup> Avenue are planned, which are generally in the same locations as they exist today; note that the eastern site access is proposed to shift about 75 feet to the east of its current location. Construction was assumed to be fully completed by 2029.

Figure 3 Proposed Site Plan



## TRAFFIC FORECASTS

Traffic forecasts were developed for year 2030 no build and build conditions, which represents one year after completion. The forecasts account for general background growth and trip generation from the proposed redevelopment. The following information summarizes the forecast development process.

### Background Growth

To account for general background growth in the study area, an annual growth rate of one-half (0.5) percent was applied to the existing traffic volumes to develop year 2030 no build conditions. This growth rate is consistent with historical ADT volumes over the last 20-years, as well as future year 2040 traffic forecasts within the *Columbia Heights 2040 Comprehensive Plan*. The year 2030 no build conditions are shown in [Figure 4](#).

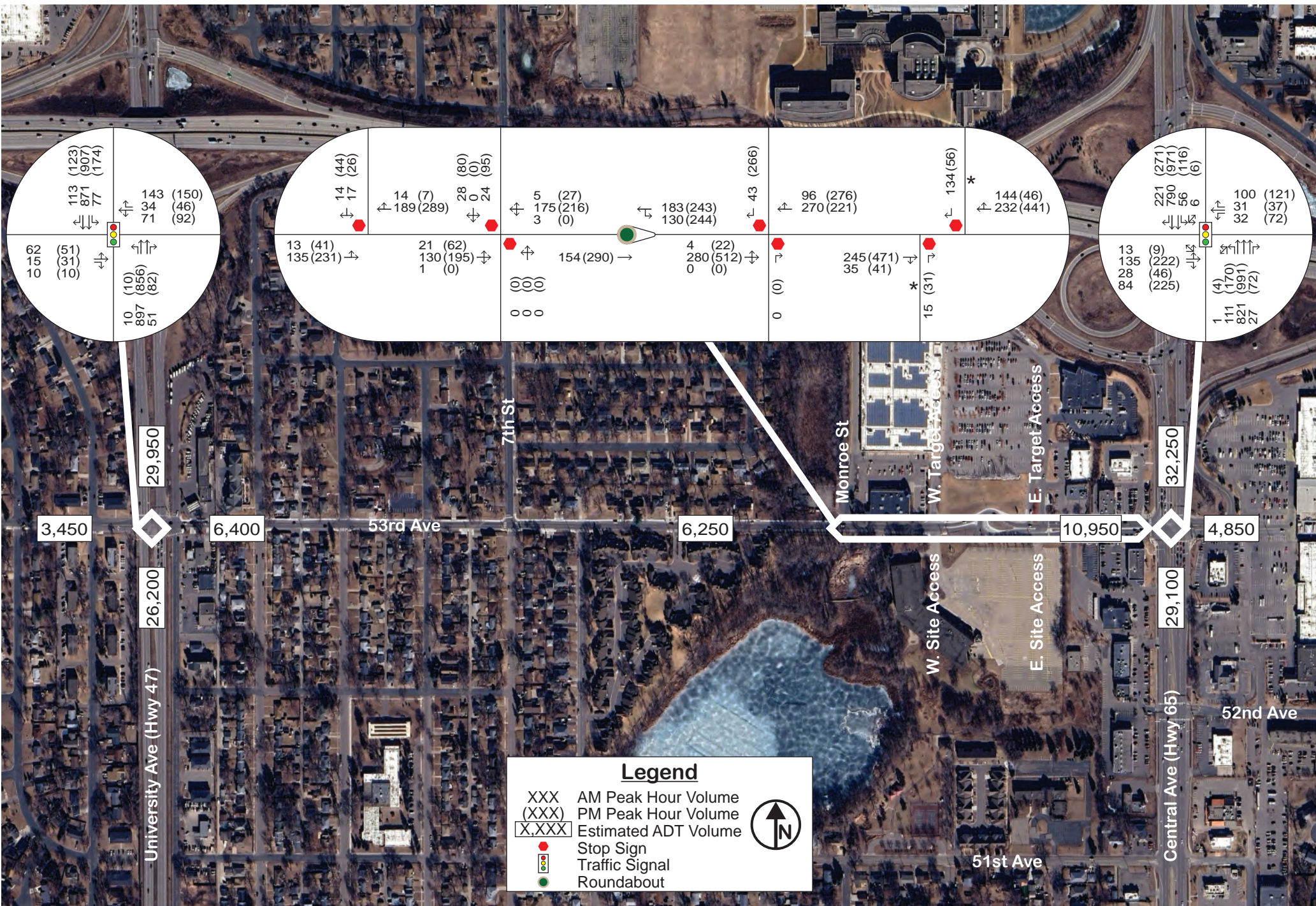
### Proposed Redevelopment Trip Generation

The trip generation estimate for the proposed redevelopment was created using the *ITE Trip Generation Manual, 11<sup>th</sup> Edition* and includes trips for typical weekday a.m. and p.m. peak hours, as well as daily. The proposed redevelopment, shown in [Table 2](#), is estimated to generate 239 a.m. peak hour (66 in / 173 out), 282 p.m. peak hour (165 in / 117 out), and 3,000 daily (1,500 in / 1,500 out) trips. This includes a 10% multi-use reduction, which was only applied to the retail portion of the redevelopment, to account for residents that would be expected to patronize the retail uses. In addition, a five (5) percent modal reduction was applied to all trips to account for people that utilize alternative modes of transportation, such as transit, walk, or bike trips to travel to / from their destinations and other area businesses. The estimated trip generation potential for the previous office use was provided for comparison purposes; the previous use was not in operation at the time of data collection and did not generate any trips.

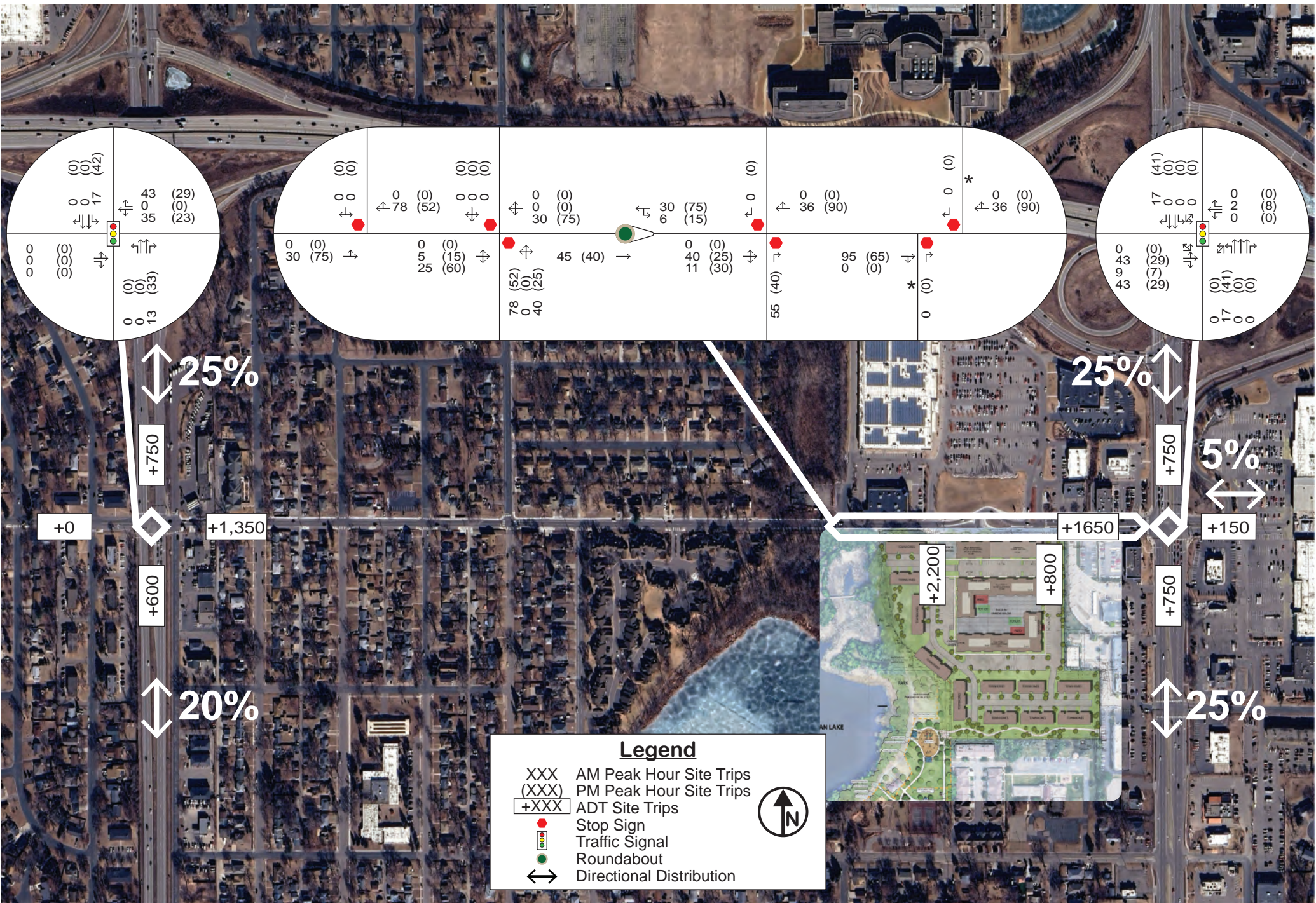
**Table 2 Trip Generation Summary**

Land Use Type (ITE Code)	Size	AM Peak Hour		PM Peak Hour		Daily
		In	Out	In	Out	
Previous Use						
General Office (710)	144,000 SF	193	26	35	172	1,560
Proposed Redevelopment						
Multifamily Housing (221)	439 units	42	140	105	67	2,048
Townhomes (220)	58 units	10	31	29	16	448
Retail (820)	12,000 SF	19	13	44	45	736
	<b>Subtotal</b>	<b>71</b>	<b>184</b>	<b>178</b>	<b>128</b>	<b>3,232</b>
	<i>Multi-use Reduction - Retail Trips Only (10%)</i>	<i>(-2)</i>	<i>(-1)</i>	<i>(-4)</i>	<i>(-4)</i>	<i>(-72)</i>
	<i>Modal Reduction (5%)</i>	<i>(-3)</i>	<i>(-10)</i>	<i>(-9)</i>	<i>(-7)</i>	<i>(-160)</i>
	<b>Total Site Trips</b>	<b>66</b>	<b>173</b>	<b>165</b>	<b>117</b>	<b>3,000</b>

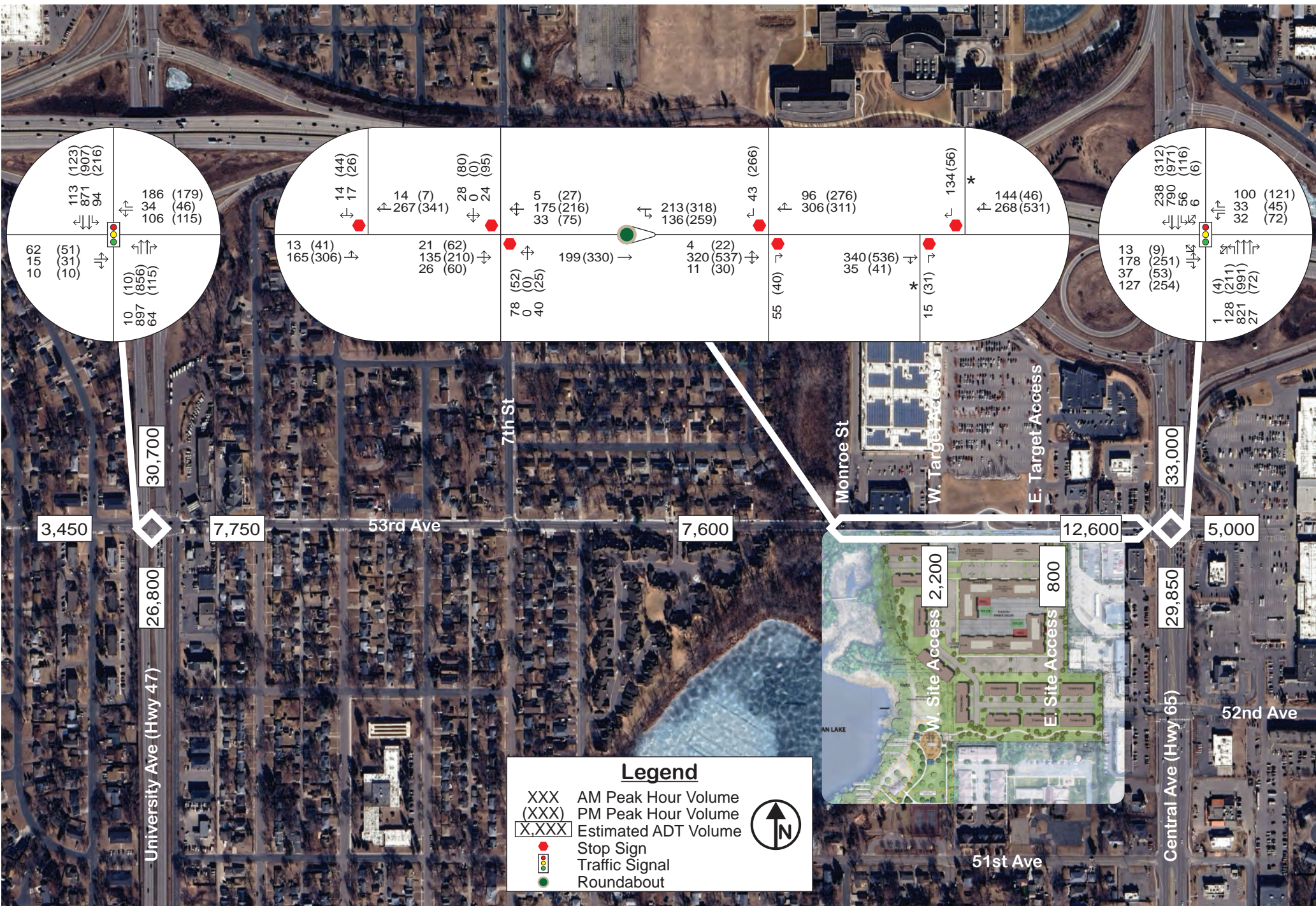
Site generated trips were distributed throughout the study area using the directional distribution shown in [Figure 5](#), which is based on a combination of existing area travel patterns and engineering judgment. The resultant year 2030 build condition traffic forecasts, which include the general background growth and trip generation from the proposed redevelopment, are illustrated in [Figure 6](#).



\*Approach represents multiple commercial access points within a short distance



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### YEAR 2030 CONDITIONS

To understand impacts associated with the proposed redevelopment, year 2030 no build and build conditions were reviewed from an intersection capacity analysis perspective. Results of the year 2030 analysis, shown [Table 3](#), indicate that all intersections and approaches will generally continue to operate at an acceptable LOS D or better during the a.m. and p.m. peak hours. The overall change in operations between the year 2030 no build and build conditions range from about 2 to 4 seconds without any changes to the existing signal timing. Note that the capacity analysis is based on signal timing plans for the area provided by MnDOT.

Westbound queues along 53<sup>rd</sup> Avenue from University Avenue (Hwy 47) are expected to increase by approximately 50' to 75' during the peak periods (i.e., 2 to 4 vehicles) as a result of the proposed redevelopment. Note that these queues are expected to extend up to approximately 375' to 400' during the p.m. peak hour. In addition, there is some minor queuing expected during the p.m. peak hour at a couple site access approaches, but nothing that would warrant any significant changes.

**Table 3 Year 2030 Intersection Capacity**

Intersection	Traffic Control	Level of Service (Delay in Seconds)			
		AM Peak Hour		PM Peak Hour	
		No Build	Build	No Build	Build
53 <sup>rd</sup> Avenue and University Avenue (Hwy 47)	Signal	B (16)	B (18)	C (23)	C (26)
53 <sup>rd</sup> Avenue and Monroe Street	SSS	A / A (5)	A / A (6)	A / A (6)	A / A (8)
53 <sup>rd</sup> Avenue and West Site / Target Access	SSS	A / A (5)	A / A (7)	A / A (9)	A / B (13)
53 <sup>rd</sup> Avenue and Roundabout / U-Turn	RAB	A / A (6)	A / A (5)	A / B (10)	A / B (11)
53 <sup>rd</sup> Avenue and East Site / Target Access	SSS	A / A (4)	A / A (5)	A / A (7)	A / A (8)
53 <sup>rd</sup> Avenue and Central Avenue (Hwy 65)	Signal	C (25)	C (28)	C (32)	C (34)

SSS – Side-Street-Stop      RAB - Roundabout

Although not needed from an intersection capacity perspective, left- and / or right-turn lanes along 53<sup>rd</sup> Avenue at the west site access or a right-turn lane along 53<sup>rd</sup> Avenue at the east site access could be considered to reduce potential conflicts. However, since the City recently reconstructed 53<sup>rd</sup> Avenue with an emphasis on safety, multimodal connectivity, and access management, there does not appear to be a significant operational benefit to providing these turn lanes. These turn lanes could result in increased vehicle speeds and / or longer pedestrian crossing distances. Therefore, since the adjacent roadway network can support the proposed redevelopment, no additional infrastructure changes are needed from an intersection capacity perspective.

### SITE PLAN / OTHER CONSIDERATIONS

A review of the proposed site plan does not indicate any major issues. However, the following items are offered for further consideration between area agencies and / or the project team.

- Locate signage and landscaping to avoid creating any sight distance issues.
- Provide multimodal connections throughout the site to ensure connectivity with existing and proposed facilities adjacent to the site.

- Review truck maneuverability to limit potential internal circulation conflicts.
- Align the northern east-west driveway aisles between the northwest townhomes and the multifamily apartments to reduce potential conflicts between movements.

In addition to the items noted, preserve the ability to connect the proposed redevelopment with a future extension of 52<sup>nd</sup> Avenue.

## CONCLUSIONS

Based on the findings of the study, the following conclusions are offered for consideration.

- 1) There does not appear to be any significant safety issues along 53<sup>rd</sup> Avenue within the study area from a crash history perspective.
- 2) All study intersections and approaches generally operate at an acceptable LOS D or better during the typical weekday a.m. and p.m. peak hours; the eastbound approaches of 53<sup>rd</sup> Avenue at both University Avenue (Hwy 47) and Central Avenue (Hwy 65) operate near the LOS D / E threshold during the p.m. peak hour.
  - a. Peak westbound queues along 53<sup>rd</sup> Avenue from University Avenue (Hwy 47) can extend approximately 300' during the p.m. peak hour (i.e., about 10 to 15-vehicles), but generally dissipate within one signal cycle length.
  - b. There are no significant existing intersection capacity issues in the study area.
- 3) The proposed redevelopment would replace the former 144,000 square foot Medtronic office building with a total of 439 multifamily apartments, 58 townhomes, and approximately 12,000 square feet of retail space; construction was assumed to be fully completed by the year 2029.
- 4) Traffic forecasts were developed for year 2030 no build and build conditions, which included a one-half (0.5) percent annual background growth and trip generation from the proposed development.
  - a. The proposed redevelopment is estimated to generate 239 a.m. peak hour (66 in / 173 out), 282 p.m. peak hour (165 in / 117 out), and 3,000 daily (1,500 in / 1,500 out) trips.
- 5) Key takeaways from the future year 2030 capacity analysis, include:
  - a. All intersections and approaches will generally continue to operate at an acceptable LOS D or better during the a.m. and p.m. peak hours; the overall change in operations between the year 2030 no build and build conditions range from about 2 to 4 seconds without any changes to the existing signal timing.
  - b. Westbound queues along 53<sup>rd</sup> Avenue from University Avenue (Hwy 47) are expected to increase by approximately 50' to 75' during the peak periods (i.e., 2 to 4 vehicles) as a result of the proposed redevelopment; these queues are expected to extend up to approximately 375' to 400' during the p.m. peak hour.
  - c. The overall change in operations as a result of the proposed redevelopment from an intersection capacity perspective is relatively minimal and no additional infrastructure is needed to support the proposed redevelopment.

- 6) A review of the proposed site plan identified the following considerations:
- a. Locate signage and landscaping to avoid creating any sight distance issues.
  - b. Provide multimodal connections throughout the site to ensure connectivity with existing and proposed facilities adjacent to the site.
  - c. Review truck maneuverability to limit potential internal circulation conflicts.
  - d. Align the northern east-west driveway aisles between the northwest townhomes and the multifamily apartments to reduce potential conflicts between movements.
  - e. Preserve the ability to connect the proposed redevelopment with an extension of 52<sup>nd</sup> Avenue.

DRAFT