DEVELOPMENT OF REGIONAL IMPACT
(DRI #3576)

TRAFFIC STUDY
FOR
MICROSOFT CCO06 DATA CENTER

CITY OF PALMETTO, GEORGIA

Prepared for:

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April 20, 2022
A & R Project # 21-123

EXECUTIVE SUMMARY

Traffic impacts were evaluated for the proposed Microsoft/Shugart Data Center development located to the northwest of Johnson Road and Williams Road in the City of Palmetto, Georgia. The development will consist of 1,180,000 sf of data center and 67,500 sf administrative office building land uses.

The development proposes to share the existing PVH's northern driveway on Tatum Road. An emergency only access is proposed on Johnson Road.

Existing and future operations during the AM peak hour (7:00 AM – 9:00 AM) and PM peak hour (4:00 PM – 6:00 PM) before and after completion of the project were analyzed at the following intersections:

1. SR 14/US 29 (Roosevelt Highway) @ Wilkerson Mill Road/Tatum Road
2. Tatum Road @ Joint Access with PVH

Traffic Operations Summary:

Table E1 below provides a summary of traffic operations for the "No-Build" and "Build" conditions for the year 2032 with and without system improvements. As per GRTA requirements, all approaches that do not meet the level-of-service (LOS) standard (considered failing) are highlighted in Table E1. Addition of auxiliary lanes did not improve the LOS to the standard LOS. The failing approaches were improved with the installation of a traffic signal in the "No-Build" condition as a system improvement. The traffic signal should be installed if and when warranted.

TABLE E1 – FUTURE INTERSECTION OPERATIONS

	Intersection	*No-Build Condition: LOS (Delay)*				*Build Condition: LOS (Delay)*							
		NO IMPROVEMENTS		SYSTEM IMPROVEMENTS		NO IMPROVEMENTS		SYSTEM IMPROVEMENT		SITE VOLUMES AT FAILING APPROACH BUILD WITH IMPROVEMENTS		PRECENT SITE TRIPS OF TOTAL APPROACH TRIPS AT FAILING APPROACHES	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1	**SR 14 (Roosevelt Hwy) @ Wilkerson Mill Road/Tatum Road**			**A (5.8)**	**A (5.8)**			**A (6.5)**	**A (6.8)**				
	-Eastbound Left (*Approach)*	A (8.0)	A (8.9)	A (4.6)	A (4.6)	A (8.0)	A (8.9)	A (4.5)	A (5.1)				
	-Westbound Left (*Approach)*	A (9.0)	A (8.2)	A (4.9)	A (4.9)	A (9.4)	A (8.3)	A (5.4)	A (5.6)	No failing approaches	No failing approaches	No failing approaches	No failing approaches
	-Northbound Approach	C (21.5)	E (38.5)	B (11.4)	B (11.4)	F (83.0)	F (120.1)	B (13.3)	B (12.5)				
	-Southbound Approach	F (69.9)	F (103.7)	B (12.4)	B (12.4)	F (255.8)	F (255.6)	B (14.4)	B (11.7)				

Recommended System Improvements

The following is the system improvement that was identified from the "No-Build" conditions analysis.

SR 14/US 29 (Roosevelt Highway) @ Wilkerson Mill Road/Tatum Road

- Installation of a traffic signal if warranted

Recommended Site Improvements

The following is the improvement that was identified from the "Build" condition analysis and was a result of the addition of site generated traffic.

Tatum Road @ Site's Joint Driveway with PVH

- Addition of a southbound left turn lane on Tatum Road for entering traffic

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INTRODUCTION

The purpose of this study is to determine the traffic impact from the proposed Microsoft/Shugart Data Center development located to the northwest of Johnson Road and Williams Road in the City of Palmetto, Georgia. The traffic analysis evaluates the current operations and the future conditions with the traffic generated by the development. The development will consist of:

- Data Center space: 1,180,000 sf
- Admin space: 67,500 sf

The development proposes access at the following locations:

- Site Driveway 1: Joint full access driveway with PVH on Tatum Road
- Site Driveway 2: Emergency only access on Johnson Road

This study includes the evaluation of traffic operations for the AM and PM peak hours at the intersections of:

1. SR 14/US 29 (Roosevelt Highway) @ Wilkerson Mill Road/Tatum Road
2. Tatum Road @ Joint Access with PVH

Recommendations to improve traffic operations have been identified as appropriate and are discussed in detail in the following sections of the report.

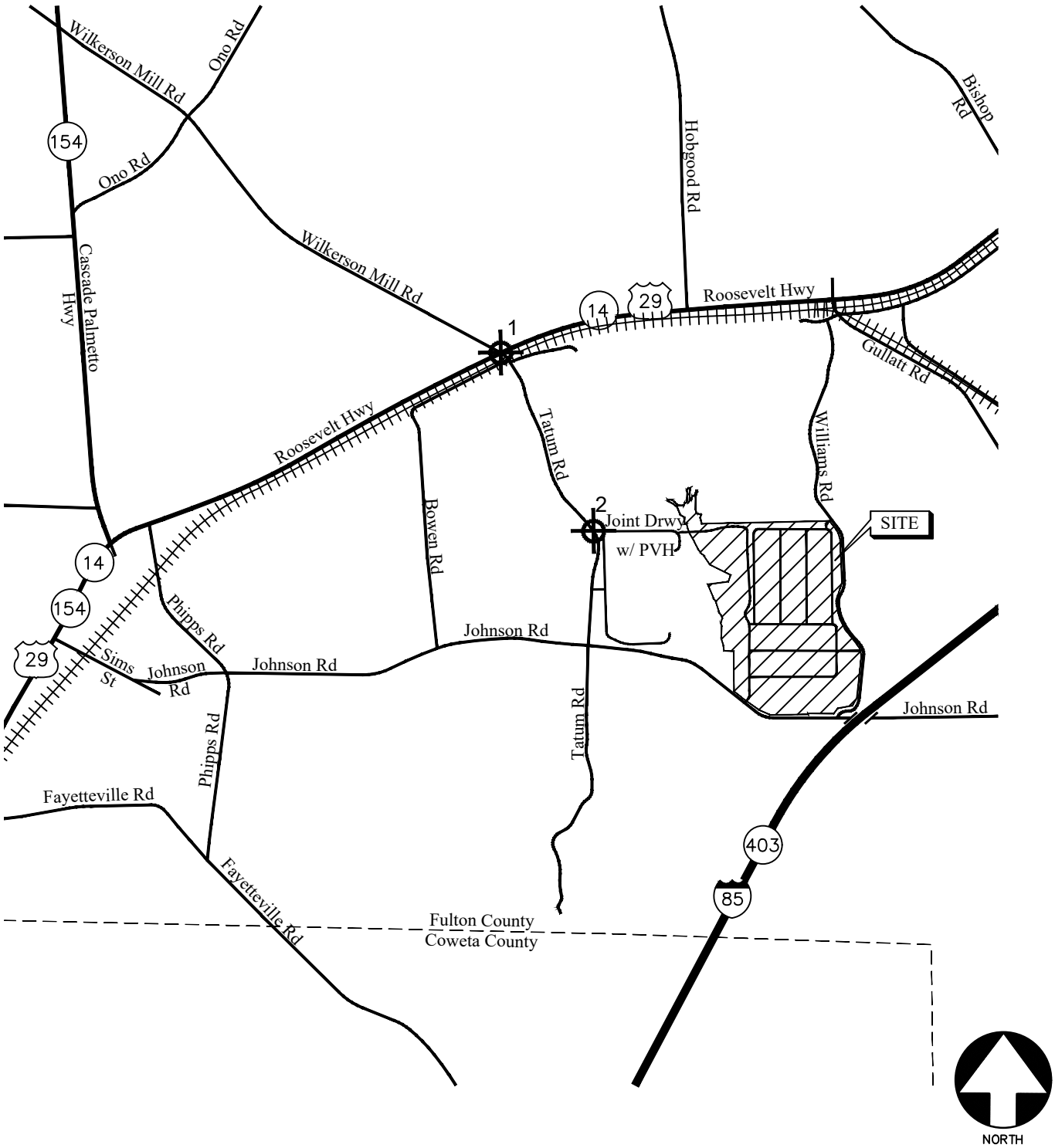
STUDY NETWORK DETERMINATION

The study network was determined by evaluating the amount of traffic that the proposed development will add to each roadway segment in the area. According to GRTA requirements, a roadway segment carries a "significant" amount of traffic if the project contributes 7% or more trips to the two-way daily service volumes of the roadway at the appropriate level of service standard. Upon agreement with GRTA a level of service standard of "D" was used for determining the study area network.

The traffic generated by the proposed project was then assigned to the area roadways using the trip distribution to determine the site-generated traffic on each roadway segment. The boundaries of the study network extend to the most distant intersections where at least 7% of the service volumes on the segment are attributed to project traffic. The following study intersections fell within the 7% rule and/or have been selected as being suitable for evaluation in discussions with ARC, GRTA, GDOT, Fulton County, Coweta County, Fayette County, City of South Fulton and City of Palmetto:

1. SR 14/US 29 (Roosevelt Highway) @ Wilkerson Mill Road/Tatum Road
2. Tatum Road @ Joint Access with PVH

The location of the development and the surrounding study network is shown in Figure 1. Other intersections within this corridor, such as unsignalized side streets, right-in / right-out driveways or private driveways have not been included in the study network.



LOCATION MAP AND STUDY INTERSECTIONS FIGURE 1

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EXISTING ROADWAY FACILITIES

The following is a brief description of each of the roadway facilities located in proximity to the site:

SR 14/US 29 (Roosevelt Highway)

SR 14/US 29 (Roosevelt Highway) is an east-west, four-lane roadway with a two-way left-turn lane and posted speed limit of 55 mph in the vicinity of the site. GDOT traffic counts (Station ID's 121-0174 & 121-0178) indicate that the daily traffic volume on SR 14/US 29 (Roosevelt Highway) in 2019 was 10,400 vehicles per day east of SR 154 (Cascade Palmetto Highway) and 10,900 vehicles per day west of Johns River Road. GDOT classifies SR 14/US 29 (Roosevelt Highway) as an Urban Minor Arterial roadway.

Wilkerson Mill Road

Wilkerson Mill Road is a north-south, two-lane, undivided roadway with a posted speed limit of 45 mph in the vicinity of the site. GDOT traffic counts (Station ID 121-7231) indicate that the daily traffic volume on Wilkerson Mill Road in 2019 was 1,230 vehicles per day east of Phillips Road. GDOT classifies Wilkerson Mill Road as an Urban Minor Collector roadway.

Tatum Road

Tatum Road is a north-south, two-lane, undivided roadway with a posted speed limit of 35 mph.

Existing Bicycle and Pedestrian Facilities

Sidewalks are available on the north side of SR 14/US 29 (Roosevelt Highway) near Tatum Road and on one side of Tatum Road from SR 14 to the existing warehouse that is located west of the proposed data center site. Crosswalks are available at intersections. Bicycle lanes are not available in the study network.

Alternative Modes of Access

MARTA transit Route 180 along SR 14/US 29 (Roosevelt Highway) includes 6 bus stops along the state route. This route operates North/South from College Park Station to City of Palmetto along Roosevelt Hwy. Camp Dr., Stonewall Tell Rd., continue Roosevelt Hwy and Main St. Points of Interest: GA Convention Ctr., S. Fulton Service Ctr, GA Military College, and Palmetto City Hall. No high-capacity transit stations were identified in the vicinity of the proposed development.

The graphic below includes the location of existing bus stops and sidewalks in the study network.

Transit Stop Ridership

Transit ridership data was obtained from MARTA and are presented in the table included below.

Stop	Stop Name	Location	Direction	Route	Boardings 2019	Alightings 2019	Boardings 2021	Alightings 2021
197036	ROOSEVELT HWY@HOBGOOD RD	Near Side	North	180	0	0	1	1
197130	ROOSEVELT HWY@HOBGOOD RD	Far Side	South	180	0	1	1	1
906386	ROOSEVELT HWY @ WILKERSON MILL RD	Near Side	South	180	1	14	1	10
906393	ROOSEVELT HWY @ TATUM RD	Far Side	Northeast	180	9	2	9	1
906394	ROOSEVELT HWY@GULLATT RD	Near Side	East	180	3	0	3	0
906398	ROOSEVELT HWY@GULLATT RD	Near Side	South	180	0	4	0	3

STUDY METHODOLOGY

In this study, the methodology used for evaluating traffic operations at each of the subject intersections is based on the criteria set forth in the Transportation Research Board's Highway Capacity Manual, 6th edition (HCM 6). Synchro software, which utilizes the HCM methodology, was used for the analysis. The following is a description of the methodology employed for the analysis of unsignalized and signalized intersections.

Unsignalized Intersections

For unsignalized intersections controlled by a stop sign on minor streets, the level-of-service (LOS) for motor vehicles with controlled movements is determined by the computed control delay according to the thresholds stated in Table 1 below. LOS is determined for each minor street movement (or shared movement), as well as major street left turns. LOS is not defined for the intersection as a whole or for major street approaches. The LOS of any controlled movement which experiences a volume to capacity ratio greater than 1 is designed as "F" regardless of the control delay.

Control delay for unsignalized intersections includes initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. Several factors affect the control delay for unsignalized intersections, such as the availability and distribution of gaps in the conflicting traffic stream, critical gaps and follow-up time for a vehicle in the queue.

Level-of-service is assigned a letter designation from "A" through "F". Level-of-service "A" indicates excellent operations with little delay to motorists, while level-of-service "F" exists when there are insufficient gaps of acceptable size to allow vehicles on the side street to cross the main road without experiencing long total delays.

TABLE 1 – LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Control Delay (sec/vehicle)	LOS by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	**v/c ≥ 1.0**
≤ 10	A	F
> 10 and ≤ 15	B	F
> 15 and ≤ 25	C	F
> 25 and ≤ 35	D	F
> 35 and ≤ 50	E	F
> 50	F	F

*The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection.

Source: Highway Capacity Manual, 6th edition, Exhibit 20-2 *LOS Criteria: Motorized Vehicle Mode*

Signalized Intersections

According to HCM procedures, LOS can be calculated for the entire intersection, each intersection approach, and each lane group. HCM uses control delay alone to characterize LOS for the entire intersection or an approach. Control delay per vehicle is composed of initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. Both control delay and volume-to-capacity ratio are used to characterize LOS for a lane group. A volume-to-capacity ratio of 1.0 or more for a lane group indicates failure from capacity perspective. Therefore, such a lane group is assigned LOS F regardless of the amount of control delay.

Table 2 below summarizes the LOS criteria from HCM for motorized vehicles at signalized intersections.

TABLE 2 – LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Control Delay (sec/vehicle)*	LOS for Lane Group by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	**v/c ≥ 1.0**
≤ 10	A	F
> 10 and ≤ 20	B	F
> 20 and ≤ 35	C	F
> 35 and ≤ 55	D	F
> 55 and ≤ 80	E	F
> 80	F	F

*For approach-based and intersection wide assessments, LOS is defined solely by control delay

Source: Highway Capacity Manual, 6th edition, Exhibit 19-8 *LOS Criteria: Motorized Vehicle Mode*

LOS A is typically assigned when the volume-to-capacity (v/c) ratio is low and either progression is exceptionally favorable, or the cycle length is very short. LOS B is typically assigned when the v/c ratio is low and either progression is highly favorable, or the cycle length is short. However, more vehicles are stopped than with LOS A. LOS C is typically assigned when progression is favorable, or the cycle length is moderate. Individual cycle failures (one or more queued vehicles are not able to depart because of insufficient capacity during the cycle) may begin to appear at this level. Many vehicles still pass through the intersection without stopping, but the number of vehicles stopping is significant. LOS D is typically assigned when the v/c ratio is high and either progression is ineffective, or the cycle length is long. There are many vehicle-stops and individual cycle failures are noticeable. LOS E is typically assigned when the v/c ratio is high, progression is very poor, the cycle length is long, and individual cycle failures are frequent. LOS F is typically assigned when the v/c ratio is very high, progression is very poor, the cycle length is long, and most cycles fail to clear the queue.

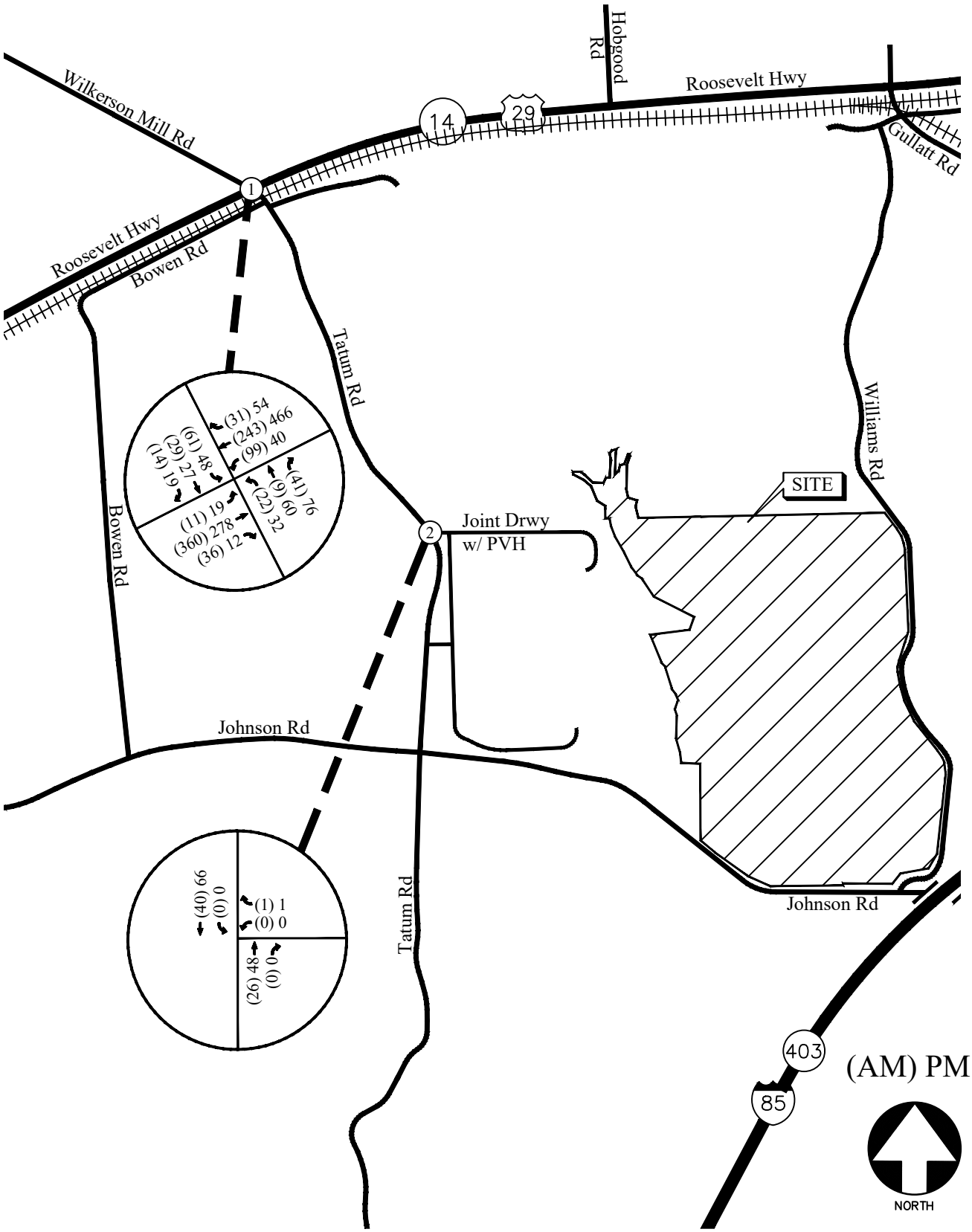
EXISTING 2022 TRAFFIC ANALYSIS

Existing Traffic Volumes

Existing traffic counts were obtained at the following study intersections:

1. SR 14/US 29 (Roosevelt Highway) @ Wilkerson Mill Road/Tatum Road
2. Tatum Road @ Joint Access with PVH

Turning movement counts were collected on Tuesday, April 12, 2022. All turning movement counts were recorded during the AM and PM peak hours between 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM, respectively. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 2.



EXISTING WEEKDAY PEAK-HOUR VOLUMES FIGURE 2

A&R Engineering Inc.

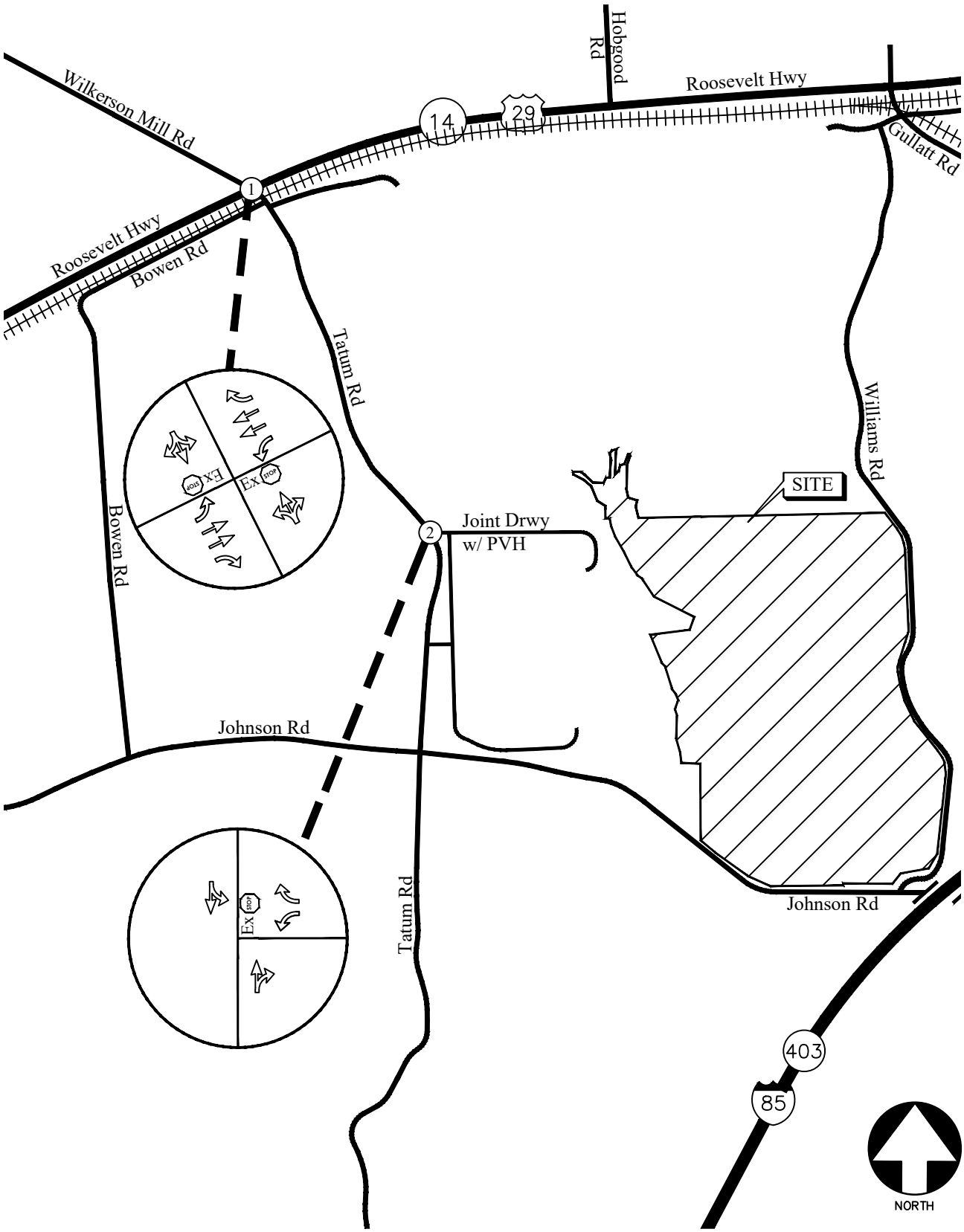
Existing Traffic Operations

Existing 2022 traffic operations were analyzed at the study intersections in accordance with the HCM methodology. The results of the analyses are shown in Table 3.

TABLE 3 – EXISTING INTERSECTION OPERATIONS					
Intersection		Traffic Control	AM Peak	PM Peak	LOS Standard
1	**SR 14 (Roosevelt Hwy) @ Wilkerson Mill Road/Tatum Road** -Eastbound Left -Westbound Left -Northbound Approach -Southbound Approach	Stop Controlled on NB and SB Approaches	 A (7.8) A (8.4) B (12.4) C (22.8)	 A (8.4) A (7.9) C (15.5) C (23.7)	 D / D D / D D / D D / D
2	**Tatum Road @ PVH Northern Driveway** -Westbound Approach	Stop Controlled on WB Approach	A (8.4)	A (8.6)	D / D

The results of existing traffic operations analysis indicate that both the study intersections are operating at level-of-service "C" or better in both the AM and PM peak hours.

The existing traffic control and lane geometry for the intersections are shown in Figure 3.



EXISTING TRAFFIC CONTROL AND LANE GEOMETRY FIGURE 3

A&R Engineering Inc.

PROJECT DESCRIPTION

The proposed Microsoft CCO06 Data Center development will be located to the northwest of Johnson Road and Williams Road in the City of Palmetto, Georgia. In general, the development will be located to the west/north of I-85. The development will consist of:

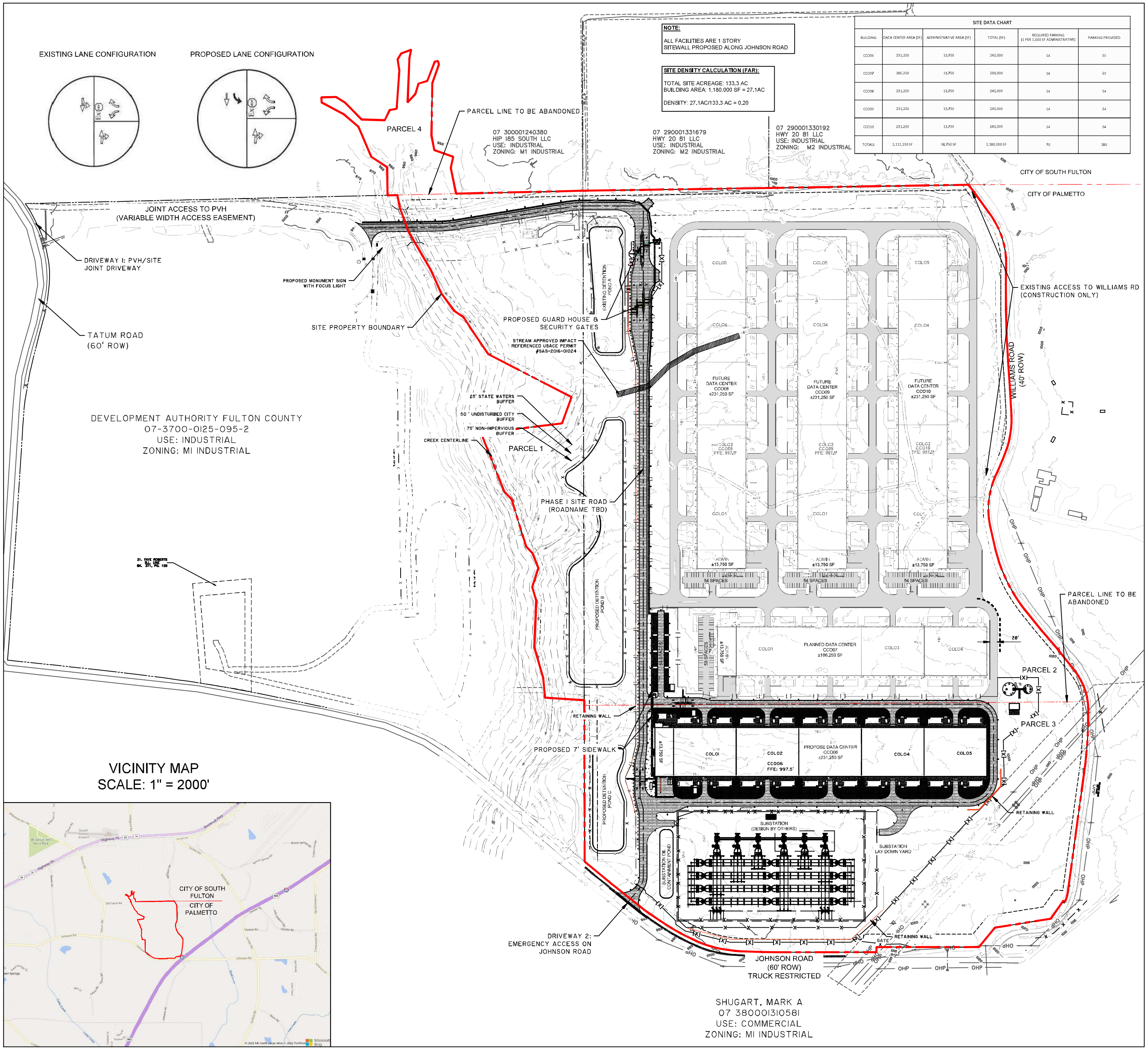
- Data Center space: 1,180,000 sf
- Admin space: 67,500 sf

The development proposes access at the following locations:

- Site Driveway 1: Joint full access driveway with PVH on Tatum Road
- Site Driveway 2: Emergency only access on Johnson Road

Site Plan

A site plan is shown in Figure 4. A digital copy of the site plan is also provided with this report.



NOTE:
ALL FACILITIES ARE 1 STORY
SITEWALL PROPOSED ALONG JOHNSON ROAD

SITE DENSITY CALCULATION (FAR):
TOTAL SITE ACREAGE: 133.3 AC
BUILDING AREA: 1,180,000 SF = 27.1AC
DENSITY: 27.1AC/133.3 AC = 0.20

SITE DATA CHART					
BUILDING	DATA CENTER AREA (SF)	ADMINISTRATIVE AREA (SF)	TOTAL (SF)	REQUIRED PARKING (1 PER 1,000 SF ADMINISTRATIVE)	PARKING PROVIDED
CCO06	231,250	13,750	245,000	14	59
CCO07	186,250	13,750	200,000	14	59
CCO08	231,250	13,750	245,000	14	54
CCO09	231,250	13,750	245,000	14	54
CCO10	231,250	13,750	245,000	14	54
TOTALS	1,111,250 SF	68,750 SF	1,180,000 SF	70	280

OWNER/APPLICANT

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REDMOND, WA 98052
470-645-6462
CONTACT: MICHAEL TRADER
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COLUMBIA, SC 29202
803-451-6789
CONTACT: MARK DESOUZA

LANDSCAPE:

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470-893-1700
CONTACT: MATT MITCHELL

SURVEYOR:

SAM, LLC
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512-447-0575
CONTACT: CHAD TURNER

ARCHITECT:

SHEEHAN NAGLE HARTRAY ARCHITECTS
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LAWRENCEVILLE, GA 30043
770-623-0755
CONTACT: CAROLINA MURPHY

TRANSPORTATION:

A&R ENGINEERING
2160 KINGSTON COURT, SUITE O
MARIETTA, GA 30067
CONTACT: ABDUL AMER

GOVERNING AGENCIES

REVIEW AGENCY:

CITY OF PALMETTO PLANNING
509 TOOMBS ST
PALMETTO, GA 30268
770-463-3377

FIRE DISTRICT:

PALMETTO FIRE DEPARTMENT
501 MENEFEE ST.
PALMETTO, GA 30268
770-463-4243

UTILITIES

WATER:

CITY OF ATLANTA DEPARTMENT OF WATERSHED MANAGEMENT
72 MARIETTA ST NW
ATLANTA, GA 30303
404-546-0311

SANITARY SEWER:

FULTON COUNTY DEPARTMENT OF PUBLIC WORKS
7520 COCHRAN RD
ATLANTA, GA 30349
770-774-1638

SURVEY DATUM/BASIS OF BEARINGS

THE BASIS OF BEARINGS IS: GEORGIA STATE PLANE COORDINATES (WEST)
NAVD '88

FLOOD PLAIN NOTE
THE SUBJECT PROPERTY IS PARTIALLY LOCATED WITHIN A FLOOD ZONE X DESIGNATED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), PER FLOOD INSURANCE RATE MAPS 13121C0445F DATED SEPTEMBER 18, 2013 AND 13121C0463F DATED SEPTEMBER 18, 2013

PARCEL NUMBERS

PARCEL NO. 1: 07 370001250580 ZONED M-1
14.978 AC

PARCEL NO. 2: 07 380001320770 ZONED M-2
76.512 AC

PARCEL NO. 3: 07 370001321141 ZONED M-2
39.333 AC

PARCEL NO. 4: 07 380001241131 ZONED M-1
2.512 AC

FINAL PARCEL TOTAL: 133.355 AC

SITE DATA

TOTAL SITE AREA = ±133.3 ACRES

EXISTING USE = WOODED WITH DIRT ROADS

PROPOSED USE = INDUSTRIAL/DATA CENTER

EXISTING ZONING: M1 LIGHT INDUSTRIAL / M2 HEAVY INDUSTRIAL

PROPOSED ZONING: M1 LIGHT INDUSTRIAL / M2 HEAVY INDUSTRIAL

SURROUNDING LAND USES:

NORTH:	EXISTING LAND USE EXISTING ZONING	LIGHT INDUSTRIAL M1 LIGHT INDUSTRIAL M2 HEAVY INDUSTRIAL
EAST:	EXISTING LAND USE EXISTING ZONING	WOODS M2 HEAVY INDUSTRIAL
SOUTH:	EXISTING LAND USE EXISTING ZONING	WOODS M2 HEAVY INDUSTRIAL
WEST:	EXISTING LAND USE EXISTING ZONING	HOUSE / LIGHT INDUSTRIAL RR RURAL RESIDENTIAL M1 LIGHT INDUSTRIAL

MINIMUM REQUIRED SETBACK: 20' BLD SETBACK (EAST, NORTH, WEST)
50' BLDG FRONT SETBACK (SOUTH)

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1455 Lincoln Parkway, Suite 500
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Architect
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Geotechnical Engineer
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Lawrenceville, GA 30043
Tel 770.235.5440

CCO06 DATA CENTER

PALMETTO, GA
SOUTH FULTON, GA

Design	NJH
Drawn	BDH/MCL
Checked	MGD
Date	April 21, 2022
Project No.	2103231.00
M.S. Project No.	P.17630

MICROSOFT

Design Manager	HILLARY MURRAY
Layout Manager	
Civil, Site Survey, Landscaping Technical Lead	DAVID SWANSON / SONDWIP DHAR
Architectural & Structural Technical Lead	TODOR NIKOLOV
Mech, Plumbing & Fire Protection Technical Lead	STEVIN TOUPIN
Building Automation Systems (BAS) Technical Lead	PAUL HILDE
Electrical Technical Lead	AC COUTU/ANAGA KRISHNAN
Electrical Power Management Systems (EPMS) Technical Lead	SERGIO FRANCO
Telecommunications / Network Technical Lead	ERIC BEAL
Security Design Manager	JOSHUA VANTASSEL

DESIGN TEAM

Civil Engineering Lead	MARK DESOUZA / TH
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Architectural Lead	DUANE HILL / SNHA
Mechanical Engineering Lead	ALLAN DY / MH
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Fire Protection Engineering Lead	DAN DAHL / MH
BAS Engineering Lead	PAUL HO / MH
Electrical Engineering Lead	ERIC DANIELS / MH
Telecommunications / Network Engineering Lead	JOHN PEDRO / TEECOM
Security Systems Engineering Lead	MARIA GONZALES / TEECOM
Audio & Visual Lead	ADAM RAMSEY / WWT
Geotechnical Engineering Lead	BILL SHEFFIELD / TERRACON

Revisions

No.	Date	Description

Registration

PRELIMINARY

Sector Key Plan

Bar Code

Package

Sheet Title/Number

CONCEPTUAL MASTER PLAN

DRI: 3576 MICROSOFT CCO06/SHUGART DATA CENTER

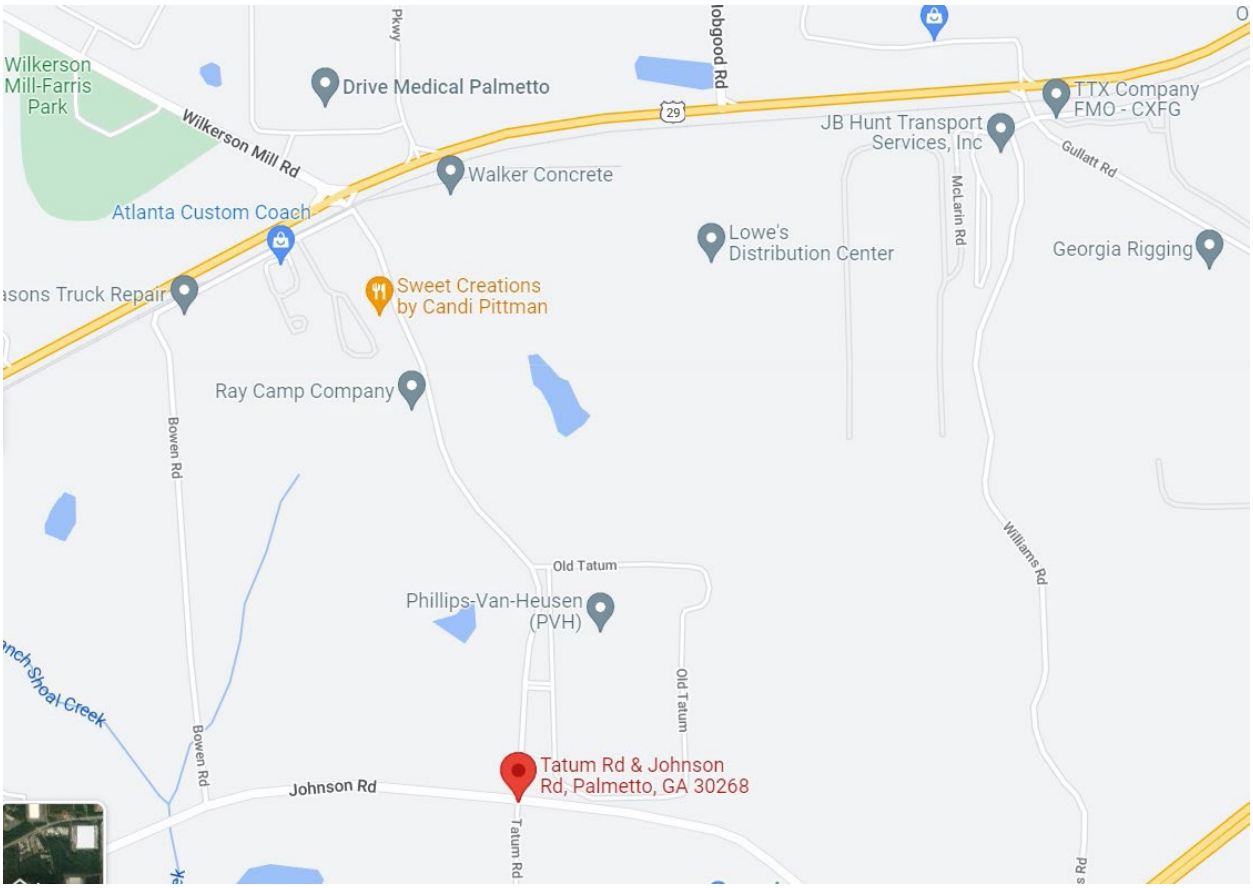
C-C1-01

Planned Bicycle and Pedestrian Facilities

Sidewalks will be provided throughout the development.

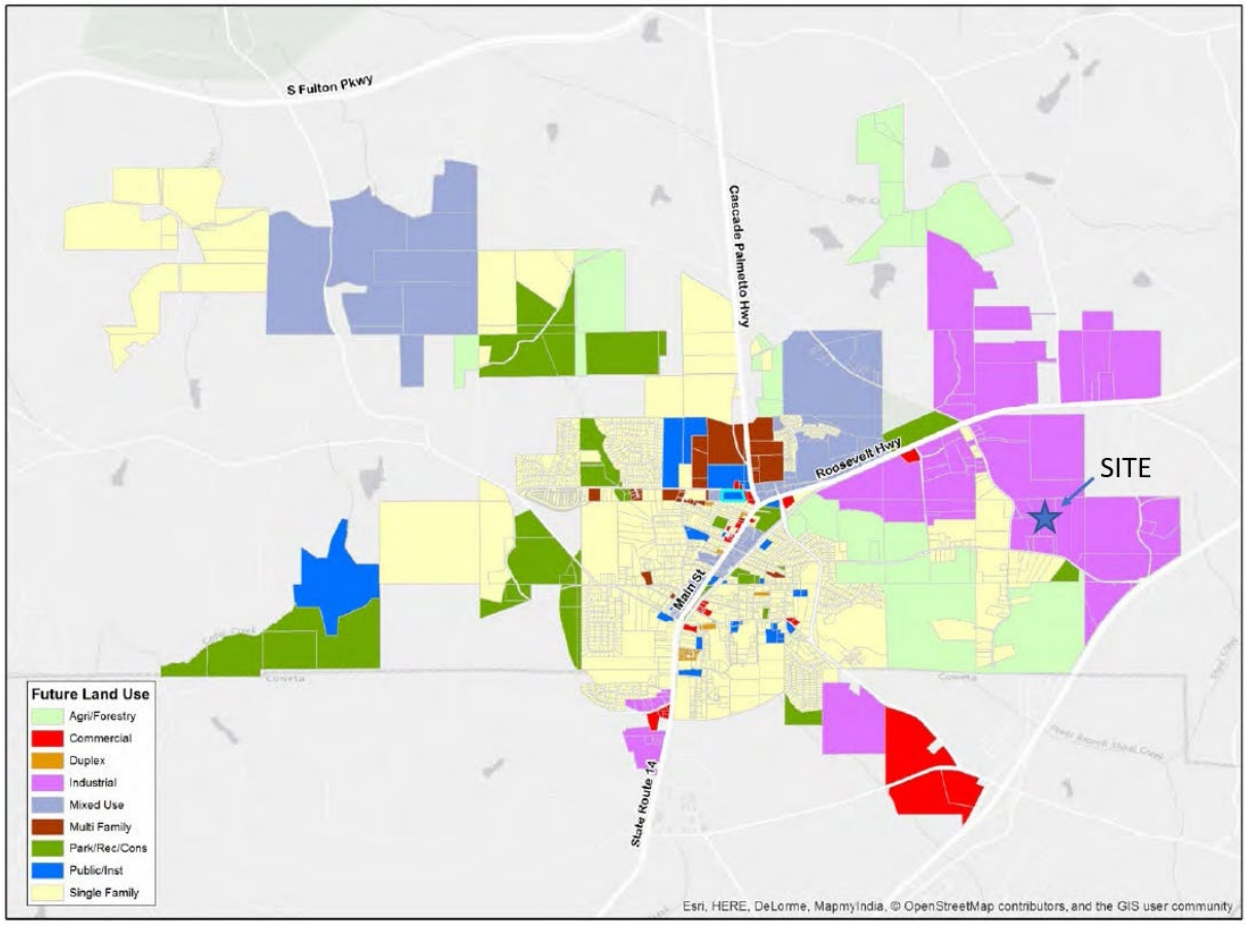
Potential Pedestrian and Bicycle Destinations

Potential pedestrian and bicycle destinations in the vicinity of the proposed development include Wilkerson Mill Farris Park, Drive Medical Palmetto, and Sweet Creations by Candi Pittman. Additional potential destinations are shown in the aerial below.



Consistency with Adopted Comprehensive Plan

The property includes approximately 133.3 acres of land and is zoned as M1 Light Industrial/M2 Heavy Industrial. The future land use designated by the City of Palmetto is industrial and is shown in the graphic below. The proposed development is consistent with the land use vision and goals included by the City. The City of Palmetto defines the industrial land use for land that is dedicated to manufacturing facilities, processing plants, factories, warehousing and wholesale trade facilities, mining or mineral extraction, or other similar uses.



Project Phasing

This project has been evaluated for the complete build-out of the development in 2032.

Trip Generation

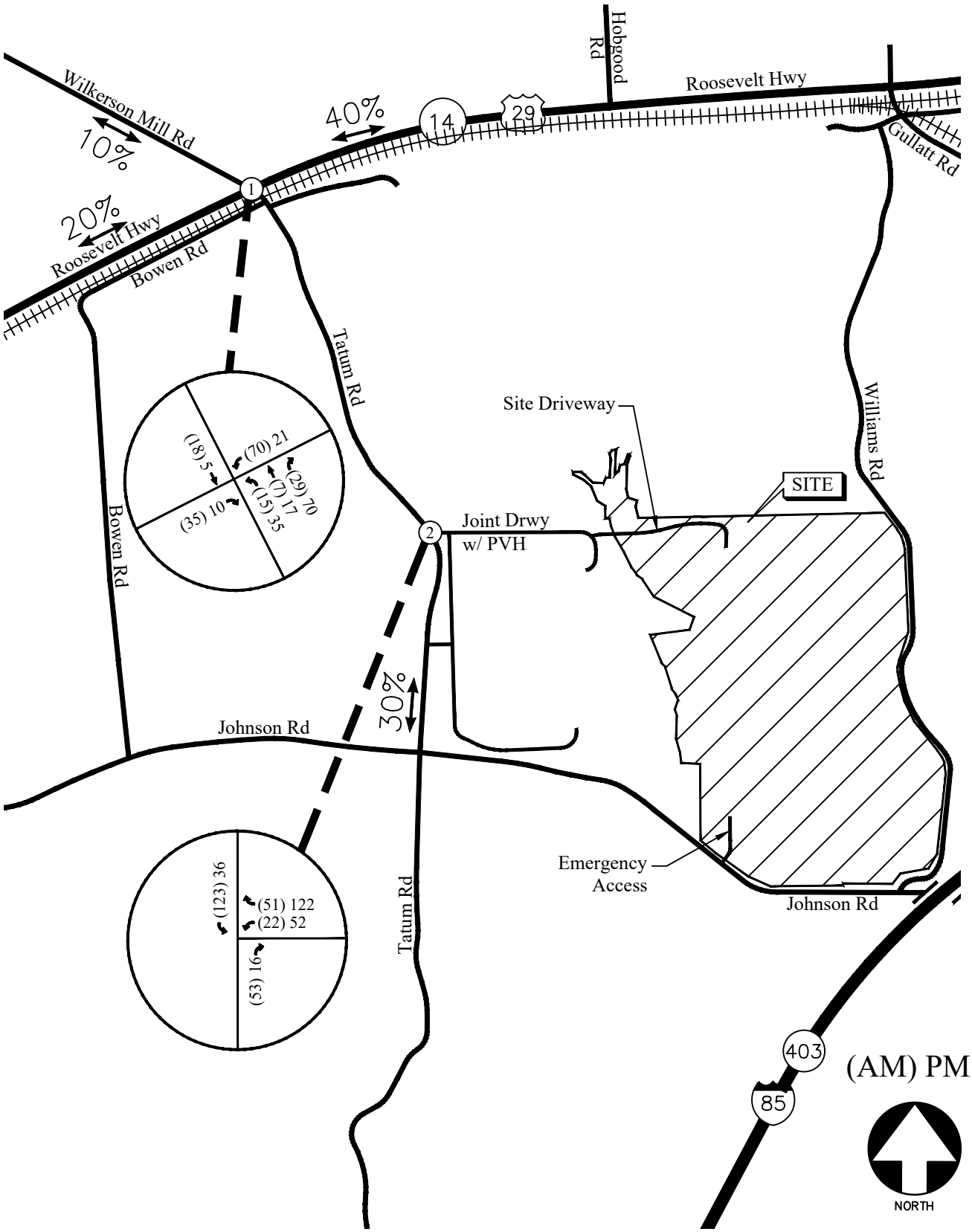
Trip generation estimates for the project were based on the rates and equations published in the 11th edition of the Institute of Transportation Engineers (ITE) Trip Generation report. This reference contains traffic volume count data collected at similar facilities nationwide. The trip generation was based on the following ITE Land Uses: *160 – Data Center* and *710 – General Office Building.* The calculated total trip generation for the proposed development is shown in Table 4.

TABLE 4 – TRIP GENERATION

Land Use	Size	AM Peak Hour			PM Peak Hour			24-Hour
		Enter	Exit	Total	Enter	Exit	Total	2-way
160 – Data Center	1,180,000 sf	71	59	130	32	74	106	1,168
710 – General Office Building	67,500 sf	105	14	119	20	100	120	824
Total Site Trips		**176**	**73**	**249**	**52**	**174**	**226**	**1,992**

Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An overall trip distribution was developed for the site based on a review of GDOT ADT volumes and the locations of major roadways and highways that will serve the development. The site-generated peak hour traffic volumes, shown in Table 4, were assigned to the study area intersections based on this distribution. The outer leg trip distribution and the AM and PM peak hour new traffic generated by the site is shown in Figure 5.



TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY PEAK HOUR VOLUMES

FIGURE 5

A&R Engineering Inc.

FUTURE 2032 TRAFFIC ANALYSIS

The future 2032 traffic operations are analyzed for the "Build" and "No-Build" conditions. This provides a basis of reference for determining both the contribution of the site to overall traffic conditions and the additional improvements needed to provide sufficient site access and capacity for passing traffic. Note that survey and construction drawings would be needed to verify the feasibility and extent of additional right-of-way required for any recommended improvements.

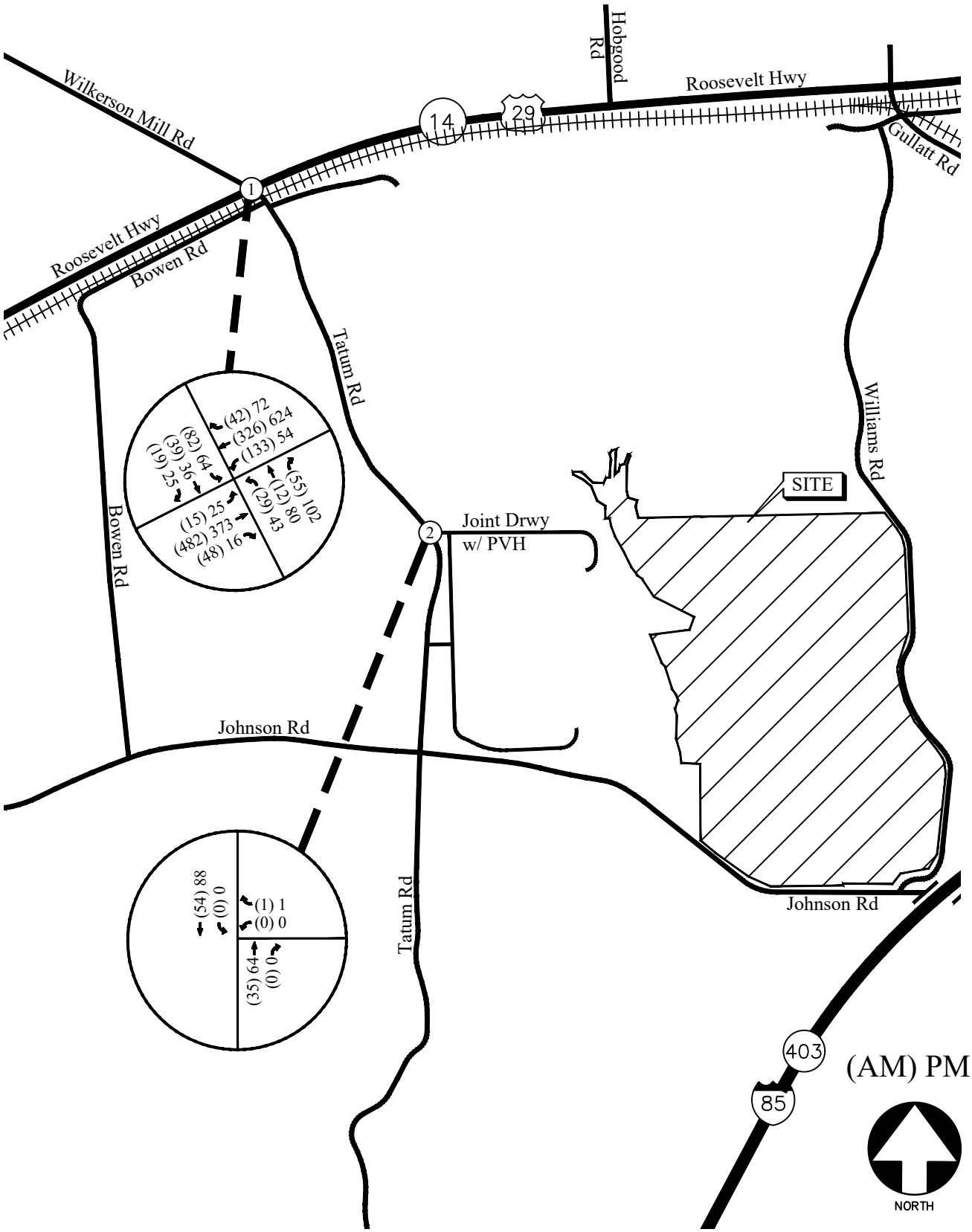
Improvements that are identified as "System Improvements" address deficiencies that are found within the existing road network prior to any impacts from the proposed development's added traffic. Improvements that are identified as "Site Mitigation Improvements" address further impacts that are a result of the proposed development's added traffic.

Future "No-Build" Conditions

The "No-Build" (or background) conditions provide an assessment of how traffic will operate in the study horizon year without the study site being developed as proposed, with projected increases in through traffic volumes due to normal annual growth. The Future "No-Build" volumes consist of the existing traffic volumes (Figure 2) plus increases for annual growth of traffic.

Annual Traffic Growth

In order to evaluate future traffic operations in this area, a projection of normal traffic growth was applied to the existing volumes. The Georgia Department of Transportation recorded average daily traffic volumes at several locations in the vicinity of the site. Reviewing the growth over the last three (2017-2019) years revealed growth of approximately 3.4% in the area. This growth factor was applied to the existing traffic volumes to estimate the future year traffic volumes prior to the addition of site-generated traffic. The resulting Future "No-Build" volumes on the roadway are shown in Figure 6.



FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES FIGURE 6

A&R Engineering Inc.

Future "No-Build" Traffic Operations

The future "No-Build" traffic operations were analyzed using the volumes in Figure 6 and the results are shown in Table 6.

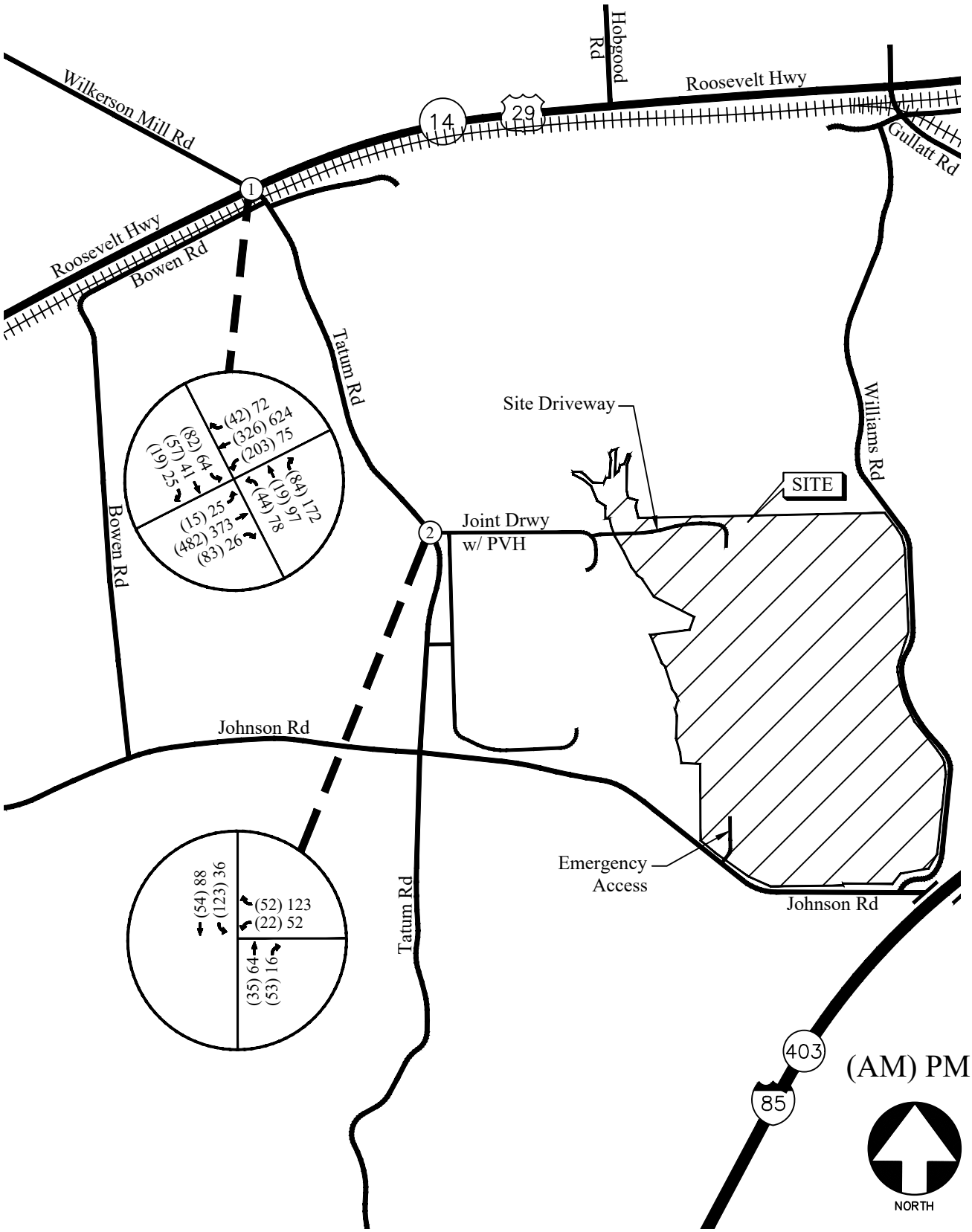
TABLE 6 – FUTURE "NO-BUILD" INTERSECTION OPERATIONS

Intersection		No-Build Condition: LOS (Delay)			
		NO IMPROVEMENTS		SYSTEM IMPROVEMENTS	
		AM Peak	PM Peak	AM Peak	PM Peak
1	**SR 14 (Roosevelt Hwy) @ Wilkerson Mill Road/Tatum Road**			**A (5.8)**	**A (6.1)**
	-Eastbound Left (*Approach)*	A (8.0)	A (8.9)	A (4.6)	A (4.5)
	-Westbound Left (*Approach)*	A (9.0)	A (8.2)	A (4.9)	A (5.0)
	-Northbound Approach	C (21.5)	E (38.5)	B (11.4)	B (12.4)
	-Southbound Approach	F (69.9)	F (103.7)	B (12.4)	B (12.1)
2	**Tatum Road @ Joint Access Driveway with PVH**				
	-Westbound Approach	A (8.5)	A (8.7)	A (8.5)	A (8.7)

The results of future "No-Build" traffic operations indicate that the intersection of SR 14 (Roosevelt Highway) and Wilkerson Mill Road/Tatum Road will operate at level-of-service "E" or "F". If the intersection is signalized, the LOS will improve to "B" or better in both the AM and PM peak hours. Therefore, a traffic signal is recommended at this intersection as a system improvement if warranted by MUTCD signal warrant standards.

Future "Build" Conditions

The "Build" or development conditions include the estimated background traffic from the "No-Build" conditions plus the added traffic from the proposed development. In order to evaluate future traffic operations in this area, the additional traffic volumes from the site (Figure 5) were added to base traffic volumes (Figure 6) to calculate the future traffic volumes after the construction of the development. These total future traffic volumes are shown in Figure 7.



FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES FIGURE 7

A&R Engineering Inc.

Left Turn Auxiliary Lane Analysis

Included below is the analysis for a left-turn lane for the site's joint driveway with PVH on Tatum Road per GDOT standards. The analysis below is based off the trip distribution included in the "Trip Distribution" section. According to the trip distribution, the 24-hour two-way volume entering and exiting the proposed data center site is 1,992 vehicles. The AADT on Tatum Road is assumed to be less than 6,000 vehicles based on the GDOT volumes on the surrounding roadways.

For two lane roadways with AADT's less than 6,000 vehicles and a posted speed limit of 35 mph, the daily site generated traffic left-turn movements threshold to warrant a left-turn lane is 300 left-turning vehicles a day. The projected left-turn volumes per day for the site driveway is included in Table 7.

TABLE 7 – GDOT REQUIREMENTS FOR LEFT TURN LANES

Intersection	Left turn traffic (% total entering)	Left-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/ day)	Warrants met?
Tatum Road @ Site's Joint Driveway with PVH	70% (Southbound)	**697** (total trips) ÷ 2 × 0.7 = (1992) ÷ 2 x 0.7 = 697	35 mph / 2-Lane / < 6,000	300	Yes

A left-turn lane is warranted per GDOT standards. Therefore, a left turn is recommended on Tatum Road for entering traffic and the same is modeled in synchro as a site improvement in the build conditions.

Future "Build" Traffic Operations

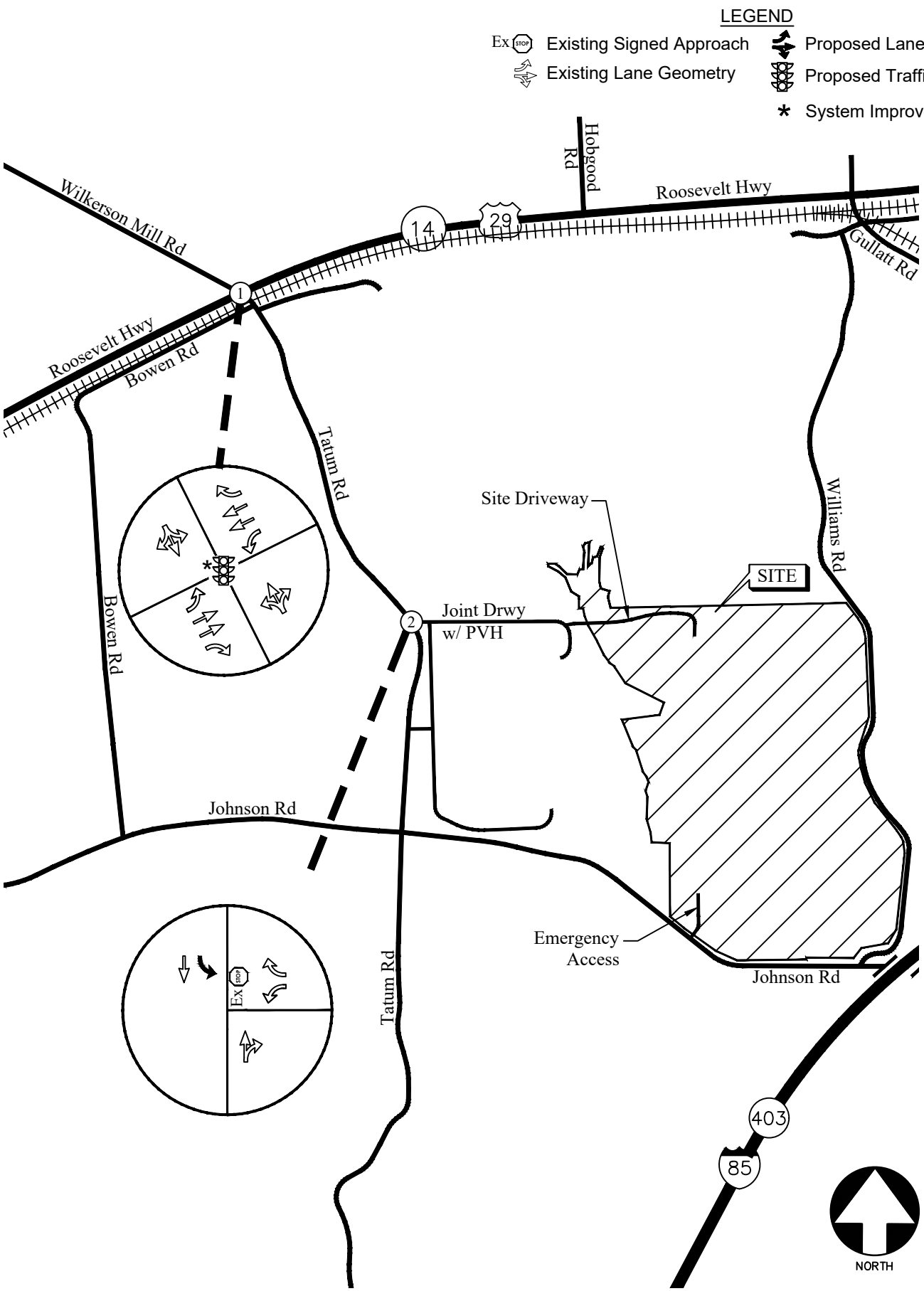
The future "Build" traffic operations were analyzed using the volumes in Figure 7. The results of the future "Build" traffic operations analysis are shown in Table 8.

TABLE 8 – FUTURE "BUILD" INTERSECTION OPERATIONS

Intersection		Build Condition: LOS (Delay)			
		NO IMPROVEMENTS		WITH IMPROVEMENTS	
		AM Peak	PM Peak	AM Peak	PM Peak
1	**SR 14 (Roosevelt Hwy) @ Wilkerson Mill Road/Tatum Road**			**A (6.5)**	**A (6.8)**
	-Eastbound Left (*Approach)*	A (8.0)	A (8.9)	A (4.5)	A (5.1)
	-Westbound Left (*Approach)*	A (9.4)	A (8.3)	A (5.4)	A (5.6)
	-Northbound Approach	F (83.0)	F (120.1)	B (13.3)	B (12.5)
	-Southbound Approach	F (255.8)	F (255.6)	B (14.4)	B (11.7)
2	**Tatum Road @ Site's Joint Driveway with PVH (Existing PVH Northern Driveway) ***				
	-Westbound Approach	A (9.7)	A (9.7)	A (9.7)	A (9.7)
	-Southbound Left	A (7.6)	A (7.5)	A (7.6)	A (7.5)

* Includes dedicated southbound left turn lane as a site improvement

The results of the "Build" traffic operations show that the level-of-service will be "F" for the stop-controlled side-streets at the intersection of SR 14 (Roosevelt Highway) and Wilkerson Mill Road/Tatum Road in both the AM and PM peak hours. With the system improvement of a traffic signal installation, the intersection will operate at LOS "B" or better in both the AM and PM peak hours. Recommendations for future traffic control and lane geometry are shown in Figure 8.



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY FIGURE 8

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CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for the proposed Microsoft/Shugart Data Center development located to the northwest of Johnson Road and Williams Road in the City of Palmetto, Georgia. The development will consist of:

- Data Center space: 1,180,000 sf
- Admin space: 67,500 sf

The development proposes one full access driveway on the existing PVH's northern driveway on Tatum Road. An emergency only access is proposed on Johnson Road.

Existing and future operations after completion of the project were analyzed for the AM and PM peak hours at the intersections of:

1. SR 14/US 29 (Roosevelt Highway) @ Wilkerson Mill Road/Tatum Road
2. Tatum Road @ Joint Access with PVH

The analysis included the evaluation of Future operations for "No-Build" and "Build" conditions, both of which account for increases in annual growth of through traffic. The results of future "No-Build" traffic operations indicate that the intersection of SR 14 (Roosevelt Highway) and Wilkerson Mill Road/Tatum Road will operate at level-of-service "E" or "F". If the intersection is signalized, the LOS will improve to "B" or better in both the AM and PM peak hours. Therefore, a traffic signal is recommended at this intersection as a system improvement if warranted by MUTCD signal warrant standards.

The results of the "Build" traffic operations show that the level-of-service will be "F" for the stop-controlled side-streets at the intersection of SR 14 (Roosevelt Highway) and Wilkerson Mill Road/Tatum Road in both the AM and PM peak hours with no improvements. With the system improvement of a traffic signal installation, the intersection will operate at LOS "B" or better in both the AM and PM peak hours.

Recommended System Improvements

The following is the system improvement that was identified from the "No-Build" conditions analysis.

SR 14/US 29 (Roosevelt Highway) @ Wilkerson Mill Road/Tatum Road

- Installation of a traffic signal if warranted by MUTCD signal warrant standards

Recommended Site Improvements

The following is the improvement that was identified from the "Build" condition analysis and was a result of the addition of site generated traffic.

Tatum Road @ Site's Joint Driveway with PVH

- Addition of a southbound left turn lane on Tatum Road for entering traffic

Appendix