



# TRAFFIC IMPACT STUDY

FOR

## WEST OAKS DEVELOPMENT

SUBMITTED TO

## CITY OF OCALA, FL

PREPARED FOR:

## SIEMENS GROUP

Submitted On April 20, 2020

Resubmitted On June, 11, 2020

Resubmitted on September 04, 2020

Resubmitted on March 18, 2021

Resubmitted on April 23, 2021

# *Tillman & Associates*

ENGINEERING, LLC.

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[Via City of Ocala's ePlans System:](#)

April 23, 2021

David Boston and Noel Cooper  
Project Planner and Project Engineer  
City of Ocala  
City Engineer's Office  
1805 NE 30th Ave., Bldg 300  
Ocala, FL 34470

Subject: Seeking approval for Traffic Impact Study (TIS) report for West Oaks Development.

Dear Mr. Boston and Mr. Cooper,

Tillman and Associates, Engineering, LLC is pleased to submit the final Traffic Impact Study based on the comment letter received on 4/15/21 and Developer's Agreement with the City.

We truly appreciate your urgent response to the approval of the revised Traffic Study as this is a very time sensitive project for our client.

If you have any questions pertaining to this letter then please feel free to contact me at [ndave@tillmaneng.com](mailto:ndave@tillmaneng.com) or at (352)-387-4540. We look forward to receiving your review and approval of this Traffic Study.

Sincerely,

\_\_\_\_\_  
Nikunj Dave, P.E., PMP

CC: Scott Siemens, Project Owner  
David Tillman, Tillman & Associates Engineering, LLC  
File

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**Executive Summary:**

The proposed project will consist of an approximately 218 acres of mixed-use development for the residential and commercial uses. The development will consist of 650 Single Family Residents (SFR), 685 units of Apartments/Multi Family Residents (MFR), 100 townhomes along with 72,000 Square Feet (SF) of commercial development. The project is located in the vicinity between NW 21<sup>st</sup> St and NW 35<sup>th</sup> St with the new access road, identified here as New Street A within the limits of the City of Ocala (aka the City), Florida. We prepared the Traffic Study based on the approved methodology and Traffic Study guideline of the City.

Based on the Traffic Study analysis conducted using SYNCHRO software, all the intersections will operate at the satisfactory Level of Service (LOS) conditions E or better and will not fail due to the propose project traffic. During the methodology discussions with the City, we identified Ocala 489 Business Park as the background traffic and the remaining 299 trips were used as the background traffic. In order to create the full build out scenario, we added the existing traffic, background traffic with the proposed project traffic along with 2% growth rated for the year of 2025. The results of all three (3) traffic conditions are described in Table 1.

Based on the results shown in Table 1, we can find out that all intersections will perform at LOS E or better. The only visible impact due to the proposed development is at the intersection of US-27 and NW 35th Ave Rd which is carrying higher background traffic due to the Ocala 489 Business Park. However, this intersection will continue to perform at LOS E during PM peak hour. An analysis of level of service was performed to find out if any mitigation is required to keep the City roadways under LOS of E or better. The results of the LOS are shown in Table 1 and from the Table 1, we can determine that all intersections identified in the methodology will continue to stay in operational condition with LOS of E or better and will not fail due to the proposed project. However, based on the recommendations from the City Traffic Engineer and the agreement between the Developer and the City, we recommend following improvements to be made due to efficiently handle the proposed traffic without excessive delay.

**Recommendations:**

1. As per the Developer's agreement, the intersection of Driveway 1 (NW 21st Ave) and NW 35th St is required to be signalized and based on the Signal Warrant Analysis, the intersection meets the warrant analysis as shown in the following section.
2. Recommend an exclusive WB left turn lane at Driveway 1 and NW 35th St intersection.
3. Recommend to construct an additional SB left turn lane, EB left turn lane and WB right turn lane at Driveway 2 and NW 21<sup>st</sup> St.
4. Recommend to make Signing and Pavement Marking changes to convert an existing Thru lane into an exclusive Right turn lane at NW 35th Ave Rd and NW 21st St. This recommendation was not agreed by the City citing the Safety reasons and instead, they recommended a separate turn lane to be constructed which can be challenging due to existing sidewalk and property line running approximately 2 ft from the edge of the sidewalk along with the overhead utilities.
5. At NW MLK Jr Ave and NW 21<sup>st</sup> St intersection, an exclusive EB left turn can be constructed. However, this improvement is not required to mitigate the LOS but rather a condition to satisfy the current City engineering standards.
6. At US-27 and NW 35th Ave Rd intersection, the City required an additional EB left turn to be added. Based on the LOS mitigation requirement, this improvement is not required however, this improvement will help if the existing overhead and underground utilities can be relocated within practical budget. Additionally, this improvement will not bring down the overall LOS of the intersection and the City should consider Benefit to Cost ratio while considering making this improvement. Rather than the additional EB left turn lane, signal retiming can be performed in order to reduce the overall delay at this intersection which can be accomplished in the fraction of the cost as compared to the construction of the additional EB turn lane.

During our previous discussions and guidance given by the City, we received the email approval on the proportionate share fees and all the improvements shown in the Study.

Based on the comments received from the City, it is our understanding that the City wants to widen the Northbound NW 35th Ave Rd to construct an additional right turn lane. However, based on the analysis that we prepared in this Study; it is not required. We recommend that the outer lane of the NB section should be change to the exclusive Right Turn lane and the inner lane should be changed to a Thru Lane. This is a very cost-effective solution and will be beneficial to both agencies as the right-of-way along NW 35th Ave Rd on east side looked restricted based on the residential community's property boundaries. However, we have complied with City's comment and provided the Proportionate Share Fees calculations showing the Developer's share to mitigate the development trips at this location.

Please note that the above changes should be designed and permitted separately from the Traffic Study if deemed necessary by the City as it will be out of our scope to address them within the Traffic Study.

Table 1: LOS Summary Table

Intersections	Existing+ Background Conditions 2020 Traffic Average Delay and (LOS)	Existing +Background+ Project 2020 Conditions Traffic Delay and (LOS)	Existing+Background + Project 2025 w/o Mitigations Traffic Conditions Delay and (LOS)	Existing+Background + Project with Mitigations Traffic Conditions Delay and (LOS)
Driveway 1 & NW 35 <sup>th</sup> St	7.5 (A)	12.1 (B)	18.9 (B)	13.8 (B)
Driveway 2 and NW 21 <sup>st</sup> Ave	7.5 (A)	12.1 (B)	17.9 (C)	9.5 (A)
NW 35th Ave Rd & NW 21 <sup>st</sup> St	1.3 (A)	2.5 (A)	2.8 (A)	2.4 (A)
US-27 & NW 35th Ave Rd	35.4 (D)	45.9 (D)	54.4 (D)	40.3 (D)
NW 27th Ave & NW 35 <sup>th</sup> St	9.7 (A)	10.3 (B)	10.3 (B)	10.3 (B)
NW 27th Ave & NW 18 <sup>th</sup> St	0.5 (A)	0.5 (A)	0.5 (A)	0.5 (A)
NW MLK Jr Ave & NW 21 <sup>st</sup> St	2.8 (A)	13.9 (B)	30.5 (D)	11.6 (B)
NW MLK Jr Ave & NW 17 <sup>th</sup> Pl	0.6 (A)	0.6 (A)	0.6 (A)	0.6 (A)
NW 27th Ave & NW 21 <sup>st</sup> St	10.5 (B)	19.3 (C)	29.0 (D)	29.0 (D)
NW 21st Ave & NW 17 <sup>th</sup> Pl	1.8 (A)	1.8 (A)	1.8 (A)	1.8 (A)

**Project Description:**

The proposed project will consist of an approximately 218 acres of mixed-use development for the residential uses. The development will consist of 386 Single Family Residences (SFR), 832 Multi Family High Rise (Apartments) and 150 Multi Family Low Rise (Townhomes) units along with 70,000 Square Feet (70 KSF) of commercial development. The project is located in the vicinity between NW 21st St and NW 35th St with the new access road, identified here as New Street A within the limits of the City of Ocala (aka the City), Florida. The proposed development's site plans were already reviewed by the City and are currently under review. This Traffic Study is prepared based on the approved methodology by City of Ocala.

Figure 1: Project Location Map



**Trip Generation:**

Trip Generation was calculated for each land-use of the proposed project based on the 10<sup>th</sup> edition of Institute of Transportation Engineers (ITE) Trip Generation Manual and Trip Generation Handbook (3<sup>rd</sup> edition). Calculations for future trips are projected in Table 1 below:

**Table 2: Gross Trip Generation**

Sr. No	Development Description	ITE Code	Parameter	Unit	AM In	AM Out	PM In	PM Out	ADT In	ADT Out	Internal Capture Rate	Pass-by Rates	Primary (Net) Trips ADT In	Primary (Net) Trips ADT Out
1	Single Family Residential	210	386	Units	70	209	234	138	1,802	1,801	21.35%	0	2909	2910
2	Multi-Family Residential (Mid Rise)	221	832	Units	71	202	207	132	2266	2267	21.35%	0	2569	2569
3	Multi Family (Low Rise)	220	150	Units	16	54	53	32	546	547	21.35%	0	290	291
4	Commercial	820	70	KSF	116	71	200	217	2,358	2,359	21.35%	34%	1359	1359

Below is the summary of the Internal Capture based on the ITE spreadsheet for AM and PM Peak hour:

**Table 3: Internal Capture Summary for AM Peak Hour (Information Purpose Only)**

<b>Table 5-A: Computations Summary</b>			
	Total	Entering	Exiting
All Person-Trips	1,066	342	724
Internal Capture Percentage	2%	4%	2%
External Vehicle-Trips <sup>5</sup>	1,042	330	712
External Transit-Trips <sup>6</sup>	0	0	0
External Non-Motorized Trips <sup>6</sup>	0	0	0

**Table 4: Internal Capture Summary for PM Peak Hour (Information Purpose Only)**

<b>Table 5-P: Computations Summary</b>			
	Total	Entering	Exiting
All Person-Trips	1,431	844	587
Internal Capture Percentage	7%	6%	9%
External Vehicle-Trips <sup>5</sup>	1,331	794	537
External Transit-Trips <sup>6</sup>	0	0	0
External Non-Motorized Trips <sup>6</sup>	0	0	0

However, based on the comment from the City during 3rd review comments round, we received a comment regarding the internal capture rates. The Study utilized the Internal Capture rate of **13.89%** during PM Peak Hour time period based on 2014 FDOT Internal Capture rate. Hence, we modified the above rates shown in Table 3 and 4 and they are for the information purpose only.

**Table 5: Net Trips Generation**

Internal Captures Volumes	Pass-by Volumes	AM In Net	AM Out Net	PM In	PM Out	Internal Capture Rates	Pass-by Rates	PM In Net	PM Out Net	ADT In	ADT Out	Internal Capture Rates	Pass-by Rates	ADT In Net	ADT Out Net
19.82%	0%	56	168	234	138	13.89%	0%	202	119	1,802	1,801	21.35%	0%	1417	1416
19.82%	0%	57	162	207	132	13.89%	0%	178	114	2,266	2,267	21.35%	0%	1782	1783
19.82%	0%	13	43	53	32	13.89%	0%	46	28	546	547	21.35%	0%	429	430
19.82%	34%	54	33	200	217	13.89%	34%	104	113	2,358	2,359	21.35%	34%	1053	1053
Total		179	406	694	519			530	373	6,972	6,974			4,682	4,683

For Commercial development, ITE’s standard pass-by rate of 34% was used. After subtracting the internal capture rates and pass-by volumes, following net trips were calculated as below:

Based on the above calculations, it is clear that the site generates more traffic during PM peak hour and the PM peak hour model should be analyzed with 903 (530+373) trips during the PM peak hour duration. Thus, as per the City of Ocala’s TIS guideline, this development should be considered for a full Traffic Impact Study.

### Trip Equivalency Matrix

Based on the request from the City, we updated the Traffic Study to include the Trip Equivalency Matrix. Trip Equivalency Matrix helps the reviewer to quickly calculate the changes in the land use. Based on the below table, we can find out if the land use gets changed from SFR to Townhomes. Based on Table 6, it can be found out that the equivalent trips of 300 SFR will be 510 Multifamily Residential (Low Rise). based on the calculation of  $300 \text{ SFR} * 1.701 = 510 \text{ Multi Family Residential (Low Rise)}$ .

**Table 6: Trip Equivalency Matrix**

Trips/Unit	Change To Change From	Single Family Residential	Multi Family Residential (Mid Rise)	Multi Family Residential (Low Rise)	Commercial
0.830	Single Family Residential	1.000	2.365	1.701	0.267
0.351	Multi Family Residential (Mid Rise)	0.423	1.000	0.719	0.113
0.488	Multi Family Residential (Low Rise)	0.588	1.391	1.000	0.157
3.104	Commercial	3.741	8.848	8.848	1.000

### Analysis Period

The PM peak-hour scenario was analyzed at the below Study Area intersections as depicted in the Study Area Methodology and the LOS results are shown in Table 1.

## **Study Area Methodology**

Based on the previous meeting with the City Staff, Cube Voyager software was used to run the latest Central Florida Regional Planning Model (CFRPM) model within Marion/Ocala region. In the CFRPM model, a new Transportation/Traffic Analysis Zone (TAZ) was created as identified by the number 4180, near the driveway of the future development. This TAZ is shown on the Figures 1 and 2. Based on this new TAZ, the model was run in order to capture the trip distribution on each link of the roadway. Cube output is attached as Figure 2. Please note that some of the intersections were added based on the comments received from the review agencies.



## **Significant Impact Analysis**

The results of the Cube analysis are depicted in the above map. Subsequently, the roadway link analysis is presented in this document in order to capture the roadways with “significant impact” for all the roadways captured in the Cube outputs. Even for Florida Department of Transportation (FDOT) owned and/or maintained roadway, more conservative rate of 3% threshold for calculating the total impacted trips was used. This conservative approach is taken based on the request from the City Staff.

Based on the recent discussions with the City Engineer, we used the ITE trips in place of Cube Assigned Trips to calculate the % of Impact values which is not consistent with the approved Methodology document. After subsequent discussions with the City Engineer, we were assured that the updated numbers will be used for information purpose and no additional intersections will be required to be studied since the Methodology and Developer’s agreement are reviewed and approved. Please note that for the purpose of LOS analysis, we utilized the ITE Trip Generation trips, not the Cube Assigned Trips which will be a conservative approach. We checked the previously approved reports by the City and County and found that other approved reports used Travel Demand Model (Cube) trips since the Methodology is done at the planning level and the analysis is performed using ITE Trip Generation trips, afterwards, during actual Traffic Study phase.

**Table 7: Significant Impact Table**

Roadway	Maintained by	Intersection Name	Desired LOS (from FDOT Service Volume Tables)	No. of Lanes	Desired Volume (from FDOT Service Volume Tables) (Vol/Day)	ITE Assigned Volumes (Vol/Day)	% of Impact	% of Impact Greater than 3%	Included in the Study Area
New Street A	City of Ocala	Driveway and New Street A (SB)	D	2	14060	9365	66.60	Yes	Yes
New Street A	City of Ocala	Driveway and New Street A (NB)	D	2	14060	7117	50.62	Yes	Yes
NW 21st St	City of Ocala	NW 35th St and New Street A	D	2	14060	2248	15.99	Yes	Yes
NW 27th Ave	Marion County	NW 27th Ave and NW 35th St	D	4	37810	2248	5.95	Yes	Yes
NW 21st St	City of Ocala	NW 21st and NW 16th Ave (MLK Jr Ave) (Before 1st driveway)	D	2	14060	4219	30.01	Yes	Yes
NW 21st St	City of Ocala	NW 27th Ave and NW 21st St	D	2	14060	2753	19.58	Yes	Yes
NW 21st St	City of Ocala	NW 21st and NW 16th Ave (MLK Jr Ave) (After 1st driveway)	D	2	14060	2933	20.86	Yes	Yes
NW 35th Ave Rd	City of Ocala & FDOT	US 27 & NW 35th Ave Rd	D	4	39800	2909	7.31	Yes	Yes
US 27	FDOT	US 27 and I-75 NB Signal	D	4	39800	1575	3.96	Yes	Yes
US 27	FDOT	US 27 and I-75 SB Signal	D	4	39800	1310	3.29	Yes	Yes
NW 21st St	City of Ocala	NW 35th Ave Rd and NW 21st St	D	2	13320	2933	22.02	Yes	Yes
NW 21st St	City of Ocala	NW 21st St and NW 27th Ave	D	2	13320	4219	31.68	Yes	Yes
NW 21st St	City of Ocala	NW MLK Jr Ave and NW 21st St	D	2	13320	2753	20.67	Yes	Yes
NW 21st Ave	City of Ocala	NW 21st Ave and NW 17th Pl	D	2	13320	144	1.08	No	Yes
NW 17th Pl	City of Ocala	NW 17th Pl and NW MLK Jr Ave	D	2	13320	2717	20.40	Yes	Yes
NW 27th Ave	City of Ocala	NW 27th Ave and NW 18th St	D	2	13320	1238	9.30	Yes	Yes

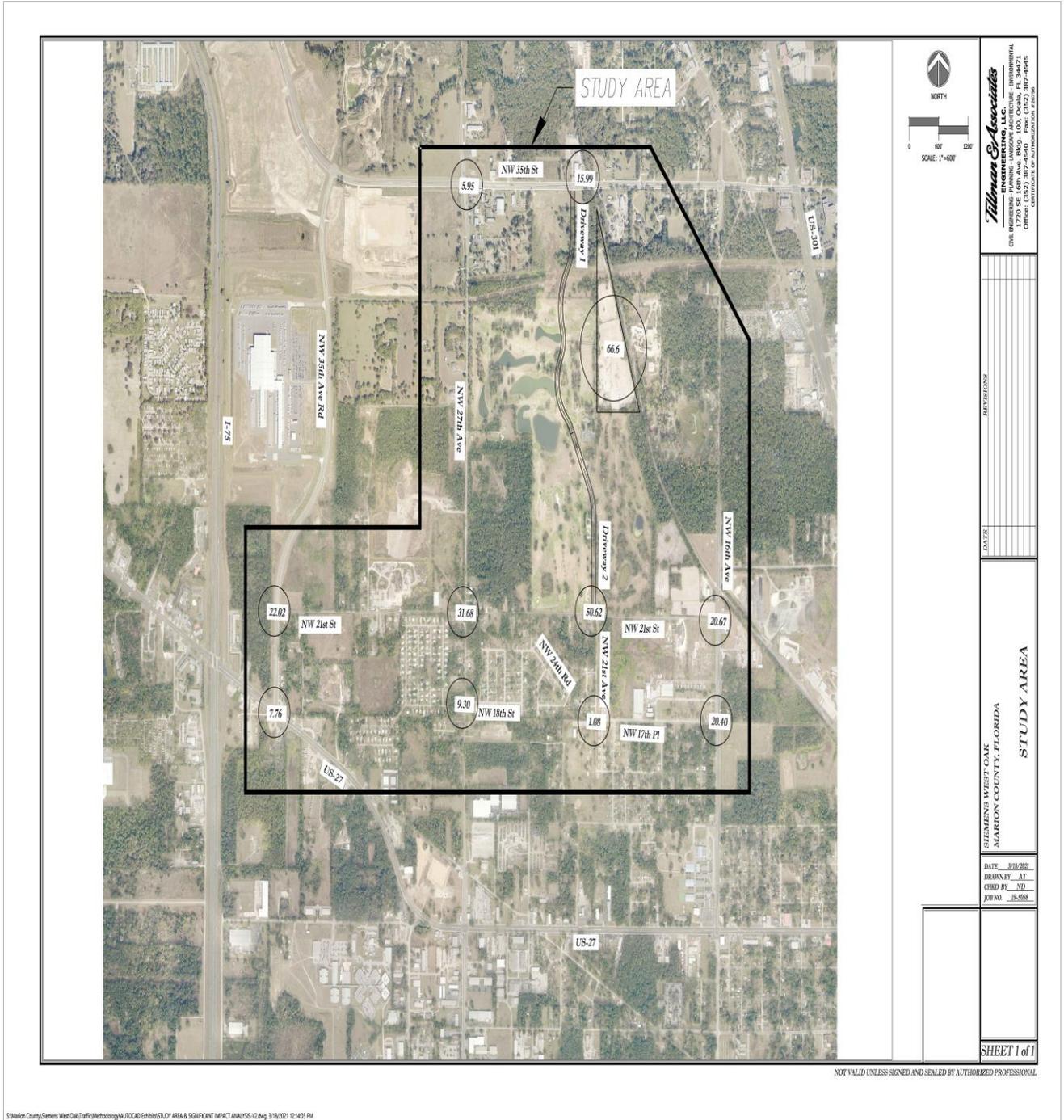
## **Study Area**

Based on the anticipated impacts and changes in traffic patterns due to the proposed project, the following intersections and roadway segments were analyzed. In addition to the intersections approved in the Methodology document, we analyzed an additional intersection of US-27 and NW 35th Ave Rd.

## **Intersections:**

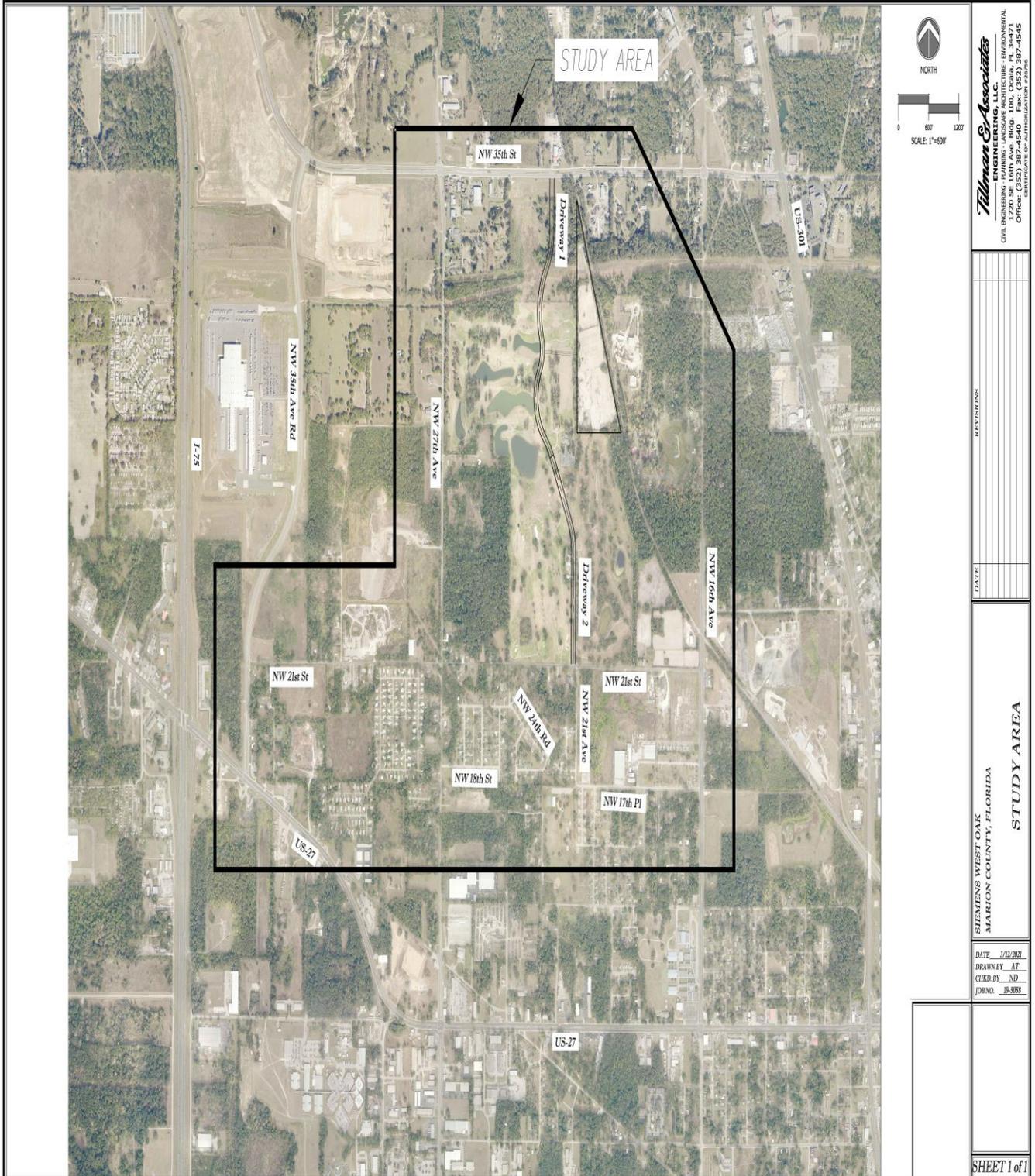
- A. Driveway 1 @ New Street A
- B. New Street A and NW 27<sup>th</sup> Ave
- C. Street A and NW 35<sup>th</sup> St
- D. NW 35<sup>th</sup> St and NW 27<sup>th</sup> Ave
- E. NW 21<sup>st</sup> St and NW 16<sup>th</sup> Ave/MLK Jr Ave
- F. NW 27<sup>th</sup> Ave and NW 21<sup>st</sup> St
- G. NW 27<sup>th</sup> Ave and NW 18<sup>th</sup> St
- H. NW 18<sup>th</sup> St and NW 24<sup>th</sup> Rd
- I. NW 17<sup>th</sup> Pl and NW 16<sup>th</sup> Ave (MLK Jr Ave)
- J. NW 21<sup>st</sup> St and NW 35th Ave Rd
- K. US-27 and NW 35th Ave Rd
- L. NW 21<sup>st</sup> Ave and NW 17<sup>th</sup> Pl

**Figure 3: Significant Impact Analysis Figure**



S:\Marion County\Siemens West Oak\Traffic\Methodology\AUTOCAD\Exhibit\STUDY AREA B SIGNIFICANT IMPACT ANALYSIS\10.dwg, 3/18/2021 12:44:55 PM

**Figure 4: Study Area**



NORTH

SCALE: 1"=600'

*Tillman & Associates*  
 CIVIL ENGINEERING - PLANNING - LANDSCAPE ARCHITECTURE - ENVIRONMENTAL  
 1720 SE 16TH AVE, BLDG. 100, Ocala, FL 34471  
 PHONE: 352-237-7075  
 CERTIFICATE OF AUTHORIZATION #2015

DATE	REVISIONS

SIEMENS WEST OAK  
 MARION COUNTY, FLORIDA  
**STUDY AREA**

DATE: 3/12/2021  
 DRAWN BY: AT  
 CHECKED BY: ND  
 JOB NO.: 18-899

**Traffic Data Collection:**

Usually, 12-hour, bi-directional, weekday (Tuesday, Wednesday, or Thursday) counts of the turning movement volumes on all of the above intersections, were captured in order to identify the peak hour time period. Once the peak hour time period was identified using these counts, the entire analysis followed that peak hour for AM and PM time duration. However, since the project analysis is solely focused on the PM peak hour duration, only 6 hours of traffic counts from 12 PM - 6 PM were conducted for this project. The data counts were conducted to analyze the intersection and its impact along with the distribution of the future trips to/from the driveway. Due to the proposed development's minor impact on the City's existing roadways, no additional traffic counts were conducted other than the intersections listed below. All traffic data counts are shown under Exhibit A.

**Intersection Analysis – AM & PM Peak-Hours (Existing, Existing + Background and Existing + Background + Project Traffic at Opening Year)**

The operating conditions at the signalized intersections were analyzed using Synchro software and all unsignalized intersections were analyzed using HCM-2000 methodology. The capacity analysis with level of service, average delay per vehicle and queue lengths within the Study intersections are shown in Appendix C. Based on the methodology presented to the City, the PM Peak Hour traffic was generating significantly higher traffic volumes and thus, we considered PM peak hour into our analysis model while analyzing the entire intersections within the study area for the existing (2020) and Opening Year (2025).

**Improvements & Access Management**

An analysis of level of service was performed to find out if any mitigation is required to keep the City roadways under LOS of E or better. The results of the LOS are shown in Table 1 and from the Table 1, we can determine that all intersections identified in the methodology will continue to stay in operational condition with LOS of E or better and will not fail due to the proposed project. However, based on the recommendations from the City Traffic Engineer and

the agreement between the Developer and the City, we recommend following improvements to be made due to efficiently handle the proposed traffic without excessive delay.

**Recommendations:**

1. As per the Developer's agreement, the intersection of Driveway 1 (NW 21st Ave) and NW 35th St is required to be signalized and based on the Signal Warrant Analysis, the intersection meets the warrant analysis as shown in the following section.
2. Recommend an exclusive WB left turn lane at Driveway 1 and NW 35th St intersection.
3. Recommend to construct an additional SB left turn lane, EB left turn lane and WB right turn lane at Driveway 2 and NW 21<sup>st</sup> St.
4. Recommend to make Signing and Pavement Marking changes to convert an existing Thru lane into an exclusive Right turn lane at NW 35th Ave Rd and NW 21st St. This recommendation was not agreed by the City citing the Safety reasons and instead, they recommended a separate turn lane to be constructed which can be challenging due to existing sidewalk and property line running approximately 2 ft from the edge of the sidewalk along with the overhead utilities.
5. At NW MLK Jr Ave and NW 21<sup>st</sup> St intersection, an exclusive EB left turn can be constructed. However, this improvement is not required to mitigate the LOS but rather a condition to satisfy the current City engineering standards.
6. At US-27 and NW 35th Ave Rd intersection, the City required an additional EB left turn to be added. Based on the LOS mitigation requirement, this improvement is not required however, this improvement will help if the existing overhead and underground utilities can be relocated within practical budget. Additionally, this improvement will not bring down the overall LOS of the intersection and the City should consider Benefit to Cost ratio while

considering making this improvement. Rather than the additional EB left turn lane, signal retiming can be performed in order to reduce the overall delay at this intersection which can be accomplished in the fraction of the cost as compared to the construction of the additional EB turn lane.

Please note that the above changes should be designed and permitted separately from the Traffic Study as it will be out of our scope to address them within the Traffic Study.

## **Signal Warrant Analysis**

Based on the request from the City, a Signal Warrant Analysis is carried out at the intersection of NW 35<sup>th</sup> St at NW 21<sup>st</sup> Ave (Driveway 1). Regarding Signal Warrant Analysis, we used Manual on Uniform Traffic Control Devices (MUTCD) Warrant guideline. Based on this guideline, we performed, 8-Hour, 4-Hour and Peak Hour Warrants and the warrants conditions are satisfied. The future condition was simulated using the ITE's recommended guideline.

Signal Warrant Analysis is presented in the next pages of this report due to the size of the tables. Based on the below analysis, we can comprehend that the intersection of NW 35<sup>th</sup> St and NW 21<sup>st</sup> Ave meets the 8-hour Signal Warrant 1 Analysis at a reduced threshold of 70% volumes. Thus, the Signal is justified based on the Interruption of Continuous Traffic, Condition-B of MUTCD. The reduced threshold can be used in an isolated community with the population of 10,000 or where a major street speed is above 40 MPH. In this case, the Major Street (NW 35<sup>th</sup> St) has a posted speed of 45 MPH so this criterion is applicable. Thus, we support installing a traffic signal at this location. Additionally, the upstream traffic signal in the western direction is located at the intersection of NW 35<sup>th</sup> St and NW 27<sup>th</sup> Ave which is approximately 2100 ft from the future signalized intersection of Driveway-1 and NW 35<sup>th</sup> St. The downstream traffic signal in the eastern direction is located at the intersection of NW 35<sup>th</sup> St and NW 16<sup>th</sup> Ave which will be approximately 2900 ft from the future signalized intersection.

Table 8: Signal Warrant Analysis Results

Warrant No.	Warrant	Applicable or Not	Meeting Warrant
1	8 Hour Warrant	Yes	Yes
2	4 Hour Warrant	Yes	Yes
3	Peak Warrant	Yes	Yes
4	Pedestrian Volume Warrant	N/A	N/A
5	School Crossing Warrant	N/A	N/A
6	Coordinated signal Warrant	Yes	Yes
7	Crash experience Warrant	N/A	N/A
8	Roadway Network Warrant	N/A	N/A

Additionally, MUTCD recommends that two signals should have 1000 ft spacings between them in order to function both signals in a coordinated manner and provide the required operational efficiency for the proposed signals. Thus, this criterion will be satisfied in our case. Hence, based on the above analysis and results presented, a Signal Warrant is justified and should be constructed to handle the future development traffic efficiently before the development build out year of 2025.

# *Tillman & Associates*

ENGINEERING, L.L.C.

**Table 9: Warrant 1: 8-HOUR WARRANT CONDITION A: MINIMUM VEHICULAR VOLUME (values in VPH)**

START TIME	NW 35th Street (Major Street)			Driveway 1 (Minor Street)			MAJOR ST	MINOR ST	RESULT	MAJOR ST	MINOR ST	RESULT	MAJOR ST	MINOR ST	RESULT
	WB	EB	TOTAL = WB + EB	SB	NB	Max of SB & NB	100%	100%	Overall 100%	80%	80%	Overall 80%	70%	70%	Overall 70%
07:00 AM To 08:00 AM	487	420	907	39	142	142	Y	N	N	Y	Y	Y	Y	Y	Y
08:00 AM To 09:00 AM	459	399	858	54	111	111	Y	N	N	Y	N	N	Y	Y	Y
09:00 AM To 10:00 AM	406	359	764	56	83	83	Y	N	N	Y	N	N	Y	N	N
10:00 AM TO 11:00 AM	412	363	774	69	73	73	Y	N	N	Y	N	N	Y	N	N
11:00 AM To 12:00 PM	474	410	884	90	83	90	Y	N	N	Y	N	N	Y	N	N
12:00 PM To 01:00 PM	530	422	952	94	90	94	Y	N	N	Y	N	N	Y	N	N
12:45 PM To 01:45 PM	511	398	909	86	88	88	Y	N	N	Y	N	N	Y	N	N
01:45 PM To 02:45 PM	478	446	924	96	95	96	Y	N	N	Y	N	N	Y	N	N
02:45 PM To 03:45 PM	562	456	1018	126	91	126	Y	N	N	Y	Y	Y	Y	Y	Y
03:15 PM To 04:15 PM	572	449	1021	116	88	116	Y	N	N	Y	N	N	Y	Y	Y
04:15 PM To 05:15 PM	540	502	1042	136	94	136	Y	N	N	Y	Y	Y	Y	Y	Y
05:00 PM To 06:00 PM	532	508	1040	146	105	146	Y	N	N	Y	Y	Y	Y	Y	Y
<b>Overall Result = N</b>							<b>N</b>			<b>N</b>			<b>N</b>		

Note: Yes= Y, No =N

**Table 10: Warrant 1 8-HOUR WARRANT CONDITION B: INTERRUPTION OF CONTINUOUS TRAFFIC (values in VPH)**

START TIME	NW 35th Street (Major Street)			Driveway 1 (Minor Street)			MAJOR ST	MINOR ST	RESULT	MAJOR ST	MINOR ST	RESULT	MAJOR ST	MINOR ST	RESULT
	WB	EB	TOTAL = WB + EB	SB	NB	Max of SB & NB	100%	100%	Overall 100%	80%	80%	Overall 80%	70%	70%	Overall 70%
07:00 AM To 08:00 AM	487	420	907	39	142	142	Y	Y	Y	Y	Y	Y	Y	Y	Y
08:00 AM To 09:00 AM	459	399	858	54	111	111	N	Y	N	Y	Y	Y	Y	Y	Y
09:00 AM To 10:00 AM	406	359	764	56	83	83	N	Y	N	Y	Y	Y	Y	Y	Y
10:00 AM TO 11:00 AM	412	363	774	69	73	73	N	N	N	Y	Y	Y	Y	Y	Y
11:00 AM To 12:00 PM	474	410	884	90	83	90	N	Y	N	Y	Y	Y	Y	Y	Y
12:00 PM To 01:00 PM	530	422	952	94	90	94	Y	Y	Y	Y	Y	Y	Y	Y	Y
12:45 PM To 01:45 PM	511	398	909	86	88	88	Y	Y	Y	Y	Y	Y	Y	Y	Y
01:45 PM To 02:45 PM	478	446	924	96	95	96	Y	Y	Y	Y	Y	Y	Y	Y	Y
02:45 PM To 03:45 PM	562	456	1018	126	91	126	Y	Y	Y	Y	Y	Y	Y	Y	Y
03:15 PM To 04:15 PM	572	449	1021	116	88	116	Y	Y	Y	Y	Y	Y	Y	Y	Y
04:15 PM To 05:15 PM	540	502	1042	136	94	136	Y	Y	Y	Y	Y	Y	Y	Y	Y
05:00 PM To 06:00 PM	532	508	1040	146	105	146	Y	Y	Y	Y	Y	Y	Y	Y	Y
Overall Result = Y							Y			Y			Y		

Table 11: Warrant 2 4-HOUR WARRANT (values in VPH)

START TIME	NW 35th Street (Major Street)			Driveway 1 (Minor Street)			Condition A			Condition B (70% factor)		
	WB	EB	TOTAL = WB + EB	SB	NB	Max of SB & NB	VPH on					
							major street	required minor street	Result	required major street	minor street	Result
07:00 AM To 08:00 AM	487	420	907	39	142	142	907	177	N	907	69	Y
08:00 AM To 09:00 AM	459	399	858	54	111	111	858	192	N	858	75	Y
09:00 AM To 10:00 AM	406	359	764	56	83	83	764	221	N	764	88	N
10:00 AM TO 11:00 AM	412	363	774	69	73	73	774	218	N	774	86	N
11:00 AM To 12:00 PM	474	410	884	90	83	90	884	184	N	884	72	Y
12:00 PM To 01:00 PM	530	422	952	94	90	94	952	163	N	952	62	Y
12:45 PM To 01:45 PM	511	398	909	86	88	88	909	176	N	909	68	Y
01:45 PM To 02:45 PM	478	446	924	96	95	96	924	172	N	924	66	Y
02:45 PM To 03:45 PM	562	456	1018	126	91	126	1018	142	N	1018	54	Y
03:15 PM To 04:15 PM	572	449	1021	116	88	116	1021	141	N	1021	53	Y
04:15 PM To 05:15 PM	540	502	1042	136	94	136	1042	135	Y	1042	50	Y
05:00 PM To 06:00 PM	532	508	1040	146	105	146	1040	136	Y	1040	51	Y
<b>Overall Result = Y</b>							<b>N</b>			<b>Y</b>		

**Table 12: Warrant 3 PEAK HOUR WARRANT (Values in VPH)**

START TIME	NW 35th Street (Major Street)			Driveway 1 (Minor Street)			Condition A			Condition B (70% factor)		
	WB	EB	TOTAL = WB + EB	SB	NB	Max of SB & NB	VPH on					
							major street	required minor street	Result	major street	required minor street	Result
07:00 AM To 08:00 AM	487	420	907	39	142	142	907	322	N	907	139	Y
08:00 AM To 09:00 AM	459	399	858	54	111	111	858	345	N	858	154	N
09:00 AM To 10:00 AM	406	359	764	56	83	83	764	384	N	764	177	N
10:00 AM TO 11:00 AM	412	363	774	69	73	73	774	380	N	774	174	N
11:00 AM To 12:00 PM	474	410	884	90	83	90	884	335	N	884	148	N
12:00 PM To 01:00 PM	530	422	952	94	90	94	952	306	N	952	132	N
12:45 PM To 01:45 PM	511	398	909	86	88	88	909	321	N	909	138	N
01:45 PM To 02:45 PM	478	446	924	96	95	96	924	315	N	924	135	N
02:45 PM To 03:45 PM	562	456	1018	126	91	126	1018	279	N	1018	116	Y
03:15 PM To 04:15 PM	572	449	1021	116	88	116	1021	278	N	1021	115	Y
04:15 PM To 05:15 PM	540	502	1042	136	94	136	1042	269	N	1042	110	Y
05:00 PM To 06:00 PM	532	508	1040	146	105	146	1040	270	N	1040	110	Y
<b>Overall Result = Y</b>							<b>N</b>			<b>Y</b>		

**Warrant 6: Coordinated Signal System**

We checked the guideline provided by MUTCD for this warrant and the upstream traffic signal in the western direction is located at the intersection of NW 35<sup>th</sup> St and NW 27<sup>th</sup> Ave which is approximately 2100 ft from the future signalized intersection of Driveway-1 and NW 35<sup>th</sup> St. The downstream traffic signal in the eastern direction is located at the intersection of NW 35<sup>th</sup> St and NW 16<sup>th</sup> Ave which will be approximately 2900 ft from the future signalized intersection. As per MUTCD guidelines, the recommended distance between the two signalized intersections should be a minimum of 1000 ft. In this case, we are meeting the minimum recommended distance of MUTCD between two intersection. The new signal timing for the proposed development should be coordinated with the existing upstream and downstream signals' timing with the appropriate signal maintenance agencies. Thus, all 3-signals should be coordinated and synchronized in order to create positive degree of platooning with the progressive operation.

## **Turn Lane Analysis**

Based on the request from the City, we performed the additional turn lane analysis at the affected intersection and below are the results of the Turn Lane Warrant Analysis. The Left turn lane warrant was checked using AASHTO guideline and the Right turn lane warrant was checked using FDOT's Driveway Information Guide. We have utilized the project trips to find out if there is any turn lane warranted due to the construction of the proposed project. Below is the summary of the Turn Lane Analysis:

**Table 13: Turn Lane Analysis Results**

Intersection	Approach Lane	Required Deceleration Distance (Ft)	95th Percentile Queue Length (Ft)	Total Turn Length (Ft)
NW 35th St & Driveway 1 (NB)	WB Left Turn	185	100	285
NW 21st St & Driveway 2 (SB)	SB Left Turn	145	100	245
NW 21st St & Driveway 2 (SB)	EB Left Turn	145	100	245
NW 21st St & Driveway 2 (SB)	WB Right Turn	145	100	245
NW 35th Ave Rd & NW 21st St	NB Right Turn	145	100	245
NW MLK Jr Ave & NW 21 <sup>st</sup> St	EB Left Turn	155	125	280
*US-27 & NW 35th Ave Rd	EB Left Turn	240	300	540

\*Based on our prior discussions, we requested that the developer should not be punished to make improvements on currently deficient intersection which is US-27 and NW 35th Ave Rd and, the City verbally agreed with our approach. So, the information at this location is only provided for the future road widening purpose as the length of the turn lanes at this intersection are not sufficient to meet the operational requirement of the existing traffic.

**Table 14: AASHTO Reference Left Turn Volumes**

Opposing volume (veh/h)	Advancing volume (veh/h)			
	5% left turns	10% left turns	20% left turns	30% left turns
40-mph operating speed				
800	330	240	180	160
600	410	305	225	200
400	510	380	275	245
200	640	470	350	305
100	720	515	390	340
50-mph operating speed				
800	280	210	165	135
600	350	260	195	170
400	430	320	240	210
200	550	400	300	270
100	615	445	335	295
60-mph operating speed				
800	230	170	125	115
600	290	210	160	140
400	365	270	200	175
200	450	330	250	215
100	505	370	275	240

*Figure 1: AASHTO Guide for Left turn Lanes on Two-Lane Highways*

## Left-Turn and Right-Turn Lane Warrants for Development Traffic (Values in VPH)

**Table 15: Turn Lane Analysis Results**

Intersection Name	Eastbound				Westbound				Northbound				Southbound			
	Threshold Volumes**	Meting Warrant Yes/No (Y/N)	Right-Turn	Meting Warrant Yes/No (Y/N)	Threshold Volumes**	Meting Warrant Yes/No (Y/N)	Right-Turn	Meting Warrant Yes/No (Y/N)	Threshold Volumes**	Meting Warrant Yes/No (Y/N)	Right-Turn	Meting Warrant Yes/No (Y/N)	Threshold Volumes**	Meting Warrant Yes/No (Y/N)	Right-Turn	Meting Warrant Yes/No (Y/N)
NW 35th St & NW 27th Ave*	N/A	N	0	N												
NW 35th St & Driveway 1 (NB)*	N/A	N	7	N	N/A	N	0	N	N/A	N	96	N	0	N	0	N
NW 21st St & NW 27th Ave	0	N	0	N	26.54%, 155,266	N	2	N	0	N	83	N	1.55%, 190, 266	N	0	N
NW 21st St & Driveway 2 (SB)	74.84%, 81, 226	Y	0	N	0	N	186	Y	--	--	--	--	39.40%, 163, 322	N	189	Y
NW 21st St & NW 16th Ave	1.12%, 153, 638	N	121	N	--	--	--	--	27.27%, 464, 348	Y***	--	--	--	--	2	N
US-27 & NW 35th Ave Rd*	193	N	0	N	0	N	2	N	0	N	0	N	1	N	0	N
NW 35th Ave Rd and NW 21st St	N/A		N/A		95.76%, 5, 371	N	0	N	0		170	Y	0		371	Y

\*Warrant is based on FDOT guideline for a signalized intersection and not based on AASHTO guideline

\*\*Threshold volumes are based on VPH and represent % Lt Turn Volumes, Advancing Volumes and Opposing Volumes in a chronological order

\*\*\*Existing turn lane is sufficient to handle the development and existing traffic

**Proportionate Share Fees Calculations:**

We discussed with the City Traffic Engineer regarding the Proportionate Share Fees calculations and the impending Developer's agreement with the City. Based on the prior discussions, we got the approval from the City regarding the proposed project improvements which are presented as below. Below excerpts were considered based on the site conditions, proposed LOS and right of way constraints that present the challenges to make practical improvement as stated below.

Based on the request that we received from the City, we performed the Proportionate Share Fee calculations. The Proportionate Share Fee is calculated to find out the required mitigation cost that the developer is expected to pay. Please note that regarding the off-site improvements, the Developer's agreement calls out a cost sharing approach between the City and the Developer. Thus, any turn lanes that is required to be built to increase the operation capacity of the public roadways should be split with the City as per the Developer's agreement. The Proportionate Share is calculated based on the ratio of new development trips and the total capacity of the roadway. For example, if the development adds 100 new trips in an hour and the capacity of a new thru lane is 1600 veh/hr, then the required Proportionate Share will be  $100/1600 = 6.25\%$ .

Below is the summary of the Proportionate Share Fee Calculations:

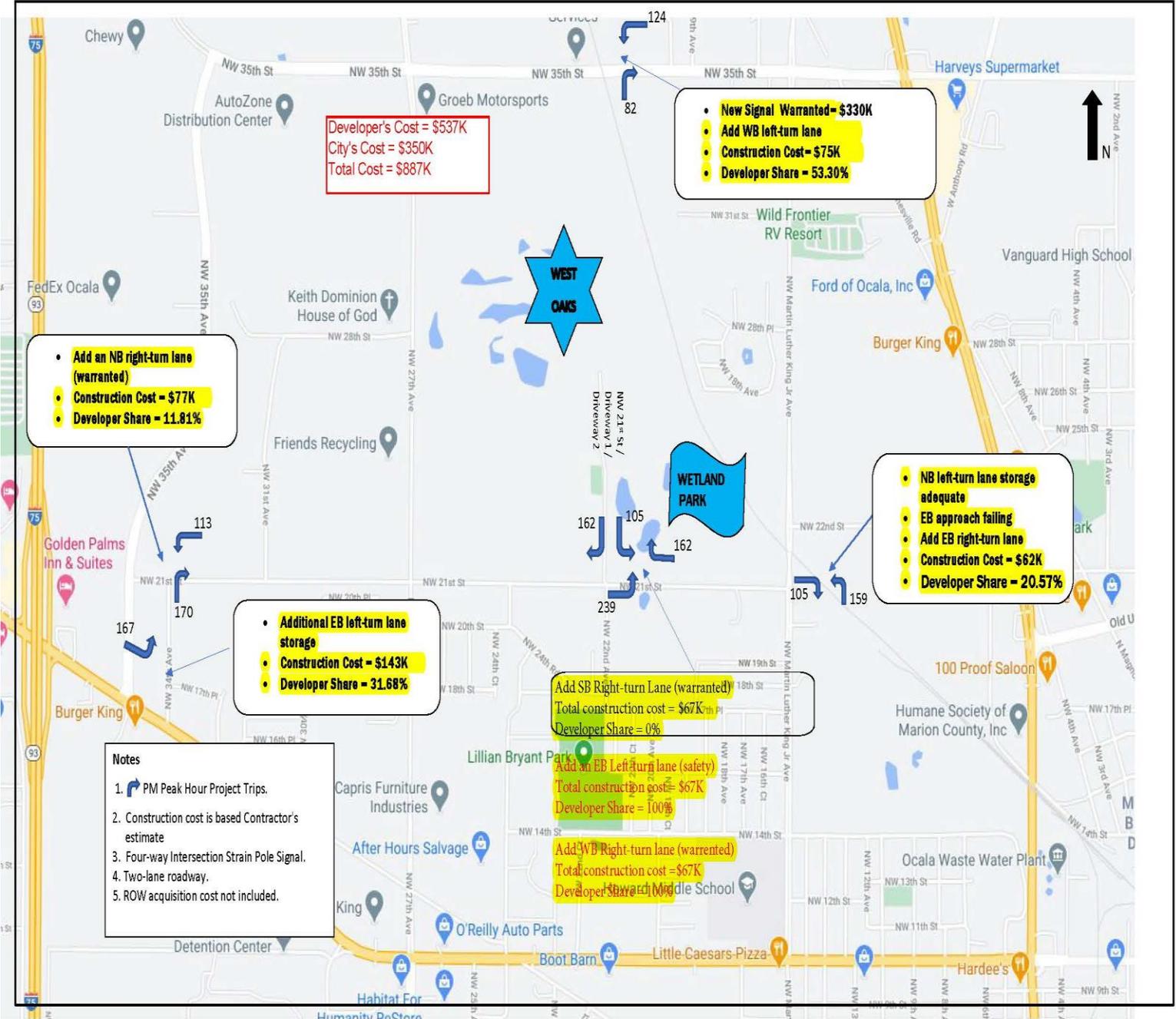
**Table 16: Proportionate Share Fees**

Intersections	V/C Ratio												Total Construction Cost	Proportionate Share
	Existing+Background + Project With Improvement													
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Driveway 1 & NW 35th St (WB Left Turn) V/C	0	0.48	0	0.58	0.42	0	0	0.14	0	0	0	0		
Net														
Total Volumes	1	456	6	124	399	0	4	0	82	1	1	1		
Capacity	N/A	950	N/A	214	950	N/A	N/A	0	N/A	N/A	N/A	N/A		53.3% (Based on Developer's Agreement)
				58.00%									\$405,000.00	\$250,485.71
Driveway 2 & NW 21st St (SB Rt, EB Lt and WB Rt) V/C	0.22	0.22	0.22	0	0	0.08	0.13	0.13	0.13	0.5	0	0.2		
Net														
Volumes	239	13	0	0	0	162	0	9	0	105	0	162		
Capacity	1095	59	0	N/A	N/A	2038	0	69	0	202	N/A	815		
	100.00%					100.00%						0.00%	\$201,000.00	\$134,000.00
NW 35th Ave Rd & NW 21st St (NB Rt Turn) V/C	0	0	0	0.35	0	0.35	0	0.1	0.15	0	0.1	0.13		
Net														
Volumes	0	0	0	113	0	0	0	0	170	0	0	0		
Capacity	N/A	N/A	N/A	323	N/A	0	N/A	0	1440	0	0	0		
								11.81%					\$77,000.00	\$9,090.28
NW 35th Ave Rd & US-27	0.81	0.5	0.03	0.61	1.02	0.09	0.95	0.3	0	0.7	0.1	0.87		
Net														
Volumes	167	0	0	0	0	2	0	0	0	1	0	112		
Capacity	527	0	0	0	0	22	0	0	N/A	1	0	129		
	31.68%												\$143,000.00	\$45,301.19
NW MLK Jr Ave & NW 21st St (EB Lt Turn)	0.88	0.29	0.29	0.16	0.16	0.16	0.19	0.22	0.11	0	0.2	0.12		
Net														
Volumes	1	0	105	0	0	0	159	0	1	1	2	2		
Capacity	103	0	510	0	0	0	837	0	9	N/A	13	17		
			20.57%										\$62,000.00	\$12,756.08
<b>Estimated Construction Cost</b>													<b>\$888,000.00</b>	<b>\$451,633.26</b>



## Proportionate Share Fee Exhibit:

WEST OAK DEVELOPMENT PROPORTIONATE COST SHARE (FINAL BUILD-OUT CONDITION)





## **Appendix A: Approved Methodology**



## METHODOLOGY ACCEPTANCE

Project: West Oaks Development

Project #: TIA19-0002

Applicant: Tillman and Associates (352) 387-4540

E-Mail: [ndave@tillmaneng.com](mailto:ndave@tillmaneng.com)

Meeting date: N/A

### Approved:

City Planning	x	County Traffic	x
TPO	x	County Planning	x
City Traffic	x		
Other			

### **Special Conditions:**

On December 20, 2019, the methodology for assessing the impact of the subject project was approved by City staff.

Approved:   
Noel Cooper, PE, Transportation Engineer  
City Engineer's Office Department

# **TRAFFIC IMPACT STUDY METHODOLOGY**

FOR

## **WEST OAKS DEVELOPMENT**

SUBMITTED TO

**CITY OF OCALA, FL**

PREPARED FOR:

**SIEMENS GROUP**

Prepared On July 12, 2019  
Revised On December 03, 2019

[Via City of Ocala's ePlans System:](#)

December 3, 2019

David Boston and Noel Cooper  
Project Planner and Project Engineer  
City of Ocala  
City Engineer's Office  
1805 NE 30th Ave., Bldg 300  
Ocala, FL 34470

Subject: Seeking approval for Traffic Impact Study (TIS) Methodology for West Oaks Development.

Dear Mr. Boston and Mr. Cooper,

Tillman and Associates, Engineering, LLC is pleased to submit this revised Traffic Impact Study Methodology for the above referenced project. We appreciate the time taken to meet with us on June 25<sup>th</sup> and all subsequent phone and email conversation with Mr. Cooper to discuss the traffic study methodology. This methodology document has been revised based on our conversations.

We truly appreciate your urgent response to this methodology approval request as this is a very time sensitive project for our client.

If you have any questions pertaining to this letter then please feel free to contact me at [ndave@tillmaneng.com](mailto:ndave@tillmaneng.com) or at (352)-387-4540. All communication presented into this report is sent to all recipients via email. We look forward to receiving your review and approval of this Methodology Letter.

Sincerely,

*Nikunj Dave*

Nikunj Dave, P.E., PMP

CC: Scott Siemens, Project Owner  
David Tillman, Tillman & Associates Engineering, LLC  
File

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**Project Description:**

The proposed project will consist of an approximately 218 acre of mixed use development for the residential uses. The development will consist of 650 Single Family Residents (SFR), 685 units of Apartments/Multi Family Residents (MFR), 100 townhomes along with 72,000 Square Feet (SF) of commercial development. The project is located in the vicinity between NW 21<sup>st</sup> St and NW 35<sup>th</sup> St with the new access road, identified here as New Street A within the limits of the City of Ocala (aka the City), Florida. The proposed development's site plans were already reviewed by the City and are currently under review. We met with the City's transportation engineer, Noel Cooper, to discuss the methodology and this methodology document is prepared based on our conversation with him.

**Figure 1: Location Map**



**Trip Generation:**

Trip Generation was calculated for each land-use of the proposed project based on the 10<sup>th</sup> edition of Institute of Transportation Engineers (ITE) Trip Generation Manual and Trip Generation Handbook (3<sup>rd</sup> edition). Calculations for future trips are projected in Table 1 below:

Table 1: Trip Generation

Sr. No	Development Description	ITE Code	Parameter	Unit	AM In	AM Out	PM In	PM Out	ADT In	ADT Out
1	Single Family Residential	210	650	Units	122	366	410	241	2,909	2,910
2	Multi Family Residential	220	685	Units	97	249	268	186	2569	2569
3	Townhomes	230	100	Units	7	37	35	17	290	291
4	Commercial	820	72,000	SF	116	72	131	143	1,359	1,359

Based on ITE’s trip generation handbook, Internal Capture rates of 3% and 7.5% were used for AM and PM duration for Residential to Commercial development respectively.

Below is the summary of the Internal Capture based on the ITE spreadsheet for AM and PM Peak hour:

Table 2: Internal Capture Summary for AM Peak Hour

<b>Table 5-A: Computations Summary</b>			
	Total	Entering	Exiting
All Person-Trips	1,066	342	724
Internal Capture Percentage	2%	4%	2%
External Vehicle-Trips <sup>5</sup>	1,042	330	712
External Transit-Trips <sup>6</sup>	0	0	0
External Non-Motorized Trips <sup>6</sup>	0	0	0

Table 3: Internal Capture Summary for PM Peak Hour

<b>Table 5-P: Computations Summary</b>			
	Total	Entering	Exiting
All Person-Trips	1,431	844	587
Internal Capture Percentage	7%	6%	9%
External Vehicle-Trips <sup>5</sup>	1,331	794	537
External Transit-Trips <sup>6</sup>	0	0	0
External Non-Motorized Trips <sup>6</sup>	0	0	0

For Commercial development, ITE’s standard pass-by rate of 34% was used. After subtracting the internal capture rates and pass-by volumes, following net trips were calculated as below:

Table 4: Net Trips Calculation

AM In	AM Out	Internal Captures Volumes	Pass-by Volumes	AM In Net	AM Out Net	PM In	PM Out	Internal Capture Rates	Pass-by Rates	PM In Net	PM Out Net
122	366	20%	0%	98	293	410	241	21%	0%	324	190
97	249	20%	0%	78	199	268	186	21%	0%	212	147
7	37	20%	0%	6	30	35	17	21%	0%	28	13
116	72	4%	34%	72	45	131	143	18%	34%	63	69
Total				253	566	844	587			626	419

Based on the above calculations, it is clear that the site generates more traffic during PM peak hour and the PM peak hour model should be analyzed with 1045 trips during the PM peak hour duration. Thus, as per the City of Ocala’s TIS guideline, this development should be considered for a full Traffic Impact Study.

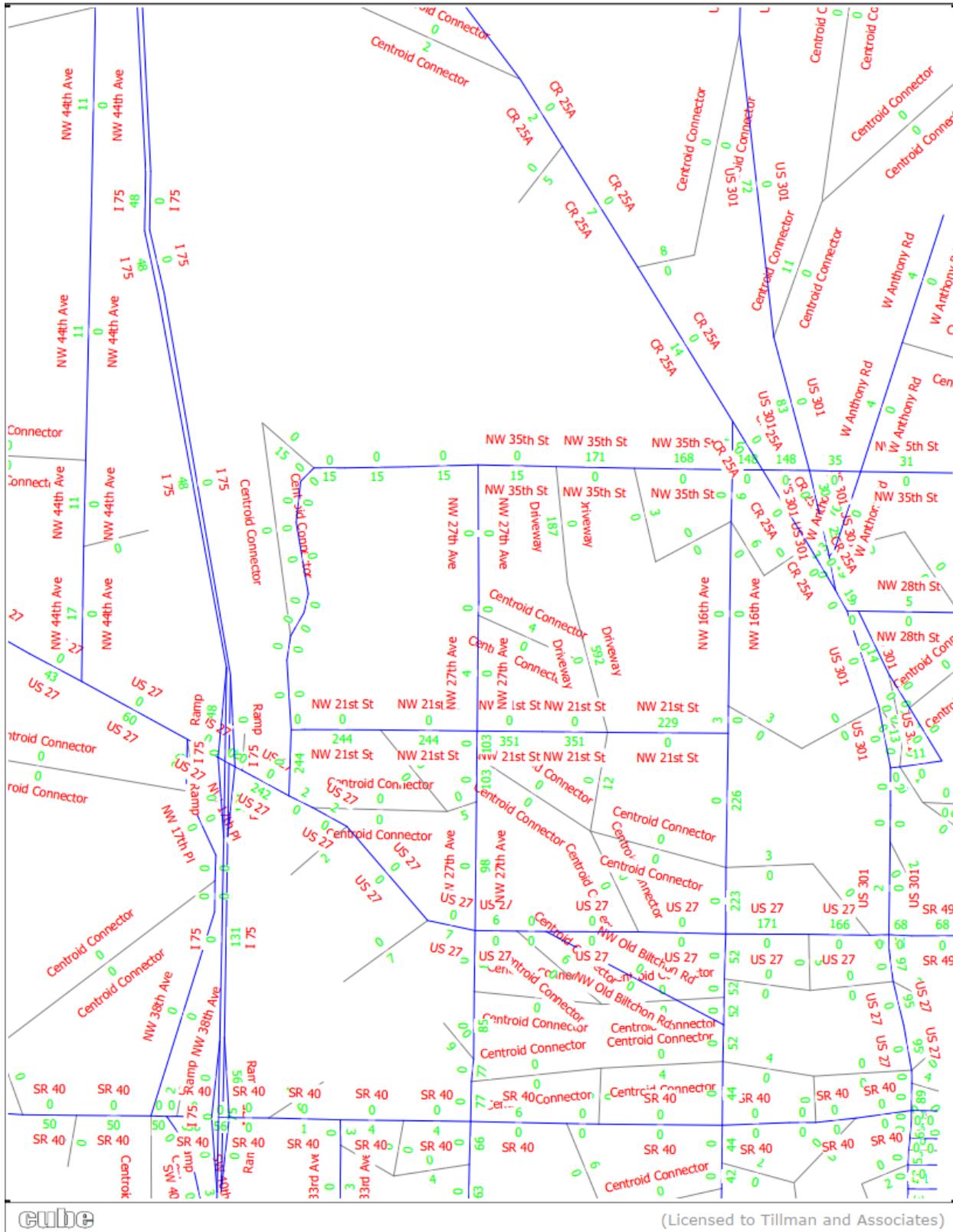
## Analysis Period

The PM peak-hour will be analyzed at the below Study Area intersections as depicted in the Study Area Methodology.

## Study Area Methodology

Based on the previous meeting with the City Staff, Cube Voyager software was used to run the latest Central Florida Regional Planning Model (CFRPM) model within Marion/Ocala region. In the CFRPM model, a new Transportation/Traffic Analysis Zone (TAZ) was created as identified by the number 4180, near the driveway of the future development. This TAZ is shown on the Figures 1 and 2. Based on this new TAZ, the model was run in order to capture the trip distribution on each link of the roadway. Cube output is attached as Figure 2. Please note that some of the intersections were added based on the comments received from the review agencies.

**Figure 2: Cube Output**



The results of the Cube analysis are depicted in the above map. Subsequently, the roadway link analysis is presented in this document in order to capture the roadways with “significant impact” for all the roadways captured in the Cube outputs. Even for Florida Department of Transportation (FDOT) owned and/or maintained roadway, more conservative rate of 3% threshold for calculating the total impacted trips was used . This conservative approach is taken based on the request from the City Staff.

Based on the anticipated impacts and changes in traffic patterns due to the proposed project, the below intersections and roadway segments will be analyzed as shown in Table 3:

**Table 3: Significant Impact Table**

Roadway	Maintained by	Intersection Name	Adopted LOS (from FDOT Service Volume Tables)	No. of Lanes	Adopted Volume (from FDOT Service Volume Tables)	Modified Adopted Volumes based on lane configuration	Cube Assigned ADT	% of Impact	% of Impact Greater than 3%	Included in the Study Area
New Street A	City of Ocala	Driveway and New Street A (SB)	D	2	14800	13320	779	10.53%	Yes	Yes
New Street A	City of Ocala	Driveway and New Street A (NB)	D	2	14800	13320	592	4.00%	Yes	Yes
NW 21st St	City of Ocala	NW 35th St and New Street A	D	2	14800	13320	187	2.53%	No	Yes
NW 21st St	City of Ocala	NW 21st and NW 16th Ave (MLK Jr Ave) (Before 1st driveway)	D	2	14800	13320	351	4.74%	Yes	Yes
NW 21st St	City of Ocala	NW 27th Ave and NW 21st St	D	2	14800	13320	229	3.09%	Yes	Yes
NW 21st St	City of Ocala	NW 21st St and NW 16th Ave (MLK Jr Ave) (After 1st driveway)	D	4	14800	13320	244	3.30%	Yes	Yes
NW 35th Ave	City of Ocala & FDOT	US 27 & NW 35th Ave	D	4	39800	39800	242	1.22%	No	Yes
SR 464	City of Ocala	US 27 and I-75 NB Signal	D	4	39800	39800	131	0.66%	No	No
US 27	FDOT	US 27 and I-75 SB Signal	D	4	39800	39800	109	0.55%	No	No
NW 27th Ave	City of Ocala	NW 27th Ave and NW 18th St	D	2	14800	13320	103	1.39%	No	Yes

NW 18th St	City of Ocala	NW 18th St and NW 24th Rd	D	2	14800	13320	226	3.05%	Yes	Yes
NW 16th Ave	City of Ocala	NW 17th Pl and NW 16th Ave/MLK Jr Ave	D	2	14800	13320	171	2.31%	No	Yes

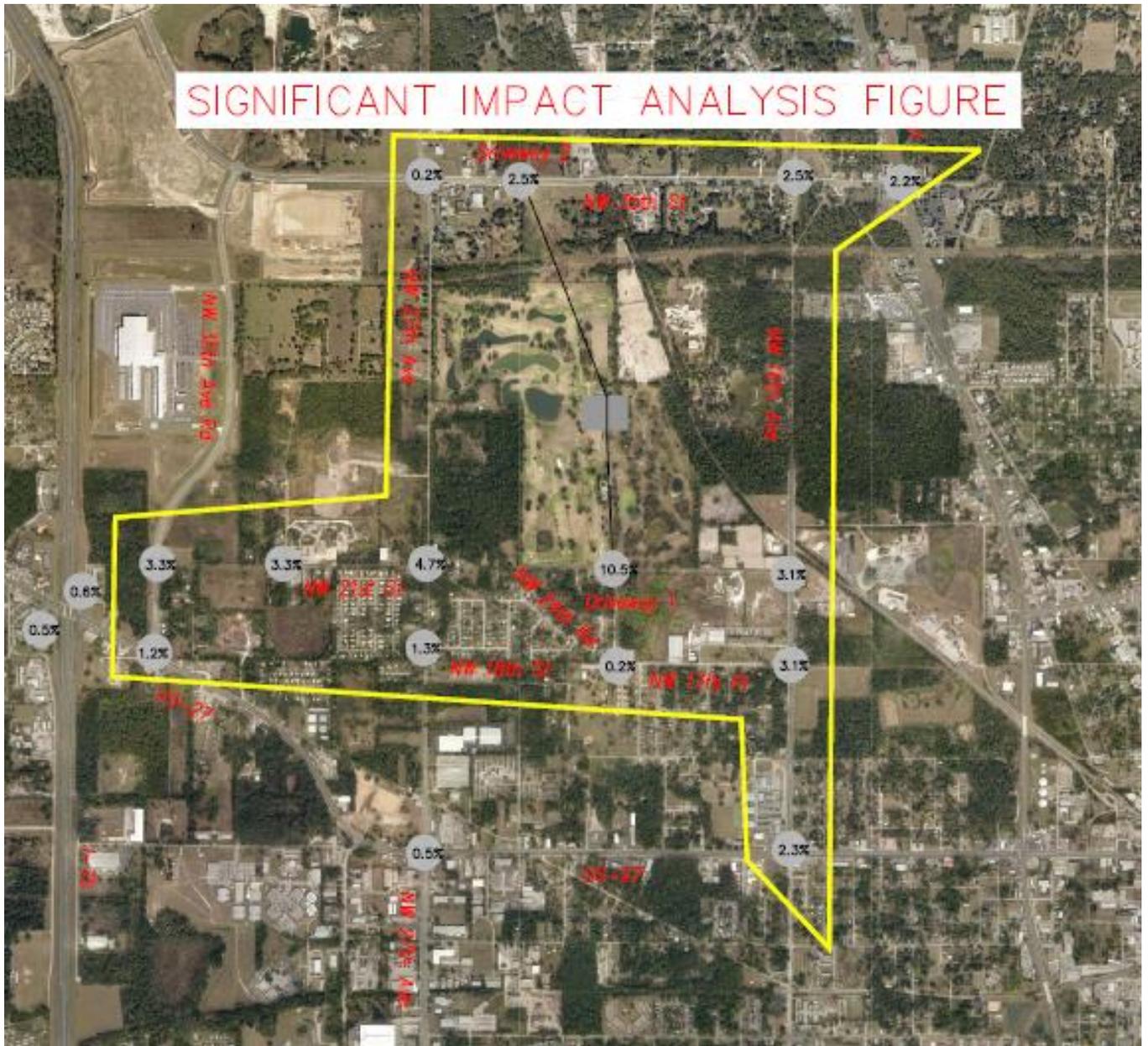
**Study Area**

Based on the anticipated impacts and changes in traffic patterns due to the proposed project, the following intersections and roadway segments will be analyzed:

**Intersections:**

- A. Driveway 1@ New Street A
- B. New Street A and NW 27<sup>th</sup> Ave
- C. Street A and NW 35<sup>th</sup> St
- D. NW 35<sup>th</sup> St and NW 27<sup>th</sup> Ave
- E. NW 21<sup>st</sup> St and NW 16<sup>th</sup> Ave/MLK Jr Ave
- F. NW 27<sup>th</sup> Ave and NW 21<sup>st</sup> St
- G. NW 27<sup>th</sup> Ave and NW 18<sup>th</sup> St
- H. NW 18<sup>th</sup> St and NW 24<sup>th</sup> Rd
- I. NW 17<sup>th</sup> Pl and NW 16<sup>th</sup> Ave (MLK Jr Ave)
- J. NW 21<sup>st</sup> St and NW 35<sup>th</sup> Ave Rd

Figure 3: Significant Impact Analysis Figure





### Traffic Data Collection:

Usually, 12-hour, bi-directional, weekday (Tuesday, Wednesday, or Thursday) counts of the turning movement volumes on all of the above intersections, can be captured in order to identify the peak hour time period. Once the peak hour time period is identified using these counts, the entire analysis will follow that peak hour for AM and PM time duration. However, since the project analysis will be solely focused on the PM peak hour duration, only 6 hours of traffic counts from 12 PM - 6 PM are proposed for this project. The data counts will be conducted to analyze the intersection and its impact along with the distribution of the future trips to/from the driveway. Due to the proposed development's minor impact on the City's existing roadways, no additional traffic counts will be conducted.

### Assumptions:

1. New development will follow the ITE trip generation and Cube's trip distribution guidelines.
2. The projects will not utilize the Marion Ocala Transportation Planning Organization (TPO) Traffic Counts due to the fact that the counts taken in the TPO report are not at the intersection. Additionally, we will conduct our own 13 hours turning movement counts which will be used for analysis purpose.
3. Growth rate for the project will be 2% and it is approved by City of Ocala based on Ocala-489 Industrial Park Traffic Study.
4. If the project construction goes beyond 5 years of timeframe then we will redo the Traffic Study with new traffic counts in order to meet the City of Ocala guidelines.
5. The full build out period for this project is expected to be in 2025, i.e., 5 years from the beginning to the end of the construction time period.
6. The site generated total volume will be divided into three driveways as proposed. Driveways are proposed at following locations:
  - A. New Street A and NW 35<sup>th</sup> St
  - B. New Street A and NW 21<sup>st</sup> St
  - C. Emergency driveway and NW 27<sup>th</sup> Ave (It will not be considered for the traffic study analysis)
7. Trip distribution will be used from the CFRPM (aka Cube) output results.
8. Credits for pass-by trips and internal captures used are based on the ITE's trip generation

guidelines. Maximum rate for pass-by volumes will be reduced to 10% of the adjacent traffic.

9. The AM & PM peak hour traffic generator will be used for the SYNCHRO software analysis purpose.
10. Future trip projection will be calculated based on the latest counts conducted by the City of Ocala's TPO traffic counts for the nearest count stations. The growth factor can be adjusted based on the actual traffic counts taken at the intersection, if more than 10% of variation is observed.
11. Based on the ITE's guideline, due to the standard deviation value less than 55% between the average rate and fitted curve rates, average rate of trip generation is considered in the calculations.
12. The mitigation for this project will be proposed in the forthcoming traffic study, if required.

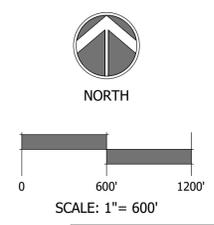
### Intersection Analysis – AM & PM Peak-Hours (Existing and Opening Year)

The operating conditions at the signalized and unsignalized intersections will be analyzed using Synchro software. The capacity analysis will provide level of service, average delay per vehicle and queue lengths within the Study intersections. AM and PM peak-hour analyses will be conducted for existing (2019) and opening-year (2025).

### Improvements & Access Management

An analysis of level of service will be performed to find out if any mitigation is required and will be included in the Traffic Impact Study and will be discussed with the City. The minimal size of this proposed development is not expected to require the Access Management Plans.

**Appendix B: Driveway Volume Exhibits and Project Study Area Exhibits (Enlarged-24"x36")**



**Tillman & Associates**  
 ENGINEERING, LLC.  
 CIVIL ENGINEERING - PLANNING - LANDSCAPE ARCHITECTURE - ENVIRONMENTAL  
 1720 SE 16th Ave. Bldg. 100, Ocala, FL 34471  
 Office: (352) 387-4540 Fax: (352) 387-4545  
 CERTIFICATE OF AUTHORIZATION #26256

DATE	REVISIONS

SIEMENS WEST OAK  
 MARION COUNTY, FLORIDA

## TRIP DISTRIBUTION

DATE 4/15/2020  
 DRAWN BY AT  
 CHKD. BY ND  
 JOB NO. 19-5058

**SHEET 1 of 3**





Trip Generation Exhibits:

# Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday,  
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 157

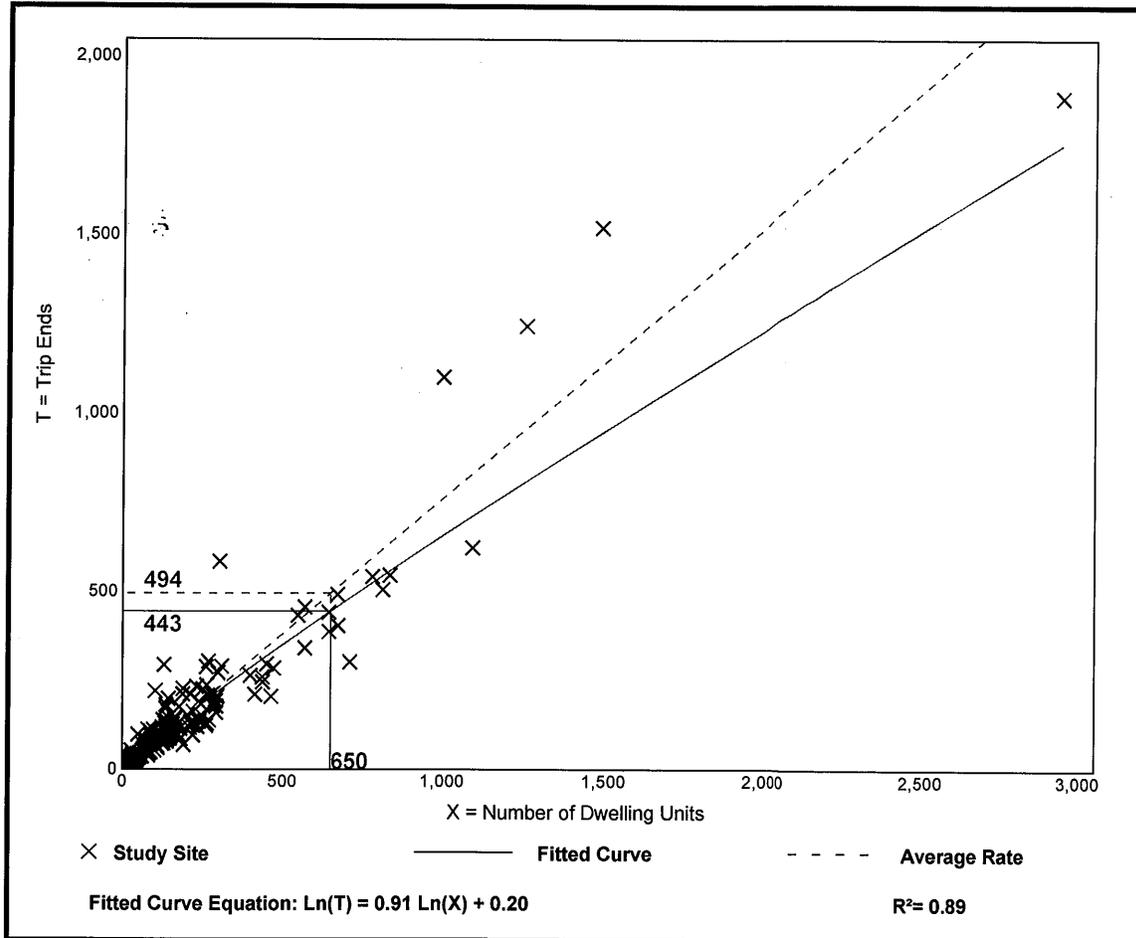
Avg. Num. of Dwelling Units: 231

Directional Distribution: 26% entering, 74% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.76	0.36 - 2.27	0.26

## Data Plot and Equation



# Single-Family Detached Housing (210)

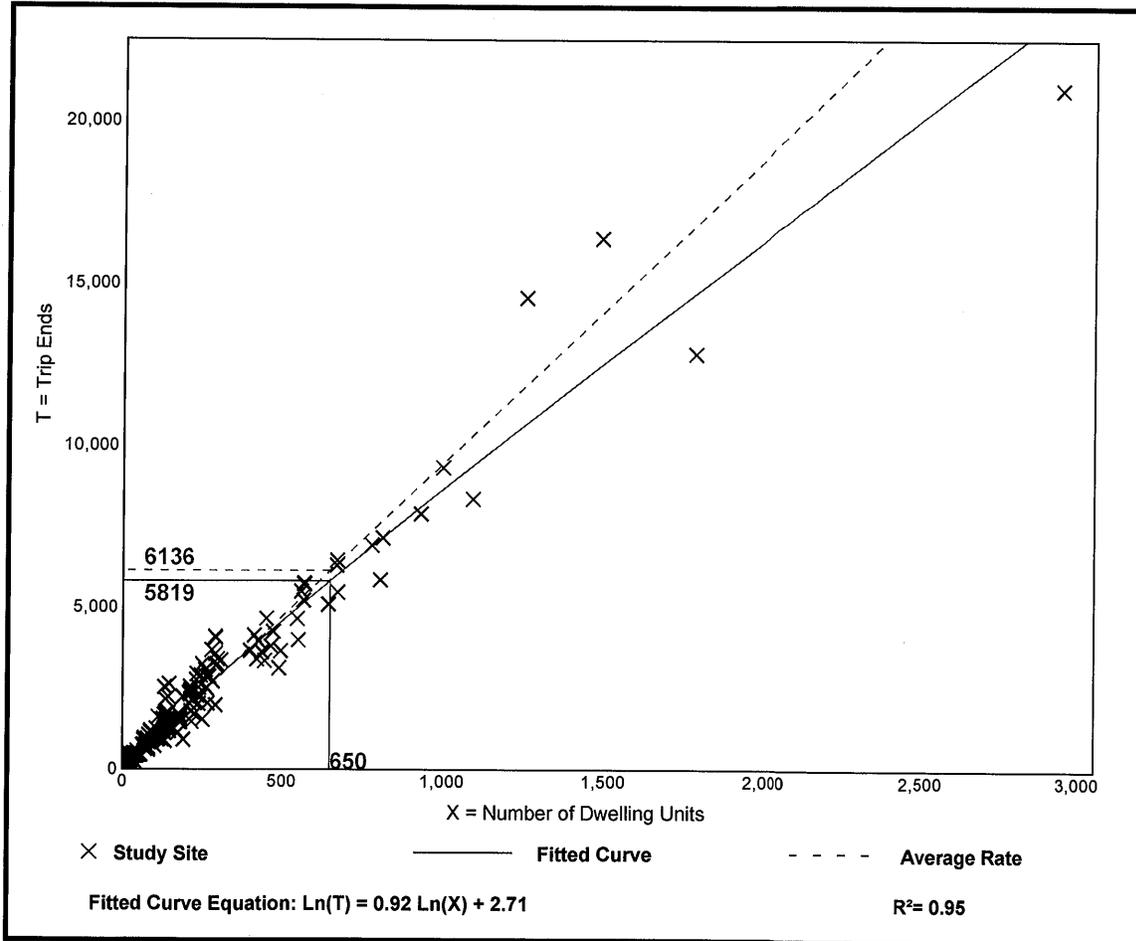
**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday**

**Setting/Location: General Urban/Suburban**  
Number of Studies: 159  
Avg. Num. of Dwelling Units: 264  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

## Data Plot and Equation



# Single-Family Detached Housing (210)

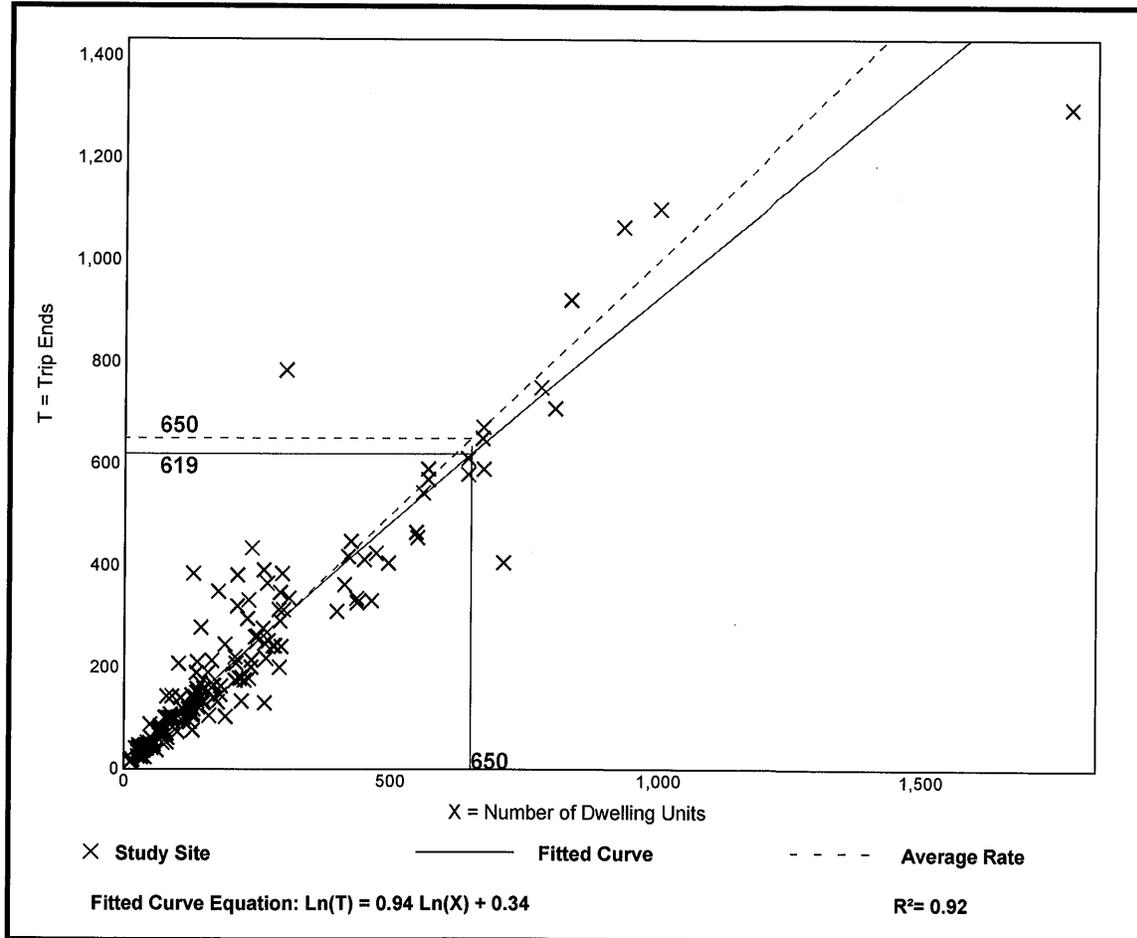
Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday,  
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban  
Number of Studies: 165  
Avg. Num. of Dwelling Units: 217  
Directional Distribution: 64% entering, 36% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
1.00	0.49 - 2.98	0.31

## Data Plot and Equation



# Multifamily Housing (Low-Rise) (220)

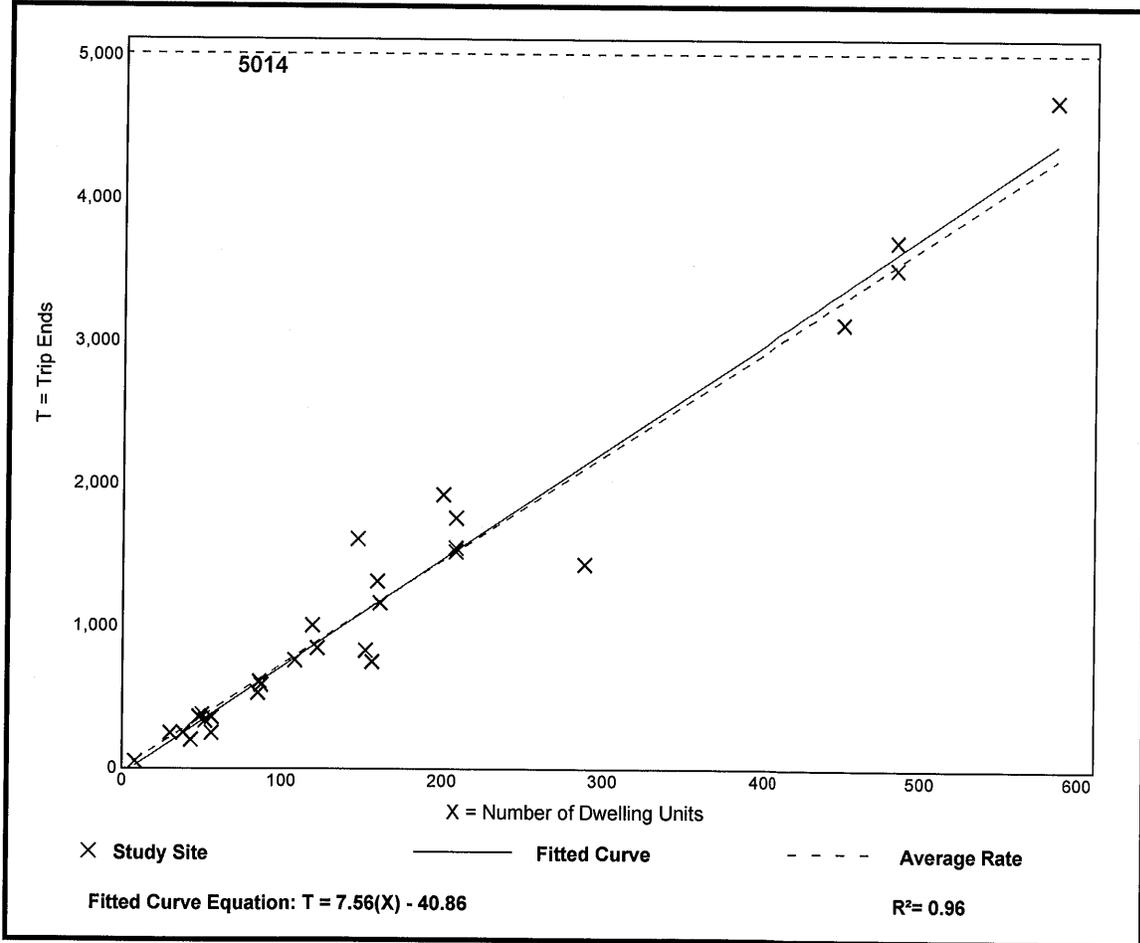
Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 29  
Avg. Num. of Dwelling Units: 168  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.32	4.45 - 10.97	1.31

## Data Plot and Equation



# Multifamily Housing (Low-Rise) (220)

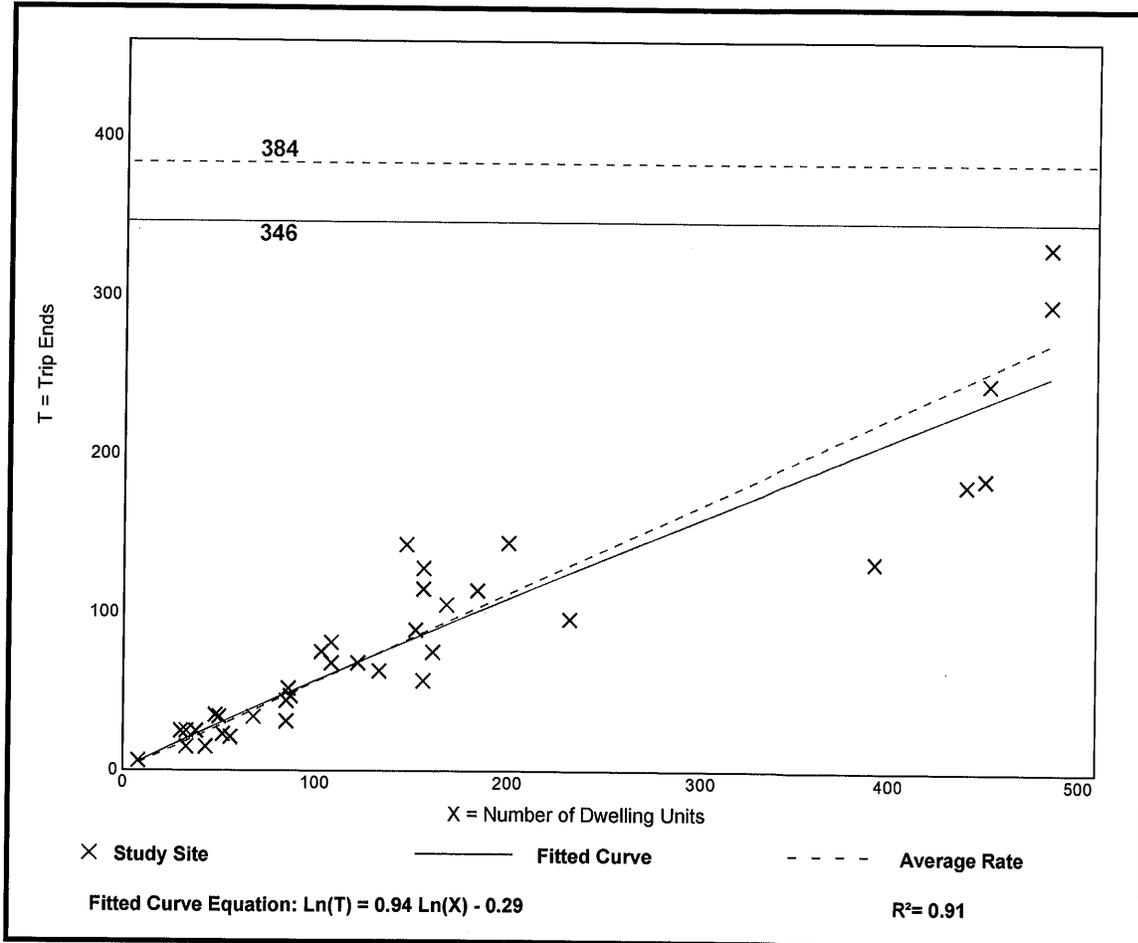
Vehicle Trip Ends vs: Dwelling Units  
 On a: Weekday,  
 AM Peak Hour of Generator

Setting/Location: General Urban/Suburban  
 Number of Studies: 36  
 Avg. Num. of Dwelling Units: 161  
 Directional Distribution: 28% entering, 72% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.34 - 0.97	0.15

## Data Plot and Equation



# Shopping Center (820)

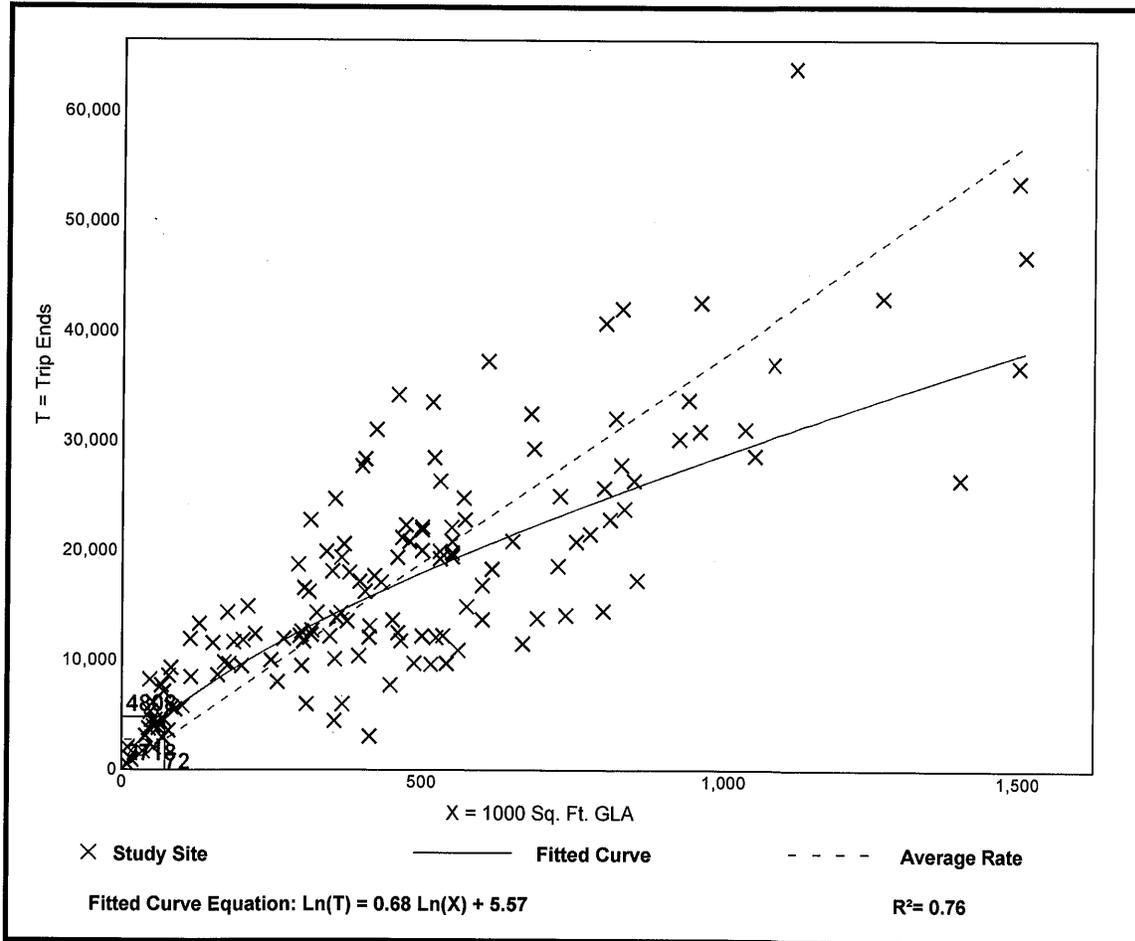
**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**  
**On a: Weekday**

**Setting/Location: General Urban/Suburban**  
 Number of Studies: 147  
 Avg. 1000 Sq. Ft. GLA: 453  
 Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
37.75	7.42 - 207.98	16.41

## Data Plot and Equation



# Shopping Center (820)

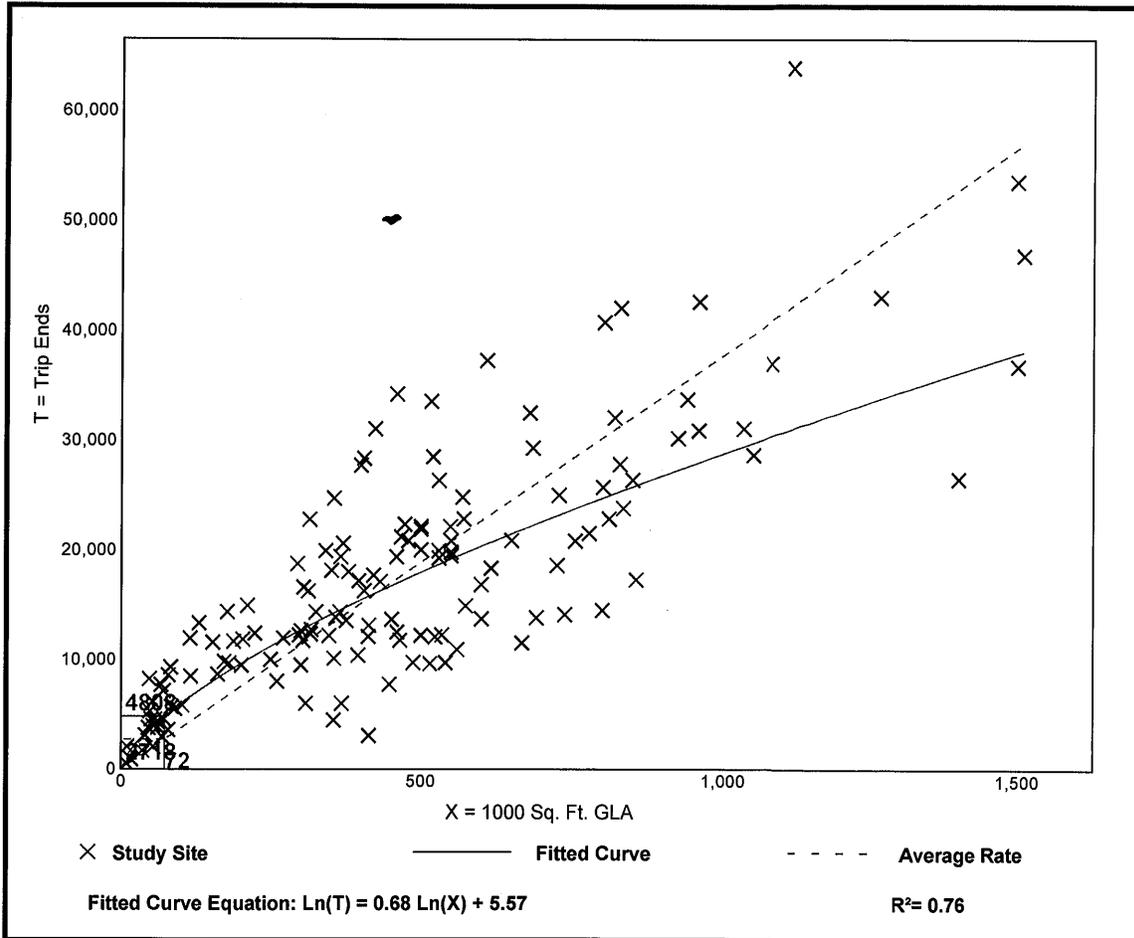
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## Data Plot and Equation



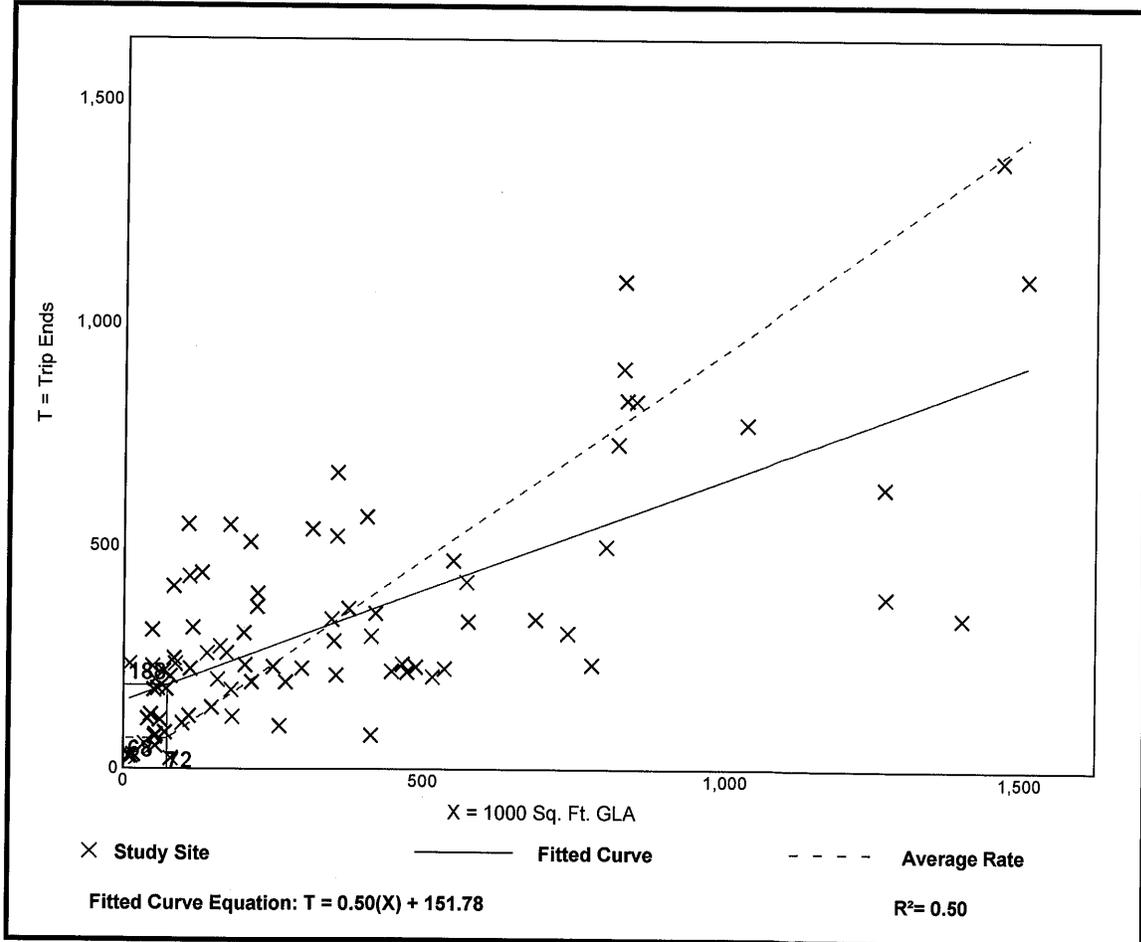
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**On a: Weekday,**  
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**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 84  
 Avg. 1000 Sq. Ft. GLA: 351  
 Directional Distribution: 62% entering, 38% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.94	0.18 - 23.74	0.87

## Data Plot and Equation



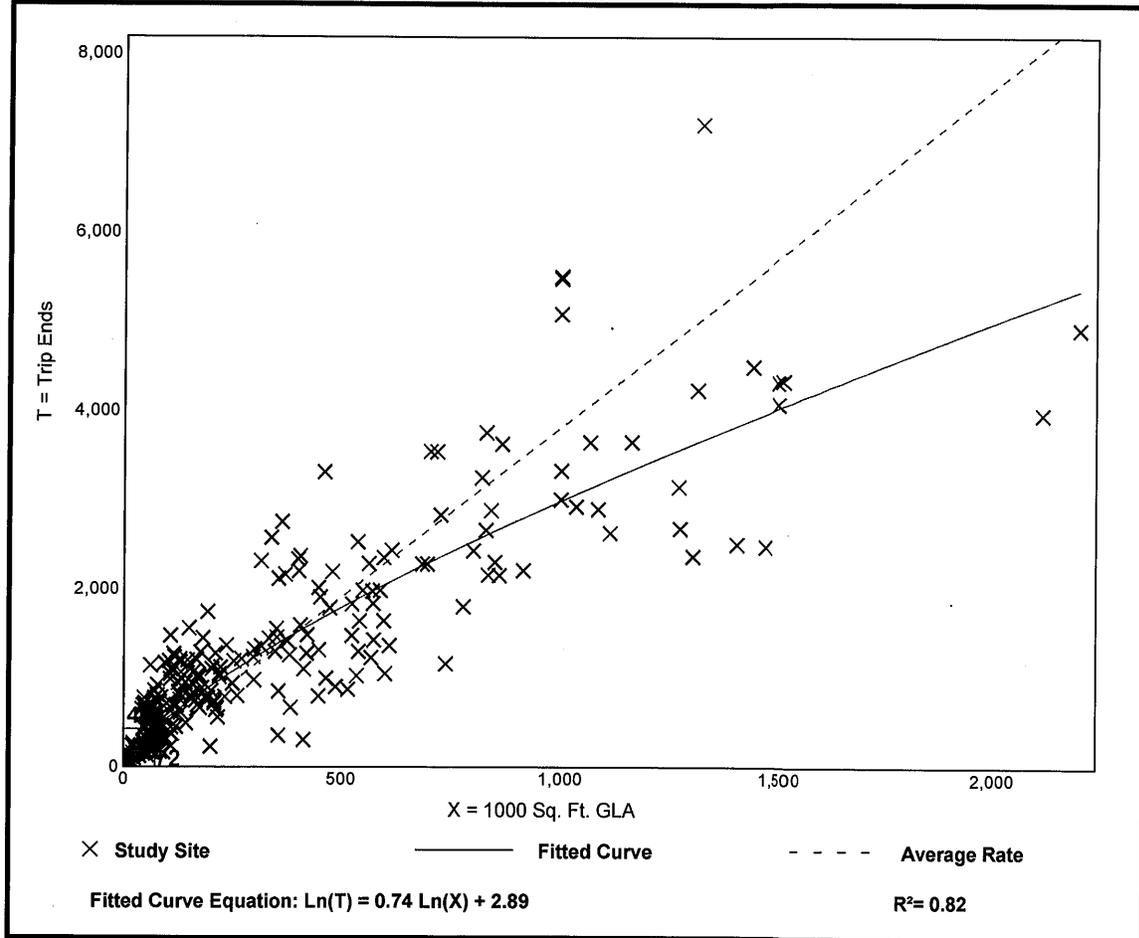
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**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**  
**On a: Weekday,**  
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**Setting/Location: General Urban/Suburban**  
 Number of Studies: 261  
 Avg. 1000 Sq. Ft. GLA: 327  
 Directional Distribution: 48% entering, 52% exiting

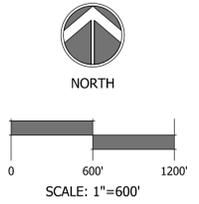
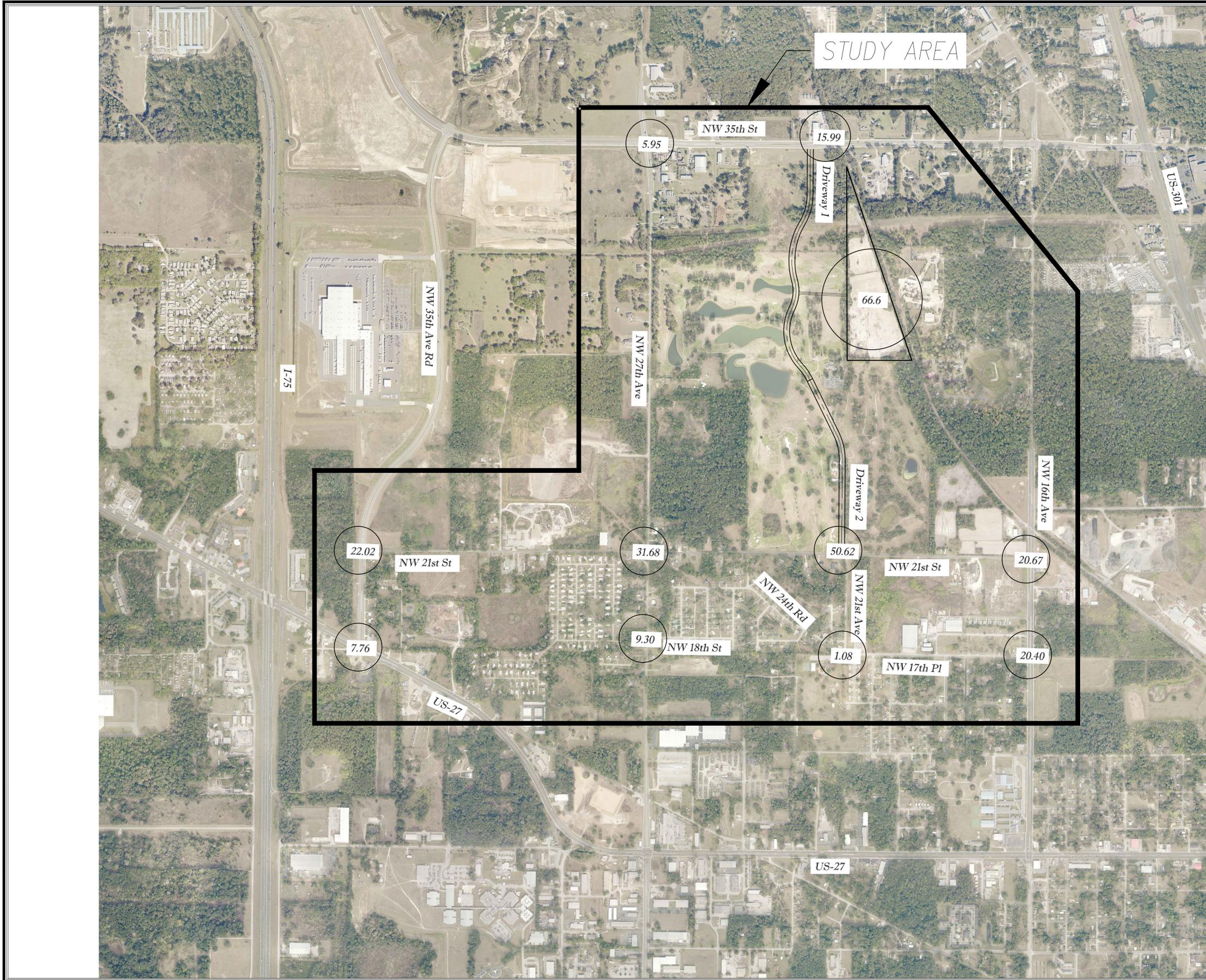
## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.81	0.74 - 18.69	2.04

## Data Plot and Equation



Significant Impact Figure:



**Tillman & Associates**  
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 CERTIFICATE OF AUTHORIZATION #26795

DATE	REVISIONS

SIEMENS WEST OAK  
 MARION COUNTY, FLORIDA

**STUDY AREA**

DATE 3/18/2021  
 DRAWN BY AT  
 CHKD. BY ND  
 JOB NO. 19-5058

**SHEET 1 of 1**

NOT VALID UNLESS SIGNED AND SEALED BY AUTHORIZED PROFESSIONAL

Trip Generation Exhibits:

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**Setting/Location: General Urban/Suburban**

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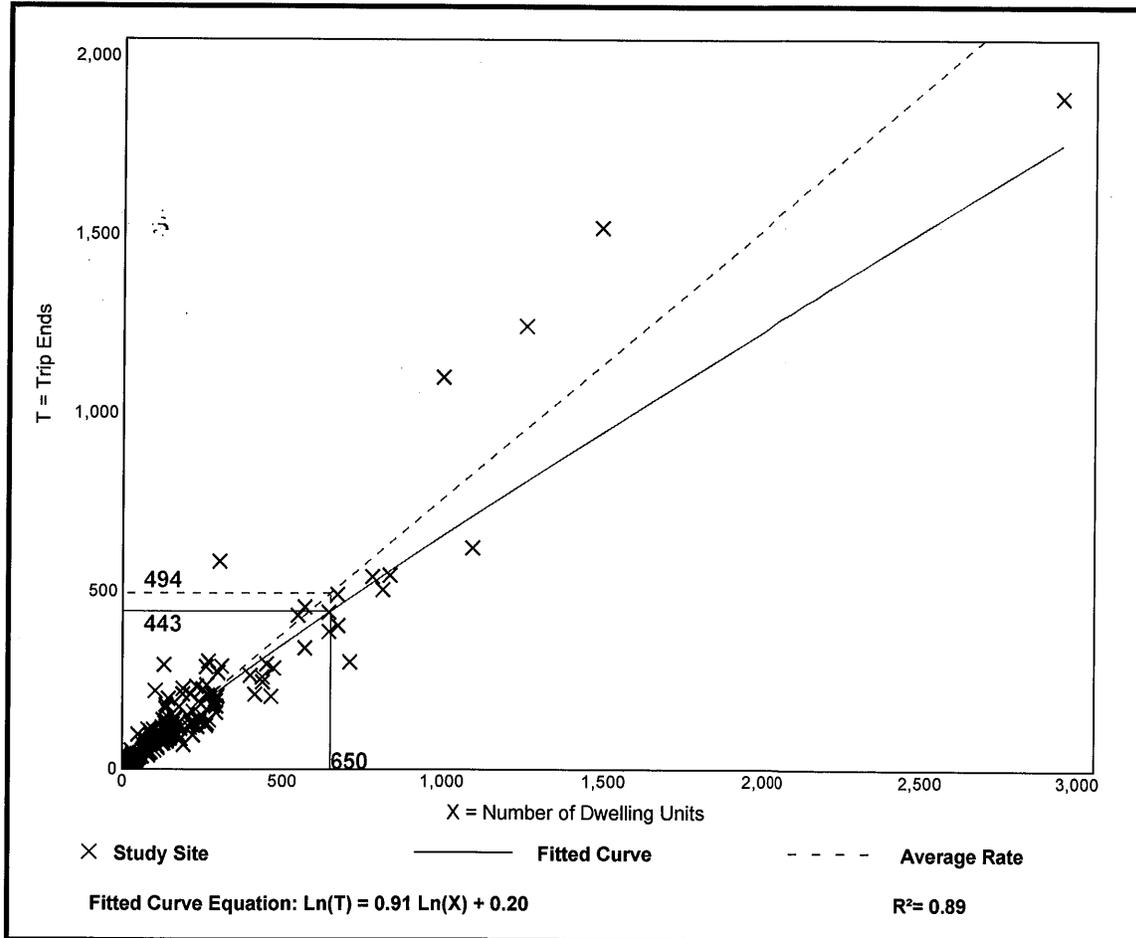
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Directional Distribution: 26% entering, 74% exiting

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Average Rate	Range of Rates	Standard Deviation
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## Data Plot and Equation



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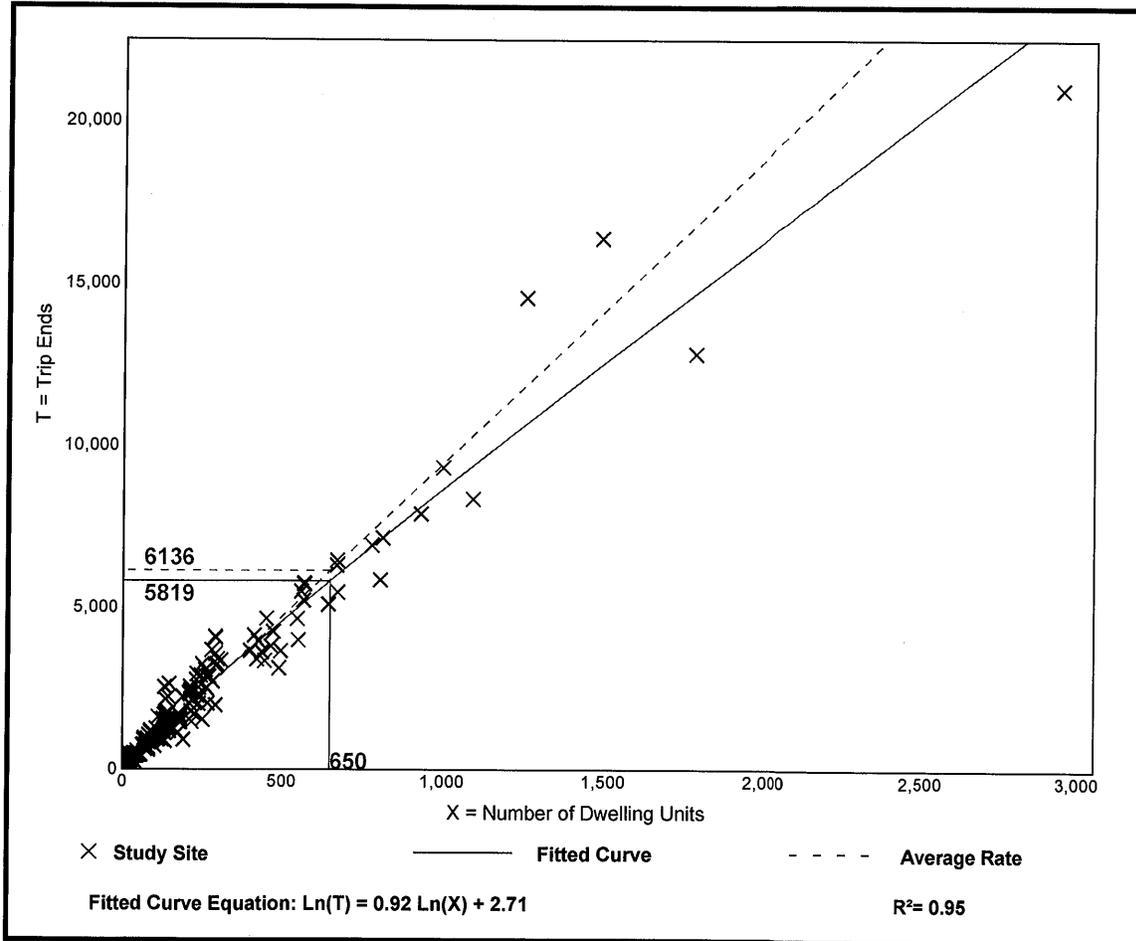
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Directional Distribution: 50% entering, 50% exiting

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## Data Plot and Equation



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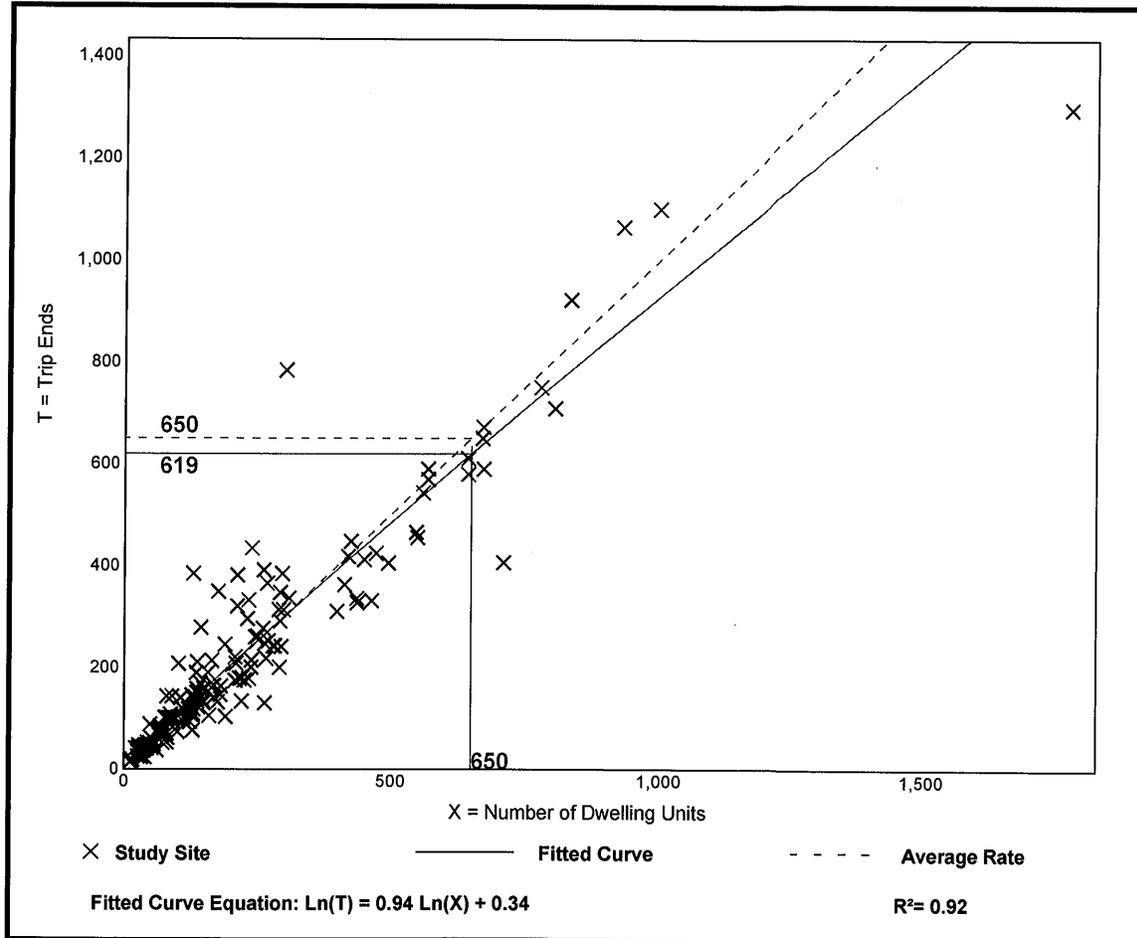
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## Data Plot and Equation



# Multifamily Housing (Low-Rise) (220)

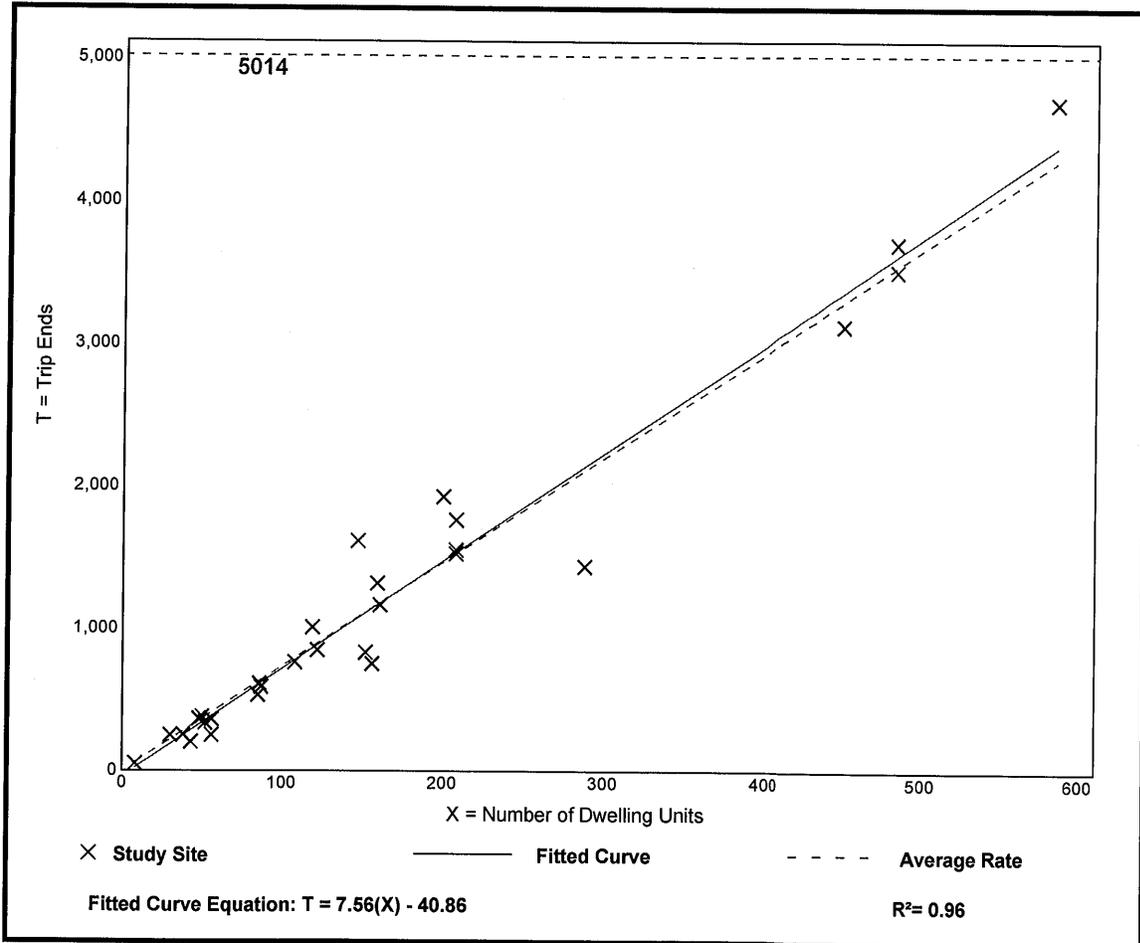
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**On a: Weekday**

**Setting/Location: General Urban/Suburban**  
Number of Studies: 29  
Avg. Num. of Dwelling Units: 168  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.32	4.45 - 10.97	1.31

## Data Plot and Equation



# Multifamily Housing (Low-Rise) (220)

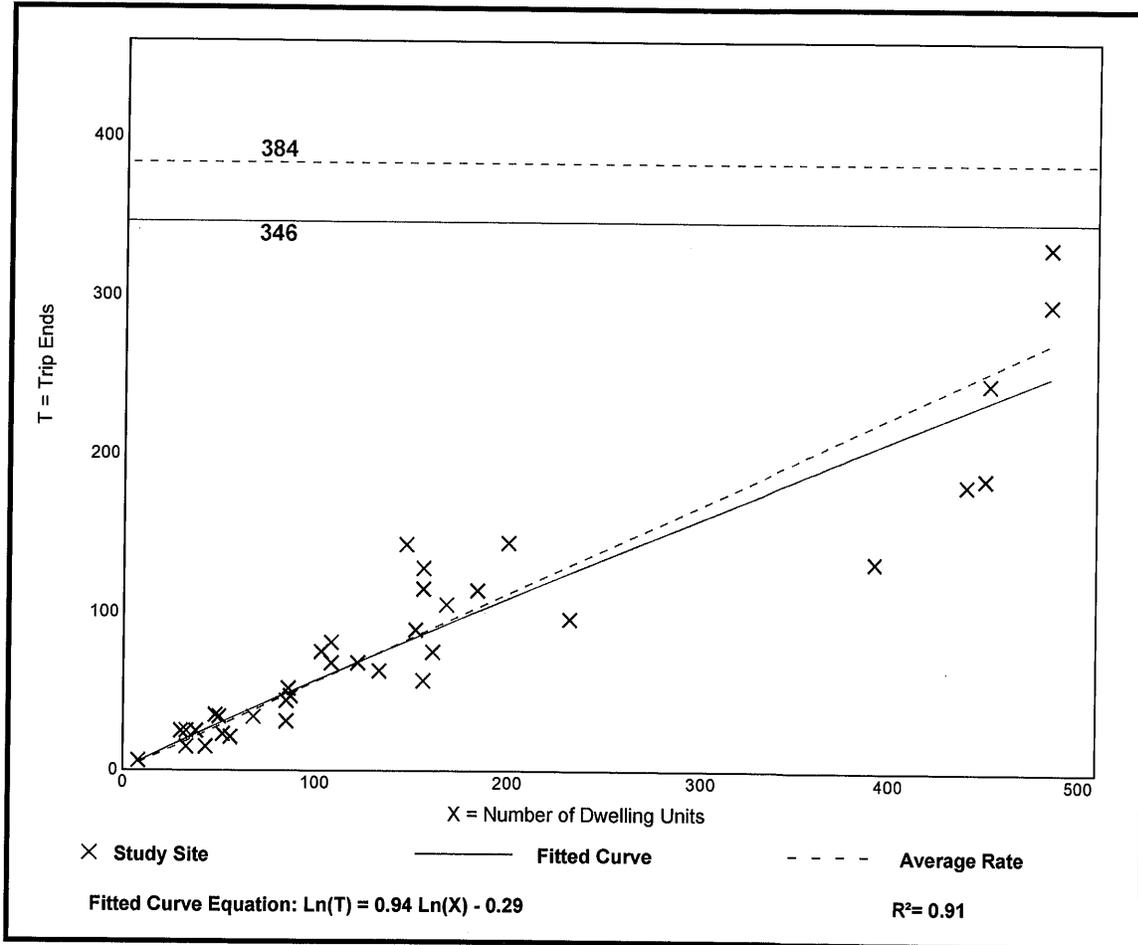
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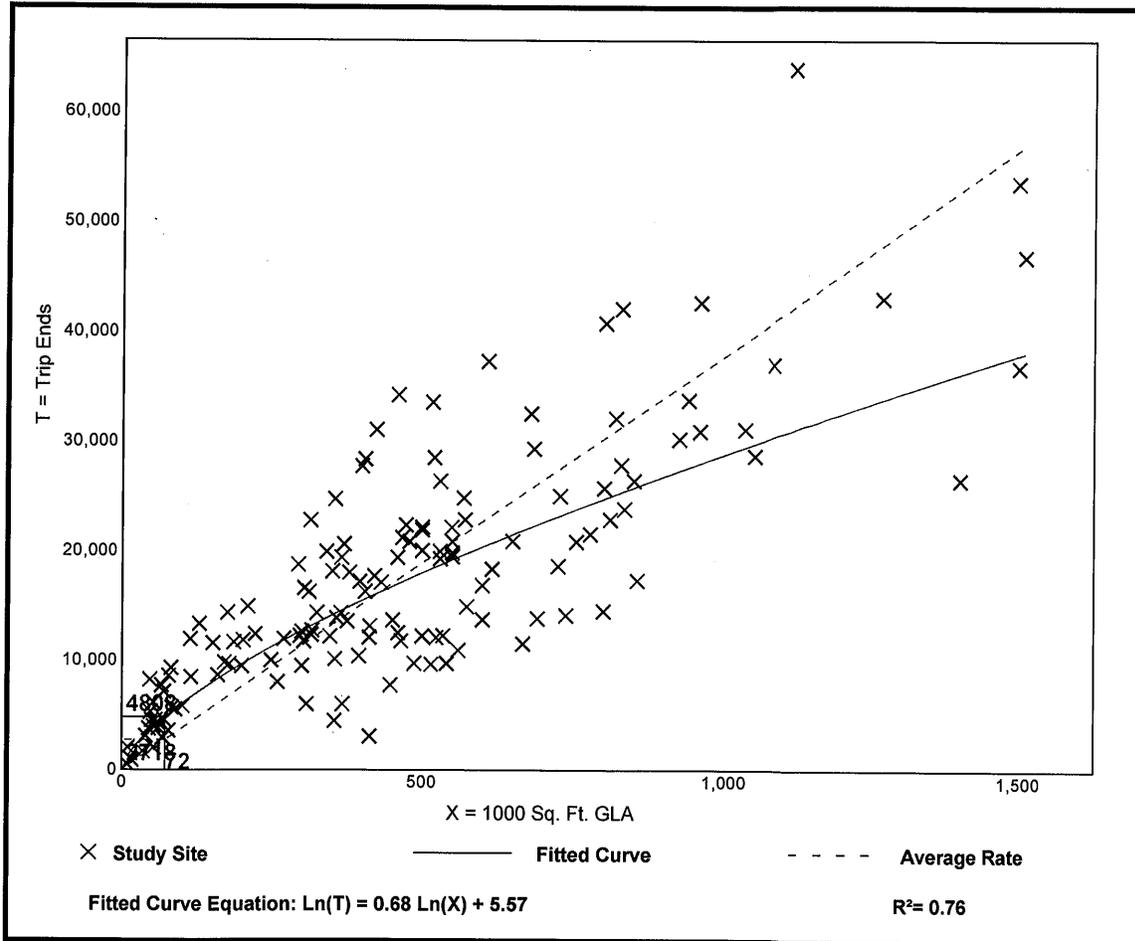
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**Setting/Location: General Urban/Suburban**  
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 Avg. 1000 Sq. Ft. GLA: 453  
 Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
37.75	7.42 - 207.98	16.41

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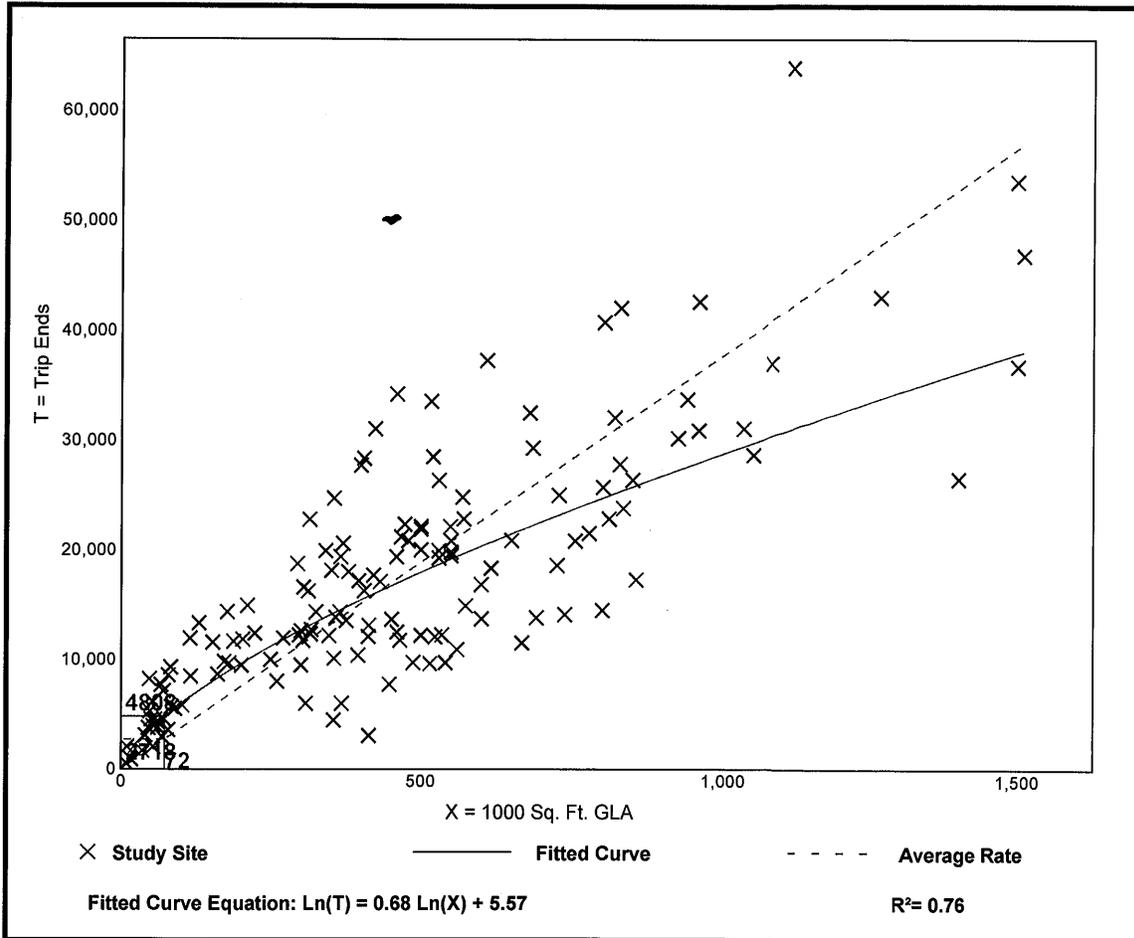
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## Data Plot and Equation



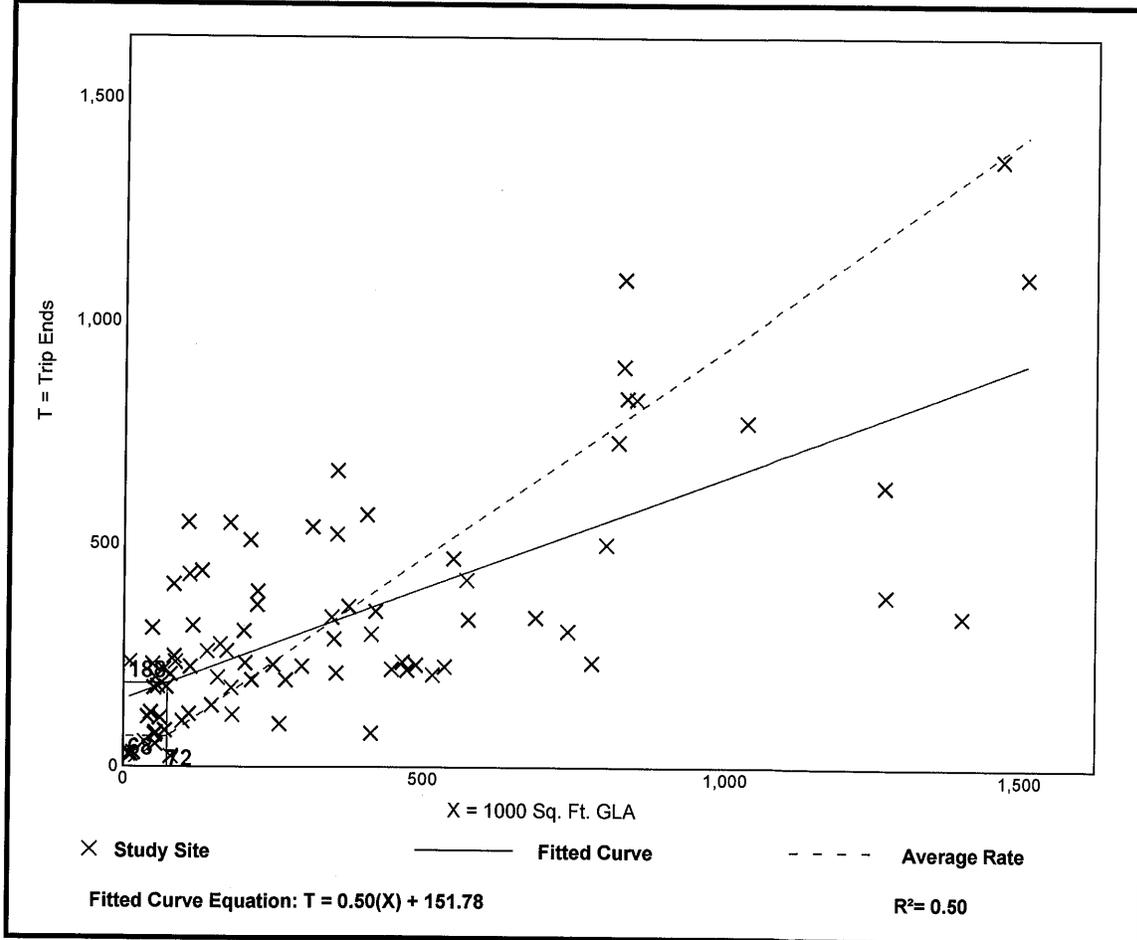
# Shopping Center (820)

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**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 84  
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## Vehicle Trip Generation per 1000 Sq. Ft. GLA

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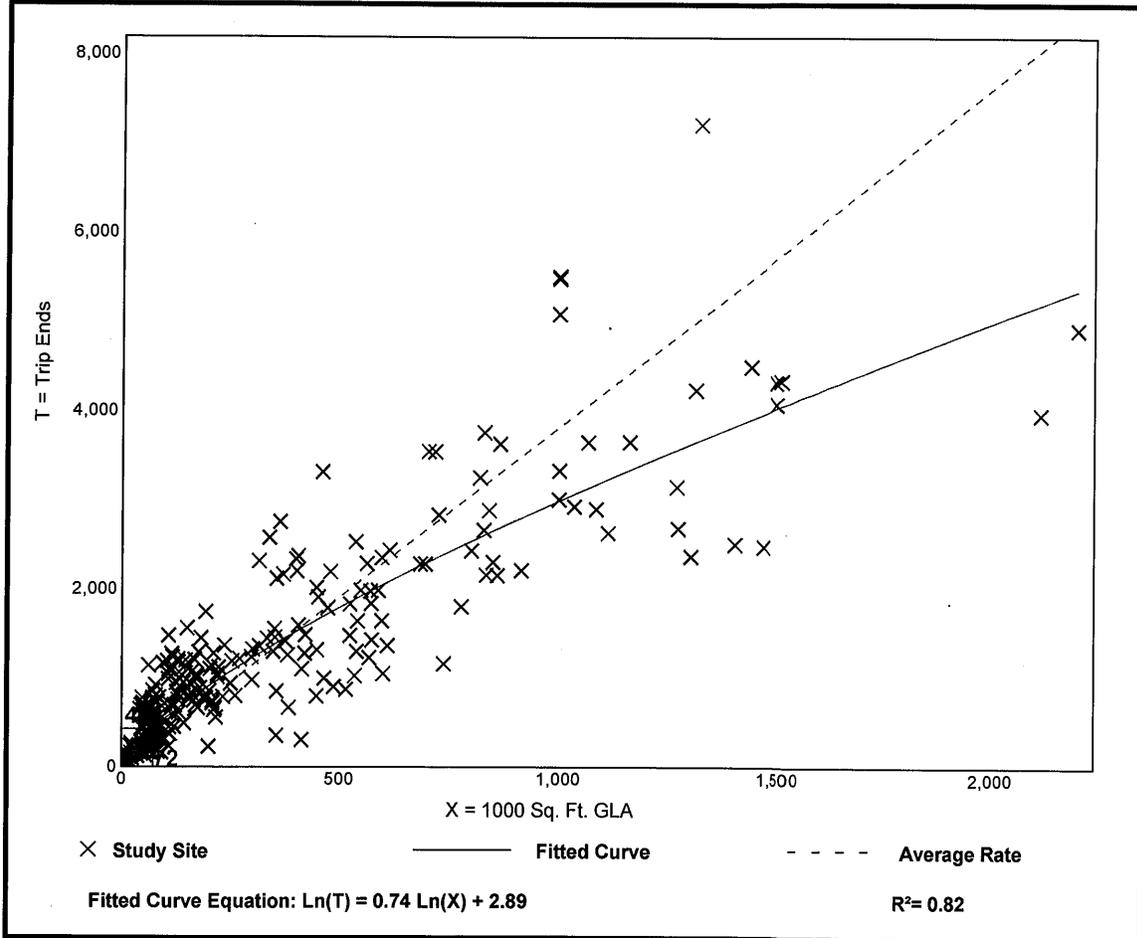
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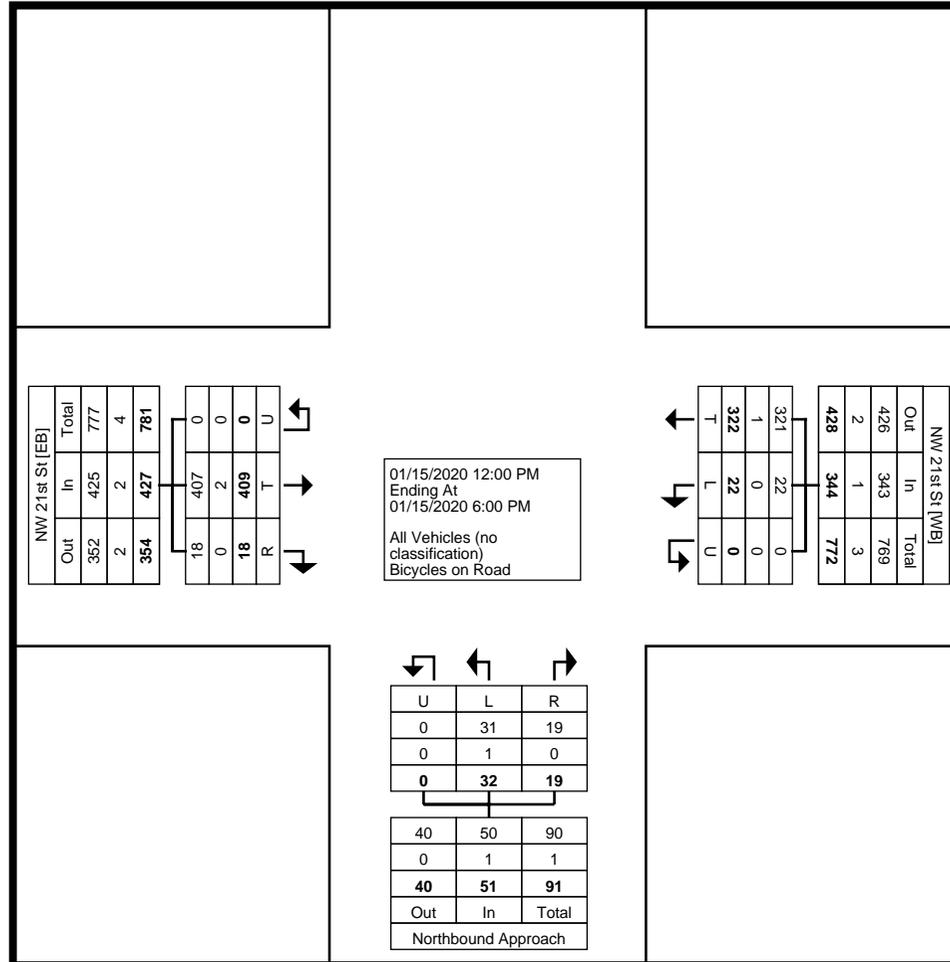
Significant Impact Figure:



**Appendix C: Traffic Counts**

### Turning Movement Data

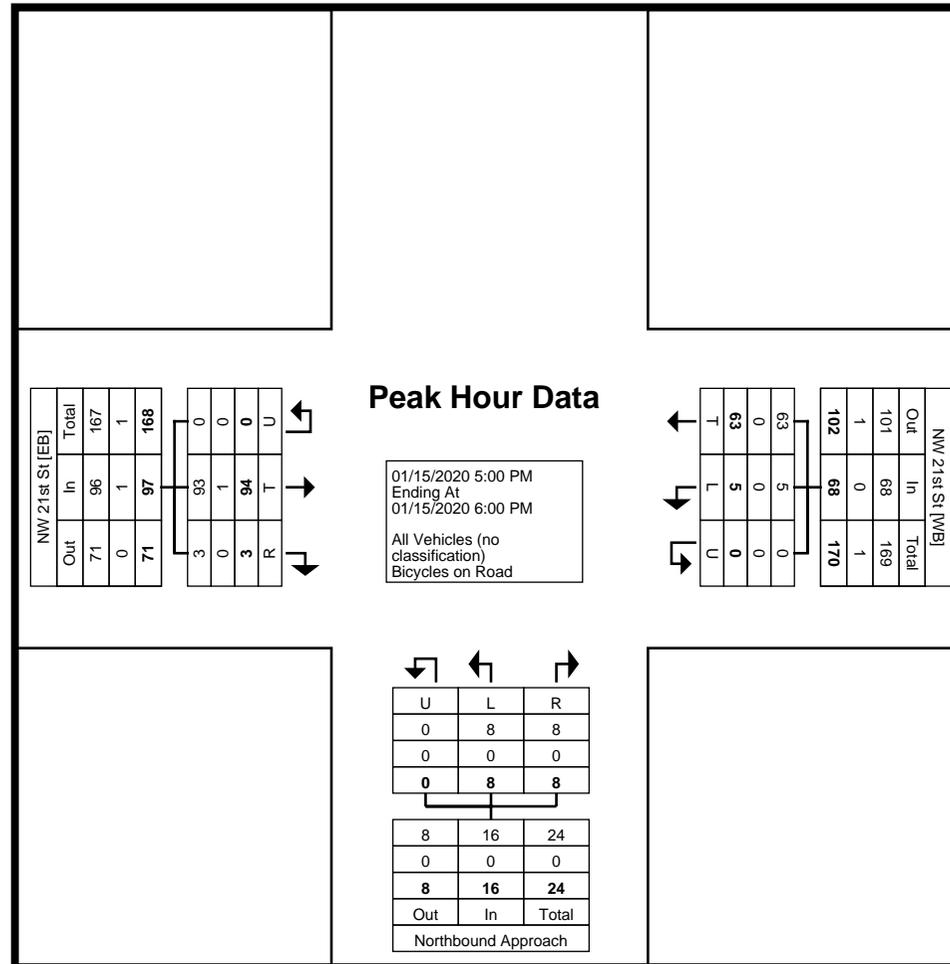
Start Time	NW 21st St Westbound				Northbound Approach Northbound				NW 21st St Eastbound				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
12:00 PM	9	0	0	9	0	4	0	4	0	19	0	19	32
12:15 PM	10	1	0	11	1	1	0	2	0	12	0	12	25
12:30 PM	10	1	0	11	0	1	0	1	1	9	0	10	22
12:45 PM	14	2	0	16	0	0	0	0	0	13	0	13	29
Hourly Total	43	4	0	47	1	6	0	7	1	53	0	54	108
1:00 PM	16	1	0	17	0	0	0	0	0	8	0	8	25
1:15 PM	9	0	0	9	1	0	0	1	1	14	0	15	25
1:30 PM	9	0	0	9	1	2	0	3	2	15	0	17	29
1:45 PM	11	1	0	12	1	1	0	2	0	12	0	12	26
Hourly Total	45	2	0	47	3	3	0	6	3	49	0	52	105
2:00 PM	11	0	0	11	0	2	0	2	2	21	0	23	36
2:15 PM	18	0	0	18	0	1	0	1	1	21	0	22	41
2:30 PM	9	1	0	10	0	1	0	1	2	18	0	20	31
2:45 PM	15	0	0	15	1	1	0	2	3	16	0	19	36
Hourly Total	53	1	0	54	1	5	0	6	8	76	0	84	144
3:00 PM	17	3	0	20	0	2	0	2	0	17	0	17	39
3:15 PM	18	0	0	18	2	3	0	5	0	14	0	14	37
3:30 PM	17	3	0	20	0	2	0	2	1	10	0	11	33
3:45 PM	13	0	0	13	0	1	0	1	1	15	0	16	30
Hourly Total	65	6	0	71	2	8	0	10	2	56	0	58	139
4:00 PM	11	1	0	12	0	0	0	0	0	20	0	20	32
4:15 PM	18	2	0	20	3	0	0	3	0	17	0	17	40
4:30 PM	16	0	0	16	0	1	0	1	1	22	0	23	40
4:45 PM	8	1	0	9	1	1	0	2	0	22	0	22	33
Hourly Total	53	4	0	57	4	2	0	6	1	81	0	82	145
5:00 PM	21	2	0	23	5	2	0	7	0	19	0	19	49
5:15 PM	17	0	0	17	1	0	0	1	0	30	0	30	48
5:30 PM	14	1	0	15	1	3	0	4	1	29	0	30	49
5:45 PM	11	2	0	13	1	3	0	4	2	16	0	18	35
Hourly Total	63	5	0	68	8	8	0	16	3	94	0	97	181
Grand Total	322	22	0	344	19	32	0	51	18	409	0	427	822
Approach %	93.6	6.4	0.0	-	37.3	62.7	0.0	-	4.2	95.8	0.0	-	-
Total %	39.2	2.7	0.0	41.8	2.3	3.9	0.0	6.2	2.2	49.8	0.0	51.9	-
All Vehicles (no classification)	321	22	0	343	19	31	0	50	18	407	0	425	818
% All Vehicles (no classification)	99.7	100.0	-	99.7	100.0	96.9	-	98.0	100.0	99.5	-	99.5	99.5
Bicycles on Road	1	0	0	1	0	1	0	1	0	2	0	2	4
% Bicycles on Road	0.3	0.0	-	0.3	0.0	3.1	-	2.0	0.0	0.5	-	0.5	0.5



Turning Movement Data Plot

### Turning Movement Peak Hour Data (5:00 PM)

Start Time	NW 21st St Westbound				Northbound Approach Northbound				NW 21st St Eastbound				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
5:00 PM	21	2	0	23	5	2	0	7	0	19	0	19	49
5:15 PM	17	0	0	17	1	0	0	1	0	30	0	30	48
5:30 PM	14	1	0	15	1	3	0	4	1	29	0	30	49
5:45 PM	11	2	0	13	1	3	0	4	2	16	0	18	35
Total	63	5	0	68	8	8	0	16	3	94	0	97	181
Approach %	92.6	7.4	0.0	-	50.0	50.0	0.0	-	3.1	96.9	0.0	-	-
Total %	34.8	2.8	0.0	37.6	4.4	4.4	0.0	8.8	1.7	51.9	0.0	53.6	-
PHF	0.750	0.625	0.000	0.739	0.400	0.667	0.000	0.571	0.375	0.783	0.000	0.808	0.923
All Vehicles (no classification)	63	5	0	68	8	8	0	16	3	93	0	96	180
% All Vehicles (no classification)	100.0	100.0	-	100.0	100.0	100.0	-	100.0	100.0	98.9	-	99.0	99.4
Bicycles on Road	0	0	0	0	0	0	0	0	0	1	0	1	1
% Bicycles on Road	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	1.1	-	1.0	0.6

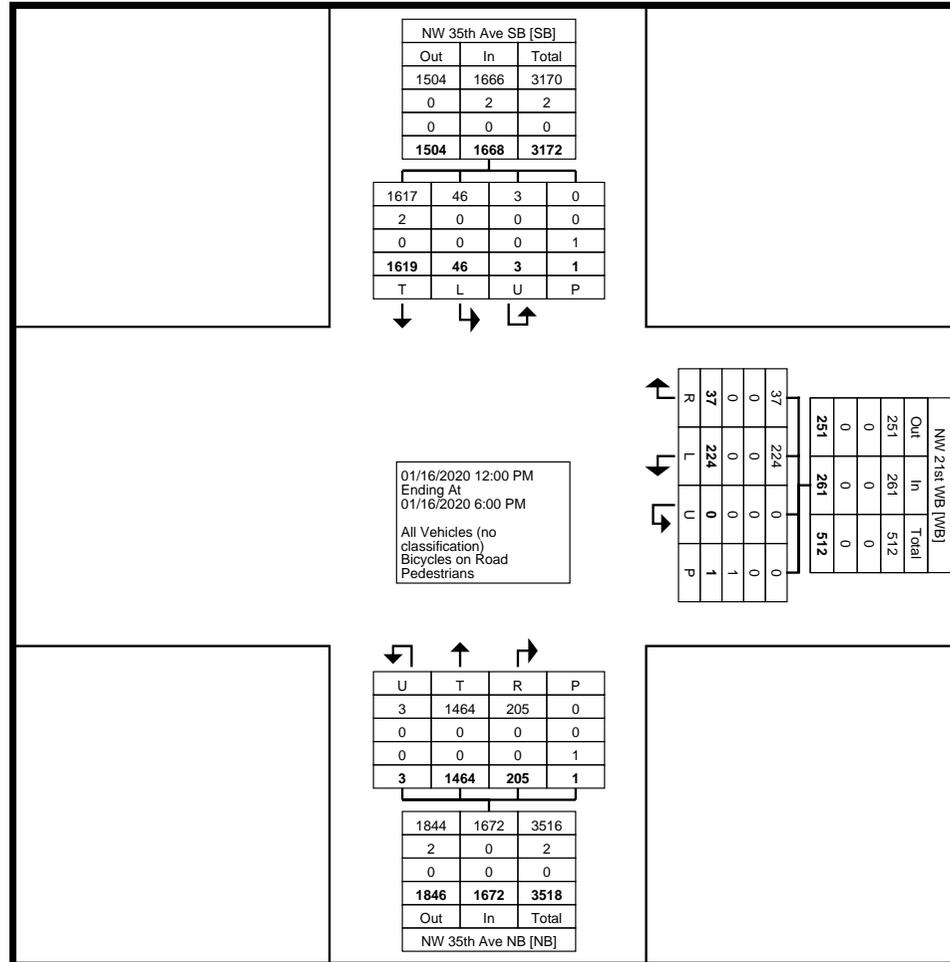


Turning Movement Peak Hour Data Plot (5:00 PM)

### Turning Movement Data

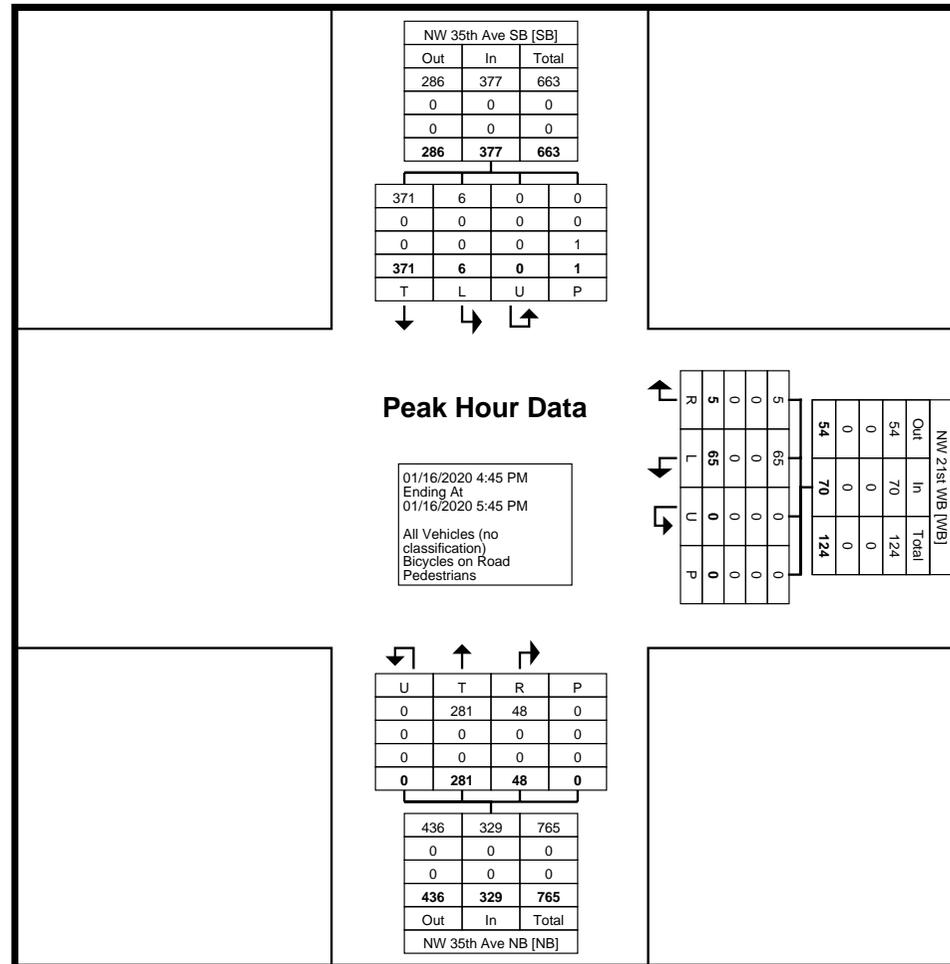
Start Time	NW 35th Ave SB Southbound					NW 21st WB Westbound					NW 35th Ave NB Northbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
12:00 PM	57	0	0	0	57	4	10	0	0	14	9	54	0	0	63	134
12:15 PM	42	0	0	0	42	0	4	0	0	4	9	62	0	0	71	117
12:30 PM	54	0	0	0	54	0	5	0	0	5	10	58	1	0	69	128
12:45 PM	61	0	0	0	61	1	6	0	0	7	5	42	0	0	47	115
Hourly Total	214	0	0	0	214	5	25	0	0	30	33	216	1	0	250	494
1:00 PM	70	0	0	0	70	0	9	0	0	9	6	45	0	0	51	130
1:15 PM	61	4	0	0	65	2	5	0	0	7	6	48	0	0	54	126
1:30 PM	72	2	0	0	74	1	6	0	0	7	9	41	0	0	50	131
1:45 PM	71	3	0	0	74	2	6	0	0	8	11	50	0	0	61	143
Hourly Total	274	9	0	0	283	5	26	0	0	31	32	184	0	0	216	530
2:00 PM	57	6	0	0	63	0	6	0	0	6	3	47	0	0	50	119
2:15 PM	43	2	1	0	46	3	5	0	0	8	10	48	0	0	58	112
2:30 PM	58	6	0	0	64	3	6	0	0	9	7	57	0	0	64	137
2:45 PM	57	1	0	0	58	1	6	0	0	7	3	71	0	0	74	139
Hourly Total	215	15	1	0	231	7	23	0	0	30	23	223	0	0	246	507
3:00 PM	50	4	1	0	55	5	6	0	0	11	4	73	0	0	77	143
3:15 PM	71	4	1	0	76	3	12	0	0	15	3	81	0	0	84	175
3:30 PM	80	1	0	0	81	1	13	0	1	14	10	75	0	0	85	180
3:45 PM	65	5	0	0	70	3	8	0	0	11	10	71	0	1	81	162
Hourly Total	266	14	2	0	282	12	39	0	1	51	27	300	0	1	327	660
4:00 PM	61	1	0	0	62	1	8	0	0	9	10	64	0	0	74	145
4:15 PM	73	0	0	0	73	1	12	0	0	13	13	77	1	0	91	177
4:30 PM	84	1	0	0	85	0	7	0	0	7	12	55	1	0	68	160
4:45 PM	79	1	0	0	80	1	12	0	0	13	13	58	0	0	71	164
Hourly Total	297	3	0	0	300	3	39	0	0	42	48	254	2	0	304	646
5:00 PM	84	1	0	0	85	0	26	0	0	26	11	76	0	0	87	198
5:15 PM	105	3	0	0	108	1	15	0	0	16	7	68	0	0	75	199
5:30 PM	103	1	0	1	104	3	12	0	0	15	17	79	0	0	96	215
5:45 PM	61	0	0	0	61	1	19	0	0	20	7	64	0	0	71	152
Hourly Total	353	5	0	1	358	5	72	0	0	77	42	287	0	0	329	764
Grand Total	1619	46	3	1	1668	37	224	0	1	261	205	1464	3	1	1672	3601
Approach %	97.1	2.8	0.2	-	-	14.2	85.8	0.0	-	-	12.3	87.6	0.2	-	-	-
Total %	45.0	1.3	0.1	-	46.3	1.0	6.2	0.0	-	7.2	5.7	40.7	0.1	-	46.4	-
All Vehicles (no classification)	1617	46	3	-	1666	37	224	0	-	261	205	1464	3	-	1672	3599
% All Vehicles (no classification)	99.9	100.0	100.0	-	99.9	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	100.0	99.9
Bicycles on Road	2	0	0	-	2	0	0	0	-	0	0	0	0	-	0	2
% Bicycles on Road	0.1	0.0	0.0	-	0.1	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.1
Pedestrians	-	-	-	1	-	-	-	-	1	-	-	-	-	1	-	-

% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	100.0	-	-
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Turning Movement Data Plot





Turning Movement Peak Hour Data Plot (4:45 PM)

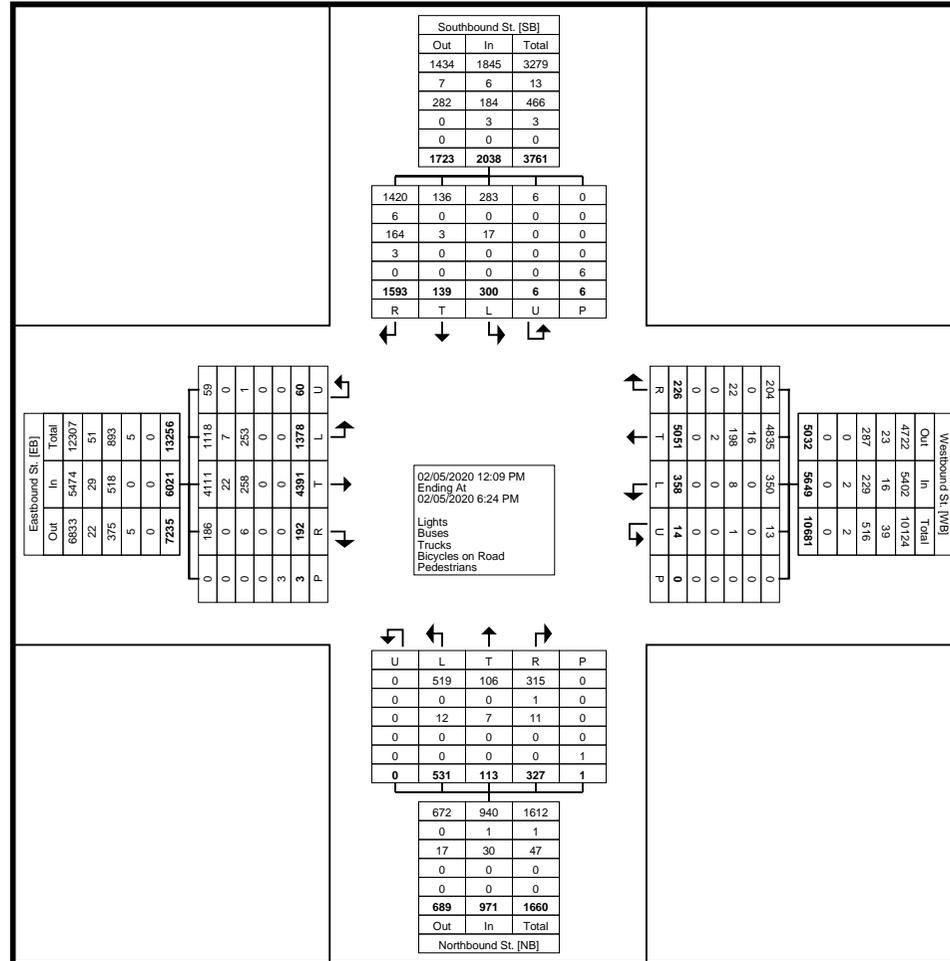
Tillman Engineering  
1720 SE 16th Ave, Building 100  
Ocala, Florida, United States 34471  
Phone ndave@tillmaneng.com

Count Name: West Oaks Traffic Study  
Site Code:  
Start Date: 01/16/2020  
Page No: 6

### Turning Movement Data

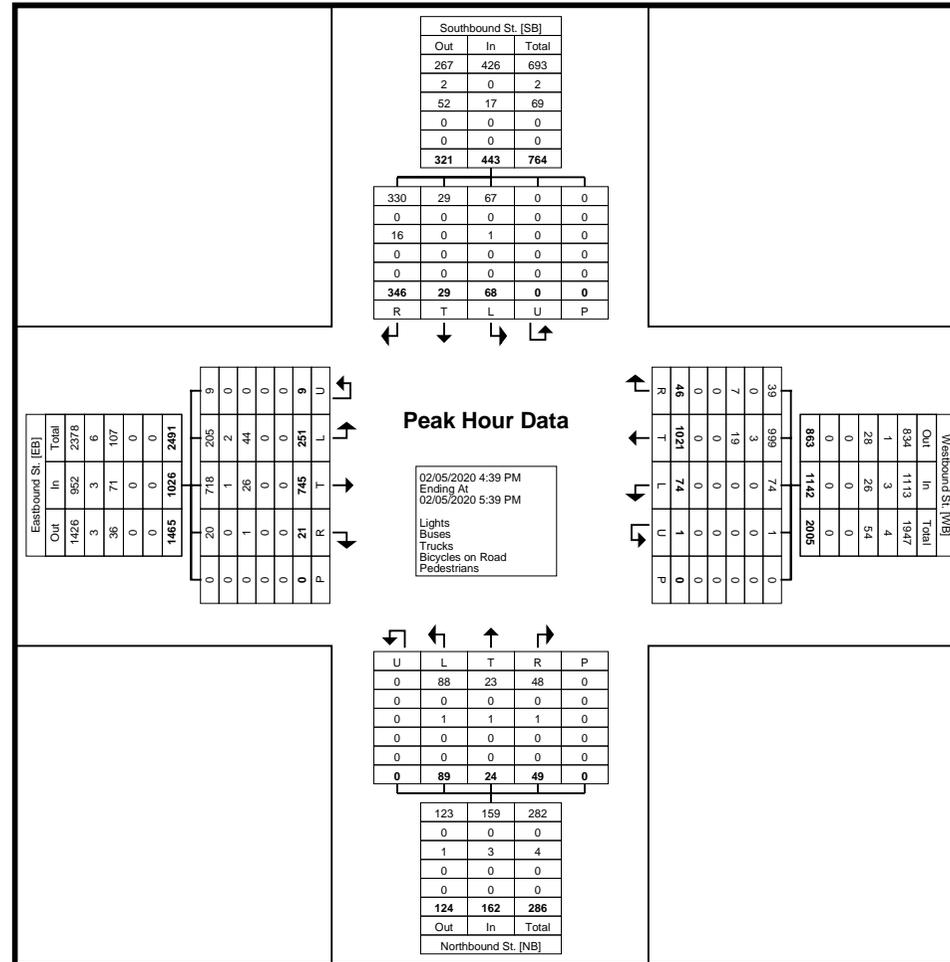
Start Time	Southbound St. Southbound							Westbound St. Westbound							Northbound St. Northbound							Eastbound St. Eastbound							Int. Total
	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	
12:09 PM	14	42	2	12	1	0	71	6	3	178	18	0	0	205	8	10	8	30	0	0	56	8	3	169	46	2	0	228	560
12:24 PM	12	24	4	2	0	0	42	4	1	172	19	0	0	196	11	3	1	26	0	0	41	9	0	163	46	2	0	220	499
12:39 PM	7	38	4	4	2	1	55	1	2	163	18	0	0	184	5	7	4	12	0	0	28	6	3	186	55	1	0	251	518
12:54 PM	14	40	4	8	1	0	67	7	1	147	9	0	0	164	4	14	4	15	0	0	37	7	4	156	41	2	0	210	478
Hourly Total	47	144	14	26	4	1	235	18	7	660	64	0	0	749	28	34	17	83	0	0	162	30	10	674	188	7	0	909	2055
1:09 PM	27	38	4	10	0	1	79	4	1	194	17	0	0	216	9	5	3	23	0	0	40	7	3	150	37	4	0	201	536
1:24 PM	37	39	7	22	0	1	105	3	1	168	15	2	0	189	15	1	2	29	0	0	47	5	2	179	35	4	0	225	566
1:39 PM	27	43	9	25	0	0	104	5	4	186	14	0	0	209	7	5	4	22	0	0	38	3	1	184	45	1	0	234	585
1:54 PM	24	34	9	11	0	0	78	4	4	169	7	1	0	185	7	5	3	18	0	0	33	9	1	201	43	5	0	259	555
Hourly Total	115	154	29	68	0	2	366	16	10	717	53	3	0	799	38	16	12	92	0	0	158	24	7	714	160	14	0	919	2242
2:09 PM	10	48	5	2	0	1	65	3	3	196	10	0	0	212	4	6	5	17	0	0	32	5	1	161	48	2	0	217	526
2:24 PM	11	34	5	12	0	0	62	2	4	186	6	0	0	198	5	8	7	19	0	1	39	1	3	184	49	4	2	241	540
2:39 PM	13	35	8	8	0	1	64	13	1	208	8	2	0	232	3	2	10	17	0	0	32	7	3	209	59	2	1	280	608
2:54 PM	15	50	5	8	1	0	79	14	4	198	10	0	0	226	11	9	6	10	0	0	36	6	0	190	68	3	0	267	608
Hourly Total	49	167	23	30	1	2	270	32	12	788	34	2	0	868	23	25	28	63	0	1	139	19	7	744	224	11	3	1005	2282
3:09 PM	26	44	5	14	0	0	89	15	4	217	17	2	0	255	4	6	4	28	0	0	42	3	2	200	69	2	0	276	662
3:24 PM	30	37	5	9	0	0	81	11	2	253	19	1	0	286	7	7	2	17	0	0	33	6	7	209	54	0	0	276	676
3:39 PM	40	30	2	9	0	1	81	6	4	255	18	0	0	283	13	4	4	24	0	0	45	12	2	215	68	1	0	298	707
3:54 PM	38	22	5	20	0	0	85	4	3	257	19	2	0	285	9	2	3	28	0	0	42	8	5	209	72	2	0	296	708
Hourly Total	134	133	17	52	0	1	336	36	13	982	73	5	0	1109	33	19	13	97	0	0	162	29	16	833	263	5	0	1146	2753
4:09 PM	44	31	8	11	0	0	94	5	2	275	17	1	0	300	16	4	6	25	0	0	51	9	2	160	62	2	0	235	680
4:24 PM	32	32	3	9	0	0	76	4	2	223	15	0	0	244	4	7	6	32	0	0	49	3	1	187	68	4	0	263	632
4:39 PM	37	52	4	16	0	0	109	6	1	281	18	0	0	306	6	7	6	19	0	0	38	4	0	177	58	0	0	239	692
4:54 PM	18	53	7	12	0	0	90	9	2	202	17	0	0	230	9	5	5	17	0	0	36	4	2	197	64	3	0	270	626
Hourly Total	131	168	22	48	0	0	369	24	7	981	67	1	0	1080	35	23	23	93	0	0	174	20	5	721	252	9	0	1007	2630
5:09 PM	57	28	9	23	0	0	117	12	6	307	18	0	0	343	10	4	7	25	0	0	46	3	1	190	56	2	0	252	758
5:24 PM	51	50	9	17	0	0	127	8	2	231	21	1	0	263	4	4	6	28	0	0	42	5	2	181	73	4	0	265	697
5:39 PM	34	51	12	20	1	0	118	11	2	215	16	1	0	245	5	9	3	31	0	0	48	3	3	157	85	2	0	250	661
5:54 PM	46	30	3	16	0	0	95	7	2	170	12	1	0	192	8	9	4	18	0	0	39	6	2	161	69	5	0	243	569
Hourly Total	188	159	33	76	1	0	457	38	12	923	67	3	0	1043	27	26	20	102	0	0	175	17	8	689	283	13	0	1010	2685
6:09 PM	2	2	1	0	0	0	5	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	16	8	1	0	25	32	
Grand Total	666	927	139	300	6	6	2038	164	62	5051	358	14	0	5649	184	143	113	531	0	1	971	139	53	4391	1378	60	3	6021	14679
Approach %	32.7	45.5	6.8	14.7	0.3	-	-	2.9	1.1	89.4	6.3	0.2	-	18.9	14.7	11.6	54.7	0.0	-	-	2.3	0.9	72.9	22.9	1.0	-	-	-	
Total %	4.5	6.3	0.9	2.0	0.0	-	13.9	1.1	0.4	34.4	2.4	0.1	-	38.5	1.3	1.0	0.8	3.6	0.0	-	6.6	0.9	0.4	29.9	9.4	0.4	-	41.0	-
Lights	587	833	136	283	6	-	1845	147	57	4835	350	13	-	5402	177	138	106	519	0	-	940	134	52	4111	1118	59	-	5474	13661
% Lights	88.1	89.9	97.8	94.3	100.0	-	90.5	89.6	91.9	95.7	97.8	92.9	-	95.6	96.2	96.5	93.8	97.7	-	-	96.8	96.4	98.1	93.6	81.1	98.3	-	90.9	93.1
Buses	3	3	0	0	0	-	6	0	0	16	0	0	-	16	1	0	0	0	0	-	1	0	0	22	7	0	-	29	52
% Buses	0.5	0.3	0.0	0.0	0.0	-	0.3	0.0	0.0	0.3	0.0	0.0	-	0.3	0.5	0.0	0.0	0.0	-	-	0.1	0.0	0.0	0.5	0.5	0.0	-	0.5	0.4





Turning Movement Data Plot





Turning Movement Peak Hour Data Plot (4:39 PM)

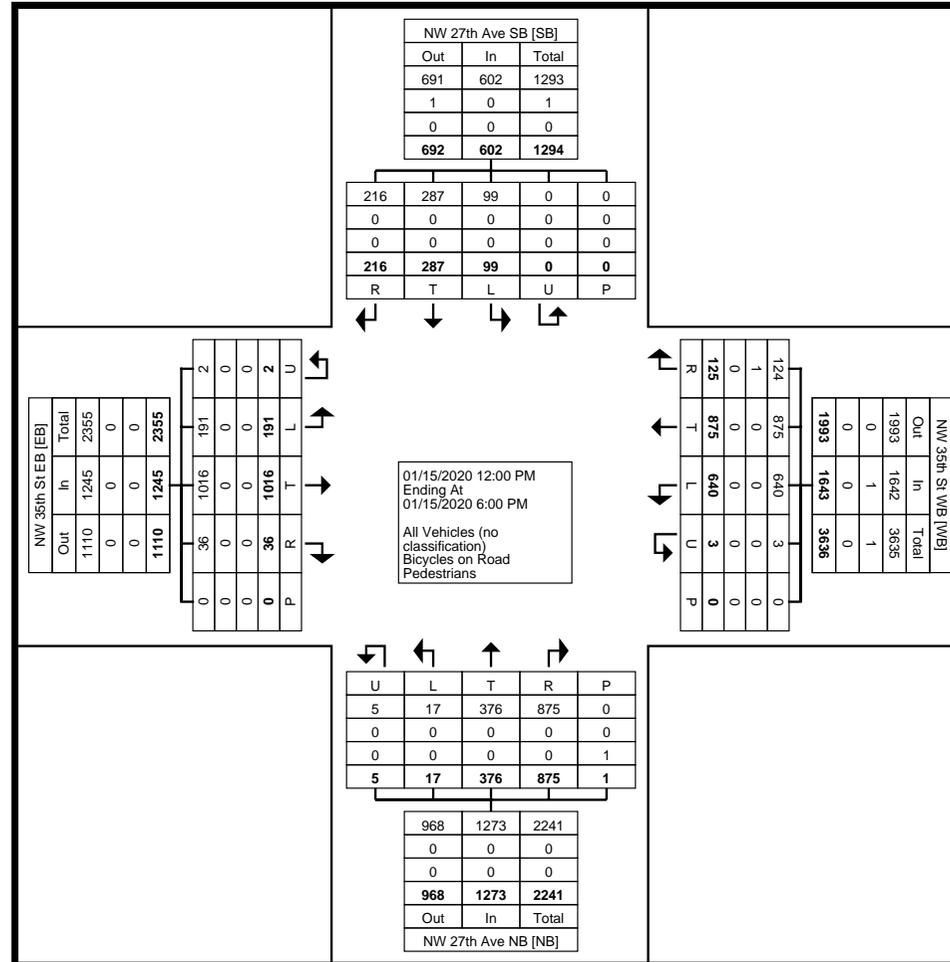
Tillman Engineering  
1720 SE 16th Ave, Building 100  
Ocala, Florida, United States 34471  
Phone ndave@tillmaneng.com

Count Name: West Oaks  
Site Code:  
Start Date: 02/05/2020  
Page No: 6

### Turning Movement Data

Start Time	NW 27th Ave SB Southbound						NW 35th St WB Westbound						NW 27th Ave NB Northbound						NW 35th St EB Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
12:00 PM	5	15	7	0	0	27	3	38	44	1	0	86	14	16	1	0	0	31	1	44	7	0	0	52	196
12:15 PM	2	8	2	0	0	12	8	34	24	0	0	66	34	12	1	1	0	48	2	26	11	1	0	40	166
12:30 PM	8	6	3	0	0	17	2	30	26	0	0	58	24	13	1	0	0	38	0	38	8	0	0	46	159
12:45 PM	6	8	2	0	0	16	5	32	28	0	0	65	18	17	0	0	0	35	1	28	9	0	0	38	154
Hourly Total	21	37	14	0	0	72	18	134	122	1	0	275	90	58	3	1	0	152	4	136	35	1	0	176	675
1:00 PM	7	9	1	0	0	17	3	24	30	0	0	57	31	12	1	0	0	44	2	27	8	0	0	37	155
1:15 PM	5	10	6	0	0	21	6	35	32	0	0	73	33	14	1	0	0	48	2	27	5	0	0	34	176
1:30 PM	9	11	4	0	0	24	6	23	32	0	0	61	28	13	0	0	0	41	1	38	4	0	0	43	169
1:45 PM	7	10	3	0	0	20	5	31	19	0	0	55	18	12	1	0	0	31	1	30	11	0	0	42	148
Hourly Total	28	40	14	0	0	82	20	113	113	0	0	246	110	51	3	0	0	164	6	122	28	0	0	156	648
2:00 PM	9	10	2	0	0	21	2	26	25	0	0	53	32	15	1	1	0	49	2	40	10	0	0	52	175
2:15 PM	7	12	4	0	0	23	4	32	24	0	0	60	26	14	0	0	0	40	0	50	5	0	0	55	178
2:30 PM	11	11	4	0	0	26	5	30	20	0	0	55	40	13	0	2	0	55	0	41	10	0	0	51	187
2:45 PM	14	13	8	0	0	35	6	36	29	1	0	72	39	14	0	0	0	53	2	41	9	0	0	52	212
Hourly Total	41	46	18	0	0	105	17	124	98	1	0	240	137	56	1	3	0	197	4	172	34	0	0	210	752
3:00 PM	9	9	5	0	0	23	3	54	15	0	0	72	34	11	2	0	0	47	2	39	9	0	0	50	192
3:15 PM	9	12	6	0	0	27	8	45	28	0	0	81	36	18	1	0	0	55	1	42	11	0	0	54	217
3:30 PM	14	13	5	0	0	32	9	51	22	0	0	82	39	13	0	0	0	52	3	45	6	0	0	54	220
3:45 PM	10	14	4	0	0	28	8	43	34	0	0	85	57	16	1	0	0	74	2	39	5	0	0	46	233
Hourly Total	42	48	20	0	0	110	28	193	99	0	0	320	166	58	4	0	0	228	8	165	31	0	0	204	862
4:00 PM	13	14	7	0	0	34	3	40	26	0	0	69	50	22	0	0	0	72	3	39	6	1	0	49	224
4:15 PM	12	14	4	0	0	30	5	40	25	0	0	70	52	13	0	0	0	65	2	50	11	0	0	63	228
4:30 PM	12	18	4	0	0	34	13	43	21	0	0	77	52	14	0	0	0	66	0	53	10	0	0	63	240
4:45 PM	6	15	5	0	0	26	6	37	25	0	0	68	45	19	0	0	0	64	3	52	7	0	0	62	220
Hourly Total	43	61	20	0	0	124	27	160	97	0	0	284	199	68	0	0	0	267	8	194	34	1	0	237	912
5:00 PM	8	11	4	0	0	23	5	35	31	0	0	71	48	12	1	0	0	61	0	63	5	0	0	68	223
5:15 PM	14	15	2	0	0	31	5	33	31	0	0	69	51	24	2	0	0	77	0	50	5	0	0	55	232
5:30 PM	9	18	3	0	0	30	3	37	27	0	0	67	47	26	2	0	0	75	6	59	15	0	0	80	252
5:45 PM	10	11	4	0	0	25	2	46	22	1	0	71	27	23	1	1	1	52	0	55	4	0	0	59	207
Hourly Total	41	55	13	0	0	109	15	151	111	1	0	278	173	85	6	1	1	265	6	227	29	0	0	262	914
Grand Total	216	287	99	0	0	602	125	875	640	3	0	1643	875	376	17	5	1	1273	36	1016	191	2	0	1245	4763
Approach %	35.9	47.7	16.4	0.0	-	-	7.6	53.3	39.0	0.2	-	-	68.7	29.5	1.3	0.4	-	-	2.9	81.6	15.3	0.2	-	-	-
Total %	4.5	6.0	2.1	0.0	-	12.6	2.6	18.4	13.4	0.1	-	34.5	18.4	7.9	0.4	0.1	-	26.7	0.8	21.3	4.0	0.0	-	26.1	-
All Vehicles (no classification)	216	287	99	0	-	602	124	875	640	3	-	1642	875	376	17	5	-	1273	36	1016	191	2	-	1245	4762
% All Vehicles (no classification)	100.0	100.0	100.0	-	-	100.0	99.2	100.0	100.0	100.0	-	99.9	100.0	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	100.0	-	100.0	100.0
Bicycles on Road	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1

% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.8	0.0	0.0	0.0	-	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



Turning Movement Data Plot

### Turning Movement Peak Hour Data (4:45 PM)

Start Time	NW 27th Ave SB Southbound						NW 35th St WB Westbound						NW 27th Ave NB Northbound						NW 35th St EB Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:45 PM	6	15	5	0	0	26	6	37	25	0	0	68	45	19	0	0	0	64	3	52	7	0	0	62	220
5:00 PM	8	11	4	0	0	23	5	35	31	0	0	71	48	12	1	0	0	61	0	63	5	0	0	68	223
5:15 PM	14	15	2	0	0	31	5	33	31	0	0	69	51	24	2	0	0	77	0	50	5	0	0	55	232
5:30 PM	9	18	3	0	0	30	3	37	27	0	0	67	47	26	2	0	0	75	6	59	15	0	0	80	252
Total	37	59	14	0	0	110	19	142	114	0	0	275	191	81	5	0	0	277	9	224	32	0	0	265	927
Approach %	33.6	53.6	12.7	0.0	-	-	6.9	51.6	41.5	0.0	-	-	69.0	29.2	1.8	0.0	-	-	3.4	84.5	12.1	0.0	-	-	-
Total %	4.0	6.4	1.5	0.0	-	11.9	2.0	15.3	12.3	0.0	-	29.7	20.6	8.7	0.5	0.0	-	29.9	1.0	24.2	3.5	0.0	-	28.6	-
PHF	0.661	0.819	0.700	0.000	-	0.887	0.792	0.959	0.919	0.000	-	0.968	0.936	0.779	0.625	0.000	-	0.899	0.375	0.889	0.533	0.000	-	0.828	0.920
All Vehicles (no classification)	37	59	14	0	-	110	18	142	114	0	-	274	191	81	5	0	-	277	9	224	32	0	-	265	926
% All Vehicles (no classification)	100.0	100.0	100.0	-	-	100.0	94.7	100.0	100.0	-	-	99.6	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	99.9
Bicycles on Road	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	5.3	0.0	0.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



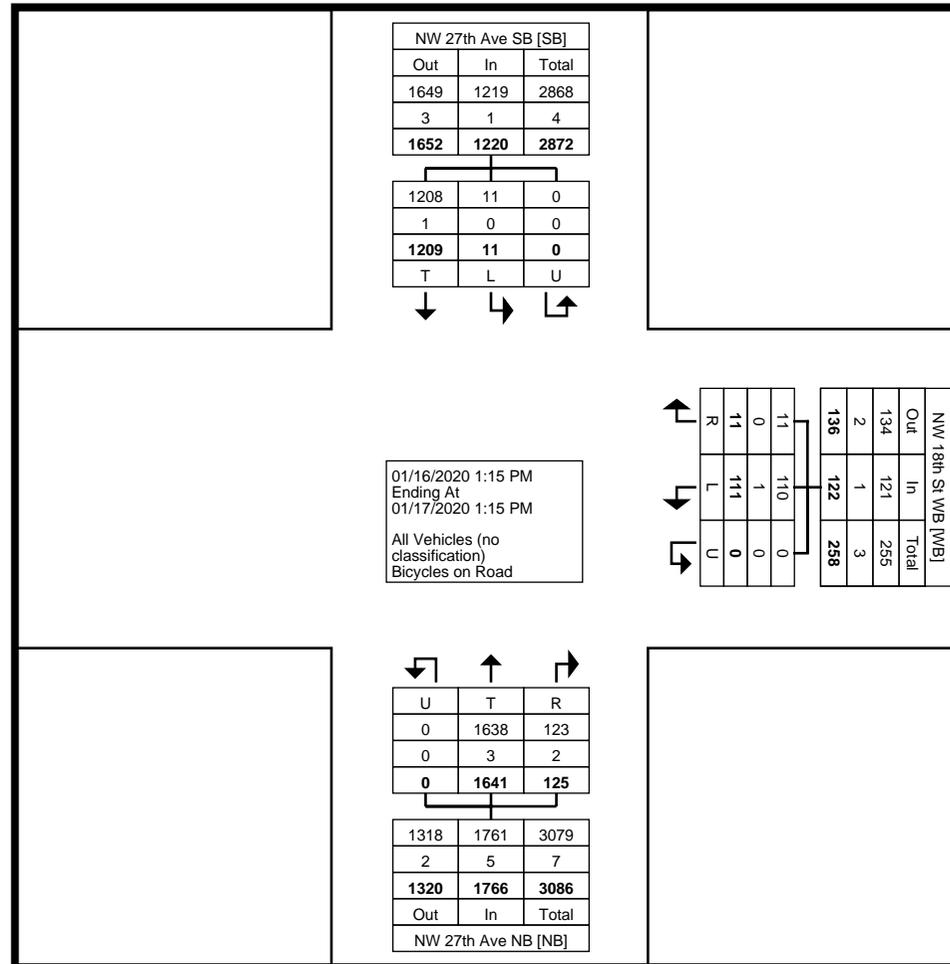
Tillman Engineering  
1720 SE 16th Ave, Building 100  
Ocala, Florida, United States 34471  
Phone ndave@tillmaneng.com

Count Name: West Oaks Traffic Study  
Site Code:  
Start Date: 01/15/2020  
Page No: 6

### Turning Movement Data

Start Time	NW 27th Ave SB Southbound				NW 18th St WB Westbound				NW 27th Ave NB Northbound				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
1:15 PM	40	0	0	40	0	3	0	3	3	46	0	49	92
1:30 PM	42	0	0	42	1	4	0	5	4	55	0	59	106
1:45 PM	58	1	0	59	0	4	0	4	6	65	0	71	134
Hourly Total	140	1	0	141	1	11	0	12	13	166	0	179	332
2:00 PM	48	1	0	49	2	5	0	7	7	44	0	51	107
2:15 PM	51	0	0	51	0	5	0	5	0	57	0	57	113
2:30 PM	50	1	0	51	0	2	0	2	2	63	0	65	118
2:45 PM	51	0	0	51	0	2	0	2	4	57	0	61	114
Hourly Total	200	2	0	202	2	14	0	16	13	221	0	234	452
3:00 PM	53	0	0	53	0	2	0	2	4	73	0	77	132
3:15 PM	51	1	0	52	1	3	0	4	4	71	0	75	131
3:30 PM	67	0	0	67	1	4	0	5	5	81	0	86	158
3:45 PM	48	1	0	49	0	8	0	8	6	88	0	94	151
Hourly Total	219	2	0	221	2	17	0	19	19	313	0	332	572
4:00 PM	53	0	0	53	0	3	0	3	3	92	0	95	151
4:15 PM	44	0	0	44	0	6	0	6	5	88	0	93	143
4:30 PM	45	2	0	47	1	4	0	5	6	88	0	94	146
4:45 PM	56	0	0	56	1	2	0	3	7	61	0	68	127
Hourly Total	198	2	0	200	2	15	0	17	21	329	0	350	567
5:00 PM	38	1	0	39	0	4	0	4	8	83	0	91	134
5:15 PM	52	0	0	52	1	10	0	11	10	92	0	102	165
5:30 PM	56	1	0	57	1	10	0	11	2	69	0	71	139
5:45 PM	41	0	0	41	1	6	0	7	11	64	0	75	123
Hourly Total	187	2	0	189	3	30	0	33	31	308	0	339	561
6:00 PM	39	0	0	39	0	2	0	2	5	47	0	52	93
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	39	0	0	39	0	2	0	2	5	47	0	52	93
12:00 PM	49	0	0	49	1	2	0	3	4	49	0	53	105
12:15 PM	57	1	0	58	0	5	0	5	5	46	0	51	114
12:30 PM	30	0	0	30	0	3	0	3	3	60	0	63	96
12:45 PM	38	0	0	38	0	2	0	2	4	57	0	61	101
Hourly Total	174	1	0	175	1	12	0	13	16	212	0	228	416
1:00 PM	52	1	0	53	0	10	0	10	7	45	0	52	115
Grand Total	1209	11	0	1220	11	111	0	122	125	1641	0	1766	3108
Approach %	99.1	0.9	0.0	-	9.0	91.0	0.0	-	7.1	92.9	0.0	-	-
Total %	38.9	0.4	0.0	39.3	0.4	3.6	0.0	3.9	4.0	52.8	0.0	56.8	-
All Vehicles (no classification)	1208	11	0	1219	11	110	0	121	123	1638	0	1761	3101
% All Vehicles (no classification)	99.9	100.0	-	99.9	100.0	99.1	-	99.2	98.4	99.8	-	99.7	99.8
Bicycles on Road	1	0	0	1	0	1	0	1	2	3	0	5	7

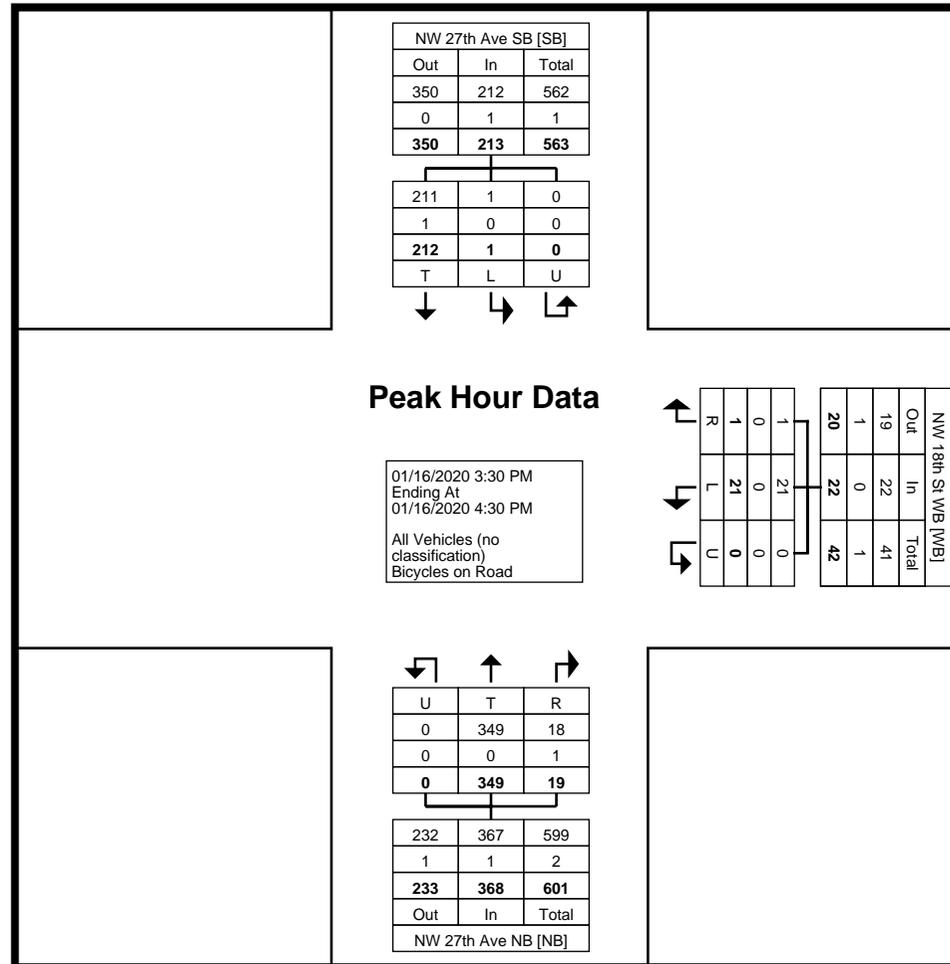
% Bicycles on Road	0.1	0.0	-	0.1	0.0	0.9	-	0.8	1.6	0.2	-	0.3	0.2
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Turning Movement Data Plot

### Turning Movement Peak Hour Data (3:30 PM)

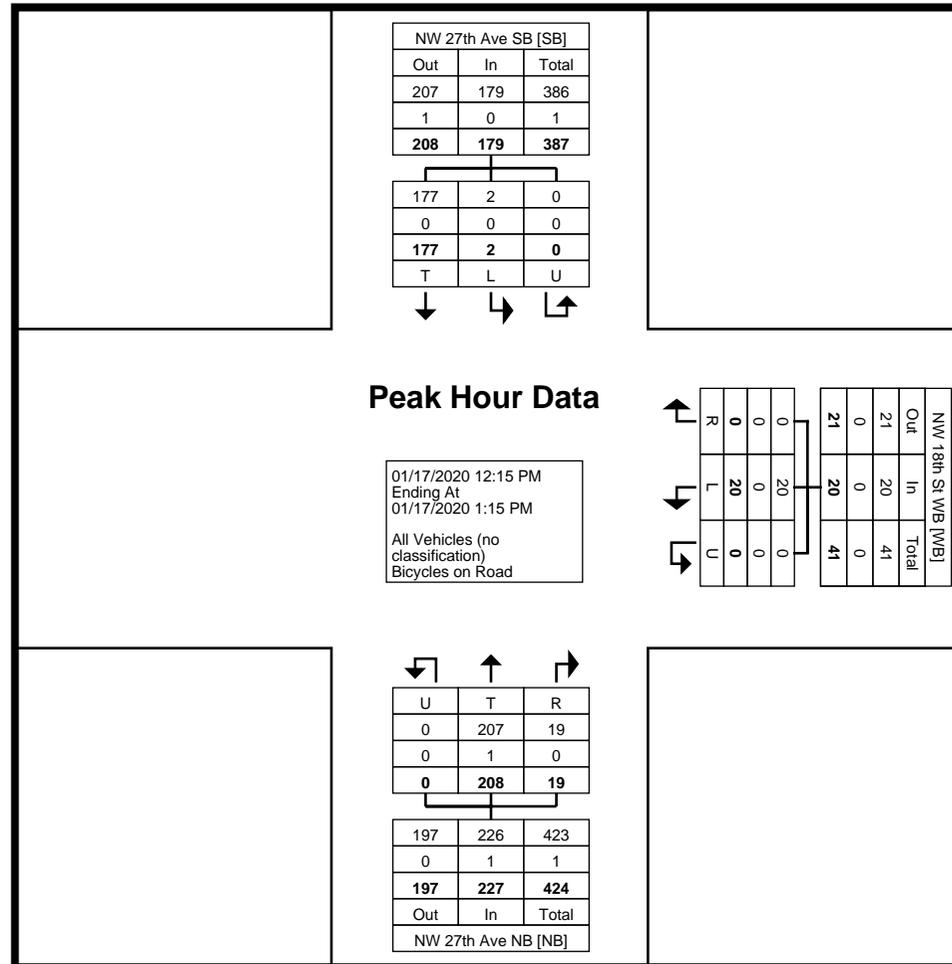
Start Time	NW 27th Ave SB Southbound				NW 18th St WB Westbound				NW 27th Ave NB Northbound				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
3:30 PM	67	0	0	67	1	4	0	5	5	81	0	86	158
3:45 PM	48	1	0	49	0	8	0	8	6	88	0	94	151
4:00 PM	53	0	0	53	0	3	0	3	3	92	0	95	151
4:15 PM	44	0	0	44	0	6	0	6	5	88	0	93	143
Total	212	1	0	213	1	21	0	22	19	349	0	368	603
Approach %	99.5	0.5	0.0	-	4.5	95.5	0.0	-	5.2	94.8	0.0	-	-
Total %	35.2	0.2	0.0	35.3	0.2	3.5	0.0	3.6	3.2	57.9	0.0	61.0	-
PHF	0.791	0.250	0.000	0.795	0.250	0.656	0.000	0.688	0.792	0.948	0.000	0.968	0.954
All Vehicles (no classification)	211	1	0	212	1	21	0	22	18	349	0	367	601
% All Vehicles (no classification)	99.5	100.0	-	99.5	100.0	100.0	-	100.0	94.7	100.0	-	99.7	99.7
Bicycles on Road	1	0	0	1	0	0	0	0	1	0	0	1	2
% Bicycles on Road	0.5	0.0	-	0.5	0.0	0.0	-	0.0	5.3	0.0	-	0.3	0.3



Turning Movement Peak Hour Data Plot (3:30 PM)

### Turning Movement Peak Hour Data (12:15 PM)

Start Time	NW 27th Ave SB Southbound				NW 18th St WB Westbound				NW 27th Ave NB Northbound				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
12:15 PM	57	1	0	58	0	5	0	5	5	46	0	51	114
12:30 PM	30	0	0	30	0	3	0	3	3	60	0	63	96
12:45 PM	38	0	0	38	0	2	0	2	4	57	0	61	101
1:00 PM	52	1	0	53	0	10	0	10	7	45	0	52	115
Total	177	2	0	179	0	20	0	20	19	208	0	227	426
Approach %	98.9	1.1	0.0	-	0.0	100.0	0.0	-	8.4	91.6	0.0	-	-
Total %	41.5	0.5	0.0	42.0	0.0	4.7	0.0	4.7	4.5	48.8	0.0	53.3	-
PHF	0.776	0.500	0.000	0.772	0.000	0.500	0.000	0.500	0.679	0.867	0.000	0.901	0.926
All Vehicles (no classification)	177	2	0	179	0	20	0	20	19	207	0	226	425
% All Vehicles (no classification)	100.0	100.0	-	100.0	-	100.0	-	100.0	100.0	99.5	-	99.6	99.8
Bicycles on Road	0	0	0	0	0	0	0	0	0	1	0	1	1
% Bicycles on Road	0.0	0.0	-	0.0	-	0.0	-	0.0	0.0	0.5	-	0.4	0.2



Turning Movement Peak Hour Data Plot (12:15 PM)

Tillman Engineering  
1720 SE 16th Ave, Building 100  
Ocala, Florida, United States 34471  
Phone ndave@tillmaneng.com

Count Name: West Oaks Traffic Study  
Site Code:  
Start Date: 01/16/2020  
Page No: 8

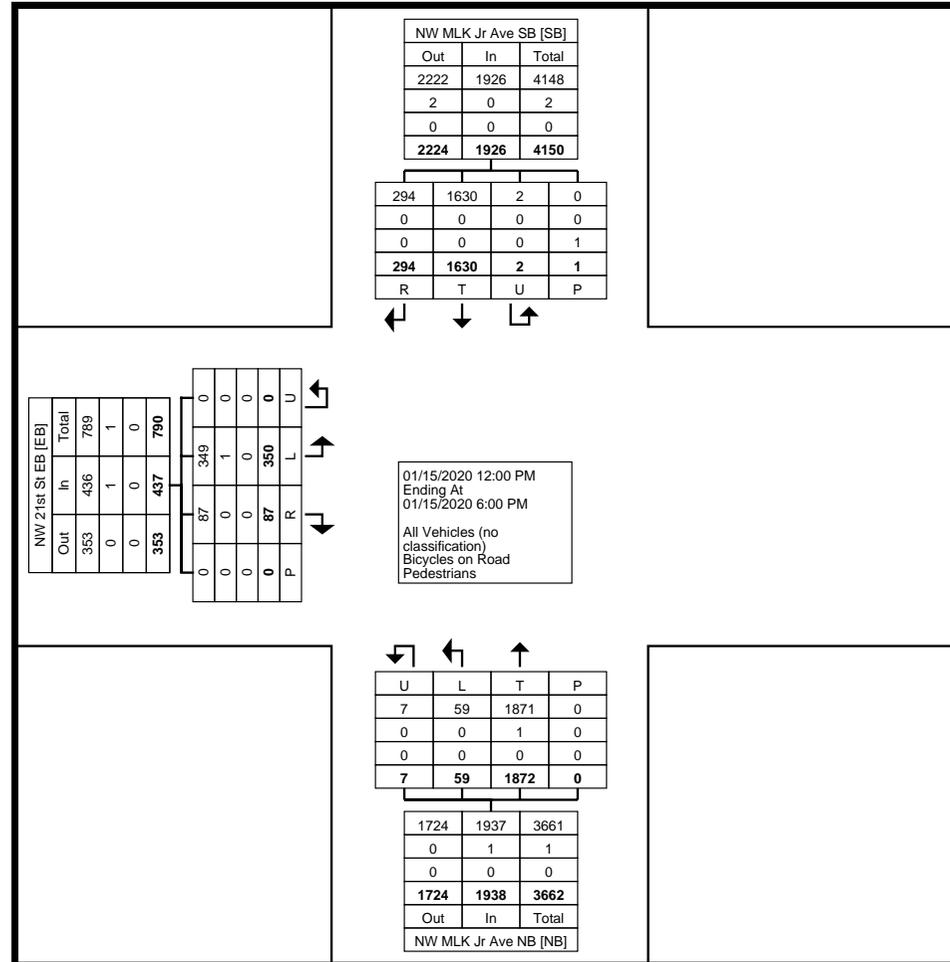
Tillman Engineering  
 1720 SE 16th Ave, Building 100  
 Ocala, Florida, United States 34471  
 Phone ndave@tillmaneng.com

Count Name: West Oaks  
 Site Code:  
 Start Date: 01/15/2020  
 Page No: 1

### Turning Movement Data

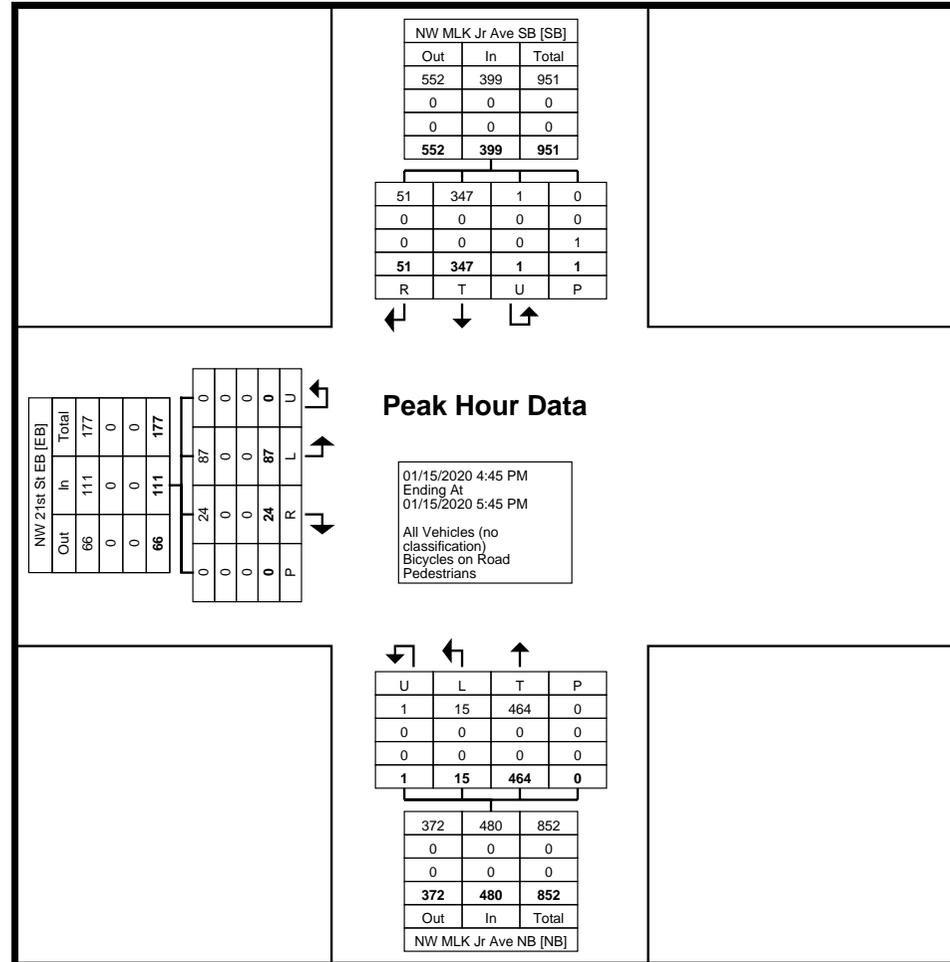
Start Time	NW MLK Jr Ave SB Southbound					NW MLK Jr Ave NB Northbound					NW 21st St EB Eastbound					Int. Total
	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	
12:00 PM	7	52	0	0	59	69	3	0	0	72	4	13	0	0	17	148
12:15 PM	10	48	1	0	59	51	1	0	0	52	3	15	0	0	18	129
12:30 PM	9	45	0	0	54	53	3	0	0	56	1	6	0	0	7	117
12:45 PM	17	52	0	0	69	64	2	0	0	66	0	14	0	0	14	149
Hourly Total	43	197	1	0	241	237	9	0	0	246	8	48	0	0	56	543
1:00 PM	13	37	0	0	50	59	4	0	0	63	2	8	0	0	10	123
1:15 PM	7	58	0	0	65	43	1	0	0	44	3	12	0	0	15	124
1:30 PM	8	43	0	0	51	61	1	0	0	62	2	13	0	0	15	128
1:45 PM	11	64	0	0	75	54	2	0	0	56	3	8	0	0	11	142
Hourly Total	39	202	0	0	241	217	8	0	0	225	10	41	0	0	51	517
2:00 PM	8	50	0	0	58	64	1	2	0	67	4	14	0	0	18	143
2:15 PM	13	53	0	0	66	71	6	0	0	77	8	18	0	0	26	169
2:30 PM	9	63	0	0	72	70	1	1	0	72	7	11	0	0	18	162
2:45 PM	12	51	0	0	63	68	2	1	0	71	6	14	0	0	20	154
Hourly Total	42	217	0	0	259	273	10	4	0	287	25	57	0	0	82	628
3:00 PM	18	83	0	0	101	49	2	0	0	51	3	12	0	0	15	167
3:15 PM	16	103	0	0	119	58	3	0	0	61	3	14	0	0	17	197
3:30 PM	18	75	0	0	93	95	4	2	0	101	1	8	0	0	9	203
3:45 PM	13	75	0	0	88	97	2	0	0	99	4	15	0	0	19	206
Hourly Total	65	336	0	0	401	299	11	2	0	312	11	49	0	0	60	773
4:00 PM	13	87	0	0	100	91	0	0	0	91	3	17	0	0	20	211
4:15 PM	19	83	0	0	102	121	2	0	0	123	2	20	0	0	22	247
4:30 PM	12	93	0	0	105	89	3	0	0	92	2	18	0	0	20	217
4:45 PM	9	86	0	1	95	99	1	0	0	100	6	18	0	0	24	219
Hourly Total	53	349	0	1	402	400	6	0	0	406	13	73	0	0	86	894
5:00 PM	19	98	0	0	117	133	4	0	0	137	6	20	0	0	26	280
5:15 PM	10	76	1	0	87	125	6	0	0	131	5	24	0	0	29	247
5:30 PM	13	87	0	0	100	107	4	1	0	112	7	25	0	0	32	244
5:45 PM	10	68	0	0	78	81	1	0	0	82	2	13	0	0	15	175
Hourly Total	52	329	1	0	382	446	15	1	0	462	20	82	0	0	102	946
Grand Total	294	1630	2	1	1926	1872	59	7	0	1938	87	350	0	0	437	4301
Approach %	15.3	84.6	0.1	-	-	96.6	3.0	0.4	-	-	19.9	80.1	0.0	-	-	-
Total %	6.8	37.9	0.0	-	44.8	43.5	1.4	0.2	-	45.1	2.0	8.1	0.0	-	10.2	-
All Vehicles (no classification)	294	1630	2	-	1926	1871	59	7	-	1937	87	349	0	-	436	4299
% All Vehicles (no classification)	100.0	100.0	100.0	-	100.0	99.9	100.0	100.0	-	99.9	100.0	99.7	-	-	99.8	100.0
Bicycles on Road	0	0	0	-	0	1	0	0	-	1	0	1	0	-	1	2
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.1	0.0	0.0	-	0.1	0.0	0.3	-	-	0.2	0.0
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-





Turning Movement Data Plot



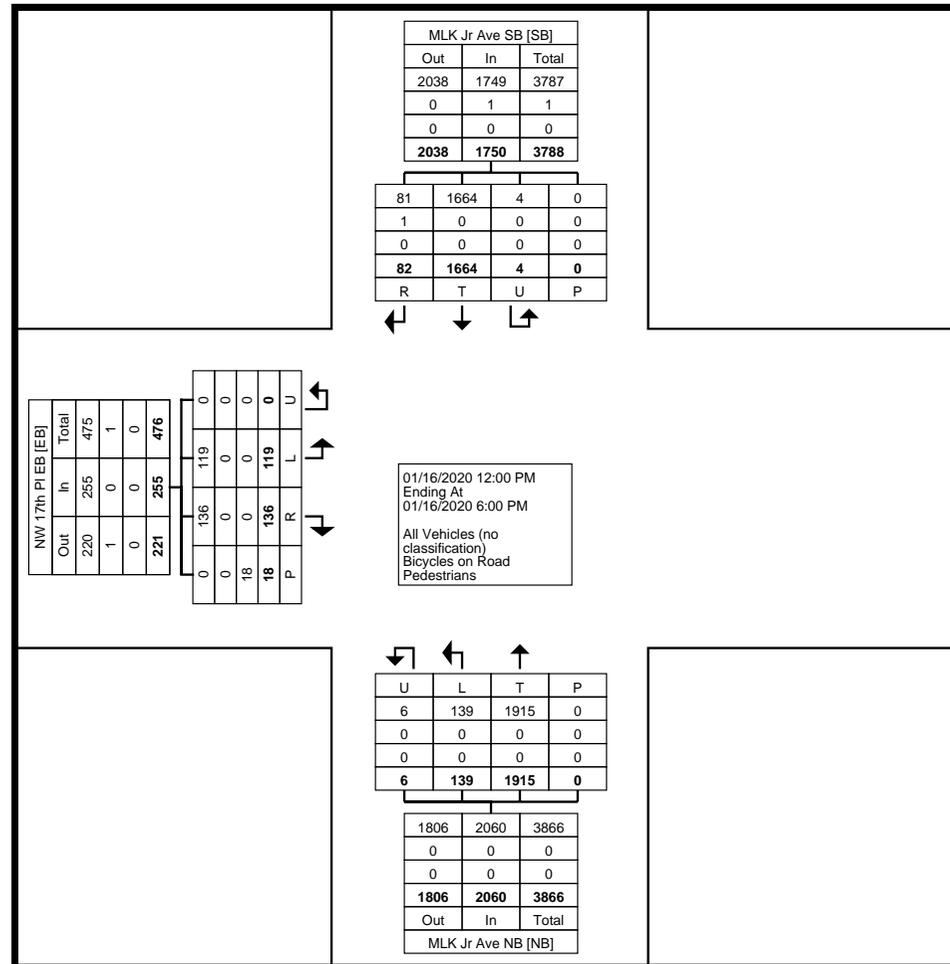


Turning Movement Peak Hour Data Plot (4:45 PM)

Tillman Engineering  
1720 SE 16th Ave, Building 100  
Ocala, Florida, United States 34471  
Phone ndave@tillmaneng.com

Count Name: West Oaks  
Site Code:  
Start Date: 01/15/2020  
Page No: 6

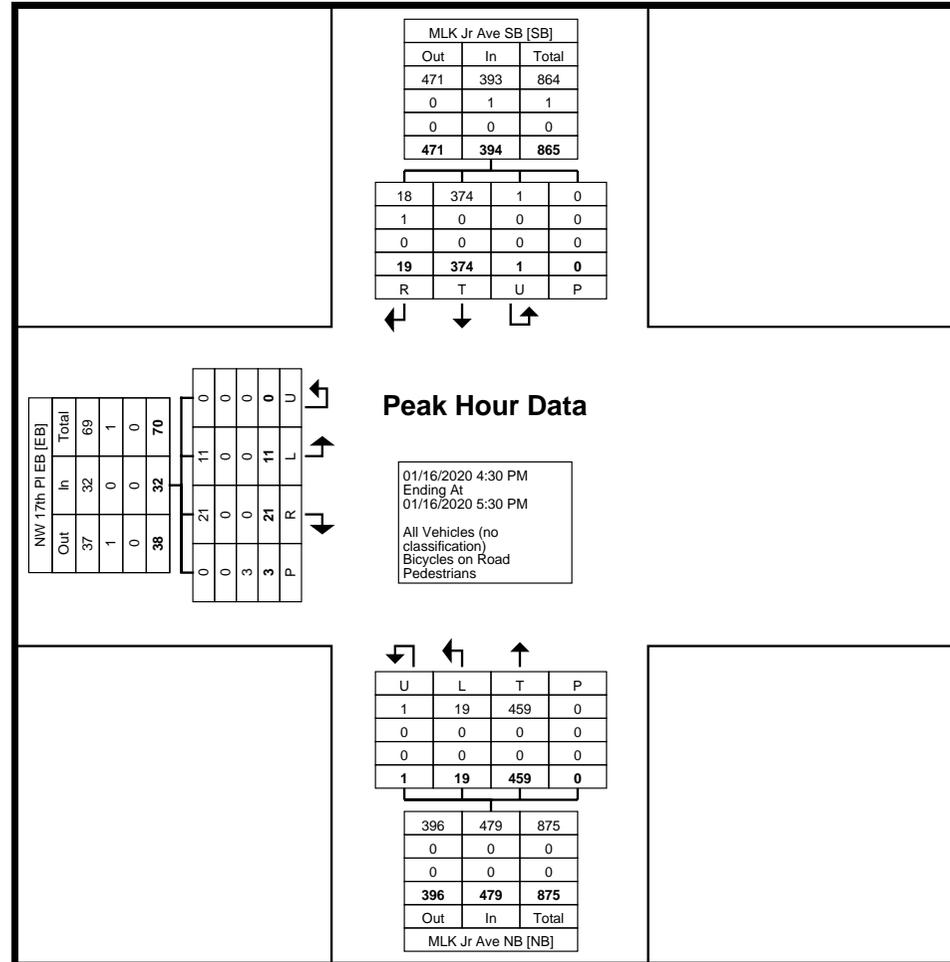
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Turning Movement Data Plot

### Turning Movement Peak Hour Data (4:30 PM)

Start Time	MLK Jr Ave SB Southbound					MLK Jr Ave NB Northbound					NW 17th PI EB Eastbound					Int. Total
	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	
4:30 PM	3	86	0	0	89	118	5	1	0	124	5	2	0	0	7	220
4:45 PM	1	80	1	0	82	104	8	0	0	112	7	1	0	1	8	202
5:00 PM	5	104	0	0	109	112	3	0	0	115	6	5	0	2	11	235
5:15 PM	10	104	0	0	114	125	3	0	0	128	3	3	0	0	6	248
Total	19	374	1	0	394	459	19	1	0	479	21	11	0	3	32	905
Approach %	4.8	94.9	0.3	-	-	95.8	4.0	0.2	-	-	65.6	34.4	0.0	-	-	-
Total %	2.1	41.3	0.1	-	43.5	50.7	2.1	0.1	-	52.9	2.3	1.2	0.0	-	3.5	-
PHF	0.475	0.899	0.250	-	0.864	0.918	0.594	0.250	-	0.936	0.750	0.550	0.000	-	0.727	0.912
All Vehicles (no classification)	18	374	1	-	393	459	19	1	-	479	21	11	0	-	32	904
% All Vehicles (no classification)	94.7	100.0	100.0	-	99.7	100.0	100.0	100.0	-	100.0	100.0	100.0	-	-	100.0	99.9
Bicycles on Road	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	5.3	0.0	0.0	-	0.3	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.1
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



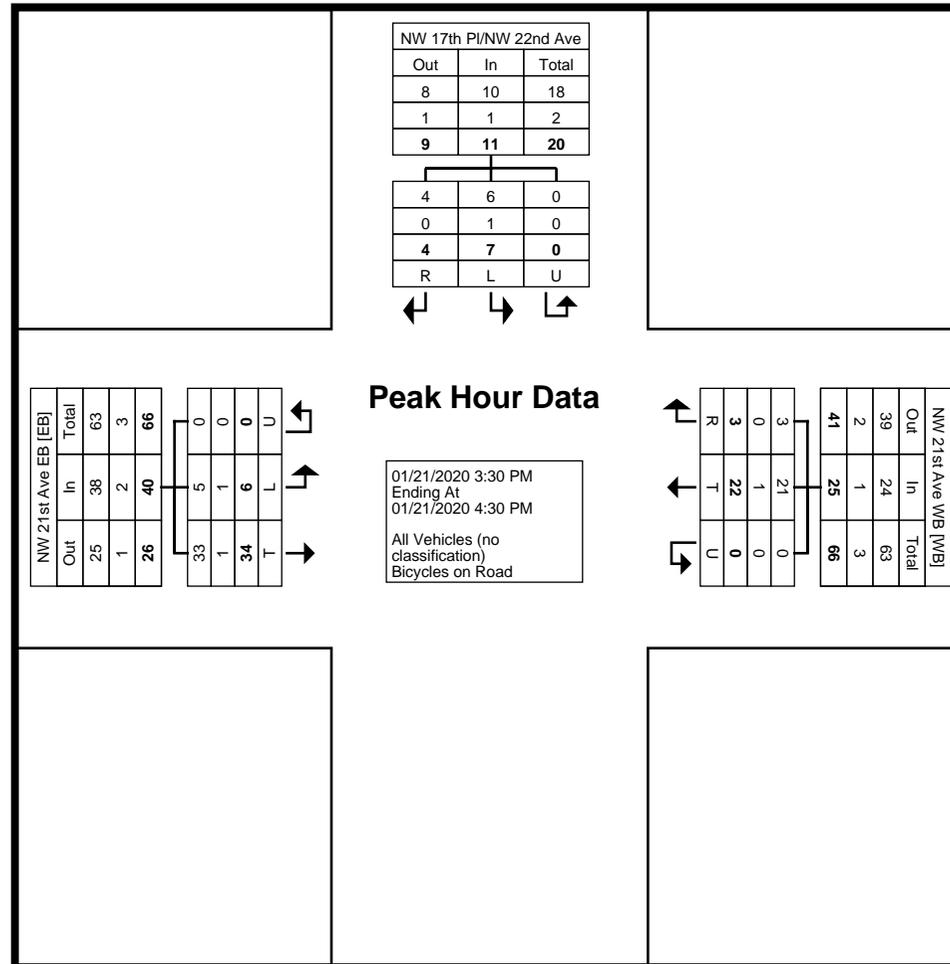
Turning Movement Peak Hour Data Plot (4:30 PM)

Tillman Engineering  
1720 SE 16th Ave, Building 100  
Ocala, Florida, United States 34471  
Phone ndave@tillmaneng.com

Count Name: West Oaks Traffic Study  
Site Code:  
Start Date: 01/16/2020  
Page No: 6

### Turning Movement Peak Hour Data (3:30 PM)

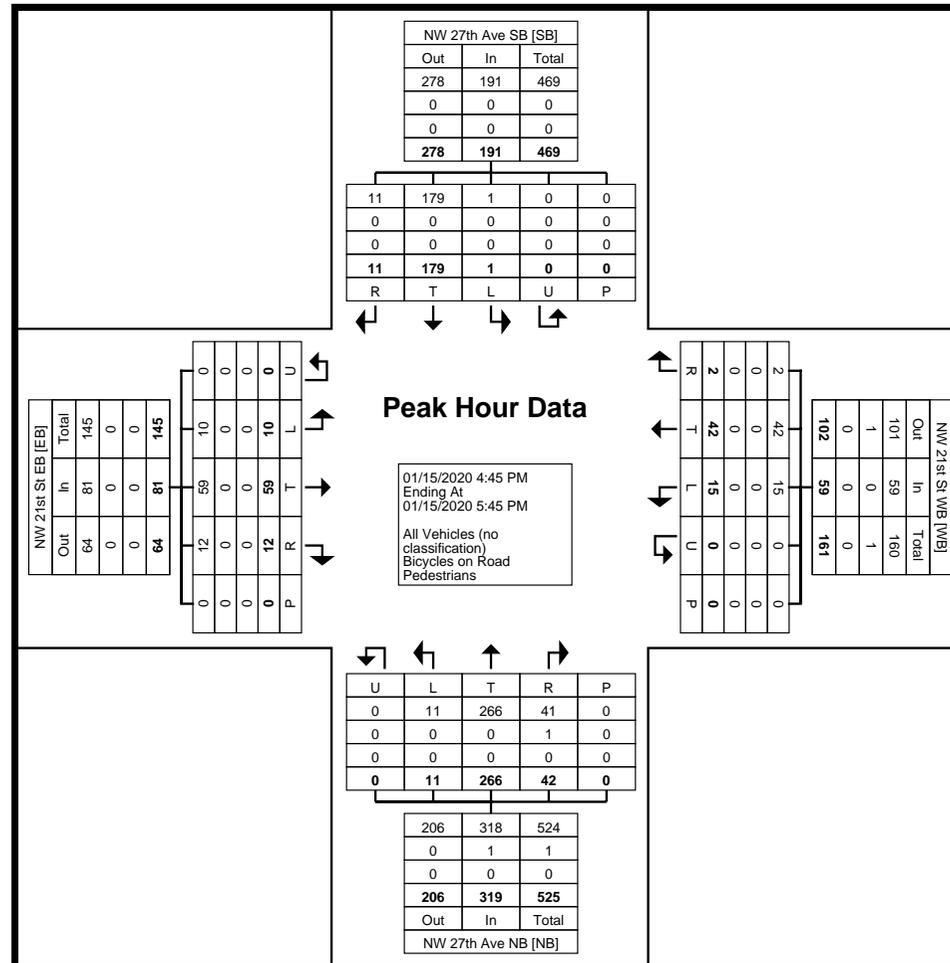
Start Time	NW 17th Pl/NW 22nd Ave Southbound				NW 21st Ave WB Westbound				NW 21st Ave EB Eastbound				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
3:30 PM	0	1	0	1	0	8	0	8	7	0	0	7	16
3:45 PM	0	2	0	2	1	6	0	7	10	1	0	11	20
4:00 PM	1	1	0	2	1	1	0	2	11	4	0	15	19
4:15 PM	3	3	0	6	1	7	0	8	6	1	0	7	21
Total	4	7	0	11	3	22	0	25	34	6	0	40	76
Approach %	36.4	63.6	0.0	-	12.0	88.0	0.0	-	85.0	15.0	0.0	-	-
Total %	5.3	9.2	0.0	14.5	3.9	28.9	0.0	32.9	44.7	7.9	0.0	52.6	-
PHF	0.333	0.583	0.000	0.458	0.750	0.688	0.000	0.781	0.773	0.375	0.000	0.667	0.905
All Vehicles (no classification)	4	6	0	10	3	21	0	24	33	5	0	38	72
% All Vehicles (no classification)	100.0	85.7	-	90.9	100.0	95.5	-	96.0	97.1	83.3	-	95.0	94.7
Bicycles on Road	0	1	0	1	0	1	0	1	1	1	0	2	4
% Bicycles on Road	0.0	14.3	-	9.1	0.0	4.5	-	4.0	2.9	16.7	-	5.0	5.3



Turning Movement Peak Hour Data Plot (3:30 PM)

Tillman Engineering  
1720 SE 16th Ave, Building 100  
Ocala, Florida, United States 34471  
Phone ndave@tillmaneng.com

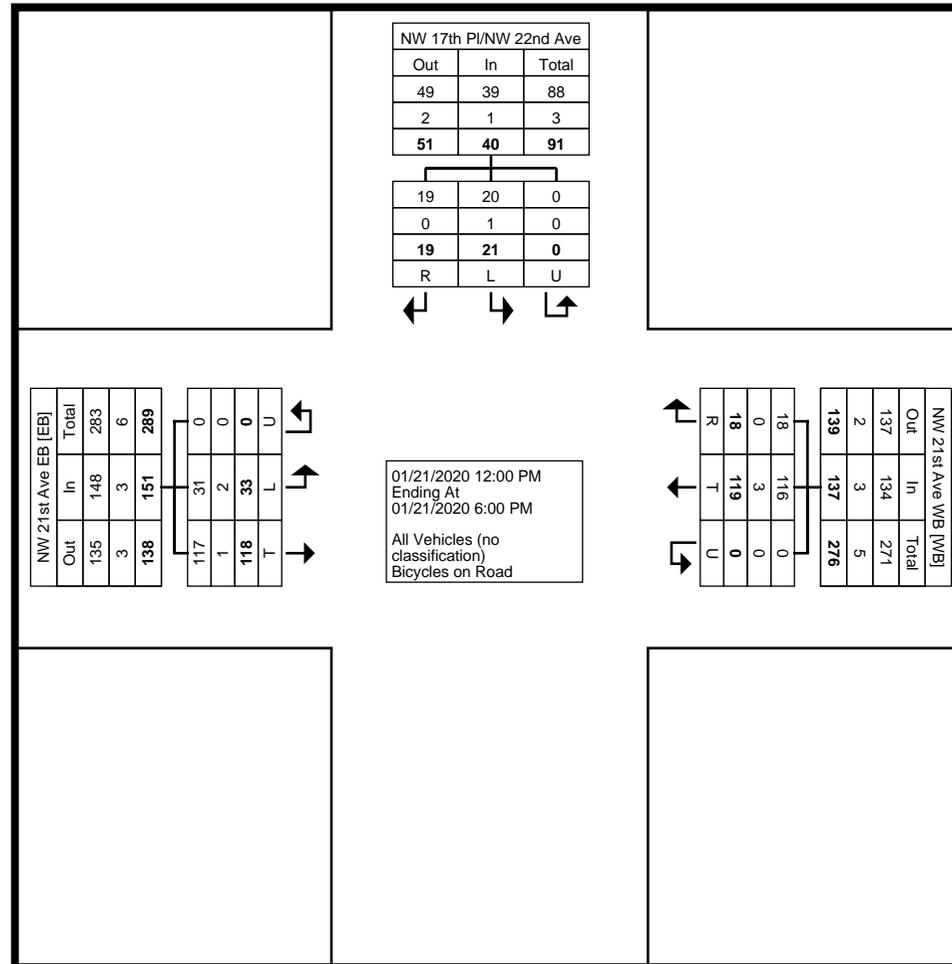
Count Name: West Oaks Traffic Study  
Site Code:  
Start Date: 01/21/2020  
Page No: 5



Turning Movement Peak Hour Data Plot (4:45 PM)

### Turning Movement Data

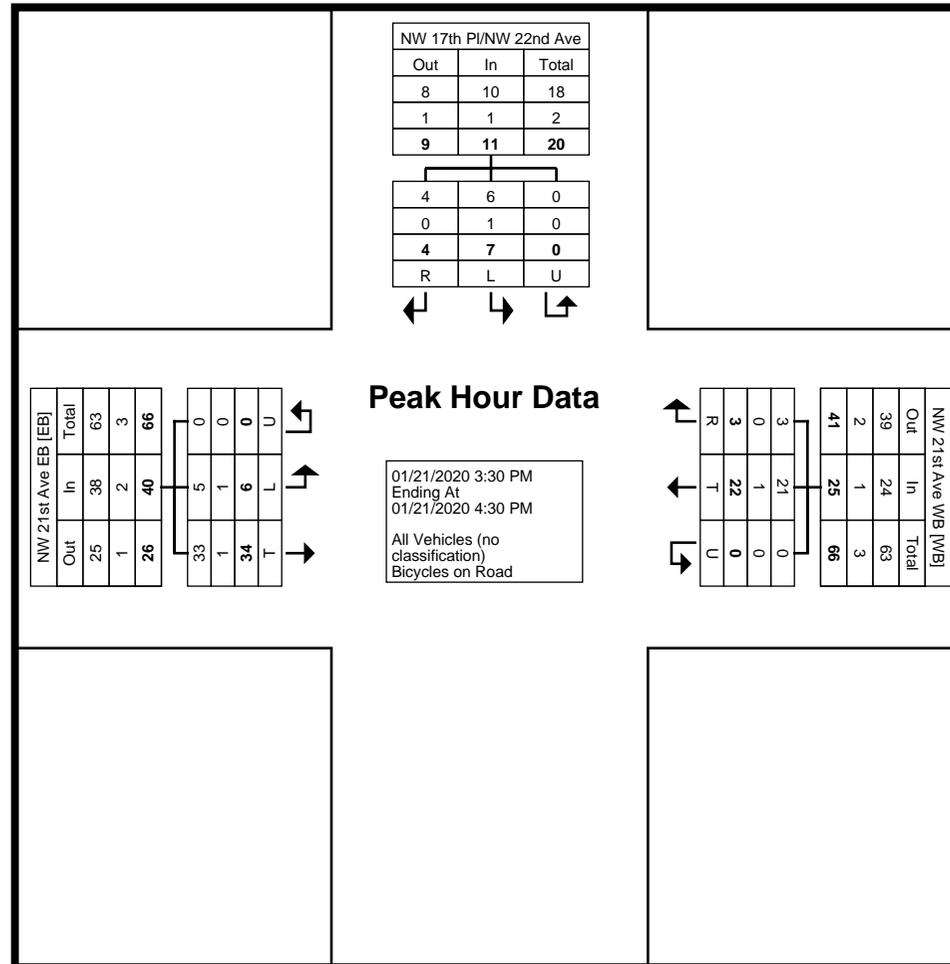
Start Time	NW 17th Pl/NW 22nd Ave Southbound				NW 21st Ave WB Westbound				NW 21st Ave EB Eastbound				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
12:00 PM	0	2	0	2	0	3	0	3	0	0	0	0	5
12:15 PM	0	0	0	0	0	2	0	2	4	1	0	5	7
12:30 PM	1	0	0	1	2	2	0	4	1	1	0	2	7
12:45 PM	4	0	0	4	1	4	0	5	2	4	0	6	15
Hourly Total	5	2	0	7	3	11	0	14	7	6	0	13	34
1:00 PM	2	0	0	2	0	1	0	1	3	1	0	4	7
1:15 PM	0	0	0	0	0	4	0	4	1	1	0	2	6
1:30 PM	0	0	0	0	1	3	0	4	6	0	0	6	10
1:45 PM	1	1	0	2	0	6	0	6	4	0	0	4	12
Hourly Total	3	1	0	4	1	14	0	15	14	2	0	16	35
2:00 PM	0	0	0	0	0	5	0	5	5	2	0	7	12
2:15 PM	1	0	0	1	2	2	0	4	7	1	0	8	13
2:30 PM	0	0	0	0	1	5	0	6	2	1	0	3	9
2:45 PM	0	2	0	2	1	3	0	4	7	3	0	10	16
Hourly Total	1	2	0	3	4	15	0	19	21	7	0	28	50
3:00 PM	0	2	0	2	1	8	0	9	3	3	0	6	17
3:15 PM	1	1	0	2	2	7	0	9	4	0	0	4	15
3:30 PM	0	1	0	1	0	8	0	8	7	0	0	7	16
3:45 PM	0	2	0	2	1	6	0	7	10	1	0	11	20
Hourly Total	1	6	0	7	4	29	0	33	24	4	0	28	68
4:00 PM	1	1	0	2	1	1	0	2	11	4	0	15	19
4:15 PM	3	3	0	6	1	7	0	8	6	1	0	7	21
4:30 PM	0	1	0	1	0	4	0	4	1	2	0	3	8
4:45 PM	1	1	0	2	2	8	0	10	5	1	0	6	18
Hourly Total	5	6	0	11	4	20	0	24	23	8	0	31	66
5:00 PM	1	0	0	1	1	9	0	10	2	2	0	4	15
5:15 PM	0	0	0	0	1	7	0	8	13	2	0	15	23
5:30 PM	1	2	0	3	0	7	0	7	5	0	0	5	15
5:45 PM	2	2	0	4	0	7	0	7	9	2	0	11	22
Hourly Total	4	4	0	8	2	30	0	32	29	6	0	35	75
Grand Total	19	21	0	40	18	119	0	137	118	33	0	151	328
Approach %	47.5	52.5	0.0	-	13.1	86.9	0.0	-	78.1	21.9	0.0	-	-
Total %	5.8	6.4	0.0	12.2	5.5	36.3	0.0	41.8	36.0	10.1	0.0	46.0	-
All Vehicles (no classification)	19	20	0	39	18	116	0	134	117	31	0	148	321
% All Vehicles (no classification)	100.0	95.2	-	97.5	100.0	97.5	-	97.8	99.2	93.9	-	98.0	97.9
Bicycles on Road	0	1	0	1	0	3	0	3	1	2	0	3	7
% Bicycles on Road	0.0	4.8	-	2.5	0.0	2.5	-	2.2	0.8	6.1	-	2.0	2.1



Turning Movement Data Plot

### Turning Movement Peak Hour Data (3:30 PM)

Start Time	NW 17th Pl/NW 22nd Ave Southbound				NW 21st Ave WB Westbound				NW 21st Ave EB Eastbound				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
3:30 PM	0	1	0	1	0	8	0	8	7	0	0	7	16
3:45 PM	0	2	0	2	1	6	0	7	10	1	0	11	20
4:00 PM	1	1	0	2	1	1	0	2	11	4	0	15	19
4:15 PM	3	3	0	6	1	7	0	8	6	1	0	7	21
Total	4	7	0	11	3	22	0	25	34	6	0	40	76
Approach %	36.4	63.6	0.0	-	12.0	88.0	0.0	-	85.0	15.0	0.0	-	-
Total %	5.3	9.2	0.0	14.5	3.9	28.9	0.0	32.9	44.7	7.9	0.0	52.6	-
PHF	0.333	0.583	0.000	0.458	0.750	0.688	0.000	0.781	0.773	0.375	0.000	0.667	0.905
All Vehicles (no classification)	4	6	0	10	3	21	0	24	33	5	0	38	72
% All Vehicles (no classification)	100.0	85.7	-	90.9	100.0	95.5	-	96.0	97.1	83.3	-	95.0	94.7
Bicycles on Road	0	1	0	1	0	1	0	1	1	1	0	2	4
% Bicycles on Road	0.0	14.3	-	9.1	0.0	4.5	-	4.0	2.9	16.7	-	5.0	5.3



Turning Movement Peak Hour Data Plot (3:30 PM)

Tillman Engineering  
1720 SE 16th Ave, Building 100  
Ocala, Florida, United States 34471  
Phone ndave@tillmaneng.com

Count Name: West Oaks Traffic Study  
Site Code:  
Start Date: 01/21/2020  
Page No: 5

Tillman Engineering  
1720 SE 16th Ave, Building 100  
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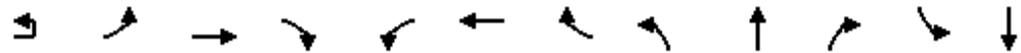
Count Name: West Oaks Traffic Study  
Site Code:  
Start Date: 01/15/2020  
Page No: 6

Significant Impact Figure:

**Appendix C: Existing + Background Traffic Conditions 2020 Level  
of Service**

Lanes, Volumes, Timings  
2: Driveway 1 & NW 35th St

03/18/2021



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	1	1	279	1	1	275	1	1	1	1	1	1
Future Volume (vph)	1	1	279	1	1	275	1	1	1	1	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00
Fr't									0.955			0.955
Flt Protected		0.950							0.984			0.984
Satd. Flow (prot)	0	1770	3539	0	0	3539	0	0	1750	0	0	1750
Flt Permitted		0.568				0.953			0.967			0.967
Satd. Flow (perm)	0	1058	3539	0	0	3373	0	0	1720	0	0	1720
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)			1			1			1			1
Link Speed (mph)			30			30			30			30
Link Distance (ft)			163			1463			5294			445
Travel Time (s)			3.7			33.3			120.3			10.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	1	303	1	1	299	1	1	1	1	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	304	0	0	301	0	0	3	0	0	3
Enter Blocked Intersection	No											
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			12			12			0			0
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors	1	1	2		1	2		1	2		1	2
Detector Template	Left	Left	Thru		Left	Thru		Left	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100		20	100		20	100
Trailing Detector (ft)	0	0	0		0	0		0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0		0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6		20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Perm	Perm	NA		Perm	NA		Perm	NA		Perm	NA
Protected Phases			4			8			2			6
Permitted Phases	4	4			8			2			6	
Detector Phase	4	4	4		8	8		2	2		6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0

Lanes, Volumes, Timings  
 2: Driveway 1 & NW 35th St

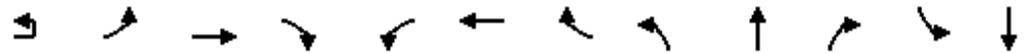
03/18/2021



Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	1
Future Volume (vph)	1
Ideal Flow (vphpl)	1900
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.92
Adj. Flow (vph)	1
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	

Lanes, Volumes, Timings  
2: Driveway 1 & NW 35th St

03/18/2021

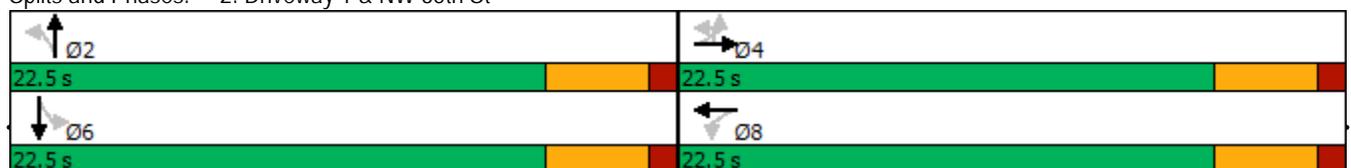


Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Minimum Split (s)	22.5	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5
Total Split (s)	22.5	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0			0.0			0.0			0.0
Total Lost Time (s)		4.5	4.5			4.5			4.5			4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Recall Mode	None	None	None		None	None		Max	Max		Max	Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0		0	0		0	0
Act Effect Green (s)		8.5	8.5			8.5			18.0			18.0
Actuated g/C Ratio		0.24	0.24			0.24			0.51			0.51
v/c Ratio		0.01	0.36			0.37			0.00			0.00
Control Delay		10.0	12.3			12.5			4.7			4.7
Queue Delay		0.0	0.0			0.0			0.0			0.0
Total Delay		10.0	12.3			12.5			4.7			4.7
LOS		A	B			B			A			A
Approach Delay			12.3			12.5			4.7			4.7
Approach LOS			B			B			A			A
Queue Length 50th (ft)		0	25			25			0			0
Queue Length 95th (ft)		3	46			46			3			3
Internal Link Dist (ft)			83			1383			5214			365
Turn Bay Length (ft)												
Base Capacity (vph)		536	1794			1710			872			872
Starvation Cap Reductn		0	0			0			0			0
Spillback Cap Reductn		0	0			0			0			0
Storage Cap Reductn		0	0			0			0			0
Reduced v/c Ratio		0.00	0.17			0.18			0.00			0.00

Intersection Summary

Area Type:	Other
Cycle Length:	45
Actuated Cycle Length:	35.6
Natural Cycle:	45
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.37
Intersection Signal Delay:	12.3
Intersection LOS:	B
Intersection Capacity Utilization:	20.0%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 2: Driveway 1 & NW 35th St

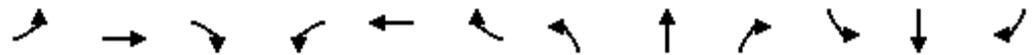




Lane Group	SBR
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings  
 3: NW 21st Ave/Driveway 2 & NW 21st St

03/18/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	2	94	3	5	63	1	8	1	8	1	1	1
Future Volume (vph)	2	94	3	5	63	1	8	1	8	1	1	1
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.998			0.936			0.955	
Flt Protected		0.999			0.997			0.977			0.984	
Satd. Flow (prot)	0	1853	0	0	1853	0	0	1703	0	0	1750	0
Flt Permitted		0.999			0.997			0.977			0.984	
Satd. Flow (perm)	0	1853	0	0	1853	0	0	1703	0	0	1750	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2659			2465			1140			89	
Travel Time (s)		60.4			56.0			25.9			2.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	102	3	5	68	1	9	1	9	1	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	107	0	0	74	0	0	19	0	0	3	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.0%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
5: NW 35th Ave & NW 21st St

03/18/2021



Lane Group	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	65	5	0	281	46	6	371
Future Volume (vph)	65	5	0	281	46	6	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	0.95
Fr <sub>t</sub>	0.991		0.979				
Fl <sub>t</sub> Protected	0.955					0.950	
Satd. Flow (prot)	1763	0	1863	3465	0	1770	3539
Fl <sub>t</sub> Permitted	0.955					0.950	
Satd. Flow (perm)	1763	0	1863	3465	0	1770	3539
Link Speed (mph)	30			30		30	
Link Distance (ft)	3854			1376		72	
Travel Time (s)	87.6			31.3		1.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	5	0	305	50	7	403
Shared Lane Traffic (%)							
Lane Group Flow (vph)	76	0	0	355	0	7	403
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Right	Left	Left
Median Width(ft)	12			12		12	
Link Offset(ft)	0			0		0	
Crosswalk Width(ft)	16			16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	9		9	15	
Sign Control	Stop		Free		Free		

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	20.8%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
7: NW MLK Jr Ave/NW 16th Ave

03/18/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr t						
Fl t Protected						
Satd. Flow (prot)	0	0	0	0	0	0
Fl t Permitted						
Satd. Flow (perm)	0	0	0	0	0	0
Right Turn on Red	Yes	Yes		Yes	Yes	
Satd. Flow (RTOR)						
Link Speed (mph)	30		30			30
Link Distance (ft)	1657		5595			542
Travel Time (s)	37.7		127.2			12.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type						
Protected Phases						
Permitted Phases						
Minimum Split (s)						
Total Split (s)						
Total Split (%)						
Maximum Green (s)						
Yellow Time (s)						
All-Red Time (s)						
Lost Time Adjust (s)						
Total Lost Time (s)						
Lead/Lag						
Lead-Lag Optimize?						
Act Effect Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay						
Queue Delay						
Total Delay						
LOS						
Approach Delay						
Approach LOS						

Lanes, Volumes, Timings  
 7: NW MLK Jr Ave/NW 16th Ave

03/18/2021



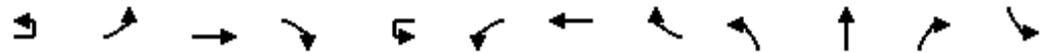
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Length 50th (ft)						
Queue Length 95th (ft)						
Internal Link Dist (ft)	1577		5515			462
Turn Bay Length (ft)						
Base Capacity (vph)						
Starvation Cap Reductn						
Spillback Cap Reductn						
Storage Cap Reductn						
Reduced v/c Ratio						

Intersection Summary	
Area Type:	Other
Cycle Length:	3
Actuated Cycle Length:	3
Offset:	0 (0%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle:	40
Control Type:	Pretimed
Maximum v/c Ratio:	0.00
Intersection Signal Delay:	0.0
Intersection LOS:	A
Intersection Capacity Utilization:	0.0%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 7: NW MLK Jr Ave/NW 16th Ave

Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

03/18/2021



Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		↔
Traffic Volume (vph)	9	251	955	21	1	74	1021	46	89	24	49	68
Future Volume (vph)	9	251	955	21	1	74	1021	46	89	24	49	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Fr't				0.850				0.850		0.899		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1770	3539	1583	0	1770	3539	1583	1770	1675	0	1770
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1770	3539	1583	0	1770	3539	1583	1770	1675	0	1770
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				127				182		53		
Link Speed (mph)			30				30			30		
Link Distance (ft)			560				254			127		
Travel Time (s)			12.7				5.8			2.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	273	1038	23	1	80	1110	50	97	26	53	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	283	1038	23	0	81	1110	50	97	79	0	74
Enter Blocked Intersection	No											
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			12				12			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors	1	1	2	1	1	1	2	1	1	2		1
Detector Template	Left	Left	Thru	Right	Left	Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)	20	20	100	20	20	20	100	20	20	100		20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0		0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0		0
Detector 1 Size(ft)	20	20	6	20	20	20	6	20	20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex									
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	7	7	4		3	3	8		5	2		1
Permitted Phases				4				8				
Detector Phase	7	7	4	4	3	3	8	8	5	2		1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0

Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

03/18/2021



Lane Group	SBT	SBR
Lane Configurations	↑	↑
Traffic Volume (vph)	29	346
Future Volume (vph)	29	346
Ideal Flow (vphpl)	1900	1900
Lane Util. Factor	1.00	1.00
Fr <sub>t</sub>		0.850
Flt Protected		
Satd. Flow (prot)	1863	1583
Flt Permitted		
Satd. Flow (perm)	1863	1583
Right Turn on Red		Yes
Satd. Flow (RTOR)		281
Link Speed (mph)	30	
Link Distance (ft)	1376	
Travel Time (s)	31.3	
Peak Hour Factor	0.92	0.92
Adj. Flow (vph)	32	376
Shared Lane Traffic (%)		
Lane Group Flow (vph)	32	376
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	5.0	5.0

Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

03/18/2021



Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Minimum Split (s)	9.5	9.5	22.5	22.5	9.5	9.5	22.5	22.5	9.5	22.5		9.5
Total Split (s)	21.0	21.0	41.8	41.8	14.2	14.2	35.0	35.0	11.0	23.0		11.0
Total Split (%)	23.3%	23.3%	46.4%	46.4%	15.8%	15.8%	38.9%	38.9%	12.2%	25.6%		12.2%
Maximum Green (s)	16.5	16.5	37.3	37.3	9.7	9.7	30.5	30.5	6.5	18.5		6.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0			0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5			4.5	4.5	4.5	4.5		4.5
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max		None								
Walk Time (s)			7.0	7.0			7.0	7.0		7.0		
Flash Dont Walk (s)			11.0	11.0			11.0	11.0		11.0		
Pedestrian Calls (#/hr)			0	0			0	0		0		
Act Effect Green (s)		16.1	40.1	40.1		8.5	30.4	30.4	6.6	21.1		6.4
Actuated g/C Ratio		0.18	0.45	0.45		0.09	0.34	0.34	0.07	0.23		0.07
v/c Ratio		0.89	0.66	0.03		0.49	0.93	0.08	0.75	0.18		0.59
Control Delay		67.3	22.9	0.0		48.3	43.2	0.2	75.2	14.5		60.9
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay		67.3	22.9	0.0		48.3	43.2	0.2	75.2	14.5		60.9
LOS		E	C	A		D	D	A	E	B		E
Approach Delay			31.9				41.8			48.0		
Approach LOS			C				D			D		
Queue Length 50th (ft)		158	248	0		44	316	0	55	12		42
Queue Length 95th (ft)		#299	324	0		90	#447	0	#138	49		#99
Internal Link Dist (ft)			480				174			47		
Turn Bay Length (ft)												
Base Capacity (vph)		324	1576	775		190	1199	656	130	434		127
Starvation Cap Reductn		0	0	0		0	0	0	0	0		0
Spillback Cap Reductn		0	0	0		0	0	0	0	0		0
Storage Cap Reductn		0	0	0		0	0	0	0	0		0
Reduced v/c Ratio		0.87	0.66	0.03		0.43	0.93	0.08	0.75	0.18		0.58

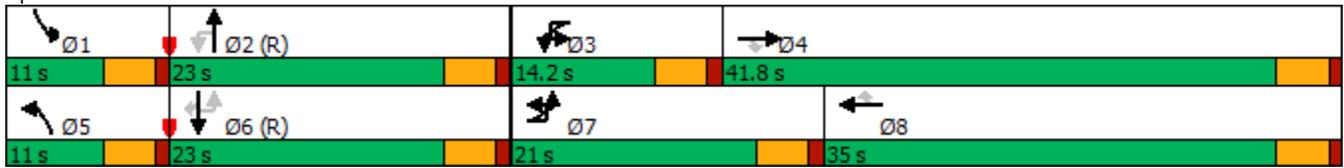
Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBTU and 6:SBTU, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.93  
 Intersection Signal Delay: 35.4 Intersection LOS: D  
 Intersection Capacity Utilization 84.0% ICU Level of Service E  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
 16: NW 35th Ave & US-27

03/18/2021

Splits and Phases: 16: NW 35th Ave & US-27



Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

03/18/2021



Lane Group	SBT	SBR
Minimum Split (s)	22.5	22.5
Total Split (s)	23.0	23.0
Total Split (%)	25.6%	25.6%
Maximum Green (s)	18.5	18.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	11.0	11.0
Pedestrian Calls (#/hr)	0	0
Act Effct Green (s)	18.8	18.8
Actuated g/C Ratio	0.21	0.21
v/c Ratio	0.08	0.68
Control Delay	29.7	16.1
Queue Delay	0.0	0.0
Total Delay	29.7	16.1
LOS	C	B
Approach Delay	23.9	
Approach LOS	C	
Queue Length 50th (ft)	15	46
Queue Length 95th (ft)	39	144
Internal Link Dist (ft)	1296	
Turn Bay Length (ft)		
Base Capacity (vph)	388	552
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.08	0.68
<b>Intersection Summary</b>		

Lanes, Volumes, Timings  
23: NW 27th Ave & NW 35th St

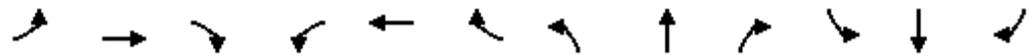
03/18/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (vph)	35	279	33	114	142	19	5	81	191	14	59	37
Future Volume (vph)	35	279	33	114	142	19	5	81	191	14	59	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Fr't		0.984			0.982			0.895			0.942	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3483	0	1770	3476	0	1770	3168	0	1770	3334	0
Flt Permitted	0.641			0.548			0.686			0.571		
Satd. Flow (perm)	1194	3483	0	1021	3476	0	1278	3168	0	1064	3334	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			21			208			40	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2281			1952			5549			273	
Travel Time (s)		51.8			44.4			126.1			6.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	303	36	124	154	21	5	88	208	15	64	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	339	0	124	175	0	5	296	0	15	104	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru										
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	

Lanes, Volumes, Timings  
23: NW 27th Ave & NW 35th St

03/18/2021

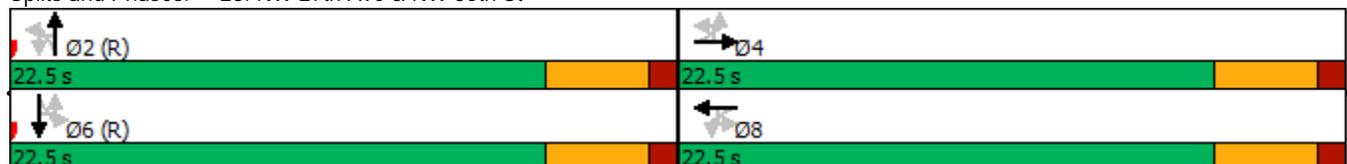


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)	11.1	11.1		11.1	11.1		24.9	24.9		24.9	24.9	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.55	0.55		0.55	0.55	
v/c Ratio	0.13	0.38		0.49	0.20		0.01	0.16		0.03	0.06	
Control Delay	12.2	13.0		20.3	11.0		6.6	2.7		6.6	4.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	12.2	13.0		20.3	11.0		6.6	2.7		6.6	4.5	
LOS	B	B		C	B		A	A		A	A	
Approach Delay		12.9			14.8			2.7			4.7	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)	8	34		28	16		1	4		1	3	
Queue Length 95th (ft)	20	49		54	27		5	22		9	14	
Internal Link Dist (ft)		2201			1872			5469			193	
Turn Bay Length (ft)												
Base Capacity (vph)	477	1413		408	1403		707	1847		589	1864	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.08	0.24		0.30	0.12		0.01	0.16		0.03	0.06	

Intersection Summary

Area Type: Other  
 Cycle Length: 45  
 Actuated Cycle Length: 45  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 45  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.49  
 Intersection Signal Delay: 9.7  
 Intersection Capacity Utilization 38.0%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 23: NW 27th Ave & NW 35th St



Lanes, Volumes, Timings  
 31: NW 27th Ave & NW 18th St

03/18/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	1	349	19	1	212
Future Volume (vph)	21	1	349	19	1	212
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994		0.993			
Flt Protected	0.954					
Satd. Flow (prot)	1766	0	1850	0	0	1863
Flt Permitted	0.954					
Satd. Flow (perm)	1766	0	1850	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	1138		60			1145
Travel Time (s)	25.9		1.4			26.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	1	379	21	1	230
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	0	400	0	0	231
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.5%
Analysis Period (min)	15
	ICU Level of Service A

# Lanes, Volumes, Timings

33: NW MLK Jr Ave/NW 16th Ave & NW 21st St

03/18/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↕			↕			↕	↕			↕
Traffic Volume (vph)	90	5	27	5	5	5	1	15	464	1	1	1
Future Volume (vph)	90	5	27	5	5	5	1	15	464	1	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95	1.00
Fr <sub>t</sub>		0.970			0.955							
Fl <sub>t</sub> Protected		0.964			0.984			0.950				0.950
Satd. Flow (prot)	0	1742	0	0	1750	0	0	1770	3539	0	0	1770
Fl <sub>t</sub> Permitted		0.964			0.984			0.950				0.950
Satd. Flow (perm)	0	1742	0	0	1750	0	0	1770	3539	0	0	1770
Link Speed (mph)		30			30			30				
Link Distance (ft)		2465			1183			1336				
Travel Time (s)		56.0			26.9			30.4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	5	29	5	5	5	1	16	504	1	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	0	0	15	0	0	17	505	0	0	2
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		0			0			12				
Link Offset(ft)		0			0			0				
Crosswalk Width(ft)		16			16			16				
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Sign Control		Stop			Stop			Free				

## Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.5%
Analysis Period (min)	15
	ICU Level of Service A

# Lanes, Volumes, Timings

33: NW MLK Jr Ave/NW 16th Ave & NW 21st St

03/18/2021



Lane Group	SBT	SBR
Lane Configurations	↑↑	
Traffic Volume (vph)	347	51
Future Volume (vph)	347	51
Ideal Flow (vphpl)	1900	1900
Lane Util. Factor	0.95	0.95
Frt	0.981	
Flt Protected		
Satd. Flow (prot)	3472	0
Flt Permitted		
Satd. Flow (perm)	3472	0
Link Speed (mph)	30	
Link Distance (ft)	5595	
Travel Time (s)	127.2	
Peak Hour Factor	0.92	0.92
Adj. Flow (vph)	377	55
Shared Lane Traffic (%)		
Lane Group Flow (vph)	432	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Sign Control	Free	
Intersection Summary		

# Lanes, Volumes, Timings

34: NW MLK Jr Ave/NW 16th Ave & NW 17th Pl

03/18/2021



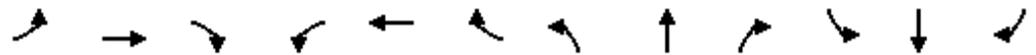
Lane Group	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	11	21	1	19	459	1	374	19
Future Volume (vph)	11	21	1	19	459	1	374	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	1.00	0.95	0.95
Fr <sub>t</sub>	0.911			0.993				
Fl <sub>t</sub> Protected	0.983			0.950			0.950	
Satd. Flow (prot)	1668			1770			3539	
Fl <sub>t</sub> Permitted	0.983			0.950			0.950	
Satd. Flow (perm)	1668			1770			3539	
Link Speed (mph)	30			30			30	
Link Distance (ft)	2350			1340			1336	
Travel Time (s)	53.4			30.5			30.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	23	1	21	499	1	407	21
Shared Lane Traffic (%)								
Lane Group Flow (vph)	35	0	0	22	499	1	428	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Left	R NA	Left	Right
Median Width(ft)	12			12			12	
Link Offset(ft)	0			0			0	
Crosswalk Width(ft)	16			16			16	
Two way Left Turn Lane								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	9	15		9		9
Sign Control	Stop				Free		Free	

## Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.6%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
37: NW 27th Ave & NW 21st St

03/18/2021



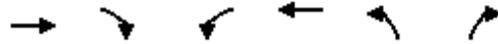
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	34	77	12	15	42	5	11	266	42	1	179	11
Future Volume (vph)	34	77	12	15	42	5	11	266	42	1	179	11
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.990			0.982			0.992	
Flt Protected		0.986			0.988			0.998				
Satd. Flow (prot)	0	1813	0	0	1822	0	0	1826	0	0	1848	0
Flt Permitted		0.986			0.988			0.998				
Satd. Flow (perm)	0	1813	0	0	1822	0	0	1826	0	0	1848	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3854			2659			1145			5549	
Travel Time (s)		87.6			60.4			26.0			126.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	84	13	16	46	5	12	289	46	1	195	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	134	0	0	67	0	0	347	0	0	208	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	40.4%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
38: NW 21st Ave & NW 17th PI

03/18/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	22	3	6	34	7	4
Future Volume (vph)	22	3	6	34	7	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.985			0.955		
Flt Protected				0.992	0.968	
Satd. Flow (prot)	1835	0	0	1848	1722	0
Flt Permitted				0.992	0.968	
Satd. Flow (perm)	1835	0	0	1848	1722	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	275			2350	81	
Travel Time (s)	6.3			53.4	1.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	3	7	37	8	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	0	0	44	12	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Free			Free	Stop	

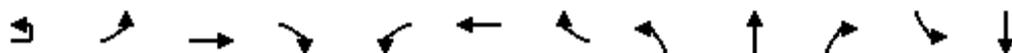
Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.9%
Analysis Period (min)	15
	ICU Level of Service A

**Appendix D: Existing+Background+Project 2020 Traffic Conditions  
Level of Service**

Lanes, Volumes, Timings  
2: Driveway 1 & NW 35th St

03/18/2021



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	1	0	456	7	124	399	1	5	1	83	1	1
Future Volume (vph)	1	0	456	7	124	399	1	5	1	83	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>			0.998						0.873			0.955
Fl <sub>t</sub> Protected		0.950				0.988			0.997			0.984
Satd. Flow (prot)	0	1770	3532	0	0	3497	0	0	1621	0	0	1750
Fl <sub>t</sub> Permitted		0.409				0.733			0.993			0.956
Satd. Flow (perm)	0	762	3532	0	0	2594	0	0	1615	0	0	1701
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)			4						90			1
Link Speed (mph)			30				30			30		30
Link Distance (ft)			2114				1557			5294		221
Travel Time (s)			48.0				35.4			120.3		5.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	0	496	8	135	434	1	5	1	90	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	504	0	0	570	0	0	96	0	0	3
Enter Blocked Intersection	No											
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			12				12			0		0
Link Offset(ft)			0				0			0		0
Crosswalk Width(ft)			16				16			16		16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors	1	1	2		1	2		1	2		1	2
Detector Template	Left	Left	Thru		Left	Thru		Left	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100		20	100		20	100
Trailing Detector (ft)	0	0	0		0	0		0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0		0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6		20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94				94			94		94
Detector 2 Size(ft)			6				6			6		6
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		0.0
Turn Type	Perm	Perm	NA		Perm	NA		Perm	NA		Perm	NA
Protected Phases			4				8			2		6
Permitted Phases	4	4			8			2			6	
Detector Phase	4	4	4		8	8		2	2		6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0

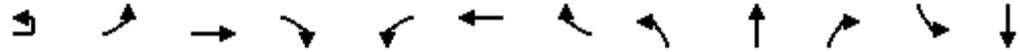
Lanes, Volumes, Timings  
 2: Driveway 1 & NW 35th St

03/18/2021

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	1
Future Volume (vph)	1
Ideal Flow (vphpl)	1900
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.92
Adj. Flow (vph)	1
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	

Lanes, Volumes, Timings  
2: Driveway 1 & NW 35th St

03/18/2021

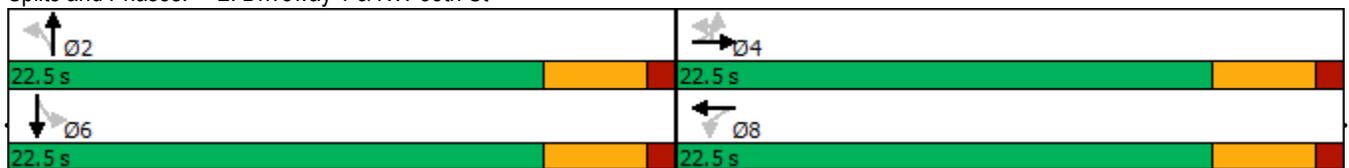


Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Minimum Split (s)	22.5	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5
Total Split (s)	22.5	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0			0.0			0.0			0.0
Total Lost Time (s)		4.5	4.5			4.5			4.5			4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Recall Mode	None	None	None		None	None		Max	Max		Max	Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0		0	0		0	0
Act Effct Green (s)		14.1	14.1			14.1			18.1			18.1
Actuated g/C Ratio		0.34	0.34			0.34			0.44			0.44
v/c Ratio		0.00	0.42			0.64			0.13			0.00
Control Delay		8.0	11.2			15.0			3.4			7.3
Queue Delay		0.0	0.0			0.0			0.0			0.0
Total Delay		8.0	11.2			15.0			3.4			7.3
LOS		A	B			B			A			A
Approach Delay			11.2			15.0			3.4			7.3
Approach LOS			B			B			A			A
Queue Length 50th (ft)		0	44			56			1			0
Queue Length 95th (ft)		2	72			93			20			4
Internal Link Dist (ft)			2034			1477			5214			141
Turn Bay Length (ft)												
Base Capacity (vph)		334	1552			1138			759			747
Starvation Cap Reductn		0	0			0			0			0
Spillback Cap Reductn		0	0			0			0			0
Storage Cap Reductn		0	0			0			0			0
Reduced v/c Ratio		0.00	0.32			0.50			0.13			0.00

Intersection Summary

Area Type:	Other
Cycle Length:	45
Actuated Cycle Length:	41.3
Natural Cycle:	45
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.64
Intersection Signal Delay:	12.4
Intersection LOS:	B
Intersection Capacity Utilization:	44.3%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 2: Driveway 1 & NW 35th St





Lane Group	SBR
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings  
 3: NW 21st Ave/Driveway 2 & NW 21st ST

03/18/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	241	81	3	5	63	163	8	10	8	106	0	163
Future Volume (vph)	241	81	3	5	63	163	8	10	8	106	0	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.999			0.904			0.958			0.918	
Fl <sub>t</sub> Protected		0.964			0.999			0.985			0.981	
Satd. Flow (prot)	0	1794	0	0	1682	0	0	1758	0	0	1678	0
Fl <sub>t</sub> Permitted		0.964			0.999			0.985			0.981	
Satd. Flow (perm)	0	1794	0	0	1682	0	0	1758	0	0	1678	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2659			2465			1140			89	
Travel Time (s)		60.4			56.0			25.9			2.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	262	88	3	5	68	177	9	11	9	115	0	177
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	353	0	0	250	0	0	29	0	0	292	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	64.0%
ICU Level of Service	B
Analysis Period (min)	15

Lanes, Volumes, Timings  
5: NW 35th Ave & NW 21st St

03/18/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	178	5	281	216	6	371
Future Volume (vph)	178	5	281	216	6	371
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt	0.997		0.935			
Flt Protected	0.954				0.950	
Satd. Flow (prot)	1772	0	3309	0	1770	3539
Flt Permitted	0.954				0.950	
Satd. Flow (perm)	1772	0	3309	0	1770	3539
Link Speed (mph)	30		30			30
Link Distance (ft)	3854		1376			72
Travel Time (s)	87.6		31.3			1.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	193	5	305	235	7	403
Shared Lane Traffic (%)						
Lane Group Flow (vph)	198	0	540	0	7	403
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.5%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

03/18/2021



Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		↔
Traffic Volume (vph)	9	418	955	21	1	74	1021	48	89	24	49	69
Future Volume (vph)	9	418	955	21	1	74	1021	48	89	24	49	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Fr t				0.850				0.850		0.899		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1593	3539	1583	0	1770	3539	1583	1770	1675	0	1770
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1593	3539	1583	0	1770	3539	1583	1770	1675	0	1770
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				76				109		53		
Link Speed (mph)			30				30			30		
Link Distance (ft)			560				254			127		
Travel Time (s)			12.7				5.8			2.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Parking (#/hr)		0										
Adj. Flow (vph)	10	454	1038	23	1	80	1110	52	97	26	53	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	464	1038	23	0	81	1110	52	97	79	0	75
Enter Blocked Intersection	No											
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			12				12			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.14	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors	1	1	2	1	1	1	2	1	1	2		1
Detector Template	Left	Left	Thru	Right	Left	Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)	20	20	100	20	20	20	100	20	20	100		20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0		0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0		0
Detector 1 Size(ft)	20	20	6	20	20	20	6	20	20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex									
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	7	7	4		3	3	8		5	2		1
Permitted Phases				4				8				
Detector Phase	7	7	4	4	3	3	8	8	5	2		1
Switch Phase												

Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

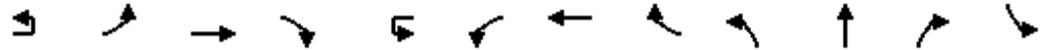
03/18/2021



Lane Group	SBT	SBR
Lane Configurations	↑	↑
Traffic Volume (vph)	29	458
Future Volume (vph)	29	458
Ideal Flow (vphpl)	1900	1900
Lane Util. Factor	1.00	1.00
Fr <sub>t</sub>		0.850
Flt Protected		
Satd. Flow (prot)	1863	1583
Flt Permitted		
Satd. Flow (perm)	1863	1583
Right Turn on Red		Yes
Satd. Flow (RTOR)		469
Link Speed (mph)	30	
Link Distance (ft)	1376	
Travel Time (s)	31.3	
Peak Hour Factor	0.92	0.92
Parking (#/hr)		
Adj. Flow (vph)	32	498
Shared Lane Traffic (%)		
Lane Group Flow (vph)	32	498
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		

Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

03/18/2021



Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0
Minimum Split (s)	9.5	9.5	22.5	22.5	9.5	9.5	22.5	22.5	9.5	22.5		9.5
Total Split (s)	54.0	54.0	89.4	89.4	19.6	19.6	55.0	55.0	14.0	26.0		15.0
Total Split (%)	36.0%	36.0%	59.6%	59.6%	13.1%	13.1%	36.7%	36.7%	9.3%	17.3%		10.0%
Maximum Green (s)	49.5	49.5	84.9	84.9	15.1	15.1	50.5	50.5	9.5	21.5		10.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0			0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5			4.5	4.5	4.5	4.5		4.5
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max		None								
Walk Time (s)			7.0	7.0			7.0	7.0		7.0		
Flash Dont Walk (s)			11.0	11.0			11.0	11.0		11.0		
Pedestrian Calls (#/hr)			0	0			0	0		0		
Act Effct Green (s)		46.6	85.3	85.3		11.8	50.5	50.5	9.9	25.1		9.8
Actuated g/C Ratio		0.31	0.57	0.57		0.08	0.34	0.34	0.07	0.17		0.07
v/c Ratio		0.94	0.52	0.02		0.58	0.93	0.09	0.84	0.24		0.65
Control Delay		77.7	20.8	0.0		82.8	62.2	0.3	115.9	24.9		94.0
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay		77.7	20.8	0.0		82.8	62.2	0.3	115.9	24.9		94.0
LOS		E	C	A		F	E	A	F	C		F
Approach Delay			37.8				60.9			75.1		
Approach LOS			D				E			E		
Queue Length 50th (ft)		430	301	0		78	552	0	96	22		73
Queue Length 95th (ft)		#631	376	0		135	#687	0	#207	75		#140
Internal Link Dist (ft)			480				174			47		
Turn Bay Length (ft)												
Base Capacity (vph)		525	2038	944		178	1203	610	116	324		123
Starvation Cap Reductn		0	0	0		0	0	0	0	0		0
Spillback Cap Reductn		0	0	0		0	0	0	0	0		0
Storage Cap Reductn		0	0	0		0	0	0	0	0		0
Reduced v/c Ratio		0.88	0.51	0.02		0.46	0.92	0.09	0.84	0.24		0.61

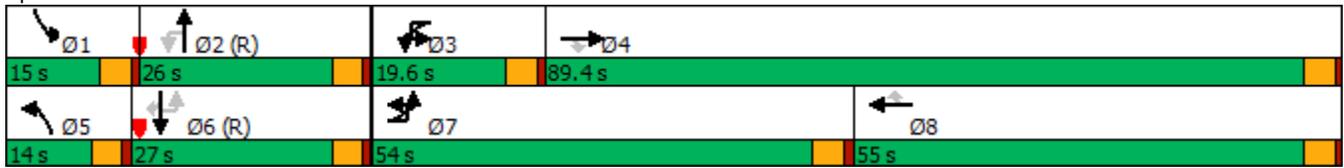
Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 0 (0%), Referenced to phase 2:NBTU and 6:SBTU, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.94  
 Intersection Signal Delay: 45.9 Intersection LOS: D  
 Intersection Capacity Utilization 100.2% ICU Level of Service G  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
 16: NW 35th Ave & US-27

03/18/2021

Splits and Phases: 16: NW 35th Ave & US-27



Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

03/18/2021



Lane Group	SBT	SBR
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	22.5
Total Split (s)	27.0	27.0
Total Split (%)	18.0%	18.0%
Maximum Green (s)	22.5	22.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	11.0	11.0
Pedestrian Calls (#/hr)	0	0
Act Effct Green (s)	25.0	25.0
Actuated g/C Ratio	0.17	0.17
v/c Ratio	0.10	0.76
Control Delay	56.3	15.1
Queue Delay	0.0	0.0
Total Delay	56.3	15.1
LOS	E	B
Approach Delay	27.1	
Approach LOS	C	
Queue Length 50th (ft)	28	25
Queue Length 95th (ft)	61	162
Internal Link Dist (ft)	1296	
Turn Bay Length (ft)		
Base Capacity (vph)	310	655
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.10	0.76
<b>Intersection Summary</b>		

Lanes, Volumes, Timings  
 22: NW 27th Ave & NW 18th St

03/18/2021



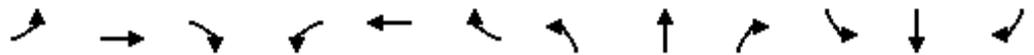
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	1	278	19	1	254
Future Volume (vph)	21	1	278	19	1	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994		0.991			
Flt Protected	0.954					
Satd. Flow (prot)	1766	0	1846	0	0	1863
Flt Permitted	0.954					
Satd. Flow (perm)	1766	0	1846	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	202		2909			1155
Travel Time (s)	4.6		66.1			26.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	1	302	21	1	276
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	0	323	0	0	277
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.8%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
23: NW 27th Ave & NW 35th St

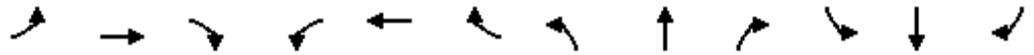
03/18/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	285	33	114	309	19	5	81	191	14	59	37
Future Volume (vph)	35	285	33	114	309	19	5	81	191	14	59	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Fr't		0.984			0.991			0.895			0.942	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3483	0	1770	3507	0	1770	3168	0	1770	3334	0
Flt Permitted	0.538			0.544			0.686			0.571		
Satd. Flow (perm)	1002	3483	0	1013	3507	0	1278	3168	0	1064	3334	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			17			208			40	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2281			2114			5549			273	
Travel Time (s)		51.8			48.0			126.1			6.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	310	36	124	336	21	5	88	208	15	64	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	346	0	124	357	0	5	296	0	15	104	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru										
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	

Lanes, Volumes, Timings  
23: NW 27th Ave & NW 35th St

03/18/2021

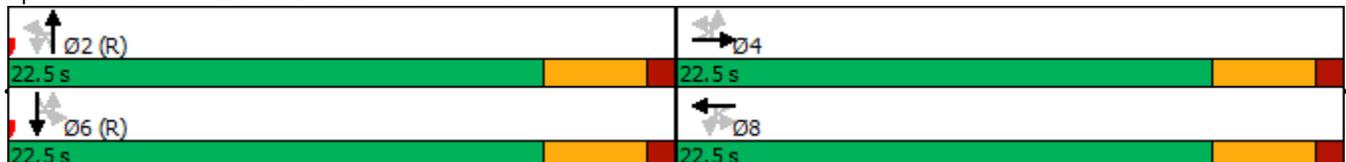


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)	11.8	11.8		11.8	11.8		24.2	24.2		24.2	24.2	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.54	0.54		0.54	0.54	
v/c Ratio	0.15	0.37		0.47	0.38		0.01	0.16		0.03	0.06	
Control Delay	11.9	12.3		18.5	13.2		7.2	2.9		7.3	4.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.9	12.3		18.5	13.2		7.2	2.9		7.3	4.9	
LOS	B	B		B	B		A	A		A	A	
Approach Delay		12.3			14.6			3.0			5.2	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)	8	34		27	37		1	4		2	3	
Queue Length 95th (ft)	19	47		51	51		5	24		10	15	
Internal Link Dist (ft)		2201			2034			5469			193	
Turn Bay Length (ft)												
Base Capacity (vph)	400	1413		405	1413		688	1802		573	1814	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.10	0.24		0.31	0.25		0.01	0.16		0.03	0.06	

Intersection Summary

Area Type: Other  
 Cycle Length: 45  
 Actuated Cycle Length: 45  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 45  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.47  
 Intersection Signal Delay: 10.3  
 Intersection Capacity Utilization 38.1%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 23: NW 27th Ave & NW 35th St



Lanes, Volumes, Timings

33: NW MLK Jr Ave/NW 16th Ave/NW MLK Jr/NW 16th Ave & NW 21st St

03/18/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↕			↕			↕	↕			↕
Traffic Volume (vph)	91	5	148	5	5	5	1	174	464	1	1	1
Future Volume (vph)	91	5	148	5	5	5	1	174	464	1	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95	1.00
Frt		0.918			0.955							
Flt Protected		0.982			0.984			0.950				0.950
Satd. Flow (prot)	0	1679	0	0	1750	0	0	1770	3539	0	0	1770
Flt Permitted		0.982			0.984			0.950				0.950
Satd. Flow (perm)	0	1679	0	0	1750	0	0	1770	3539	0	0	1770
Link Speed (mph)		30			30			30				
Link Distance (ft)		2465			117			1336				
Travel Time (s)		56.0			2.7			30.4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	99	5	161	5	5	5	1	189	504	1	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	265	0	0	15	0	0	190	505	0	0	2
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		0			0			12				
Link Offset(ft)		0			0			0				
Crosswalk Width(ft)		16			16			16				
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Sign Control		Stop			Stop			Free				

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.7%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings

33: NW MLK Jr Ave/NW 16th Ave/NW MLK Jr/NW 16th Ave & NW 21st St

03/18/2021



Lane Group	SBT	SBR
Lane Configurations	↑↑	
Traffic Volume (vph)	348	53
Future Volume (vph)	348	53
Ideal Flow (vphpl)	1900	1900
Lane Util. Factor	0.95	0.95
Fr <sub>t</sub>	0.980	
Flt Protected		
Satd. Flow (prot)	3468	0
Flt Permitted		
Satd. Flow (perm)	3468	0
Link Speed (mph)	30	
Link Distance (ft)	2798	
Travel Time (s)	63.6	
Peak Hour Factor	0.92	0.92
Adj. Flow (vph)	378	58
Shared Lane Traffic (%)		
Lane Group Flow (vph)	436	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Sign Control	Free	
Intersection Summary		

Lanes, Volumes, Timings

34: NW MLK Jr Ave/NW 16th Ave & NW 17th PI

03/18/2021



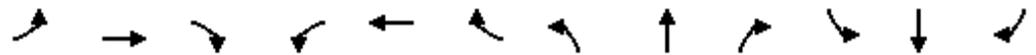
Lane Group	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	11	26	1	19	619	1	374	19
Future Volume (vph)	11	26	1	19	619	1	374	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	1.00	0.95	0.95
Frt	0.905						0.993	
Flt Protected	0.985			0.950		0.950		
Satd. Flow (prot)	1660		0		1770		3539	
Flt Permitted	0.985			0.950		0.950		
Satd. Flow (perm)	1660		0		1770		3539	
Link Speed (mph)	30				30		30	
Link Distance (ft)	2350				1340		1336	
Travel Time (s)	53.4				30.5		30.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	28	1	21	673	1	407	21
Shared Lane Traffic (%)								
Lane Group Flow (vph)	40	0	0	22	673	1	428	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Left	R NA	Left	Right
Median Width(ft)	12				12		12	
Link Offset(ft)	0				0		0	
Crosswalk Width(ft)	16				16		16	
Two way Left Turn Lane								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	9	15		9		9
Sign Control	Stop				Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	27.1%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
37: NW 27th Ave & NW 21st St

03/18/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	34	245	12	63	155	7	11	266	113	4	179	11
Future Volume (vph)	34	245	12	63	155	7	11	266	113	4	179	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.994			0.996			0.961			0.992	
Fl <sub>t</sub> Protected		0.994			0.986			0.999			0.999	
Satd. Flow (prot)	0	1840	0	0	1829	0	0	1788	0	0	1846	0
Fl <sub>t</sub> Permitted		0.994			0.986			0.999			0.999	
Satd. Flow (perm)	0	1840	0	0	1829	0	0	1788	0	0	1846	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3854			2659			1155			5549	
Travel Time (s)		87.6			60.4			26.3			126.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	266	13	68	168	8	12	289	123	4	195	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	316	0	0	244	0	0	424	0	0	211	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	56.8%
ICU Level of Service	B
Analysis Period (min)	15

Lanes, Volumes, Timings  
38: NW 21st Ave & NW 17th PI

03/18/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	25	3	6	34	7	4
Future Volume (vph)	25	3	6	34	7	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.986			0.955		
Flt Protected				0.992	0.968	
Satd. Flow (prot)	1837	0	0	1848	1722	0
Flt Permitted				0.992	0.968	
Satd. Flow (perm)	1837	0	0	1848	1722	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	275			2350	81	
Travel Time (s)	6.3			53.4	1.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	3	7	37	8	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	0	0	44	12	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Free			Free	Stop	

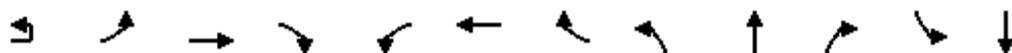
Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.9%
Analysis Period (min)	15
	ICU Level of Service A

**Appendix E: Existing+Background+Project Traffic Conditions 2025  
without Mitigations Level of Service**

Lanes, Volumes, Timings  
2: Driveway 1 & NW 35th St

03/18/2021



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	1	0	456	7	124	399	1	5	1	83	1	1
Future Volume (vph)	1	0	456	7	124	399	1	5	1	83	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00
Frt			0.998						0.874			0.955
Flt Protected		0.950				0.988			0.997			0.984
Satd. Flow (prot)	0	1770	3532	0	0	3497	0	0	1623	0	0	1750
Flt Permitted		0.371				0.707			0.992			0.954
Satd. Flow (perm)	0	691	3532	0	0	2502	0	0	1615	0	0	1697
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)			4						99			1
Link Speed (mph)			30			30			30			30
Link Distance (ft)			2114			1557			5294			221
Travel Time (s)			48.0			35.4			120.3			5.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	1	0	545	8	148	477	1	6	1	99	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	553	0	0	626	0	0	106	0	0	3
Enter Blocked Intersection	No											
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			12			12			0			0
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors	1	1	2		1	2		1	2		1	2
Detector Template	Left	Left	Thru		Left	Thru		Left	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100		20	100		20	100
Trailing Detector (ft)	0	0	0		0	0		0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0		0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6		20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Perm	Perm	NA		Perm	NA		Perm	NA		Perm	NA
Protected Phases			4			8			2			6
Permitted Phases	4	4			8			2			6	
Detector Phase	4	4	4		8	8		2	2		6	6
Switch Phase												

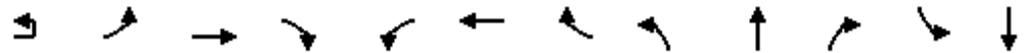
Lanes, Volumes, Timings  
 2: Driveway 1 & NW 35th St

03/18/2021

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	1
Future Volume (vph)	1
Ideal Flow (vphpl)	1900
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.92
Growth Factor	110%
Adj. Flow (vph)	1
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	

Lanes, Volumes, Timings  
2: Driveway 1 & NW 35th St

03/18/2021

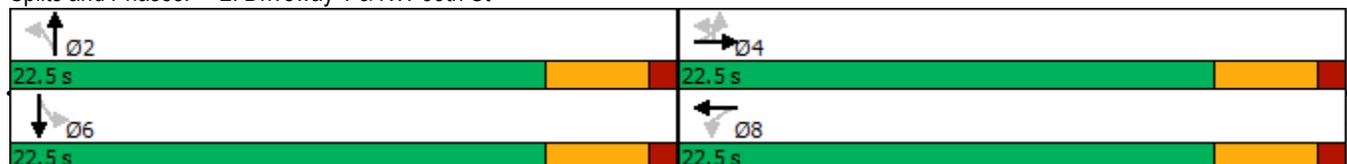


Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5
Total Split (s)	22.5	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0			0.0			0.0			0.0
Total Lost Time (s)		4.5	4.5			4.5			4.5			4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Recall Mode	None	None	None		None	None		Max	Max		Max	Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0		0	0		0	0
Act Effct Green (s)		15.1	15.1			15.1			18.1			18.1
Actuated g/C Ratio		0.36	0.36			0.36			0.43			0.43
v/c Ratio		0.00	0.44			0.70			0.14			0.00
Control Delay		8.0	11.2			16.2			3.4			7.3
Queue Delay		0.0	0.0			0.0			0.0			0.0
Total Delay		8.0	11.2			16.2			3.4			7.3
LOS		A	B			B			A			A
Approach Delay			11.2			16.2			3.4			7.3
Approach LOS			B			B			A			A
Queue Length 50th (ft)		0	50			64			1			0
Queue Length 95th (ft)		2	80			107			21			4
Internal Link Dist (ft)			2034			1477			5214			141
Turn Bay Length (ft)												
Base Capacity (vph)		295	1513			1070			747			726
Starvation Cap Reductn		0	0			0			0			0
Spillback Cap Reductn		0	0			0			0			0
Storage Cap Reductn		0	0			0			0			0
Reduced v/c Ratio		0.00	0.37			0.59			0.14			0.00

Intersection Summary

Area Type: Other  
 Cycle Length: 45  
 Actuated Cycle Length: 42.3  
 Natural Cycle: 45  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.70  
 Intersection Signal Delay: 13.0  
 Intersection Capacity Utilization 47.7%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 2: Driveway 1 & NW 35th St

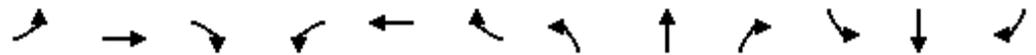




Lane Group	SBR
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings  
 3: NW 21st Ave/Driveway 2 & NW 21st ST

03/18/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	241	81	3	5	63	163	8	10	8	106	0	163
Future Volume (vph)	241	81	3	5	63	163	8	10	8	106	0	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.905			0.958			0.918	
Flt Protected		0.964			0.999			0.985			0.981	
Satd. Flow (prot)	0	1794	0	0	1684	0	0	1758	0	0	1678	0
Flt Permitted		0.964			0.999			0.985			0.981	
Satd. Flow (perm)	0	1794	0	0	1684	0	0	1758	0	0	1678	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2659			2465			1140			89	
Travel Time (s)		60.4			56.0			25.9			2.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	288	97	4	6	75	195	10	12	10	127	0	195
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	389	0	0	276	0	0	32	0	0	322	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	68.7%
ICU Level of Service	C
Analysis Period (min)	15

Lanes, Volumes, Timings  
5: NW 35th Ave & NW 21st St

03/18/2021



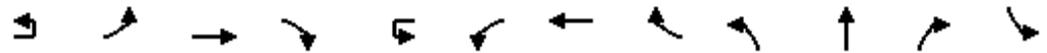
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	178	5	281	216	6	371
Future Volume (vph)	178	5	281	216	6	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt	0.996		0.935			
Flt Protected	0.954				0.950	
Satd. Flow (prot)	1770	0	3309	0	1770	3539
Flt Permitted	0.954				0.950	
Satd. Flow (perm)	1770	0	3309	0	1770	3539
Link Speed (mph)	30		30			30
Link Distance (ft)	3854		1376			72
Travel Time (s)	87.6		31.3			1.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	213	6	336	258	7	444
Shared Lane Traffic (%)						
Lane Group Flow (vph)	219	0	594	0	7	444
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.0%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

03/18/2021



Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		↔
Traffic Volume (vph)	9	418	955	21	1	74	1021	48	89	24	49	69
Future Volume (vph)	9	418	955	21	1	74	1021	48	89	24	49	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Fr t				0.850				0.850		0.899		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1593	3539	1583	0	1770	3539	1583	1770	1675	0	1770
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1593	3539	1583	0	1770	3539	1583	1770	1675	0	1770
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				76				109		57		
Link Speed (mph)			30				30			30		
Link Distance (ft)			560				254			127		
Travel Time (s)			12.7				5.8			2.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Parking (#/hr)		0										
Adj. Flow (vph)	11	500	1142	25	1	88	1221	57	106	29	59	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	511	1142	25	0	89	1221	57	106	88	0	83
Enter Blocked Intersection	No											
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			12				12			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.14	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors	1	1	2	1	1	1	2	1	1	2		1
Detector Template	Left	Left	Thru	Right	Left	Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)	20	20	100	20	20	20	100	20	20	100		20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0		0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0		0
Detector 1 Size(ft)	20	20	6	20	20	20	6	20	20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex									
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	7	7	4		3	3	8		5	2		1
Permitted Phases				4				8				
Detector Phase	7	7	4	4	3	3	8	8	5	2		1

Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

03/18/2021



Lane Group	SBT	SBR
Lane Configurations	↑	↑
Traffic Volume (vph)	29	458
Future Volume (vph)	29	458
Ideal Flow (vphpl)	1900	1900
Lane Util. Factor	1.00	1.00
Fr <sub>t</sub>		0.850
Flt Protected		
Satd. Flow (prot)	1863	1583
Flt Permitted		
Satd. Flow (perm)	1863	1583
Right Turn on Red		Yes
Satd. Flow (RTOR)		463
Link Speed (mph)	30	
Link Distance (ft)	1376	
Travel Time (s)	31.3	
Peak Hour Factor	0.92	0.92
Growth Factor	110%	110%
Parking (#/hr)		
Adj. Flow (vph)	35	548
Shared Lane Traffic (%)		
Lane Group Flow (vph)	35	548
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6



Lanes, Volumes, Timings  
 16: NW 35th Ave & US-27

03/18/2021



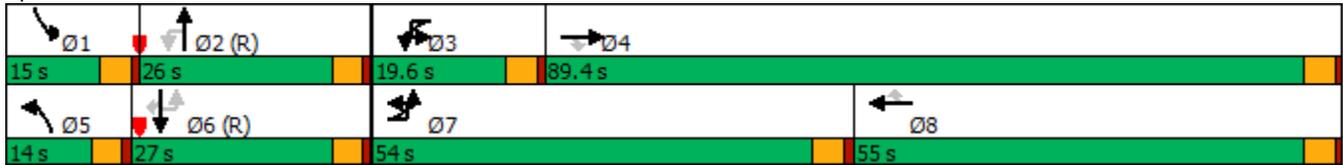
Lane Group	SBT	SBR
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	22.5
Total Split (s)	27.0	27.0
Total Split (%)	18.0%	18.0%
Maximum Green (s)	22.5	22.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	11.0	11.0
Pedestrian Calls (#/hr)	0	0
Act Effct Green (s)	22.5	22.5
Actuated g/C Ratio	0.15	0.15
v/c Ratio	0.13	0.87
Control Delay	56.7	25.9
Queue Delay	0.0	0.0
Total Delay	56.7	25.9
LOS	E	C
Approach Delay	36.6	
Approach LOS	D	
Queue Length 50th (ft)	30	80
Queue Length 95th (ft)	66	#296
Internal Link Dist (ft)	1296	
Turn Bay Length (ft)		
Base Capacity (vph)	279	631
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.13	0.87
Intersection Summary		

Lanes, Volumes, Timings  
 16: NW 35th Ave & US-27

03/18/2021

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 16: NW 35th Ave & US-27



Lanes, Volumes, Timings  
22: NW 27th Ave & NW 18th St

03/18/2021



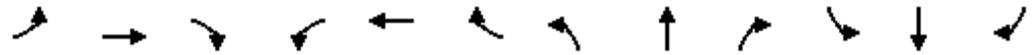
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	1	278	19	1	254
Future Volume (vph)	21	1	278	19	1	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995		0.991			
Flt Protected	0.954					
Satd. Flow (prot)	1768	0	1846	0	0	1863
Flt Permitted	0.954					
Satd. Flow (perm)	1768	0	1846	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	202		2909			1155
Travel Time (s)	4.6		66.1			26.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	25	1	332	23	1	304
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	355	0	0	305
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	27.4%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
23: NW 27th Ave & NW 35th St

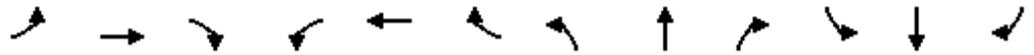
03/18/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	285	33	114	309	19	5	81	191	14	59	37
Future Volume (vph)	35	285	33	114	309	19	5	81	191	14	59	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Fr't		0.985			0.991			0.895			0.943	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3486	0	1770	3507	0	1770	3168	0	1770	3337	0
Flt Permitted	0.520			0.526			0.679			0.555		
Satd. Flow (perm)	969	3486	0	980	3507	0	1265	3168	0	1034	3337	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			17			228			44	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2281			2114			5549			273	
Travel Time (s)		51.8			48.0			126.1			6.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	42	341	39	136	369	23	6	97	228	17	71	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	380	0	136	392	0	6	325	0	17	115	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru										
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												

Lanes, Volumes, Timings  
 23: NW 27th Ave & NW 35th St

03/18/2021

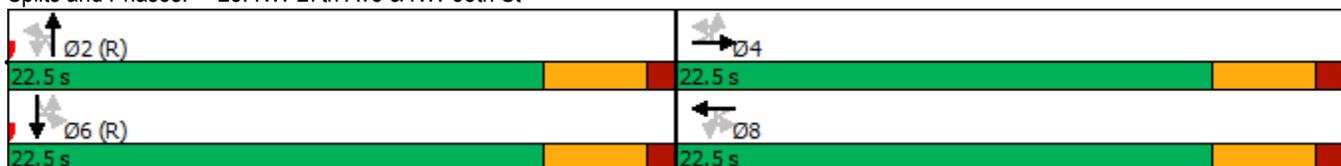


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	12.4	12.4		12.4	12.4		23.6	23.6		23.6	23.6	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.52	0.52		0.52	0.52	
v/c Ratio	0.16	0.39		0.50	0.40		0.01	0.18		0.03	0.06	
Control Delay	11.6	12.2		19.1	12.9		7.5	3.0		7.7	5.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.6	12.2		19.1	12.9		7.5	3.0		7.7	5.1	
LOS	B	B		B	B		A	A		A	A	
Approach Delay		12.2			14.5			3.1			5.4	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)	8	37		29	41		1	5		2	4	
Queue Length 95th (ft)	21	52		56	55		6	25		11	16	
Internal Link Dist (ft)		2201			2034			5469			193	
Turn Bay Length (ft)												
Base Capacity (vph)	387	1413		392	1413		663	1770		542	1771	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.11	0.27		0.35	0.28		0.01	0.18		0.03	0.06	

Intersection Summary

Area Type: Other  
 Cycle Length: 45  
 Actuated Cycle Length: 45  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 45  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.50  
 Intersection Signal Delay: 10.3  
 Intersection Capacity Utilization 40.8%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 23: NW 27th Ave & NW 35th St



Lanes, Volumes, Timings

33: NW MLK Jr Ave/NW 16th Ave/NW MLK Jr/NW 16th Ave & NW 21st St

03/18/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↕			↕			↕	↕			↕
Traffic Volume (vph)	91	5	148	5	5	5	1	174	464	1	1	1
Future Volume (vph)	91	5	148	5	5	5	1	174	464	1	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95	1.00
Fr <sub>t</sub>		0.918			0.955							
Fl <sub>t</sub> Protected		0.982			0.984			0.950				0.950
Satd. Flow (prot)	0	1679	0	0	1750	0	0	1770	3539	0	0	1770
Fl <sub>t</sub> Permitted		0.982			0.984			0.950				0.950
Satd. Flow (perm)	0	1679	0	0	1750	0	0	1770	3539	0	0	1770
Link Speed (mph)		30			30			30				
Link Distance (ft)		2465			117			1336				
Travel Time (s)		56.0			2.7			30.4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	109	6	177	6	6	6	1	208	555	1	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	292	0	0	18	0	0	209	556	0	0	2
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		0			0			12				
Link Offset(ft)		0			0			0				
Crosswalk Width(ft)		16			16			16				
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Sign Control		Stop			Stop				Free			

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.8%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings

33: NW MLK Jr Ave/NW 16th Ave/NW MLK Jr/NW 16th Ave & NW 21st St

03/18/2021



Lane Group	SBT	SBR
Lane Configurations	↑↑	
Traffic Volume (vph)	348	53
Future Volume (vph)	348	53
Ideal Flow (vphpl)	1900	1900
Lane Util. Factor	0.95	0.95
Fr <sub>t</sub>	0.980	
Flt Protected		
Satd. Flow (prot)	3468	0
Flt Permitted		
Satd. Flow (perm)	3468	0
Link Speed (mph)	30	
Link Distance (ft)	2798	
Travel Time (s)	63.6	
Peak Hour Factor	0.92	0.92
Growth Factor	110%	110%
Adj. Flow (vph)	416	63
Shared Lane Traffic (%)		
Lane Group Flow (vph)	479	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Sign Control	Free	
<b>Intersection Summary</b>		

Lanes, Volumes, Timings

34: NW MLK Jr Ave/NW 16th Ave & NW 17th Pl

03/18/2021



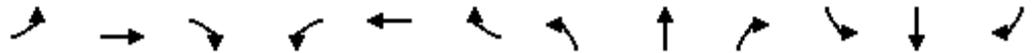
Lane Group	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	11	26	1	19	619	1	374	19
Future Volume (vph)	11	26	1	19	619	1	374	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	1.00	0.95	0.95
Frt	0.905			0.993				
Flt Protected	0.985			0.950		0.950		
Satd. Flow (prot)	1660	0	0	1770	3539	1770	3514	0
Flt Permitted	0.985			0.950		0.950		
Satd. Flow (perm)	1660	0	0	1770	3539	1770	3514	0
Link Speed (mph)	30				30		30	
Link Distance (ft)	2350				1340		1336	
Travel Time (s)	53.4				30.5		30.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	13	31	1	23	740	1	447	23
Shared Lane Traffic (%)								
Lane Group Flow (vph)	44	0	0	24	740	1	470	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Left	R NA	Left	Right
Median Width(ft)	12				12		12	
Link Offset(ft)	0				0		0	
Crosswalk Width(ft)	16				16		16	
Two way Left Turn Lane								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	9	15		9		9
Sign Control	Stop				Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.8%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings  
37: NW 27th Ave & NW 21st St

03/18/2021



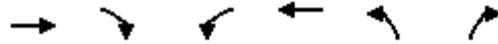
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	34	245	12	63	155	7	11	266	113	4	179	11
Future Volume (vph)	34	245	12	63	155	7	11	266	113	4	179	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.996			0.961			0.992	
Flt Protected		0.994			0.986			0.999			0.999	
Satd. Flow (prot)	0	1842	0	0	1829	0	0	1788	0	0	1846	0
Flt Permitted		0.994			0.986			0.999			0.999	
Satd. Flow (perm)	0	1842	0	0	1829	0	0	1788	0	0	1846	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3854			2659			1155			5549	
Travel Time (s)		87.6			60.4			26.3			126.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	41	293	14	75	185	8	13	318	135	5	214	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	348	0	0	268	0	0	466	0	0	232	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	61.9%
ICU Level of Service	B
Analysis Period (min)	15

Lanes, Volumes, Timings  
38: NW 21st Ave & NW 17th PI

03/18/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	25	3	6	34	7	4
Future Volume (vph)	25	3	6	34	7	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.984			0.948		
Fl <sub>t</sub> Protected				0.993	0.970	
Satd. Flow (prot)	1833	0	0	1850	1713	0
Fl <sub>t</sub> Permitted				0.993	0.970	
Satd. Flow (perm)	1833	0	0	1850	1713	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	275			2350	81	
Travel Time (s)	6.3			53.4	1.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	30	4	7	41	8	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	0	0	48	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.6%
Analysis Period (min)	15
	ICU Level of Service A

**Appendix F: Existing+Background+Project Traffic Conditions 2025  
with Mitigations Level of Service**

Lanes, Volumes, Timings  
2: Driveway 1 & NW 35th St

03/17/2021



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	1	0	456	7	124	399	1	5	1	83	1	1
Future Volume (vph)	1	0	456	7	124	399	1	5	1	83	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00
Frt			0.998						0.874			0.955
Flt Protected		0.950			0.950				0.997			0.984
Satd. Flow (prot)	0	1770	3532	0	1770	3539	0	0	1623	0	0	1750
Flt Permitted		0.479			0.420				0.992			0.955
Satd. Flow (perm)	0	892	3532	0	782	3539	0	0	1615	0	0	1699
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)			4			1			99			1
Link Speed (mph)			30			30			30			30
Link Distance (ft)			2114			1557			5294			221
Travel Time (s)			48.0			35.4			120.3			5.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	1	0	545	8	148	477	1	6	1	99	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	553	0	148	478	0	0	106	0	0	3
Enter Blocked Intersection	No											
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			12			12			0			0
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors	1	1	2		1	2		1	2		1	2
Detector Template	Left	Left	Thru		Left	Thru		Left	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100		20	100		20	100
Trailing Detector (ft)	0	0	0		0	0		0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0		0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6		20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Perm	Perm	NA		Perm	NA		Perm	NA		Perm	NA
Protected Phases			4			8			2			6
Permitted Phases	4	4			8			2			6	
Detector Phase	4	4	4		8	8		2	2		6	6
Switch Phase												

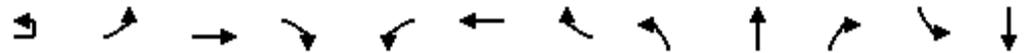
Lanes, Volumes, Timings  
 2: Driveway 1 & NW 35th St

03/17/2021

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	1
Future Volume (vph)	1
Ideal Flow (vphpl)	1900
Lane Util. Factor	1.00
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.92
Growth Factor	110%
Adj. Flow (vph)	1
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	

Lanes, Volumes, Timings  
2: Driveway 1 & NW 35th St

03/17/2021

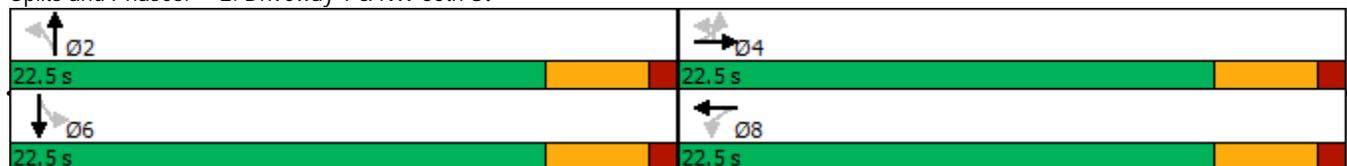


Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5
Total Split (s)	22.5	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0			0.0			0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5			4.5			4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Recall Mode	None	None	None		None	None		Max	Max		Max	Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0		0	0		0	0
Act Effect Green (s)		13.1	13.1		13.1	13.1			18.2			18.2
Actuated g/C Ratio		0.32	0.32		0.32	0.32			0.45			0.45
v/c Ratio		0.00	0.48		0.58	0.42			0.14			0.00
Control Delay		8.0	12.0		21.3	11.4			3.3			7.3
Queue Delay		0.0	0.0		0.0	0.0			0.0			0.0
Total Delay		8.0	12.0		21.3	11.4			3.3			7.3
LOS		A	B		C	B			A			A
Approach Delay			12.0			13.8			3.3			7.3
Approach LOS			B			B			A			A
Queue Length 50th (ft)		0	50		27	42			1			0
Queue Length 95th (ft)		2	80		69	69			21			4
Internal Link Dist (ft)			2034			1477			5214			141
Turn Bay Length (ft)												
Base Capacity (vph)		401	1594		352	1596			782			766
Starvation Cap Reductn		0	0		0	0			0			0
Spillback Cap Reductn		0	0		0	0			0			0
Storage Cap Reductn		0	0		0	0			0			0
Reduced v/c Ratio		0.00	0.35		0.42	0.30			0.14			0.00

Intersection Summary

Area Type: Other  
 Cycle Length: 45  
 Actuated Cycle Length: 40.4  
 Natural Cycle: 45  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.58  
 Intersection Signal Delay: 12.1  
 Intersection Capacity Utilization 39.1%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 2: Driveway 1 & NW 35th St



Lanes, Volumes, Timings  
2: Driveway 1 & NW 35th St

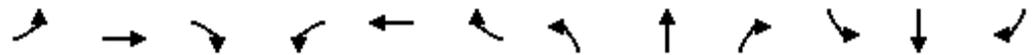
03/17/2021



Lane Group	SBR
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings  
 3: NW 21st Ave/Driveway 2 & NW 21st ST

03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	241	81	3	5	63	163	8	10	8	106	0	163
Future Volume (vph)	241	81	3	5	63	163	8	10	8	106	0	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.997			0.935	0.850		0.958				0.850
Fl <sub>t</sub> Protected	0.950	0.976			0.998			0.985		0.950		
Satd. Flow (prot)	1681	1722	0	0	1651	1504	0	1758	0	1770	0	1583
Fl <sub>t</sub> Permitted	0.950	0.976			0.998			0.985		0.950		
Satd. Flow (perm)	1681	1722	0	0	1651	1504	0	1758	0	1770	0	1583
Link Speed (mph)		30			30			30				30
Link Distance (ft)		2659			2465			1140				89
Travel Time (s)		60.4			56.0			25.9				2.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	288	97	4	6	75	195	10	12	10	127	0	195
Shared Lane Traffic (%)	33%					32%						
Lane Group Flow (vph)	193	196	0	0	143	133	0	32	0	127	0	195
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	40.5%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings  
5: NW 35th Ave & NW 21st St

03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	178	5	281	216	6	371
Future Volume (vph)	178	5	281	216	6	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	0.996			0.850		
Flt Protected	0.954				0.950	
Satd. Flow (prot)	1770	0	3539	1583	1770	3539
Flt Permitted	0.954				0.950	
Satd. Flow (perm)	1770	0	3539	1583	1770	3539
Link Speed (mph)	30		30			30
Link Distance (ft)	3854		1376			72
Travel Time (s)	87.6		31.3			1.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	213	6	336	258	7	444
Shared Lane Traffic (%)						
Lane Group Flow (vph)	219	0	336	258	7	444
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.1%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

03/17/2021



Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	9	418	955	21	1	74	1021	48	89	24	49	69
Future Volume (vph)	9	418	955	21	1	74	1021	48	89	24	49	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.97	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Frts				0.850				0.850		0.899		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	3261	3539	1583	0	1770	3539	1583	1770	1675	0	1770
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	3261	3539	1583	0	1770	3539	1583	1770	1675	0	1770
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)				76				109		57		
Link Speed (mph)			30				30			30		
Link Distance (ft)			560				254			127		
Travel Time (s)			12.7				5.8			2.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Parking (#/hr)		0										
Adj. Flow (vph)	11	500	1142	25	1	88	1221	57	106	29	59	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	511	1142	25	0	89	1221	57	106	88	0	83
Enter Blocked Intersection	No											
Lane Alignment	R NA	Left	Left	Right	R NA	Left	Left	Right	Left	Left	Right	Left
Median Width(ft)			24				24			12		
Link Offset(ft)			0				0			0		
Crosswalk Width(ft)			16				16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.07	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Number of Detectors	1	1	2	1	1	1	2	1	1	2		1
Detector Template	Left	Left	Thru	Right	Left	Left	Thru	Right	Left	Thru		Left
Leading Detector (ft)	20	20	100	20	20	20	100	20	20	100		20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0		0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0		0
Detector 1 Size(ft)	20	20	6	20	20	20	6	20	20	6		20
Detector 1 Type	Cl+Ex		Cl+Ex									
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)			94				94			94		
Detector 2 Size(ft)			6				6			6		
Detector 2 Type			Cl+Ex				Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)			0.0				0.0			0.0		
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	7	7	4		3	3	8		5	2		1
Permitted Phases				4				8				
Detector Phase	7	7	4	4	3	3	8	8	5	2		1

Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

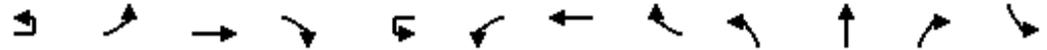
03/17/2021



Lane Group	SBT	SBR
Lane Configurations	↑	↑
Traffic Volume (vph)	29	458
Future Volume (vph)	29	458
Ideal Flow (vphpl)	1900	1900
Lane Util. Factor	1.00	1.00
Fr <sub>t</sub>		0.850
Flt Protected		
Satd. Flow (prot)	1863	1583
Flt Permitted		
Satd. Flow (perm)	1863	1583
Right Turn on Red		Yes
Satd. Flow (RTOR)		463
Link Speed (mph)	30	
Link Distance (ft)	1376	
Travel Time (s)	31.3	
Peak Hour Factor	0.92	0.92
Growth Factor	110%	110%
Parking (#/hr)		
Adj. Flow (vph)	35	548
Shared Lane Traffic (%)		
Lane Group Flow (vph)	35	548
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane	Yes	
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Number of Detectors	2	1
Detector Template	Thru	Right
Leading Detector (ft)	100	20
Trailing Detector (ft)	0	0
Detector 1 Position(ft)	0	0
Detector 1 Size(ft)	6	20
Detector 1 Type	Cl+Ex	Cl+Ex
Detector 1 Channel		
Detector 1 Extend (s)	0.0	0.0
Detector 1 Queue (s)	0.0	0.0
Detector 1 Delay (s)	0.0	0.0
Detector 2 Position(ft)	94	
Detector 2 Size(ft)	6	
Detector 2 Type	Cl+Ex	
Detector 2 Channel		
Detector 2 Extend (s)	0.0	
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6

Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

03/17/2021



Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	9.5	22.5	22.5	9.5	9.5	22.5	22.5	9.5	22.5		9.5
Total Split (s)	54.0	54.0	89.4	89.4	19.6	19.6	55.0	55.0	14.0	26.0		15.0
Total Split (%)	36.0%	36.0%	59.6%	59.6%	13.1%	13.1%	36.7%	36.7%	9.3%	17.3%		10.0%
Maximum Green (s)	49.5	49.5	84.9	84.9	15.1	15.1	50.5	50.5	9.5	21.5		10.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	None	C-Max		None							
Walk Time (s)			7.0	7.0			7.0	7.0		7.0		
Flash Dont Walk (s)			11.0	11.0			11.0	11.0		11.0		
Pedestrian Calls (#/hr)			0	0			0	0		0		
Act Effct Green (s)		29.2	80.4	80.4		12.3	63.5	63.5	13.0	28.5		10.8
Actuated g/C Ratio		0.19	0.54	0.54		0.08	0.42	0.42	0.09	0.19		0.07
v/c Ratio		0.81	0.60	0.03		0.61	0.82	0.08	0.69	0.24		0.65
Control Delay		67.8	25.2	0.0		84.0	43.4	0.2	88.7	24.9		90.5
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay		67.8	25.2	0.0		84.0	43.4	0.2	88.7	24.9		90.5
LOS		E	C	A		F	D	A	F	C		F
Approach Delay			37.8				44.2			59.8		
Approach LOS			D				D			E		
Queue Length 50th (ft)		248	403	0		85	557	0	100	25		79
Queue Length 95th (ft)		298	429	0		146	638	0	#231	82		#158
Internal Link Dist (ft)			480				174			47		
Turn Bay Length (ft)												
Base Capacity (vph)		1076	2003	928		178	1498	733	153	363		133
Starvation Cap Reductn		0	0	0		0	0	0	0	0		0
Spillback Cap Reductn		0	0	0		0	0	0	0	0		0
Storage Cap Reductn		0	0	0		0	0	0	0	0		0
Reduced v/c Ratio		0.47	0.57	0.03		0.50	0.82	0.08	0.69	0.24		0.62

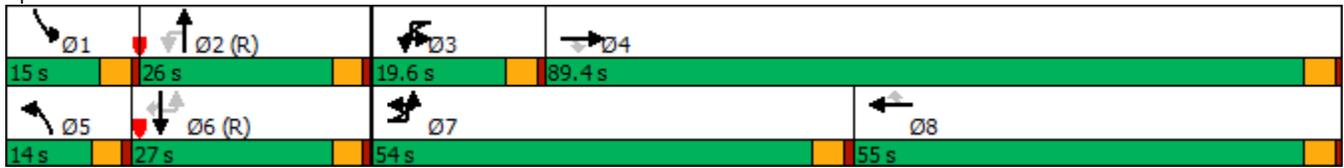
Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 0 (0%), Referenced to phase 2:NBTU and 6:SBTU, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 40.3  
 Intersection LOS: D  
 Intersection Capacity Utilization 96.1%  
 ICU Level of Service F  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
 16: NW 35th Ave & US-27

03/17/2021

Splits and Phases: 16: NW 35th Ave & US-27



Lanes, Volumes, Timings  
16: NW 35th Ave & US-27

03/17/2021



Lane Group	SBT	SBR
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	22.5
Total Split (s)	27.0	27.0
Total Split (%)	18.0%	18.0%
Maximum Green (s)	22.5	22.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	11.0	11.0
Pedestrian Calls (#/hr)	0	0
Act Effct Green (s)	26.3	26.3
Actuated g/C Ratio	0.18	0.18
v/c Ratio	0.11	0.83
Control Delay	55.7	22.5
Queue Delay	0.0	0.0
Total Delay	55.7	22.5
LOS	E	C
Approach Delay	32.7	
Approach LOS	C	
Queue Length 50th (ft)	30	79
Queue Length 95th (ft)	66	#296
Internal Link Dist (ft)	1296	
Turn Bay Length (ft)		
Base Capacity (vph)	326	659
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.11	0.83
Intersection Summary		

Lanes, Volumes, Timings  
 22: NW 27th Ave & NW 18th St

03/17/2021



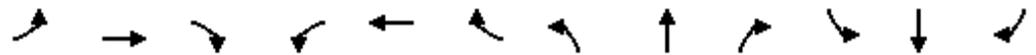
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	1	278	19	1	254
Future Volume (vph)	21	1	278	19	1	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995		0.991			
Flt Protected	0.954					
Satd. Flow (prot)	1768	0	1846	0	0	1863
Flt Permitted	0.954					
Satd. Flow (perm)	1768	0	1846	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	202		2909			1155
Travel Time (s)	4.6		66.1			26.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	25	1	332	23	1	304
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	355	0	0	305
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	27.4%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
23: NW 27th Ave & NW 35th St

03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	285	33	114	309	19	5	81	191	14	59	37
Future Volume (vph)	35	285	33	114	309	19	5	81	191	14	59	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.985			0.991			0.895			0.943	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3486	0	1770	3507	0	1770	3168	0	1770	3337	0
Flt Permitted	0.520			0.526			0.679			0.555		
Satd. Flow (perm)	969	3486	0	980	3507	0	1265	3168	0	1034	3337	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			17			228			44	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2281			2114			5549			273	
Travel Time (s)		51.8			48.0			126.1			6.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	42	341	39	136	369	23	6	97	228	17	71	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	380	0	136	392	0	6	325	0	17	115	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru										
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												

Lanes, Volumes, Timings  
23: NW 27th Ave & NW 35th St

03/17/2021

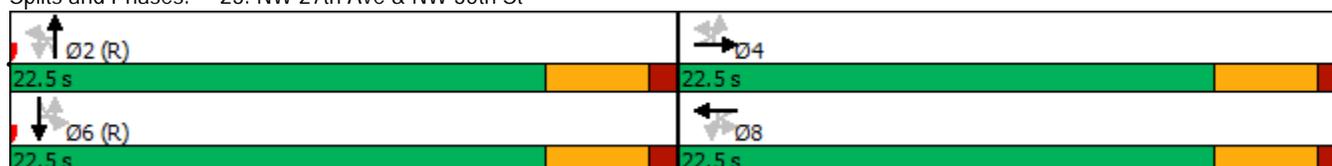


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)	12.4	12.4		12.4	12.4		23.6	23.6		23.6	23.6	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.52	0.52		0.52	0.52	
v/c Ratio	0.16	0.39		0.50	0.40		0.01	0.18		0.03	0.06	
Control Delay	11.6	12.2		19.1	12.9		7.5	3.0		7.7	5.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.6	12.2		19.1	12.9		7.5	3.0		7.7	5.1	
LOS	B	B		B	B		A	A		A	A	
Approach Delay		12.2			14.5			3.1			5.4	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)	8	37		29	41		1	5		2	4	
Queue Length 95th (ft)	21	52		56	55		6	25		11	16	
Internal Link Dist (ft)		2201			2034			5469			193	
Turn Bay Length (ft)												
Base Capacity (vph)	387	1413		392	1413		663	1770		542	1771	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.11	0.27		0.35	0.28		0.01	0.18		0.03	0.06	

Intersection Summary

Area Type:	Other
Cycle Length:	45
Actuated Cycle Length:	45
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	45
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.50
Intersection Signal Delay:	10.3
Intersection LOS:	B
Intersection Capacity Utilization:	40.8%
ICU Level of Service:	A
Analysis Period (min):	15

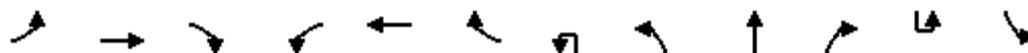
Splits and Phases: 23: NW 27th Ave & NW 35th St



# Lanes, Volumes, Timings

33: NW MLK Jr Ave/NW 16th Ave/NW MLK Jr/NW 16th Ave & NW 21st St

03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	91	5	148	5	5	5	1	174	464	1	1	1
Future Volume (vph)	91	5	148	5	5	5	1	174	464	1	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95	1.00
Fr <sub>t</sub>		0.855			0.955							
Fl <sub>t</sub> Protected	0.950				0.984			0.950				0.950
Satd. Flow (prot)	1770	1593	0	0	1750	0	0	1770	3539	0	0	1770
Fl <sub>t</sub> Permitted	0.950				0.984			0.950				0.950
Satd. Flow (perm)	1770	1593	0	0	1750	0	0	1770	3539	0	0	1770
Link Speed (mph)		30			30				30			
Link Distance (ft)		2465			117				1336			
Travel Time (s)		56.0			2.7				30.4			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	109	6	177	6	6	6	1	208	555	1	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	183	0	0	18	0	0	209	556	0	0	2
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Sign Control		Stop			Stop				Free			

## Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 45.3% ICU Level of Service A

Analysis Period (min) 15

# Lanes, Volumes, Timings

33: NW MLK Jr Ave/NW 16th Ave/NW MLK Jr/NW 16th Ave & NW 21st St

03/17/2021



Lane Group	SBT	SBR
Lane Configurations	↑↑	
Traffic Volume (vph)	348	53
Future Volume (vph)	348	53
Ideal Flow (vphpl)	1900	1900
Lane Util. Factor	0.95	0.95
Fr <sub>t</sub>	0.980	
Flt Protected		
Satd. Flow (prot)	3468	0
Flt Permitted		
Satd. Flow (perm)	3468	0
Link Speed (mph)	30	
Link Distance (ft)	2798	
Travel Time (s)	63.6	
Peak Hour Factor	0.92	0.92
Growth Factor	110%	110%
Adj. Flow (vph)	416	63
Shared Lane Traffic (%)		
Lane Group Flow (vph)	479	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Sign Control	Free	
<b>Intersection Summary</b>		

# Lanes, Volumes, Timings

34: NW MLK Jr Ave/NW 16th Ave & NW 17th PI

03/17/2021



Lane Group	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	11	26	1	19	619	1	374	19
Future Volume (vph)	11	26	1	19	619	1	374	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	1.00	0.95	0.95
Frt	0.905						0.993	
Flt Protected	0.985			0.950		0.950		
Satd. Flow (prot)	1660			1770		3539		1770
Flt Permitted	0.985			0.950		0.950		
Satd. Flow (perm)	1660			1770		3539		1770
Link Speed (mph)	30				30		30	
Link Distance (ft)	2350				1340		1336	
Travel Time (s)	53.4				30.5		30.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	13	31	1	23	740	1	447	23
Shared Lane Traffic (%)								
Lane Group Flow (vph)	44	0	0	24	740	1	470	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Left	R NA	Left	Right
Median Width(ft)	12				12		12	
Link Offset(ft)	0				0		0	
Crosswalk Width(ft)	16				16		16	
Two way Left Turn Lane								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	9	15		9		9
Sign Control	Stop				Free		Free	

## Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.8%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
37: NW 27th Ave & NW 21st St

03/17/2021



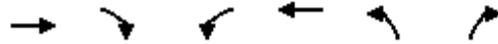
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	34	245	12	63	155	7	11	266	113	4	179	11
Future Volume (vph)	34	245	12	63	155	7	11	266	113	4	179	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.996			0.961			0.992	
Flt Protected		0.994			0.986			0.999			0.999	
Satd. Flow (prot)	0	1842	0	0	1829	0	0	1788	0	0	1846	0
Flt Permitted		0.994			0.986			0.999			0.999	
Satd. Flow (perm)	0	1842	0	0	1829	0	0	1788	0	0	1846	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3854			2659			1155			5549	
Travel Time (s)		87.6			60.4			26.3			126.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	41	293	14	75	185	8	13	318	135	5	214	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	348	0	0	268	0	0	466	0	0	232	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	61.9%
ICU Level of Service	B
Analysis Period (min)	15

Lanes, Volumes, Timings  
38: NW 21st Ave & NW 17th PI

03/17/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	25	3	6	34	7	4
Future Volume (vph)	25	3	6	34	7	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984			0.948		
Flt Protected				0.993	0.970	
Satd. Flow (prot)	1833	0	0	1850	1713	0
Flt Permitted				0.993	0.970	
Satd. Flow (perm)	1833	0	0	1850	1713	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	275			2350	81	
Travel Time (s)	6.3			53.4	1.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	30	4	7	41	8	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	0	0	48	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.6% ICU Level of Service A
Analysis Period (min)	15

**Appendix G: Preliminary Construction Cost Estimate and  
Proportionate/Fair Share Fees Exhibit**

Improvement				Engineering			
3/17/2021				540 Ft Curbed Section			
Location:		US 27 and NW 35th Ave					
Pay Item	Description	Total Quantity	Unit	Avg. Unit Price	Total Amount	Developer's Cost	City's Cost
102-1	MAINTENANCE OF TRAFFIC	1.00	LS	\$10000.00	\$10,000.00		
101-1	MOBILIZATION	1.00	LS	\$5000.00	\$5,000.00		
104-10-3	SEDIMENT BARRIER	550.00	LF	\$2.25	\$1,237.50		
110-1-1	CLEARING & GRUBBING	0.10	AC	\$18,000.00	\$1,800.00		
120-1	REGULAR EXCAVATION	900.00	CY	\$3.50	\$3,150.00		
120-2-2	BORROW EXCAVATION, TRUCK MEASURE	1462.50	CY	\$17.00	\$24,862.50		
160-4	TYPE B STABILIZATION	720.00	SY	\$3.00	\$2,160.00		
160-0	DENSITY TESTING (1 LOCATION	1.00	EA	\$1000.00	\$1,000.00		
285-709	OPTIONAL BASE,BASE GROUP 09	720.00	SY	\$19.00	\$13,680.00		
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	59.40	TN	\$145.00	\$8,613.00		
337-7-25	ASPH CONC FC,INC BIT,FC-5,PG76-22	31.68	TN	\$140.00	\$4,435.20		
425-1331	CURB INLET, TYPE P-3, < 10 FT	1.00	EA	\$5000.00	\$5,000.00		
520-1-10	CONCRETE TYPE F CURB & GUTTER	540.00	LF	\$20.00	\$10,800.00		
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	300.00	SY	\$40.00	\$12,000.00		
570-1-2	PERFORMANCE TURF, SOD	562.50	SY	\$4.50	\$2,531.25		
700-1-11	SINGLE POST SIGN, F&I GM, SINGLE POST SIGN, F&I GM, 12-20 SF	4.00	AS	\$340.00	\$1,360.00		
700-1-12	SINGLE POST SIGN, RELOCATE	4.00	AS	\$1,200.00	\$4,800.00		
700-1-50	SINGLE POST SIGN, REMOVE	4.00	AS	\$220.00	\$880.00		
700-1-60	SINGLE POST SIGN, REMOVE	4.00	AS	\$30.00	\$120.00		
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	4.00	AS	\$4,500.00	\$18,000.00		
700-2-60	MULTI- POST SIGN, REMOVE	4.00	AS	\$750.00	\$3,000.00		
706-1-1	RAISED PAVMT MARK, TYPE B W/O FINAL SURF	40.00	EA	\$4.40	\$176.00		
710-11-101	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	1.04	GM	\$900.00	\$931.50		
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.52	GM	\$430.00	\$222.53		
710-111-31	THERMOPLASTIC, STANDARD-OTHER SURFACES WHITE, SOLID 6"	1.04	GM	\$4770.84	\$4,937.82		
711-16-101	THERMOPLASTIC (RATE ADJUSTED),WHITE, SKIP 6" WIDE	0.52	GM	\$4004.23	\$2,072.19		
<b>TOTAL FOR EACH IMPROVEMENT</b>					<b>\$142,769.48</b>	<b>\$45,229.37</b>	<b>\$97,540.11</b>

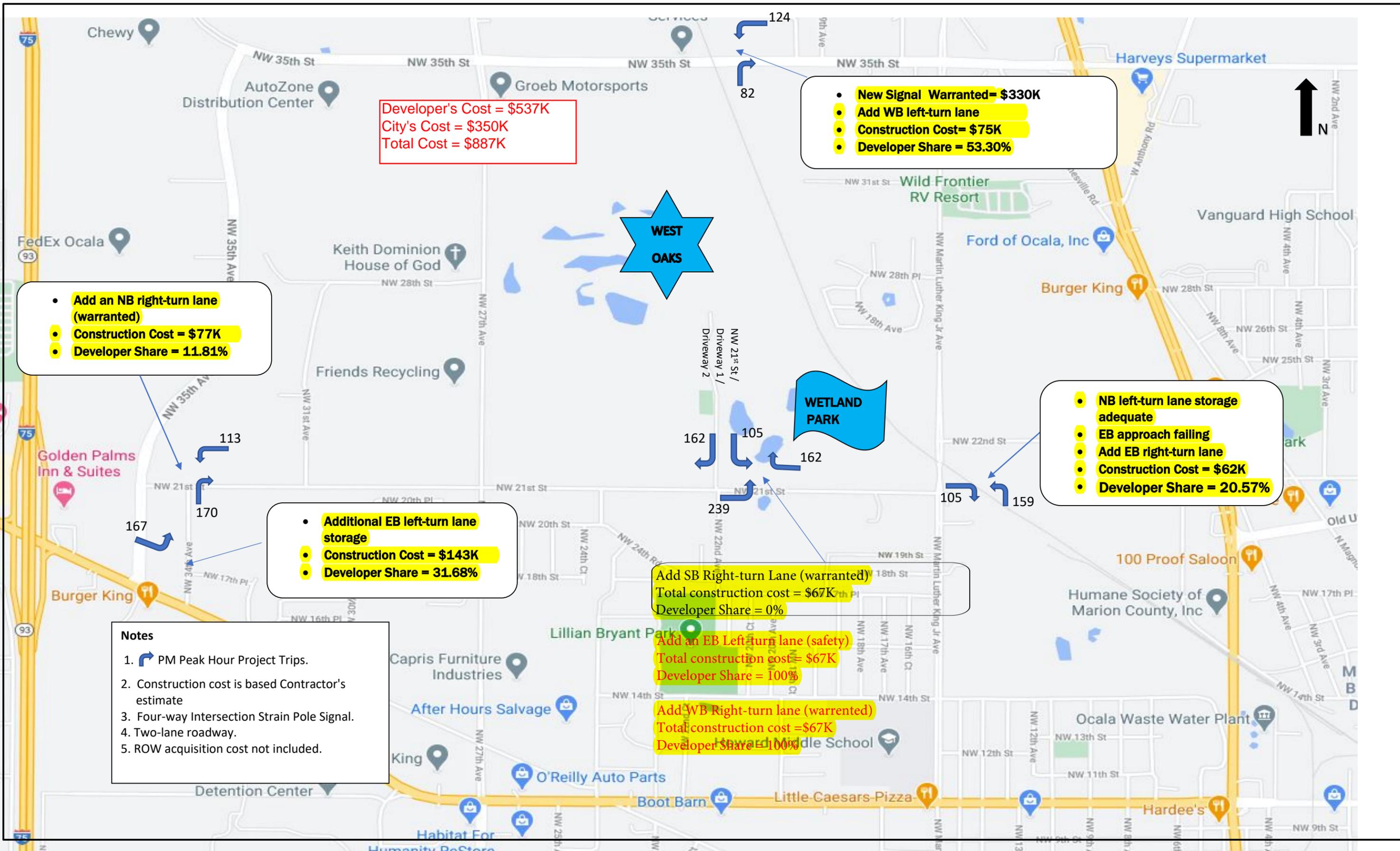
West Oak Construction Cost Estimate for Roadway Improvement				Timman & Associates Engineering			
3/17/2021				240 Ft Uncurbed Section			
Location:		South Driveway (NW 21st St and NW 21st Ave-Total 3 improvements)					
Pay Item	Description	Total Quantity	Unit	Avg. Unit Price	Total Amount	Developer's Cost	City's Cost
102-1	MAINTENANCE OF TRAFFIC	1.00	LS	\$5000.00	\$5,000.00		
101-1	MOBILIZATION	1.00	LS	\$2000.00	\$2,000.00		
104-10-3	SEDIMENT BARRIER	240.00	LF	\$2.25	\$540.00		
110-1-1	CLEARING & GRUBBING	0.20	AC	\$18,000.00	\$3,600.00		
120-1	REGULAR EXCAVATION	400.00	CY	\$3.50	\$1,400.00		
120-2-2	BORROW EXCAVATION, TRUCK MEASURE	650.00	CY	\$17.00	\$11,050.00		
160-4	TYPE B STABILIZATION	320.00	SY	\$3.00	\$960.00		
160-0	DENSITY TESTING (1 LOCATION ASSUMED)	1.00	EA	\$1000.00	\$1,000.00		
285-709	OPTIONAL BASE,BASE GROUP 09	320.00	SY	\$19.00	\$6,080.00		
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	26.40	TN	\$145.00	\$3,828.00		
337-7-25	ASPH CONC FC,INC BIT,FC-5,PG76-22	14.08	TN	\$140.00	\$1,971.20		
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	166.67	SY	\$40.00	\$6,666.67		
570-1-2	PERFORMANCE TURF, SOD	250.00	SY	\$4.50	\$1,125.00		
700-1-11	SINGLE POST SIGN, F&I GM,	2.00	AS	\$340.00	\$680.00		
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	2.00	AS	\$1,200.00	\$2,400.00		
700-1-50	SINGLE POST SIGN, RELOCATE	2.00	AS	\$220.00	\$440.00		
700-1-60	SINGLE POST SIGN, REMOVE	2.00	AS	\$30.00	\$60.00		
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	2.00	AS	\$4,500.00	\$9,000.00		
700-2-60	MULTI- POST SIGN, REMOVE	2.00	AS	\$750.00	\$1,500.00		
706-1-1	RAISED PAVMT MARK, TYPE B W/O FINAL SURF	25.00	EA	\$4.40	\$110.00		
710-11-101	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.46	GM	\$900.00	\$414.00		
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.23	GM	\$430.00	\$98.90		
710-111-31	THERMOPLASTIC, STANDARD-OTHER	1.035	GM	4770.84	4937.8194		
711-16-101	THERMOPLASTIC (RATE ADJUSTED),WHITE,	0.5175	GM	4004.23	2072.189025		
<b>TOTAL FOR EACH IMPROVEMENT</b>					<b>\$66,933.78</b>	<b>\$133,867.55</b>	<b>\$66,933.78</b>
<b>TOTAL FOR ALL IMPROVEMENT</b>						<b>\$200,801.33</b>	

Improvement				Engineering			
3/17/2021				240 Ft Curbed Section			
Location: NW 35th Ave and NW 21st St							
Pay Item	Description	Total Quantity	Unit	Avg. Unit Price	Total Amount	Developer's Cost	City's Cost
102-1	MAINTENANCE OF TRAFFIC	1.00	LS	\$5000.00	\$5,000.00		
101-1	MOBILIZATION	1.00	LS	\$2000.00	\$2,000.00		
104-10-3	SEDIMENT BARRIER	240.00	LF	\$2.25	\$540.00		
110-1-1	CLEARING & GRUBBING	0.20	AC	\$18,000.00	\$3,600.00		
120-1	REGULAR EXCAVATION	400.00	CY	\$3.50	\$1,400.00		
120-2-2	BORROW EXCAVATION, TRUCK MEASURE	650.00	CY	\$17.00	\$11,050.00		
160-4	TYPE B STABILIZATION	320.00	SY	\$3.00	\$960.00		
160-0	DENSITY TESTING (1 LOCATION	1.00	EA	\$1000.00	\$1,000.00		
285-709	OPTIONAL BASE,BASE GROUP 09 SUPERPAVE ASPHALTIC CONC, TRAFFIC C	320.00	SY	\$19.00	\$6,080.00		
334-1-13	ASPH CONC FC,INC BIT,FC-5,PG76-22	26.40	TN	\$145.00	\$3,828.00		
337-7-25	CURB INLET, TYPE P-3, < 10 FT	14.08	TN	\$140.00	\$1,971.20		
425-1331	CONCRETE TYPE F CURB & GUTTER CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	1.00	EA	\$5000.00	\$5,000.00		
520-1-10	PERFORMANCE TURF, SOD	240.00	LF	\$20.00	\$4,800.00		
522-1	SINGLE POST SIGN, F&I GM, 12-20 SF	166.67	SY	\$40.00	\$6,666.67		
570-1-2	SINGLE POST SIGN, RELOCATE	250.00	SY	\$4.50	\$1,125.00		
700-1-11	SINGLE POST SIGN, REMOVE	2.00	AS	\$340.00	\$680.00		
700-1-12	MULTI-POST SIGN, F&I GM, 31-50 SF	2.00	AS	\$1,200.00	\$2,400.00		
700-1-50	MULTI-POST SIGN, REMOVE	2.00	AS	\$220.00	\$440.00		
700-1-60	RAISED PAVMT MARK, TYPE B W/O FINAL SURF	2.00	AS	\$30.00	\$60.00		
700-2-14	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	2.00	AS	\$4,500.00	\$9,000.00		
700-2-60	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	2.00	AS	\$750.00	\$1,500.00		
706-1-1	THERMOPLASTIC, STANDARD-OTHER	25.00	EA	\$4.40	\$110.00		
710-11-101	THERMOPLASTIC (RATE	0.46	GM	\$900.00	\$414.00		
710-11-131		0.23	GM	\$430.00	\$98.90		
710-11-31		1.035	GM	4770.84	4937.8194		
711-16-101		0.5175	GM	4004.23	2072.189025		
<b>TOTAL FOR EACH IMPROVEMENT</b>					<b>\$76,733.78</b>	<b>\$9,062.26</b>	<b>\$67,671.52</b>

West Oak Construction Cost Estimate for Roadway Improvement				Engineering			
3/17/2021				285 Ft Curbed Section			
Location: Ave)							
Pay Item	Description	Total Quantity	Unit	Avg. Unit Price	Total Amount	Developer's Cost	City's Cost
102-1	MAINTENANCE OF TRAFFIC	1.00	LS	\$5000.00	\$5,000.00		
101-1	MOBILIZATION	1.00	LS	\$2000.00	\$2,000.00		
104-10-3	SEDIMENT BARRIER	285.00	LF	\$2.25	\$641.25		
110-1-1	CLEARING & GRUBBING	0.20	AC	\$18,000.00	\$3,600.00		
120-1	REGULAR EXCAVATION	400.00	CY	\$3.50	\$1,400.00		
120-2-2	BORROW EXCAVATION, TRUCK MEASURE	650.00	CY	\$17.00	\$11,050.00		
160-4	TYPE B STABILIZATION	320.00	SY	\$3.00	\$960.00		
160-0	DENSITY TESTING (1 LOCATION ASSUMED)	1.00	EA	\$1000.00	\$1,000.00		
285-709	OPTIONAL BASE,BASE GROUP 09	380.00	SY	\$19.00	\$7,220.00		
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	31.35	TN	\$145.00	\$4,545.75		
337-7-25	ASPH CONC FC,INC BIT,FC-5,PG76-22	16.72	TN	\$140.00	\$2,340.80		
520-1-10	CONCRETE TYPE F CURB & GUTTER	600.00	LF	\$20.00	\$12,000.00		
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	0.00	SY	\$40.00	\$0.00		
570-1-2	PERFORMANCE TURF, SOD	250.00	SY	\$4.50	\$1,125.00		
700-1-11	SINGLE POST SIGN, F&I GM,	2.00	AS	\$340.00	\$680.00		
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	2.00	AS	\$1,200.00	\$2,400.00		
700-1-50	SINGLE POST SIGN, RELOCATE	2.00	AS	\$220.00	\$440.00		
700-1-60	SINGLE POST SIGN, REMOVE	2.00	AS	\$30.00	\$60.00		
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	2.00	AS	\$4,500.00	\$9,000.00		
700-2-60	MULTI- POST SIGN, REMOVE	2.00	AS	\$750.00	\$1,500.00		
706-1-1	RAISED PAVMT MARK, TYPE B W/O FINAL SURF	25.00	EA	\$4.40	\$110.00		
710-11-101	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.46	GM	\$900.00	\$414.00		
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.23	GM	\$430.00	\$98.90		
710-111-31	THERMOPLASTIC, STANDARD-OTHER	1.035	GM	4770.84	4937.8194		
711-16-101	THERMOPLASTIC (RATE ADJUSTED),WHITE,	0.5175	GM	4004.23	2072.189025		
<b>TOTAL FOR EACH IMPROVEMENT</b>					<b>\$74,595.71</b>	<b>\$74,595.71</b>	<b>\$0.00</b>

Improvement				Engineering			
3/17/2021				280 Ft Uncurbed Section			
Location: NW MLK Jr Ave and NW 21st St							
Pay Item	Description	Total Quantity	Unit	Avg. Unit Price	Total Amount	Developer's Cost	City's Cost
102-1	MAINTENANCE OF TRAFFIC	1.00	LS	\$5000.00	\$5,000.00		
101-1	MOBILIZATION	1.00	LS	\$2000.00	\$2,000.00		
104-10-3	SEDIMENT BARRIER	240.00	LF	\$2.25	\$540.00		
110-1-1	CLEARING & GRUBBING	0.20	AC	\$18,000.00	\$3,600.00		
120-1	REGULAR EXCAVATION	400.00	CY	\$3.50	\$1,400.00		
120-2-2	BORROW EXCAVATION, TRUCK MEASURE	650.00	CY	\$17.00	\$11,050.00		
160-4	TYPE B STABILIZATION	373.33	SY	\$3.00	\$1,120.00		
160-0	DENSITY TESTING (1 LOCATION	1.00	EA	\$1000.00	\$1,000.00		
285-709	OPTIONAL BASE, BASE GROUP 09	373.33	SY	\$19.00	\$7,093.33		
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	30.80	TN	\$145.00	\$4,466.00		
337-7-25	ASPH CONC FC, INC BIT, FC-5, PG76-22	16.43	TN	\$140.00	\$2,299.73		
570-1-2	PERFORMANCE TURF, SOD	250.00	SY	\$4.50	\$1,125.00		
700-1-11	SINGLE POST SIGN, F&I GM,	2.00	AS	\$340.00	\$680.00		
					\$0.00		
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	2.00	AS	\$1,200.00	\$2,400.00		
700-1-50	SINGLE POST SIGN, RELOCATE	2.00	AS	\$220.00	\$440.00		
700-1-60	SINGLE POST SIGN, REMOVE	2.00	AS	\$30.00	\$60.00		
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	2.00	AS	\$4,500.00	\$9,000.00		
700-2-60	MULTI- POST SIGN, REMOVE	2.00	AS	\$750.00	\$1,500.00		
706-1-1	RAISED PAVMT MARK, TYPE B W/O FINAL SURF	25.00	EA	\$4.40	\$110.00		
710-11-101	PAINTED PAVT MARK, STD, WHITE, SOLID, 6"	0.46	GM	\$900.00	\$414.00		
710-11-131	PAINTED PAVT MARK, STD, WHITE, SKIP, 6"	0.23	GM	\$430.00	\$98.90		
710-111-31	THERMOPLASTIC, STANDARD-OTHER	1.035	GM	4770.84	4937.8194		
711-16-101	THERMOPLASTIC (RATE	0.5175	GM	4004.23	2072.189025		
<b>TOTAL FOR EACH IMPROVEMENT</b>					<b>\$62,406.98</b>	<b>\$12,837.11</b>	<b>\$49,569.86</b>

Item	Based on Spreadsheet	Adjustment Numbers Based on Developer's Agreement	Revised Numbers Based on Developer's Agreement
Total Cost	\$887,307.27		
Developer's Cost	\$451,482.00	"+85,825.26"	\$537,307.27
City's Cost	\$435,825.26	Exceeds 350k by	\$85,825.26



Developer's Cost = \$537K  
 City's Cost = \$350K  
 Total Cost = \$887K

- New Signal Warranted= \$330K
- Add WB left-turn lane
- Construction Cost= \$75K
- Developer Share = 53.30%

- Add an NB right-turn lane (warranted)
- Construction Cost = \$77K
- Developer Share = 11.81%

- NB left-turn lane storage adequate
- EB approach falling
- Add EB right-turn lane
- Construction Cost = \$62K
- Developer Share = 20.57%

- Additional EB left-turn lane storage
- Construction Cost = \$143K
- Developer Share = 31.68%

Add SB Right-turn Lane (warranted)  
 Total construction cost = \$67K  
 Developer Share = 0%

Add an EB Left-turn lane (safety)  
 Total construction cost = \$67K  
 Developer Share = 100%

Add WB Right-turn lane (warranted)  
 Total construction cost = \$67K  
 Developer Share = 100%

- Notes**
1. PM Peak Hour Project Trips.
  2. Construction cost is based Contractor's estimate
  3. Four-way Intersection Strain Pole Signal.
  4. Two-lane roadway.
  5. ROW acquisition cost not included.