100 Prince
Traffic Impact Analysis

Prepared for:

Athens-Clarke County Unified Government

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Updated June 2017

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Executive Summary

The following report provides an updated evaluation of the traffic impacts related to the development of approximately six acres in the City of Athens, which is situated north of Prince Avenue, between Childs Street and Pulaski Street. The applicant for the subject property intends to construct 110 permanent household apartments and approximately 23,000 square-feet of non-residential space fronting Prince Avenue. There is a circa 1918 building on the subject property that will remain, and has been proposed for an adaptive re-use as an additional sit-down restaurant facility for the City. Construction for the proposed development is expected to be completed by the year 2018.

The traffic study for this project entailed a detailed intersection operational analysis for the following intersections:

- Prince Avenue @ Barber Street/N Finley Street
- Prince Avenue @ Childs Street
- Prince Avenue/W Dougherty Street @ Pulaski Street
- Pulaski Street @ W Hancock Avenue
- W Dougherty Street @ N Hull Street

Vehicular access for the proposed development has been proposed in two locations. Access is proposed along Prince Avenue, which is approximately 400 feet west of Pulaski Street and is intended to primarily serve the non-residential portion of the proposed development. The residential portion of the proposed development has proposed access from Childs Street, which is approximately 380 feet north of Prince Avenue. Future year traffic operations for the year 2018 and a "Complete Street" option for the year 2038, are included in this report for these two proposed access locations.

A net trip generation analysis was conducted for the proposed development, accounting for the complimentary mixture of land uses. ITE Trip Generation codes 220, 710, 820, 850 and 932 were incorporated to estimate the number of project-generated trips, which were further reduced recognizing a mixed-use reduction, an alternative mode of travel reduction and lastly, a pass-by trip reduction for the non-residential portion of the proposed development. Trips not expected to leave the site represent the mixed-use reductions and this is likely to occur due to the proximity of the non-residential portion of the development to the residential portion of the development. The existing bicycle and pedestrian amenities, along with the existing transit service within close proximity to the site are expected to result in alternative modes of travel. Finally, a number of the current trips along Prince Avenue are expected to represent of portion of the gross trips associated with the non-residential portion of the proposed development as "pass-by" trips. The net new daily trip ends for the proposed development amount to 2,600 vehicles per day, 141 AM peak-hour trips and 252 PM peak-hour trips.

The project-generated trips were distributed and assigned to the study area network and the traffic analysis software **Synchro, version 10** was used to perform the capacity analysis both with and without the construction of the proposed development. The capacity analyses utilized peak-hour traffic volumes for the detailed intersection analyses. No-Build Condition traffic volumes for the future year 2018 were derived using an annual 0.5% growth rate, which was added to the existing condition traffic counts. It should be noted that the existing year traffic volumes were derived from traffic counts that had been collected in October 2015. The calculated 0.5% growth rate was utilized to increase the 2015 traffic volumes to the year 2017. The Build Condition traffic volumes incorporated the net new trips associated with the proposed development, which were distributed within the study area and added to the No-Build Condition traffic volumes for the future year, 2018. Results from the study have revealed that each of the identified intersections analyzed are anticipated to operate at LOS D or better for the AM and PM peak hours, both with and without the construction of the proposed development. No transportation improvements were required for the future year, 2018. Nevertheless, a "Complete Street" approach for this portion of Prince Avenue would encourage the efficient use of any existing transportation facilities by offering alternatives to the automobile for travel. Walking, bicycling or public transportation would minimize the demands for peak-hour travel in an automobile. All traffic operations at the identified intersections are expected to diminish using the "Complete Street" option for each of the peak periods analyzed, assuming that Prince Avenue would be constructed as a three-lane facility with dedicated bicycle lanes. This option would provide for one travel lane in each direction with a center turn-lane and pedestrian refuge at crosswalks.

The following table provides a general summary for the proposed development along Prince Avenue:

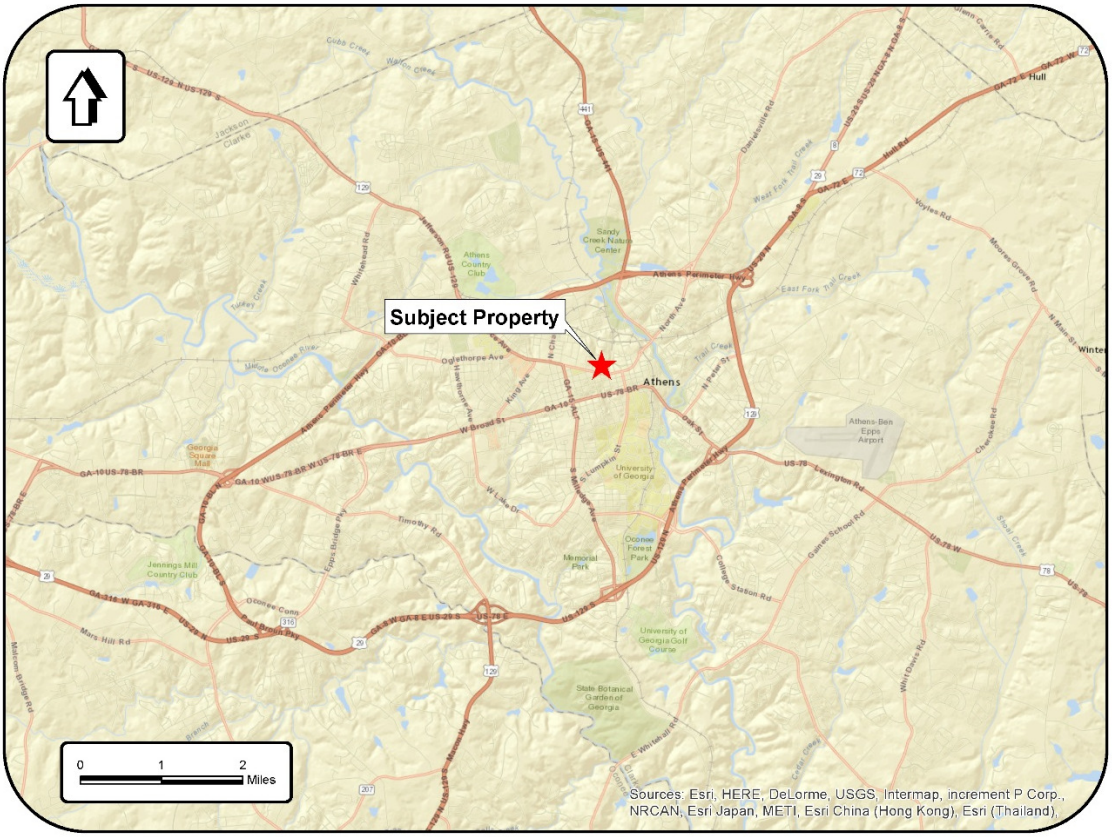
Name of Project	100 Prince
Jurisdiction	City of Athens
Location	North of Prince Avenue, between Childs Street and Pulaski Street
Uses and Intensities	110 Permanent Apartment Units/1,200 sqft Office/13,384 sqft Grocery/5,404 sqft Retail/3,200 sqft Restaurant
Project Phasing and Build Out Schedule	One Phase for the year 2018
Gross Trip Generation (ADT/AM Peak/PM Peak)	FY 2018: 4,550/232/417
Traffic Study Recommendations	No improvements required to serve either the No-Build or Build Conditions for the year 2018. A "Complete Street" policy and implementation may work to reduce the demands of peak-hour travel in an automobile.

Section 1-Introduction

Introduction

The following evaluation provides an updated study of the traffic operational impacts related to a proposed mixed-use development located along Prince Avenue in Athens-Clarke County. The project's vicinity is illustrated in **Figure 1**, which is situated near the center of Athens. Being centrally located within the City is significant in regards to the proposed mixture of uses, which may work to reduce the number of vehicular trips produced by both the proposed development and the general population. The purpose of this report is to evaluate the traffic impacts related to a mixture of uses that would include retail establishments, an office, a grocery store anchor, a restaurant and apartments.

Figure 1-Project Vicinity



Atkins performed the following tasks for this analysis:

- Identified the existing conditions of the roadway facilities within close vicinity of the proposed mixed-use development; and,
- Estimated the daily and peak-hour traffic volumes for the proposed uses, using the ITE Trip Generation Manual, 9th Edition; and,

- Performed a detailed evaluation of the operational characteristics of the roadway system within close vicinity of the subject property, both with and without the construction of the proposed development for both a No-Build and Build Condition for the year 2018; and,
- Evaluate traffic operations along Prince Avenue utilizing a proposed "Complete Streets" option as a 3-lane section for the Build Condition for the years 2018 and 2038.

Project Description

The subject property is located on approximately six acres in the City of Athens, which is situated north of Prince Avenue, between Childs Street and Pulaski Street. The location of the proposed site is further illustrated on **Figure 2**. The applicant intends to construct 110 permanent household apartments and approximately 23,000 square-feet of non-residential space fronting Prince Avenue. There is a circa 1918 building on the subject property that will remain, and has been proposed for an adaptive re-use as an additional sit-down restaurant facility for the City. **Table 1** summarizes the anticipated land uses and densities for the proposed development.

Source: Photo by Atkins, Subject Property on Prince Ave

Figure 2-Project Location

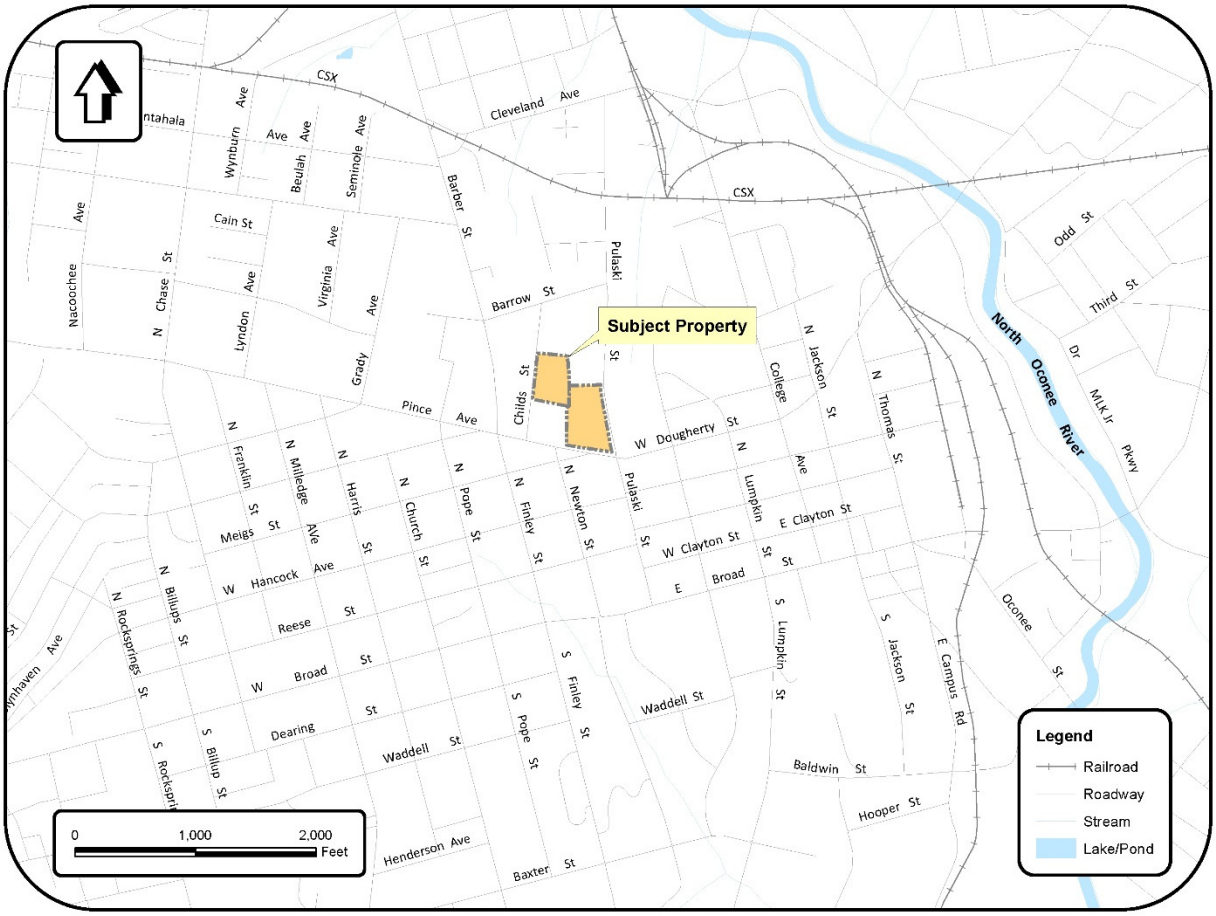


Table 1-Development Summary

Land Use	Quantity
Grocery	13,384 sqft
Retail	5,404 sqft
Leasing Office	1,200 sqft
Restaurant	3,200 sqft
Apartments	110 units

Methodology

Traffic operations have been analyzed for the proposed development, which includes the signalized and un-signalized intersections listed below:

Source: Photo by Atkins, Prince Ave @ Pulaski St

- Prince Avenue @ Barber Street/N Finley Street
- Prince Avenue @ Childs Street
- Prince Avenue/W Dougherty Street @ Pulaski Street
- Pulaski Street @ W Hancock Avenue
- W Dougherty Street @ N Hull Street

Vehicular access for the proposed development has been proposed in two locations. Access is proposed along Prince Avenue, which is approximately 400 feet west of Pulaski Street and is intended to primarily serve the non-residential portion of the proposed development. The residential portion of the proposed development has proposed access from Childs Street, which is approximately 380 feet north of Prince Avenue.

As indicated previously, the identified intersections for this analysis include both signalized and un-signalized intersections, and for the Build Condition, the additional two un-signalized intersections were evaluated for access into the proposed development. The time periods analyzed were during the weekday AM and PM peak hours. The study methodology for this project has included the following tasks:

- Utilize the traffic analysis software **Synchro, version 10**, to evaluate traffic operating conditions for each of the identified intersections within the study area to establish a baseline condition; and,
- Develop future year (2018 and 2038) AM and PM peak-hour vehicle trip end estimates for the study area, both with and without the construction of the proposed development; and,
- Use the traffic analysis software **Synchro, version 10**, to evaluate operating conditions within the study area using future No-Build Condition and Build Condition traffic for each of the future years; and,
- Use the traffic analysis results to identify any necessary roadway system enhancements that may be necessary to serve the traffic that is anticipated to be generated by the proposed development.

Traffic Analysis Software

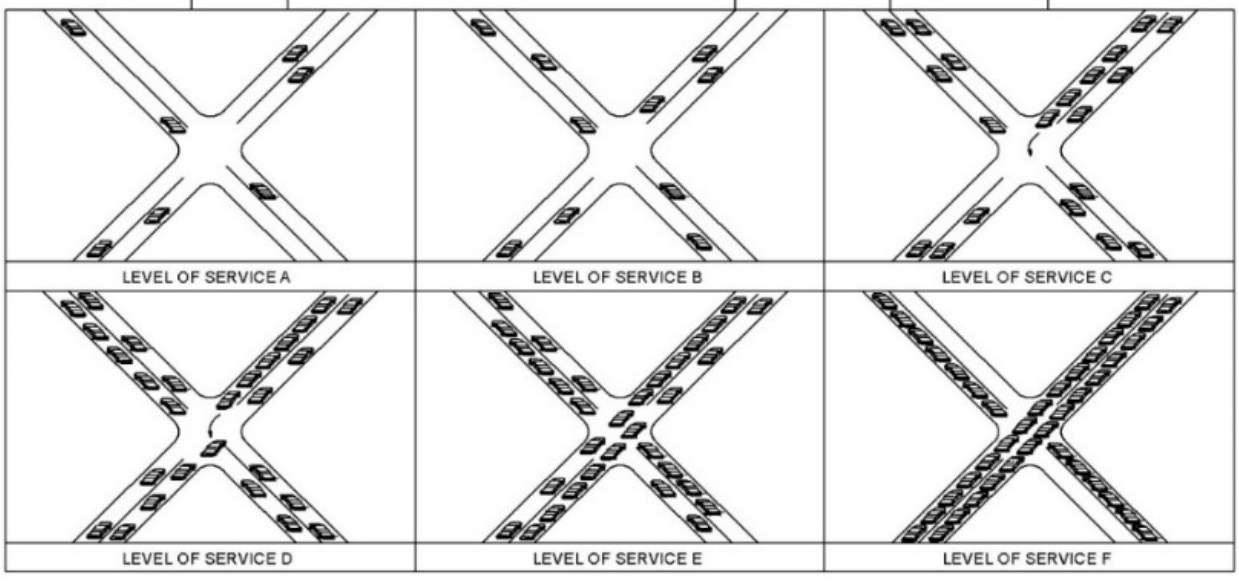
Capacity analysis procedures for the subject corridor have been performed using the traffic operations software **Synchro**, **version 10**. This widely used software provided an accurate tool for assessing traffic operations within the identified study area and evaluating the impacts of the proposed development. **Synchro** tabulated the average delay per vehicle for each approach to each intersection that was designated for analysis within the study area. To interpret **Synchro** analysis measurements into terms that can be translated into improvement recommendations, the average delay per vehicle calculations were converted into level-of-service (LOS) categories based upon the Highway Capacity Manual, 2010 (HCM 2010).

Level-of-Service

LOS is a measure used to describe traffic operations that translates traffic conditions into a letter grade ranging from A to F. **Figure 3**, which is based upon the HCM 2010, illustrates and describes each LOS and lists the criteria used in their determination. The average vehicle delay at each intersection is calculated by **Synchro** and then translated to LOS.

Figure 3-Level of Service Definitions and Criteria

LEVEL OF SERVICE	DESCRIPTION	SIGNALIZED INTERSECTION MAXIMUM DELAY (In Seconds)	UNSIGNALIZED INTERSECTION MAXIMUM DELAY (In Seconds)
A	LITTLE OR NO DELAY. At signalized intersections, no vehicle must wait longer than one signal in order to travel through the intersection.	10.0	10.0
B	SHORT DELAYS. At signalized intersections, a vehicle might have to wait through more than one signal indication to pass through the intersection on a rare occasion.	20.0	15.0
C	AVERAGE DELAYS. At signalized intersections, a vehicle would be required to wait through more than one signal indication to pass through the intersection on an intermittent basis, and occasionally backups could occur behind left turning vehicles.	35.0	25.0
D	LONG DELAYS. At signalized intersections, delays may become extensive with some vehicles requiring two or more signal indications to pass through the intersection. However, sufficient signal cycles with lower demand are available to permit the periodic clearance of the intersection.	55.0	35.0
E	VERY LONG DELAYS. At signalized intersections, very long queues and high levels of congestion are prevalent which result in lengthy delays.	80.0	50.0
F	EXCESSIVELY LONG DELAYS. The capacity of the roadway or intersection has been exceeded resulting in extremely high levels of congestion.	>80.0	>50.0



Section 2-Existing Conditions

As previously discussed, the subject property is centrally located in the City of Athens situated north of Prince Avenue between Pulaski Street and Childs Street. This area of Athens is within close proximity to a variety of land uses that include both residential and non-residential properties, which is critical in ensuring that the number of trips generated by the proposed development can be reduced to reflect the mixture of proposed land uses, alternative modes of travel and pass-by trips. The study area that has been identified for the proposed project currently provides for multiple modes of transportation that includes vehicles, pedestrians, bicyclists and transit-riders.

Prince Avenue has incorporated a "share-the-road" method for bicycle travel, with on-street pavement markings and signage. Additionally, Pulaski Street, south of Prince Avenue, has dedicated bicycle travel-lanes on each side of the roadway. The proposed development will be enhancing pedestrian and bicycle activity with newly constructed sidewalks, plazas, benches and bicycle racks. Sidewalks along each side of the roadway currently exist along Prince Avenue and Childs Street, while only the eastern portion of Pulaski Street provides for a sidewalk. The proposed development will include construction of a sidewalk for the western portion of Pulaski Street.

Source: Photo by Atkins, Prince Ave: Share-the-Road

The existing transportation facilities within the identified study area can be described as follows:

Prince Avenue is classified as an urban, minor arterial and is constructed as an undivided, four-lane roadway within the immediate vicinity of the proposed project. This facility consists of a mid-block pedestrian crossing near its intersection with N Newton Street and as previously indicated, provides bicyclists with a share-the road signage, traveling both eastbound and westbound. Prince Avenue transitions into **W Dougherty Street** east of Pulaski Street and these two roadway facilities have a posted speed limit of 35 mph.

Pulaski Street is classified as an urban, local roadway facility and is constructed as an undivided, two-lane roadway that accommodates bicyclists, south of Prince Avenue and W Dougherty Street with dedicated bicycle lanes. Pulaski Street has a posted speed limit of 30 mph south of Prince Avenue and a posted speed limit of 20 mph, north of Prince Avenue.

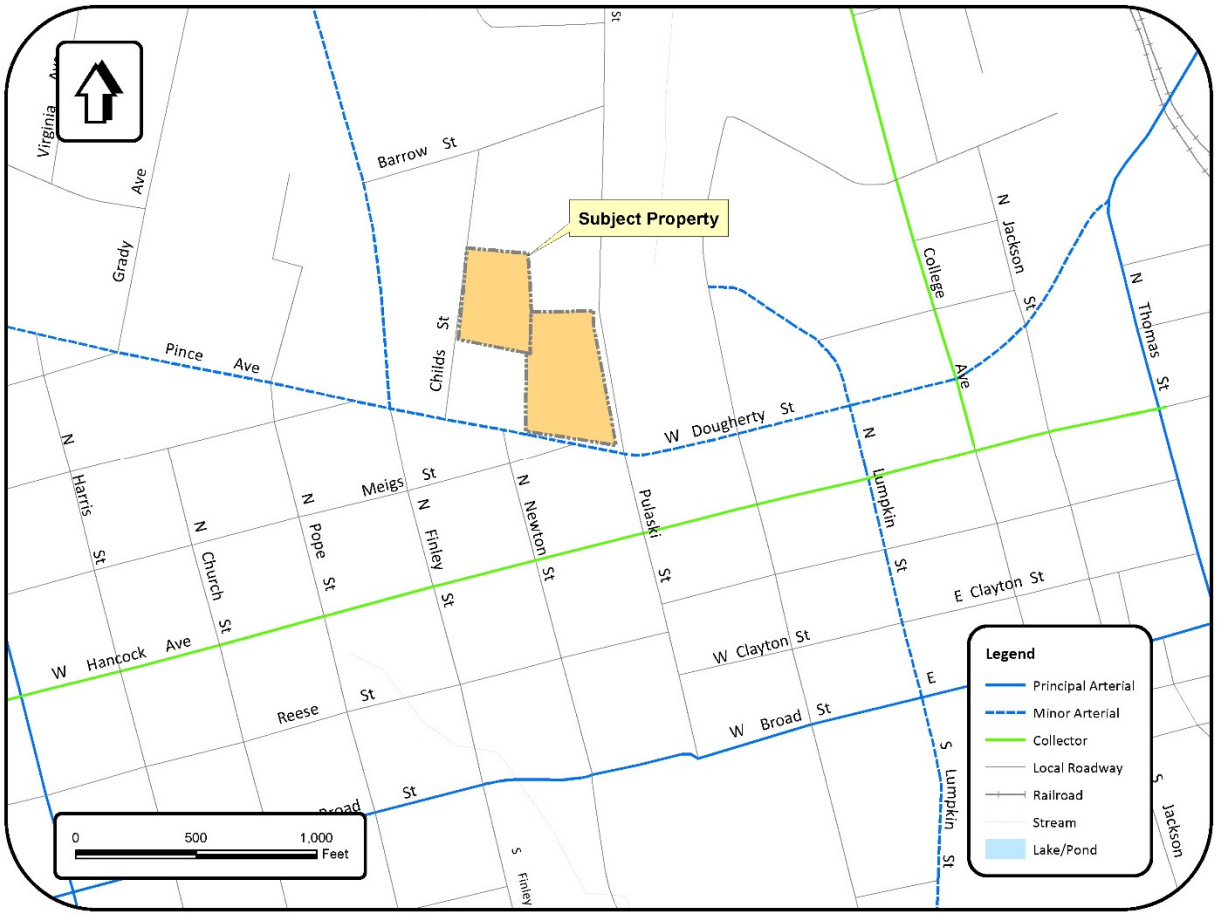
W Hancock Avenue is classified as an urban collector and is constructed as an undivided, two-lane roadway facility with sidewalks on each side to accommodate pedestrian travel. W Hancock Avenue has a posted speed limit of 30 mph.

Barber Street is classified as an urban, minor arterial and is constructed as an undivided, two-lane roadway facility. Barber Street begins at Prince Avenue and provides access to the Athens Perimeter to the north. Barber Street has a posted speed limit of 30 mph.

N Hull Street and **N Finley Street** are the remaining two roadways within the study area and each are classified as local roadway facilities. N Hull Street is constructed as an undivided, two-lane roadway, north of Prince Avenue; however, this same facility becomes a one-way southbound facility between Prince Avenue and Broad Street. N Hull Street has a posted speed limit of 25 mph. Lastly, N Finley Street is directly aligned with Barber Street on Prince Avenue. N Finley Street is constructed as an undivided, two-lane roadway facility providing access to properties between Prince Avenue and Broad Street. N Finley Street has a posted speed limit of 30 mph.

The functional classifications within the identified study area are further illustrated on **Figure 4**.

Figure 4-Functional Classifications



Existing Traffic Volumes

Peak-hour intersection turning movement traffic counts were taken at the five key intersections within the study area on October 6th, 2015. The time periods collected are listed below and more detailed traffic count sheets are provided in Appendix A.

- 7:00 am to 9:00 am
- 11:00 am to 1:00 pm
- 4:00 pm to 6:00 pm

An additional location was necessary in order to account for a comprehensive pedestrian evaluation and because pedestrian activity typically occurs during the mid-day and evening periods, the morning period was not collected at this additional location. Each of the data collection locations are provided below and have been further illustrated on **Figure 5**.

- Prince Avenue @ Barber Street/N Finley Street
- Prince Avenue @ Childs Street
- Prince Avenue/W Dougherty Street @ Pulaski Street
- Pulaski Street @ W Hancock Avenue
- W Dougherty Street @ N Hull Street
- N Newton St @ Prince Ave (mid-block cross-walk – mid-day and evening only)

These traffic volumes collected were modified to represent existing year 2017 conditions and incorporated into the traffic analysis software, **Synchro, version 10**, to evaluate the operational efficiency for each of the identified intersections. The Existing Condition (2017) traffic volumes are illustrated on **Figure 6**.

Several Georgia Department of Transportation (GDOT) traffic count stations are located within the vicinity of the proposed development and GDOT historic traffic volumes were used to calculate an appropriate growth rate for the identified study area. Counts at these locations were reviewed for the years 2000 to 2016, to determine historical trends and to assist in the traffic distribution for this analysis. The historical traffic counts are summarized in **Table 2** and their locations have been illustrated on **Figure 7**.

Source: http://www.dot.ga.gov/

Figure 5-Data Collection Locations

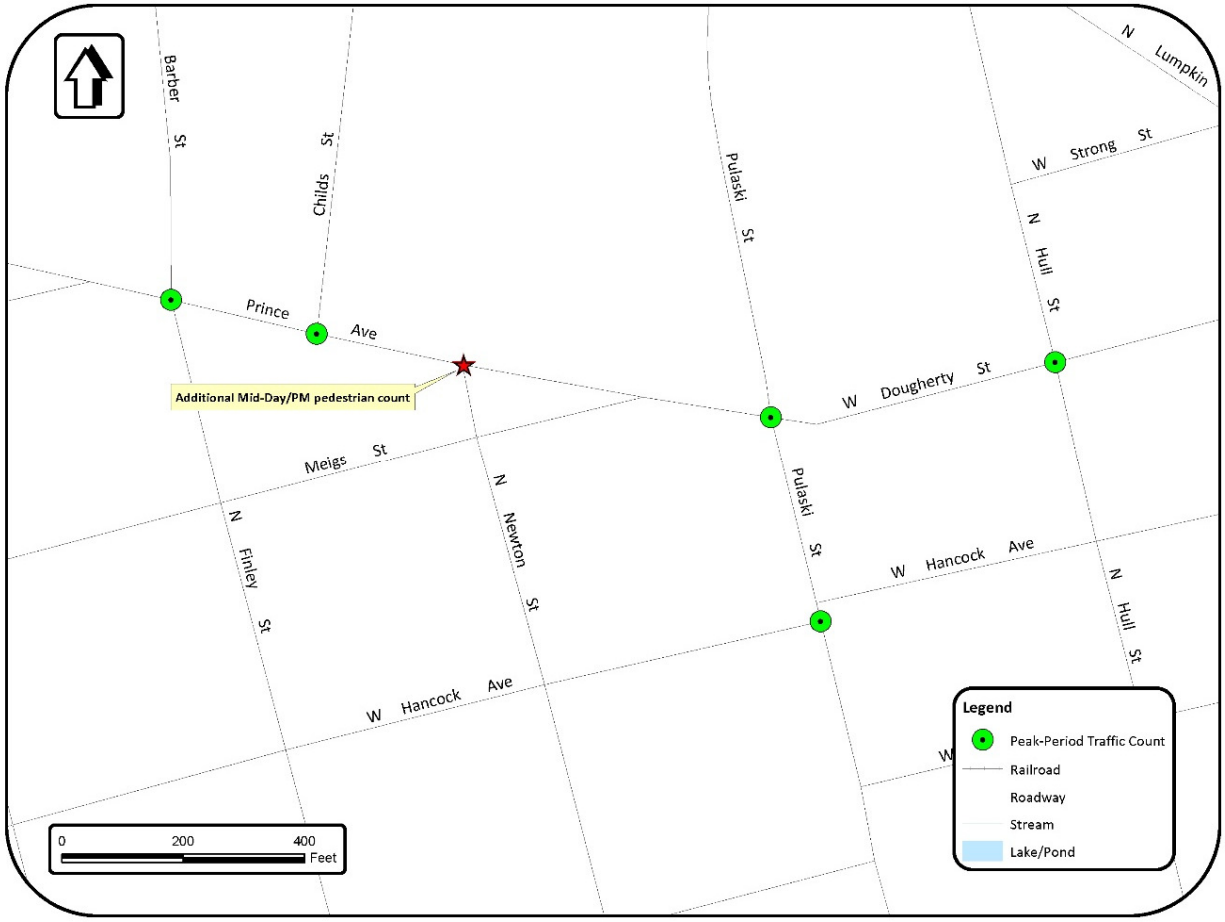


Figure 6-Existing Condition (2017) Traffic Volumes

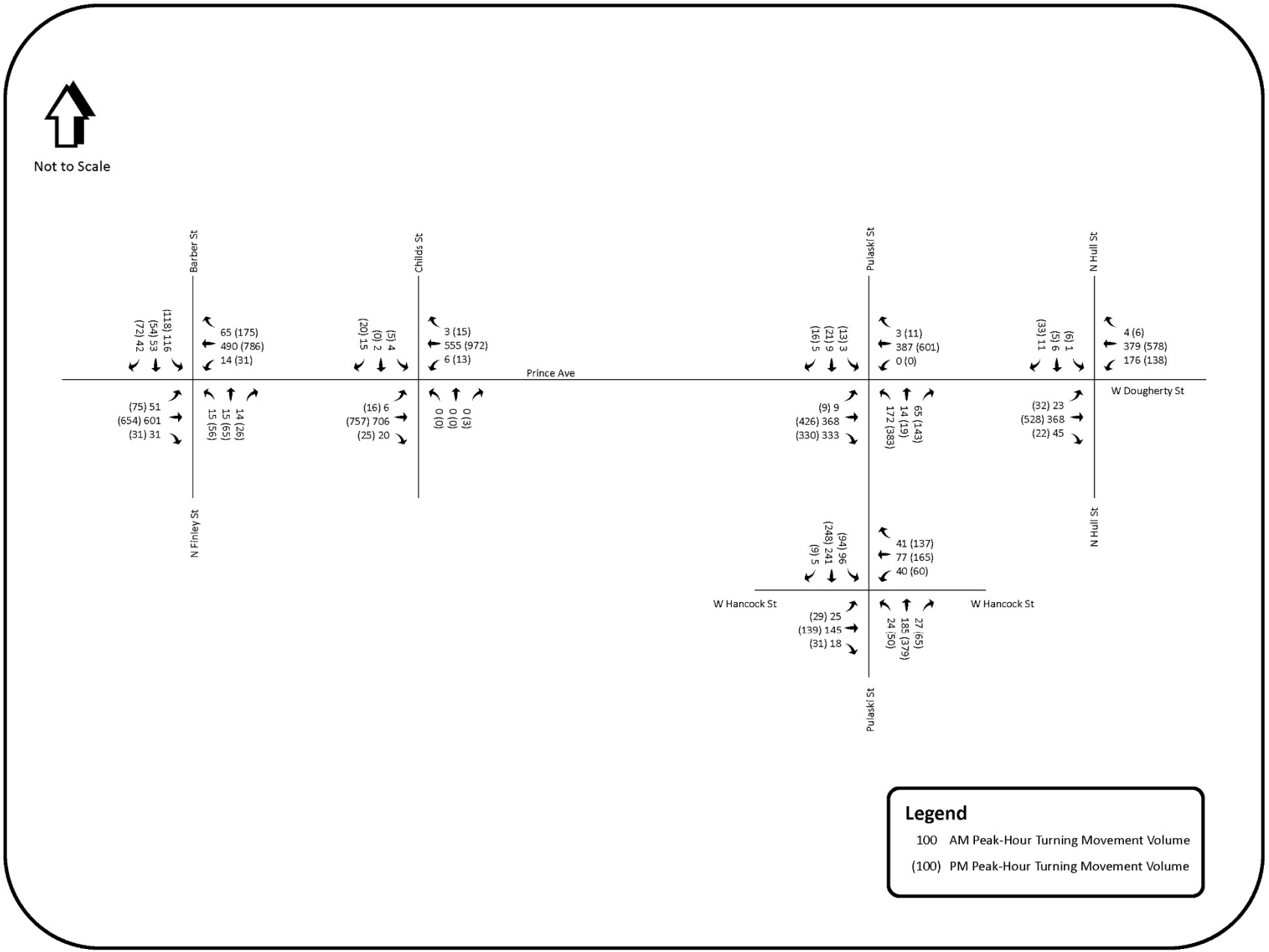
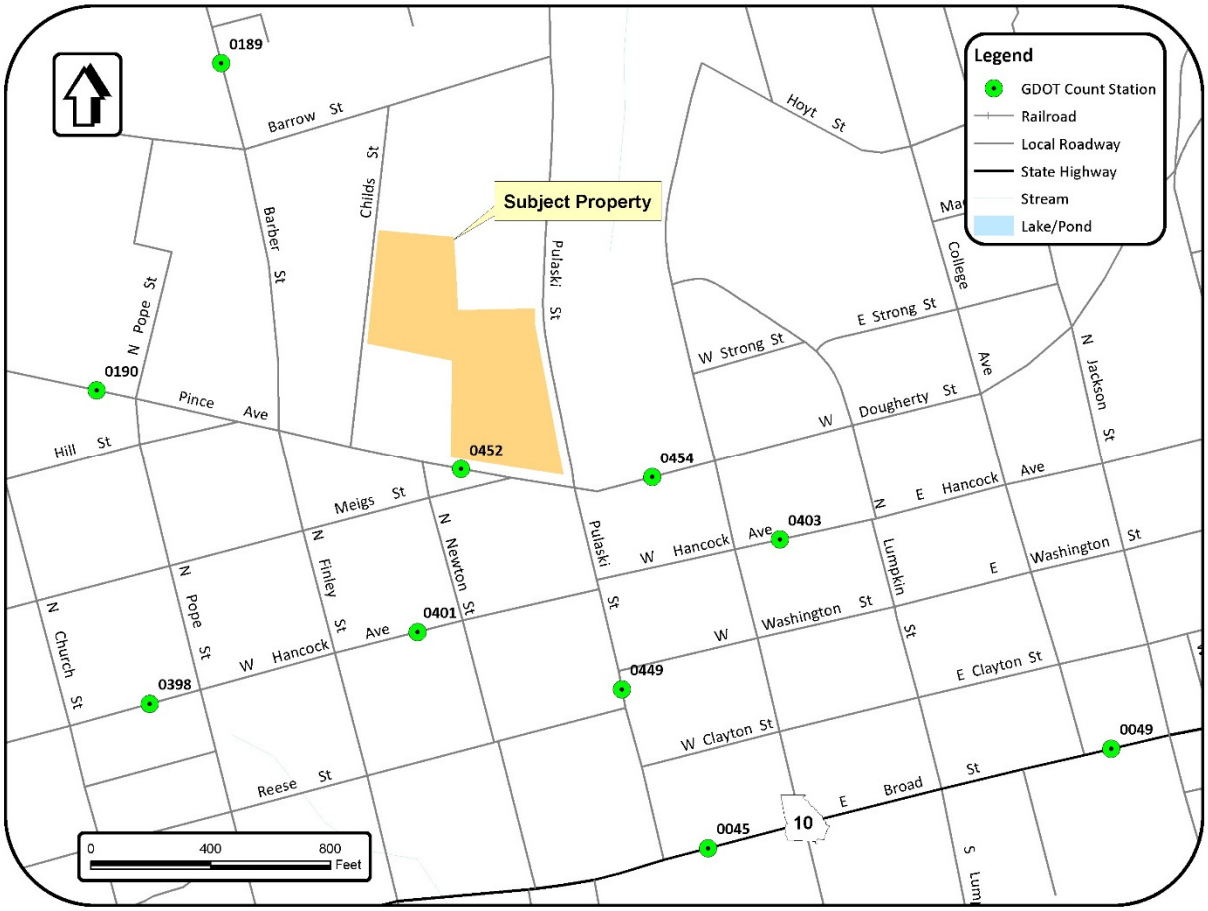


Table 2-GDOT Historical Traffic Counts

Traffic Count Station	Roadway	Year																
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
0452	Prince Ave, btwn N Newton St and Meigs St	19,100	19,000	20,384	19,130	18,730	19,730	19,020	18,020	17,570	17,610	16,820	16,420	16,140	16,030	20,400	21,100	21,700
0454	W Dougherty St, btwn Pulaski St and N Hull St	9,100	8,900	10,512	11,830	13,450	12,570	14,110	13,520	13,980	14,010	13,880	13,550	12,950	12,870	12,900	13,300	12,800
0190	Prince Ave, btwn Grady Ave and Barrow St	13,700	19,300	17,081	18,190	17,380	18,270	17,870	18,030	17,350	17,390	17,230	16,820	16,990	16,880	16,900	17,600	15,600
0189	Barber St, just north of Barrow St	5,800	6,600	5,979	5,530	5,800	6,210	6,050	5,830	5,800	5,680	5,570	5,630	5,620	5,750	5,750	5,200	5,330
0449	Pulaski St, btwn Reese St and W Washington St	14,000	15,900	16,131	9,630	9,540	9,830	9,770	9,350	9,300	-	11,050	10,890	10,870	8,580	8,580	8,930	6,230
0403	E Hancock St, btwn N Hull St and N Lumpkin St	6,900	7,100	6,886	6,890	6,170	6,910	4,880	6,050	6,010	6,330	6,250	5,710	5,700	5,830	5,830	5,360	5,490
0401	W Hancock St, btwn N Finley St and N Newton St	4,900	4,300	4,252	4,300	4,250	4,380	4,330	4,400	4,230	4,150	4,100	4,040	4,290	4,390	4,390	4,570	4,630
0398	W Hancock St, btwn N Church St and N Pope St	4,000	3,900	4,235	4,190	4,110	4,500	5,870	4,880	4,850	4,750	4,620	4,550	4,540	4,640	4,780	4,970	5,090
0045	Broad St (US 78), btwn Pulaski St and N Hull St	28,200	27,400	24,480	23,430	23,520	31,390	24,060	19,890	19,580	-	21,300	21,000	21,870	21,790	21,800	22,500	23,200
0049	Broad St (US 78), btwn College Ave and N Jackson St	33,800	34,200	34,968	26,880	27,840	21,530	21,960	22,820	30,780	31,320	24,100	22,680	22,390	22,310	22,300	23,000	24,000

Figure 7-GDOT Historical Traffic Counts



Existing Traffic Operations

A **Synchro** analysis was performed for the existing conditions. The results from **Synchro** provided the LOS determination for each of the intersections located within the study area. These results are summarized in **Table 3** and more detailed results are provided in Appendix B.

Source: http://www.turbosquid.com/3d-models/lcd-traffic-signals-3d-c4d/501907

The analysis for the subject property has assumed that a LOS D or better will be considered adequate (or acceptable) for the roadways within the study area. It should be noted that when completing traffic analysis for a project within an urban area, a LOS D or better is commonly considered adequate or acceptable. Levels of service worse than a LOS D would indicate that an intersection or approach is approaching capacity and cannot accommodate substantial increases in traffic without substantial increases in congestion and delay. **Table 3** reveals that each of the intersections currently operate at a LOS C or better in both the AM and PM peak periods.

Table 3-Existing Condition (2017) Intersection Level of Service Summary

Intersection	Control	Peak Period	Overall (Delay/LOS)	V/C Ratio	EB		WB		NB		SB		ICU (%/LOS)
					Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
Prince Ave @ Barber St/N Finley St	***Signal***	*AM*	*13.8/B*	*0.67*	9.5	A	18.8	B	10.3	B	13.4	B	48/A
		PM	*17.0/B*	*0.85*	8.5	A	23.9	C	14.5	B	14.5	B	69/C
Prince Ave @ Childs St	***Stop***	*AM*	*0.4/A*	*0.25*	0.1	A	0.2	A	-	-	12.9	B	41/A
		PM	*0.6/A*	*0.37*	0.4	A	0.3	A	9.9	A	15.3	C	54/A
Prince Ave/W Dougherty St @ Pulaski St	***Signal***	*AM*	*14.8/B*	*0.66*	12.5	B	21.8	C	11.4	B	14.1	B	51/A
		PM	*24.8/C*	*0.87*	13.1	B	27.6	C	37.8	D	13.8	B	65/C
W Dougherty St @ N Hull St	***Stop***	*AM*	*2.3/A*	*0.18*	0.5	A	2.8	A	-	-	24.2	C	37/A
		PM	*2.3/A*	*0.28*	0.5	A	1.8	A	-	-	27.5	D	43/A
W Hancock Ave @ Pulaski St	***Signal***	*AM*	*12.4/B*	*0.41*	16.2	B	11.0	B	15.9	B	8.9	A	56/B
		PM	*15.6/B*	*0.71*	19.7	B	13.9	B	20.9	C	8.6	A	75/D

Section 3-Future Conditions

Future Conditions

To accurately assess the traffic impact of the proposed development, a No-Build Condition that represents traffic without the construction of the proposed development was prepared. This No-Build Condition included the traffic that is projected for the expected year of completion, 2018, assuming that the proposed development did not occur. There were no scheduled roadway improvements identified within the study area; therefore, none were included in the No-Build Condition.

Subsequent to preparing the No-Build Condition transportation network, the next step was to determine the number of trips entering and exiting the subject property that would be generated by the proposed development for the expected year of completion 2018. Finally, traffic operations were analyzed with the project-generated trips added to the No-Build Condition.

Identification of Programmed Projects

The *Madison Athens-Clarke Oconee Regional Transportation Study: 2015-2040 Long-Range Transportation Plan* (MACORTS) was reviewed to determine if there were any roadway projects scheduled within the identified study area. There were no projects identified in this plan that are expected to be completed by the year 2018; therefore, none were included in the No-Build Condition.

Source: http://www.macorts.org/

No-Build Condition Traffic

The traffic volumes for the future year are based on annual traffic growth. The expected annual growth in traffic was based on historical data obtained from GDOT traffic count locations, MACORTS travel demand model volumes, and the future traffic growth as predicted by the population growth estimates for Clarke County, obtained from the Georgia Office of Planning and Budgeting (OPB).

As shown in the following tables, the average historical growth rate along the roadway facilities within proximity of the identified study area are minimal or have declined. Detailed growth rate calculations are provided in Appendix C. Actual traffic counts were given preference over the estimated traffic counts obtained from the GDOT traffic count database to calculate an average annual historical growth rate.

Table 4-Historical Growth Rates

Historical Growth Rates					
GDOT Count Location	Location Description	Growth Rate			
		Linear 5 Year	Linear 10 Year	Linear 15 Year	Exponential
0590452	Prince Ave, east of N Newton St	-0.2%	-0.2%	-0.2%	-0.3%
0590454	Prince Ave, btwn Pulaski St and N Hull St	0.6%	0.6%	0.6%	0.7%
0590190	Prince Ave, btwn Grady Ave and Barrow St	-1.0%	-1.0%	-1.0%	-1.0%
0590189	Barber St, just north of Barrow St	-0.7%	-0.7%	-0.7%	-0.7%
0590449	Pulaski St, btwn Reese St and W Washington St	-4.7%	-4.2%	-3.9%	-3.6%
0590403	E Hancock St, btwn N Hull St and N Lumpkin St	-1.9%	-1.9%	-1.8%	-1.7%
0590401	W Hancock St, btwn N Finley St and N Newton St	0.4%	0.4%	0.4%	0.4%
0590398	W Hancock St, btwn N Church St and N Pope St	1.0%	1.0%	1.0%	1.1%
0590045	Broad St, btwn Pulaski St and N Hull St	-1.6%	-1.6%	-1.5%	-1.5%
0590049	Broad St, btwn College Ave and N Jackson St	-4.5%	-4.1%	-3.7%	-3.1%
Count Location Average		-1.3%	-1.2%	-1.1%	-1.0%
Average Linear/Average Exponential		-1.2%			-1.0%
Overall Annual Average Growth Rate		-1.1%			

Examining travel demand model network assignments for the identified study area between 2010 and 2040, the model showed an annual growth rate of 1.1% as shown in the following table.

Table 5-Travel Demand Model Growth Rates

MACORTS Travel Demand Model Growth Rate				
Location	Forecast Year – 2040 Volume		Base Year – 2010 Volume	
	Direction 1	Direction 2	Direction 1	Direction 2
W Dougherty St, east of Pulaski St	8,170	7,490	7,000	7,180
Prince Ave, west of Barber St	9,070	9,490	7,370	7,930
Pulaski St, south of Prince Ave	8,080	9,060	4,090	4,550
Annual Average Growth Rate				1.1%

The growth rates based on population estimates for Clarke County (obtained from the Georgia OPB) were also calculated. The population forecasts for the years 2015, 2020, 2025 and 2030 were obtained and the expected growth rates for the region were calculated. These are provided in the table below. The average population growth rate was estimated to be 0.9%.

Table 6-Population Growth Rates

County	Population 2015	Population 2020	Population 2025	Population 2030
Clarke	123,489	129,135	134,588	139,254

County	Growth 2020	Growth 2025	Growth 2030	Average
Clarke	0.9%	0.9%	0.8%	0.9%

The annual growth in traffic calculated based on the historical traffic volume data, the travel demand model volumes, and the future traffic volumes as predicted by the population estimates are -1.1%, 1.1%, and 0.9%, respectively. Based on the results of this analysis a 0.3% per year growth rate has occurred; however, for the purposes of this evaluation a minimum 0.5% per year growth rate was assumed. Traffic volumes for the future year 2018, assuming the proposed development was not constructed, were projected for both the AM and PM peak hours. These No-Build Condition traffic volumes are illustrated on **Figure 8**.

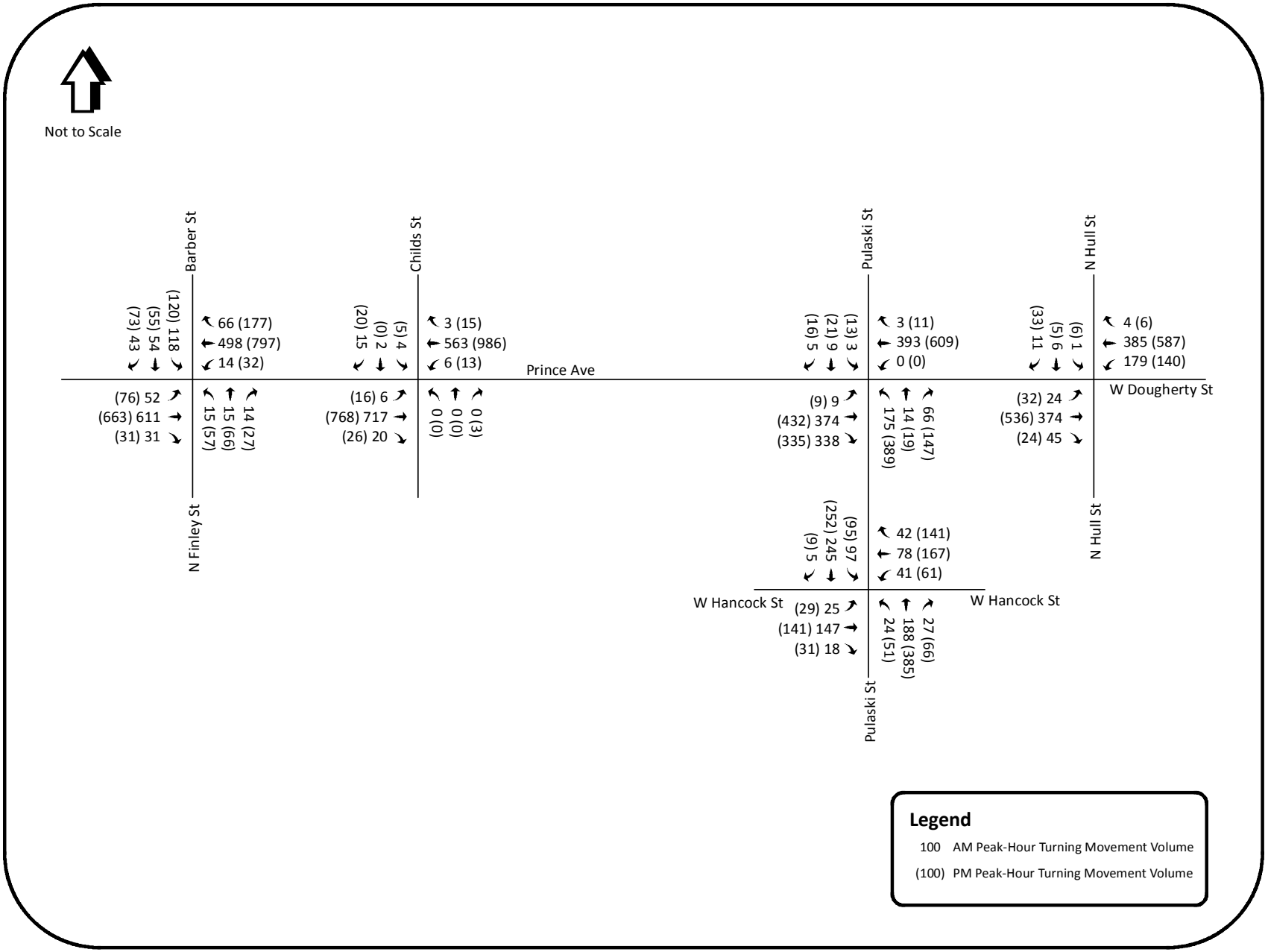
Project-Generated Traffic

The **ITE Trip Generation Manual, 9th edition**, was used to determine the number of trips entering and exiting the subject property during the weekday AM and PM peak hours. To account for the mixture of uses anticipated for this development, **ITE Trip Generation** codes 220, 710, 820, 850 and 932 were utilized and detailed trip generation formulas are provided in Appendix D. The gross project-generated trips were reduced using a mixed-use reduction for the complimentary land uses proposed for this development, alternative modes of transportation and lastly, pass-by trips associated with the retail portion of the proposed development.

Mixed-use reductions were calculated based upon the procedures outlined in the **ITE Trip Generation Handbook, Chapter 7: Multi-Use Development**. The worksheets used in calculating these reductions for the multi-use generated trips are provided in Appendix D. The complementary land uses within the proposed development have been inter-connected using site design features that promote pedestrian accessibility and connectivity. The daily internal capture rate and vehicle trip reductions between residential and retail land uses is expected to be 13%. The internal capture rates and vehicle trip reductions for the AM and PM peak hours is expected to be 12% and 16%, respectively.

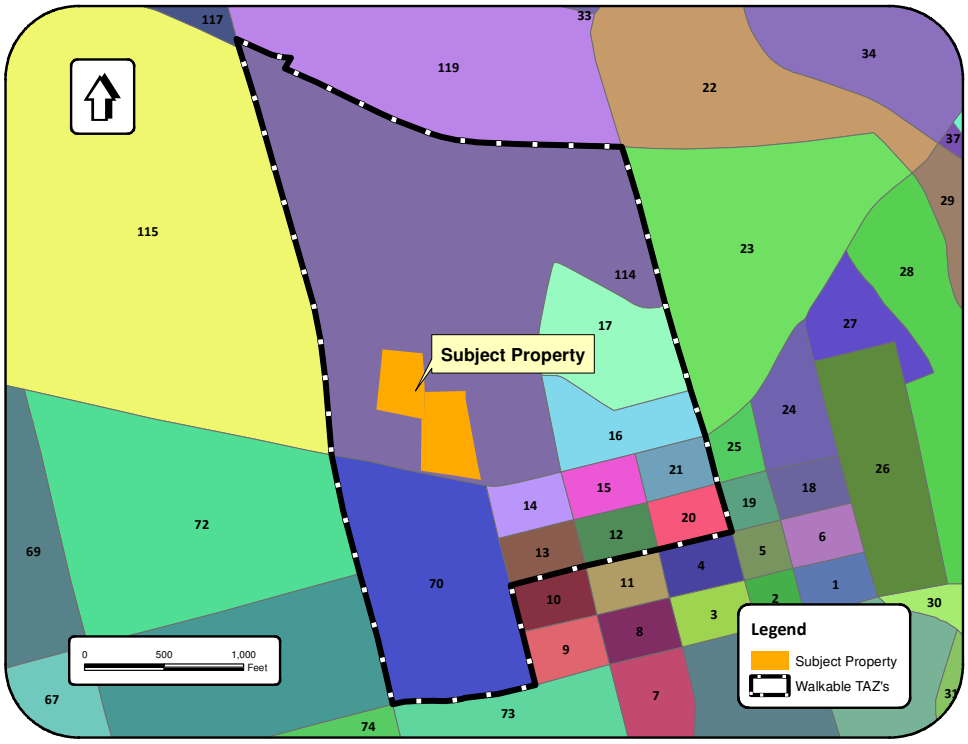
The mode split assumptions for the proposed development (alternative modes of transportation) intends to incorporate amenities that support vehicular, pedestrian, bicycle and transit modes of travel. Athens-Clarke County operates a local bus service, “The Bus”, connecting neighborhoods and businesses to various cultural, shopping and educational opportunities. It has been assumed that these transit operations will take advantage of the proposed pedestrian amenities within the proposed development and bicycle and pedestrian activity will increase.

Figure 8-Future (2018) No-Build Condition Traffic Volumes



Bicycle/pedestrian activity was examined along Prince Avenue between Pulaski Street and Childs Street. 12-hour bicycle/pedestrian counts were collected between the hours of 8:00 am and 8:00 pm on May 10th, 2017 to assist in determining a ratio of bicycle/pedestrians and vehicular traffic. To calculate a ratio, the Madison Athens-Clarke Oconee Regional Transportation Study (MACORTS) travel demand model was obtained and vehicular data was extracted from traffic analysis zones that were within approximately ¼ mile of the planned development. The ratio was then applied to the gross trip generation analysis for the planned development, to forecast future bicycle/pedestrian activity. To estimate the expected bicycle/pedestrians generated by the planned development, a combination of existing pedestrian counts and vehicular trip ends in the area were used to compute a ratio. The vehicular trip ends were extracted from the MACORTS travel demand model maintained by the Georgia Department of Transportation. The planned development is located within traffic analysis zone (TAZ) 114; however, the existing pedestrian counts likely had origins and destinations outside this single TAZ in the surrounding area. To determine the appropriate vehicular trip ends for the ratio calculation, TAZs within approximately ¼ mile of the development were included in the model extraction as shown in **Figure 9**. The model estimated approximately 3,500 vehicular trip origins in this area surrounding the development.

Figure 9-Traffic Analysis Zones (TAZ)



As previously mentioned, the 12-hour bicycle/pedestrian counts that were collected on May 10th, 2017 between the hours of 8:00 am and 8:00 pm indicated that there were 316 pedestrians identified along Prince Avenue between Pulaski Street and Childs Street. A more detailed review of this data reveals that 214 pedestrians were located within the crosswalk; 21 pedestrians were outside of the crosswalk and 81 bicycles were traveling in the roadway. These results have been summarized in **Table 7**.

Table 7-Bicycle/Pedestrian Activity

Pedestrian Activity	Volume	% Total
Pedestrians within Crosswalk	214	68%
Pedestrians outside of Crosswalk	21	7%
Bicycles in Roadway	81	26%
Total Number of Bicycles/Pedestrians	316	100%

The calculated bicycle/pedestrian ratio for this evaluation was determined by dividing the number of daily trip ends provided by the MACORTS travel demand model (3,479) by the 12-hour bicycle/pedestrian count collected on May 10th, 2017 (316). This ratio was then applied to the number of daily vehicular trips ends that are expected to occur with the construction of the proposed development. The bicycle/pedestrian ratio used in this analysis was 0.091 and when applied to the gross number of trips generated, the result is approximately 300 bicycles/pedestrians. Since the calculated ratio was based upon a 12-hour count of pedestrian activity, the number of forecasted bicycle/pedestrians was further adjusted to account for a 24-hour period.

An hourly distribution of traffic volumes was incorporated into this evaluation to determine the 24-hour volume of bicycle/pedestrian activity that is anticipated to be generated by the planned development. Distribution factors provided from research prepared by the Transportation Research Board in a National Cooperative Highway Research Program Report 716 (NCHRP 716)*, "Travel Demand Forecasting: Parameters and Techniques,"*[1] provided applicable hourly distribution percentages for this portion of the evaluation. These percentages, which are provided in **Table 8**, were applied to the project-generated daily volumes to make a comparison between the numbers of vehicular and non-vehicular trips.

Lastly, the potential amount of 24-hour pedestrian activity that may be expected with the construction of the proposed development amounts to 516 bicycles/pedestrians. Utilizing the percent totals identified in **Table 7** this total can be further refined to include 350 pedestrians within the crosswalk, 34 pedestrians outside of the crosswalk and 133 bicycles on the roadway. These results have been summarized in **Table 9**.

The final adjustment in trip generation was made to account for "pass-by" trips associated with the retail portion of the proposed development. The pass-by trip reduction rate was calculated using the **ITE Trip Generation Handbook, 5th edition**. A detailed "pass-by" trip reduction worksheet is provided in Appendix D. Based upon the formula given on page I-23, a trip reduction rate of 34% for the year 2018 may be assumed. A limits test reveals that the daily volume on Prince Avenue within close vicinity of the subject property is approximately 21,700 vehicles per day. This volume was gathered from the GDOT traffic count database. Using the fifteen percent limits test, the total number of pass-by trips that can be realized cannot exceed 3,255 vehicles for the year 2018 using a one percent (0.5%) average annual growth rate.

[1] The National Cooperative Highway Research Program Report 716, "Travel Demand Forecasting: Parameters and Techniques" (Washington D.C.: Transportation Research Board, 2012), Table C.11, p. C-23, C-25.

Table 8-Hourly Distribution Percentages

Time of Day	Auto Mode	Non-vehicular Mode
12:00 to 1:00 am	0.003	0.002
1:00 to 2:00 am	0.001	0.002
2:00 to 3:00 am	0.001	0
3:00 to 4:00 am	0.001	0
4:00 to 5:00 am	0.004	0.002
5:00 to 6:00 am	0.014	0.01
6:00 to 7:00 am	0.035	0.024
7:00 to 8:00 am	0.077	0.063
8:00 to 9:00 am	0.059	0.058
9:00 to 10:00 am	0.047	0.045
10:00 to 11:00 am	0.051	0.045
11:00 to 12:00 pm	0.06	0.053
12:00 to 1:00 pm	0.068	0.076
1:00 to 2:00 pm	0.061	0.059
2:00 to 3:00 pm	0.069	0.081
3:00 to 4:00 pm	0.083	0.081
4:00 to 5:00 pm	0.084	0.077
5:00 to 6:00 pm	0.087	0.087
6:00 to 7:00 pm	0.067	0.08
7:00 to 8:00 pm	0.048	0.067
8:00 to 9:00 pm	0.035	0.041
9:00 to 10:00 pm	0.024	0.027
10:00 to 11:00 pm	0.014	0.013
11:00 to 12:00 am	0.007	0.007

Table 9-Prince Avenue Bicycle and Pedestrian Distribution

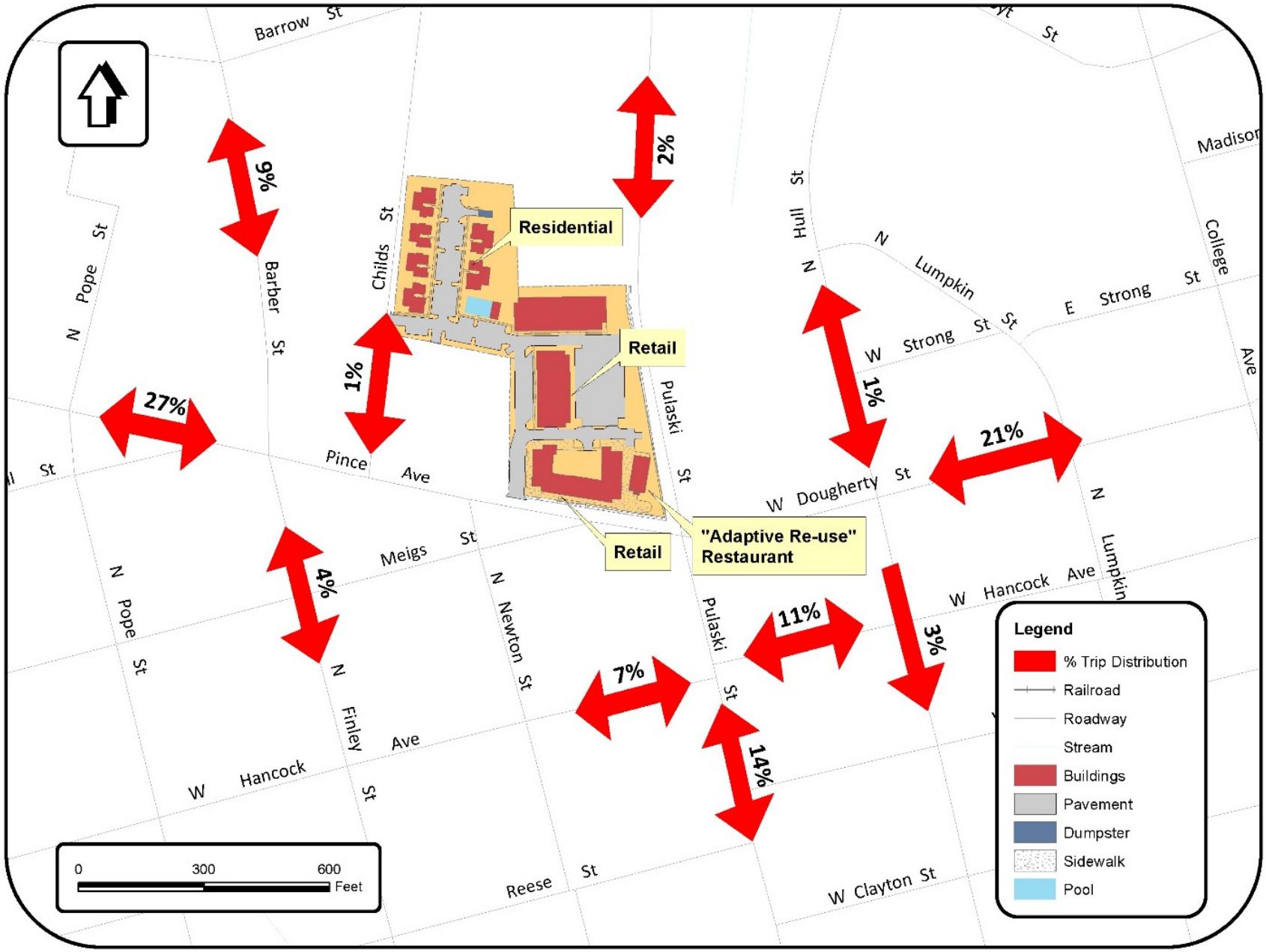
Hour	Volume	Total Peds	Peds in Crosswalk	Peds outisde Crosswalk	Bicycles On-Road
12:00 to 1:00 am	14	1	1	0	0
1:00 to 2:00 am	5	1	1	0	0
2:00 to 3:00 am	5	0	0	0	0
3:00 to 4:00 am	5	0	0	0	0
4:00 to 5:00 am	18	1	1	0	0
5:00 to 6:00 am	64	5	3	0	1
6:00 to 7:00 am	159	12	8	1	3
7:00 to 8:00 am	350	33	22	2	8
8:00 to 9:00 am	268	30	20	2	8
9:00 to 10:00 am	214	23	16	2	6
10:00 to 11:00 am	232	23	16	2	6
11:00 to 12:00 pm	273	27	19	2	7
12:00 to 1:00 pm	309	39	27	3	10
1:00 to 2:00 pm	278	30	21	2	8
2:00 to 3:00 pm	314	42	28	3	11
3:00 to 4:00 pm	378	42	28	3	11
4:00 to 5:00 pm	382	40	27	3	10
5:00 to 6:00 pm	396	45	30	3	12
6:00 to 7:00 pm	305	41	28	3	11
7:00 to 8:00 pm	218	35	23	2	9
8:00 to 9:00 pm	159	21	14	1	5
9:00 to 10:00 pm	109	14	9	1	4
10:00 to 11:00 pm	64	7	5	0	2
11:00 to 12:00 am	32	4	2	0	1
Total:	**4550**	**516**	**350**	**34**	**133**

The total (net) trips generated and analyzed in this report are listed in **Table 10**. The project-generated traffic was then distributed throughout the study area network using the percentages for each identified facility as illustrated on **Figure 10**.

Table 10-Trip Reductions

Reduction Factors	Daily Traffic	AM Peak		PM Peak	
		Enter	Exit	Enter	Exit
Gross Project Trips	4,550	109	123	199	218
Mixed-Use Reduction	-592	-13	-15	-32	-35
Alternative Mode Reduction	-360	-9	-10	-15	-17
Pass-by Reduction	-999	-25	-20	-34	-32
Net New Trips	2,600	62	79	118	134

Figure 10-Trip Distribution



Future Traffic Conditions

The future peak-hour traffic volumes were analyzed for both the AM and PM peak hours for both the No-Build and Build Conditions. First, the study area network utilized the future background traffic volumes for the No-Build Condition to determine the LOS for the identified intersections within the study area. Then, for the Build Condition, the project-generated traffic was included on the same network, in order to determine the traffic impacts caused by the development. It should be noted that the Build Condition included a left-turn lane along Prince Avenue to Childs Street that would remove left-turning vehicles from the traffic queue, which enhances traffic operations and driver safety. The proposed project-generated traffic volumes and the future Build Condition traffic volumes are illustrated on **Figure 11** and **Figure 12**, respectively. As stated earlier, the traffic analysis software **Synchro, version 10** was utilized to evaluate the operating conditions of the study area network. Detailed analysis sheets for all traffic scenarios are provided in Appendix B.

The results of the intersection analysis for the future year 2018 No-Build Condition, which does not include the traffic generated by the proposed development, and the Build Condition are summarized in **Table 11** and **Table 12**. These results have revealed that each of the identified intersections analyzed are anticipated to operate at LOS C or better for both the AM and PM peak hours. There were no transportation improvements required for either of the future year (2018) Base or Build Conditions.

Figure 11-Project-Generated Traffic Volumes

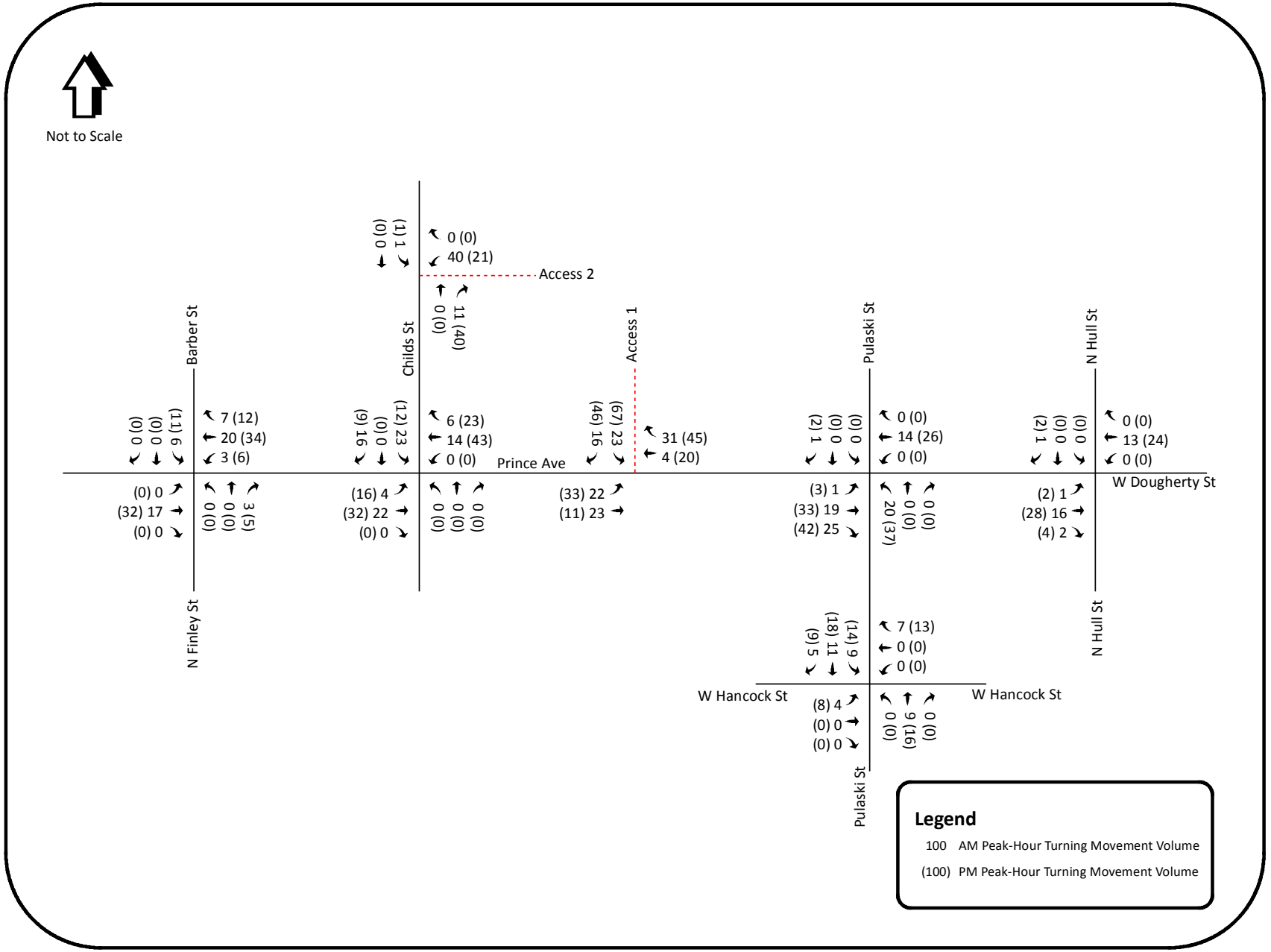


Figure 12-Future (2018) Build Condition Traffic Volumes

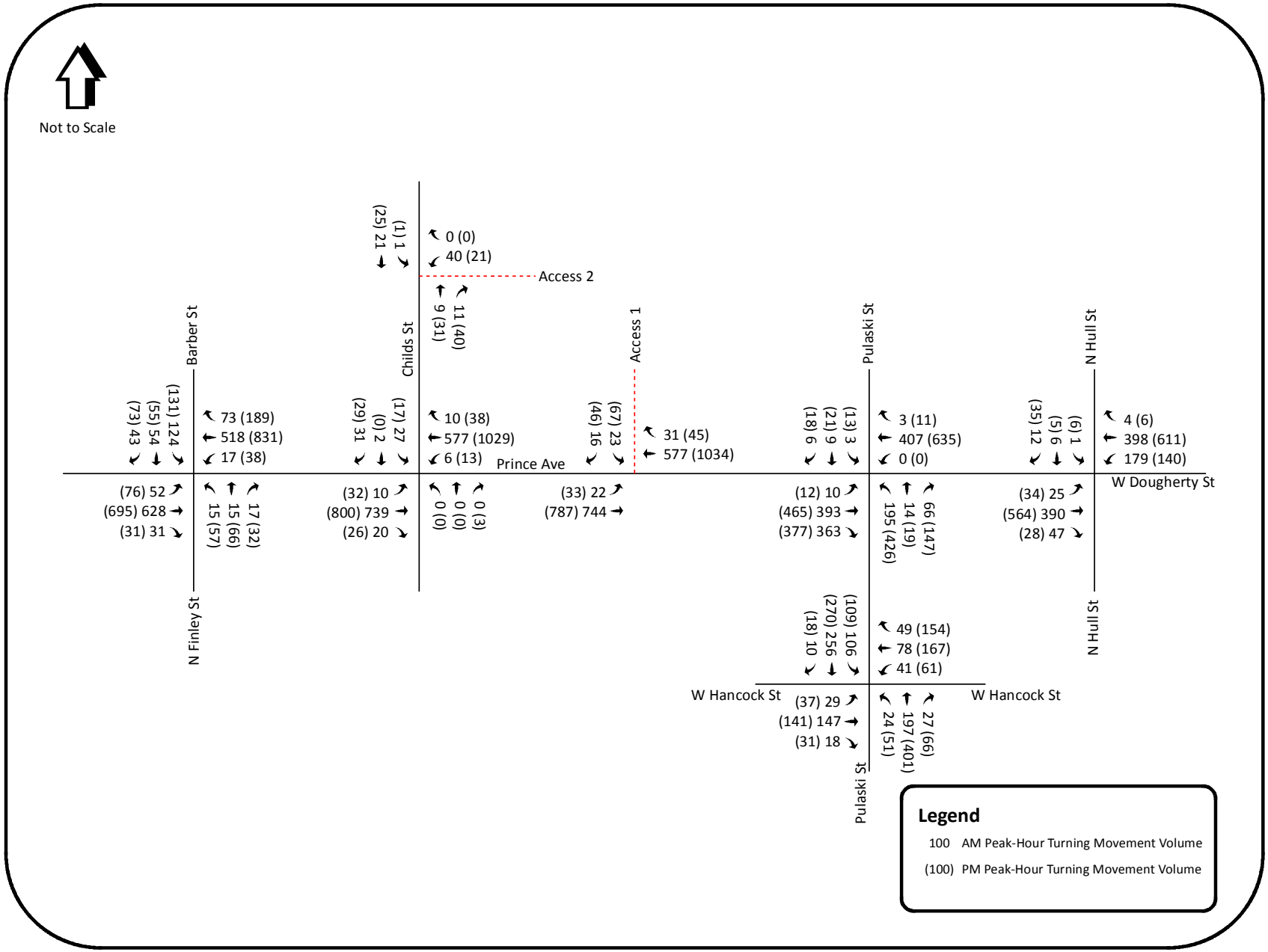


Table 11-Future (2018) No-Build Condition Intersection Level of Service Summary

Intersection	Control	Peak Period	Overall (Delay/LOS)	V/C Ratio	EB		WB		NB		SB		ICU (%/LOS)
					Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
Prince Ave @ Barber St/N Finley St	***Signal***	*AM*	*13.9/B*	*0.67*	9.6	A	18.9	B	10.3	B	13.4	B	48/A
		PM	*18.5/B*	*0.88*	9.0	A	27.1	C	13.8	B	13.9	B	69/C
Prince Ave @ Childs St	***Stop***	*AM*	*0.4/A*	*0.25*	0.1	A	0.2	A	-	-	12.9	B	41/A
		PM	*0.6/A*	*0.37*	0.4	A	0.3	A	9.9	A	15.3	C	54/A
Prince Ave/W Dougherty St @ Pulaski St	***Signal***	*AM*	*14.8/B*	*0.66*	12.6	B	21.9	C	11.4	B	14.1	B	51/A
		PM	*25.3/C*	*0.88*	13.1	B	27.8	C	39.2	D	13.8	B	66/C
W Dougherty St @ N Hull St	***Stop***	*AM*	*2.3/A*	*0.18*	0.4	A	2.8	A	-	-	24.4	C	37/A
		PM	*2.3/A*	*0.29*	0.5	A	1.8	A	-	-	28.0	D	43/A
W Hancock Ave @ Pulaski St	***Signal***	*AM*	*12.2/B*	*0.41*	15.4	B	10.9	B	15.9	B	8.9	A	56/B
		PM	*15.6/B*	*0.71*	19.7	B	13.9	B	21.1	C	8.6	A	75/D

Table 12-Future (2018) Build Condition Intersection Level of Service Summary

Intersection	Control	Peak Period	Overall (Delay/LOS)	V/C Ratio	EB		WB		NB		SB		ICU (%/LOS)
					Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
Prince Ave @ Barber St/N Finley St	***Signal***	*AM*	*14.2/B*	*0.7*	9.7	A	19.6	B	9.9	A	13.7	B	49/A
		PM	*20.7/C*	*0.92*	9.1	A	31.4	C	13.5	B	14.4	B	71/C
Prince Ave @ Childs St	***Stop***	*AM*	*1.2/A*	*0.32*	0.1	A	0.1	A	-	-	18.3	C	37/A
		PM	*0.9/A*	*0.41*	0.4	A	0.3	A	9.9	A	24.3	C	57/B
Prince Ave/W Dougherty St @ Pulaski St	***Signal***	*AM*	*15.3/B*	*0.7*	13.2	B	22.1	C	12.2	B	13.6	B	54/A
		PM	*27.4/C*	*0.85*	17.1	B	34.9	C	34.5	C	14.7	B	72/C
W Dougherty St @ N Hull St	***Stop***	*AM*	*2.3/A*	*0.18*	0.5	A	2.8	A	-	-	24.9	C	38/A
		PM	*2.4/A*	*0.32*	0.5	A	1.8	A	-	-	30.0	D	44/A
W Hancock Ave @ Pulaski St	***Signal***	*AM*	*12.5/B*	*0.43*	16.4	B	10.8	B	16.2	B	9.1	A	56/B
		PM	*16.0/B*	*0.73*	20.5	C	13.6	B	21.8	C	9.5	A	76/D
Access 1 @ Prince Ave	***Stop***	*AM*	*0.5/A*	*0.32*	0.3	A	-	-	-	-	12.7	C	46/A
		PM	*1.6/A*	*0.44*	0.6	A	-	-	-	-	24.6	D	56/B
Access 2 @ Prince Ave	***Stop***	*AM*	*4.4/A*	*0.04*	-	-	8.9	A	-	-	0.3	A	13/A
		PM	*1.7/A*	*0.05*	-	-	9.0	A	-	-	0.3	A	14/A

Section 4-Transportation Options

100 Prince would be constructed in a manner and at a location that has the ability to provide a balance between pedestrians, bicyclists, vehicles and transit. Each of these travel modes are currently encouraged along this portion of Prince Avenue and the proposed development strengthens each mode of travel with various design components. Buildings for non-residential land uses are proposed near the street, which works to promote enhanced access and may create a new walkable district as an extension of downtown Athens. Sidewalks that provide increased connectivity, a plaza at the corner of Pulaski Street and Prince Avenue, bicycle racks and consolidated parking located in the rear all contribute to a more enhanced walkable district. The mixture of land uses at this location may result in a slower-paced street that enhances pedestrian activity and safety. The acknowledgement of a "Complete Street" design along Prince Avenue that would further work to compliment the proposed development, as well as protect the City of Athens' transportation resources, has been considered in this report.

"Complete Street" Design

Source: Photo by Atkins: Pedestrian Crossing on Prince Ave

The proposed development affords the City of Athens with a unique opportunity to protect its transportation resources with sound transportation policies that would work to provide solutions to common transportation challenges. A "Complete Street" initiative would encourage multiple modes of transportation, reduce the number of vehicle miles traveled and promote safe and efficient mobility within the study area. As of July 9th, 2014, the ***Complete Streets: Prince Avenue*** website indicated that the novelty of a "Complete Street" project along Prince Avenue surfaced in 2004 as an urban design project, *Community Approach to Planning Prince Avenue*, and re-emerged in one of two corridor planning studies completed by Athens-Clarke County (ACC) staff in the year 2012. Prince Avenue appears to have the support of local business owners and nearby residents to convert the existing four-lane undivided roadway into an extension of downtown Athens. A design project, *Complete Streets: Prince Avenue*, that was initiated by citizens and conducted by University of Georgia faculty and ACC staff proposed improving Prince Avenue, from Pulaski Street to Milledge Avenue, as a three-lane roadway with pedestrian refuge islands at crosswalks to accommodate multiple modes of travel. The intention of this proposed improvement was to increase the functionality of the Prince Avenue corridor by initiating a road diet that would allow for dedicated bicycle lanes and encourage pedestrian travel with refuge islands at crosswalks. The website also revealed that in 2012, the ACC mayor and Commission adopted a complete streets policy that reads: *"The Complete Streets concept is an initiative to design and build roads that adequately accommodate all users of a corridor, including pedestrians, bicyclists, transit users and motorists."*[2]

[2] McCorory, Clint, "ACC is Doing a Poor Job of Planning Prince Avenue." *Complete Streets: Prince Avenue,* July 9th, 2014. Accessed November 24th, 2015. http://flagpole.com/news/comment/2014/07/09/acc-is-doing-a-poor-job-of-planning-prince-avenue.

Figure 13 demonstrates how the design of the proposed development offers numerous components of a "Complete Street" policy.

The existing (2015) peak-period traffic data that was collected for this evaluation indicates that pedestrian, bicycle and bus-transit activity occurs simultaneously with vehicular traffic at each of the identified intersections. As discussed previously, pedestrian activity for each of the identified intersections within the study area was collected for the morning, mid-day and evening peak-periods of travel. A preliminary investigation of this pedestrian activity, along with the peak-hour traffic volumes indicate that crosswalks are necessary within the study area. The number of conflicting pedestrians for each approach at the identified intersection locations are summarized in **Table 13**. For the purposes of this evaluation, these bicycle and pedestrian volumes were increased using the calculated annual growth rate for traffic for the anticipated year of completion (2018) and for a design year occurring in the year 2038. These future bicycle and pedestrian volumes have been further illustrated on **Figure 14** through **Figure 17**.

The proposed building orientations, off-street parking in the rear, shared-driveway access and the provision of bicycle and pedestrian amenities for the proposed development have all been incorporated minimizing the need for a single-occupant vehicle. As bicycle, transit and pedestrian modes of travel were observed at the proposed site location, the proposed mixture of land uses would strengthen the presence of a "Complete Street." Improving Prince Avenue as an extension of downtown Athens as a "Complete Street" would promote the use of alternative modes of transportation with the goal of reducing the number of vehicle miles traveled. Conversely, an incomplete street design would discourage travelers from utilizing other options such as, walking, bicycling or transit. The land uses proposed for this development have been designed in a fashion to reduce the burden of traffic congestion on the City of Athens' roadway facilities and improve travel times for all types of users. Prince Avenue can be considered as a main connection to the Central Business District of Athens and this community appears to be actively seeking innovative methods of transportation to meet their travel needs by extending Prince Avenue to the greater downtown Athens area. A "Complete Street" approach to transportation planning and design would escalate the transportation choices available for the general public. Additionally, a "Complete Street" design would encourage an efficient use of any existing facilities by offering alternatives to the automobile for travel. Walking, bicycling or public transportation can minimize the demands for peak-hour travel in an automobile.

A preliminary analysis of a "Complete Street" design was conducted utilizing both the future years 2018 and 2038 AM and PM Build Condition peak-hour traffic volumes and the study area network. A "road diet" that converts the current four-lane undivided roadway into a three-lane undivided roadway with one travel lane in each direction and a center, left-turn lane would permit the construction of dedicated bicycle lanes. The preliminary analysis also assumed that the width of each travel lane be reduced to 10 feet. These "Complete Street" design assumptions have been illustrated on **Figure 18**. The results of this analysis are summarized in **Table 14** and more detailed results are provided in Appendix B.

Figure 13-Complete Street Components

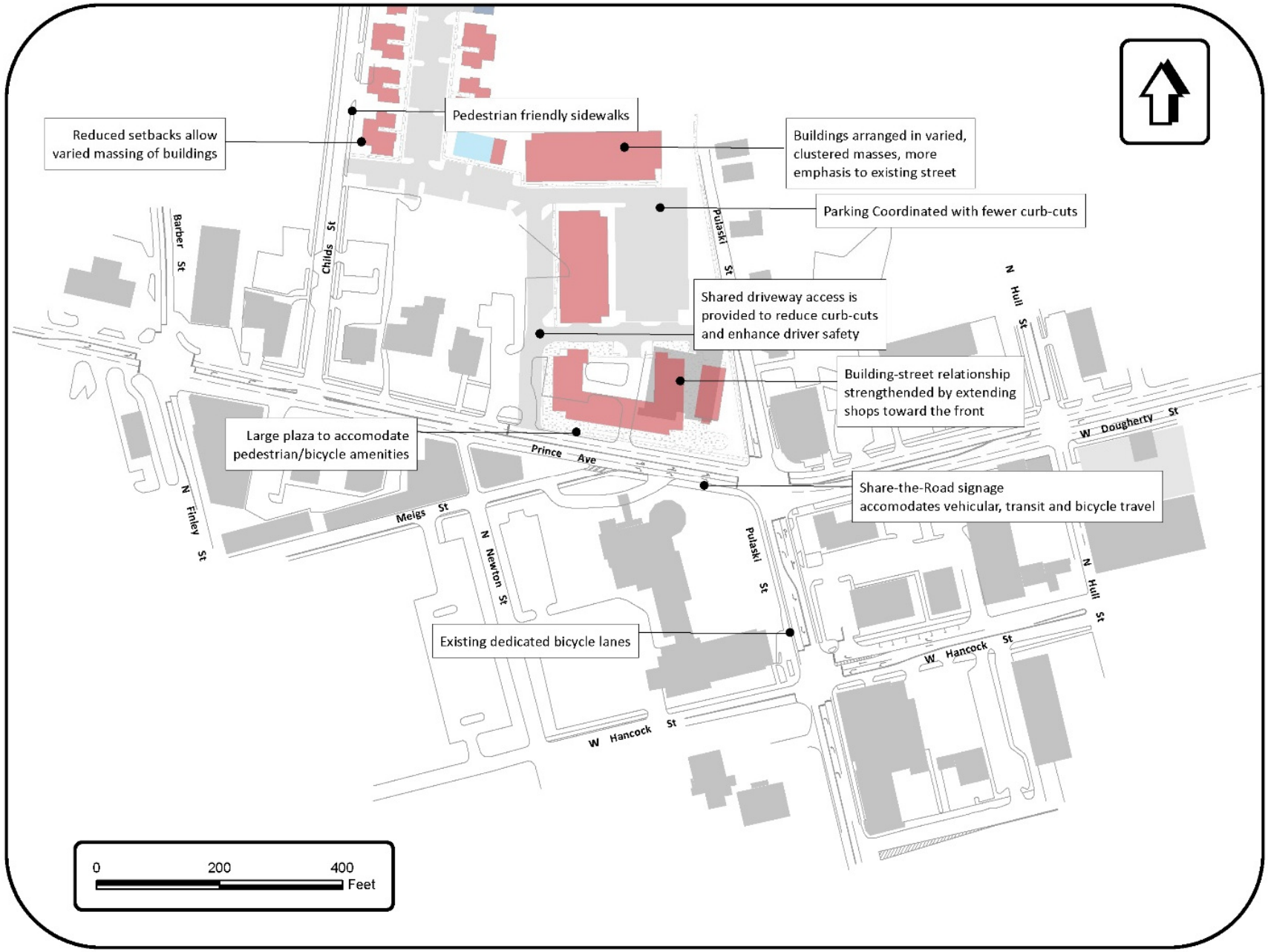


Table 13-Existing (2015) Conflicting Pedestrian Crossings

Intersection	Approach	Conflicting Pedestrian Crossings		
		AM	Mid-day	PM
Prince Ave @ Barber St/N Finley St	Southbound	9	29	12
	Westbound	10	26	14
	Northbound	1	12	29
	Eastbound	4	14	9
Total All Approaches		**24**	**81**	**64**
Prince Ave @ Childs St	Southbound	11	33	18
	Westbound	0	0	0
	Northbound	29	37	36
	Eastbound	1	1	0
Total All Approaches		**41**	**71**	**54**
N Newton St @ Prince Ave "The Grit Crossing"	Southbound	3	6	7
	East/Westbound	9	14	16
	Northbound	6	15	19
Total All Approaches		**18**	**35**	**42**
Prince Ave @ Pulaski St	Southbound	9	12	21
	Westbound	11	20	14
	Northbound	10	25	26
	Eastbound	n/a	n/a	n/a
Total All Approaches		**30**	**57**	**61**
W Dougherty St @ N Hul St	Southbound	3	6	7
	Westbound	4	6	7
	Northbound	6	15	19
	Eastbound	5	8	9
Total All Approaches		**18**	**35**	**42**
W Hancock St @ Pulaski St	Southbound	16	34	8
	Westbound	8	25	21
	Northbound	21	23	20
	Eastbound	5	25	17
Total All Approaches		**50**	**107**	**66**

Figure 14-Future (2018) Conflicting Pedestrian Traffic

Figure 15-Future (2018) Conflicting Pedestrian Traffic

Not to Scale

Legend

10 AM Pedestrian Count

10 Mid-Day Pedestrian Count

10 PM Pedestrian Count

Figure 16-Future (2038) Conflicting Pedestrian Traffic

Figure 17-Future (2038) Conflicting Pedestrian Traffic

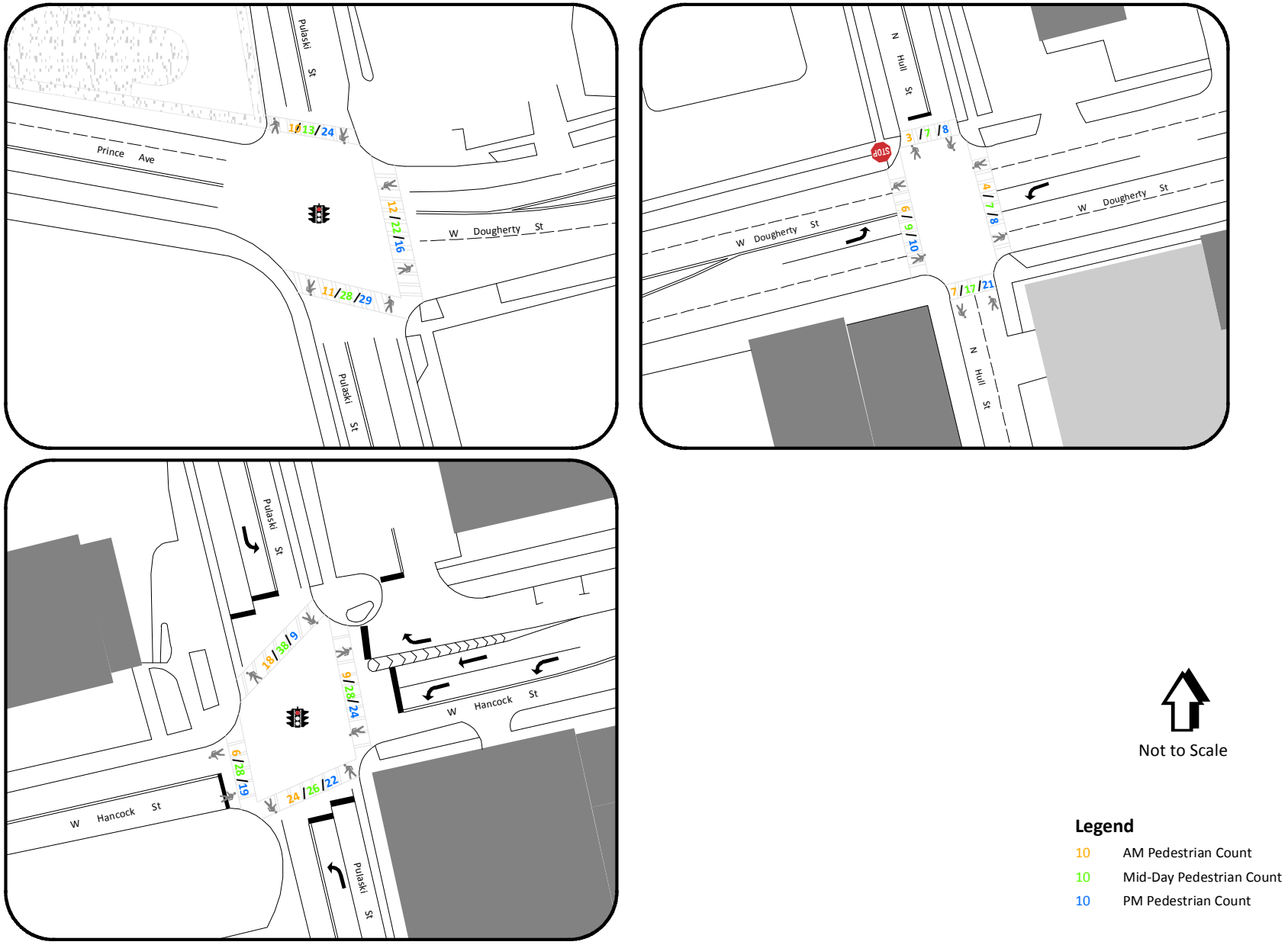


Figure 18-Complete Street Design

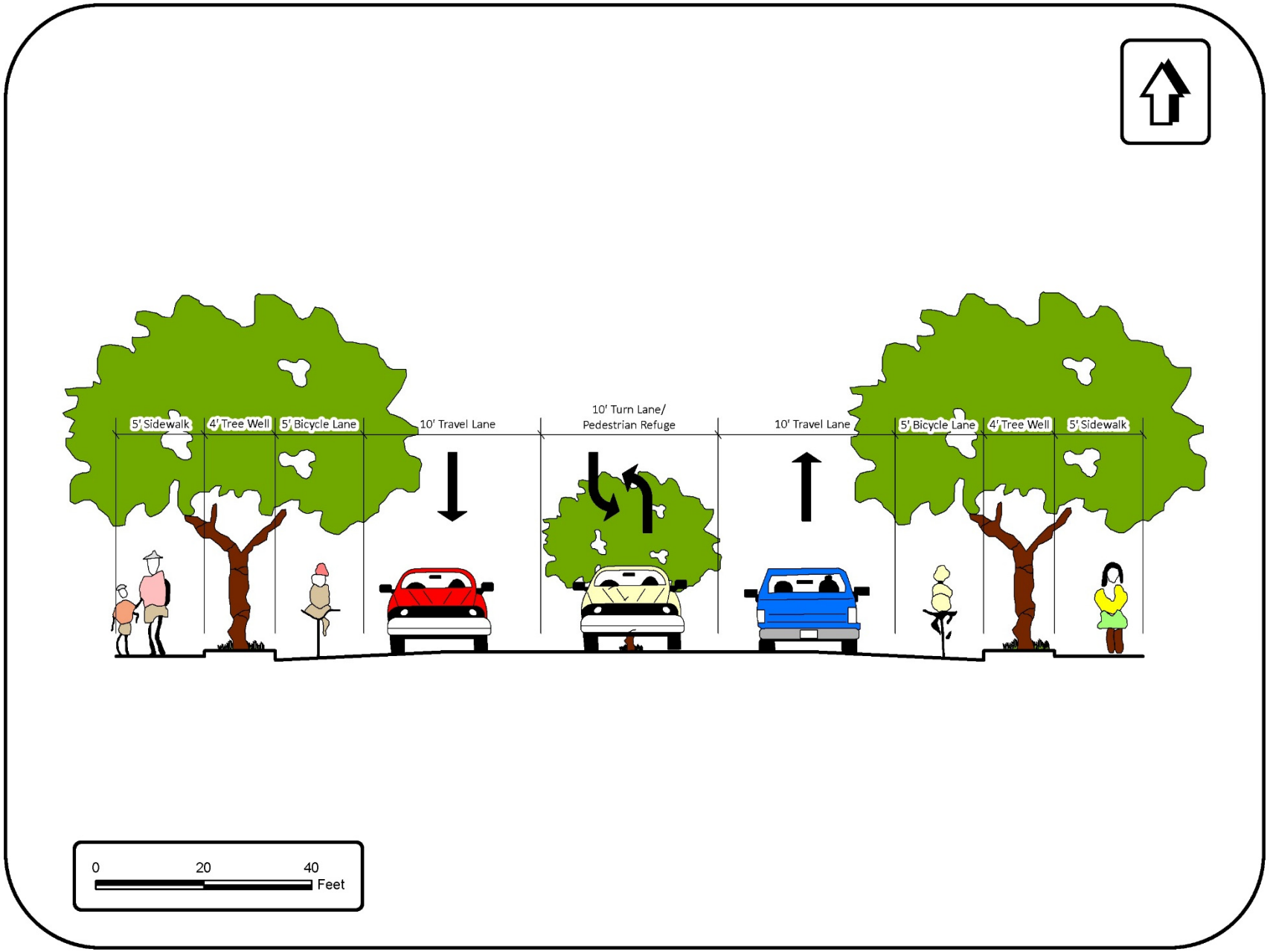


Table 14-Complete Street Intersection Level of Service Summary

Intersection	Control	Peak Period	Overall(Delay/LOS)			
			Future Year 2018		Future Year 2038	
			4-Lanes	Complete Street	4-Lanes	Complete Street
Prince Ave @ Barber St/N Finley St	*Signal*	*AM*	*14.2/B*	*25.0/C*	15.4/B	23.5/C
		PM	*20.7/C*	*37.9/D*	19.5/B	73.2/E
Prince Ave @ Childs St	*Stop*	*AM*	*1.2/A*	*1.5/A*	1.2/A	1.7/A
		PM	*0.9/A*	*4.6/A*	1.1/A	14.5/B
Prince Ave/W Dougherty St @ Pulaski St	*Signal*	*AM*	*15.3/B*	*33.3/C*	16.6/B	40.8/D
		PM	*27.4/C*	*59.2/E*	32.1/C	83.3/F
W Dougherty St @ N Hull St	*Stop*	*AM*	*2.3/A*	*2.2/A*	2.5/A	2.4/A
		PM	*2.4/A*	*2.4/A*	3.2/A	3.2/A
W Hancock Ave @ Pulaski St	*Signal*	*AM*	*12.5/B*	*12.5/B*	13.0/B	13.0/B
		PM	*16.0/B*	*24.1/C*	17.8/B	17.8/B
Access 1 @ Prince Ave	*Stop*	*AM*	*0.5/A*	*0.6/A*	0.5/A	0.6/A
		PM	*1.6/A*	*13.8/B*	1.8/A	25.3/D
Access 2 @ Prince Ave	*Stop*	*AM*	*4.4/A*	*4.4/A*	4.2/A	4.2/A
		PM	*1.7/A*	*1.7/A*	1.6/A	1.6/A

The levels of service at each of the identified intersections along Prince Avenue diminish with the construction of a "Complete Street" design. The intersection at Prince Avenue and Pulaski Street is expected to operate at LOS E during the PM peak-hour for the year 2018 with a "Complete Street" design. However, one must consider that a transportation facility accommodating all modes of travel that includes pedestrian, bicycle, vehicular and transit, may reduce the number of automobile peak-hour trips. The provision of dedicated bicycle lanes in each direction and one vehicular travel-lane in each direction with a center turn-lane that accommodates pedestrian refuge would create the "Complete Street" system. The remaining intersections within the study area for the future year 2018 are expected to operate at LOS D or better for each of the peak periods analyzed with a "Complete Street" design. An additional analysis for the future year 2038 was conducted and these results indicate that the intersections along Prince Avenue at Barber Street/N Finley Street and Pulaski Street/W Dougherty Street are anticipated to operate at LOS E and F, respectively. A "Complete Street" design alternative could be considered for Prince Avenue within the immediate vicinity of the proposed project with the expectation that vehicular trips would be reduced.

The "Complete Street" design option was also evaluated using a level of traffic stress (LTS) analysis[3]. The criteria used for this portion of the evaluation is provided in **Table 15** and **Table 16**. Currently, Prince Avenue is a four-lane roadway with a share-the-road accommodation for bicycle travel. Based upon the speed of Prince Avenue, the LTS analysis indicates that the facility would be categorized as a LTS 4 for both the current and future bicycle and pedestrian systems. In order to improve the LTS, the current speed limit would require a reduction.

Table 15-Criteria for Bike Lanes Not Alongside a Parking Lane

Criteria	LTS >= 1	LTS >= 2	LTS >= 3	LTS >= 4
Street Width (through lanes per direction)	1	2, if directions are separated by a raised median	More than 2, or 2 without separating median	(no effect)
Bike lane width (includes marked buffer and paved gutter)	6 ft. or more	5.5 ft. or less	(no effect)	(no effect)
Speed Limit or prevailing speed	30 mph or less	(no effect)	35 mph	40 mph or more
Bike lane blockage (may apply in commercial areas)	rare	(no effect)	frequent	(no effect)

Note: (no effect) = factor does not trigger an increase to this level of stress.

[3] Mekuria, Maaza C., Ph.D., P.E., PTOE, etal, "Low-Stress Bicycling and Network Connectivity." *Mineta Transportation Institute, May*, 2012. Accessed June 20th, 2017. http://transweb.sjsu.edu/PDFs/research/1005-low-stress-bicycling-network-connectivity.pdf.

Table 16-Criteria for Level of Traffic Stress in Mixed Traffic

	Street Width		
	2-3 lanes	4-5 lanes	6+lanes
Speed Limit up to 25 mph	LTS 1* or 2*	LTS 3	LTS 4
30 mph	LTS 2* or 3*	LTS 4	LTS 4
35+ mph	LTS 4	LTS 4	LTS 4

Note: * Use lower value for streets without marked centerlines or classified as residential and with fewer than 3 lanes; use higher value otherwise.

Section 5-Conclusions

Summary of Findings

In order to assess the impact of the proposed development, existing conditions were analyzed based upon actual traffic counts utilizing SYNCHRO traffic analysis software. Then a No-Build Condition was prepared to reflect the future conditions for the year 2018, assuming the proposed development was not constructed. A growth rate of one half percent (0.5%) per year was utilized to represent an increase in the existing traffic volumes and there were no planned roadway improvements identified to be completed by the anticipated year of construction for the proposed development, 2018. Project-generated traffic that is anticipated to be produced by the proposed development was estimated using the latest edition of the **Trip Generation Manual** and distributed within the study area network. Finally, the **Synchro** traffic analysis software was used to calculate levels-of-service using the Build Condition traffic volumes and their associated delays.

The findings of this study state that there are no transportation improvements required for the No-Build Condition that does not include the traffic generated by the proposed development. Each of the identified intersections are expected to operate at acceptable levels of service for the year 2018. Each of the identified intersections, along with the two proposed access locations, were further analyzed with the traffic generated by the proposed development. Each of the identified intersections and the proposed access locations are expected to continue operating at acceptable levels of service with the traffic that is generated by the proposed development. There were no transportation improvements necessary to serve the project-generated traffic, with the exception of a left-turn lane along Prince Avenue at Childs Street that was required by Athens-Clarke County.

Conclusion

The proposed development is estimated to be fully occupied by the year 2018 and there is a net total of 2,600 daily vehicular trip ends that are expected to be generated by the proposed development. During the AM peak hour, for the year 2018, there are 141 vehicles projected to access the roadways within the study area and during the PM peak hour there are 252 vehicles per hour expected to access the same facilities.

The results of this analysis have revealed that the current roadway facilities within the immediate vicinity of the subject property are expected to operate at acceptable levels of service (LOS D or better) for the year 2018, both with and without the construction of the proposed development. No transportation improvements are required to serve the traffic generated by the proposed development for the year 2018. The number of peak-hour trips associated with “100 Prince” for the Build Condition does not significantly impact the operation of any of the identified intersections. The highest number of trips generated by the proposed development occurs during the PM peak-hour for the year 2018 and these trips amount to approximately 250 vehicles per hour.

Appendices