SUMMIT

LAND MANAGEMENT

PHOENIX COUNTRY DAY SCHOOL
PERFORMING ARTS CENTER
Paradise Valley, Arizona

Traffic Impact Analysis

September 2023

Prepared for:
PHOENIX COUNTRY DAY SCHOOL

For Submittal to:
TOWN OF PARADISE VALLEY

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Table of Contents

List of Figures

List of Tables

List of Appendices

Executive Summary

Introduction

The Phoenix Country Day School is planning to construct a new 600-seat Performing Arts Center (PAC). All performances currently occurring at Dorrance Auditorium will occur at the Performing Arts Center in the future.

Results

The proposed Performing Arts Center is anticipated to generate 200 vehicles-per-hour prior to an event and 200 vehicles-per-hour subsequent to an event with non-student, non-faculty audiences.

Table 1 and **Table 2** summarize the intersection level-of-service results for 2023 and 2025, without and with the Performing Arts Center. The Performing Arts Center will only have events with non-student and non-faculty audiences on school days after classes have ended and on weekends. Therefore, the only traffic generation from the Performing Arts Center is before and after an event. To be conservative, the time periods analyzed before and after an event were assumed to be earlier, when ambient traffic volumes are higher, than the events are likely to be scheduled.

Table 1: Peak Hours Level-of-Service Summary for 40th / Stanford Intersection

	7:15 to 8:15 AM PEAK HOUR			2:30 to 3:30 PM HOUR			3:30 to 4:30 PM HOUR		
	2023		2025	2023		2025	2023		2025
	EXISTING	ADJUSTED	AMBIENT	EXISTING	ADJUSTED	AMBIENT	EXISTING	ADJUSTED	AMBIENT
A	0	0	0	1	1	1	5	5	4
B	1	1	1	3	1	1	0	0	1
C	1	1	1	1	3	2	0	0	0
D	0	0	0	0	0	1	0	0	0
E	2	2	0	0	0	0	0	0	0
F	1	1	3	0	0	0	0	0	0
	5	5	5	5	5	5	5	5	5

Table 2: Level-of-Service Summary for 40th / Stanford Intersection without and with PAC

	5:30 to 6:30 PM HOUR				7:00 to 8:00 PM HOUR			
	2023		2025		2023		2025	
	EXISTING	ADJUSTED	AMBIENT	WITH PAC	EXISTING	ADJUSTED	AMBIENT	WITH PAC
A	5	5	5	5	5	5	5	5
B	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0
	5	5	5	5	5	5	5	5

The 40th / Stanford roundabout has high traffic volumes and corresponding high delay during the school arrival time. The proposed Performing Arts Center will not have events during the school arrival time, and therefore will not generate traffic at the 40th / Stanford intersection during the school arrival time. The 40th / Stanford roundabout has low traffic volumes and corresponding low delay during all other hours of the day. Events with non-student, non-faculty audiences will only occur on weekday late afternoons and evenings, and on weekends. During these times periods the levels-of-service for all 40th / Stanford movements will be “A”.

Recommendations without Performing Arts Center

No improvements to the street system are recommended. The existing delay at the 40th / Stanford roundabout are typical of schools and dissipate quickly after school arrival periods.

Recommendations with Performing Arts Center

The Performing Arts Center will not affect school arrival period traffic. No street improvements are necessary or appropriate with the Performing Arts Center.

Introduction

The Phoenix Country Day School is planning to construct a new 600-seat Performing Arts Center (PAC). All performances currently occurring at Dorrance Auditorium will occur at the Performing Arts Center in the future. The Phoenix Country Day School campus and general vicinity is depicted in **Figure 1**.

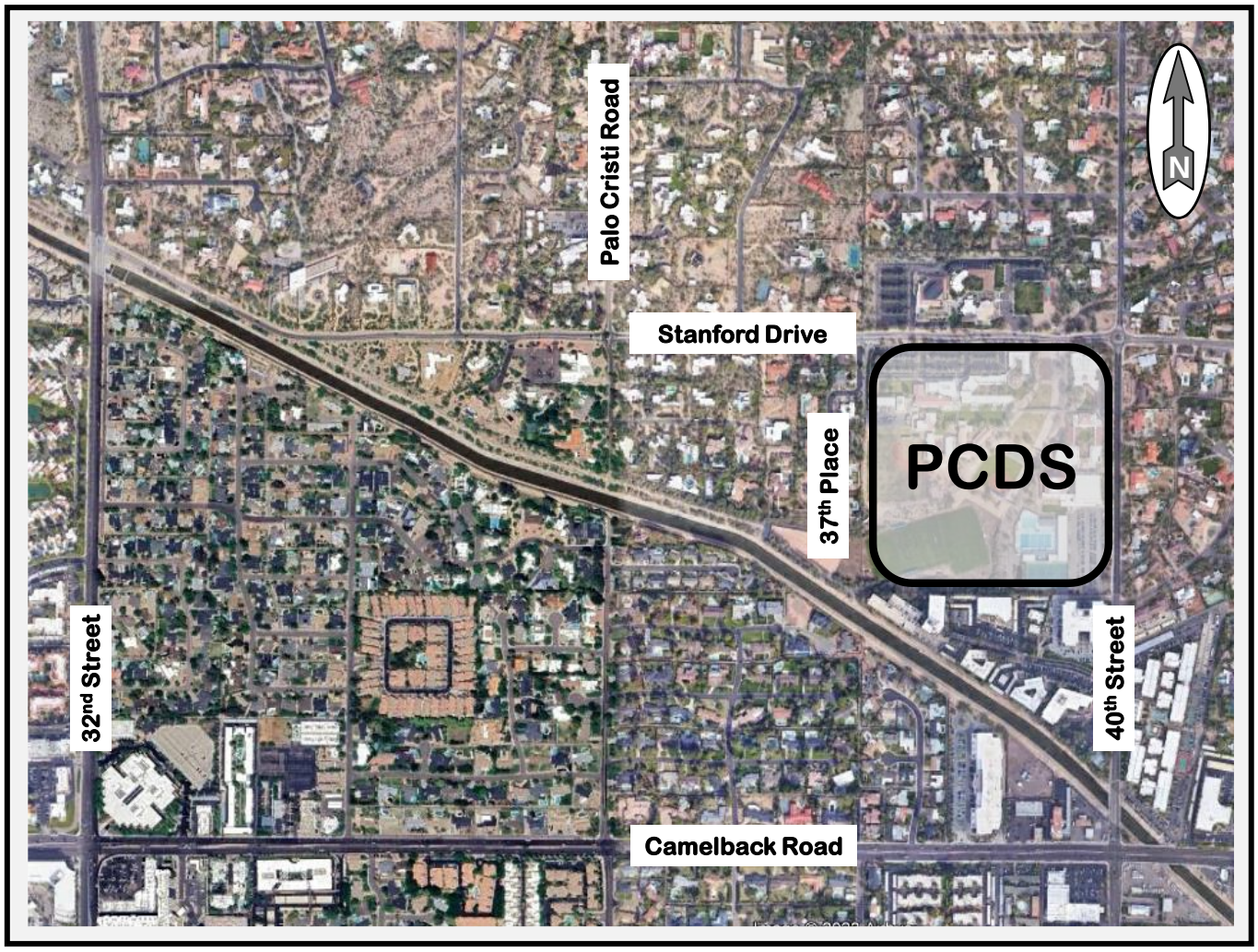


Figure 1: General Vicinity Aerial Photograph

Figure 2 provides the immediate vicinity of the Performing Arts Center and the existing Phoenix Country Day School. The four (4) existing parking areas are indicated in **Figure 2**. Access to the Phoenix Country Day School campus parking areas is provided to and from both 40th Street and Stanford Drive.

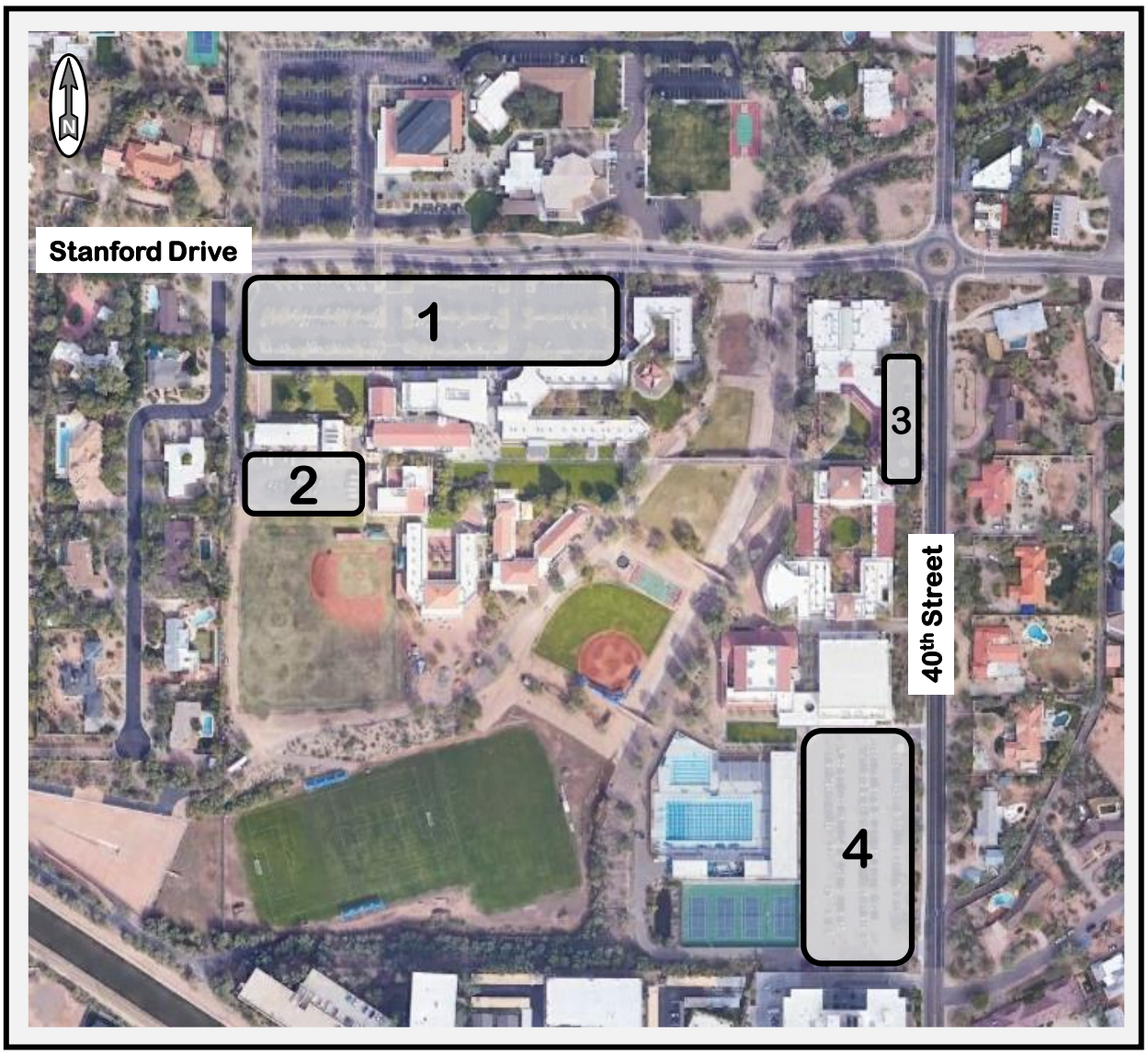


Figure 2: Immediate Vicinity Aerial Photograph

Scope of Study

Seven (7) purposes exist for this analysis:

- ❖ Evaluate existing traffic conditions.
- ❖ Evaluate recent historic traffic collisions.
- ❖ Estimate and evaluate future ambient 2025 traffic volumes.
- ❖ Estimate new traffic generated by new Performing Arts Center.
- ❖ Distribute and assign new traffic to the adjacent intersection of 40th Street and Stanford Drive.
- ❖ Evaluate year 2025 traffic conditions with new Performing Arts Center.
- ❖ Determine need for modified traffic control.

The one (1) existing study intersection is:

1. 40th Street and Stanford Drive

Surrounding Transportation System

Figure 3 provides a street map, intersection traffic control, and intersection lane configurations in the immediate vicinity.

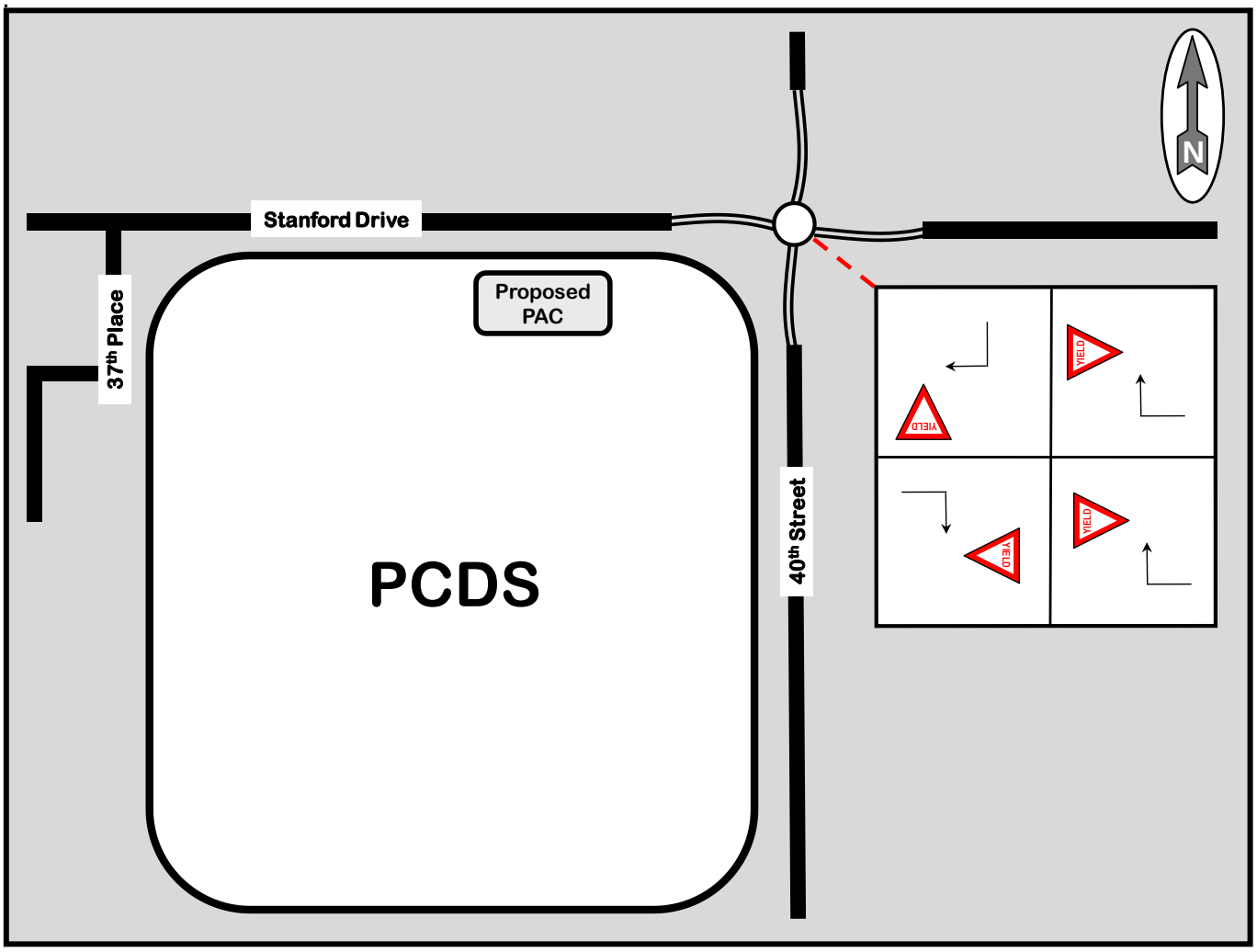


Figure 3: Intersection Existing Lane Configurations

Figure 4 provides a schematic of the proposed Performing Arts Center site plan for the existing Phoenix Country Day School.

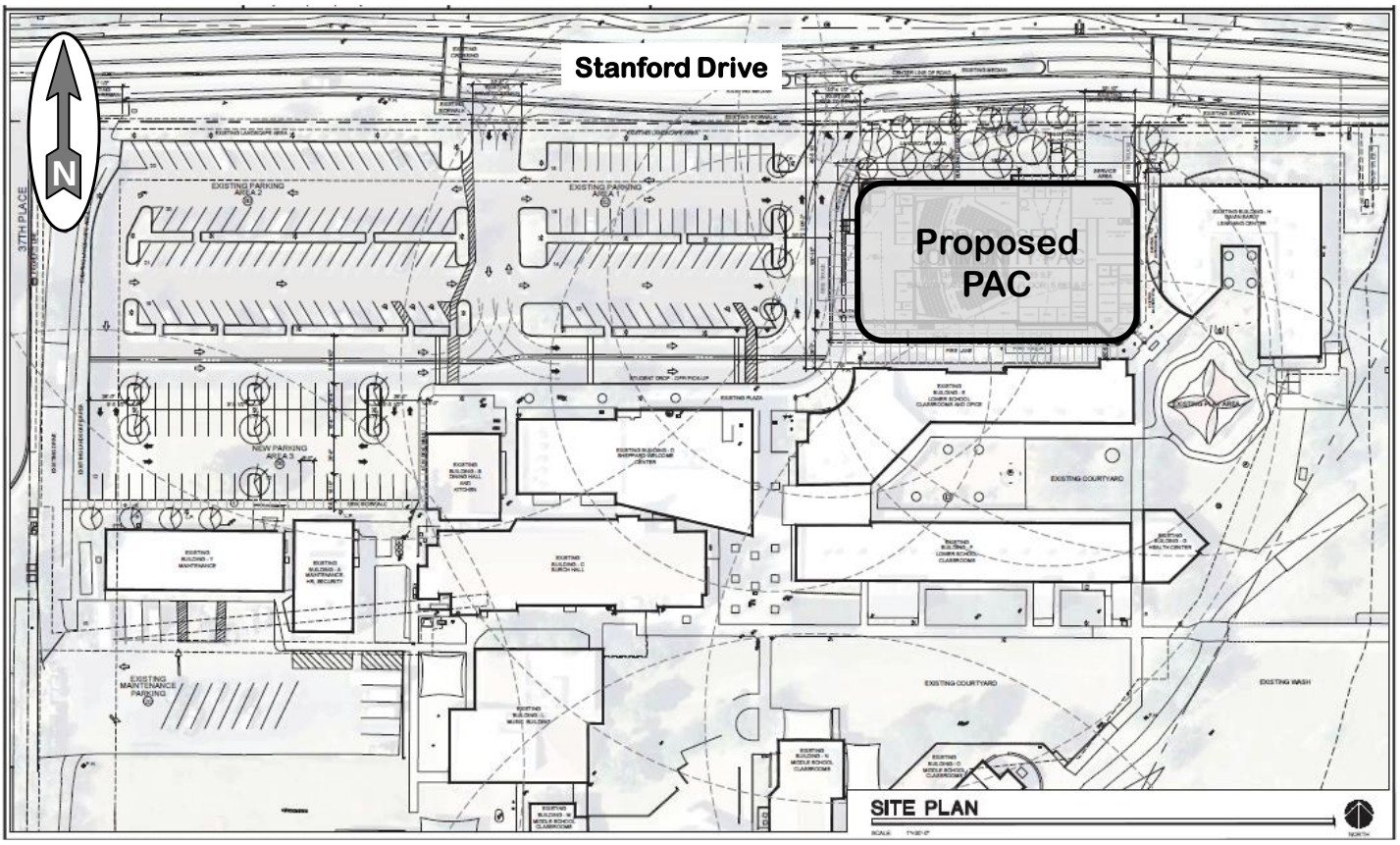


Figure 4: Phoenix Country Day School Performing Arts Center Site Plan

Collision Analysis

The historic collision experience for the study intersection were analyzed. The collision data for calendar years 2015 through 2022. The summary data provided by the Arizona Department of Transportation does not provide travel direction and injury severity for every collision.

Appendix A provides the complete collision data. **Table 3**, **Table 4**, and **Table 5** respectively provide the collision manner and travel direction summaries for all years. Not all collision report summaries include travel directions. The manner of collision and the travel directions of involved vehicles with a higher portion of total collisions are highlighted in black.

Table 3: Collision Manner History Summary: 2015 through 2022

	REAR-END	ANGLE	LEFT-TURN ANGLE	LEFT-TURN HEAD-ON	SIDE-SWIPE SAME	SIDE-SWIPE OPPOSITE	HEAD-ON	SINGLE VEHICLE	OTHER	TOTAL
2015	**0**	**0**	0	0	0	0	0	**1**	0	1
2016	**0**	**2**	0	0	0	0	0	**1**	0	3
2017	**0**	**1**	0	0	0	0	0	**4**	0	5
2018	**0**	**1**	0	0	1	0	0	**0**	0	2
2019	**0**	**0**	0	0	0	0	0	**0**	0	0
2020	**1**	**1**	0	0	1	0	0	**2**	1	6
2021	**2**	**1**	0	0	0	0	0	**1**	0	4
2022	**0**	**1**	0	0	0	0	0	**0**	0	1
TOTAL	**3**	**7**	0	0	2	0	0	**9**	1	22
PORTION	**14%**	**32%**	0%	0%	9%	0%	0%	**41%**	5%	100%

Table 4: Collision Travel Direction Summary: 2015 through 2022

	2015	2016	2017	2018	2019	2020	2021	2022	TOTAL	PORTION
Northbound Only	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**2**	**11%**
Southbound Only	0	0	0	0	0	0	1	0	1	5%
Eastbound Only	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**2**	**11%**
Westbound Only	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**11%**
Northbound and Northbound	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**4**	**21%**
Southbound and Southbound	0	0	0	0	0	0	0	0	0	0%
Eastbound and Eastbound	0	0	0	0	0	0	0	1	1	5%
Westbound and Westbound	0	0	0	0	0	0	0	0	0	0%
Northbound and Eastbound	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**11%**
Northbound and Westbound	0	0	0	1	0	0	0	0	1	5%
Southbound and Eastbound	0	0	0	0	0	1	0	0	1	5%
Southbound and Westbound	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**3**	**16%**
Northbound and Southbound	0	0	0	0	0	0	0	0	0	0%
Eastbound and Westbound	0	0	0	0	0	0	0	0	0	0%
TOTAL	0	2	4	2	0	6	4	1	19	100%

Table 5: Collision Injury Severity Total of 2015 through 2022

SEVERITY	NUMBER	PORTION
No Injury	18	86%
Possible Injury	1	5%
Suspected Minor Injury	2	10%
Suspected Serious Injury	0	0%
Fatal Injury	0	0%
Unknown	0	0%
Not Reported	0	0%
TOTAL	21	100%

Collisions are irregular and infrequent events. Over the past eight (8) years, the average number of collisions-per-year at the 40th / Stanford intersection was 2.75, varying from a high of six (6) in 2020 and a low of zero (0) in 2019. The roundabout was constructed between February 2013 and January 2015, so all the provided collision data is with the roundabout.

There were no fatal or suspected serious injuries, which is typical for roundabouts.

The dominant collision type is single-vehicle, which is unusual, involving nine (9) of the 22 collisions. There were seven (7) angle collisions (one vehicle on 40th Street and the other vehicle on Stanford Drive) over the eight (8) years, three (3) rear-end, two (2) side-swipe-same-direction, and one (1) other.

Of the single-vehicle collisions, one (1) occurred in 2015, and the ADOT collision summaries lists most characteristics as unknown. One (1) occurred in 2016, and involved a westbound truck on 8/16 at 11:25 AM, with no citations indicated. In 2017, four (4) single-vehicle collisions occurred: one each were listed as: unknown, eastbound, westbound, and northbound. In one collision the driver of one vehicle was cited for both Speed Too Fast For Conditions and Failure to Keep in Proper Lane. In one collision, one driver was cited for Failure to Keep in Proper Lane. In another collision, one driver was cited for Speed Too Fast For Conditions.

No single-vehicle collisions occurred at 40th / Stanford in either 2018 or 2019. In 2020, two (2) single-vehicle collisions occurred: one (1) involved an eastbound vehicle with the driver cited for Failure to Keep in Proper Lane. The other 2020 collision involved a northbound vehicle with the driver cited for Speed Too Fast For Conditions. One (1) single-vehicle collision occurred in 2021, which involved a southbound vehicle with the driver cited for Made Improper Turn. No single-vehicle collisions occurred at the 40th / Stanford intersection in 2022.

There are no patterns of collision manner or travel direction. Therefore, no mitigation is necessary or appropriate. While all collisions should be prevented, the primary collision cause is poor driver behavior. The recommendation is that no changes of the intersection design or operation should occur.

Existing Traffic Volumes

Traffic counts were obtained on 29 August 2023. **Appendix B** provides the turning movement counts for 24 hours in 15-minute increments for the study intersection. **Figure 5** provides a graph of the hourly volumes for each hour for 24 hours.

Figure 6 provides a graph of the hourly volumes for 24 hours. The **Figure 6** graph provides 60-minute volumes for every 15-minute period from 6:00 AM through 7:30 PM.

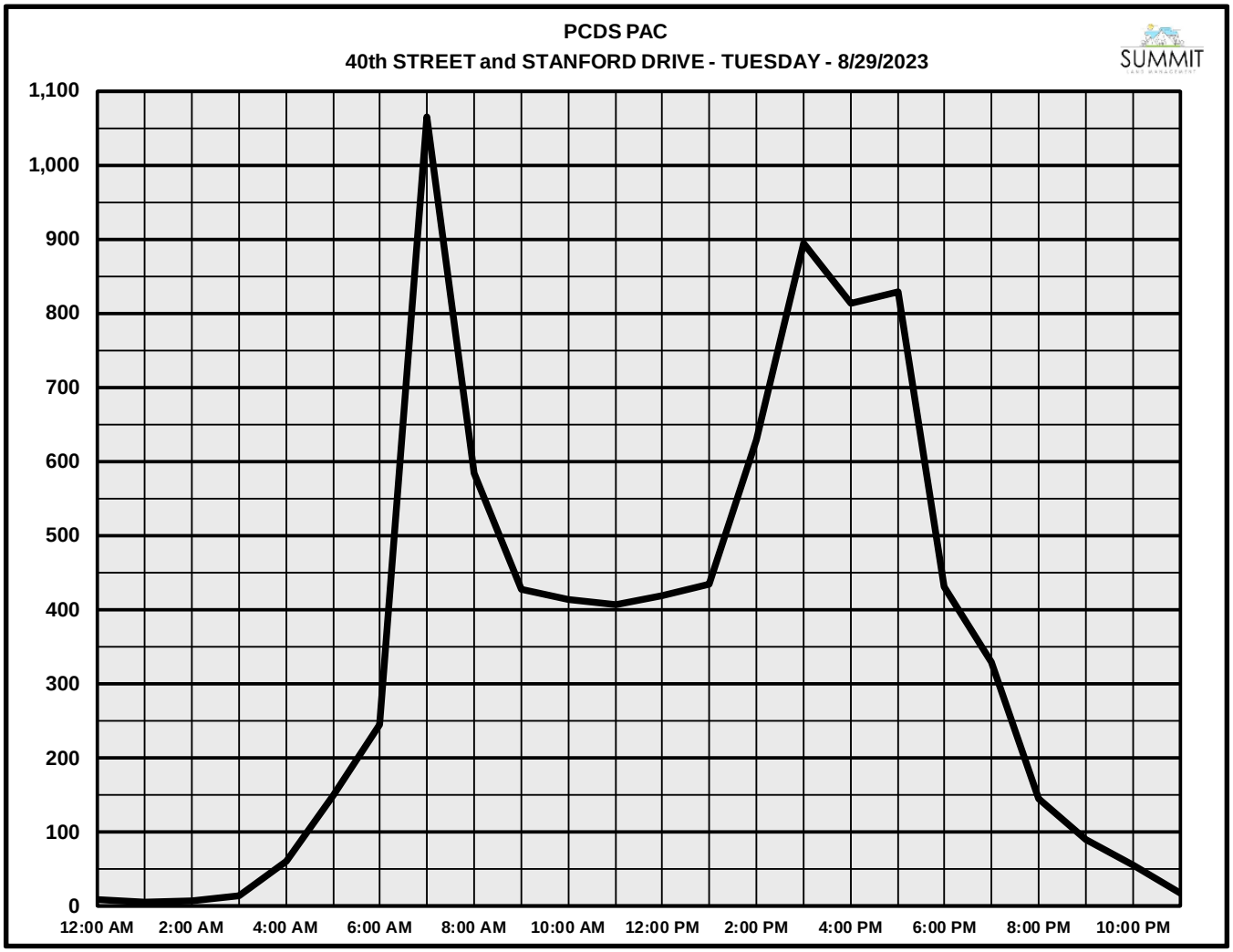


Figure 5: 24 Hour Counts at 40th / Stanford

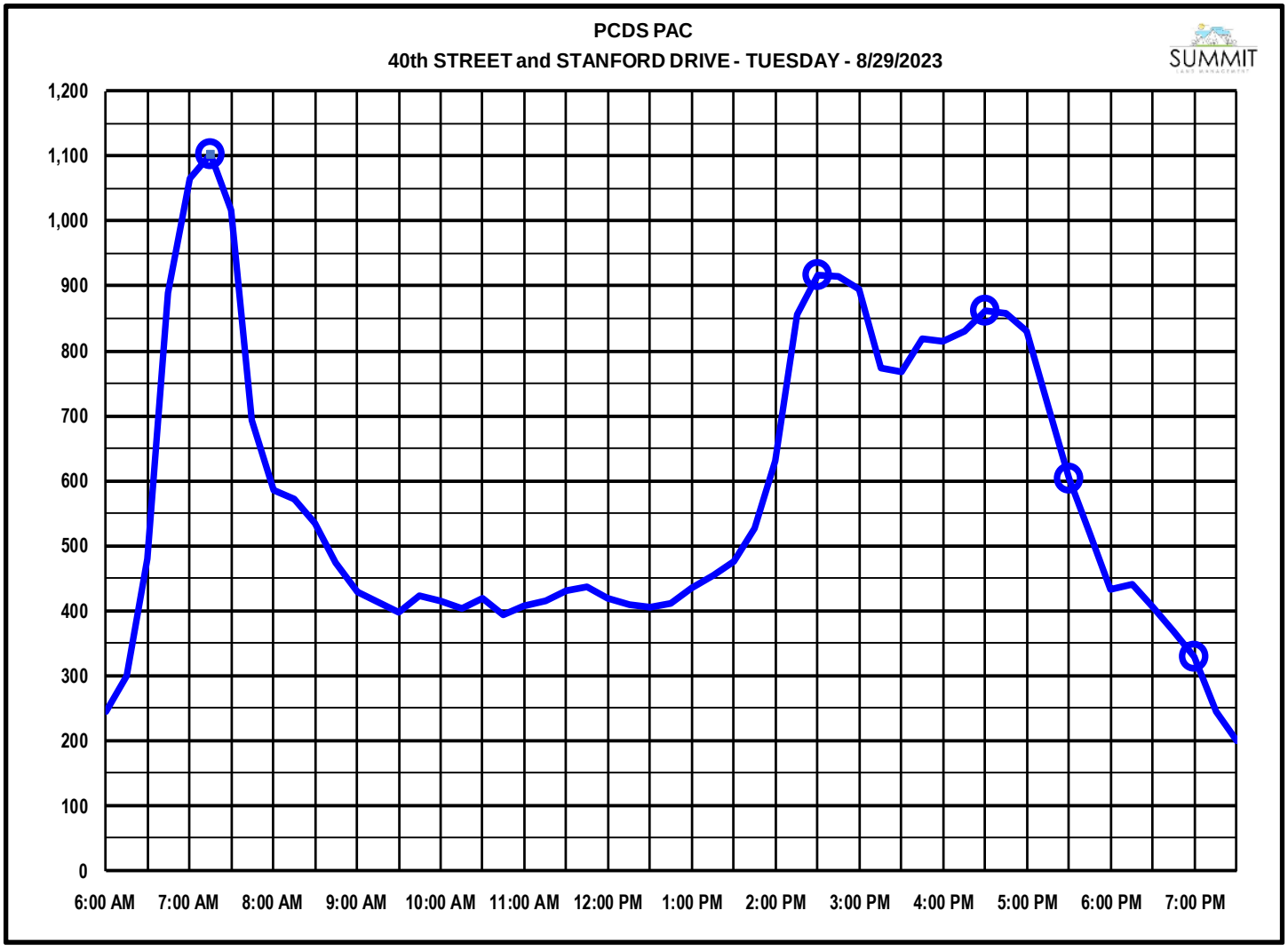


Figure 6: 6:00 AM to 7:30 PM 60-Minute Counts at 40th / Stanford with Analyzed Hours Indicated

Table 6 provides the three (3) highest hourly volumes with their respective time period. **Table 6** also provides two additional hours and their respective hourly volumes. These additional hours are assumed to be the arrival and departure times of events at the proposed Performing Arts Center. These hours are earlier than are anticipated. However, they were selected for analysis to ensure a conservative analysis.

Table 6: Peak Traffic Hours at 40th / Stanford

TIME PERIOD		TOTAL VOLUME
7:15 AM to 8:15 AM	Highest	1,103
2:30 PM to 3:30 PM	2nd Highest	917
4:30 PM to 5:30 PM	3rd Highest	862
5:30 PM to 6:30 PM	Additional	603
7:00 PM to 8:00 PM	Additional	329

Later hours, closer to the actual beginning and ending of events, would have lower ambient traffic volumes at 40th Street and Stanford Drive.

Figure 7 through **Figure 15** provide the existing 2023 day approach and departure volumes, and the approach and departure, and turning movement volumes for the five (5) analyzed hours.

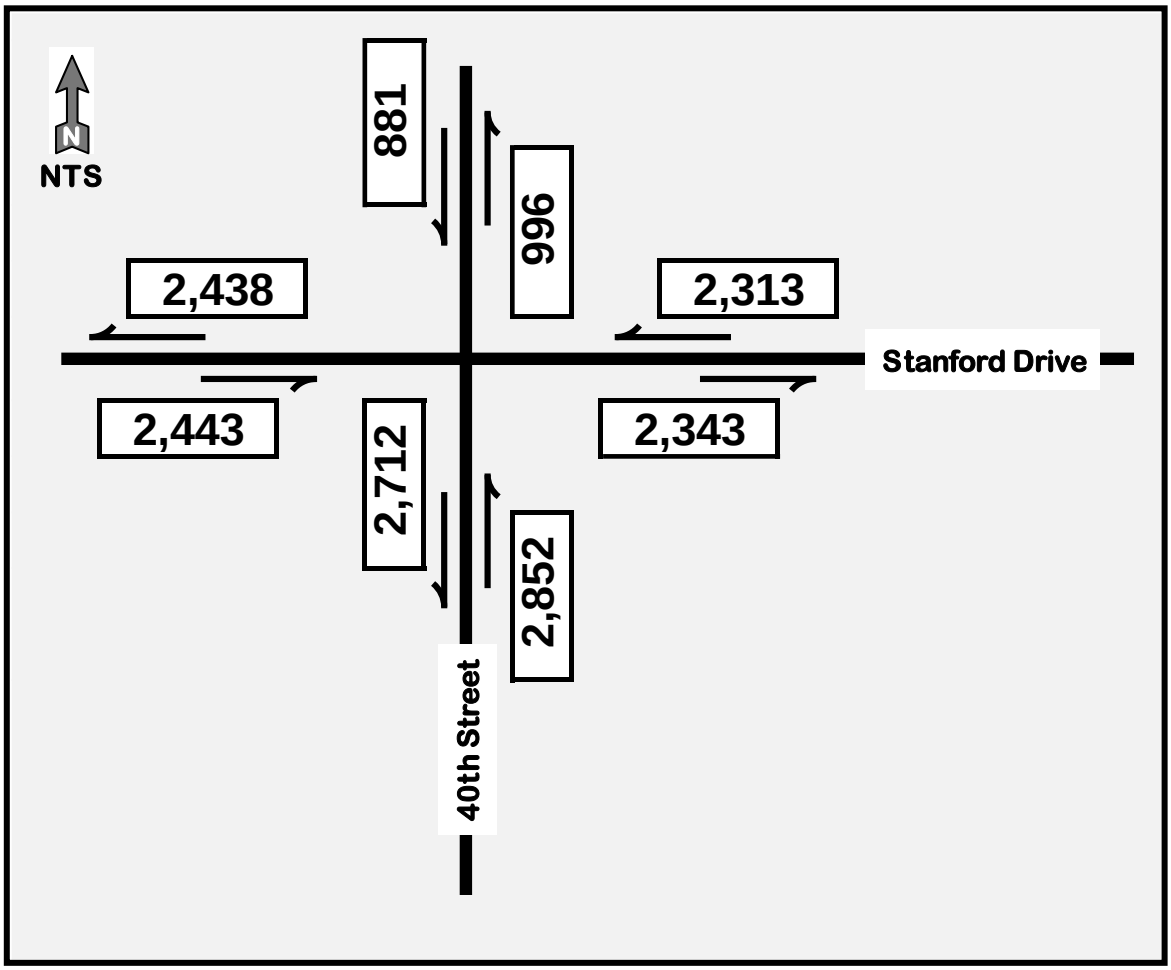


Figure 7: Existing 2023 Day Approach and Departure Volumes

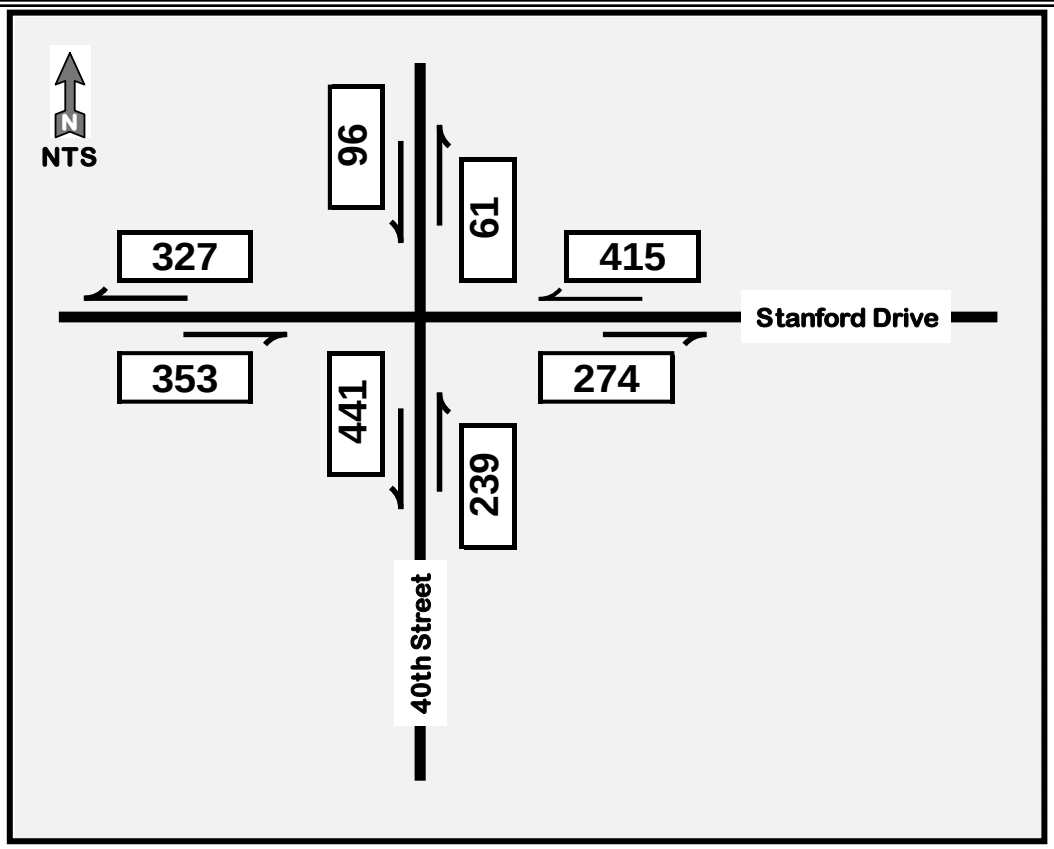


Figure 8: Existing 2023 7:15 to 8:15 AM Peak Hour Approach and Departure Volumes

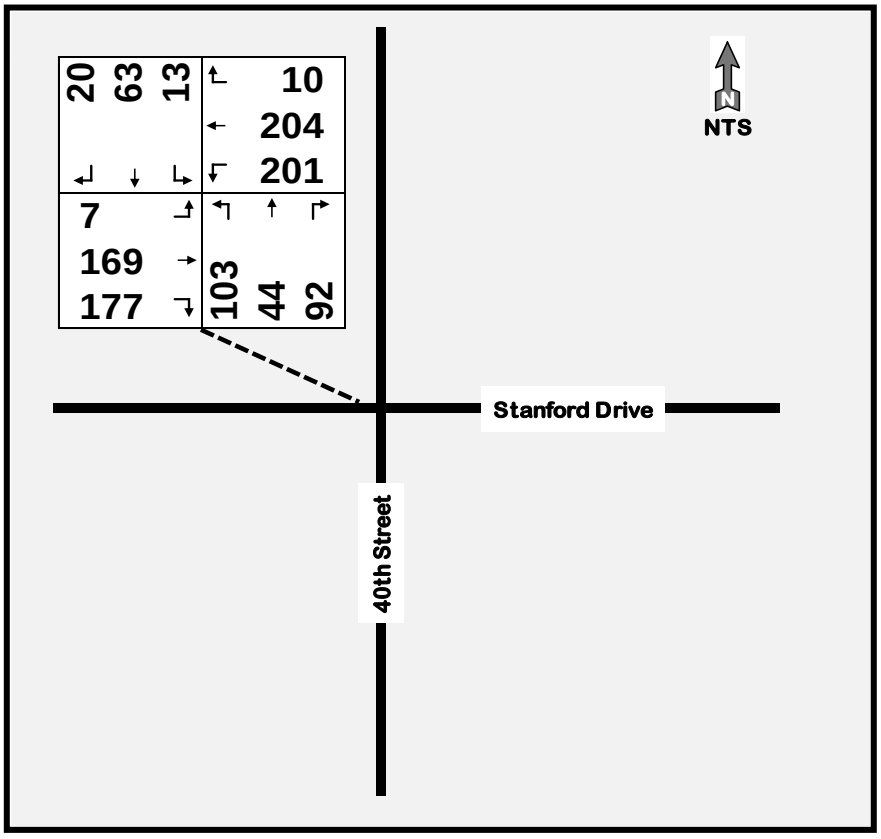


Figure 9: Existing 2023 7:15 to 8:15 AM Peak Hour Turning Movement Volumes

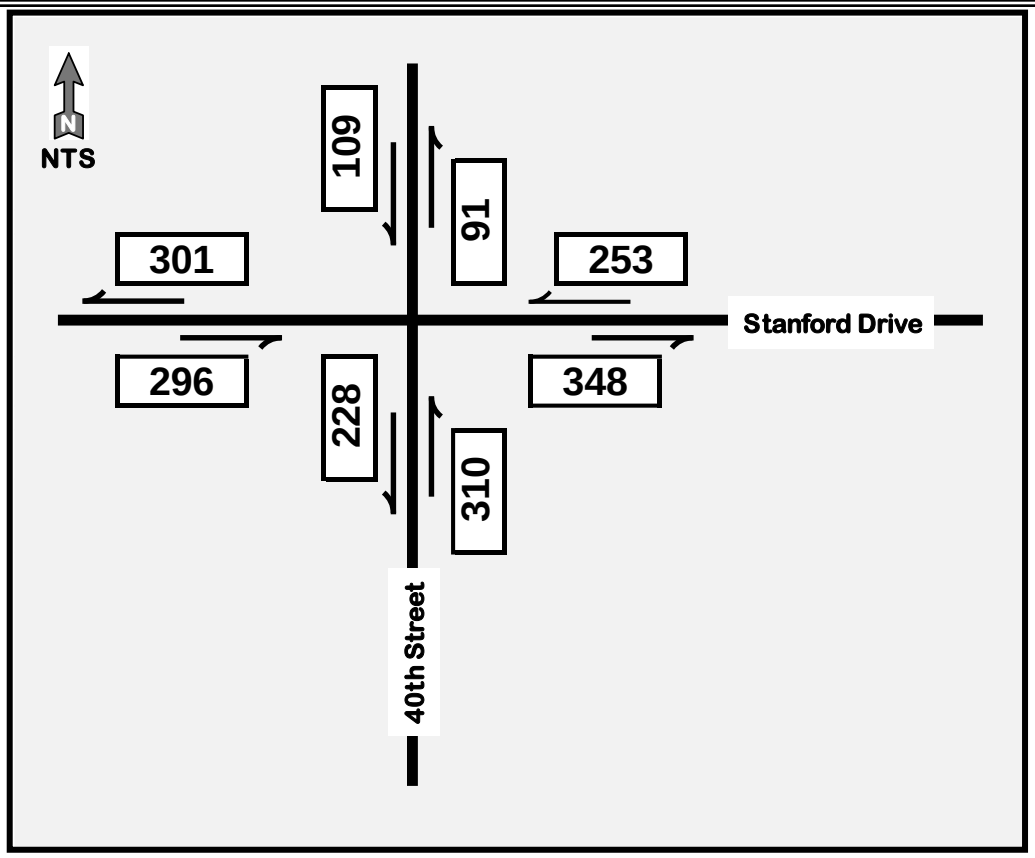


Figure 10: Existing 2023 2:30 to 3:30 PM Peak Hour Approach and Departure Volumes

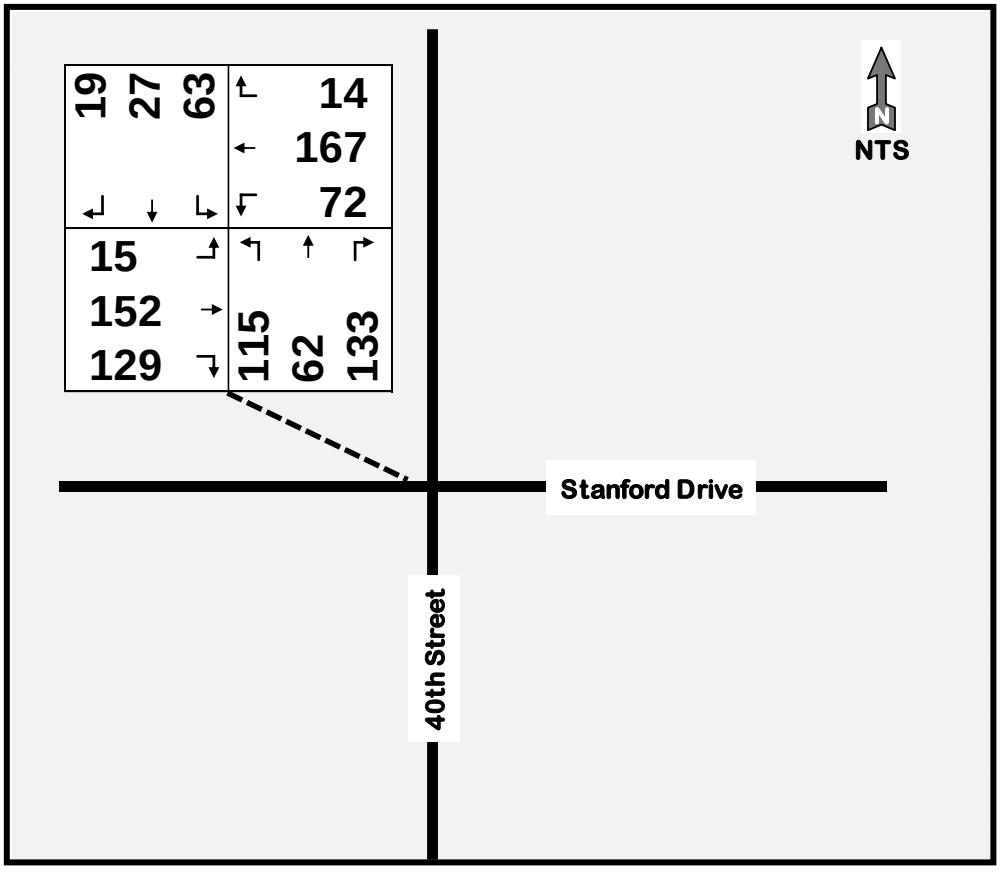


Figure 11: Existing 2023 2:30 to 3:30 PM Peak Hour Turning Volumes

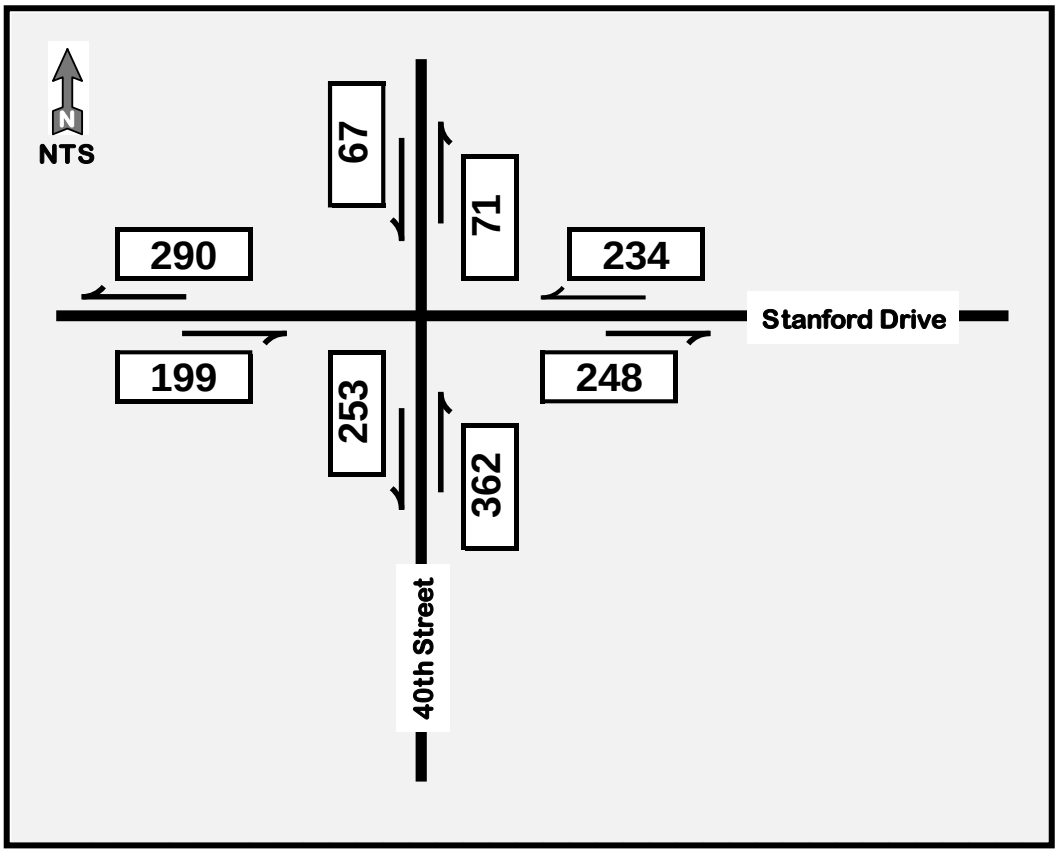


Figure 12: Existing 2023 4:30 to 5:30 PM Peak Hour Approach and Departure Volumes

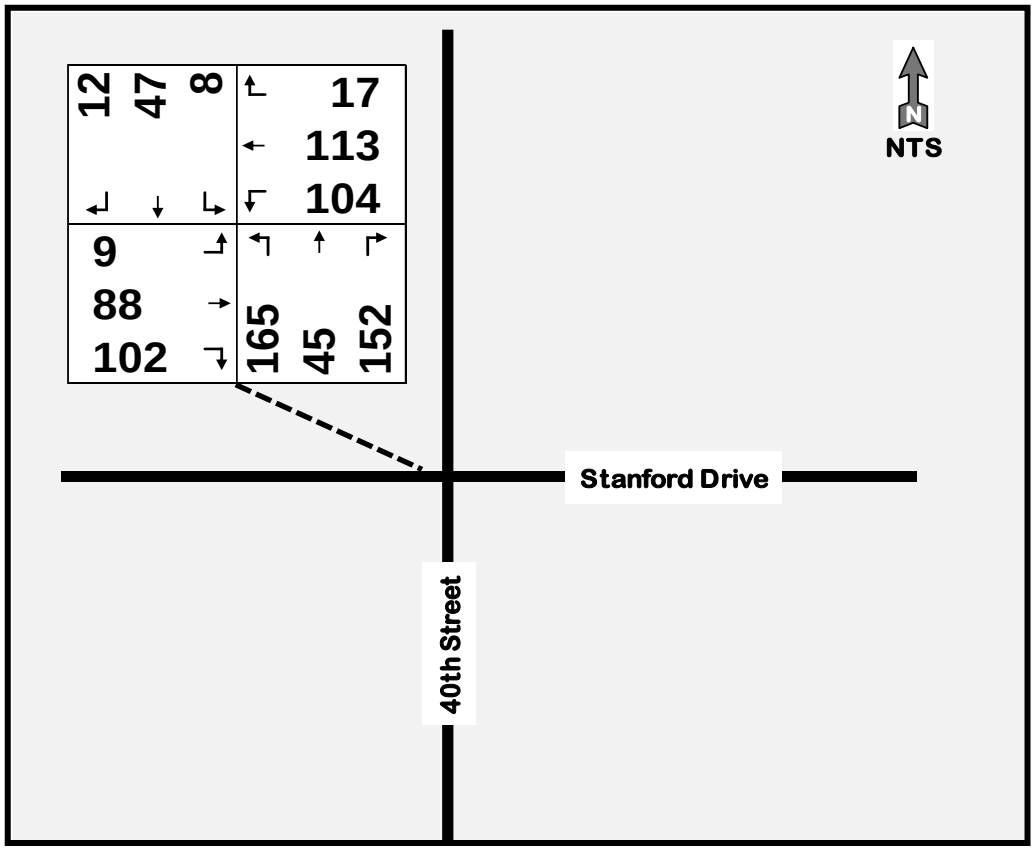


Figure 13: Existing 2023 4:30 to 5:30 PM Peak Hour Turning Volumes

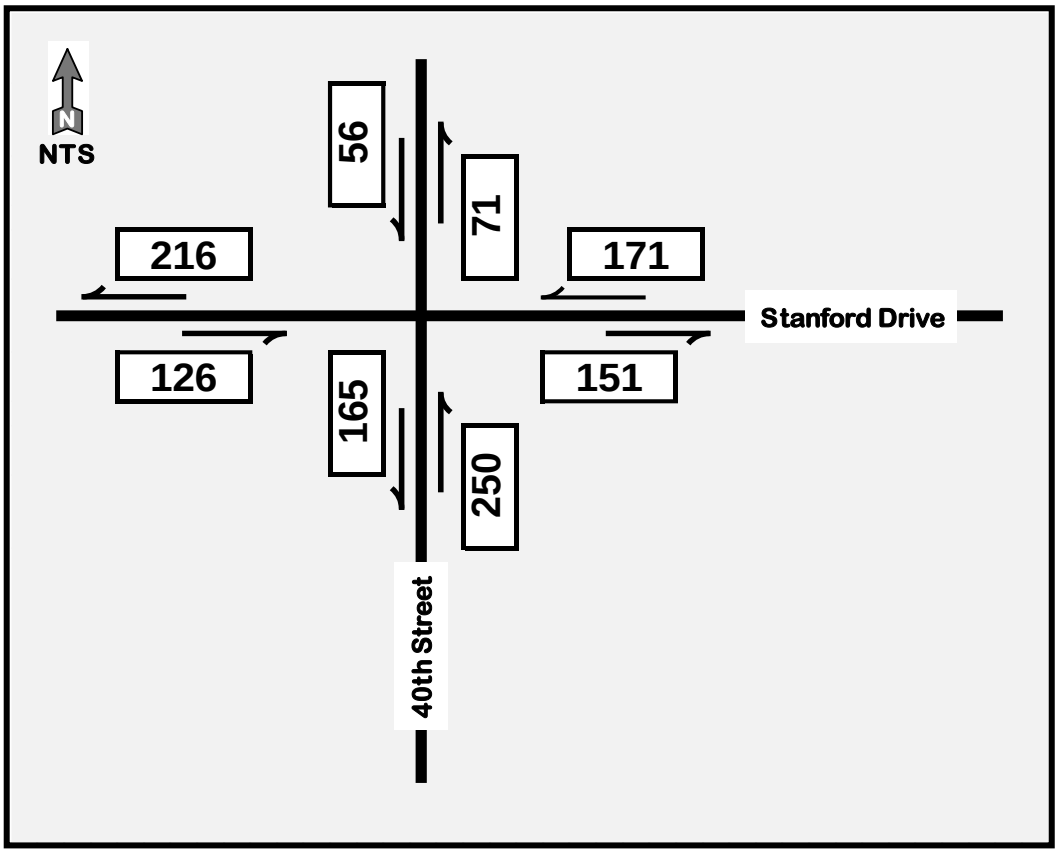


Figure 14: Existing 2023 5:30 to 6:30 PM Peak Hour Approach and Departure Volumes

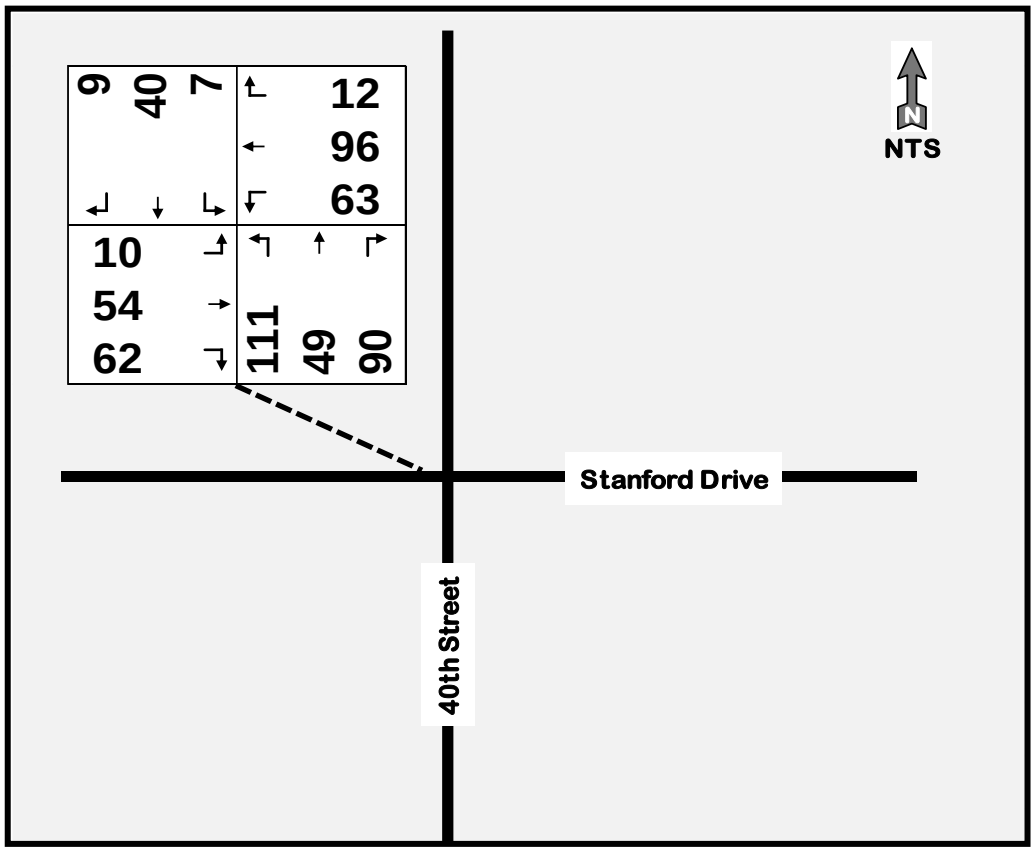


Figure 15: Existing 2023 5:30 to 6:30 PM Peak Hour Turning Volumes

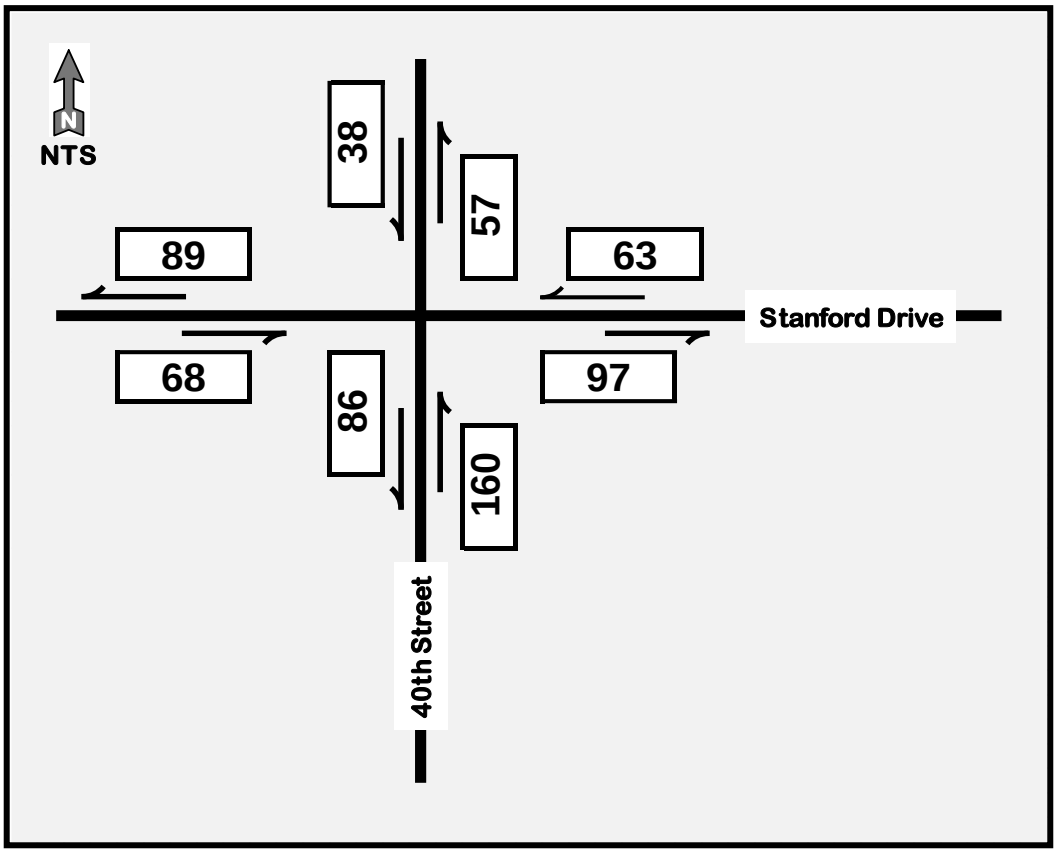


Figure 16: Existing 2023 7:00 to 8:00 PM Peak Hour Approach and Departure Volumes

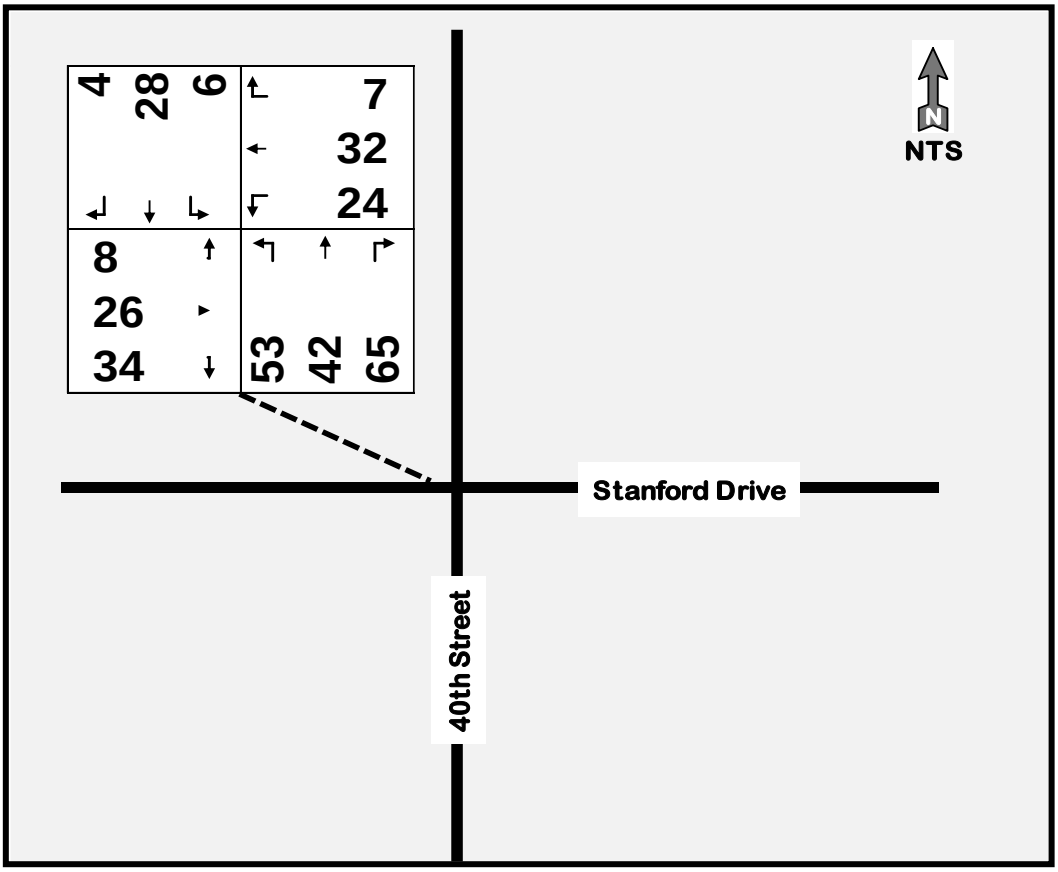


Figure 17: Existing 2023 7:00 to 8:00 PM Peak Hour Turning Volumes

Because traffic counts vary from month-to-month, often monthly factors are utilized to adjust a specific count month to an average for the year. Monthly factors were developed by the Maricopa Association of Governments in 2007.

Table 7 provides these monthly factors. These factors indicate that counts in January, September, and October are the closest to typical. Counts in August are 97.5% of typical.

The traffic counts occurred on 29 August; and therefore, each turning movement count was divided by 0.975 to represent the typical weekday traffic volume for the entire year.

Figure 18 through **Figure 28** provide the adjusted 2023 day approach and departure, the peak hour approach and departure volumes, and turning movement volumes for the five (5) study hours.

Table 7: Monthly Factors

	Factor
January	1.003
February	1.045
March	1.040
April	1.044
May	1.022
June	0.972
July	0.930
August	0.975
September	0.995
October	0.994
November	1.008
December	0.974

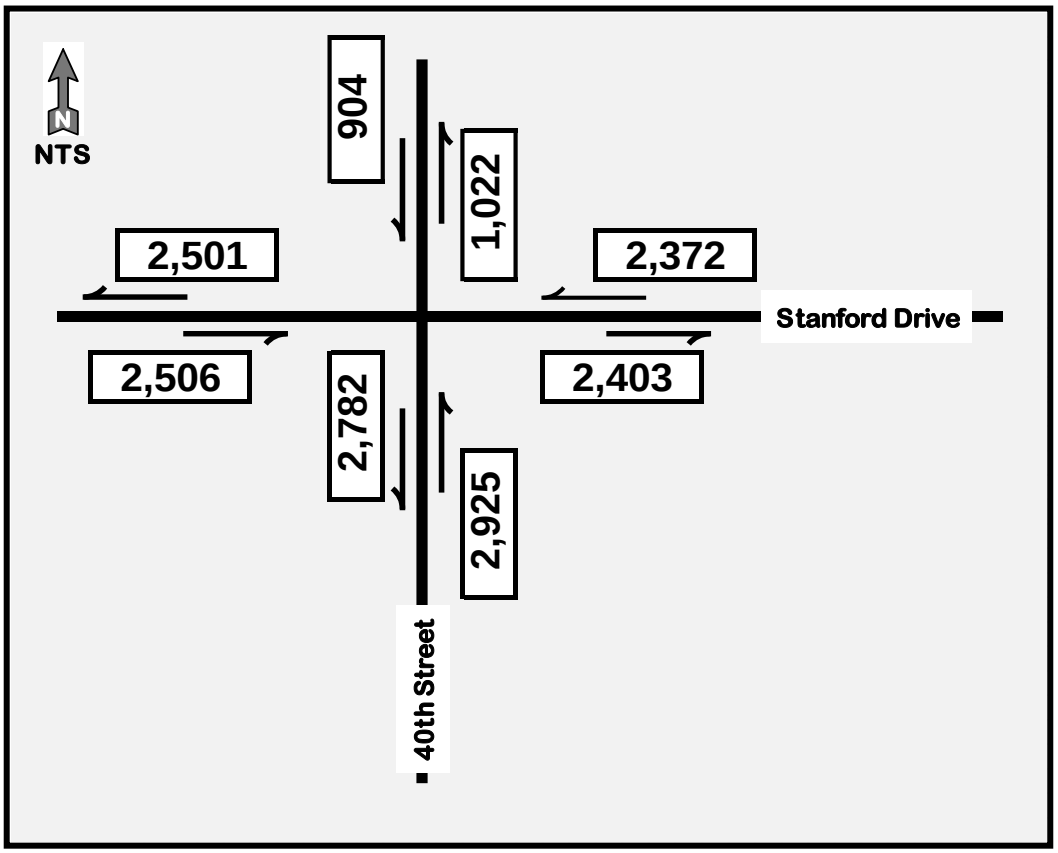


Figure 18: Adjusted 2023 Day Approach and Departure Volumes

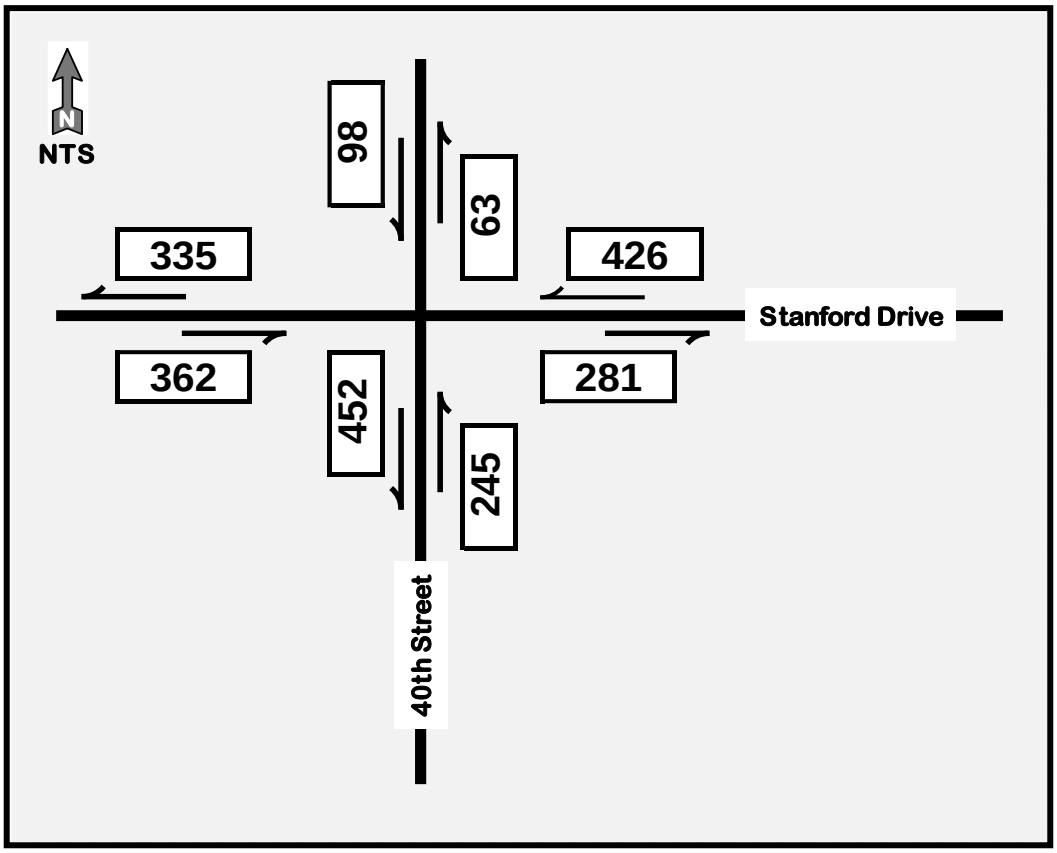


Figure 19: Adjusted 2023 7:15 to 8:15 AM Peak Hour Approach and Departure Volumes

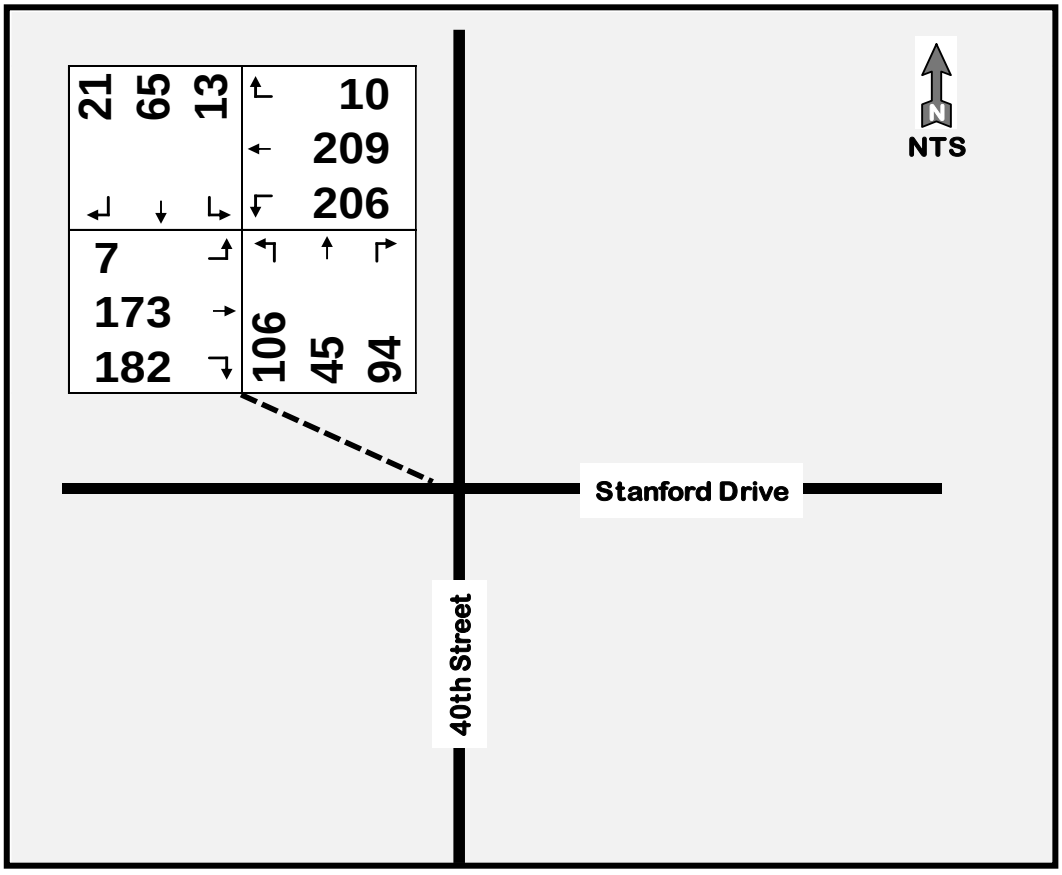


Figure 20: Adjusted 2023 7:15 to 8:15 AM Peak Hour Turning Movement Volumes

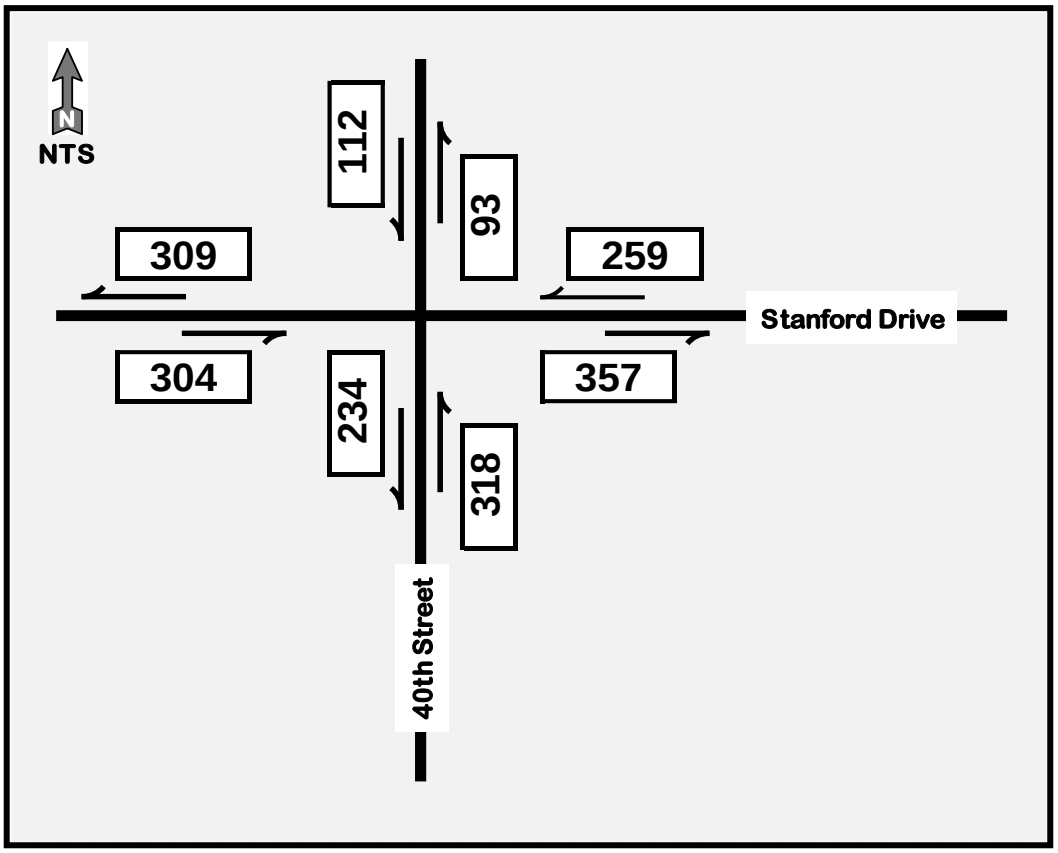


Figure 21: Adjusted 2023 2:30 to 3:30 PM Peak Hour Approach and Departure Volumes

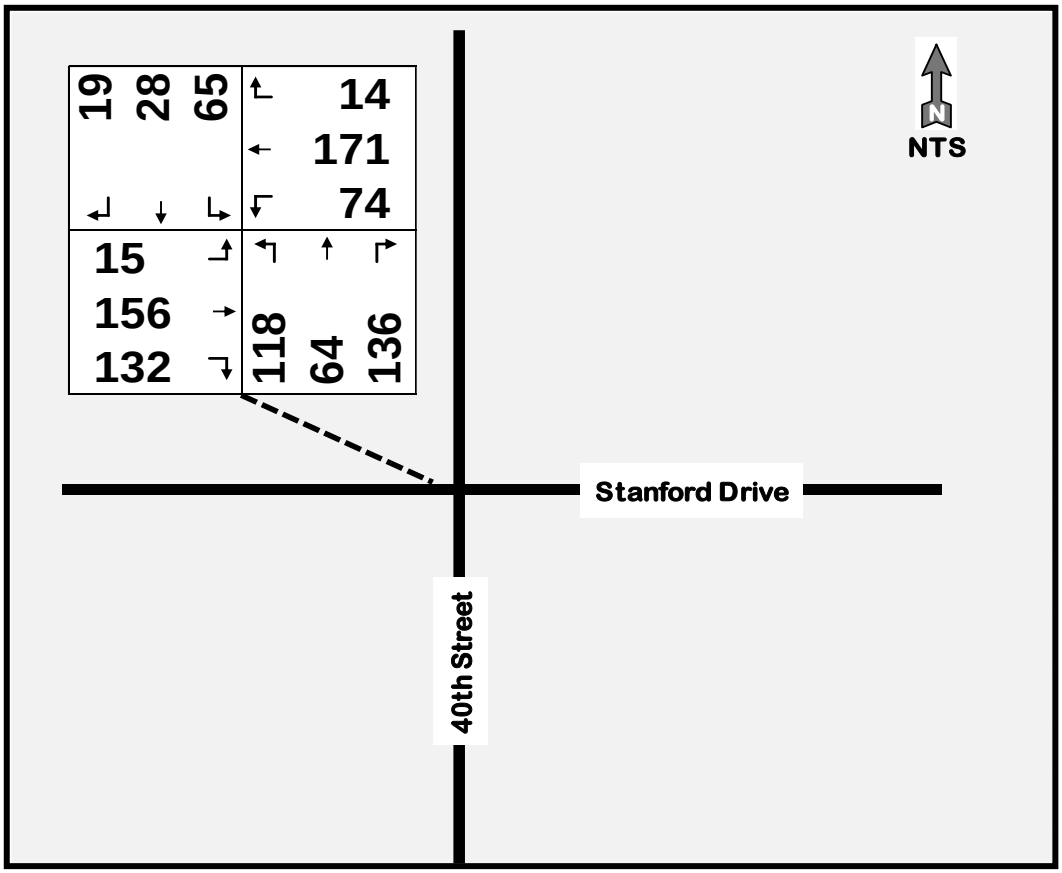


Figure 22: Adjusted 2023 2:30 to 3:30 PM Peak Hour Turning Volumes

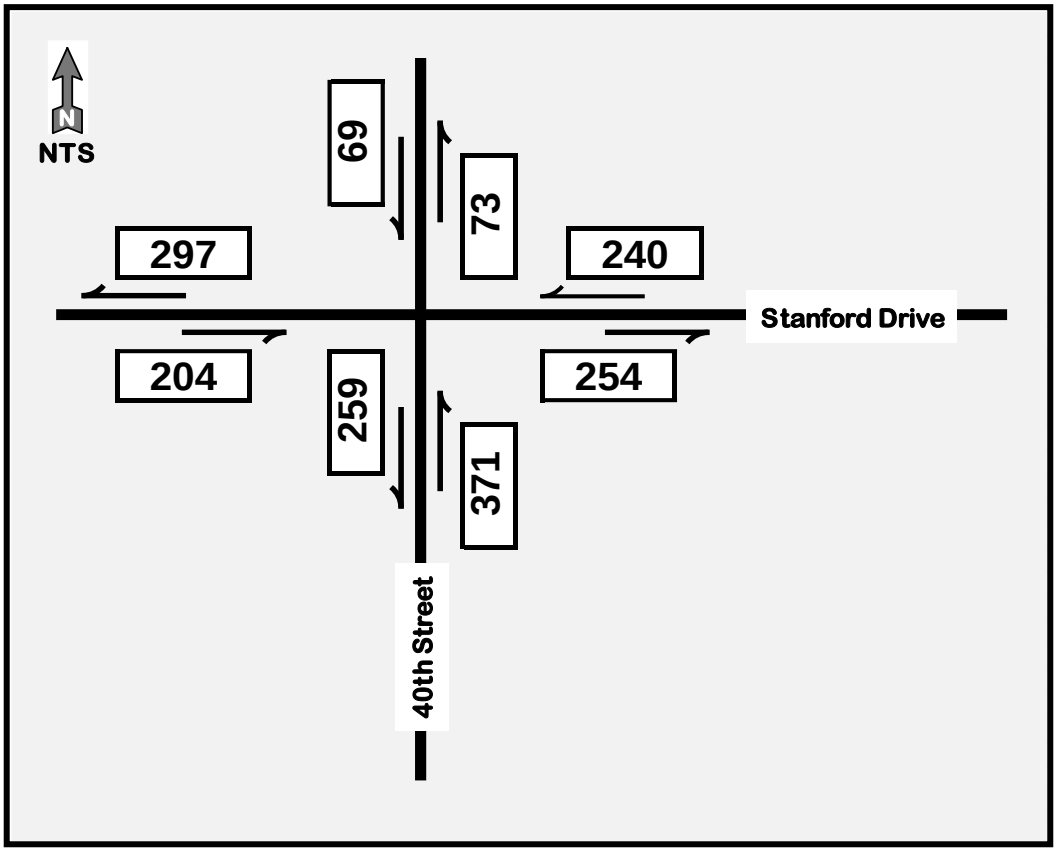


Figure 23: Adjusted 2023 4:30 to 5:30 PM Peak Hour Approach and Departure Volumes

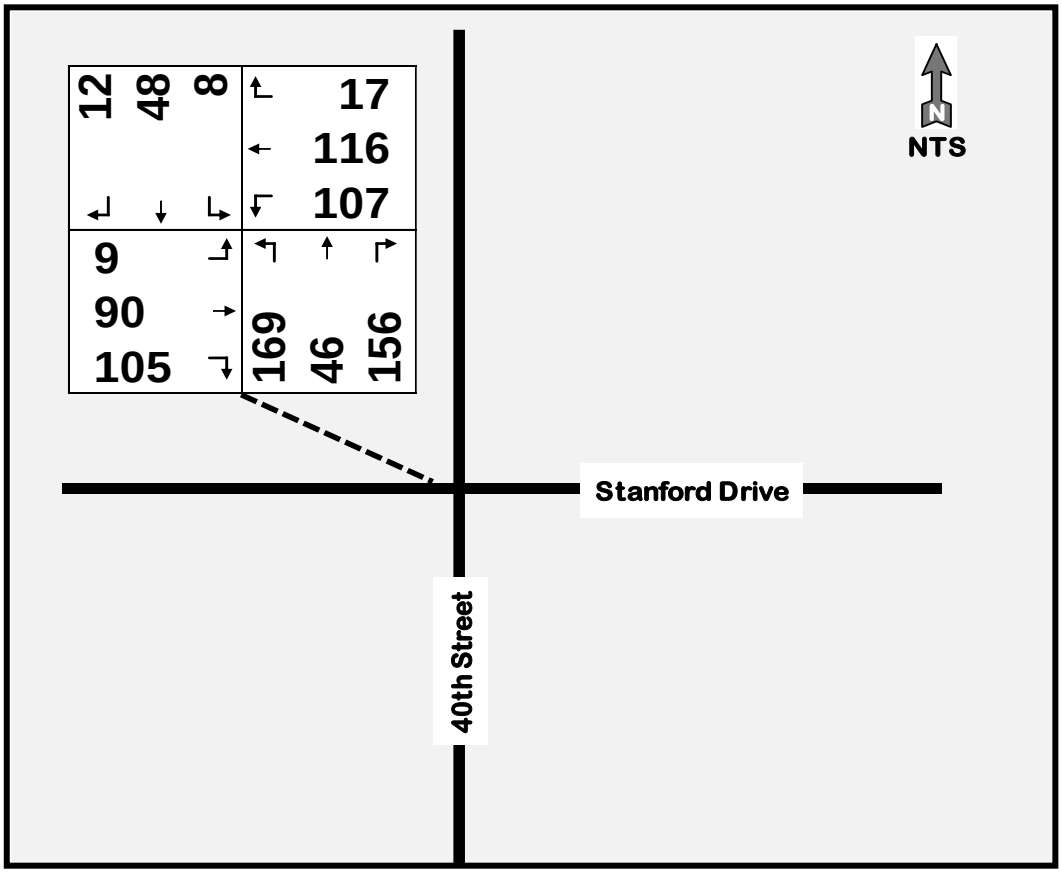


Figure 24: Adjusted 2023 4:30 to 5:30 PM Peak Hour Turning Volumes

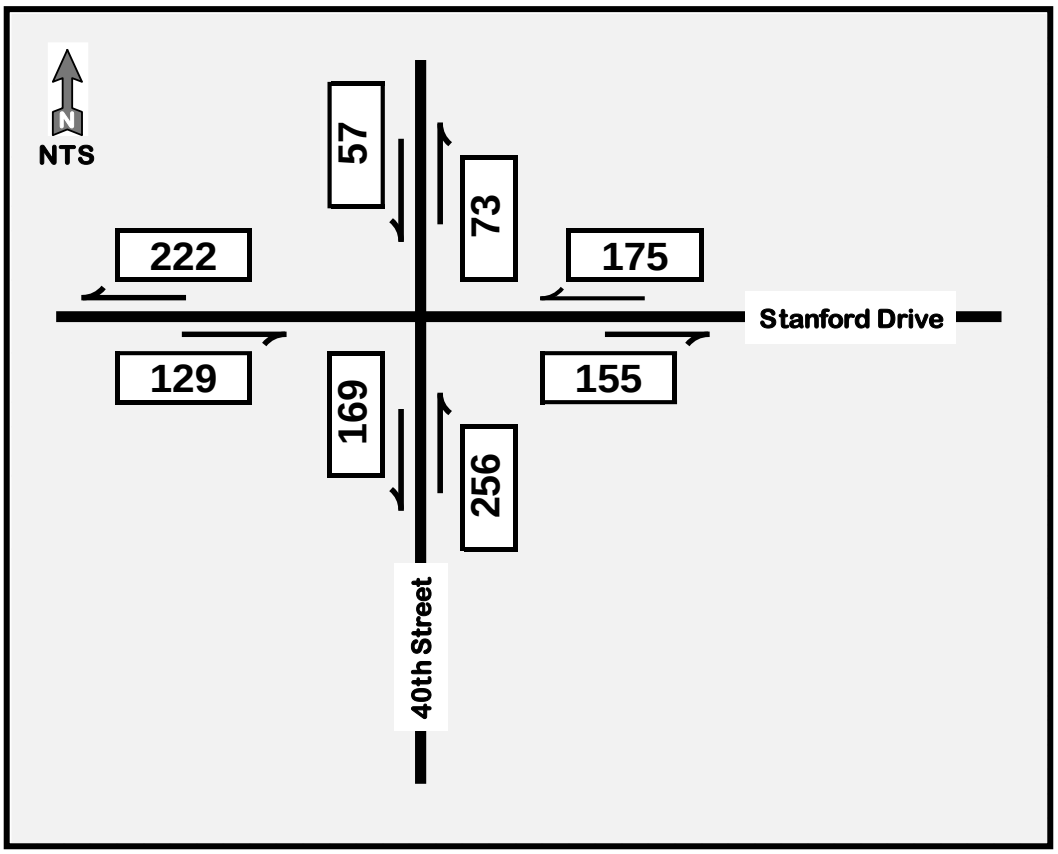


Figure 25: Adjusted 2023 5:30 to 6:30 PM Peak Hour Approach and Departure Volumes

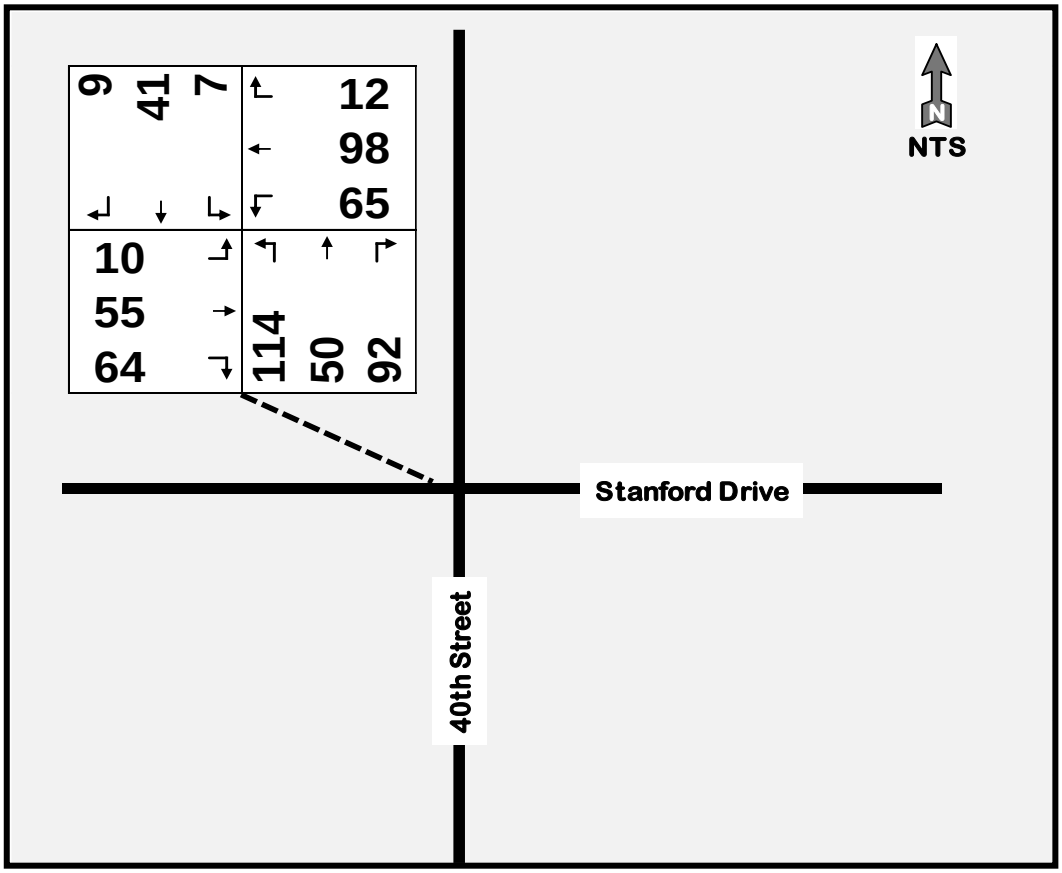


Figure 26: Adjusted 2023 5:30 to 6:30 PM Peak Hour Turning Volumes

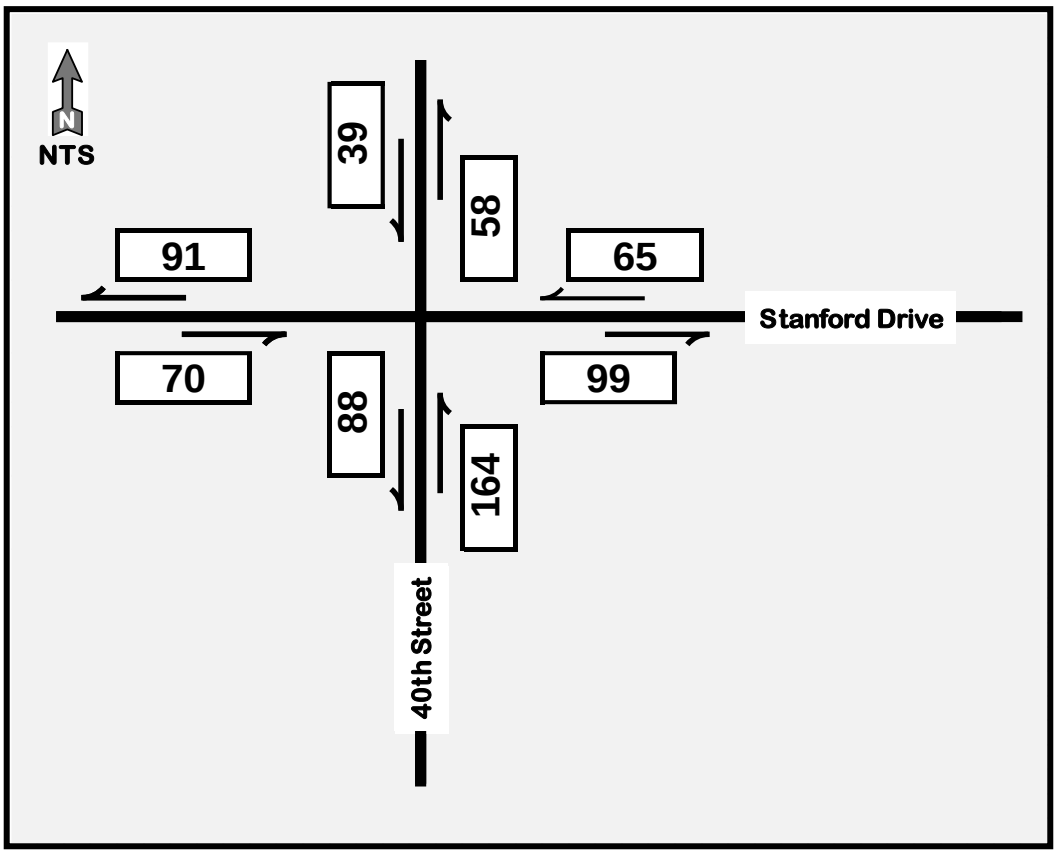


Figure 27: Adjusted 2023 7:00 to 8:00 PM Peak Hour Approach and Departure Volumes

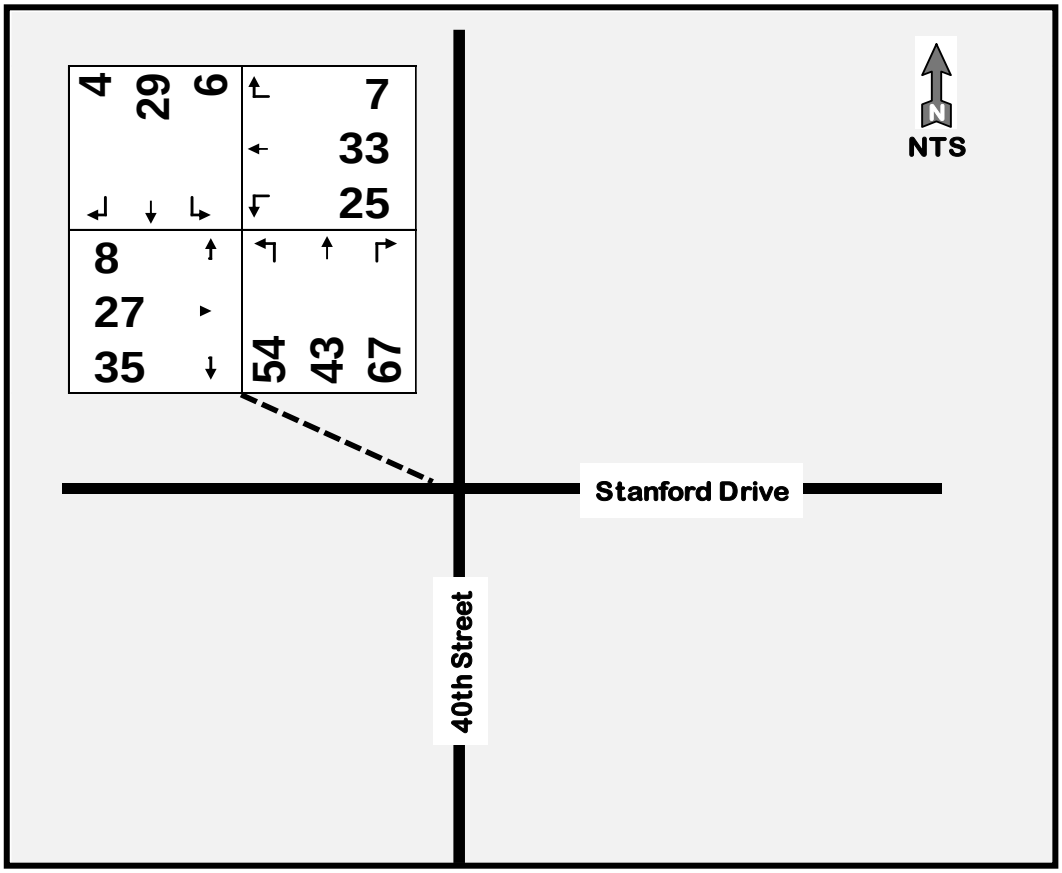


Figure 28: Adjusted 2023 7:00 to 8:00 PM Peak Hour Turning Volumes

Future Ambient 2025

To determine the future 2025 traffic volumes, a 2% linear increase was applied to each Adjusted 2023 approach volume, and the turning movement volumes were determined by the same ratio as the Adjusted 2023 volumes. The 2025 approach volumes and turning movement volumes were approximately to the nearest 10 vehicles-per-hour and to a minimum volume of 10 vehicles-per-hour.

Figure 29 through **Figure 39** provide the ambient 2025 traffic volumes.

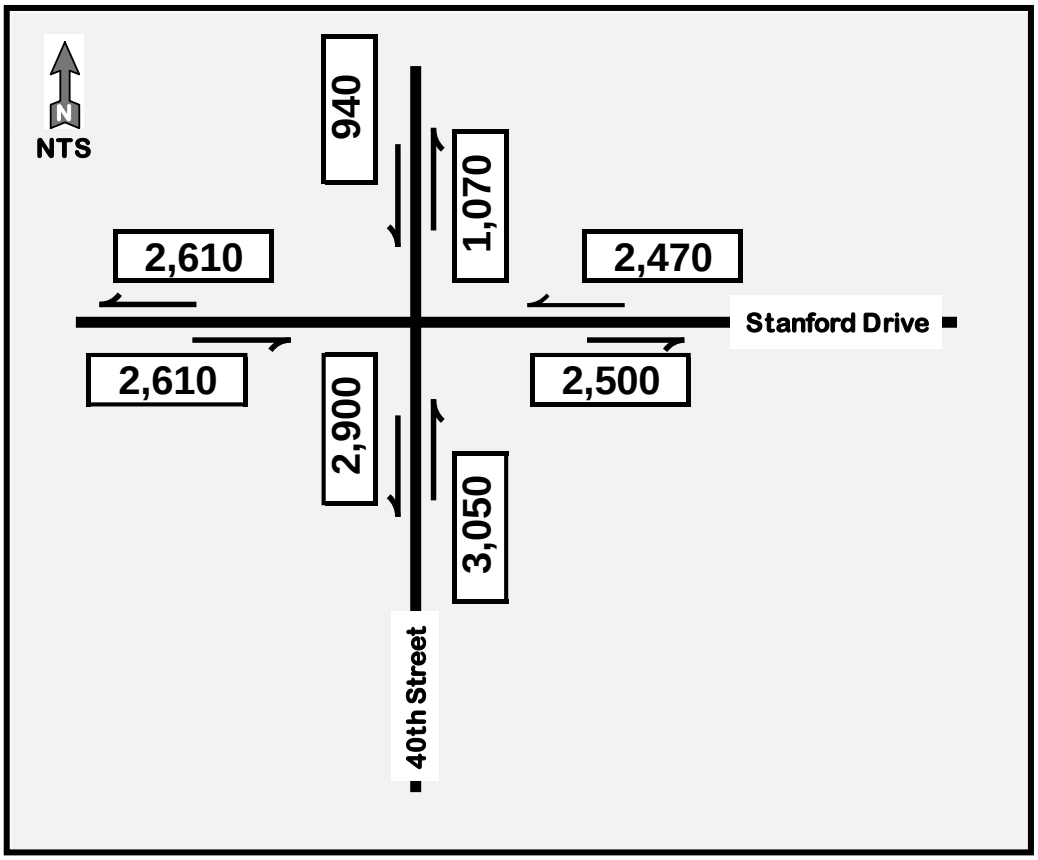


Figure 29: Ambient 2025 Day Approach and Departure Volumes

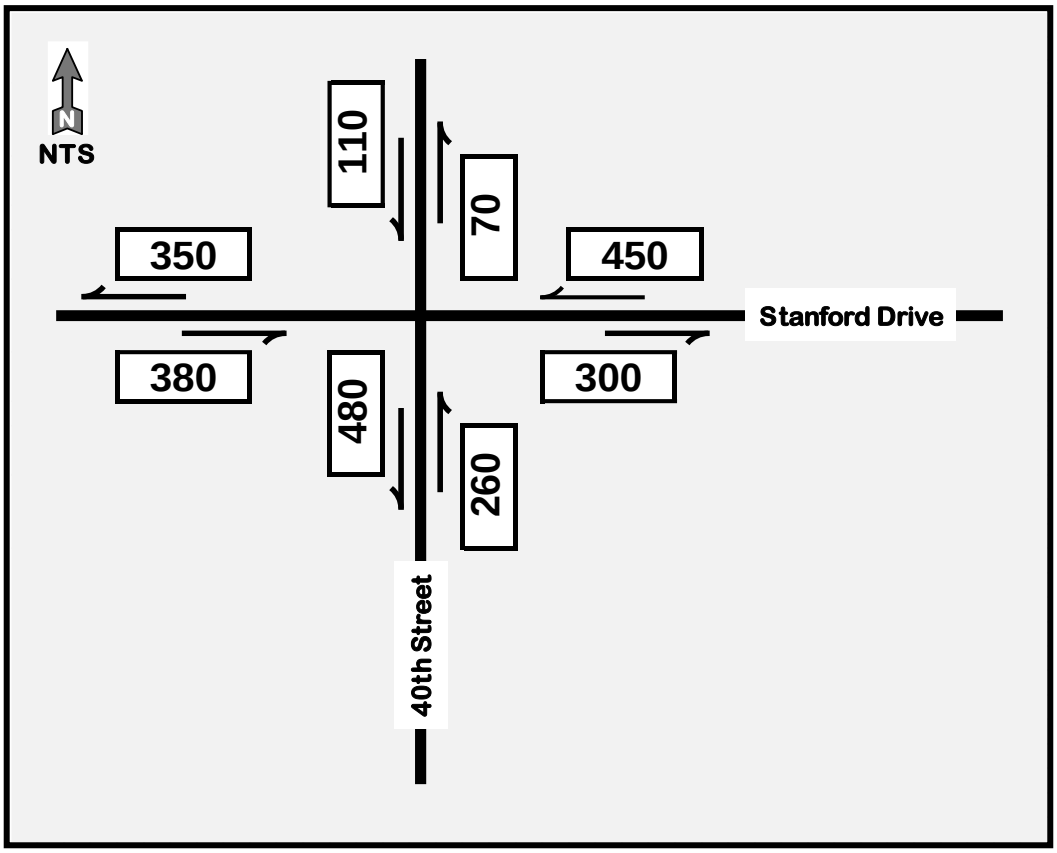


Figure 30: Ambient 2025 7:15 to 8:15 AM Peak Hour Approach and Departure Volumes

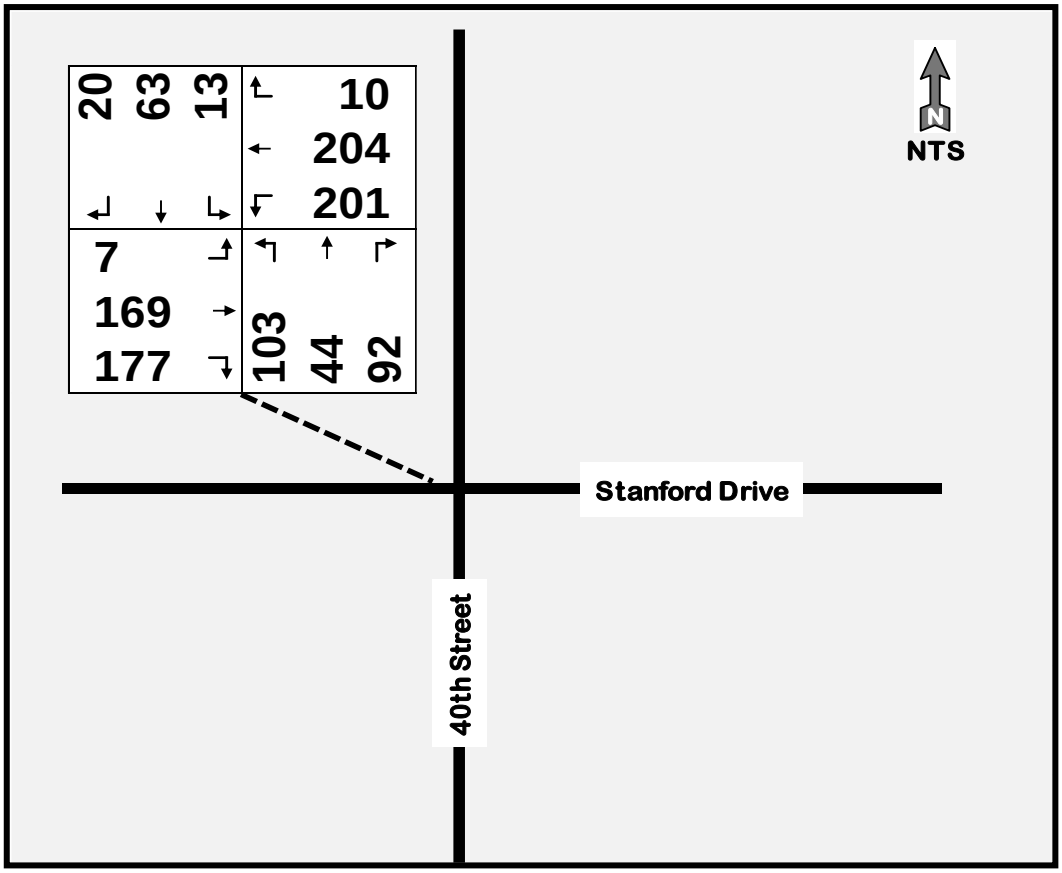


Figure 31: Ambient 2025 7:15 to 8:15 AM Peak Hour Turning Movement Volumes

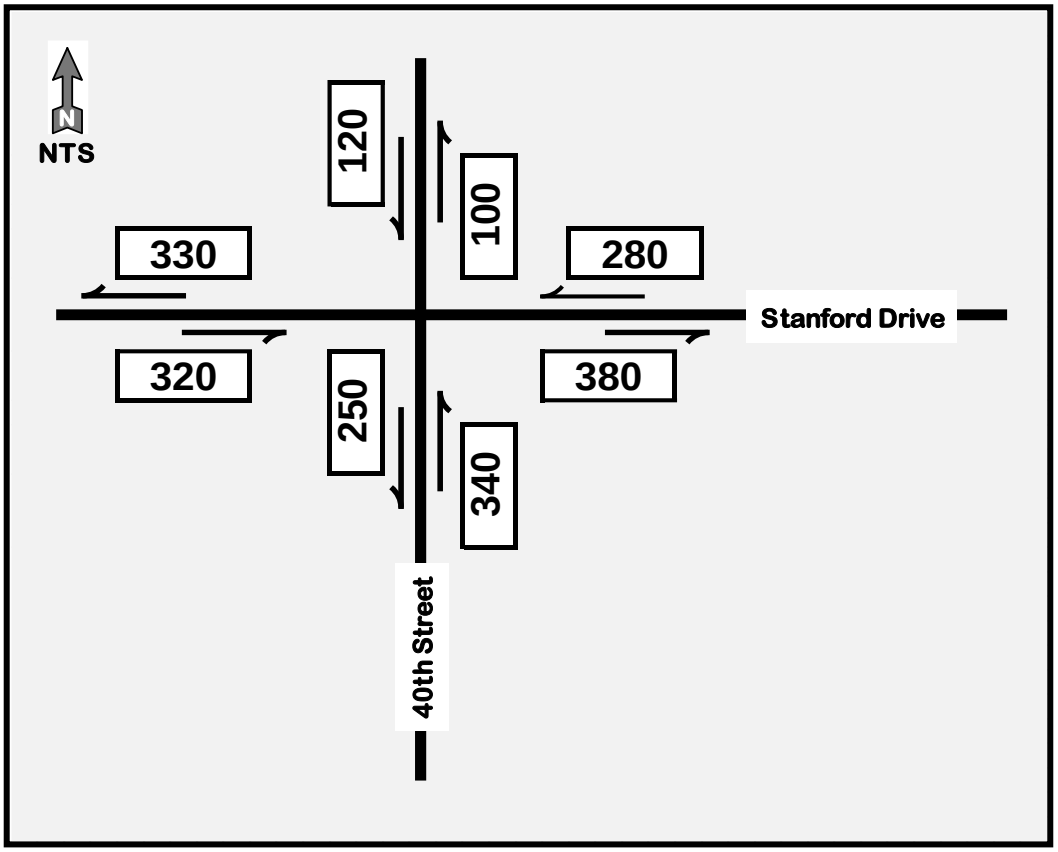


Figure 32: Ambient 2025 2:30 to 3:30 PM Peak Hour Approach and Departure Volumes

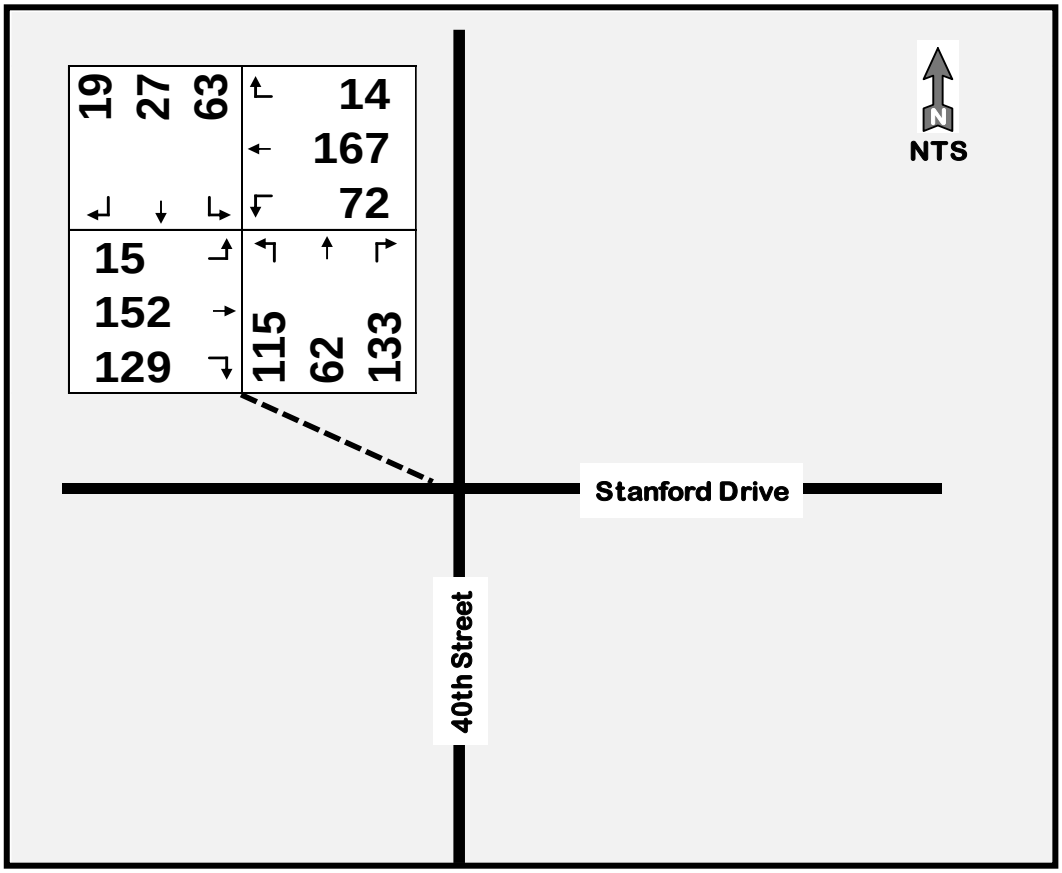


Figure 33: Ambient 2025 2:30 to 3:30 PM Peak Hour Turning Volumes

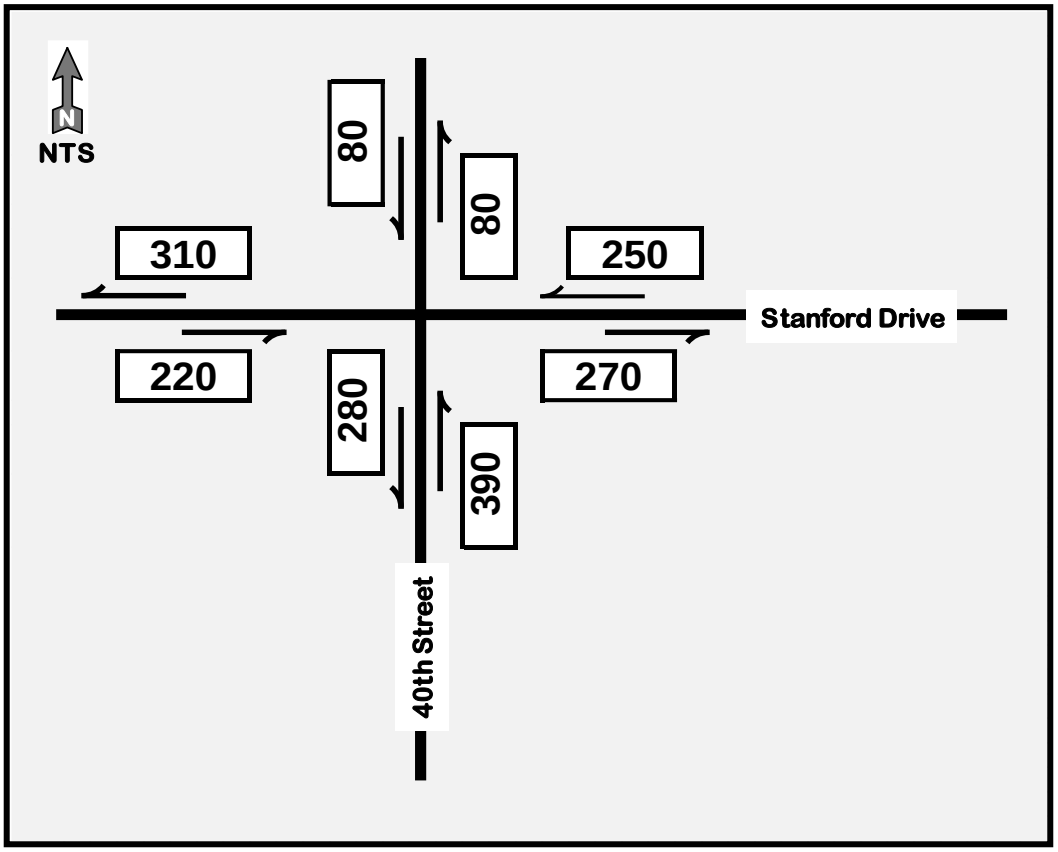


Figure 34: Ambient 2025 4:30 to 5:30 PM Peak Hour Approach and Departure Volumes

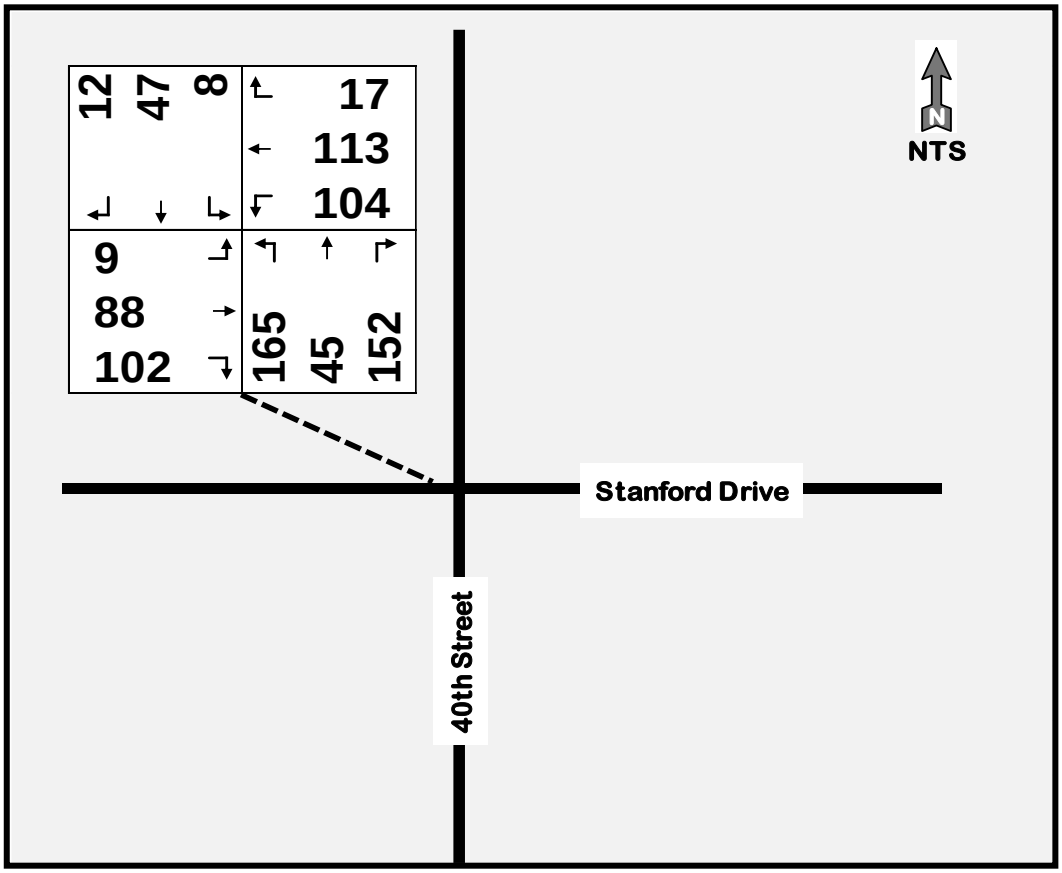


Figure 35: Ambient 2025 4:30 to 5:30 PM Peak Hour Turning Volumes

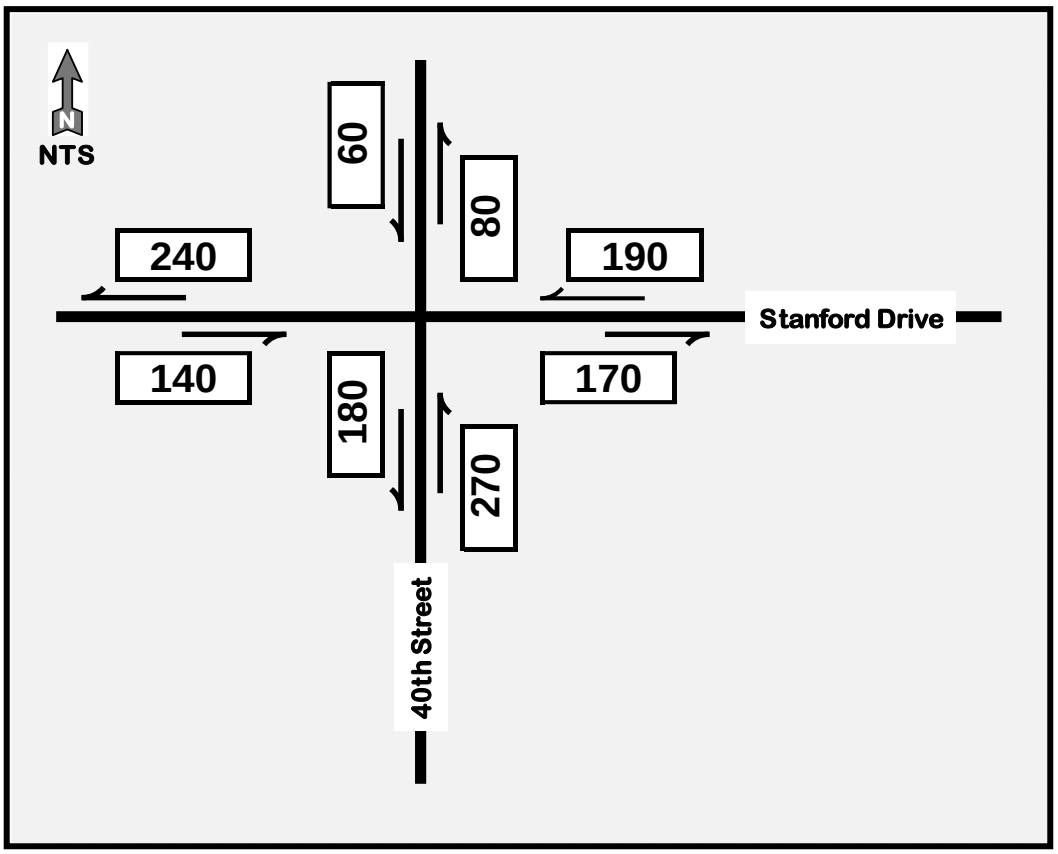


Figure 36: Ambient 2025 5:30 to 6:30 PM Peak Hour Approach and Departure Volumes

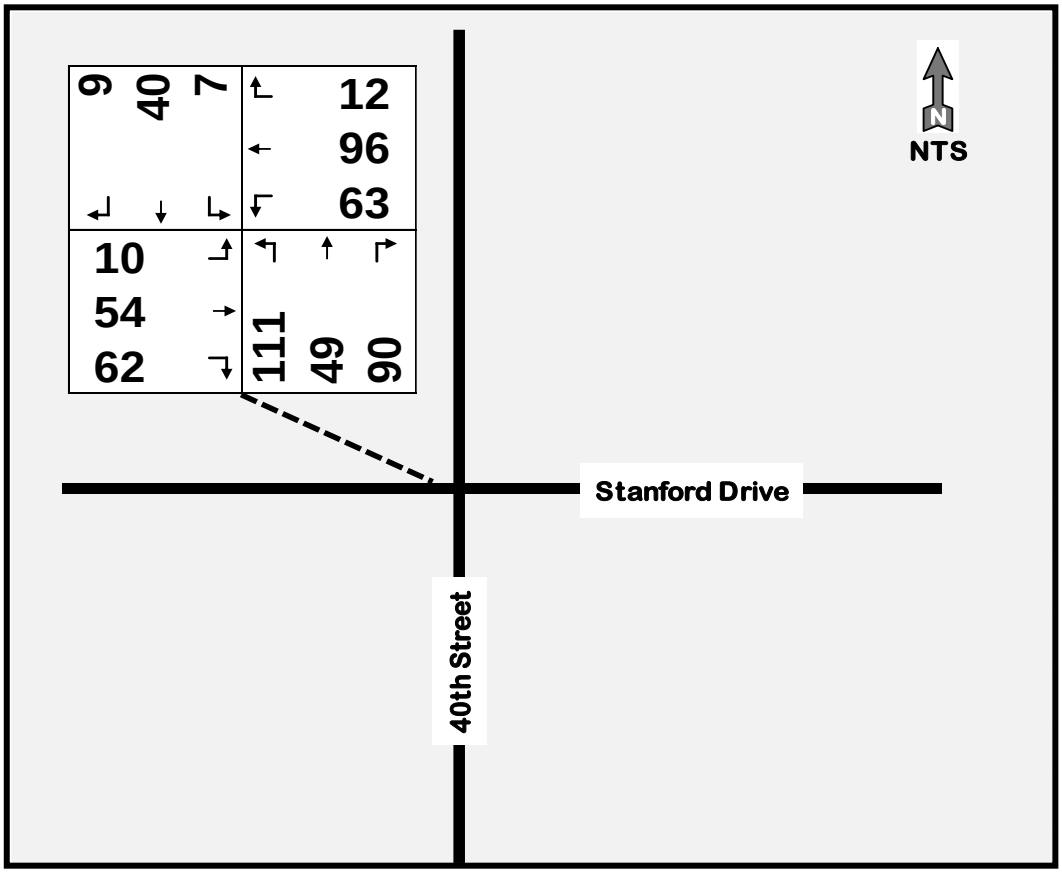


Figure 37: Ambient 2025 5:30 to 6:30 PM Peak Hour Turning Volumes

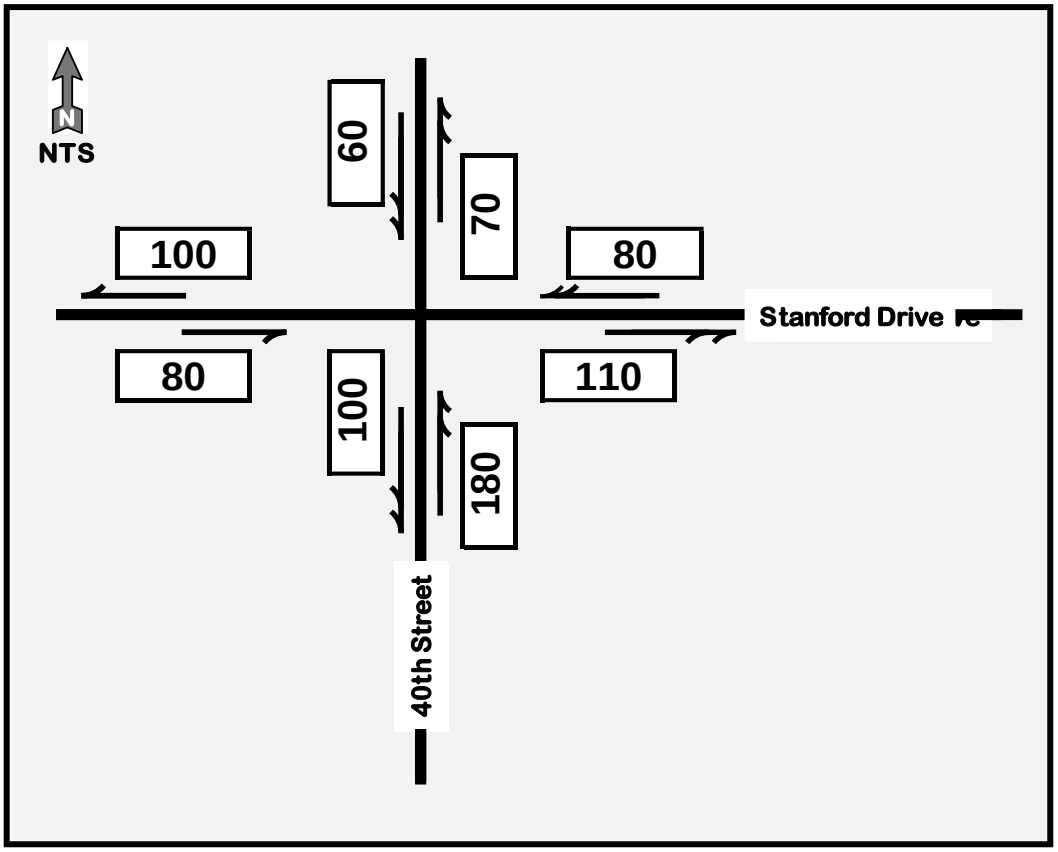


Figure 38: Ambient 2025 7:00 to 8:00 PM Peak Hour Approach and Departure Volumes

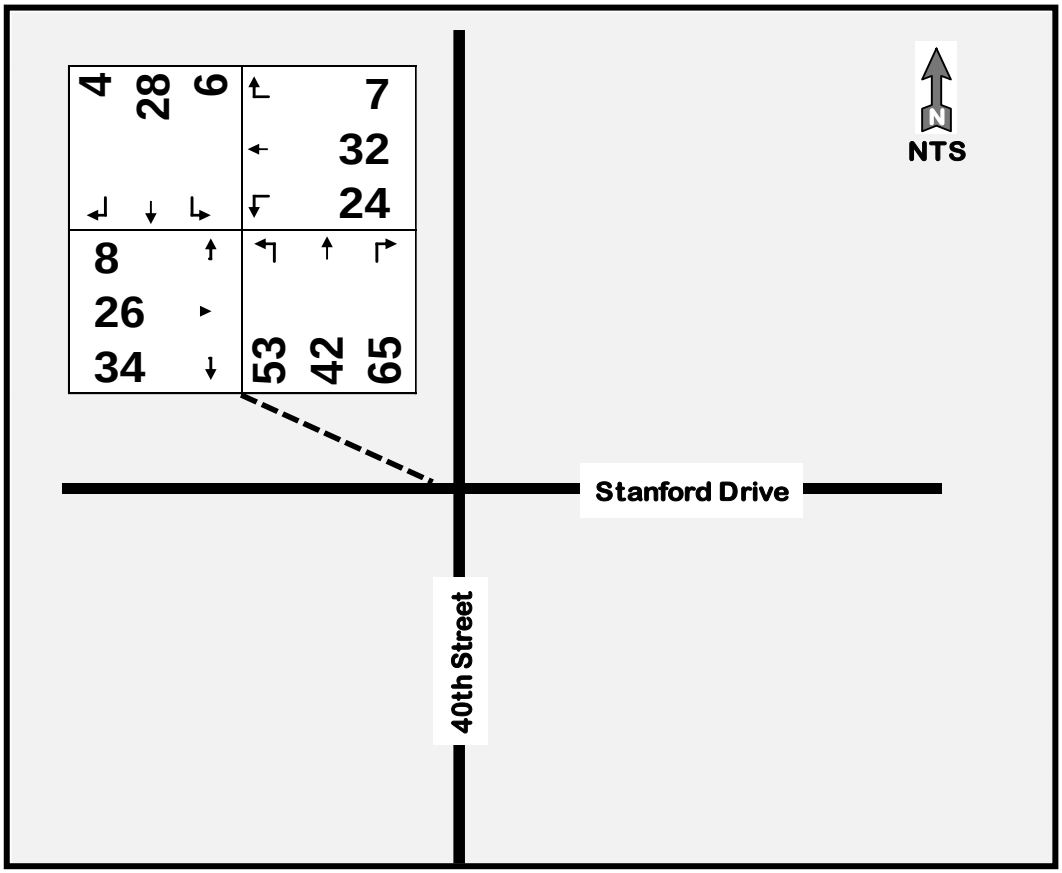


Figure 39: Ambient 2025 7:00 to 8:00 PM Peak Hour Turning Volumes

Proposed Performing Arts Center Estimated Trip Generation

Typically trip generation for proposed developments is estimated with the procedures and data contained within the Institute of Transportation Engineers *Trip Generation Manual*, *11th Edition*, published in 2021. This document provides traffic volume data from existing developments throughout the United States and Canada, from 1980 through 2019, that can be utilized to estimate trips from proposed developments. The traffic data are provided for 179 land use categories separated into 10 major land use categories. The estimated traffic volume is dependent upon independent variables defined by the characteristics and size of each land use category. Data are typically provided for five (5) weekday time periods and four (4) weekend time periods.

However, a category for performance venues is not included in the *Trip Generation Manual*. Therefore, this methodology cannot be used. It is logical to utilize the Town of Paradise Valley parking guidelines, which suggest one (1) parking space for every three (3) seats. Thereby, the 600-seat Performing Arts Center (PAC) would generate 200 vehicles-per-hour entering and 200 vehicles-per-hour exiting. The entering traffic was assumed to arrive between 5:30 and 6:30 PM. This time period is likely earlier than Performing Arts Center traffic would arrive. However, this traffic volume is higher than later hours, and therefore is conservative. Similarly, the exiting traffic was assumed to depart between 7:00 and 8:00 PM. This time period is likely earlier than Performing Arts Center traffic would depart. However, this traffic volume is higher than later hours, and therefore is conservative.

Figure 40 provides an aerial photograph of the portions of Paradise Valley in the greater vicinity of the Phoenix Country Day School campus. **Figure 41** provides a street schematic of the portions of Paradise Valley in the greater vicinity of the Phoenix Country Day School campus. Thes two (2) figures reveal that Stanford Drive, east of 40th Street, provides access to more of Paradise Valley than does 40th Street, north of Stanford Drive. Stanford Drive connects with 44th Street, which becomes McDonald Drive, then Tatum Boulevard, which connects to Lincoln Drive, while 40th Street does not connect to Lincoln Drive. This street access is an important consideration for determining the trip distribution of the traffic arriving to and departing from the Performing Arts Center of the Phoenix Country Day School.

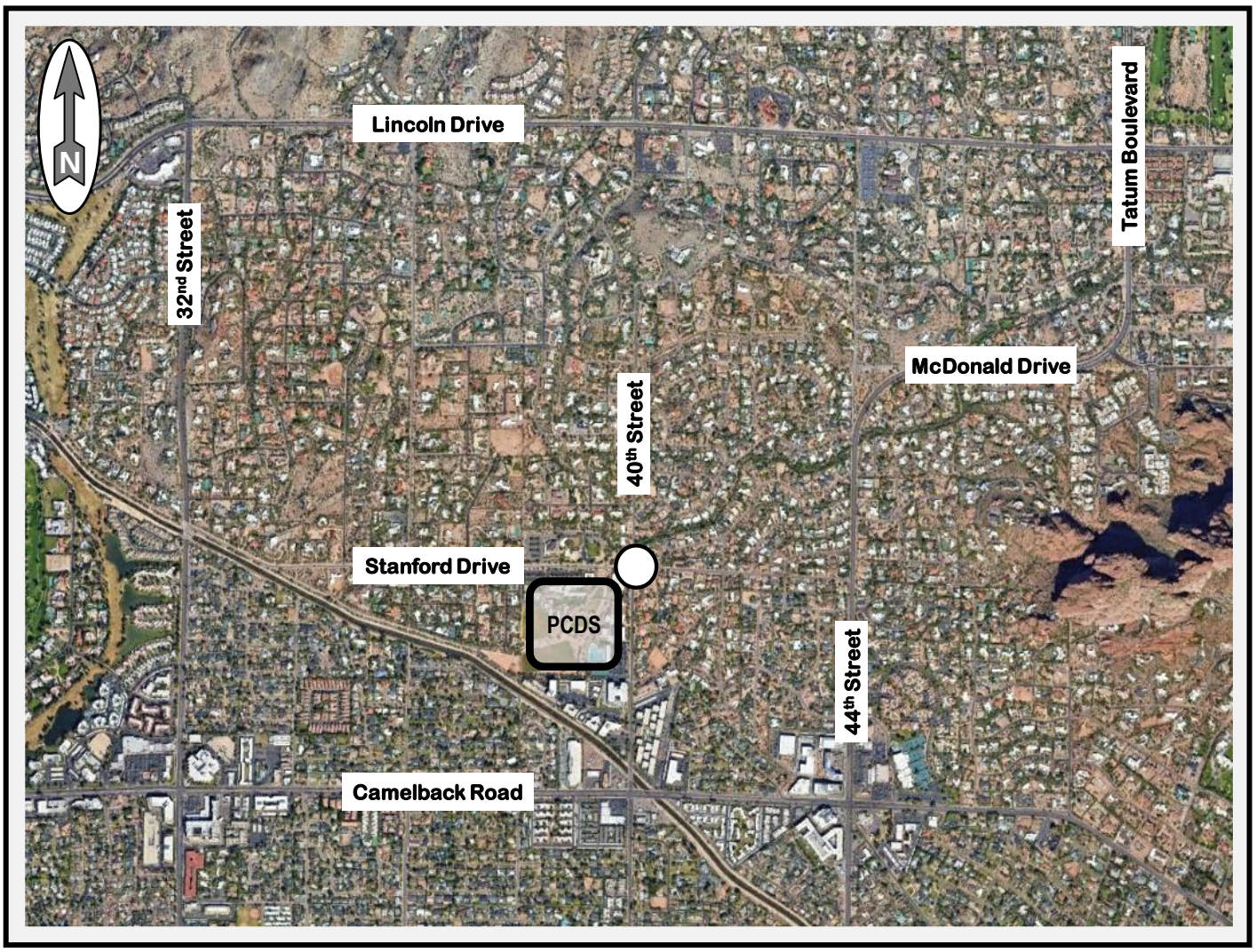


Figure 40: Aerial Photograph of Greater Vicinity of Phoenix Country Day School

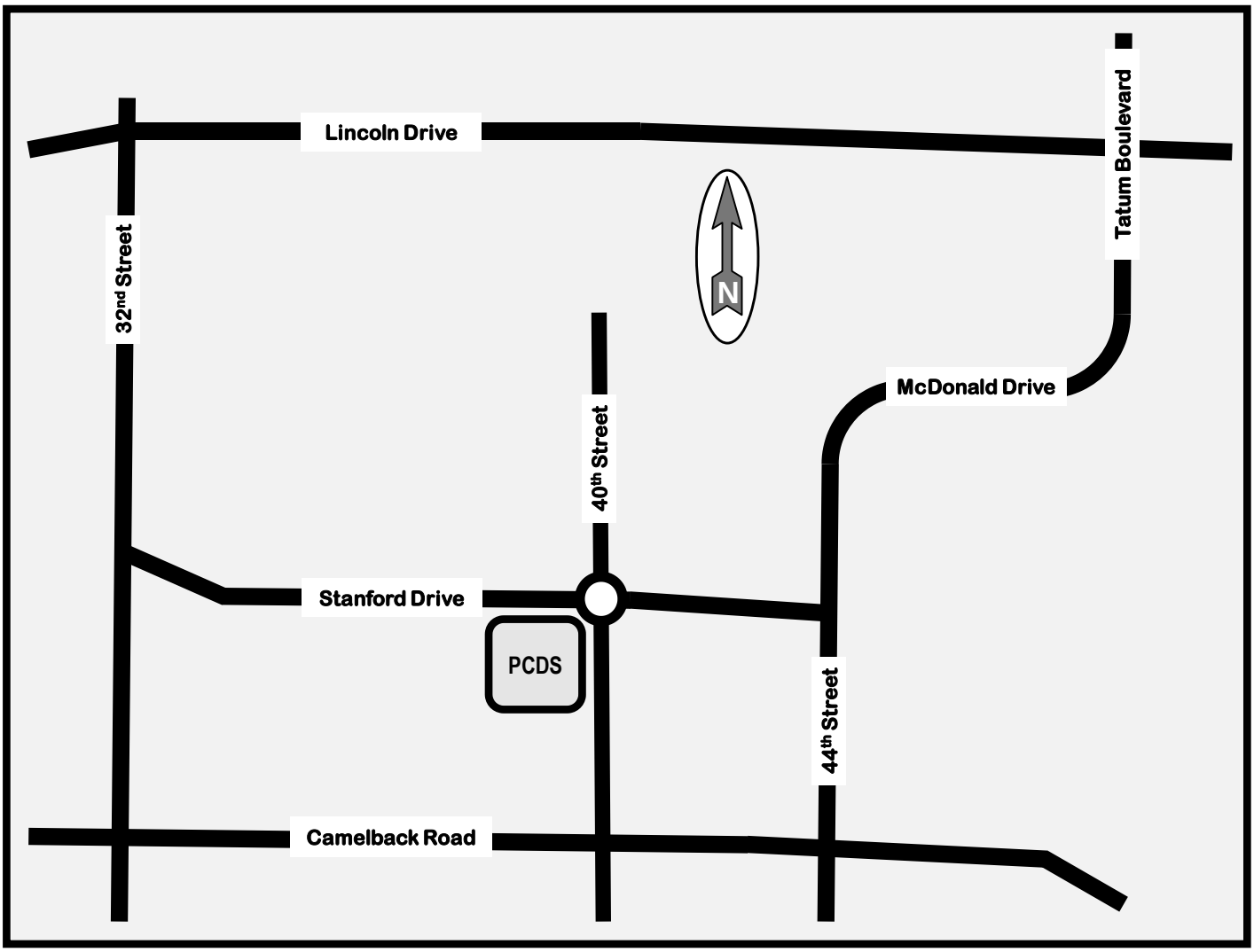


Figure 41: Street Schematic of Greater Vicinity of Phoenix Country Day School

The Performing Arts Center is estimated to generate 200 vehicles hourly vehicles arriving for a non-student, non-faculty event. The event arrival hour was conservatively assumed to be 5:30 to 6:30 PM.

Of this arriving PAC traffic, 41% was assumed to arrive from Stanford Drive, east of 40th Street. Of the arriving PAC traffic, 16% of the traffic was assumed to arrive from 40th Street, north of Standford Drive. The remaining 43% of the traffic was assumed to arrive from Standford Drive, west of the Phoenix Country Day School, and therefore would not utilize the 40th / Standford roundabout. The westbound Stanford Drive, east of 40th Street, traffic was distributed to the west to the Stanford parking areas and south to the 40th Street parking areas according to the existing 5:30 to 6:30 PM turning percentages. The southbound traffic, north of 40th Street, was also distributed to the west to the Stanford parking areas and south to the 40th Street parking areas according to the existing 5:30 to 6:30 PM turning percentages.

The Performing Arts Center is also estimated to generate 200 vehicles hourly vehicles departing from a non-student, non-faculty event. The event departure hour was conservatively assumed to be 7:00 to 8:00 PM.

The process utilized for the PAC arriving traffic was also utilized for the PAC departing traffic, with 41% of the exiting traffic assumed to depart to Stanford Drive, east of 40th Street. Of the PAC departing traffic, 16% was assumed to depart to 40th Street, north of Stanford Drive. The remaining 43% of the traffic was assumed to depart to Stanford Drive, west of the Phoenix Country Day School, and therefore would not utilize the 40th / Stanford roundabout. The turning movements at the 40th / Stanford roundabout were distributed according to the existing 7:00 to 8:00 PM turning percentages.

The Performing Arts Center daily traffic is the sum of the hourly entering traffic from 5:30 to 6:30 PM and the hourly exiting traffic from 7:00 to 8:00 PM. The Performing Arts Center will not generate traffic other than the event-arrival hour and the event-departure hour.

The resulting Performing Arts Center traffic daily approach and departure, and hourly turning movements at the 40th / Stanford intersection are provided in **Figure 42** through **Figure 46** respectively.

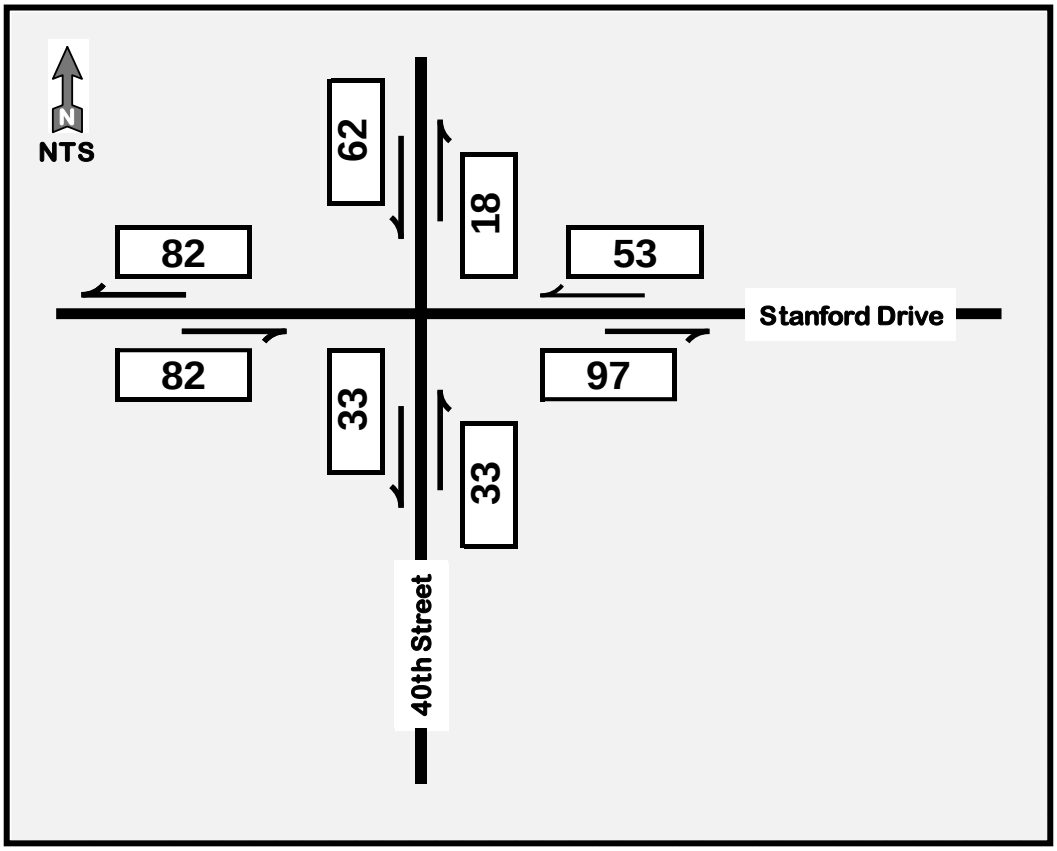


Figure 42: PCDS Performing Arts Center Day Approach and Departure Volumes

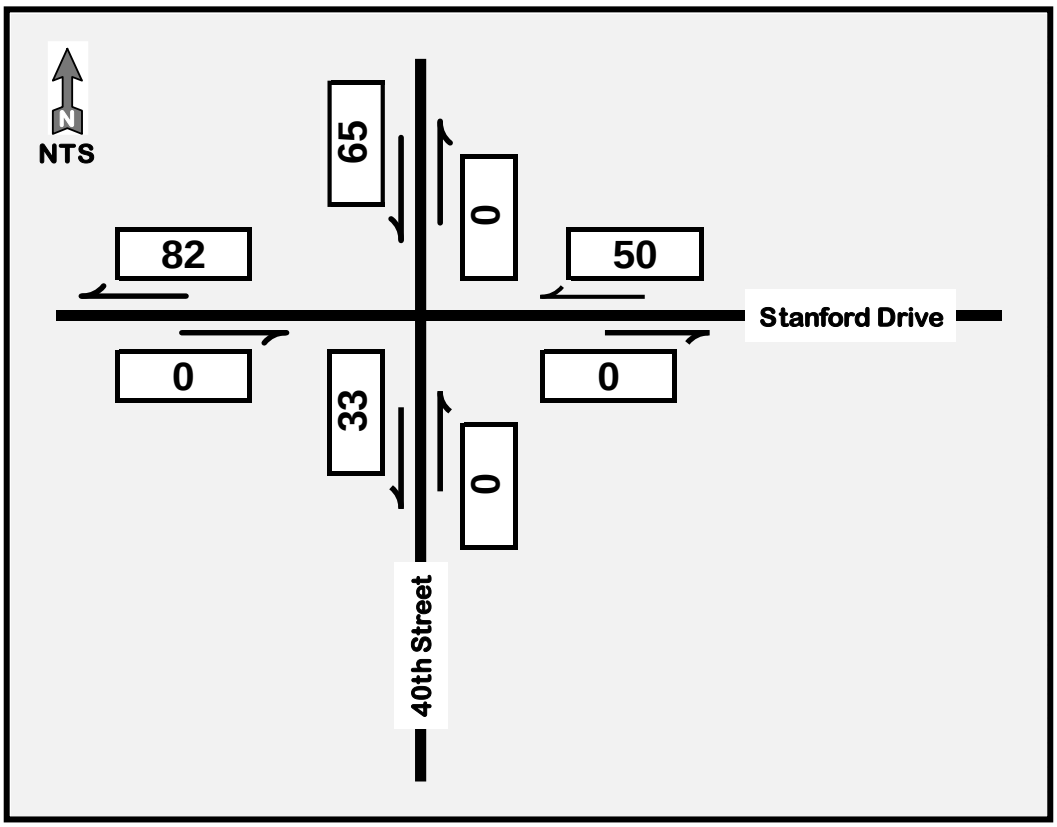


Figure 43: PCDS PAC 5:30 to 6:30 PM Peak Hour Approach and Departure Volumes

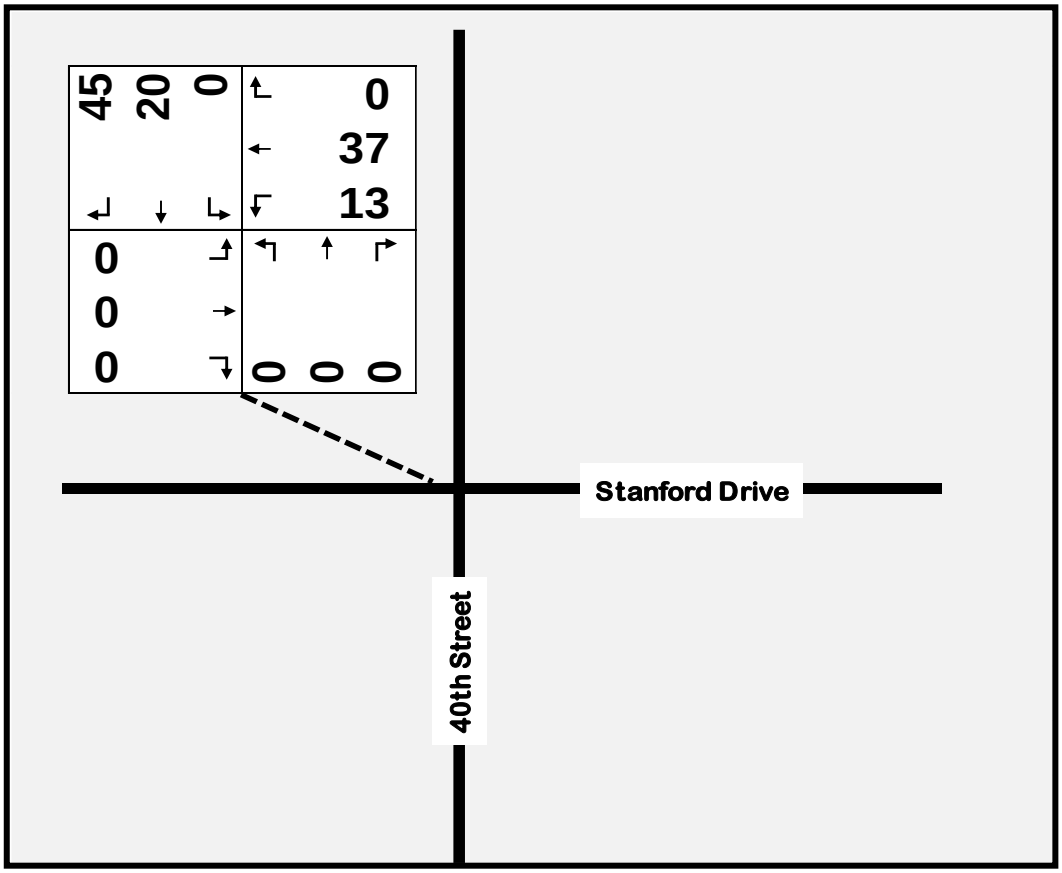


Figure 44: PCDS Performing Arts Center 5:30 to 6:30 PM Peak Hour Turning Movement Volumes

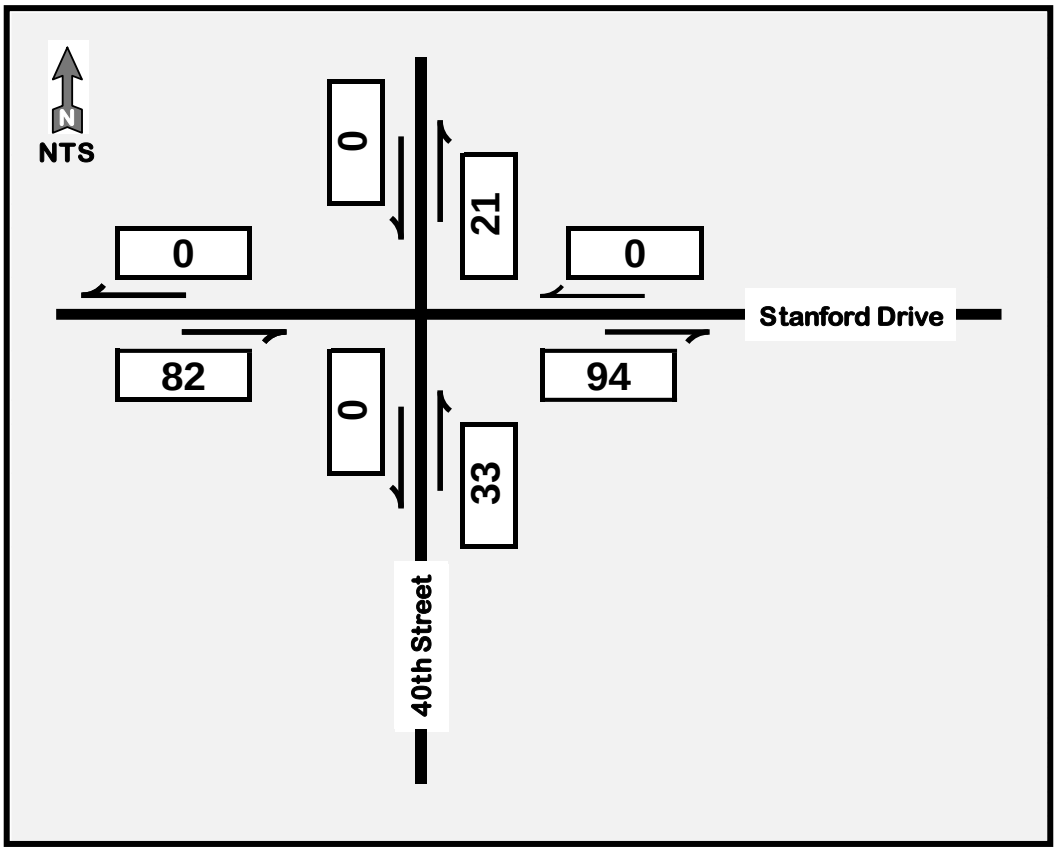


Figure 45: PCDS PAC 7:00 to 8:00 PM Peak Hour Approach and Departure Volumes

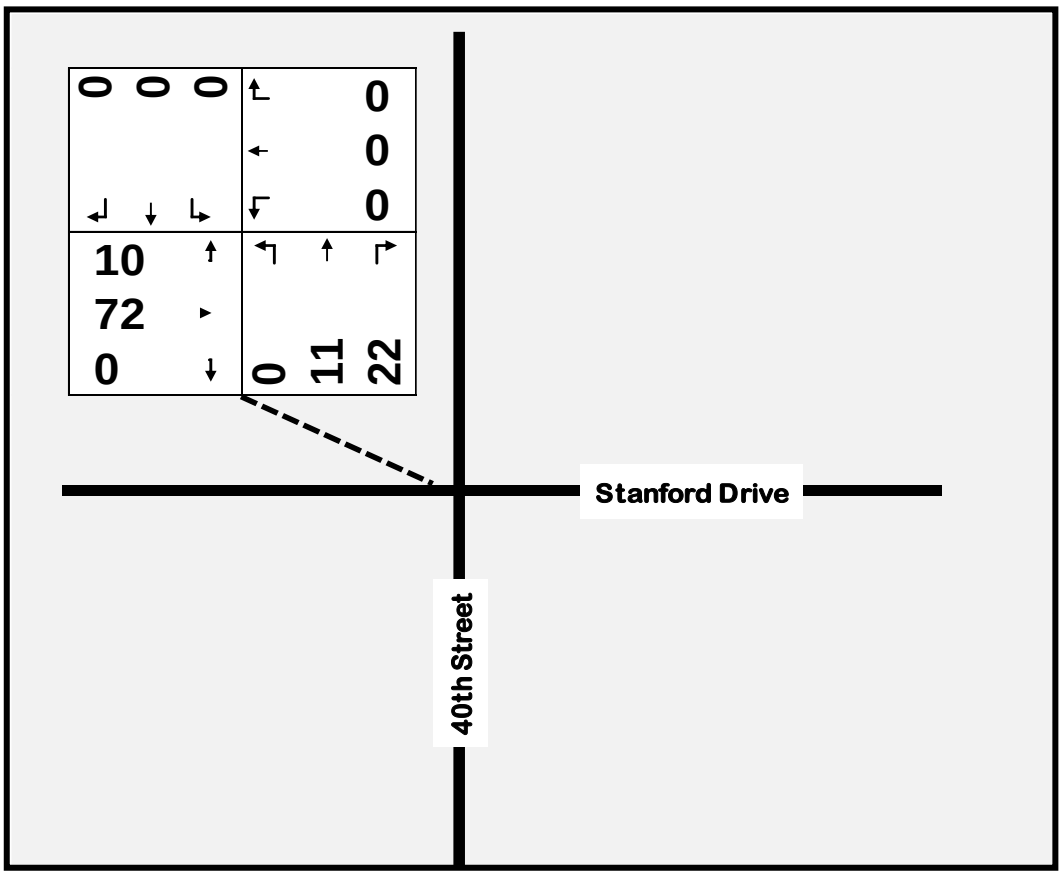


Figure 46: PCDS Performing Arts Center 7:00 to 8:00 PM Peak Hour Turning Movement Volumes

Figure 47 through **Figure 51** respectively provide the 2025 with the new Performing Arts Center day, 5:30 to 6:30 PM, and 7:00 to 8:00 PM peak hours traffic volume.

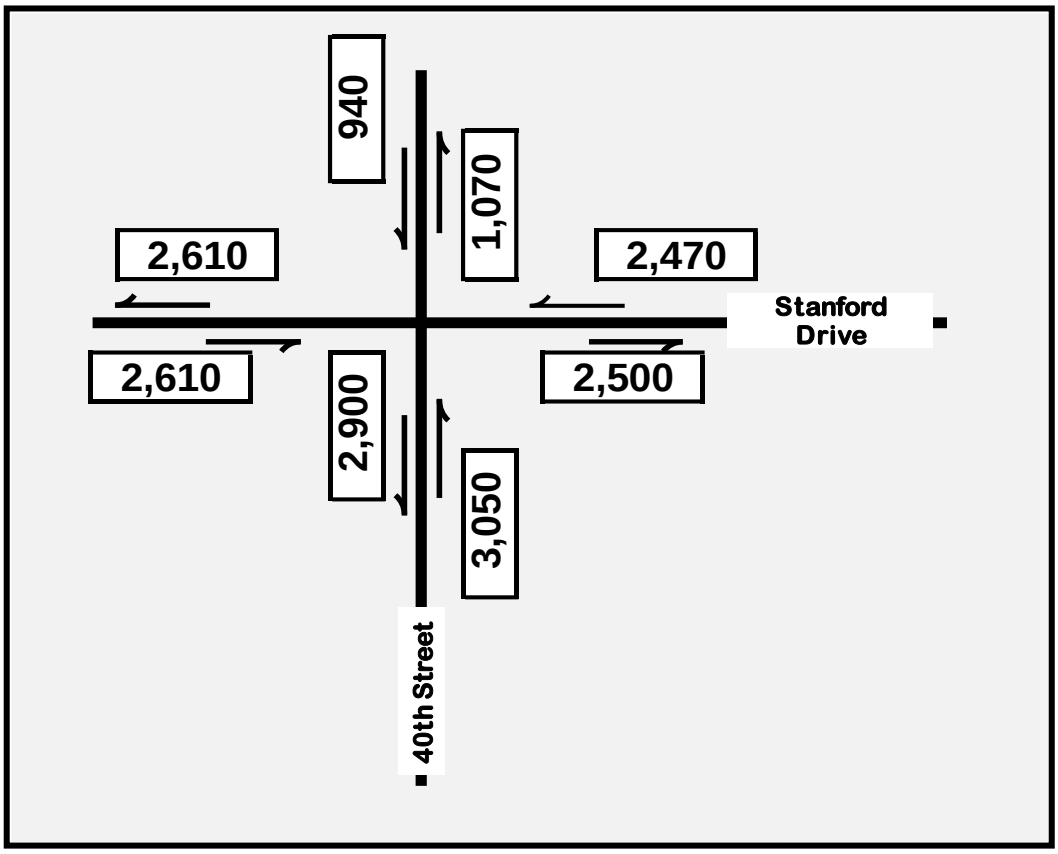


Figure 47: 2025 with PCDS Performing Arts Center Day Approach and Departure Volumes

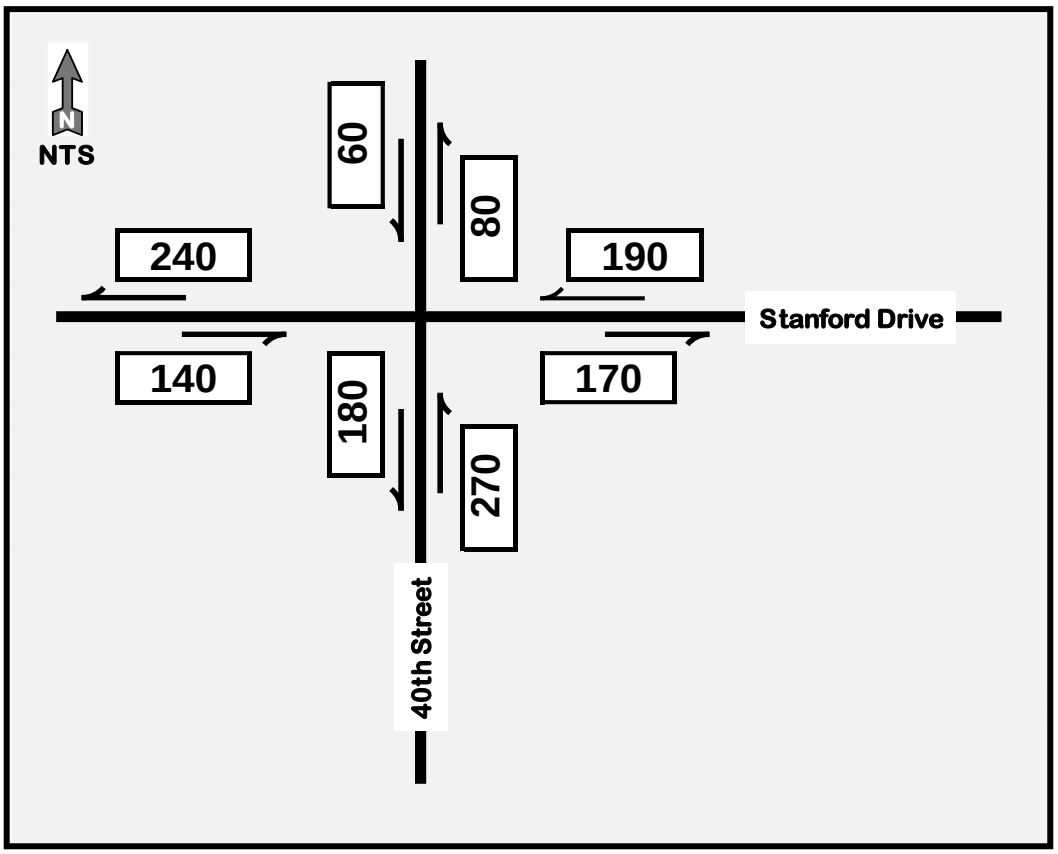


Figure 48: 2025 with PCDS PAC 5:30 to 6:30 PM Peak Hour Approach and Departure Volumes

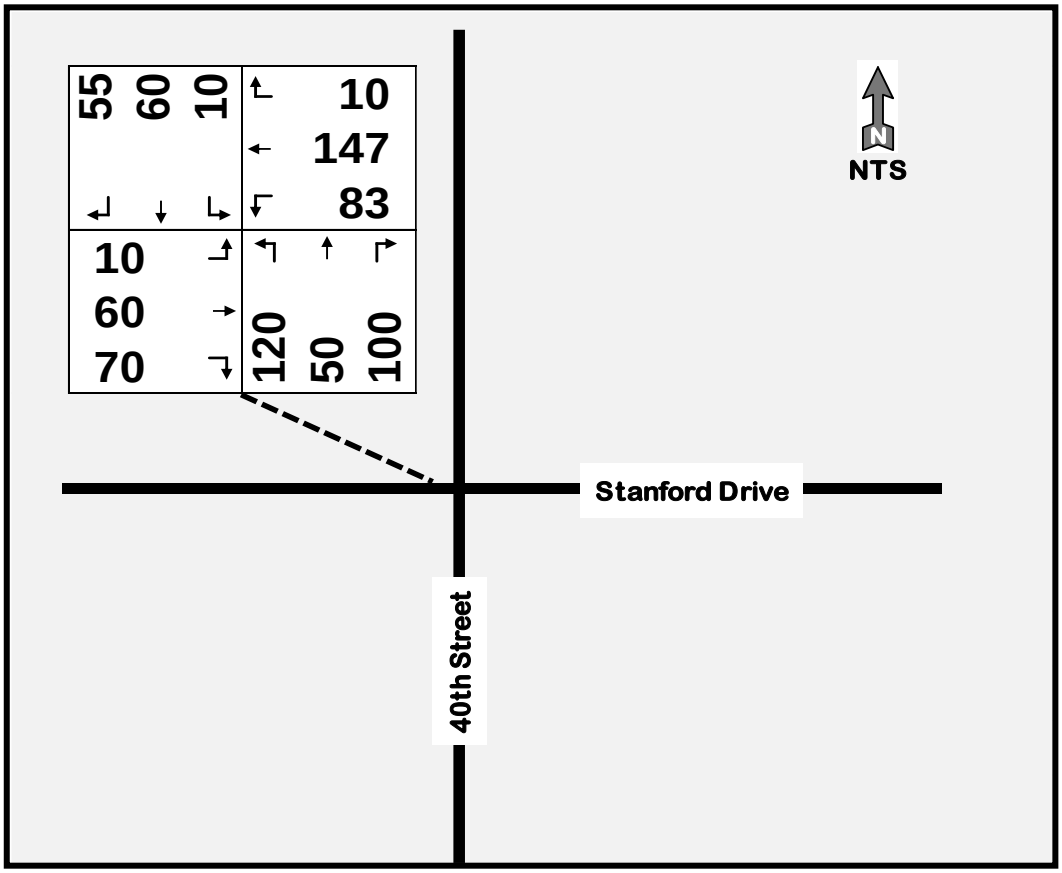


Figure 49: 2025 with PCDS Performing Arts Center 5:30 to 6:30 PM Peak Hour Turning Volumes

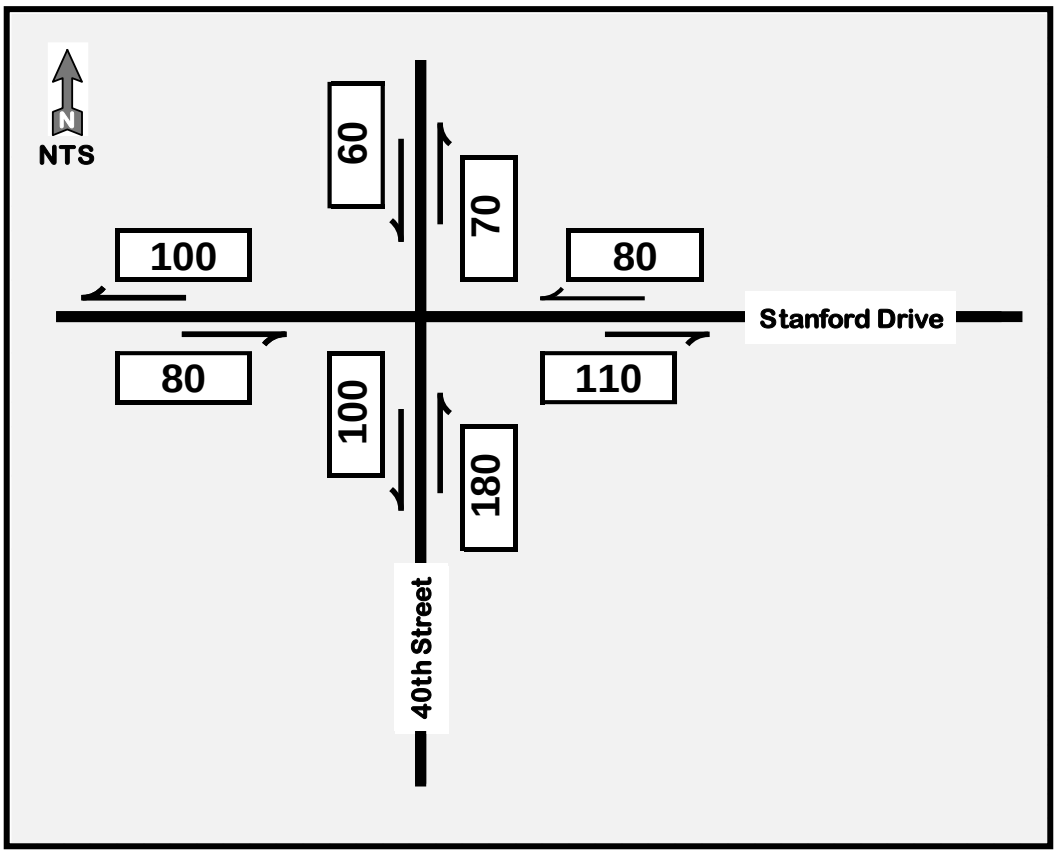


Figure 50: 2025 with PCDS PAC 7:00 to 8:00 PM Peak Hour Approach and Departure Volumes

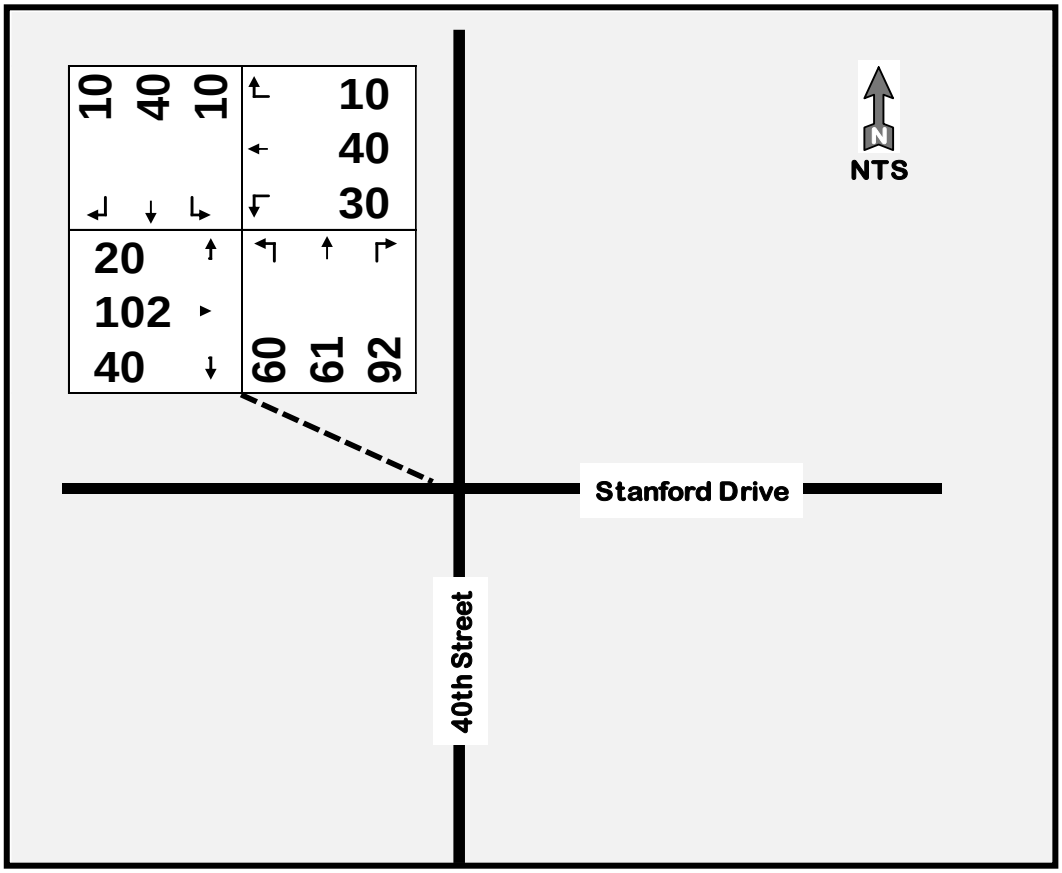


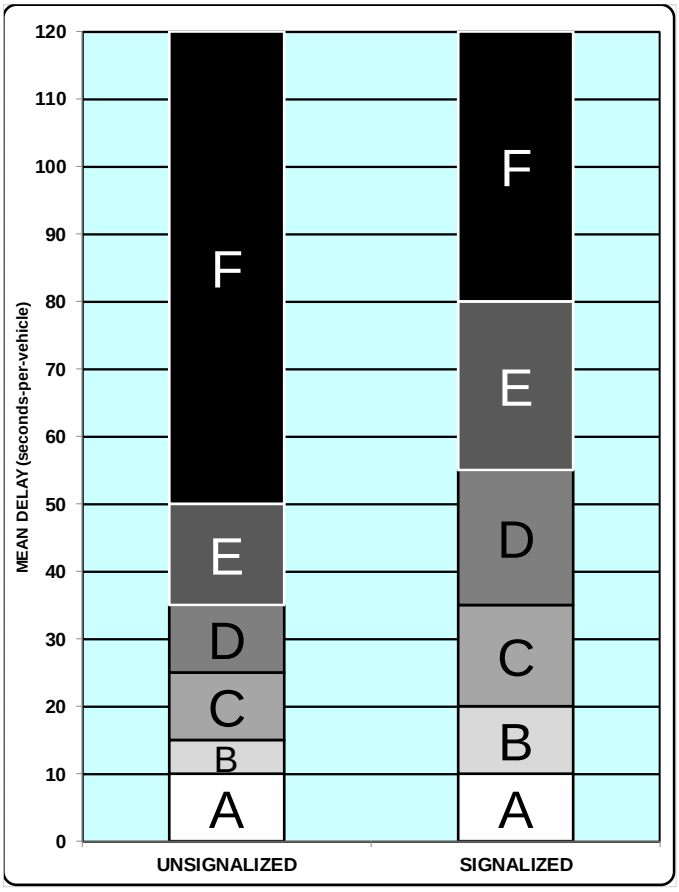
Figure 51: 2025 with PCDS Performing Arts Center 7:00 to 8:00 PM Peak Hour Turning Volumes

Level-of-Service Analysis

The ability of a transportation system to transmit the transportation demand is characterized as its level-of-service (LOS). Level-of-service is a rating system from "A" representing the most preferred operation to "F" representing the least preferred operation. Typically, levels-of-service "C" and "D" provide an optimal balance between traffic operation and street system expenditures.

The appropriate reference for level-of-service analysis and calculation is the *Highway Capacity Manual*, published by the Transportation Research Board. This manual considers average delay as the measure to determine level-of-service at intersections. For signalized intersections and multi-way stop intersections, the delay and level-of-service are calculated for the entire intersection, each approach, and each turning movement. For two-way intersections, the delay and level-of-service are determined only for each stopped approach and for left-turns from the uncontrolled approach. **Table 8**: provides a diagram depicting level-of-service and delay criteria for intersections.

Table 8: Intersection Level-of-Service Criteria



The Synchro *Highway Capacity Manual* methodology was utilized for these analyses. The detailed results of these analyses are provided in **Appendix C**. **Appendix C** includes a comparison of the different conditions by time period, with highlighted cells that indicate when a level-of-service changes. **Table 9** summarizes the three (3) time periods that are not affected by the Performing Arts Center. **Table 10** summarizes the two (2) time periods that are affected by the Performing Arts Center. The numbers indicate the number of approaches and intersection that experience the designated level-of-service.

Table 9: Level-of-Service – without Performing Arts Center – School Arrival and Departing Hours

	7:15 to 8:15 AM PEAK HOUR			2:30 to 3:30 PM HOUR			3:30 to 4:30 PM HOUR		
	2023		2025	2023		2025	2023		2025
	EXISTING	ADJUSTED	AMBIENT	EXISTING	ADJUSTED	AMBIENT	EXISTING	ADJUSTED	AMBIENT
A	0	0	0	1	1	1	5	5	4
B	1	1	1	3	1	1	0	0	1
C	1	1	1	1	3	2	0	0	0
D	0	0	0	0	0	1	0	0	0
E	2	2	0	0	0	0	0	0	0
F	1	1	3	0	0	0	0	0	0
	5	5	5	5	5	5	5	5	5

Table 10: Level-of-Service –without and with PAC – 5:30 to 6:30 PM and 7:00 to 8:00 PM Hours

	5:30 to 6:30 PM HOUR				7:00 to 8:00 PM HOUR			
	2023		2025		2023		2025	
	EXISTING	ADJUSTED	AMBIENT	WITH PAC	EXISTING	ADJUSTED	AMBIENT	WITH PAC
A	5	5	5	5	5	5	5	5
B	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0
	5	5	5	5	5	5	5	5

Appendix A

Collision Analysis

40th Street & Stanford Drive - 2015

INCIDENT ID	LATITUDE	LONGITUDE	DATE	TIME	COLLISION MANNER	INJURY SEVERITY	TRAVEL DIRECTION	ACTION	VEHICLE	CONTROL	DISTRACTION	FIRST VIOLATION	SECOND VIOLATION
3012866	33.5173	-111.9952	10 / 16	1:40 PM	Single Vehicle	No Injury	Unknown	Unknown	Not Reported	Yield Signs	Unknown	Unknown	

40th Street & Stanford Drive - 2016

INCIDENT ID	LATITUDE	LONGITUDE	DATE	TIME	COLLISION MANNER	INJURY SEVERITY	TRAVEL DIRECTION	ACTION	VEHICLE	CONTROL	DISTRACTION	FIRST VIOLATION	SECOND VIOLATION
3096873	33.5173	-111.9952	05 / 27	8:37 AM	Angle	Suspected Minor Injury	Northbound	Other	Car	Yield Signs	Unknown	Failed to Yield Right of Way	
3096873							Eastbound	Straight	Pedalcyclist	Yield Signs	Unknown	No Improper Action	
3114838	33.5173	-111.9952	07 / 31	10:51 AM	Angle	Possible Injury	Unknown	Straight	Pick-up Truck	Unknown	Unknown	Failed to Yield Right of Way	
3114838							Unknown	Straight	Car	Unknown	Unknown	Unknown	
3129552	33.5173	-111.9952	08 / 16	11:25 AM	Single Vehicle	No Injury	Westbound	Unknown	Truck	No Controls	Unknown	Unknown	

40th Street & Stanford Drive - 2017

INCIDENT ID	LATITUDE	LONGITUDE	DATE	TIME	COLLISION MANNER	INJURY SEVERITY	TRAVEL DIRECTION	ACTION	VEHICLE	CONTROL	DISTRACTION	FIRST VIOLATION	SECOND VIOLATION
3211363	33.5173	-111.9952	01 / 02	10:45 PM	Angle	No Injury	Southbound	Straight	Car	Yield Signs	Unknown	Failed to Yield Right of Way	
3211363							Westbound	Straight	Car	Yield Signs	Unknown	No Improper Action	
3223907	33.5173	-111.9952	03 / 05	4:22 AM	Single Vehicle	No Injury	Eastbound	Straight	Car	Yield Signs	Unknown	Speed Too Fast For Conditions	Failed to Keep in Proper Lane
3256382	33.5173	-111.9952	07 / 06	1:40 AM	Single Vehicle	No Injury	Unknown	Unknown	Not Reported	Yield Signs	Unknown	Unknown	
3298563	33.5173	-111.9952	11 / 25	7:37 AM	Single Vehicle	No Injury	Northbound	Straight	Truck	Yield Signs	Not Distracted	Speed Too Fast For Conditions	
3312980	33.5173	-111.9952	12 / 21	7:32 AM	Single Vehicle	No Injury	Westbound	Unknown	Not Reported	No Controls	Unknown	Failed to Keep in Proper Lane	

40th Street & Stanford Drive - 2018

INCIDENT ID	LATITUDE	LONGITUDE	DATE	TIME	COLLISION MANNER	INJURY SEVERITY	TRAVEL DIRECTION	ACTION	VEHICLE	CONTROL	DISTRACTION	FIRST VIOLATION	SECOND VIOLATION
3627119	33.5173	-111.9952	01 / 13	3:24 PM	Angle	No Injury	Westbound	Turning Right	Car	Yield Signs	Not Distracted	Disregarded Traffic Signal	
3627119							Northbound	Turning Left	Car	Yield Signs	Not Distracted	No Improper Action	
3627630	33.5173	-111.9952	08 / 23	3:05 PM	Sideswipe Same Direction	No Injury	Southbound	Slowing	Car	Yield Signs	Unknown	Unknown	
3627630							Westbound	Slowing	Car	Yield Signs	Distracted	Unknown	

40th Street & Stanford Drive - 2020

INCIDENT ID	LATITUDE	LONGITUDE	DATE	TIME	COLLISION MANNER	INJURY SEVERITY	TRAVEL DIRECTION	ACTION	VEHICLE	CONTROL	DISTRACTION	FIRST VIOLATION	SECOND VIOLATION
3670759	33.5173	-111.9971	05 / 04	3:22 AM	Single Vehicle	No Injury	Eastbound	Unknown	Car	No Controls	Unknown	Failed to Keep in Proper Lane	
3699265	33.5173	-111.9952	07 / 15	3:49 PM	Sideswipe Same Direction	No Injury	Eastbound	Straight	Car	No Controls	Unknown	Failed to Yield Right of Way	
3699265							Southbound	Straight	Car	No Controls	Not Distracted	No Improper Action	
3699270	33.5173	-111.9952	07 / 30	6:27 AM	Single Vehicle	No Injury	Northbound	Straight	Unknown	No Controls	Unknown	Speed Too Fast For Conditions	
3699274	33.5173	-111.9952	08 / 12	9:15 AM	Other	No Injury	Northbound	Backing	Car	No Controls	Not Distracted	Other	
3699274							Northbound	Stopped	Car	No Controls	Not Distracted	No Improper Action	
3719677	33.5171	-111.9953	10 / 19	7:34 AM	Rear End	No Injury	Northbound	Straight	Pick-up Truck	No Controls	Unknown	Speed Too Fast For Conditions	
3719677							Northbound	Slowing	Car	No Controls	Not Distracted	No Improper Action	
3719681	33.5173	-111.9952	10 / 31	11:27 AM	Angle	Suspected Minor Injury	Northbound	Straight	Car	Yield Sign	Not Distracted	Failed to Yield Right of Way	
3719681							Eastbound	Straight	Pedalcyclist	No Controls	Not Distracted	No Improper Action	

40th Street & Stanford Drive - 2021

INCIDENT ID	LATITUDE	LONGITUDE	DATE	TIME	COLLISION MANNER	INJURY SEVERITY	TRAVEL DIRECTION	ACTION	VEHICLE	CONTROL	DISTRACTION	FIRST VIOLATION	SECOND VIOLATION
3751539	33.5171	-111.9953	04 / 08	8:11 AM	Rear End	No Injury	Northbound	Straight	Car	No Controls	Not Distracted	Speed Too Fast For Conditions	
3751539							Northbound	Stopped	Car	Yield Signs	Not Distracted	No Improper Action	
3804165	33.5159	-111.9953	02 / 05	11:30 AM	Rear End	No Injury	Northbound	Straight	Car	No Controls	Distracted Unknov	Followed Too Closely	
3804165							Northbound	Stopped	Car	No Controls	Not Distracted	No Improper Action	
3812235	33.5173	-111.9952	05 / 10	8:00 AM	Single Vehicle	No Injury	Southbound	Turning Left	Truck	Roundabout	Unknown	Made Improper Turn	
3859615	33.5173	-111.9952	12 / 05	4:42 PM	Angle	No Injury	Southbound	Straight	Car	Roundabout	Not Distracted	Disregarded Traffic Signal	
3859615							Westbound	Straight	Car	Roundabout	Not Distracted	No Improper Action	

40th Street & Stanford Drive - 2022

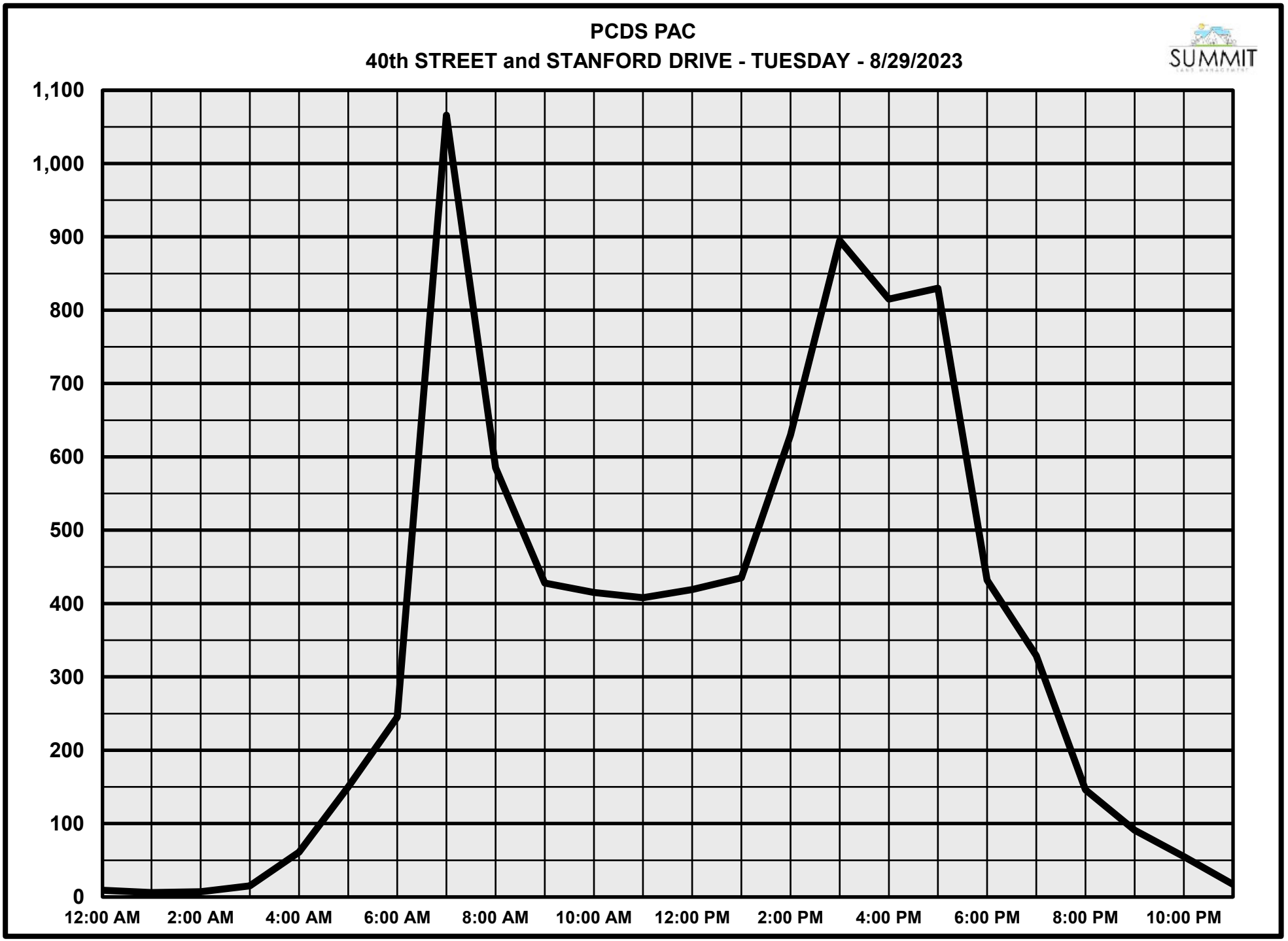
INCIDENT ID	LATITUDE	LONGITUDE	DATE	TIME	COLLISION MANNER	INJURY SEVERITY	TRAVEL DIRECTION	ACTION	VEHICLE	CONTROL	DISTRACTION	FIRST VIOLATION	SECOND VIOLATION
3897540	33.5173	-111.9952	02 / 09	9:39 AM	Angle	No Injury	Eastbound	Turning Right	Truck	Roundabout	Unknown	Failed to Yield Right of Way	
3897540							Eastbound	Straight	Car	Roundabout	Not Distracted	No Improper Action	

Appendix B

2023 Traffic Counts

PCDS PAC

40th STREET and STANFORD DRIVE - TUESDAY - 8/29/2023



PCDS PAC

40th STREET and STANFORD DRIVE - TUESDAY - 8/29/2023

EXISTING 5:00 AM to 10:00 AM

BEGIN TIME	STANFORD DRIVE EASTBOUND				STANFORD DRIVE WESTBOUND				40th STREET NORTHBOUND				40th STREET SOUTHBOUND				ALL TOTAL	60 MINUTE TOTAL
	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL		
5:00 AM	0	4	3	7	4	1	0	5	7	4	1	12	1	4	0	5	29	150
5:15 AM	1	8	10	19	5	4	0	9	10	3	3	16	1	2	0	3	47	166
5:30 AM	0	4	3	7	4	3	0	7	4	0	3	7	0	2	0	2	23	164
5:45 AM	0	8	4	12	9	6	0	15	7	3	4	14	2	8	0	10	51	211
6:00 AM	1	5	9	15	4	4	2	10	3	8	3	14	2	3	1	6	45	245
6:15 AM	3	7	3	13	4	8	4	16	8	0	1	9	2	3	2	7	45	299
6:30 AM	0	8	9	17	7	3	1	11	8	11	13	32	3	6	1	10	70	479
6:45 AM	2	14	17	33	9	12	1	22	12	4	8	24	2	3	1	6	85	890
7:00 AM	0	11	12	23	7	16	1	24	13	5	7	25	4	19	4	27	99	1,066
7:15 AM	**0**	**32**	**34**	**66**	**37**	**49**	**2**	**88**	**29**	**7**	**15**	**51**	**4**	**14**	**2**	**20**	**225**	**1,103**
7:30 AM	2	66	73	141	106	105	0	211	48	12	32	92	2	23	12	37	**481**	1,017
7:45 AM	2	58	48	108	35	36	6	77	20	10	23	53	4	14	5	23	261	694
8:00 AM	3	13	22	38	23	14	2	39	6	15	22	43	3	12	1	16	136	585
8:15 AM	3	14	26	43	25	13	7	45	12	11	12	35	5	11	0	16	139	571
8:30 AM	2	18	36	56	28	18	4	50	5	14	17	36	3	12	1	16	158	535
8:45 AM	2	24	21	47	16	20	2	38	19	15	11	45	2	15	5	22	152	474
9:00 AM	3	24	24	51	12	13	3	28	7	6	18	31	0	8	4	12	122	428
9:15 AM	3	17	19	39	7	11	2	20	9	9	8	26	2	13	3	18	103	413
9:30 AM	1	16	20	37	12	8	0	20	6	15	9	30	1	9	0	10	97	397
9:45 AM	2	11	22	35	8	14	6	28	9	16	8	33	0	7	3	10	106	423
AM PEAK	**7**	**169**	**177**	**353**	**201**	**204**	**10**	**415**	**103**	**44**	**92**	**239**	**13**	**63**	**20**	**96**	**1,103**	**1,103**
PHF	0.58	0.64	0.61	0.63	0.47	0.49	0.42	0.49	0.54	0.73	0.72	0.49	0.81	0.68	0.42	0.65		

PCDS PAC

40th STREET and STANFORD DRIVE - TUESDAY - 8/29/2023

EXISTING 10:00 AM to 3:00 PM

BEGIN	STANFORD DRIVE EASTBOUND				STANFORD DRIVE WESTBOUND				40th STREET NORTHBOUND				40th STREET SOUTHBOUND				ALL	60 MIN.
TIME	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	TOTAL	TOTAL
10:00 AM	4	13	15	32	7	10	4	21	9	11	15	35	4	12	3	19	107	415
10:15 AM	1	9	17	27	8	8	1	17	7	16	9	32	3	6	2	11	87	404
10:30 AM	5	21	13	39	11	14	5	30	8	16	18	42	3	7	2	12	123	419
10:45 AM	3	9	16	28	8	7	4	19	10	7	13	30	3	13	5	21	98	394
11:00 AM	0	14	14	28	5	13	3	21	6	10	13	29	3	13	2	18	96	408
11:15 AM	3	13	10	26	8	12	3	23	6	13	15	34	5	12	2	19	102	415
11:30 AM	1	11	10	22	10	17	1	28	11	16	13	40	1	6	1	8	98	431
11:45 AM	3	20	15	38	8	9	3	20	10	15	16	41	1	11	1	13	112	436
12:00 PM	3	12	11	26	7	13	3	23	11	9	16	36	0	14	4	18	103	419
12:15 PM	3	10	20	33	11	19	3	33	14	8	12	34	4	11	3	18	118	410
12:30 PM	1	14	7	22	12	17	5	34	12	8	15	35	0	9	3	12	103	405
12:45 PM	2	15	7	24	8	14	4	26	8	15	8	31	2	8	4	14	95	412
1:00 PM	1	6	8	15	10	13	4	27	12	9	15	36	2	12	2	16	94	435
1:15 PM	2	19	21	42	13	10	0	23	12	5	19	36	0	7	5	12	113	454
1:30 PM	3	19	10	32	11	13	2	26	15	11	16	42	1	4	5	10	110	476
1:45 PM	4	11	11	26	13	17	4	34	13	10	13	36	3	14	5	22	118	527
2:00 PM	0	22	9	31	13	18	1	32	12	8	19	39	1	5	5	11	113	630
2:15 PM	1	15	18	34	12	24	0	36	14	20	11	45	4	12	4	20	135	856
2:30 PM	**2**	**11**	**17**	**30**	**14**	**43**	**3**	**60**	**32**	**7**	**17**	**56**	**2**	**8**	**5**	**15**	**161**	**917**
2:45 PM	2	22	26	50	21	71	5	97	28	13	16	57	2	8	7	17	**221**	915
MD PEAK	**15**	**152**	**129**	**296**	**72**	**167**	**14**	**253**	**115**	**62**	**133**	**310**	**9**	**33**	**16**	**58**	**917**	**917**
PHF	0.63	0.42	0.62	0.50	0.86	0.59	0.70	0.65	0.78	0.67	0.54	0.65	0.75	0.92	0.57	0.85		

PCDS PAC

40th STREET and STANFORD DRIVE - TUESDAY - 8/29/2023

EXISTING 3:00 PM to 8:00 PM

BEGIN	STANFORD DRIVE EASTBOUND				STANFORD DRIVE WESTBOUND				40th STREET NORTHBOUND				40th STREET SOUTHBOUND				ALL	60 MIN.
TIME	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	TOTAL	TOTAL
3:00 PM	**6**	**90**	**52**	**148**	**20**	**37**	**2**	**59**	**37**	**19**	**62**	**118**	**2**	**9**	**3**	**14**	**339**	**895**
3:15 PM	5	29	34	68	17	16	4	37	18	23	38	79	3	8	1	12	196	773
3:30 PM	2	25	22	49	15	18	4	37	23	13	26	62	1	7	3	11	159	768
3:45 PM	1	26	45	72	19	31	0	50	25	17	20	62	2	13	2	17	201	818
4:00 PM	2	29	35	66	24	23	1	48	39	23	28	90	3	8	2	13	217	815
4:15 PM	4	27	30	61	27	29	4	60	29	13	17	59	1	9	1	11	191	831
4:30 PM	1	15	20	36	26	28	7	61	37	8	45	90	4	14	4	22	209	862
4:45 PM	1	29	23	53	20	27	2	49	44	8	35	87	1	6	2	9	198	857
5:00 PM	4	23	26	53	24	33	3	60	40	10	44	94	3	19	4	26	233	830
5:15 PM	3	21	33	57	34	25	5	64	44	19	28	91	0	8	2	10	222	713
5:30 PM	8	17	21	46	17	38	3	58	45	13	30	88	2	8	2	12	204	603
5:45 PM	0	15	18	33	23	23	3	49	32	15	28	75	2	8	4	14	171	519
6:00 PM	0	13	13	26	11	16	5	32	18	9	14	41	3	11	3	17	116	432
6:15 PM	2	9	10	21	12	19	1	32	16	12	18	46	0	13	0	13	112	441
6:30 PM	3	17	9	29	12	12	1	25	23	16	14	53	5	7	1	13	120	406
6:45 PM	3	8	11	22	9	15	1	25	9	6	19	34	0	3	0	3	84	368
7:00 PM	2	8	11	21	11	12	2	25	20	11	33	64	4	10	1	15	125	329
7:15 PM	2	4	9	15	6	7	3	16	12	12	11	35	1	8	2	11	77	245
7:30 PM	2	9	14	25	4	2	1	7	17	10	15	42	1	6	1	8	82	200
7:45 PM	2	5	0	7	3	11	1	15	4	9	6	19	0	4	0	4	45	160
PM PEAK	**14**	**170**	**153**	**337**	**71**	**102**	**10**	**183**	**103**	**72**	**146**	**321**	**8**	**37**	**9**	**54**	**895**	**895**
PHF	0.58	0.47	0.74	0.57	0.89	0.69	0.63	0.78	0.70	0.78	0.59	0.78	0.67	0.71	0.75	0.79		

PCDS PAC

40th STREET and STANFORD DRIVE - TUESDAY - 8/29/2023

ADDITIONAL ANALYZED HOURS

BEGIN TIME	STANFORD DRIVE EASTBOUND				STANFORD DRIVE WESTBOUND				STANFORD DRIVE NORTHBOUND				STANFORD DRIVE SOUTHBOUND					60 MIN. TOTAL
	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL		
4:30 to 5:30	**9**	**88**	**102**	**199**	**104**	**113**	**17**	**234**	**165**	**45**	**152**	**362**	**8**	**47**	**12**	**67**		**862**
PHF	0.56	0.76	0.77	0.87	0.76	0.86	0.61	0.91	0.94	0.59	0.84	0.96	0.50	0.62	0.75	0.64		
5:30 to 6:30	**10**	**54**	**62**	**126**	**63**	**96**	**12**	**171**	**111**	**49**	**90**	**250**	**7**	**40**	**9**	**56**		**603**
PHF	0.31	0.79	0.74	0.68	0.68	0.63	0.60	0.74	0.62	0.82	0.75	0.71	0.58	0.77	0.56	0.82		
7:00 to 8:00	**8**	**26**	**34**	**68**	**24**	**32**	**7**	**63**	**53**	**42**	**65**	**160**	**6**	**28**	**4**	**38**		**329**
PHF	1.00	0.72	0.61	0.68	0.55	0.67	0.58	0.63	0.66	0.88	0.49	0.63	0.38	0.70	0.50	0.63		

Appendix C

Level of Service

Appendix C.1

Level of Service

Summary

40th and STANFORD: 7:15 to 8:15 AM PEAK HOUR

	EXISTING 2023		ADJUSTED 2023		2025	
	DELAY	LOS	DELAY	LOS	DELAY	LOS
Intersection	40.4	E	46.4	E	64.2	**F**
Northbound	10.4	B	10.7	B	11.5	B
Southbound	17.6	C	18.8	C	23.5	C
Eastbound	37.9	E	43.5	E	61.2	**F**
Westbound	59.2	F	68.9	F	97.2	F

40th and STANFORD: 2:30 to 3:30 PM PEAK HOUR

	EXISTING 2023		ADJUSTED 2023		2025	
	DELAY	LOS	DELAY	LOS	DELAY	LOS
Intersection	14.7	B	15.6	**C**	18.4	C
Northbound	20.5	C	22.3	C	27.7	**D**
Southbound	8.2	A	8.4	A	9.1	A
Eastbound	14.5	B	15.2	**C**	17.5	C
Westbound	10.1	B	10.4	B	11.9	B

40th and STANFORD: 4:30 to 5:30 PM PEAK HOUR

	EXISTING 2023		ADJUSTED 2023		2025	
	DELAY	LOS	DELAY	LOS	DELAY	LOS
Intersection	8.3	A	8.5	A	9.1	A
Northbound	9.2	A	9.4	A	10.2	**B**
Southbound	6.8	A	6.9	A	7.4	A
Eastbound	7.4	A	7.5	A	8.2	A
Westbound	8.4	A	8.6	A	9.1	A

40th and STANFORD: 5:30 to 6:30 PM PEAK HOUR

	EXISTING 2023		ADJUSTED 2023		2025		2025 WITH PAC	
	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS
Intersection	5.5	A	5.6	A	5.9	A	6.5	A
Northbound	5.7	A	5.8	A	6.1	A	6.1	A
Southbound	5.1	A	5.2	A	5.5	A	6.6	A
Eastbound	4.6	A	4.7	A	4.9	A	5.2	A
Westbound	6.1	A	6.2	A	6.5	A	7.5	A

40th and STANFORD: 7:00 to 8:00 PM PEAK HOUR

	EXISTING 2023		ADJUSTED 2023		2025		2025 WITH PAC	
	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS
Intersection	4.1	A	4.2	A	4.4	A	5.2	A
Northbound	4.6	A	4.7	A	4.9	A	6.3	A
Southbound	3.6	A	3.7	A	4.1	A	4.1	A
Eastbound	3.6	A	3.6	A	4.9	A	4.8	A
Westbound	3.8	A	3.8	A	4.1	A	4.2	A

Appendix C.2

Level of Service

2023 Existing and Adjusted

Intersection	
Intersection Delay, s/veh	40.4
Intersection LOS	E

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	566	868	379	157
Demand Flow Rate, veh/h	577	885	387	160
Vehicles Circulating, veh/h	548	268	297	1056
Vehicles Exiting, veh/h	668	416	828	97
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	37.9	59.2	10.4	17.6
Approach LOS	E	F	B	C

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	577	885	387	160
Cap Entry Lane, veh/h	653	864	840	393
Entry HV Adj Factor	0.980	0.980	0.979	0.982
Flow Entry, veh/h	566	868	379	157
Cap Entry, veh/h	640	847	822	386
V/C Ratio	0.883	1.024	0.461	0.407
Control Delay, s/veh	37.9	59.2	10.4	17.6
LOS	E	F	B	C
95th %tile Queue, veh	11	19	2	2

Intersection	
Intersection Delay, s/veh	14.7
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	594	387	486	146
Demand Flow Rate, veh/h	605	395	496	150
Vehicles Circulating, veh/h	202	269	479	525
Vehicles Exiting, veh/h	473	706	328	139
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	14.5	10.1	20.5	8.2
Approach LOS	B	B	C	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	605	395	496	150
Cap Entry Lane, veh/h	923	863	700	668
Entry HV Adj Factor	0.981	0.981	0.980	0.976
Flow Entry, veh/h	594	387	486	146
Cap Entry, veh/h	906	847	686	652
V/C Ratio	0.655	0.457	0.709	0.224
Control Delay, s/veh	14.5	10.1	20.5	8.2
LOS	B	B	C	A
95th %tile Queue, veh	5	2	6	1

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	264	296	433	108
Demand Flow Rate, veh/h	269	303	443	110
Vehicles Circulating, veh/h	234	274	150	454
Vehicles Exiting, veh/h	330	319	353	123
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.4	8.4	9.2	6.8
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	269	303	443	110
Cap Entry Lane, veh/h	894	859	973	718
Entry HV Adj Factor	0.980	0.978	0.978	0.986
Flow Entry, veh/h	264	296	433	108
Cap Entry, veh/h	877	840	952	708
V/C Ratio	0.301	0.353	0.456	0.153
Control Delay, s/veh	7.4	8.4	9.2	6.8
LOS	A	A	A	A
95th %tile Queue, veh	1	2	2	1

Intersection	
Intersection Delay, s/veh	5.5
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	184	265	359	91
Demand Flow Rate, veh/h	188	270	366	92
Vehicles Circulating, veh/h	176	277	111	433
Vehicles Exiting, veh/h	349	200	253	114
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.6	6.1	5.7	5.1
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	188	270	366	92
Cap Entry Lane, veh/h	1153	1040	1232	887
Entry HV Adj Factor	0.977	0.981	0.980	0.985
Flow Entry, veh/h	184	265	359	91
Cap Entry, veh/h	1126	1021	1208	874
V/C Ratio	0.163	0.260	0.297	0.104
Control Delay, s/veh	4.6	6.1	5.7	5.1
LOS	A	A	A	A
95th %tile Queue, veh	1	1	1	0

Intersection	
Intersection Delay, s/veh	4.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	100	104	261	64
Demand Flow Rate, veh/h	102	106	267	65
Vehicles Circulating, veh/h	102	139	61	176
Vehicles Exiting, veh/h	139	189	143	69
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.6	3.8	4.6	3.6
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	102	106	267	65
Cap Entry Lane, veh/h	1244	1197	1297	1153
Entry HV Adj Factor	0.983	0.982	0.978	0.988
Flow Entry, veh/h	100	104	261	64
Cap Entry, veh/h	1222	1175	1268	1139
V/C Ratio	0.082	0.089	0.206	0.056
Control Delay, s/veh	3.6	3.8	4.6	3.6
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	0

Intersection	
Intersection Delay, s/veh	46.4
Intersection LOS	E

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	580	889	389	162
Demand Flow Rate, veh/h	591	907	397	165
Vehicles Circulating, veh/h	561	275	303	1083
Vehicles Exiting, veh/h	687	425	849	99
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	43.5	68.9	10.7	18.8
Approach LOS	E	F	B	C

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	591	907	397	165
Cap Entry Lane, veh/h	645	858	835	383
Entry HV Adj Factor	0.981	0.981	0.979	0.982
Flow Entry, veh/h	580	889	389	162
Cap Entry, veh/h	632	842	817	376
V/C Ratio	0.917	1.057	0.476	0.431
Control Delay, s/veh	43.5	68.9	10.7	18.8
LOS	E	F	B	C
95th %tile Queue, veh	12	21	3	2

Intersection	
Intersection Delay, s/veh	15.6
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	608	396	499	150
Demand Flow Rate, veh/h	619	404	509	154
Vehicles Circulating, veh/h	208	276	491	538
Vehicles Exiting, veh/h	484	724	336	142
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	15.2	10.4	22.3	8.4
Approach LOS	C	B	C	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	619	404	509	154
Cap Entry Lane, veh/h	918	857	692	660
Entry HV Adj Factor	0.982	0.981	0.981	0.977
Flow Entry, veh/h	608	396	499	150
Cap Entry, veh/h	901	841	678	644
V/C Ratio	0.674	0.471	0.736	0.233
Control Delay, s/veh	15.2	10.4	22.3	8.4
LOS	C	B	C	A
95th %tile Queue, veh	5	3	6	1

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	270	304	444	109
Demand Flow Rate, veh/h	275	311	454	111
Vehicles Circulating, veh/h	239	280	152	466
Vehicles Exiting, veh/h	338	326	362	125
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.5	8.6	9.4	6.9
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	275	311	454	111
Cap Entry Lane, veh/h	890	854	971	709
Entry HV Adj Factor	0.981	0.978	0.979	0.986
Flow Entry, veh/h	270	304	444	109
Cap Entry, veh/h	872	836	950	699
V/C Ratio	0.309	0.364	0.468	0.157
Control Delay, s/veh	7.5	8.6	9.4	6.9
LOS	A	A	A	A
95th %tile Queue, veh	1	2	3	1

Intersection	
Intersection Delay, s/veh	5.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	188	272	368	93
Demand Flow Rate, veh/h	192	277	375	94
Vehicles Circulating, veh/h	181	283	113	445
Vehicles Exiting, veh/h	358	205	260	115
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.7	6.2	5.8	5.2
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	192	277	375	94
Cap Entry Lane, veh/h	1147	1034	1230	876
Entry HV Adj Factor	0.977	0.982	0.981	0.985
Flow Entry, veh/h	188	272	368	93
Cap Entry, veh/h	1121	1015	1206	863
V/C Ratio	0.167	0.268	0.305	0.107
Control Delay, s/veh	4.7	6.2	5.8	5.2
LOS	A	A	A	A
95th %tile Queue, veh	1	1	1	0

Intersection	
Intersection Delay, s/veh	4.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	103	106	268	65
Demand Flow Rate, veh/h	105	108	274	66
Vehicles Circulating, veh/h	104	142	63	180
Vehicles Exiting, veh/h	142	195	146	70
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.6	3.8	4.7	3.7
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	105	108	274	66
Cap Entry Lane, veh/h	1241	1194	1294	1148
Entry HV Adj Factor	0.983	0.982	0.978	0.988
Flow Entry, veh/h	103	106	268	65
Cap Entry, veh/h	1220	1172	1266	1134
V/C Ratio	0.085	0.090	0.212	0.057
Control Delay, s/veh	3.6	3.8	4.7	3.7
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	0

Appendix C.3

Level-of-Service

2025 Ambient and 2025 with Performing Arts Center

Intersection	
Intersection Delay, s/veh	64.2
Intersection LOS	F

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	609	941	411	186
Demand Flow Rate, veh/h	621	959	419	189
Vehicles Circulating, veh/h	594	294	316	1143
Vehicles Exiting, veh/h	738	441	899	110
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	61.2	97.2	11.5	23.5
Approach LOS	F	F	B	C

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	621	959	419	189
Cap Entry Lane, veh/h	624	842	824	360
Entry HV Adj Factor	0.981	0.981	0.980	0.984
Flow Entry, veh/h	609	941	411	186
Cap Entry, veh/h	612	826	807	354
V/C Ratio	0.995	1.139	0.509	0.525
Control Delay, s/veh	61.2	97.2	11.5	23.5
LOS	F	F	B	C
95th %tile Queue, veh	15	27	3	3

Intersection	
Intersection Delay, s/veh	18.4
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	639	427	530	161
Demand Flow Rate, veh/h	653	436	540	165
Vehicles Circulating, veh/h	224	309	517	576
Vehicles Exiting, veh/h	517	748	360	169
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	17.5	11.9	27.7	9.1
Approach LOS	C	B	D	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	653	436	540	165
Cap Entry Lane, veh/h	903	830	674	635
Entry HV Adj Factor	0.979	0.979	0.981	0.978
Flow Entry, veh/h	639	427	530	161
Cap Entry, veh/h	884	812	661	621
V/C Ratio	0.723	0.526	0.801	0.260
Control Delay, s/veh	17.5	11.9	27.7	9.1
LOS	C	B	D	A
95th %tile Queue, veh	6	3	8	1

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	293	318	466	130
Demand Flow Rate, veh/h	299	325	476	132
Vehicles Circulating, veh/h	267	300	173	486
Vehicles Exiting, veh/h	351	349	393	139
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.2	9.1	10.2	7.4
Approach LOS	A	A	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	299	325	476	132
Cap Entry Lane, veh/h	865	837	950	695
Entry HV Adj Factor	0.981	0.979	0.980	0.985
Flow Entry, veh/h	293	318	466	130
Cap Entry, veh/h	849	820	931	685
V/C Ratio	0.346	0.388	0.501	0.190
Control Delay, s/veh	8.2	9.1	10.2	7.4
LOS	A	A	B	A
95th %tile Queue, veh	2	2	3	1

Intersection	
Intersection Delay, s/veh	5.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	203	295	388	96
Demand Flow Rate, veh/h	208	300	396	97
Vehicles Circulating, veh/h	190	293	124	481
Vehicles Exiting, veh/h	388	227	274	112
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.9	6.5	6.1	5.5
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	208	300	396	97
Cap Entry Lane, veh/h	1137	1023	1216	845
Entry HV Adj Factor	0.978	0.982	0.979	0.985
Flow Entry, veh/h	203	295	388	96
Cap Entry, veh/h	1112	1005	1191	833
V/C Ratio	0.183	0.293	0.326	0.115
Control Delay, s/veh	4.9	6.5	6.1	5.5
LOS	A	A	A	A
95th %tile Queue, veh	1	1	1	0

Intersection	
Intersection Delay, s/veh	4.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	118	132	291	103
Demand Flow Rate, veh/h	120	134	297	105
Vehicles Circulating, veh/h	141	161	80	210
Vehicles Exiting, veh/h	174	216	181	85
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.9	4.1	4.9	4.1
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	120	134	297	105
Cap Entry Lane, veh/h	1195	1171	1272	1114
Entry HV Adj Factor	0.985	0.984	0.979	0.980
Flow Entry, veh/h	118	132	291	103
Cap Entry, veh/h	1177	1152	1245	1091
V/C Ratio	0.100	0.114	0.234	0.094
Control Delay, s/veh	3.9	4.1	4.9	4.1
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	0

Intersection	
Intersection Delay, s/veh	6.5
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	203	372	388	138
Demand Flow Rate, veh/h	208	379	396	140
Vehicles Circulating, veh/h	246	293	124	560
Vehicles Exiting, veh/h	454	227	330	112
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.2	7.5	6.1	6.6
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	208	379	396	140
Cap Entry Lane, veh/h	1074	1023	1216	779
Entry HV Adj Factor	0.978	0.982	0.979	0.985
Flow Entry, veh/h	203	372	388	138
Cap Entry, veh/h	1050	1005	1191	768
V/C Ratio	0.194	0.370	0.326	0.180
Control Delay, s/veh	5.2	7.5	6.1	6.6
LOS	A	A	A	A
95th %tile Queue, veh	1	2	1	1

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	228	132	348	103
Demand Flow Rate, veh/h	232	134	355	105
Vehicles Circulating, veh/h	141	183	192	210
Vehicles Exiting, veh/h	174	364	181	107
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.8	4.2	6.3	4.1
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	232	134	355	105
Cap Entry Lane, veh/h	1195	1145	1134	1114
Entry HV Adj Factor	0.983	0.984	0.979	0.980
Flow Entry, veh/h	228	132	348	103
Cap Entry, veh/h	1175	1126	1111	1091
V/C Ratio	0.194	0.117	0.313	0.094
Control Delay, s/veh	4.8	4.2	6.3	4.1
LOS	A	A	A	A
95th %tile Queue, veh	1	0	1	0