Attachment D

Traffic Impact Statement

Gulliver Academy

Prepared for:
City of Coral Gables

JUNE 11, 2018

LOCHNER
Authored by: James E. Spinks III, PE, PTOE

PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida practicing with H.W. Lochner, a corporation authorized to operate as an engineering business, by the State of Florida Department of Professional Regulation, Board of Professional Engineers, and that I have prepared or approved the evaluation, findings, opinions, conclusions, or technical advice hereby for:

PROJECT: Gulliver Academy – Coral Gables

LOCATION: 12595 Red Road, Coral Gables, FL 33156

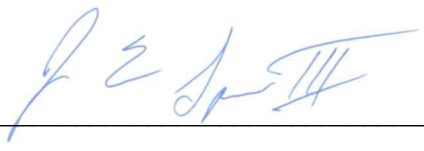
CLIENT: City of Coral Gable, Florida

I acknowledge that the procedures and references used to develop the results contained in these computations are standard to the professional practice of transportation engineering as applied through professional judgment and experience.

NAME: James E. Spinks III, PE, PTOE

P.E. NO.: 66775

DATE: June 11, 2019

SIGNATURE: 

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1. Introduction

The purpose of this report is to document the results of the Traffic Impact Analysis for the proposed expansion of Gulliver Academy, an existing PK3 through 8th grade school. The proposed project consists of expanding from the existing maximum 1,162 student population to 1,260 students, an increase of 98 students.

H.W. Lochner, Inc. has completed this traffic impact analysis for submittal to the City of Coral Gables. The purpose of the study is to assess the project's impact on the surrounding transportation network and determine if adequate capacity is available to support future demand.

The study's methodology is consistent with the requirements outlined by the City of Gables for traffic impact analyses in the "Traffic Impact Study Application Process and Methodology" document. This report summarizes the data collection, project trip generation and distribution, and capacity analyses. The applicant submitted a Trip Generation Letter on February 8, 2019, included in **Appendix A**, and a scoping meeting occurred on March 21, 2019. A proposal and fee was submitted to the applicant on March 28, 2019, with 5 days of the scoping meeting, which outlined the terms and conditions of the study performance, scope, and estimated fee.

The following sections summarize the results of the traffic study, and provide a list of options to be considered to mitigate any potential impacts of the project.

1.1. Project Description

This project will be built in one phase; and projected opening will occur in fall 2019. The existing Gulliver School consists of 1,162 students and proposes to increase to 1,260 students.

1.2. Project Location

The project site is located at 12595 Red Road within the City of Coral Gables, Florida. **Figure 1** depicts the general location of the "Gulliver School" development site and the study area. Access to the site is gained from Old Cutler Road.

1.3. Traffic Impact Study Area

The project site is limited to SW 62 Avenue to the west, Old Cutler Road to the east, SW 128 Street to the south, and SW 120 Street to the north, as shown in **Figure 1**.

Since the proposed site is easily accessed via the regional roadway system, the area of influence where most of the traffic entering and exiting the project will be concentrated, is limited to adjacent roadways and intersections in close proximity to the site.

Figure 1 – Project Location Map

Source: Google Earth Aerial Photograph

2. Data Collection

2.1. Existing Transportation Characteristics

Miami Dade County Transit (MDT) provides bus transit service routes in the vicinity of the site on route 136 along Old Cutler Roads. Transit route maps and service schedules are shown in **Appendix B**.

2.2. Traffic Count Data

As part of a preliminary study of the existing conditions, traffic data were collected on the defined intersections within the project study area. The traffic volume data includes two-hour intersection turning movement volumes, during the AM, PM and Off-peak (school dismissal) hours. In addition, bi-directional approach counts were also collected. Locations of the traffic data collection are shown on **Figure 1.**

2.2.1. Turning Movement Counts (TMC's)

Turning movement counts (TMC's) were collected during the A.M. (7:00–9:00), P.M. (4:00–6:00) and off-peak (3:15 – 4:15) on a typical weekday within the determined traffic study area as listed below:

1. SW 120 Street at SW 62 Avenue
2. SW 120 Street at Pine Needle Lane
3. SW 120 Street at Old Cutler Road
4. SW 128 Street at SW 62 Avenue
5. SW 128 Street at Pine Needle Lane
6. SW 128 Street at Old Cutler Road
7. Old Cutler Road at Project D/W (North)
8. Old Cutler Road at Project D/W (South)

A seasonal factor obtained from the 2017 FDOT Florida Traffic Information Online was used to adjust the raw turning movement counts to peak season turning movement counts.

The data collection date and corresponding peak season conversion factors are shown in **Table 2-1**. Turning movement counts, 24-hour volume counts, and peak season conversion factors are provided in **Appendix C**.

Table 2-1 – Data Collection Summary

Intersection		Date	Peak Season Factor
1	SW 120 Street at SW 62 Avenue	5/23/19	1.03
2	SW 120 Street at Pine Needle Lane	5/27/19*	1.03
3	SW 120 Street at Old Cutler Road	5/23/19	1.03
4	SW 128 Street at SW 62 Avenue	5/27/19*	1.03
5	SW 128 Street at Pine Needle Lane	5/27/19*	1.03
6	SW 128 Street at Old Cutler Road	5/27/19*	1.03
7	Old Cutler Road at Project D/W (North)	5/23/19	1.03
8	Old Cutler Road at Project D/W (South)	5/23/19	1.03

* - School year ended on 5/24/19

2.2.2. 24-Hour Bi-Directional Machine Counts

24-Hour Bi-Directional Machine Counts were collected during a typical weekday at the following locations:

1. SW 120 Street, between Old Cutler Road and Pine Needle Lane
2. SW 128 Street, between Old Cutler Road and Pine Needle Lane
3. Old Cutler Road, between SW 120 Street and Project D/W (North)
4. Old Cutler Road, between SW 128 Street and Project D/W (South)

2.2.3. Segment Traffic Volumes

Segment traffic volumes for the A.M. and P.M. peak period will be calculated from the intersection turning movement counts (TMCs).

2.3. Additional Traffic Data Collection

2.3.1. Signals Timing Data – Existing signal timing and phasing was obtained from the Miami-Dade County Advanced Traffic Management System (ATMS) Website, and is included in **Appendix D**.

2.3.2. Peak Hour Factors – A peak hour factor was used for hourly variation of the traffic flow in the peak period, as prescribed by the Florida Department of Transportation (FDOT) within the Quality/Level of Service Handbook. The peak hour factors for each intersection were obtained from the collected turning movement counts.

2.3.3. Peak Season Adjustment Factors – These factors will be used to adjust raw counts to reflect average annual for typical weekday and weekday conditions. These factors will be obtained from the latest available FDOT Florida Traffic Online database. The peak seasonal factor report is included in **Appendix C**.

2.3.4. Other Data - In addition to the traffic data counts, existing characteristics of the roadway network including intersection geometry, lane geometry and posted speed limits within the traffic study area were verified.

A compounded growth rate factor of 0.5% was applied to all of the previously collected traffic data counts to forecast fall 2019 conditions. The growth rate calculations were based on historical traffic counts obtained from the latest FDOT Florida Traffic Online database. Growth rate data is included in **Appendix F**.

2.4. Roadway Description

The following sections describe the physical characteristics of the roadways within the traffic impact area.

- **SW 120 Street** - Two-lane undivided local road, running in the east-west direction. The posted speed limit in the vicinity of the project is 35 mph.
- **SW 128 Street** - Two-lane undivided local road, running in the east-west direction. The posted speed limit in the vicinity of the project is 30 mph.
- **Pine Needle Lane -** Two-lane undivided local road, running in the north-south direction. The posted speed limit in the vicinity of the project is 30 mph.
- **SW 62 Avenue -** Two-lane undivided local road, running in the north-south direction. The posted speed limit in the vicinity of the project is 30 mph.
- **Old Cutler Road -** Two-lane undivided County road, running in the north-south direction. The posted speed limit in the vicinity of the project is 35 mph.

2.5. Intersections Descriptions

There are 2 signalized intersections and 6 un-signalized intersections located within the project study area, as follows:

2.5.1. Signalized Intersections

1. Old Cutler Road at SW 120 Street
2. Old Cutler Road at SW 128 Street

2.5.2. Un-signalized Intersections

1. SW 120 Street at Pine Needle Lane
2. SW 120 Street at SW 62 Avenue
3. SW 128 Street at Pine Needle Lane
4. SW 128 Street at SW 62 Avenue
5. Old Cutler Road at Project D/W (North)
6. Old Cutler Road at Project D/W (South)

3. Existing Conditions Analysis

Analysis of existing traffic conditions was performed for the AM, PM and Off-Peak period conditions on the roadway segments within the study area. The Florida Department of Transportation (FDOT) Generalized Level of Service (LOS) Tables were used to identify the vehicular capacity on the roadway segments. Intersection Levels of Service were determined for AM, PM and Off-Peak period conditions using Synchro based on the procedures of the Highway Capacity Manual (HCM) at all intersections within the study area. The levels of service thresholds used for the analysis are based on the "Generalized" tables for Urbanized Areas within the FDOT Level of Service Handbook for the Miami-Dade County adopted threshold, which is Level of Service "E".

Level of Service (LOS) is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six (6) LOS are defined for each type of facility that has HCM analysis procedures available. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions and the driver's perception of those conditions. Safety is not included in the measures that establish service levels. Eight (8) LOS are defined for each intersection analyzed using ICU procedures. Letters designate each level, ranging from A to H. Similar to the HCM method, LOS A signifies that an intersection has no congestion and LOS H represents an intersection that is over capacity.

3.1. Intersection Level of Service Summary

The collected turning movement counts were converted to average turning movement volumes by applying a peak season conversion factor (PSCF). The peak season conversion factors were obtained from the latest Florida Traffic Information & Highway Online database. The background growth rate (0.50%) determined in the future background traffic conditions section was applied to the counts to establish future (2019) conditions.

The analysis shows that all intersections within the study area currently operate at acceptable Levels of Service during the AM, PM and Off-Peak hours, with exception of the Old Cutler Road at School Driveway (North) that operates below the acceptable level of service during the AM and Off-Peak hours, school start and dismissal, respectively.

The existing intersection levels of service analysis worksheets are summarized on **Figures 2, 3** and **4** and included in **Appendix E**.

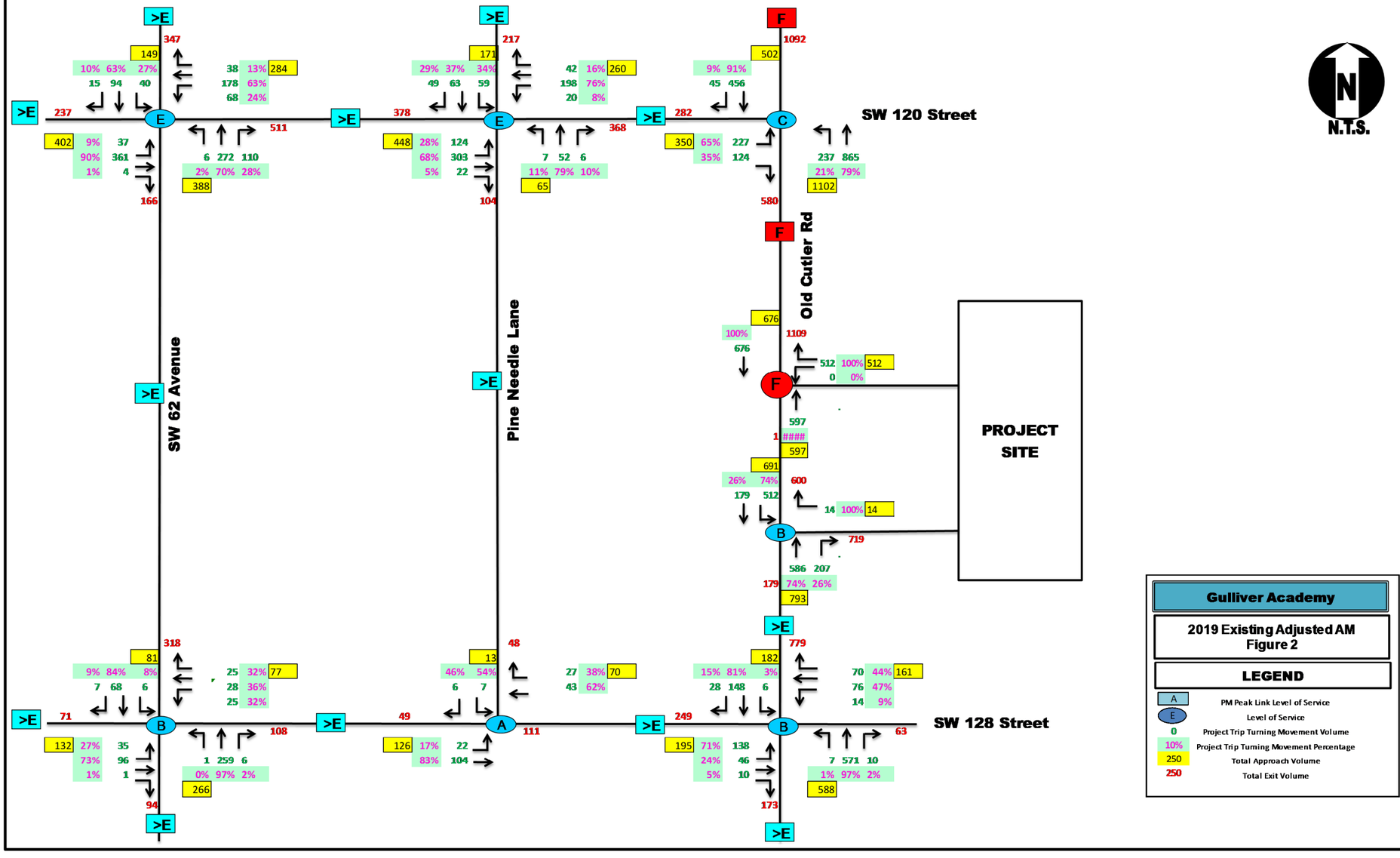
3.2. Roadway Segment Level of Service Summary

The AM, PM and Off-peak hour weekday link volumes within the study area were estimated using the adjusted peak hour turning movement counts. The resulting link and intersection data are summarized on **Figures 2, 3** and **4**.

The link maximum service volumes used in this study are derived from the 2012 FDOT Generalized Level of Service Tables. **Table 3-1** includes facility type, number of travel lanes, existing peak hour volumes, peak hour maximum service volumes, the adopted level of service standard and AM and PM peak hour level of service.

All the arterial links operate at acceptable levels of service, with the exception of Old Cutler Road which operates below acceptable levels of service during the AM, PM and Off-Peak periods.

Gulliver Academy Expansion - 2019 Existing AM



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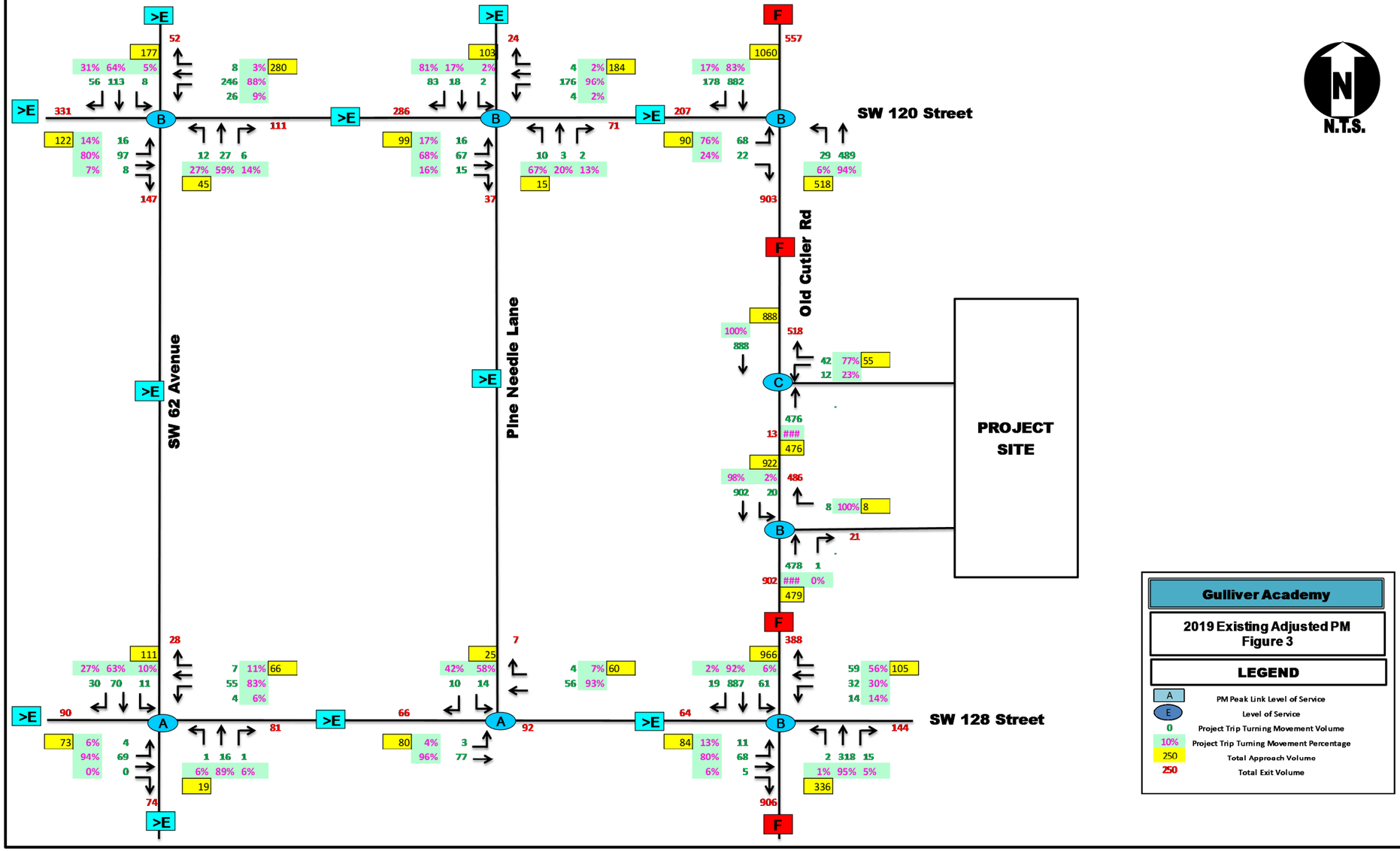
Gulliver Academy Expansion - 2019 Existing PM



Gulliver Academy Expansion - 2019 Existing Off Peak

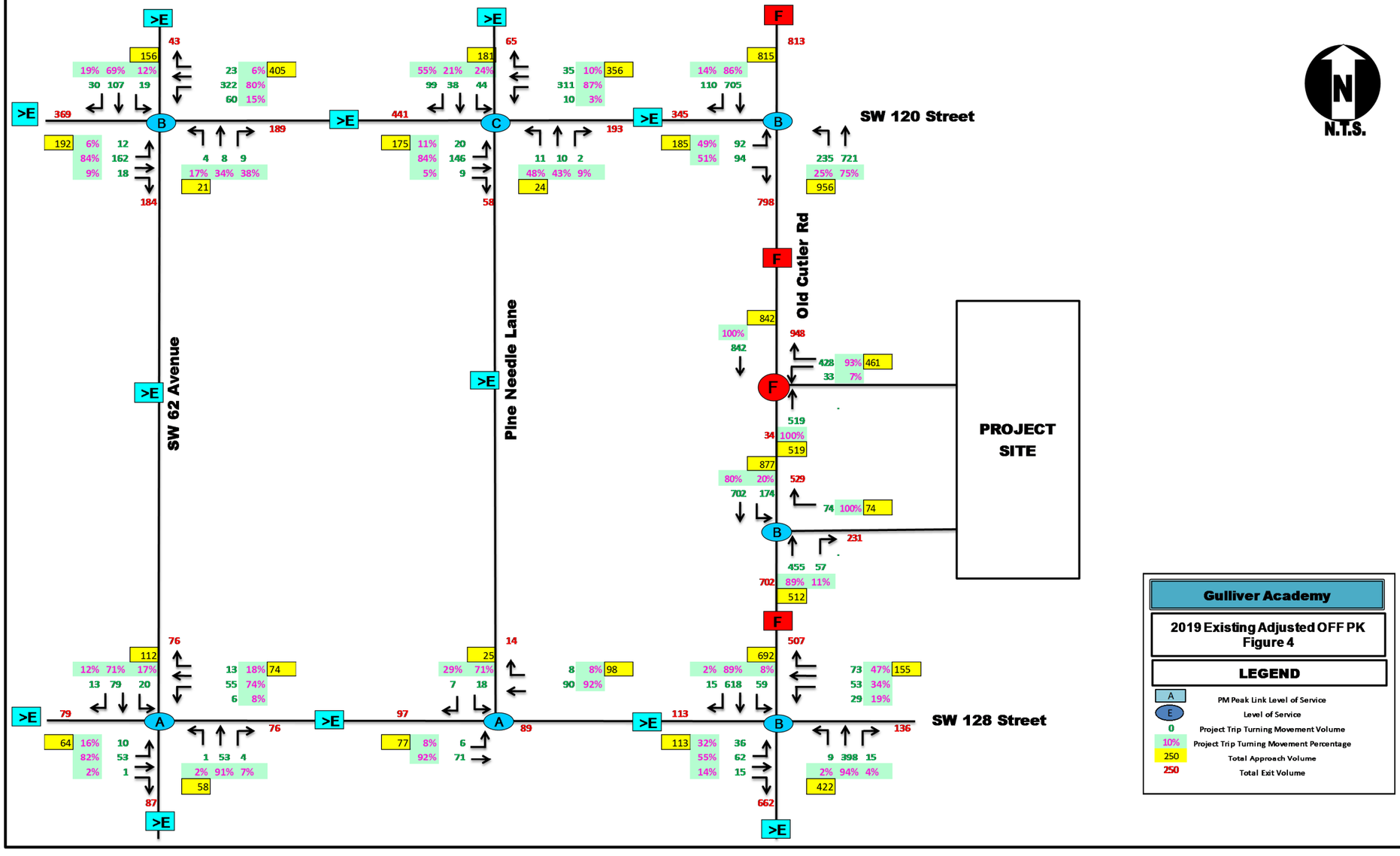


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Table 3-1 – Existing Conditions Segment Analysis – AM, PM and Off-Peak Hour

Peak Hour Volume Level Of Service Analysis (AM & PM & Off Peak)								
LOCATION	ROADWAY TYPE	PH LOS "E" Volume*	AM Peak Hour		PM Peak Hour		Off Peak Hour	
			Existing Peak Hour (PH) Volume**	Existing Peak Hour LOS	Existing Peak Hour (PH) Volume**	Existing Peak Hour LOS	Existing Peak Hour (PH) Volume**	Existing Peak Hour LOS
SW 120 Street - W. of SW 62 Avenue	2LU	987	639	E or better	452	E or better	560	E or better
SW 120 Street - Between SW 62 Avenue and Pine Needle Lane	2LU	987	732	E or better	379	E or better	580	E or better
SW 120 Street - Between Pine Needle Lane and Old Cutler Rd	2LU	987	610	E or better	274	E or better	542	E or better
SW 128 Street - W. of SW 62 Avenue	2LU	987	203	E or better	163	E or better	143	E or better
SW 128 Street - Between SW 62 Avenue and Pine Needle Lane	2LU	987	203	E or better	146	E or better	151	E or better
SW 128 Street - Between Pine Needle Lane and Old Cutler Rd	2LU	987	265	E or better	144	E or better	211	E or better
SW 128 Street - E. of Old Cutler Rd	2LU	987	223	E or better	249	E or better	290	E or better
SW 62 Avenue - Between SW 120 Street and SW 128 Street	2LU	987	470	E or better	157	E or better	133	E or better
Pine Needle Lane - Between SW 120 Street and SW 128 Street	2LU	987	78	E or better	40	E or better	48	E or better
Old Cutler Rd - N. of SW 120 Street	2LU	1,161	1,593	F	1,617	F	1,627	F
Old Cutler Rd - Between SW 120 Street and Project D/W	2LU	1,161	1,778	F	1,406	F	1,797	F
Old Cutler Rd - Between SW 128 Street and Project D/W	2LU	1,161	961	E or better	1,354	F	1,199	F
Old Cutler Rd - S. Of SW 128 Street	2LU	1,161	761	E or better	1,242	F	1,085	E or better

* - 2012 Quality/LOS Handbook - Generalized Peak Hour Two-Way Volumes for Florida's Urbanized Areas

** - 2019 Collected Data

4. Future Traffic Projections

Each phase of the analysis of future traffic projections within the study area was performed for two scenarios:

a) Background traffic plus committed development traffic.
b) Total traffic which includes background traffic, committed development traffic, plus project traffic.

The purpose of the analysis is to isolate the impacts of the traffic associated with the project due to the population growth and construction of new developments.

The following sections describe the process used to determine future roadway improvements planned by the City, County, and state agencies; the methodology used to estimate background traffic; traffic from committed developments; and trips associated with the proposed site.

4.1. Planned and Programmed Roadway Improvements

Programmed (funded and/or committed) transportation improvements within the traffic impact study area were collected using Florida Department of Transportation (FDOT) five year work program, Miami-Dade County's Transportation Planning Organization (TPO) Transportation Improvement Program (TIP) and the Long Range Transportation Plan (LRTP). There are no capacity improvement projects funded for construction prior to or on the proposed project site phased opening year, planned for 2019. Therefore, the existing roadway geometry within the study area was used as the future roadway network in the future analysis.

4.2. Background Traffic

Background traffic was calculated to account for committed traffic and growth in the area. Future background traffic for this study was developed by applying a yearly growth rate to the seasonally adjusted 2019 traffic counts to estimate the background traffic for the year 2019, which is the project's anticipated phased build out years.

The growth rate utilized was 0.50 percent (%) to represent the expected traffic growth within the entire traffic impact area. This growth rate was then applied to the 2019 traffic counts to estimate the future background traffic volumes within the traffic impact area. **Table 4-1** provides a summary of the analysis. The following FDOT count stations were referenced for this analysis:

- 87-7060: SW 67 Avenue, 300 FT N. of SW 123 Street
- 87-8300: SW 75 Avenue, 200' NORTH OF OLD CUTLER RD
- 87-8312: Old Cutler Road, 200' EAST OF LUDLAM RD
- 87-8313: Old Cutler Road, 200' SOUTH OF SW 120TH STREET
- 87-5802: SW 120 ST, 200' WEST OF SW 68 CT (2011 OFF SYSTEM CYCLE)

Table 4-1 –2019 Growth Analysis Summary

Growth Rate			
Roadway Name	**Location**	**Station No.**	**Annual Historic Growth Rate**
SW 67 Avenue	300 FT N. of SW 123 Street	87-7060	-0.46%
SW 75 Avenue	200' NORTH OF OLD CUTLER RD	87-8300	-1.03%
Old Cutler Road	200' EAST OF LUDLAM RD	87-8312	0.08%
Old Cutler Road	200' SOUTH OF SW 120TH STREET	87-8313	-0.43%
SW 120 ST	200' WEST OF SW 68 CT (2011 OFF SYSTEM CYCLE)	87-5802	-0.47%

Average Area Growth Rate:	-0.462%
Recommended Growth Rate:	**0.50%**

Traffic volumes for area roadways were used to calculate a linear growth rate. The growth rate calculations were based on historical traffic counts obtained from the latest FDOT Florida Traffic Online database. Growth rate data is included in **Appendix F**.

4.3. Committed Developments

No committed development information was utilized in this analysis.

4.4. Future Background Analysis

Two separate future background conditions peak hour capacity analyses were performed.

- Segment level of service analysis
- Intersection capacity analysis

Table 4-2 presents the results of the intersection capacity analysis. As shown for the existing conditions, an analysis of existing traffic, plus background, plus committed traffic, shows all the study intersections within the study area operate at or above the adopted level of service standards, with exception of Old Cutler Road at School Driveway (north) during the AM and Off-Peak periods, school start and dismissal. This is consistent with the existing conditions.

Figure 5 summarizes the A.M. Total Background development traffic within the study area. Detailed information from the intersection capacity analysis is included in **Appendix G**.

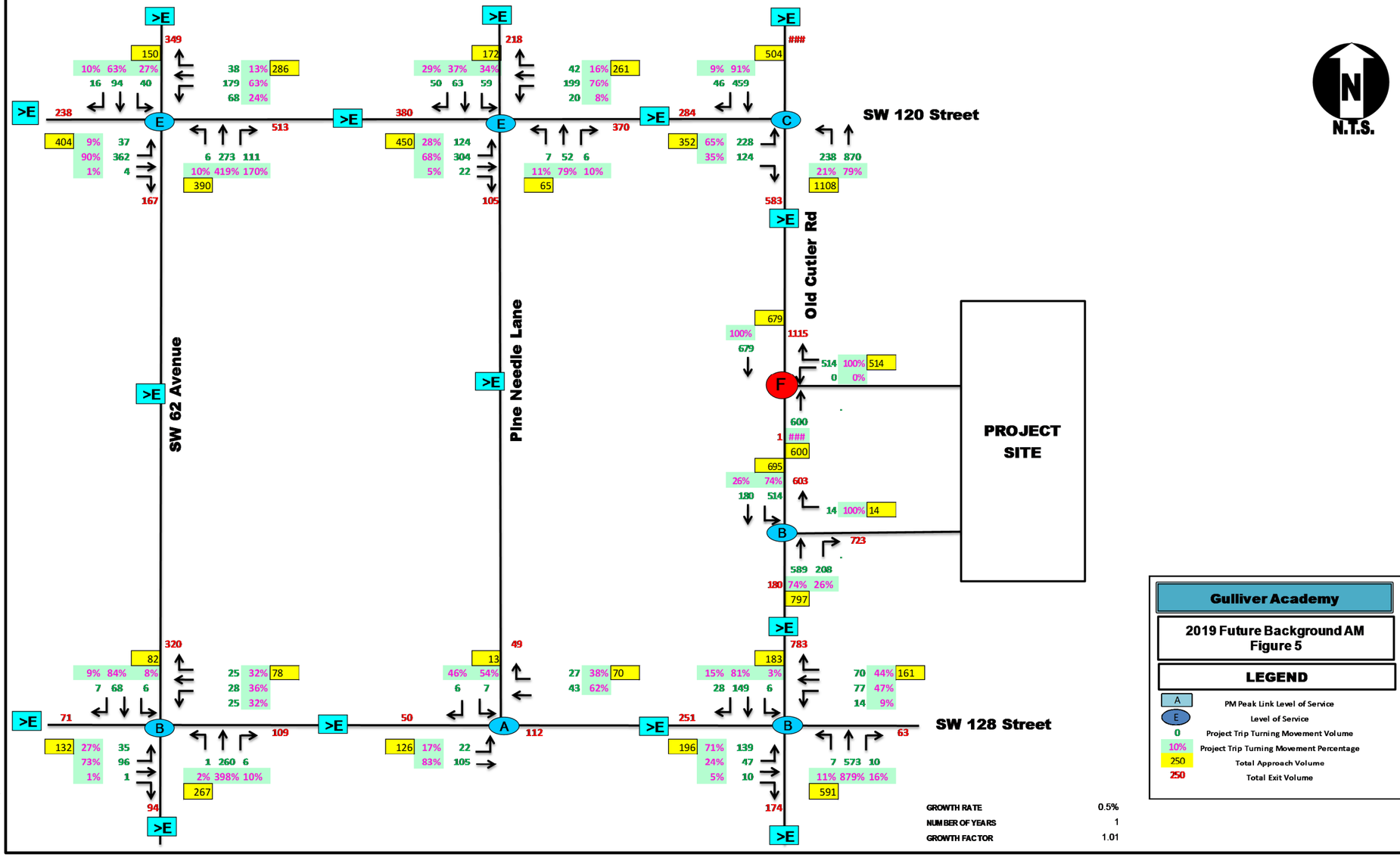
Figure 6 summarizes the P.M. Total Background development traffic within the study area. Detailed information from the intersection capacity analysis is included in **Appendix G**.

Figure 7 summarizes the Off-Peak Total Background development traffic within the study area. Detailed information from the intersection capacity analysis is included in **Appendix G**.

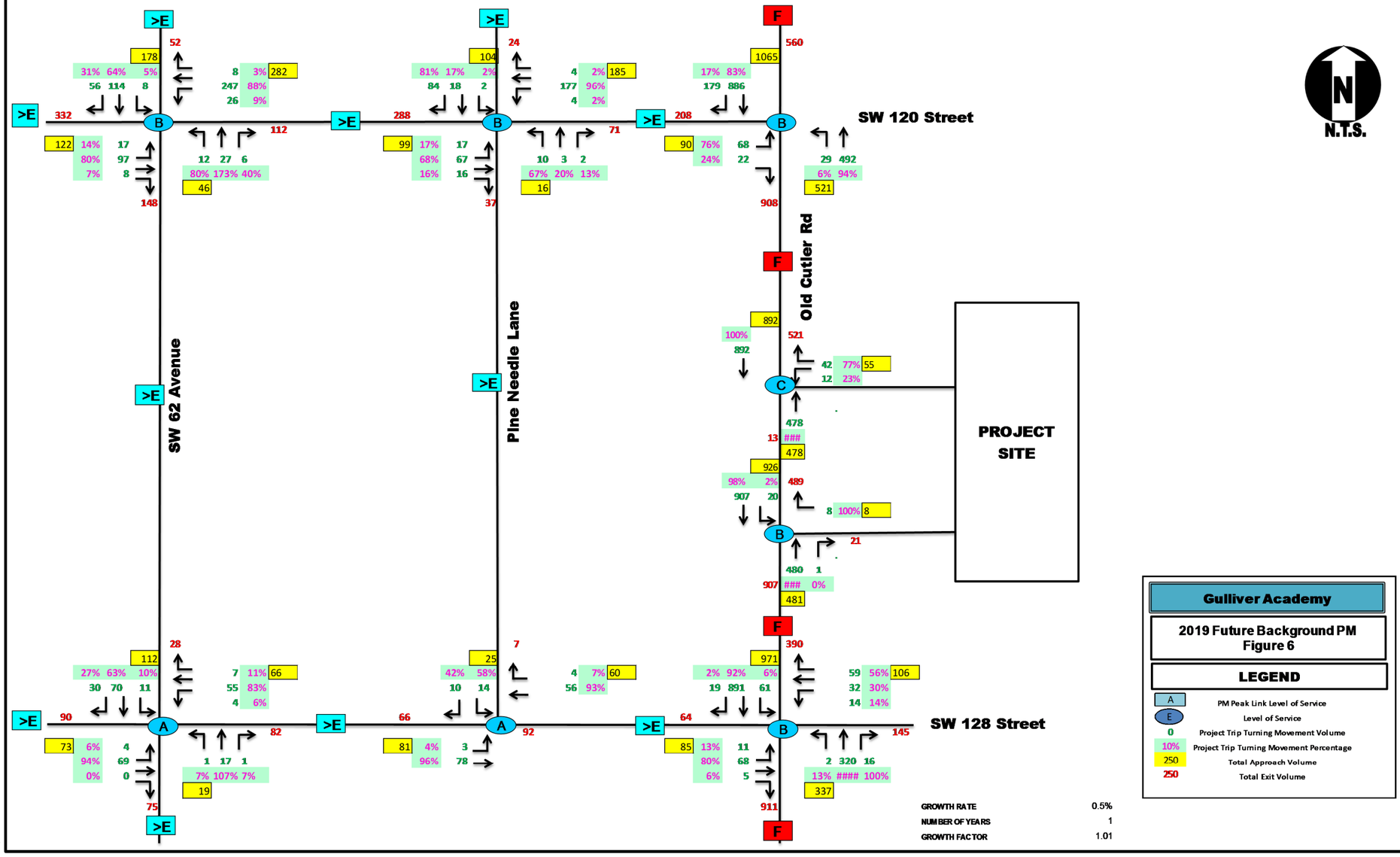
Table 4-1 – 2019 Future Background Intersection Conditions

INTERSECTION		Future Background 2019		Future Background 2019		Future Background 2019	
		AM		PM		OFF PEAK	
		Delay	LOS	Delay	LOS	Delay	LOS
SW 120 Street	SW 62 Avenue	38.8	E	10.9	B	11.0	B
	Pine Needle Lane	47.3	E	11.7	B	11.8	B
	Old Cutler Road	25.9	C	13.8	B	14.2	B
SW 128 Street	SW 62 Avenue	10.3	B	7.8	A	7.8	A
	Pine Needle Lane	9.3	A	9.1	A	9.2	A
	Old Cutler Road	16.8	B	12.0	B	12.2	B
Old Cutler Road	Project Driveway (North)	134.0	F	18.3	C	123.0	F
	Project Driveway (South)	14.2	B	11.6	B	11.6	B

Gulliver Academy Expansion - 2019 Future Background AM



Gulliver Academy Expansion - 2019 Future Background PM



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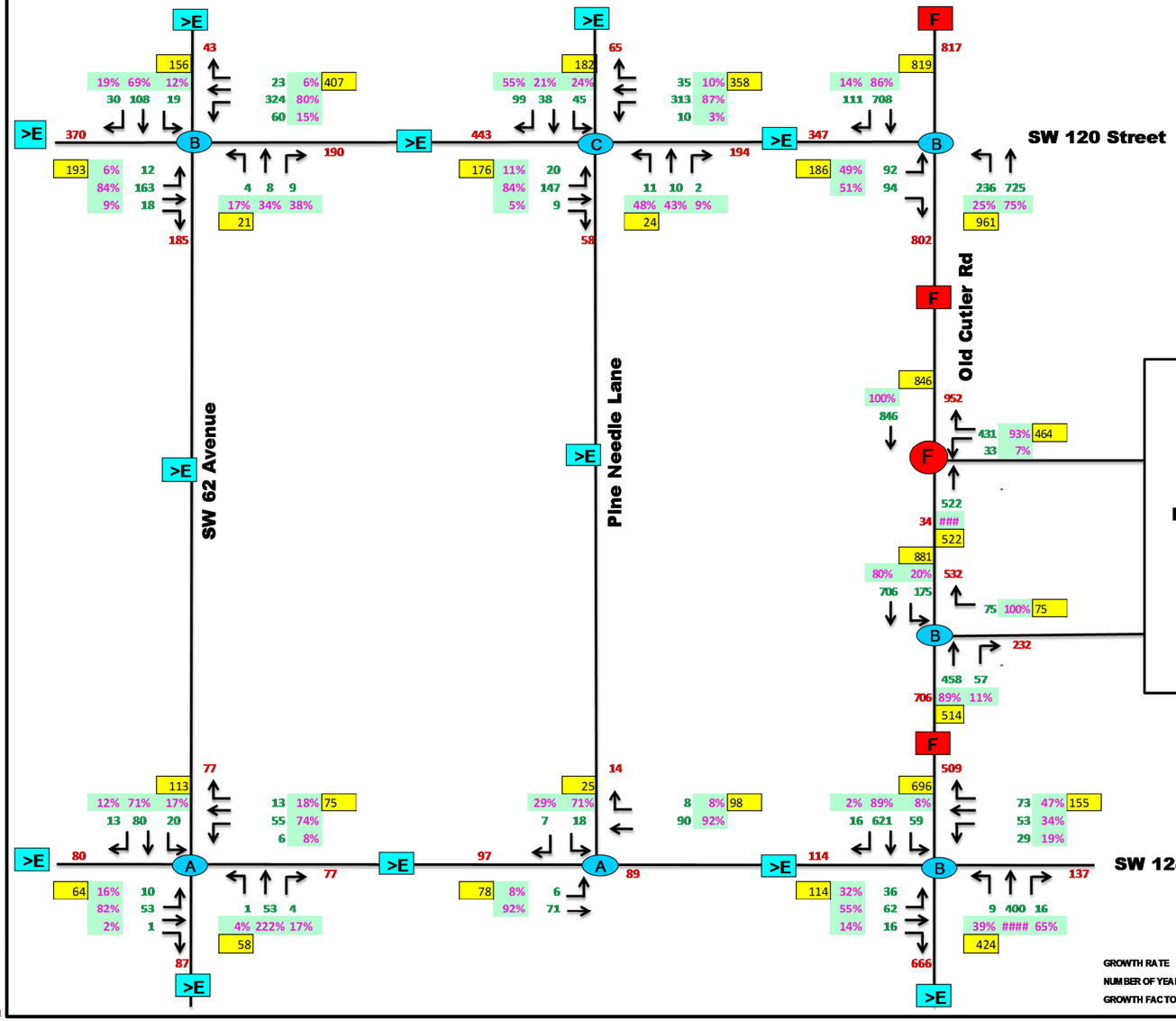
Gulliver Academy Expansion - 2019 Future Background Off Peak



4.5. Project Traffic

Project traffic was developed using trip generation rates from The Trip Generation Manual, 10th Edition, by the Institute of Transportation Engineers (ITE).

4.5.1. Trip Generation

Trip generation is the method by which the amount of traffic, or the number of trips to and from a site, is estimated. The Trip Generation Manual, 10th Edition, by the Institute of Transportation Engineers (ITE), is a common source of trip generation characteristics, providing data on a variety of development types on daily and peak-hour basis.

Based upon the ITE land use codes, the proposed project's trip generation was determined, as follows:

- ITE Land Use Code 534 (Private School (K-8))

Internal Capture Volumes
Internal capture trips are trips that occur between various land uses within the development without needing to access the external roadway network. Internal capture is not expected for the project.

Pass-By Capture Volumes
A portion of the trips at the project driveways will be the result of the project's new trips. Pass-by trips are stops on the way from an origin to a primary trip destination without a route diversion and that are existing trips on the roadway network. Pass by trips are not expected for the project.

Net New Project Trips
Net new, external vehicle trips are equal to the gross project trips minus the internal capture trips and the pass-by capture trips.

Table 4-3 shows the project trip generation for the peak periods for the project site. Detailed trip generation calculations are contained in **Appendix I**.

Table 4-3 – Trip Generation

AM Trip Generation - AM Peak Hour (7 AM to 9 AM)																	
Land Uses	ITE Land Use Code	Description	Unit	Total Units	Rate/Unit	Trips*	Driveway Volumes				Transit Reduction		Total Trips	Directional Distribution			
							Entering		Exiting		%	Trips		Entering		Exiting	
EXISTING																	
Institutional	**534**	Private School (K-8)	Students	**1,162**	**0.91**	1058	**55.0%**	582	**45.0%**	476	0%	0	1058	**55.0%**	582	**45.0%**	476
FUTURE																	
Institutional	**534**	Private School (K-8)	Students	**1,260**	**0.91**	1147	**55.0%**	631	**45.0%**	516	0%	0	1147	**55.0%**	631	**45.0%**	516
NET DIFFERENCE																	
Total														**Entering**	**49**	**Exiting**	**40**

* - Rounded up to the nearest w hole number

Trip Generation - PM Peak Hour (4PM to 6PM)																	
Land Uses	ITE Land Use Code	Description	Unit	Total Units	Rate/Unit	Trips*	Driveway Volumes				Transit Reduction		Total Trips	Directional Distribution			
							Entering		Exiting		%	Trips		Entering		Exiting	
EXISTING																	
Institutional	**534**	Private School (K-8)	Students	**1,162**	**0.26**	303	**46.0%**	139	**54.0%**	164	0%	0	303	**46.0%**	139	**54.0%**	164
FUTURE																	
Institutional	**534**	Private School (K-8)	Students	**1,260**	**0.26**	328	**46.0%**	151	**54.0%**	177	0%	0	328	**46.0%**	151	**54.0%**	177
NET DIFFERENCE																	
Total														**Entering**	**12**	**Exiting**	**14**

* - Rounded up to the nearest w hole number

Trip Generation - PM Peak Hour of Generator																	
Land Uses	ITE Land Use Code	Description	Unit	Total Units	Rate/Unit	Trips*	Driveway Volumes				Transit Reduction		Total Trips	Directional Distribution			
							Entering		Exiting		%	Trips		Entering		Exiting	
EXISTING																	
Institutional	**534**	Private School (K-8)	Students	**1,162**	**0.62**	721	**47.0%**	339	**53.0%**	382	0%	0	721	**47.0%**	339	**53.0%**	382
FUTURE																	
Institutional	**534**	Private School (K-8)	Students	**1,260**	**0.62**	782	**47.0%**	368	**53.0%**	414	0%	0	782	**47.0%**	368	**53.0%**	414
NET DIFFERENCE																	
Total														**Entering**	**29**	**Exiting**	**32**

* - Rounded up to the nearest w hole number

4.5.2. Trip Distribution

The likely distribution of project traffic was forecast for trips expected to be generated by the project. The trip distribution was based on a cardinal trip distribution obtained from the 2040 Cost Feasible Plan for the project site's traffic analysis zone (TAZ 1134). The cardinal trip distribution for TAZ 1134 is provided in **Table 4-4**. The detailed cardinal distribution is included in **Appendix H**.

Table 4-1 –Cardinal Distribution

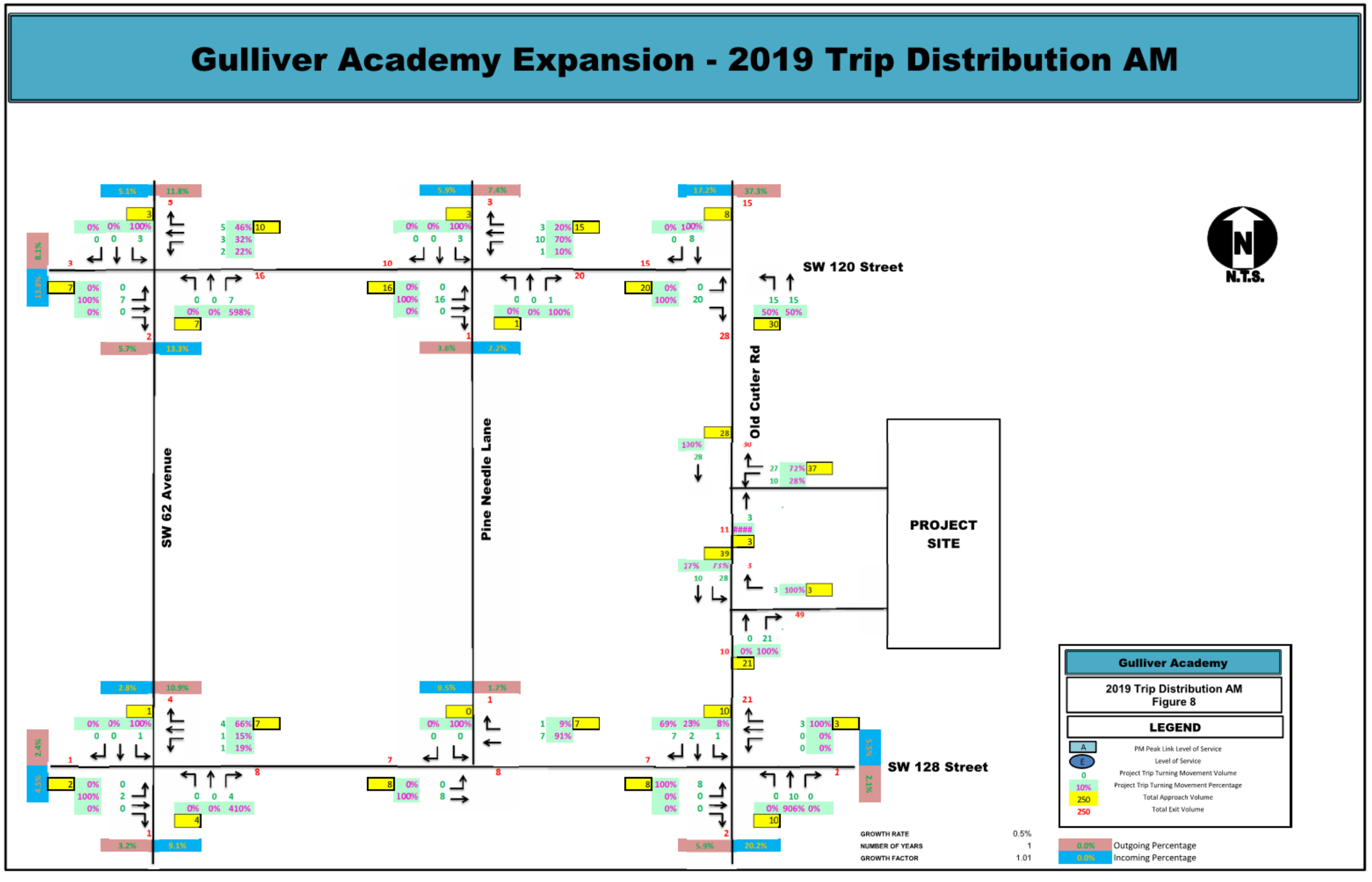
Cardinal Direction	Percentage of Trips
NNE	24.0
ENE	0.9
ESE	0.0
SSE	0.0
SSW	6.6
WSW	17.3
WNW	19.9
NNW	31.4
Total	**100.00%**

4.5.3. Trip Assignment

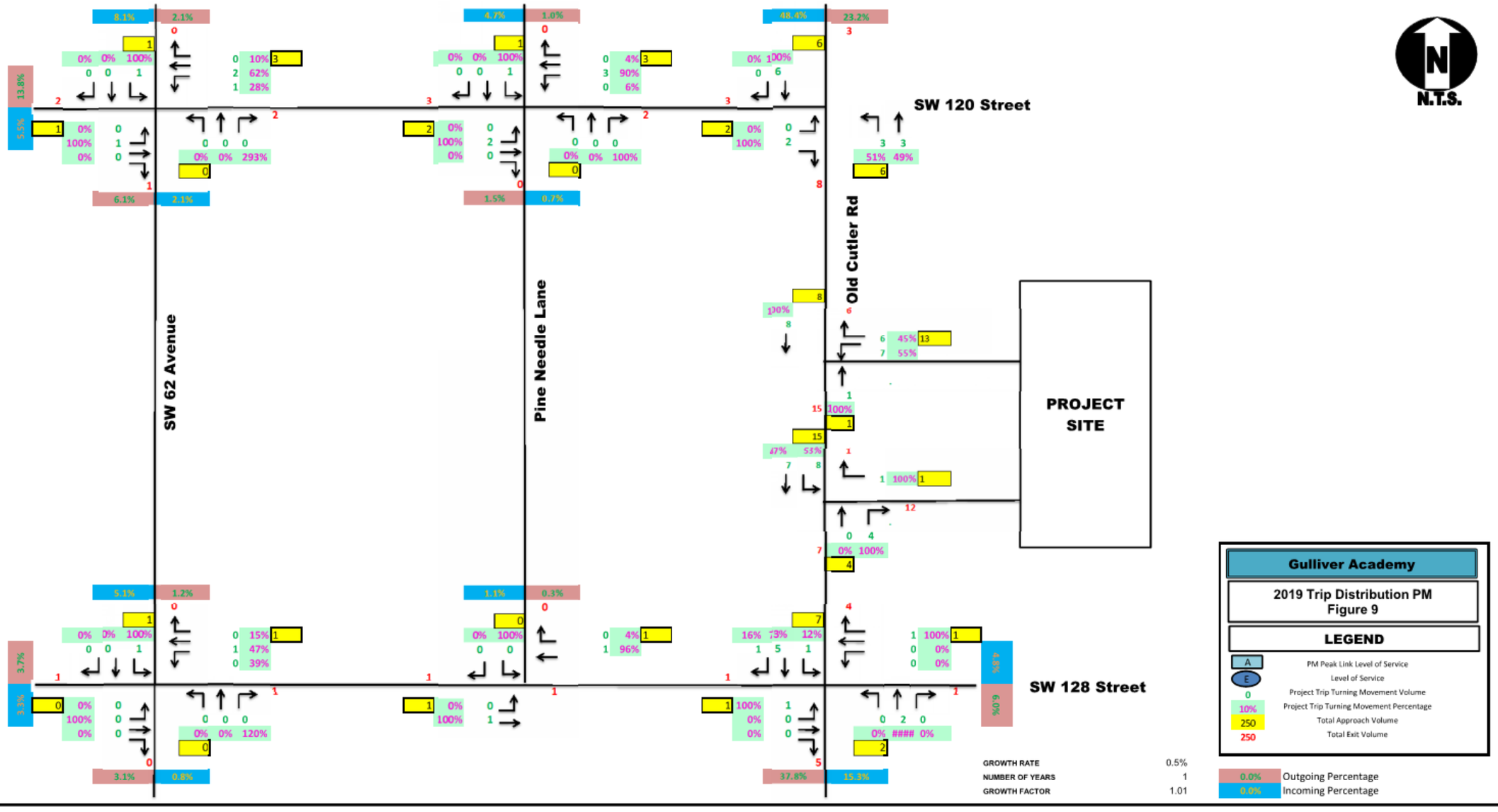
Based upon the trip distribution described in the previous section, the total weekday AM and PM peak project trips were assigned to the roadway network. **Figures 8, 9 and 10** show the trip distribution and assignment on the roadway network for each of the sceneries, during the peak periods.

Trip generation analysis data is included in **Appendix I**.

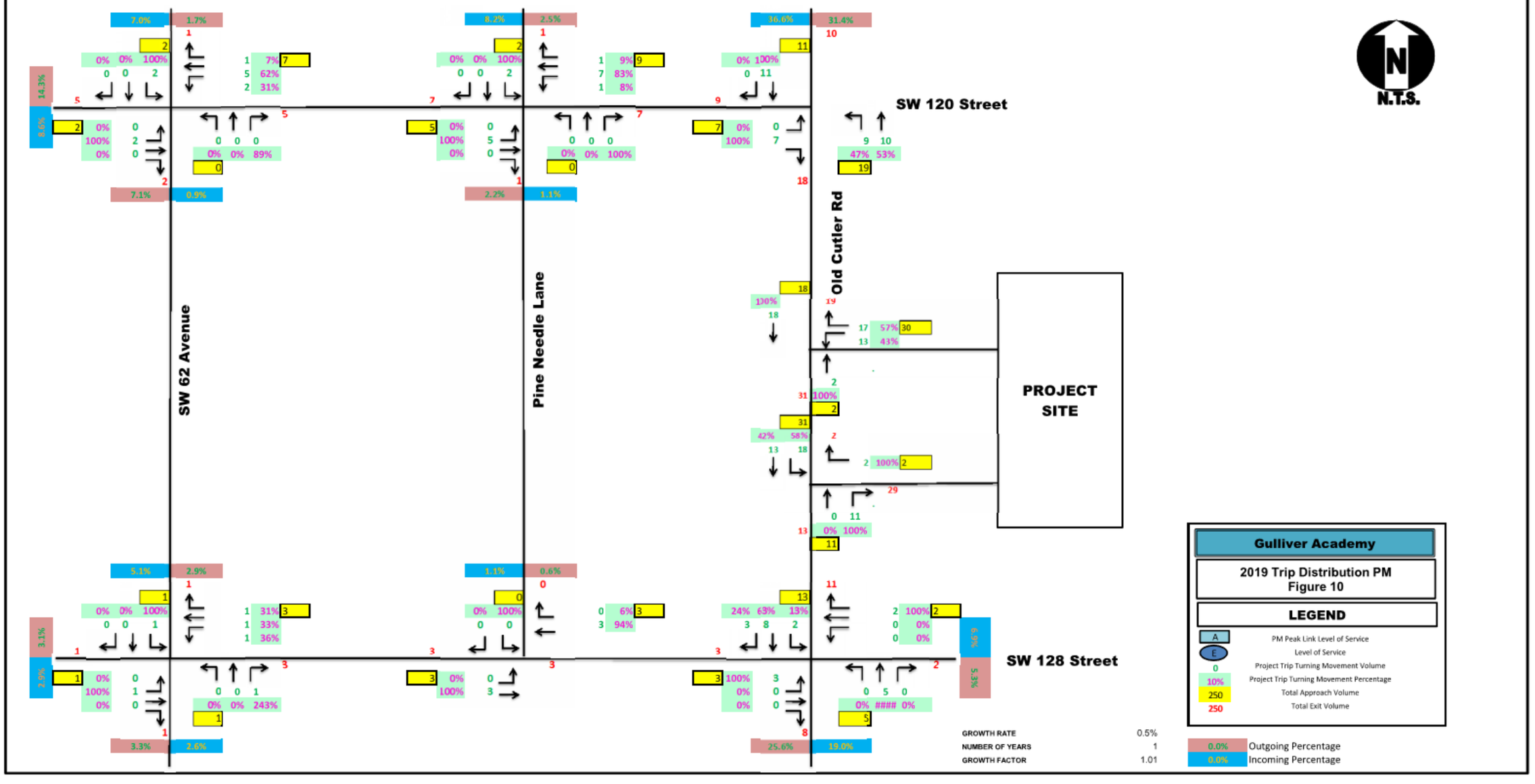
Gulliver Academy Expansion - 2019 Trip Distribution AM



Gulliver Academy Expansion - 2019 Trip Distribution PM



Gulliver Academy Expansion - 2019 Trip Distribution Off Peak



5. Future Total Traffic Analysis

Two separate future total conditions peak hour capacity analyses were performed.

- Segment level of service analysis
- Intersection capacity analysis

The Levels of Service thresholds used for the analysis are based on the "Generalized" tables for Urbanized Areas within the FDOT Level of Service Handbook adopted for Miami-Dade County which is LOS E. Level of service thresholds are discussed in more detail in Section 3.0 of this document.

5.1. Roadway Segment Level of Service Summary

Tables 5-1, 5-2 and **5-3** summarizes the arterial analysis of existing, background plus committed, and project traffic vehicular volumes for the AM, PM and Off-Peak periods, respectively. All the arterial links operate at acceptable levels of service, with the exception of Old Cutler Road which operates below acceptable levels of service during the AM, PM and Off-Peak periods. Each of the roadway segments within the study area will operate at the same level of service, regardless of the addition of project traffic. This is consistent with existing conditions.

5.2. Intersection Level of Service Summary

Intersection levels of service were determined for the AM, PM and Off-peak period conditions using the latest version of Synchro based on the procedures of the Highway Capacity Manual. Intersection signal timing green splits were optimized for all future traffic analysis with the cycle lengths held consistent with existing conditions, as shown on the Synchro output sheets in **Appendix J**.

The intersection level of service analysis performed for future conditions including the project traffic showed that each of the intersections performed at the same level of service as the future background conditions without including the project traffic, with exception to SW 120 Street at Pine Needle Lane during the AM peak period.

Figures 11, 12 and **13** summarizes the future total (existing, background plus committed, and project traffic vehicular volumes) development traffic, for each of the sceneries, during the AM, PM and Off-Peak period, within the study area.

Detailed information from the intersection capacity analysis is included in **Appendix J**.

Table 5-1 – 2019 AM Future Total Traffic Intersection Conditions

Peak Hour Volume Level Of Service Analysis (AM)												
LOCATION	ROADWAY TYPE	Existing Peak Hour (PH) Volume**	PH LOS "E" Volume*	Existing Peak Hour LOS	Future Roadway Type (2021)			Future without project trips		Future with project trips		
					Programmed Improvements	Future Roadway Type	Future PH LOS "E" Volume*	Future PH Volume	Future Peak Hour LOS	Project Trips	Future PH Volume	Future PH LOS
SW 120 Street - W. of SW 62 Avenue	2LU	639	987	E or better	NO	2LU	987	642	E or better	10	652	E or better
SW 120 Street - Between SW 62 Avenue and Pine Needle Lane	2LU	732	987	E or better	NO	2LU	987	736	E or better	26	762	E or better
SW 120 Street - Between Pine Needle Lane and Old Cutler Rd	2LU	610	987	E or better	NO	2LU	987	613	E or better	34	647	E or better
SW 128 Street - W. of SW 62 Avenue	2LU	203	987	E or better	NO	2LU	987	204	E or better	3	207	E or better
SW 128 Street - Between SW 62 Avenue and Pine Needle Lane	2LU	203	987	E or better	NO	2LU	987	204	E or better	15	219	E or better
SW 128 Street - Between Pine Needle Lane and Old Cutler Rd	2LU	265	987	E or better	NO	2LU	987	266	E or better	16	282	E or better
SW 128 Street - E. of Old Cutler Rd	2LU	223	987	E or better	NO	2LU	987	224	E or better	4	228	E or better
SW 62 Avenue - Between SW 120 Street and SW 128 Street	2LU	470	987	E or better	NO	2LU	987	472	E or better	8	480	E or better
Pine Needle Lane - Between SW 120 Street and SW 128 Street	2LU	78	987	E or better	NO	2LU	987	79	E or better	1	80	E or better
Old Cutler Rd - N. of SW 120 Street	2LU	1,593	1,161	F	NO	2LU	1,161	1,601	F	23	1,625	F
Old Cutler Rd - Between SW 120 Street and Project D/W	2LU	1,778	1,161	F	NO	2LU	1,161	1,787	F	58	1,844	F
Old Cutler Rd - Between SW 128 Street and Project D/W	2LU	961	1,161	E or better	NO	2LU	1,161	966	E or better	31	997	E or better
Old Cutler Rd - S. Of SW 128 Street	2LU	761	1,161	E or better	NO	2LU	1,161	765	E or better	12	777	E or better

* - 2012 Quality/LOS Handbook - Generalized Peak Hour Two-Way Volumes for Florida's Urbanized Areas

** - 2019 Collected Data

Note: Minor rounding discrepancies (less than 1.0) may be shown.

Table 5-2 – 2019 PM Future Total Traffic Intersection Conditions

Peak Hour Volume Level Of Service Analysis (PM)												
LOCATION	ROADWAY TYPE	Existing Peak Hour (PH) Volume**	PH LOS "E" Volume*	Existing Peak Hour LOS	Future Roadway Type (2021)			Future without project trips		Future with project trips		
					Programmed Improvements	Future Roadway Type	Future PH LOS "E" Volume*	Future PH Volume	Future Peak Hour LOS	Project Trips	Future PH Volume	Future PH LOS
SW 120 Street - W. of SW 62 Avenue	2LU	452	987	E or better	NO	2LU	987	454	E or better	3	457	E or better
SW 120 Street - Between SW 62 Avenue and Pine Needle Lane	2LU	379	987	E or better	NO	2LU	987	381	E or better	5	386	E or better
SW 120 Street - Between Pine Needle Lane and Old Cutler Rd	2LU	274	987	E or better	NO	2LU	987	275	E or better	6	281	E or better
SW 128 Street - W. of SW 62 Avenue	2LU	163	987	E or better	NO	2LU	987	164	E or better	1	164	E or better
SW 128 Street - Between SW 62 Avenue and Pine Needle Lane	2LU	146	987	E or better	NO	2LU	987	147	E or better	2	149	E or better
SW 128 Street - Between Pine Needle Lane and Old Cutler Rd	2LU	144	987	E or better	NO	2LU	987	145	E or better	2	147	E or better
SW 128 Street - E. of Old Cutler Rd	2LU	249	987	E or better	NO	2LU	987	251	E or better	1	252	E or better
SW 62 Avenue - Between SW 120 Street and SW 128 Street	2LU	157	987	E or better	NO	2LU	987	157	E or better	1	158	E or better
Pine Needle Lane - Between SW 120 Street and SW 128 Street	2LU	40	987	E or better	NO	2LU	987	40	E or better	0	41	E or better
Old Cutler Rd - N. of SW 120 Street	2LU	1617	1161	F	NO	2LU	1,161	1,625	F	9	1,634	F
Old Cutler Rd - Between SW 120 Street and Project D/W	2LU	1406	1161	F	NO	2LU	1,161	1,413	F	14	1,427	F
Old Cutler Rd - Between SW 128 Street and Project D/W	2LU	1354	1161	F	NO	2LU	1,161	1,361	F	11	1,372	F
Old Cutler Rd - S. Of SW 128 Street	2LU	1242	1161	F	NO	2LU	1,161	1,248	F	7	1,255	F

* - 2012 Quality/LOS Handbook - Generalized Peak Hour Two-Way Volumes for Florida's Urbanized Areas

** - 2019 Collected Data

Note: Minor rounding discrepancies (less than 1.0) may be shown.

Table 5-3 – 2019 Off-Peak Future Total Traffic Intersection Conditions

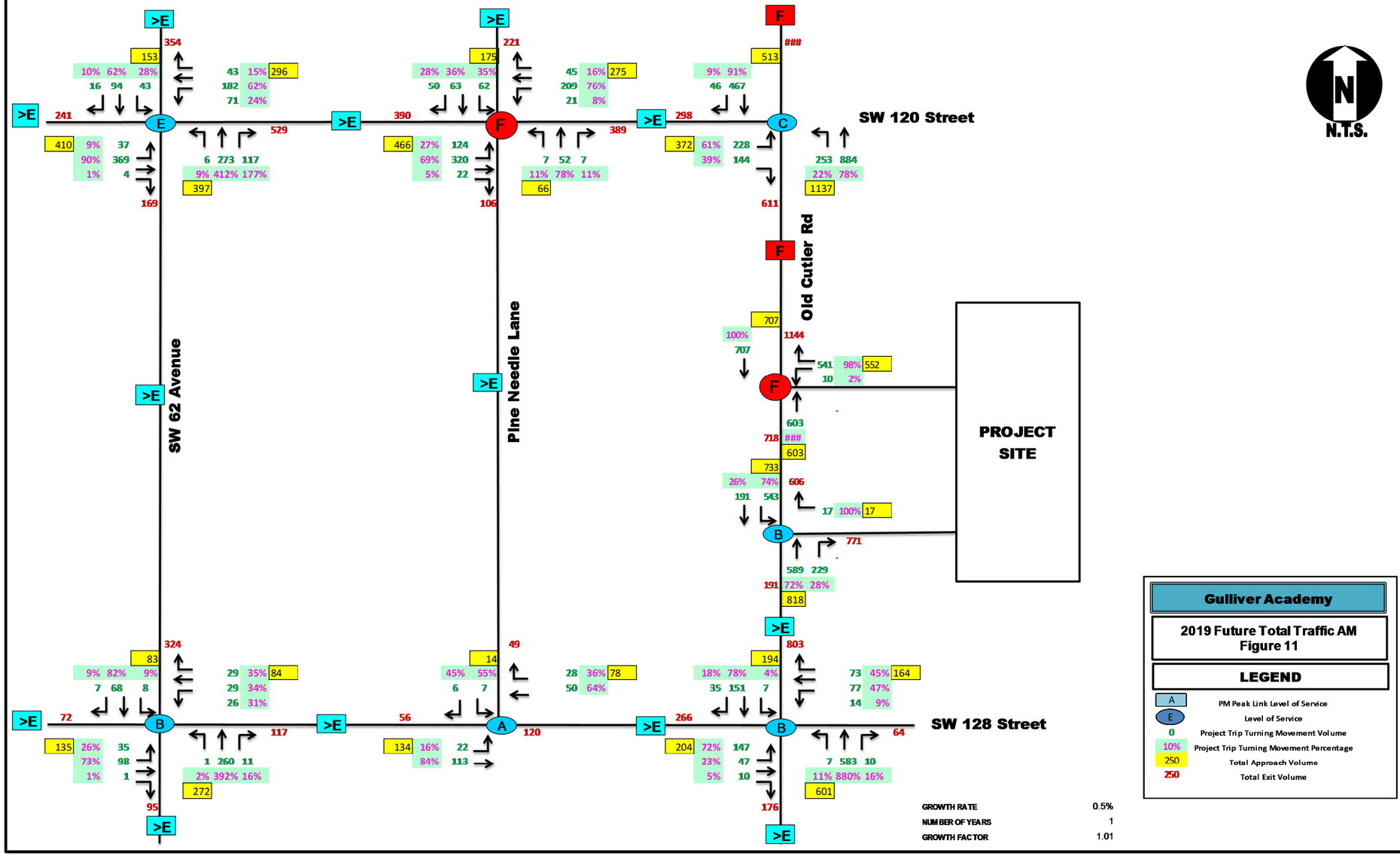
Peak Hour Volume Level Of Service Analysis (Off Peak)												
LOCATION	ROADWAY TYPE	Existing Peak Hour (PH) Volume**	PH LOS "E" Volume*	Existing Peak Hour LOS	Future Roadway Type (2021)			Future without project trips		Future with project trips		
					Programmed Improvements	Future Roadway Type	Future PH LOS "E" Volume*	Future PH Volume	Future Peak Hour LOS	Project Trips	Future PH Volume	Future PH LOS
SW 120 Street - W. of SW 62 Avenue	2LU	560	987	E or better	NO	2LU	987	563	E or better	7	570	E or better
SW 120 Street - Between SW 62 Avenue and Pine Needle Lane	2LU	580	987	E or better	NO	2LU	987	583	E or better	12	595	E or better
SW 120 Street - Between Pine Needle Lane and Old Cutler Rd	2LU	542	987	E or better	NO	2LU	987	544	E or better	16	561	E or better
SW 128 Street - W. of SW 62 Avenue	2LU	143	987	E or better	NO	2LU	987	144	E or better	2	146	E or better
SW 128 Street - Between SW 62 Avenue and Pine Needle Lane	2LU	151	987	E or better	NO	2LU	987	152	E or better	6	158	E or better
SW 128 Street - Between Pine Needle Lane and Old Cutler Rd	2LU	211	987	E or better	NO	2LU	987	212	E or better	7	219	E or better
SW 128 Street - E. of Old Cutler Rd	2LU	290	987	E or better	NO	2LU	987	292	E or better	4	296	E or better
SW 62 Avenue - Between SW 120 Street and SW 128 Street	2LU	133	987	E or better	NO	2LU	987	134	E or better	2	136	E or better
Pine Needle Lane - Between SW 120 Street and SW 128 Street	2LU	48	987	E or better	NO	2LU	987	49	E or better	1	49	E or better
Old Cutler Rd - N. of SW 120 Street	2LU	1627	1161	F	NO	2LU	1,161	1,636	F	21	1,656	F
Old Cutler Rd - Between SW 120 Street and Project D/W	2LU	1797	1161	F	NO	2LU	1,161	1,806	F	37	1,843	F
Old Cutler Rd - Between SW 128 Street and Project D/W	2LU	1199	1161	F	NO	2LU	1,161	1,205	F	24	1,229	F
Old Cutler Rd - S. Of SW 128 Street	2LU	1085	1161	E or better	NO	2LU	1,161	1,090	E or better	14	1,104	E or better

* - 2012 Quality/LOS Handbook - Generalized Peak Hour Two-Way Volumes for Florida's Urbanized Areas

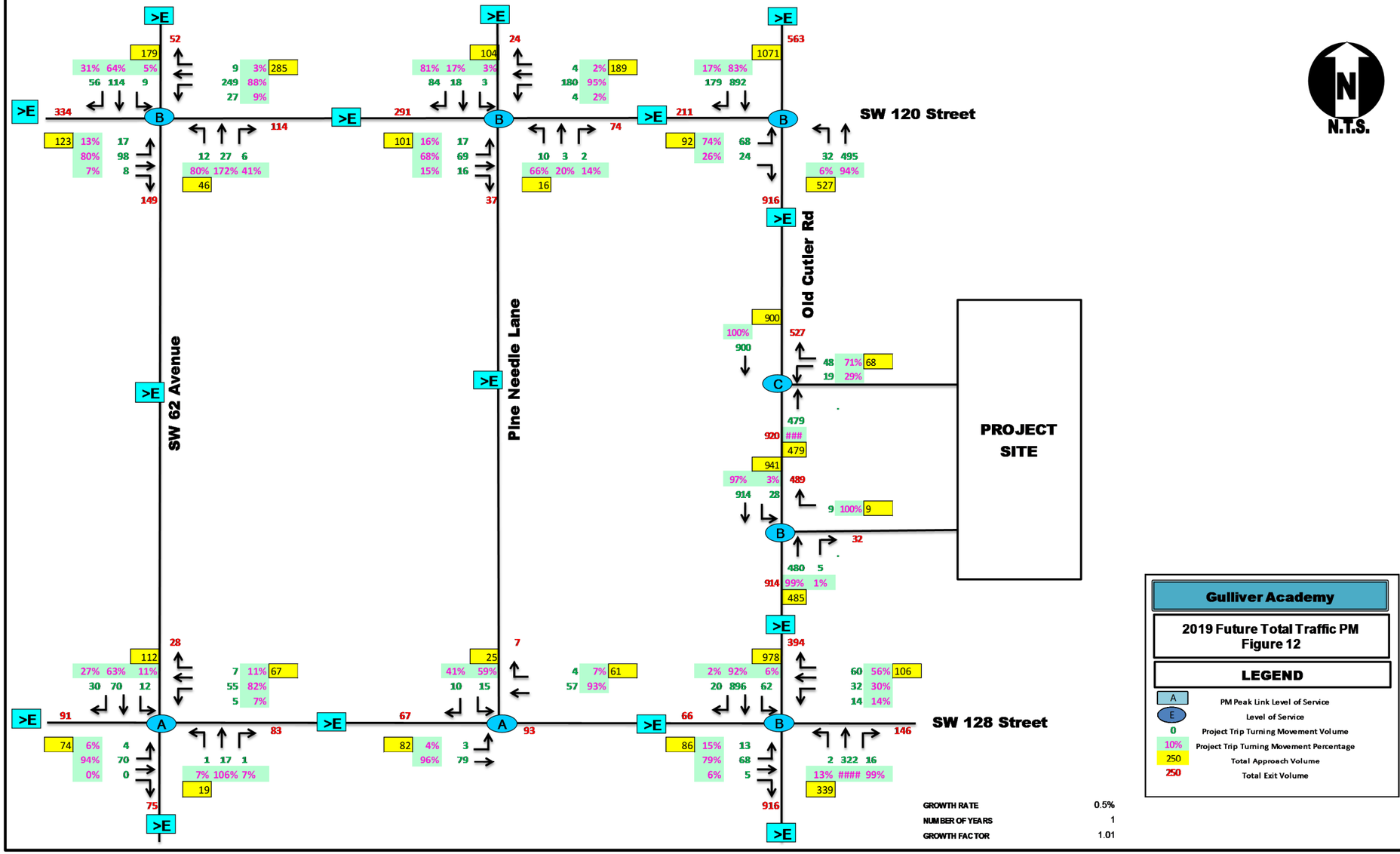
** - 2019 Collected Data

Note: Minor rounding discrepancies (less than 1.0) may be shown.

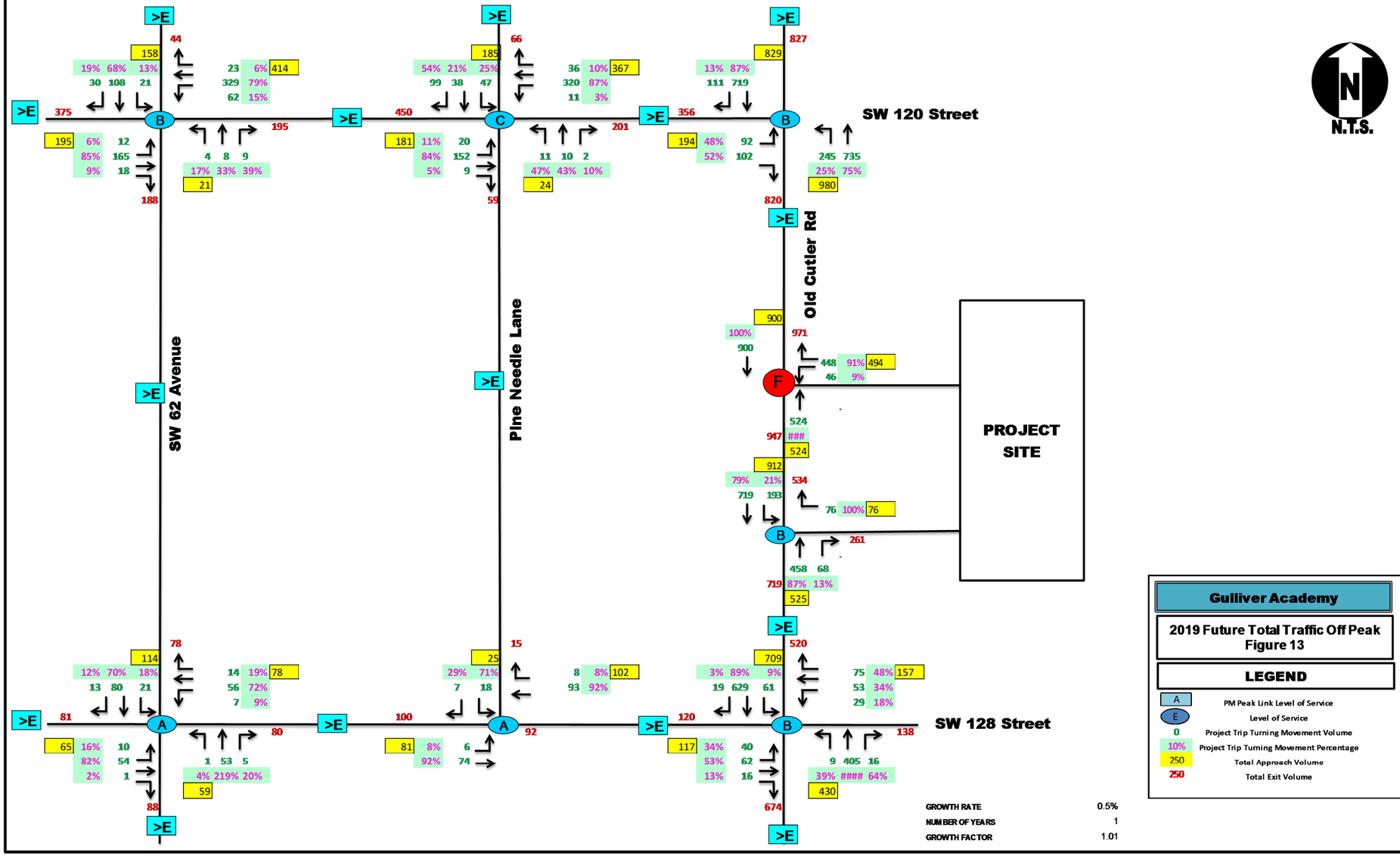
Gulliver Academy Expansion - 2019 Future Total Traffic AM



Gulliver Academy Expansion - 2019 Future Total Traffic PM



Gulliver Academy Expansion - 2019 Future Total Traffic Off Peak



6. Project Driveway Queue Analysis

Gulliver Academy opens at 7:55 in the morning and dismisses at 3:15 in the evening on Weekdays except Wednesday. School closes early each Wednesday at 2:35 in the evening.

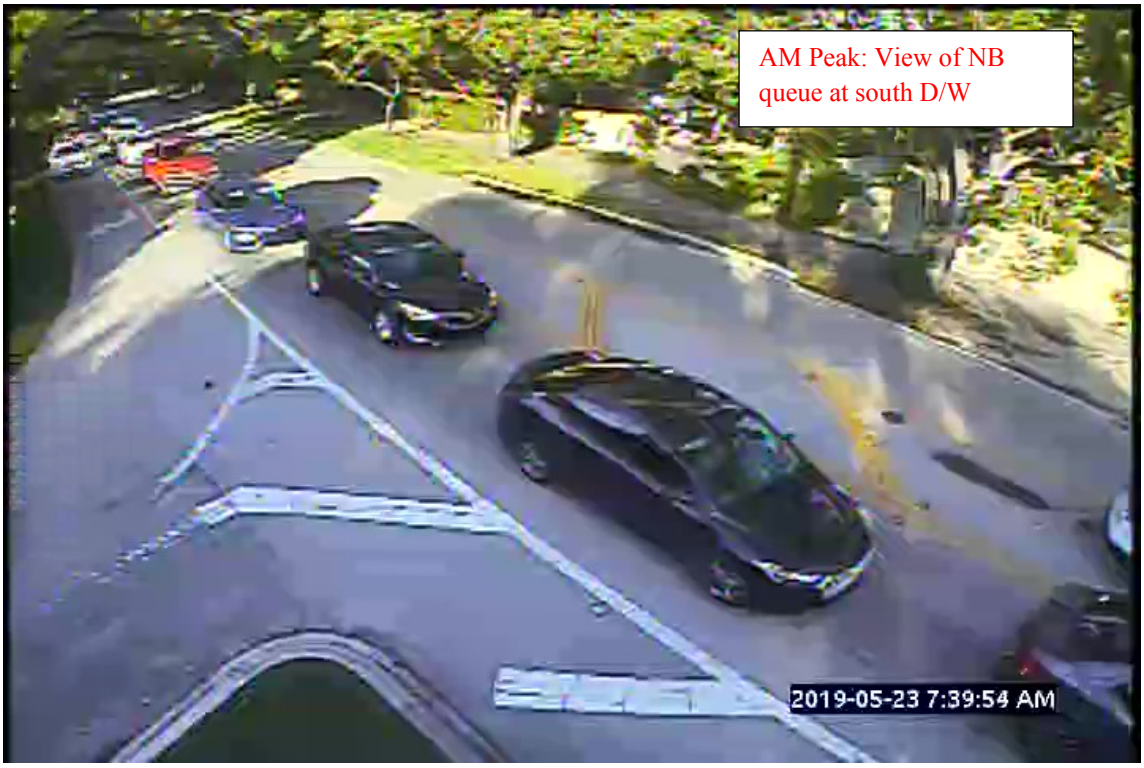
Old Cutler Road and the school's ingress and egress are not signalized and do not have any sort of preferential treatments for school traffic, other than a police officer to control the northbound right-turn traffic at the school egress (north driveway).

AM Peak Period:

Field reviews observed heavy traffic along Red Road outside the school ingress area and also along the Old Cutler Bay in the vicinity of the school. Traffic queues were observed to build up at 7:25 AM and did not clear out until approximately 8:05 AM. Because of heavy through commuting traffic along Old Cutler Road, southbound left-turn school traffic experiences delays waiting for a gap in northbound traffic; thus creating long southbound queues along the Old Cutler Road. Also, stop-and-go traffic was observed on Red Road outside the school ingress.

The photos below shows the AM peak period traffic at the School Entrances on Old Cutler Road.


AM Peak: View of Old Cutler SB left-turn traffic at south D/W
2019-05-23 7:39:54 AM


AM Peak: View of NB queue at south D/W
2019-05-23 7:39:54 AM

Off-Peak Period:

During school dismissal, heavy traffic was observed between 3:20 and 3:50 in the vicinity of school area on Old Cutler and Red Road. Long traffic queues were observed along Red Road outside the school ingress gate and along Old Cutler Road in the southbound direction during this time period.

Off Peak: View of SB left-turn queue from Old Cutler to Red Road.

Off Peak: View of light NB Traffic

Summary:

As shown, the existing queue impacts both Red Road and Old Cutler Road during both the AM and Off-Peak periods, school start and dismissal, respectively. During the AM peak, school start, traffic queues were observed to build up at 7:25 AM and did not clear out until approximately 8:05 AM. During the off-peak period, school dismissal, heavy queues were observed between 3:20 PM and 3:50 PM on Old Cutler and Red Road, with southbound the prevalent movement.

Due the heavy northbound traffic along Old Cutler Road during the AM peak period, the southbound queue was observed to be worse during this period.

As shown by the results of the queue analysis, the actual amount of queuing needed is greater than the existing site can accommodate on-site. It can be anticipated that the additional school trips generated by the proposed school expansion will further degrade the current conditions.

7. Conclusions and Recommendations

H.W. Lochner was commissioned by the City of Coral Gables to provide a Traffic Impact Study for the proposed expansion of Gulliver Academy, an existing PK3 through 8th grade school. The proposed project consists of expanding from the existing maximum 1,162 student population to 1,260 students, an increase of 98 students.

The purpose of the study is to assess the project's impact on the surrounding transportation network and determine if adequate capacity is available to support future demand. The study's methodology is consistent with the requirements outlined by the City of Gables for traffic impact analyses in the "Traffic Impact Study Application Process and Methodology" document. This report summarizes the data collection, project trip generation and distribution, and capacity analyses. The applicant submitted a Trip Generation Letter on February 8, 2019, included in **Appendix A**, and a scoping meeting occurred on March 21, 2019. A proposal and fee was submitted to the applicant on March 28, 2019, with 5 days of the scoping meeting, which outlined the terms and conditions of the study performance, scope, and estimated fee.

In general, the proposed expansion of the school additional 98 students does not have an adverse effect on the surrounding network arterial links and intersections, with exception to SW 120 Street at Pine Needle Lane during the AM peak period. All other levels of service remain consistent with existing conditions.

However, existing observed queues appear to adversely impact Old Cutler Road and Red Road during school start and dismissal times. Although, these impacts last only approximately 30 minutes, a school a stacking management plan is suggested to reduce the impacts to Old Cutler Road, such as:

- Staggered start/dismissal times (spaced more than 30 minutes apart)