

# REPORT / RECOMMENDATION



**To:** Edina Transportation Commission

**Agenda Item #:** VI. A.

**From:** Joseph Totten, Traffic Safety Coordinator

**Action**

**Discussion**

**Date:** May 21, 2015

**Information**

**Subject:** University of Minnesota Capstone Presentation: Neighborhood Traffic Study

**Action Requested:**

None

**Information / Background:**

Members of the Capstone team will present the final project by the 03M-Edina team of graduating seniors from the University of Minnesota. This was completed as part of the Capstone Design class, and investigated traffic and parking concerns within the Creek Knolls, Chowen Park and Strachauer Park neighborhoods.

**Attachments:**

Team 03M-Edina, Capstone Design, Final Report

MAY 7, 2015

TRAFFIC STUDY  
FOR THE CITY OF EDINA

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May 7th, 2015

Chad Millner  
Mark Nolan  
City of Edina Public Works  
7450 Metro Blvd. Edina, MN 55439

RE: Neighborhood Traffic Study for the City of Edina

Dear Mr. Nolan and Mr. Millner:

We trust the following report will provide you with baseline information regarding the traffic conditions in Strachauer Park, Chowen Park and Creek Knoll neighborhoods. We believe that these findings will aid you in your presentation of construction plans to the Edina Transportation Commission.

The enclosed report contains our findings from a neighborhood traffic study conducted in Strachauer Park, Chowen Park and Creek Knoll neighborhoods of Edina. DKMBJ Engineering performed a parking and traffic analysis of the area and developed a bike route that could eventually be connected to the Edina Promenade. We identified areas where the neighborhood could be improved to become more livable and sustainable as a part of the City of Edina's Living Streets Policy. We would like to thank you for working with us as we conducted this study.

Regards,  
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## Certification Page

By signing below, the team members submit that this report was prepared by them and is their original work to the best of their ability.

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## Executive Summary

The purpose of this study was to investigate the vehicle and pedestrian traffic as well as the current parking situation in the Strachauer Park, Chowen Park and Creek Knoll neighborhoods in the City of Edina. These neighborhoods were constructed in the 1950's and 1960's and plans for reconstruction of the infrastructure have already begun.

DKMBJ Engineering investigated vehicular speeds and the presence of cut-through traffic on 58th Street and 60th Street to determine how frequently vehicles are traveling through these neighborhoods. Secondly, parking utilization was investigated to determine if there were any parking related issues and whether changes needed to be made. Finally, DKMBJ Engineering developed a proposed route to connect the Edina Promenade with Strachauer Park and York Park.

As a result of our study, DKMBJ Engineering recommends the following:

- No treatment is needed in regards to cut through traffic on 58th Street and 60th Street.
- Traffic calming circles should be placed at the intersections of 58th Street and Beard Avenue and 60th Street and Beard Avenue to better control vehicular speeds.
- One area should remain unchanged with regard to two-sided street parking: specifically, the south end of Zone 8 (See figures A-3 through A-5). All remaining areas of study would require no special parking accommodations and the City of Edina may proceed with their construction plans.
- The bike route should be implemented as shared car and bike lanes.
- Connecting the Edina Promenade bike path with a separate bridge spanning TH 62 from Colony Way on the south to Strachauer Park on the north. The route would travel through Strachauer Park, north along Beard Avenue, east on 57th Street, north on Zenith Street until reaching York Park. The path will curve eastbound through York Park connecting to 55th Street.

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## 1.0 Traffic Study Background

The City of Edina encompasses 45 neighborhoods, three of which are Strachauer Park, Chowen Park, and Creek Knoll. These neighborhoods are defined by France Avenue to the west, Xerxes Avenue to the east, Minnesota Trunk-Highway (TH) 62 to the south, and 54th Street to the north (see Figure 1-1)(Google Maps 2015). The clients (city staff) note that the City of Edina has recently received a high amount of traffic safety requests from residents in these three neighborhoods when compared to the rest of the City, this can be seen with the area comprising 3.5% of the city's area, but comprising nearly 8% of all traffic safety requests in the past three years. See Table A-12 in the appendix. Residents are concerned with an increased traffic volume, higher vehicle speeds, and pedestrian safety. The majority of these traffic requests are requests for control at currently uncontrolled intersections.

The City of Edina has plans to reconstruct many of the neighborhood's roads in the near future and wants to investigate whether their current plans suffice or if changes need to be made based on resident requests. These city plans are based on necessity. The City tries to reconstruct roadways with the highest needs based on specific metrics. Living Streets, which is discussed later in this report, is then applied to these projects. This policy attempts to make the City of Edina a more livable and sustainable community. It includes aspects such as narrowing roadways, traffic calming techniques, and installing sidewalks and bike paths.

The City engineering staff has requested help from DKMBJ Engineering to investigate these requests, assess the traffic conditions in these neighborhoods, and make subsequent recommendations based on the team's findings.

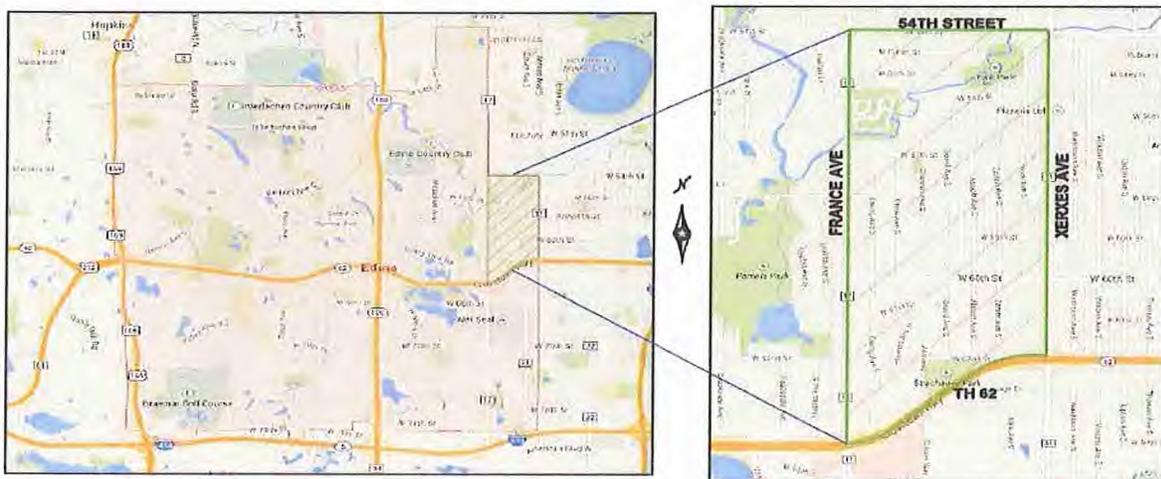


Figure 1-1: Location of Study

## 2.0 Vehicle Traffic Analysis

The three neighborhoods being investigated are bounded by County State Aid Highways (CSAH), Xerxes Avenue to the east and France Avenue to the west. Minnesota Trunk Highway 62 determines the southern border and 54<sup>th</sup> Street determines the northern border. The City of Edina does not maintain ownership of these roads, and therefore, the aforementioned roads are out of the scope of this analysis.

### 2.1 Municipal State Aid Streets in the Neighborhoods

58<sup>th</sup> Street and 60<sup>th</sup> Street handle the majority of traffic into and out of these neighborhoods, as they run perpendicular and connect to both France Avenue and Xerxes Avenue. Both of these streets are designated as collector streets meaning that they are designed for through traffic and higher levels of use. Concerns have arisen from the neighborhood residents about these streets being used at high speeds and for cut through traffic between France Avenue and Xerxes Avenue.

Differences in traffic control on 58<sup>th</sup> Street at France Avenue and Xerxes Avenue allow us to predict that 58<sup>th</sup> Street will see higher traffic at France Avenue, where it has a full signal. Traffic volumes should decrease along 58<sup>th</sup> Street as it nears Xerxes Avenue, where there is a two way stop. The reversal of this pattern should be noticed on 60<sup>th</sup> Street, as that street has an all way stop condition on Xerxes Avenue, and a one-way stop control at the intersection with France Avenue. DKMBJ Engineering predicted the highest traffic volumes would be at Xerxes Avenue and will decrease as 60<sup>th</sup> Street approaches France Avenue.

#### 2.1.1 58th Street

These predictions were found to be mostly accurate. Analysis of existing traffic counts reveals that 58<sup>th</sup> Street, while a busy street, is used predominantly to access the neighborhood. Counts are located in Table A-6 in the appendix. Traffic counts from 2010 showed that most traffic using 58<sup>th</sup> Street accessed the neighborhood from France Avenue, carrying an Average Daily Traffic (ADT) of 3,245 Vehicles. Traffic volumes diminished as the counts headed east, with 58<sup>th</sup> Street carrying only 565 vehicles per day at its intersection with Xerxes Avenue (see Figure 2-1.1).



Figure 2-1.1: 58<sup>th</sup> Street Traffic Counts

The importance of 58<sup>th</sup> Street as an access point for the whole neighborhood cannot be overstated. Traffic counts on local crossroads of 58<sup>th</sup> Street indicate that approximately 600 vehicles on each street use 58<sup>th</sup> Street to access larger volume roads. Six cross streets intersect 58<sup>th</sup> Street between Xerxes Avenue and France Avenue, and if all these streets carry 600 vehicles to or from 58<sup>th</sup> Street, then 3,600 vehicles would be using 58<sup>th</sup> Street to access local residences. The sum of vehicles accessing 58<sup>th</sup> Street from both France Avenue and Xerxes Avenue is 3,810. The small difference of vehicles entering and exiting the neighborhood and local roadway volumes supports the conclusion that 58<sup>th</sup> Street is not being overly used as a through street.

The measured 85<sup>th</sup>-percentile speeds on 58<sup>th</sup> Street are commonly above 30 mph, while the speed limit on this street is 25 mph. This means that speeding in this area is a concern.

It should be noted that on crossroads of 58<sup>th</sup> Street there was an inconsistency in the data. The counts west of Abbot Avenue of 991, York Avenue of 1,333 and Xerxes Avenue of 565 vehicles showed a sharp drop in vehicle traffic from York Avenue to Xerxes Avenue exceeding the usual traffic volumes seen in the neighborhood. This indicates that one of these counts may have a high error, and be unreliable. The exclusion of counts at either York Avenue or Xerxes Avenue would not significantly alter the conclusions of this report, as cut through traffic would still be the minority of traffic, and most vehicles using 58<sup>th</sup> Street would be accessing the neighborhood from France Avenue.

### **2.1.2 60th Street**

60th Street also connects Xerxes Avenue to France Avenue. Daily traffic counts for 60<sup>th</sup> Street were taken in April, 2015. These counts can be found in Table A-11 in the appendix. The analysis of this street was performed in a similar manner, but because the data was collected for the purpose of the report, a more detailed analysis was conducted. 60<sup>th</sup> Street is not considered a major artery for through traffic, but is more so used for distributing vehicles from the local residences to the regional roadway network.

During the study, 60<sup>th</sup> Street had a maximum traffic count of 2,373 Vehicles in a day. The count was highest between York Avenue and Xerxes Avenue, which supports the earlier prediction that 60th Street is used primarily for access at Xerxes Avenue, where the intersection is controlled by an all-way stop. Using a similar method as mentioned before it was determined that up to 60 percent of vehicles use 60<sup>th</sup> Street to move between Xerxes Avenue and France Avenue, however because the counts were taken more recently, a further analysis showed that this was not the case.

This analysis required newer counts to be analyzed by the computer to separate the traffic volumes in each direction. Applying similar measures as before to the directional counts, it was clear that fewer vehicles were using the area for cut-through traffic. Westbound traffic was the most affected by this analysis, as traffic volumes decreased as the counts got further west of the intersection at 60<sup>th</sup> Street and Xerxes Avenue. The lowest count was just east of France Avenue, and indicated that only 422 vehicles a day were using westbound 60<sup>th</sup> Street to access France Avenue, which was approximately one-third of the westbound traffic entering the street at Xerxes Avenue.

Eastbound traffic showed a very different pattern, with volumes growing and diminishing as the counts moved away from 60<sup>th</sup> Street's intersection with Xerxes Avenue. While the maximum count of eastbound vehicles observed was less than 1,300, at least 1388 vehicles used 60<sup>th</sup> Street to travel eastbound in this corridor. This indicates that when eastbound traffic is viewed separately than westbound traffic, up to 70% of the vehicles could be through traffic. When the eastbound and westbound traffic considered at the same time, the analysis reveals that approximately 50% of all vehicles could possibly be through traffic, having no connection to the neighborhood.

An additional analysis was conducted on 60<sup>th</sup> Street comparing assumed rates of traffic to the observed rates of traffic at the neighborhood entrances. This analysis is similar to the analysis done on 58<sup>th</sup> Street. Again, it was assumed that 3,600 vehicles should be using 60<sup>th</sup> Street to get to and from their home. However, 3,875 total vehicles were observed entering or exiting the neighborhood. This indicates that fewer than 300 vehicles are using 60<sup>th</sup> Street to transverse from Xerxes Avenue to France Avenue.

Speeds on 60<sup>th</sup> Street were below the speed limit of 30 mph at most locations. Only two locations had 85<sup>th</sup>-percentile speeds which exceeded the 30 mph speed limit of 60<sup>th</sup> Street. The few locations where the speeds were above the speed limit allows for traffic calming measures to be focused on these intersections and segments.

## **2.2 Traffic Calming Measures**

An investigation into traffic calming measures existing in the City of Edina was conducted in two locations. These locations were east of the intersection of Drew Avenue and 54<sup>th</sup> Street at the northern edge of the study area, and Tracy Avenue at Hawkes Drive. These locations were selected because traffic data was available prior to the implementing the traffic calming measures which could be used for comparison. Traffic counts can be found in Tables A-6 and A-11 in the appendix.

Neighborhood traffic circles are small roundabouts placed in existing intersections (see Figure 2-2). The size of these circles is small enough that normal circulation is possible without adjusting the existing curbs of an intersection. On 54<sup>th</sup> Street, at the northern boundary of the neighborhoods being investigated in this study, neighborhood traffic circles were installed in conjunction with the creation of a bicycle boulevard in 2012. Between 2011 and 2015 the 85<sup>th</sup>-percentile speeds decreased by 3.7 mph. Misuse of this circle by drivers has been observed, with many drivers turning left in front of the circle instead of going all the way around. Because of these issues, a change in the design of the circle before it is implemented elsewhere should be considered. The options for changes include using the similar mini-roundabouts, adding signage, and adding a median before the neighborhood traffic circle to better direct traffic around the central island.



Figure 2-2: Example of Traffic Circle

Bike lanes, narrowed lanes, parking bays, lowering the speed limit, and dynamic speed signs (the type which shows your speed and flashes if it is in excess of the posted speed limit) were all included during the reconstruction of Tracy Avenue. These treatments were accompanied by a reduction in the 85<sup>th</sup>-percentile speeds of 3.0 mph. The combinations of all these treatments may have actually made some of them less effective, as the bike lanes prevented the parking bays from narrowing the width of the street available to automobiles.

Four-way stop signs are often thought of, incorrectly, as traffic calming. MnDOT states this in the Minnesota Manual on Uniform Traffic Control Devices (MNDOT 2014). Two observations regarding all-way stop control were made in accordance to the traffic analysis conducted. On 58<sup>th</sup> Street at Beard Avenue, speed data from the blocks immediately east and west of the all-way stop control exhibited 85<sup>th</sup>-percentile speeds which were greater than the 85<sup>th</sup>-percentile speeds further from the stop control. In other words, vehicular traffic closer to the stop signs was actually going faster than vehicular traffic further from the stop signs. The segments directly surrounding the intersection of Chowen Avenue and 60<sup>th</sup> Street, which has an all-way stop control, were not seen to have lower 85<sup>th</sup>-percentile speeds than other points on 60<sup>th</sup> Street. This further confirms that these treatments do not reduce speeds nearby.

### 2.3 Vehicle Traffic Analysis Conclusions

We have seen that 58<sup>th</sup> Street is not being used heavily for cut through traffic, with the corridor's minimum count being only one-sixth of the vehicle count on the street at France Avenue. This is again supported by the volumes of cross streets being less than the volumes of vehicles entering and exiting the corridor by only 5%. This indicates that cut through traffic on this corridor is not

a major issue, especially as this street is designated as a Municipal State Aid street and has regional importance. We have also demonstrated that 58<sup>th</sup> Street acts as an important access point for the residences in this area.

On 60<sup>th</sup> Street the two studies done were in conflict. With one indicating that eastbound traffic might be cutting through the neighborhood in large numbers, but another showing that there was not more traffic using the street than would be assumed if it was merely providing access to the neighborhood. To determine exactly how much traffic was cutting through the neighborhood would require extensive investigation, but it can be seen that less than 50% of all traffic in this corridor could be going the entire distance between France Avenue and Xerxes Avenue.

Speeds in the area are of some concern, and they can be influenced by the design of the streets in the future. The areas where the 85<sup>th</sup>-percentile speeds exceed the speed limit can be called out specifically for more intensive traffic calming measures.

## 3.0 Vehicle Parking Analysis

The City of Edina has received numerous complaints about parking throughout the three neighborhoods, specifically in the northeast portion where 55th Street and 56th Street intersect York Avenue and in the south on the streets surrounding Strachauer Park. Residents would like the City to limit parking in these areas. DKMBJ Engineering is investigating current utilization rates and possible forms of parking limitations to address the concerns from residents.

### 3.1 Vehicle Parking Study

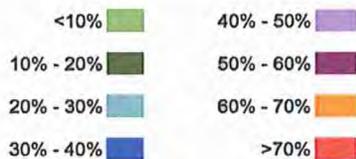
DKMBJ Engineering performed a parking study in accordance with Parking Generation 4th edition from the Institute of Transportation Engineers (McCourt 2010). It was done throughout the three neighborhoods from Wednesday, February 11th through Sunday, February 15th. Parking counts were taken on Wednesday, Friday, Saturday and Sunday. Each day consisted of four counts, one in the morning (around 8 AM), one at midday (around 12 PM), one in the evening (around 5 PM), and one at night (around 9 PM). Based on concerns from residents, DKMBJ Engineering defined ten different zones in which to collect parking data, as is seen on Figure A-2. Parked cars were counted separately for north, south, east and west sides of the street. All cars parked on 55th Street in Zone 8 were considered to be on the north side and all cars parked on 56th Street were considered to be on the south side.

It should be noted that some of the data collected during the study may not be an accurate representation of the average utilization. There are multiple home reconstruction projects throughout the neighborhood. These reconstruction projects had more cars parked outside during the day than the average home in the area. It can be assumed from the rest of our data that these anomalies will not continue once the construction is completed.

The parking capacity of each zone was calculated in order to find the percent of utilization. To determine the capacity of each zone, the gross length of each parking zone was determined using *Google Earth*. Thirty (30) feet was subtracted from the gross length for controlled intersection and 20 feet was subtracted for uncontrolled intersections. Driveways were also considered, with driveway width and an additional 5 feet on either side of the driveway subtracted from the gross length. The remaining length was then divided by the standard parking stall length of 25 feet. To determine the percent utilization, the number of cars counted in each zone was divided by the total number of stalls in the zone. These percent utilization values can also be seen in Table 3-1. Parking utilization has been mapped for each day and time using the data from Table 3-1. These maps can be seen in Figures A-2 through A-4 in the appendix.

Table 3-1: Parking Utilization

Zone	Weekday Capacity Percentages				Saturday Capacity Percentages				Sunday Capacity Percentages			
	Morning	Midday	Evening	Late	Morning	Midday	Evening	Late	Morning	Midday	Evening	Late
1 N	0.267	0.267	0.067	0	0	0.4	0	0	0	0	0	0
1 S	0.182	0.182	0.182	0.091	0	0.182	0	0	0	0	0	0
2 N	0.410	0.333	0	0	0	0	0	0	0	0	0	0
2 S	0.737	0.727	0	0	0	0	0	0	0	0	0	0.182
3 N	0.063	0.063	0.031	0.063	0	0	0	0	0	0.063	0	0
3 S	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO PARKING
4 N	0	0	0	0	0	0	0	0	0	0	0	0
4 S	0.115	0.038	0.038	0	0	0	0	0	0	0	0	0
5 E	0	0	0	0	0	0	0	0.027	0	0	0	0.027
5 W	0	0.033	0	0	0	0	0	0.033	0	0.033	0	0
6 N	0	0	0	0	0	0	0	0	0	0	0	0
6 S	0.039	0	0.066	0	0	0	0	0	0	0	0	0
6 E	0	0.023	0	0	0	0	0	0	0	0	0	0
6 W	0	0	0	0	0	0	0	0	0	0	0	0
7 E	0.058	0.094	0.022	0.014	0.014	0.072	0.014	0.014	0	0.058	0.072	0.029
7 W	0.125	0.105	0.114	0.195	0.018	0.018	0.053	0.018	0	0.035	0.018	0.018
8 N	0.036	0.036	0.179	0.179	0	0.071	0	0.071	0	0	0.071	0
8 S	0.063	0.507	0.5	0.438	0	0.5	1	1	0	0.375	0	0.125
8 E	0.063	0.031	0.094	0.063	0	0	0.188	0.313	0	0	0.188	0.063
8 W	0.063	0.094	0.063	0.063	0	0.25	0.125	0	0	0	0.0623	0.063
9 E	0.050	0.075	0.175	0.175	0	0	0.050	0.1	0	0.050	0.050	0.050
9 W	0	0.087	0.044	0.022	0	0	0.087	0.087	0	0.043	0.087	0.043
10 N	0	0.105	0	0	0	0	0.105	0	0	0.105	0	0
10 S	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO PARKING



**3.2 Vehicle Parking Conclusion**

There are few discernible issues with parking throughout the neighborhoods. Specifically, Zone 2 on W 55th Street had multiple home reconstructions. These reconstructs were causing the high amount of on street parking usage. It should be expected that when the constructions are complete the need for on street parking will not be needed. Zone 8 is in close proximity to numerous small businesses and a gas station and displays high parking utilization during popular business hours.

It should be noted that Zone 6 and the southern end of Zone 7 surround Strachauer Park. This park receives its heaviest traffic during the summer months and therefore the timing of this study may not have accurately reflected the full utilization of the parking surrounding Strachauer Park.

## 4.0 Pedestrian and Bike Traffic Analysis

As a part of the neighborhood traffic study, DKMBJ Engineering was assigned the task of determining the best route for a bike route through the three neighborhoods. The City of Edina did not request a cost analysis for any portion of this task. This route is envisioned to be an extension of the highly utilized Edina Promenade, which currently terminates half of a mile south of TH 62; with a long range plan to connect the three neighborhoods to Minneapolis' Grand Rounds Scenic Byway, which is a mile north along the south side of Lake Harriet. To connect the Promenade to the Strachauer Park neighborhood, Highway 62 must be crossed. The City of Edina has been considering adding a separate pedestrian bridge just to the east of the existing France Avenue Bridge. As an alternative, DKMBJ Engineering proposes adding a pedestrian bridge that connects Colony Way on the south side of TH 62 to Beard Place on the north side. Although both ideas include separate pedestrian bridges, DKMBJ Engineering's proposal includes a necessary change in elevation to get over the highway, whereas the bridge next to France would cross over at the same elevation as the existing bridge. Although more convenient for pedestrians and bike travelers, the elevation change would require more sophisticated infrastructure resulting in an increased overall cost. The proposed route and pedestrian bridge options are shown in Figure A-5.

The bike path shown in Figure A-5 would be implemented through a shared car and bike path option. An example of this street layout is shown in Figure 4-1. This example is a current picture of 54th Street on the north side of the three neighborhood area meaning that there is an added benefit of citizen familiarity with this type of implementation.



Figure 4-1: Example Section of Proposed Bike Lane Road

## 5.0 Sustainability

Our team has identified a few aspects of our project that will improve sustainability. To begin, the City of Edina has formulated the Living Streets Policy (Living Streets Policy 2013). This policy is being implemented throughout the City and includes efforts to incorporate sustainable living practices.

Sustainability can be incorporated into road design in a number of different ways. One of the most basic practices to aid in sustainability is reducing the amount of impervious surfaces throughout a watershed. Impervious surfaces, like asphalt and concrete, cause precipitation that would otherwise drain through the ground, to be funneled into storm water systems, taking with it all of the chemicals and pollutants already on the ground. To minimize this effect, the Living Streets policy includes the idea of reducing road widths to allow for more pervious area. The parking study suggests that this reduction in road widths will not be an issue, especially if some of the new streets only allow one sided parking.

Since some rainwater will inevitably collect on the roads, it is important to implement practices for filtering the runoff before it reaches the storm water system. Rain gardens with curb inlets are a simple but elegant way of filtering storm water runoff from the roads. This is why they are included as a part of the Living Streets vision. Not only do they have a practical use in filtering runoff, but they also add an aesthetically pleasing element to the streets in which they are added.

One argument against these rain gardens is that the responsibility of keeping them maintained cannot be forced on residents and that they may be too expensive for the City to keep up with. The neighboring City of Bloomington began installing rain gardens in 2008 and has received very positive feedback from residents and visitors alike (Harrison 2014). To address the continuous maintenance of their rain gardens, the City of Bloomington only installed rain gardens where a homeowner voluntarily agreed to keep the area healthy. The City of Maplewood also has a quality rain garden program in which they educate residents on how to create and maintain their own rain gardens (Maplewood Public Works 2006). They also provide cost sharing options through various watershed agencies for anyone who wishes to participate in the program.

## 6.0 Recommendations

DKMBJ Engineering has formulated recommendations regarding parking, and the proposed bike route connection to the Edina Promenade and Minneapolis' Grand Rounds Scenic Byway. The following subsections are DKMBJ Engineering's recommendations based on the analysis.

### 6.1 Vehicle Parking

High parking utilization was found in two areas: 56th street near Xerxes Avenue, and at the St. Peter's Lutheran Church on Fuller St. We recommend no changes to the parking structure in these two areas as they are close to, or at capacity. In the remaining area of study, our findings pointed to no need for special parking considerations. We recommend the City of Edina proceed as planned with their construction incorporating elements of Living Streets.

### 6.2 Pedestrian/Bike Route

The proposed route for the Edina Promenade connection should proceed as follows: begin in Strachauer Park, continue north on Beard Avenue, turn east onto 57th Street, turn north onto Zenith Avenue, continue through York Park, and exit the City of Edina on 55th Street. We also recommend a separate pedestrian bridge over TH 62 that would connect Beard Avenue on the north side to Colony Way on the south. This proposed path can be seen in Figure A-5. This is seen at the better option due to the bridge's ability to take pedestrians out of the busy, France Avenue and TH 62 intersection. However, a further cost analysis comparing the two options should be completed before a final decision is made.

### 6.3 Traffic Calming

High speeds were an issue on both 58th Street and 60th Street. We recommend the inclusion of traffic calming circles at the intersections of 58th Street and Beard Avenue and 60th Street and Beard Avenue. Medians at each approach to the intersection could also be used to better direct traffic and reduce the misuse of the calming circle.

### 6.4 Sustainability

We recommend that the City of Edina implements a rain garden program that draws on ideas from both Bloomington and Maplewood. Prior to installation of any rain gardens, the City should verify with nearby homeowners and other neighbors to ensure that they are willing to maintain the gardens in the future. They should also set up a program to educate residents on how to maintain them and provide them with cost sharing options if necessary.

## 7.0 Schedule and Budget

DKMBJ Engineering began our traffic study on February 2nd, 2015 by meeting with our mentors. Our study and report was completed, on schedule, on May 7th, 2015. The project team also completed a presentation of our study that was presented on May 5th, 2015. In the beginning of our project, the project team estimated a total cost of \$52,800. After the completion of our project, the final cost ended up being \$23,420, or \$29,380 under budget. A detailed graph of our cost estimates versus the actual project costs can be seen below in Figure 7-1.

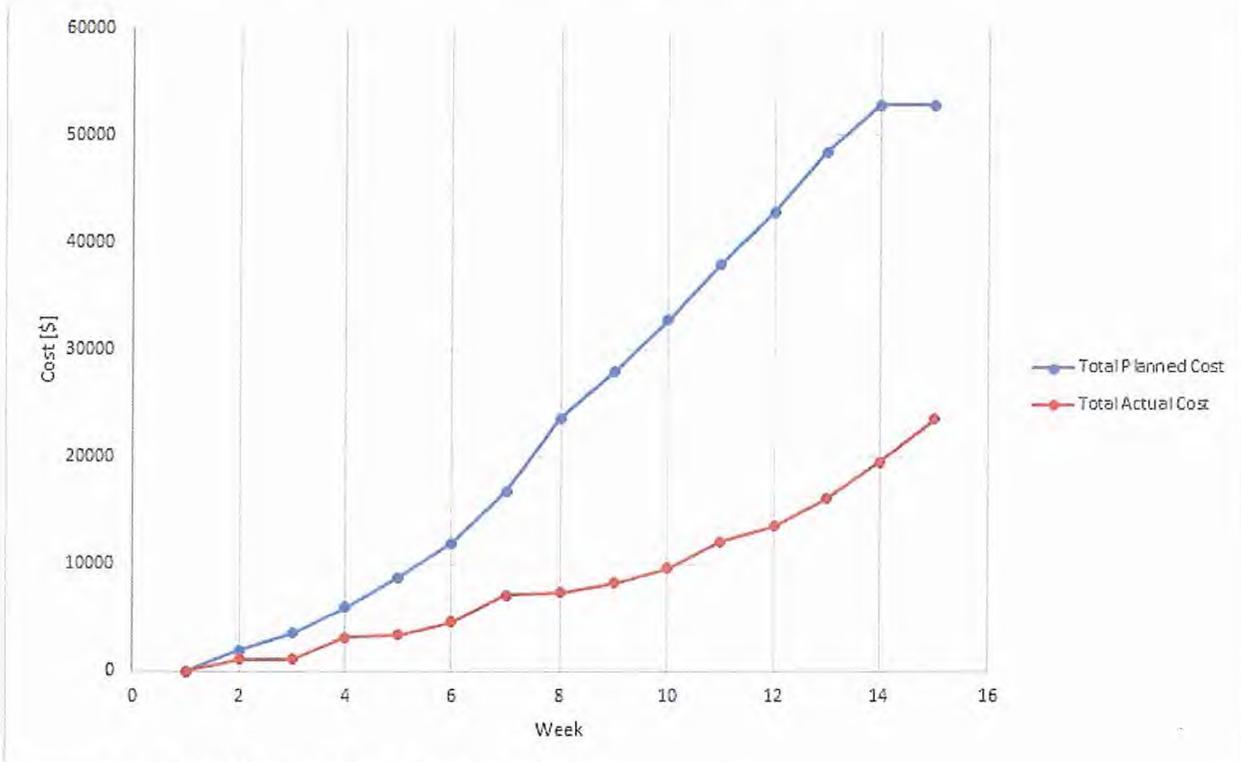


Figure 7-1: Total Planned Cost v. Actual Cost

## 8.0 References

Google Maps (2015) “*Edina, Minnesota Street Map*”

<<https://www.google.com/maps/place/Edina,+MN/@44.8958335,-93.3595726,14z/data=!4m2!3m1!1s0x87f6213ace55a039:0xcdaf9c3796fa2779>> (March 12, 2015)

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# 9.0 Appendix

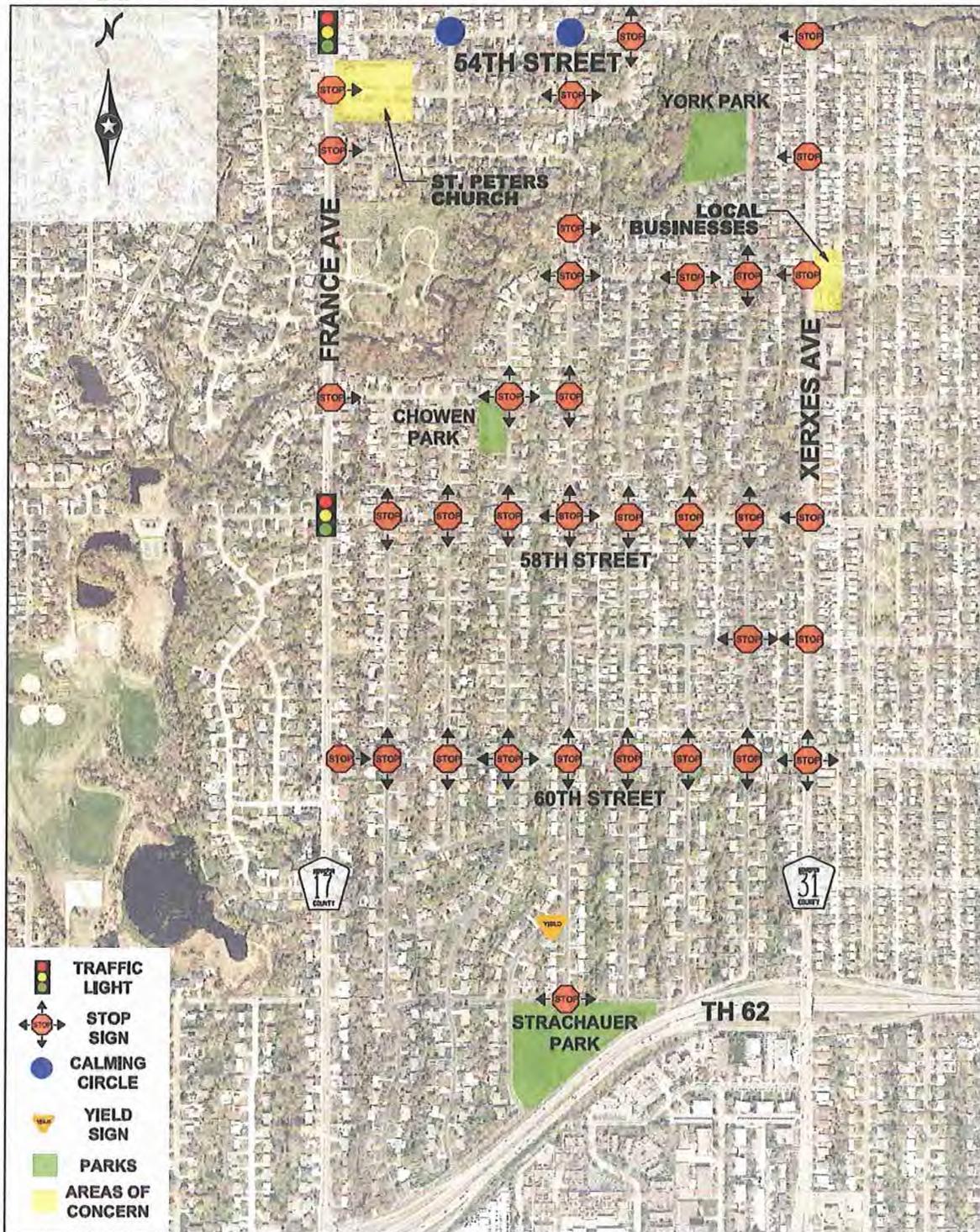


Figure A-1: Existing Conditions

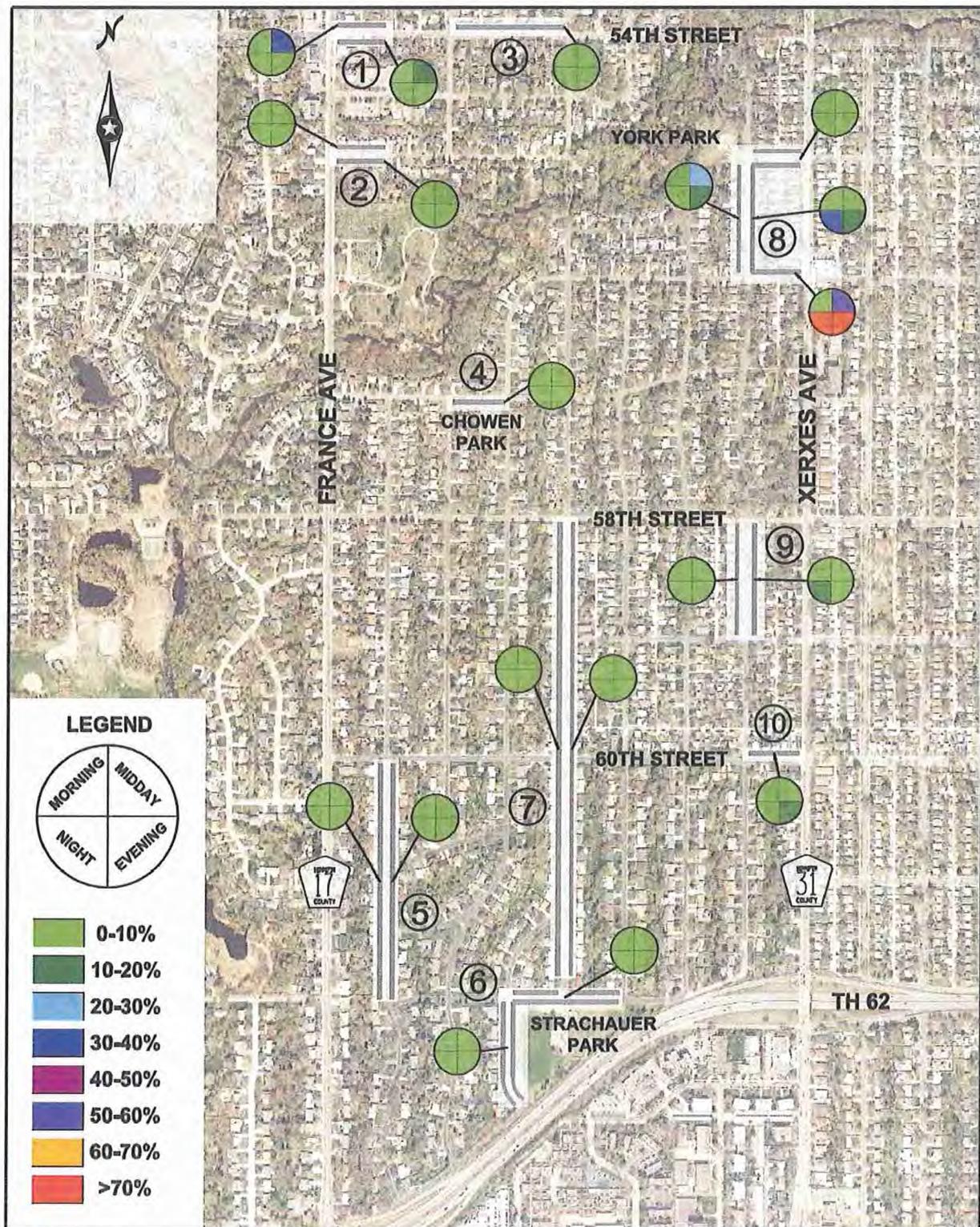


Figure A-2: Weekday Parking Utilization

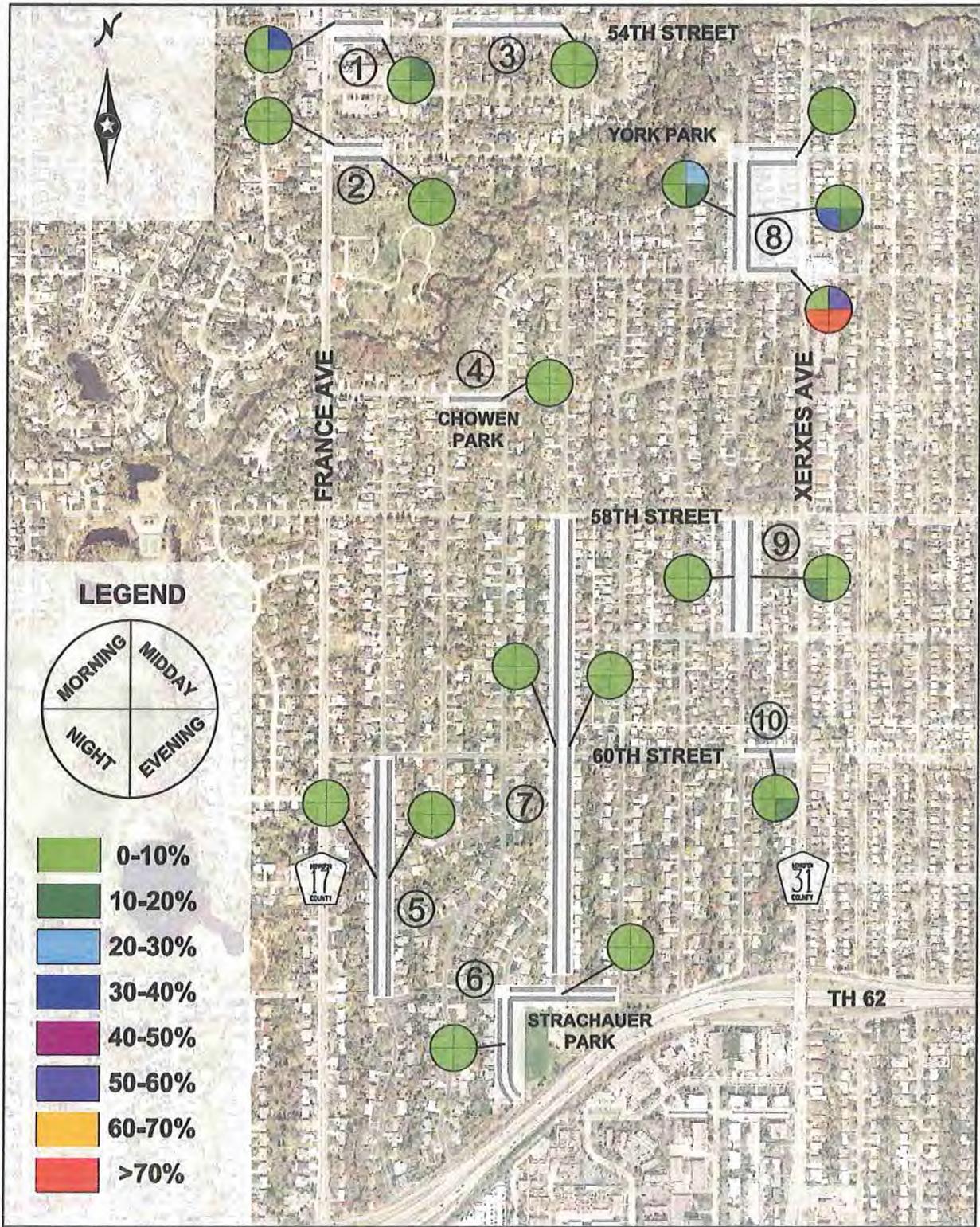


Figure A-3: Saturday Parking Utilization

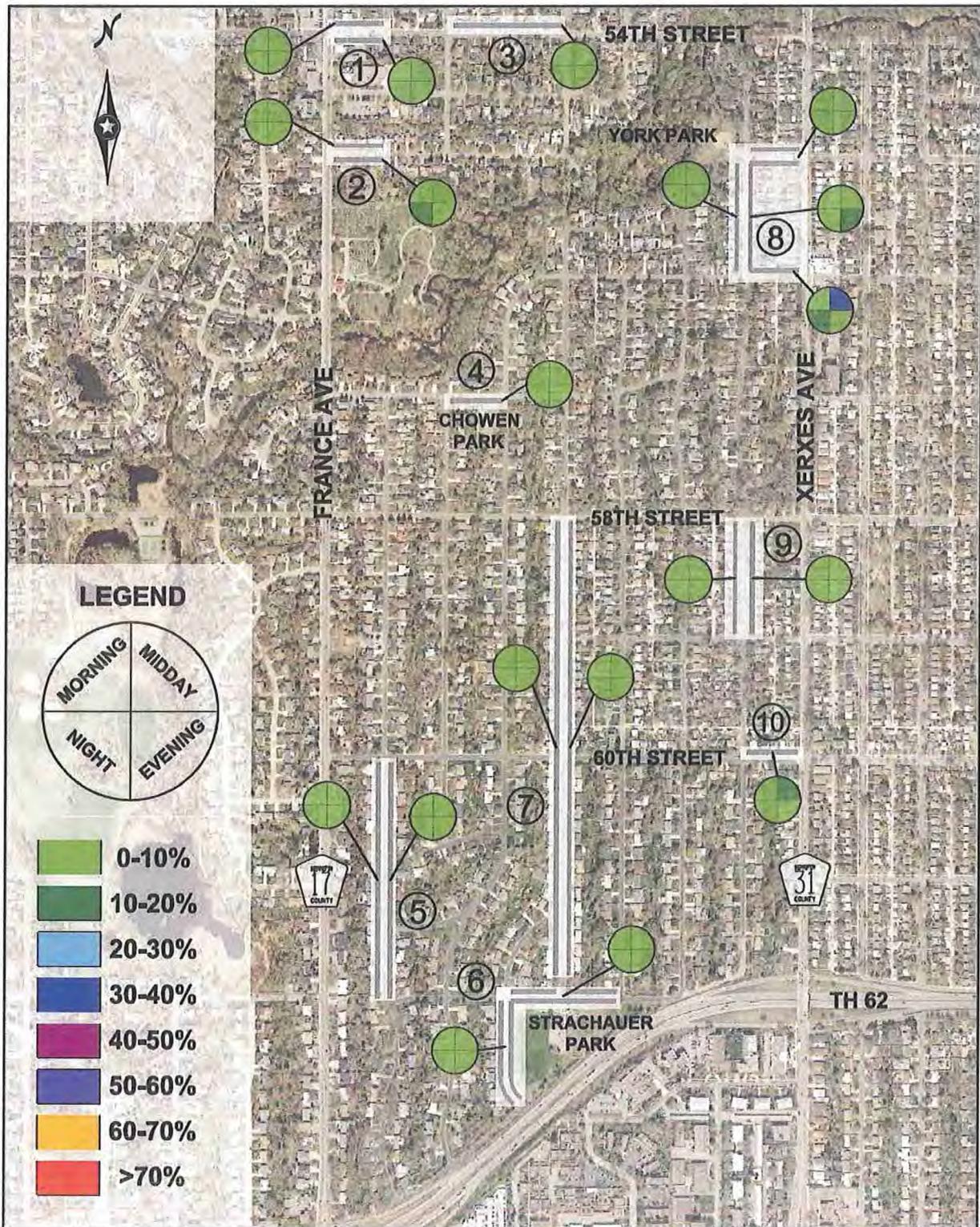


Figure A-4: Sunday Parking Utilization

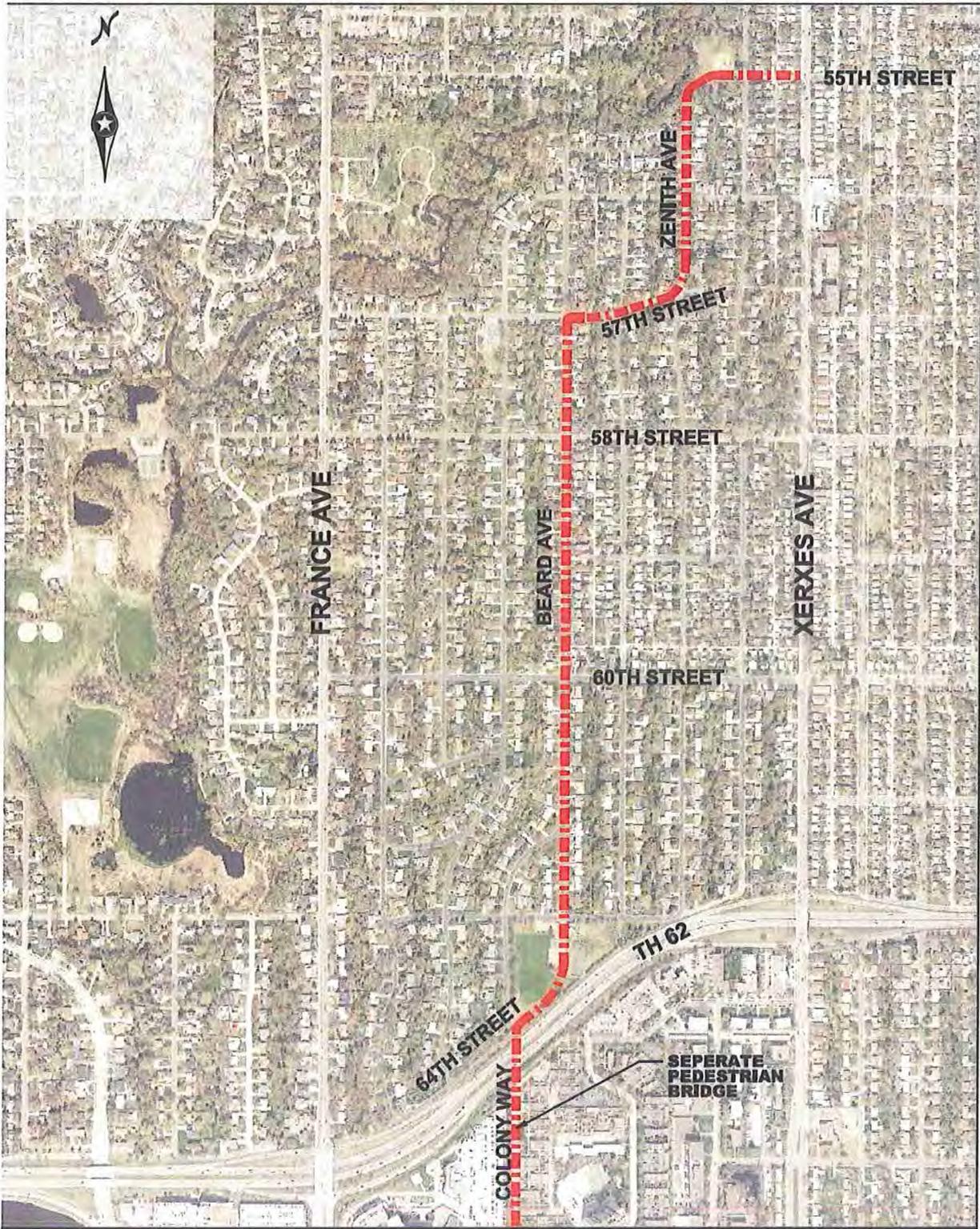


Figure A-5: Proposed Bike Path Location

Table A-6: Traffic Count Data from City of Edina

Location	Date of Survey	M/F ADT	M/F 85%	Sat. ADT	Sat. 85%	Sun. ADT	Sun. 85%
Abbott north of 62nd @ 6109	07/10/13-07/18/13	112	24.9	82	28.1	93	25.7
Abbott north W60st	06/20/02-06/29/02	269	NA	228	NA	182	NA
Abbott south W60st	06/20/02-06/29/02	297	NA	276	NA	210	NA
Beard 5700	05/14/01-05/22/01	288	29	231	28.7	187	28
Beard 6121	08/17/00-08/28/00	125	28.5	101	31	93	29.1
Beard Ave N. of W. 58th St.	05/25/10-06/04/10	286	27.9	164	28.9	154	27.3
Beard Ave S. of W. 58th St.	05/25/10-06/04/10	349	27	198	28.1	154	26.1
Beard Ave S. of W. 58th St.	06/13/14-06/23/14	400	29	244	28.8	252	28.5
Beard Ave. N. of W. 56th St.	08/23/11-09/01/11	111	19.7	96	18.1	97	19.6
Beard Ave. S. of W. 56th St.	08/23/11-09/01/11	211	28.6	146	25.5	144	27.3
Beard Pl. 6124	08/17/00-08/28/00	127	27.6	115	27.6	110	28.1
Chowen Ave N. of W. 58th Street	05/25/10-06/04/10	290	25.7	204	27.8	178	27.8
Chowen Ave N. of W. 58th Street	05/21/12-05/29/12	265	28.1	168	27.2	113	26.5
Chowen Ave S. of W 58th Street	05/25/10-06/04/10	313	29.5	227	28.1	184	28.4
Chowen Ave S. of W 58th Street	05/21/12-05/29/12	235	29	163	27.6	114	27.7
Chowen Ave S. of W 58th Street	10/01/12-10/05/12	241	29.1	NA	NA	NA	NA
Ewing 6104	04/10/01-04/17/01	311	31.8	329	31.9	258	30.9
Ewing at 5901	09/04/02-09/12/02	297	30.3	248	31.2	194	30.7
Ewing at 6105	08/14/13-08/21/13	334	28.5	362	28.4	265	28.9
Ewing, South of Chowen Curve	06/13/14-06/23/14	331.6	28.1	385	27.6	292	27.4

W 55th St. east of Drew Ave.	03/27/12-04/13/12	196	24.4	182	24.5	130	25.3
W 57th St, West of Zenith	06/13/14-06/23/14	226.3	25	205	24.5	172	23.2
W. 57th St west of Drew Ave @ 3612	05/29/12-06/06/12	898	27	952	27.3	891	26.1
W54th St. East of Drew Ave. @ 3605	10/18/11-10/26/11	801	30.1	629	29.8	536	28.9
W56st east of Zenith	10/22/98-10/30/98	2580	37.2	NA	NA	NA	
W56st east of Zenith	07/19/03-07/29/03	2623	36.5	1774	37	1595	36.6
W56th st east of York Ave	04/09/12-04/20/12	986	25.5	1061	24.8	810	24.2
W56th St. west of York Ave	04/09/12-04/20/12	699	20.3	758	19.8	588	19.6
W58st east of France	MSA 1975	2544	NA	NA	NA	NA	NA
W58st east of France	MSA 1977	1540	NA	NA	NA	NA	NA
W58st east of France	MSA 1979	2336	NA	NA	NA	NA	NA
W58st east of France	MSA 1981	1926	NA	NA	NA	NA	NA
W58st east of France	MSA 1983	1489	NA	NA	NA	NA	NA
W58st east of France	MSA 1985	1851	NA	NA	NA	NA	NA
W58st east of France	MSA 1987	1935	NA	NA	NA	NA	NA
W58st east of France	MSA 1989	2378	NA	NA	NA	NA	NA
W58st east of France	MSA 1991	1310	NA	NA	NA	NA	NA
W58st east of France	MSA 1993	2288	NA	NA	NA	NA	NA
W58st east of France	MSA 1995	2383	NA	NA	NA	NA	NA
W58st east of France	MSA 1997	2616	NA	NA	NA	NA	NA
W58st east of France	06/11/01-06/14/01	2408	26	NA	NA	NA	NA
W58st east of France	MSA 2005	3245	33.3	NA	NA	NA	NA
W58st west of Abbott	05/25/10-06/04/10	991	31.3	487	30.6	535	30.2
W58st west of Chowen	MSA 1975	1575	NA	NA	NA	NA	NA
W58st west of Chowen	MSA 2005	3245	33.4	NA	NA	NA	NA
W58st west of Chowen	MSA 2009	1983	30.1	NA	NA	NA	NA
W58st west of Chowen	05/25/10-06/04/10	1873	30.1	942	30	881	29.5
W58st west of Chowen-RECOUNT	10/05/09-10/08/09	1872	30.4	NA	NA	NA	NA
W58st west of Drew	05/25/10-06/04/10	2109	32	1116	31.7	1023	31.4

W58st west of Xerxes	MSA 1975	1015	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1977	1917	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1979	1860	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1981	1158	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1983	873	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1985	1310	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1987	1074	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1989	988	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1991	1086	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1993	1070	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1995	1096	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1997	1422	NA	NA	NA	NA	NA
W58st west of Xerxes	05/19/04- 05/25/04	565	31.1	552	31.7	335	30.6
W58st west of Xerxes	MSA 1975	1015	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1977	1917	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1979	1860	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1981	1158	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1983	873	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1985	1310	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1987	1074	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1989	988	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1991	1086	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1993	1070	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1995	1096	NA	NA	NA	NA	NA
W58st west of Xerxes	MSA 1997	1422	NA	NA	NA	NA	NA
W58st west of Xerxes	05/19/04- 05/25/04	565	31.1	552	31.7	335	30.6
W58st west of York	05/26/10- 06/04/10	1333	30.4	751	28.9	670	27.8
W58st west of York	05/26/10- 06/04/10	1333	30.4	751	28.9	670	27.8
W58th St east of Chowen Ave	05/29/12- 06/06/12	2075	29.4	1582	29.1	1282	28.7
W59st east of Beard	10/09/08- 10/17/08	109	23.6	89	22.3	69	22.8
W59st east of Beard	10/09/08- 10/17/08	109	23.6	89	22.3	69	22.8
W60st east Abbott	MSA 1977	3351	NA	NA	NA	NA	NA
W60st east of Ewing Avenue	05/13/13- 05/20/13	2569	32.9	1611	32.2	1338	32.2

W60st east of France	MSA 1975	4780	NA	NA	NA	NA	NA
W60st east of France	MSA 1979	4551	NA	NA	NA	NA	NA
W60st east of France	MSA 1981	2640	NA	NA	NA	NA	NA
W60st east of France	MSA 1983	3032	NA	NA	NA	NA	NA
W60st east of France	MSA 1985	2433	NA	NA	NA	NA	NA
W60st east of France	MSA 1987	3043	NA	NA	NA	NA	NA
W60st east of France	MSA 1989	2724	NA	NA	NA	NA	NA
W60st east of France	MSA 1991	2669	NA	NA	NA	NA	NA
W60st east of France	MSA 1993	2291	NA	NA	NA	NA	NA
W60st east of France	MSA 1995	2448	NA	NA	NA	NA	NA
W60st east of France	MSA 1997	2825	NA	NA	NA	NA	NA
W60st east of France	06/11/01- 06/14/01	3153	25.9	NA	NA	NA	NA
W60st east of France	06/20/02- 06/29/02	2874	35.3	2188	34.7	1825	34.6
W60st east of France	10/19/10- 10/28/10	1910	26.8	1442	26.4	1309	26.1
W60st west Abbott	MSA 1979	4551	NA	NA	NA	NA	NA
W60st west Abbott	06/11/01- 06/14/01	3153	25.9	NA	NA	NA	NA
Xerxes Ave @ 54th St.	10/27/13- 11/02/13	11772	34.8	NA	NA	NA	NA
Xerxes Ave N. of 61st @ 6040	07/23/12- 07/30/12	14590	34.6	13766	34.3	12236	34.5
Xerxes Ave S. of 58th St. @ 5827	05/13/13- 05/20/13	14327	34.4	13565	34.5	11761	34.4
Xerxes Ave S. of 60th St.	11/08/12- 11/16/12	13260	34.4	13698	33.4	11889	33.6
York Ave North of 56th st W	04/12/12- 04/20/12	162	24.9	142	25.2	114	25
York Ave North of 56th st W	04/12/12- 04/20/12	162	24.9	142	25.2	114	25
York Ave north of 62nd ST @ 6029	07/10/13- 07/18/13	217	27.2	194	26	186	27.6
York Ave north of 62nd ST @ 6029	07/10/13- 07/18/13	217	27.2	194	26	186	27.6
York Ave South of 56th st W	04/09/12- 04/20/12	275	27.9	242	27.3	199	24.9
York Ave South of 56th st W	04/09/12- 04/20/12	275	27.9	242	27.3	199	24.9
Zenith north of 62nd ST @ 6016	07/10/13- 07/18/13	204	28	151	27.9	171	28.1

Zenith south of 57th	6/13/2014- 6/23/2014	168.7	24.5	158	24.8	121	23.5
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Table A-11: Traffic Data Collected by DKMBJ

Location	M-F ADT	M-F 85th %	WB M- F ADT	EB M- F ADT
60th Street, east of York	2373	29	1237	1135
60th Street, east of Zenith	2317	33.1	1025	1291
60th Street, east of Beard	1952	31.5	862	1090
60th Street, east of Chowen	1846	30	862	983
60th Street, east of Drew	1770	29.7	780	989
60th Street, east of France	1502	26.4	422	1080
54th Street, east of Drew	1006	26.4	NA	NA

Table A-12: Resident Requests in the Area Provided by the City of Edina

Year	LOCATION	REQUEST / ISSUES
2015	Xerxes and 60th St	Daughter is disabled, getting to handicapped bus/ vehicles are difficult if not aligned with walk. Parked vehicles in the area needed for the school bus prevents daughter from attending school. Wants handicapped parking to assure access
2014	57th St and Beard Ave	Request to either switch the road the 2-way stop is located on, or install an All-Way stop at the intersection
2014	57th and Zenith	The intersection is uncontrolled, which is "profoundly unsafe"
2014	Beard and Ewing, close to the park	Concerns about speeders (soccer specific)
2014	54th Street Bike Blvd	People are unfamiliar with the neighborhood traffic circles we installed. Some sort of explaining to people that they have to yield to the left.
2013	Drew Ave & Fuller St	Request for stop signs at the intersection
2013	54th Street and Xerxes	Request for crosswalks
2013	58th and Zenith	Request for parking restrictions in the area
2013	60th Street W & Ewing Ave s	Request for speed counts in the area
2013	Xerxes near 5800	Request for speed counts in the area
2013	55th and Xerxes	Request for a crosswalk in the area
2012	56th ST W and York Ave	Request for an All Way Stop sign
2012	Xerxes and 60th St W	Request for a "Disabled Child" sign
2012	Chowen and 58th	Request for an All Way Stop sign
2012	62nd and France	Request for traffic calming in the area
2012	5410 York Ave	Request for "No Parking" signs for the alley
2012	57th and Chowen	Request for speed counts to be done in the area
2012	55th and Xerxes Ave	Request for crosswalk across Xerxes
2012	60th and Xerxes	Request for speed counts to be done in the area
2011	55th St. & Xerxes Ave	Request for Ped. X-walk.
2011	N.W. Corner of 60th St. & Ewing Ave	Stop sign is "beat up, rusty and nasty."
2011	56th and Beard Ave.	Request for a stop sign on Beard Ave.

2011	55th W near France	Request for speed bumps
2011	W. 56th St. west of Xerxes Ave	Cars are parking on both sides of the street making it very narrow.
2011	4515 W. 56th Street	Wants to restricts parking on Sundays from 0700-1300 on the south side of W. 56th Street.
2011	W. 56th Street, Xerxes Ave to York Ave	Wants residential parking permits so only residents can park here.
2011	Drew Ave & Fuller Street	Requesting stop signs at this uncontrolled intersection
2011	Xerxes Ave at W. 64th Street	Request for Ped. X-walk at this location
2011	W. Fuller Street & Drew Ave	Concerns with traffic.
2010	W. 58th St. & Chowen Ave	Request to make the 2-way stop into an all-way stop.
2010	W. 59th Street & Beard Ave	Request for a stop sign
2010	W. 56th Street Beard to Zenith Ave	Concerns with speed of traffic.
2010	56th St. & Xerxes Ave	Request for a pedestrian X-walk crossing Xerxes Ave.