TRAFFIC IMPACT AND ACCESS STUDY

PROPOSED SUNNYSIDE RESIDENTIAL DEVELOPMENT
SC 707 (SUNNYSIDE AVENUE)
GEORGETOWN COUNTY/MURRELLS INLET, SOUTH CAROLINA

Prepared for:

Native Homes
Myrtle Beach, SC

Submitted
September 2020

Prepared by:

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September 11, 2020

Bentley Thompson
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RE: Traffic Impact and Access Study
Sunnyside Residential Development
Sunnyside Avenue (SC 707)
Georgetown County, SC

Dear Mr. Thompson:

As requested, Encroachment Permit Clearinghouse (EPC) has completed an assessment of the traffic impacts associated with the development of a new residential neighborhood to be located on the north side of SC 707 (Sunnyside Avenue), between US 17 By-Pass and US 17 Business in Georgetown County/Murrells Inlet, SC. The following provides a summary of this study's findings.

PROJECT DESCRIPTION

The project site is generally located on the north side of Sunnyside Avenue midway between US 17 By-Pass and US 17 Business. The project site is an undeveloped wooded parcel totaling approximately 11.2-acres and has a 50-foot South Carolina Public Service Authority transmission easement through the middle in a north/south orientation. As planned a new residential neighborhood will be constructed which will contain a total of 75 condominium units and 40 duplex townhome units (total multi-family 115 units). Access to/from the future development is planned via Sunnyside Avenue by two main access drives which will create an internal loop within the development servicing the residential units. A third minor access is also planned which will serve a single duplex building (2-units) which are not accessed via the planned loop road. The westerly drive will service mainly the condo units while the eastern access will service the townhomes. As scheduled, this development is planned to be constructed and occupied by 2023. **Figure 1** depicts the site location in relation to the regional roadway system. **Figure 2** depicts the proposed development plan (Figures located at end of report).

EXISTING CONDITIONS

A comprehensive field inventory of the project study area was conducted in August 2020 during the summer vacation season as requested by Georgetown County staff. The field inventory included a collection of geometric data, traffic volumes and traffic control within the study area. The following sections detail the current traffic conditions and include a description of roadways/intersections serving the site and traffic flow in close proximity to the project.

Study Area Intersections

As identified by Georgetown County Planning staff, the following intersections have been required to be analyzed in order to determine project impact on the surrounding roadway network:

- US 17 By-Pass at SC 707 (Sunnyside Avenue/Burgess Road);
- US 17 Business at Sunnyside Avenue; and
- Sunnyside Avenue at Site Access Drives (2X).

Figure 3 illustrates the existing geometrics and traffic control for the study area intersections and surrounding roadways.

Traffic Volumes

In order to determine the existing traffic volume flow patterns within the study area, manual turning movement counts were performed. Weekday morning (7:00-9:00 AM) and evening (4:00-6:00 PM) peak period turning movement specific counts were conducted at the above referenced study area intersections.

Summarized count sheets for the study area intersection are included in the Appendix of this report. **Figure 4** graphically depicts the respective 2020 Existing AM and PM peak-hour traffic volumes at the study area intersections to be used for analytical purposes.

FUTURE CONDITIONS

Traffic analyses for future conditions have been conducted for two separate scenarios: first, 2023 No-Build conditions, which include an annual normal growth in traffic, all pertinent background development traffic, and any pertinent planned roadway/intersection improvements; and secondly, 2023 Build conditions, which account for all No-Build conditions PLUS traffic generated by the proposed development.

Future No-Build Traffic Conditions

Background Development/Planned Roadway Improvements

Based on discussions with Georgetown County Planning staff, there are no developments in the immediate area of the site that would significantly affect traffic volumes within the study area. Additionally, there are no scheduled roadway improvements in the study area prior to the development year of this project.

Annual Growth Rate

Based on SCDOT permanent count station data, stations #101 (located US 17 Business north of Sunnyside Avenue) and #121 (located on US 17 By-Pass south of Sunnyside Avenue), a 2-percent annual growth rate has been utilized to project future conditions. This 2-percent annual growth, which will account for all unspecified traffic growth, was applied to the Existing peak-hour traffic volumes.

The anticipated 2023 No-Build AM and PM peak-hour traffic volumes, which reflect the annual 2-percent annual growth rate are shown in **Figure 5**.

Site-Generated Traffic

Traffic volumes expected to be generated by the proposed project were forecasted using the Tenth Edition of the ITE *Trip Generation* manual, as published by the Institute of Transportation Engineers. **Table 1** depicts the anticipated site-generated traffic.

Table 1
TRIP GENERATION SUMMARY[1]
Sunnyside Residential

Time Period	75 Condo Units (a)	40 Duplex Units (b)	Total Site-Generated Traffic (a+b)
Weekday Daily	550	300	850
AM Peak-Hour			
Enter	8	5	13
Exit	27	15	42
Total	36	20	55
PM Peak-Hour			
Enter	29	16	45
Exit	17	10	27
Total	46	26	72

1. ITE *TRIP GENERATION* 10th Ed. LUC 220 (Mulit-family).

As shown, the proposed development at build-out can be expected to generate 850 two-way daily trips of which a total of 55 trips (13 entering and 42 exiting) are expected during the AM peak-hour. During the PM peak-hour, a total of 72 trips (45 entering, 27 exiting) are expected.

Distribution Pattern

The directional distribution of site-generated traffic on the study area roadways has been based on an evaluation of existing travel patterns in the study area. The anticipated pattern is shown in **Table 2**. This distribution pattern has been applied to the site-generated traffic volumes from Table 1 to develop the site-generated specific volumes for the study area intersections illustrated in **Figure 6**.

1.33 - Condo
1.5 - Duplex

Table 2
TRIP DISTRIBUTION PATTERN
Sunnyside Residential

Roadways	Direction To/From	Percent of Trips Enter/Exit
US 17 By-Pass	North	35
	South	30
US 17 Business	North	10
	South	10
Burgess Road	West	15
	Total	**100**

Note: Based on the existing traffic patterns during both peak hours.

Future Build Traffic Conditions

The site-generated traffic, as depicted in Figure 6 has been added to the respective 2023 No-Build traffic volumes shown in Figure 5. This results in the peak-hour 2023 Build traffic volumes, which are graphically depicted in **Figure 7.** These volumes were used as the basis to determine potential improvement measures necessary to mitigate traffic impacts caused by the project.

TRAFFIC OPERATIONS

Analysis Methodology

A primary result of capacity analysis is the assignment of Level-of-Service (LOS) to traffic facilities under various traffic flow conditions. The concept of Level-of-Service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A Level-of-Service designation provides an index to the quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six Levels-of-Service are defined for each type of facility (signalized and unsignalized intersections). They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst.

Since the Level-of-Service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of Levels-of-Service depending on the time of day, day of week, or period of a year.

Analysis Results

As part of this TIAS, capacity analyses have been performed at the study area intersections under both Existing and Future (No-Build & Build) conditions. The results of these analyses are summarized in **Table 3**.

Table 3
LEVEL-OF-SERVICE SUMMARY[1]
Sunnyside Residential

Signalized Intersection	Time Period	2020 EXISTING Delay[2]	2020 EXISTING LOS[3]	2023 NO-BUILD Delay	2023 NO-BUILD LOS	2023 BUILD Delay	2023 BUILD LOS
US 17 By-Pass at SC 707 (Burgess Road/Sunnyside Avenue)	AM	28.7	C	35.7	D	36.4	D
	PM	39.9	D	42.2	D	44.1	D
Unsignalized Intersections							
US 17 Business at Sunnyside Avenue	AM	12.3	B	12.7	B	13.0	B
	PM	31.4	D	**40.1**	**E**	**43.7**	**E**
US 17 Business at Western Access (Condominiums)	AM	To be Constructed by Development				7.4	A
	PM					9.6	A
US 17 Business at Eastern Access (Duplexes)	AM	To be Constructed by Development				8.9	A
	PM					9.5	A

1. Calculations completed using the HCM 6th Ed methodology.
2. Delay in seconds-per-vehicle.
3. LOS = Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, Delay is representative of the worst approach.
2. For signalized intersections, Delay is representative of the weight average of all approaches.

As shown in Table 3, under Existing conditions, the signalized intersection of US 17 By-Pass at Sunnyside Avenue/Burgess Road operates at acceptable service levels during the AM (LOS C) and PM (LOS D) peak-hours. The unsignalized intersection of US 17 Business at Sunnyside Avenue operates at a LOS B during the AM peak-hour and a LOS D during the PM peak-hour; both acceptable.

Future 2023 No-Build conditions which assumes the annual regional growth results in an acceptable LOS D during both the AM and PM peak hours for the signalized intersection of US 17 By-Pass at Sunnyside Avenue/Burgess Road. The US 17 Business at Sunnyside Avenue intersection will operate at a LOS B during the AM peak-hour and a LOS E during the PM peak-hour. The delay at this intersection during the PM peak-hour is due to the minor street traffic movements which are made from a single-lane and must wait for a gap in north/south traffic flow. It should be noted that minor delays at a STOP control location are not uncommon for intersections with major collectors.

Build 2023 conditions continue to result in acceptable service levels during both the AM and PM peak hours for the US 17 By-Pass at Sunnyside Avenue/Burgess Road intersection. Project site traffic adds a small amount of delay (2-seconds or less) during either peak-hour. As under the No-Build conditions, the US 17 Business at Sunnyside Avenue intersection will operate at a LOS B during the AM peak-hour and a LOS E during the PM peak-hour.

The two proposed site access drives, to/from Sunnyside Avenue are both expected to operate at good service levels during both peak hours.

MITIGATION

The final phase of the analysis process is to identify mitigating measures which may either minimize the impact of the project on the transportation system or tend to alleviate poor service levels not caused by the project. The following describes measures necessary to mitigate the project's impact.

Site Access Drives

Two main access drives and a third minor drive are to be constructed along Sunnyside Avenue in order to serve the residential development. The eastern and western access drives will provide a loop road configuration between each other providing connectivity between the condominium and townhomes. These access drives are located/separated by 480-feet which exceeds the minimum spacing of 220-feet as stated in *Figure 3-7 of the SCDOT ARMs*. The minor third access is located less approximately 175-feet west of eastern site access which serves the single duplex. This access will require a waiver as it does not meet the minimum spacing between access drives however it will only service two of the townhome units which are not accessed via the loop road. Each of these drives should provide the following geometrics and traffic control:

- ***Southbound (Site Access) Approach:*** Construct each site access to provide a two-lane approach with one lane entering the site and one lane exiting designated as a shared left/right-turn lane; and

- ***Traffic Control:*** Place each of the new approaches under STOP sign control.

Both left and right-turn deceleration lanes have been reviewed for each access drive however volumes along this section of Sunnyside Avenue as well as volume entering and exiting the access drives do not meet the minimum guidelines as illustrated by the *SCDOT Design Manual, Fig. 9.5-A or Fig. 9.5G.*

Sight Distance Considerations

The access drive intersection should be designed/constructed to meet current applicable SCDOT standards and/or guidelines in terms of sight distance. It is assumed that this will be the responsibility of the project's civil engineer and will be depicted by the site plan/submittal information.

Off-Site Study Area Intersections

As shown in Table 3, the off-site study area intersections of US 17 By-Pass at Sunnyside Avenue/Burgess Road operates at acceptable service levels under all conditions studied. Based on this, no improvements are suggested for this intersection at this time.

The US 17 By-Pass at Sunnyside Avenue is expected to operate at a LOS E under the No-Build (without the project) PM peak-hour and therefore also the Build scenarios. The project is expected to increase delay by only 3.6-seconds and is therefore not a significant impact to the operations. It should be noted that the LOS E is the minor street approach (Sunnyside Avenue) and does not have an impact on the operations of the through traffic on US 17 Business. Based on the minor impact and the typical LOS E for unsignalized intersections with major collectors, no recommendations are suggested at this time.

SUMMARY

EPC has completed a Traffic Impact and Access Study relative to the development of a new residential neighborhood to be located on the north side of Sunnyside Avenue (SC 707) between US 17 By-Pass and US 17 Business in Georgetown County, SC. As planned, the development will contain a total of 115 residential units comprised of 75 condominiums and 40 townhomes. This project is expected to be constructed and operational in 2023.

Detailed analyses have been conducted for the adjacent off-site intersections of US 17 By-Pass at Sunnyside Avenue/Burgess Road as well as US 17 Business at Sunnyside Avenue. These analyses indicated that at the adjacent intersection of US 17 By-Pass at Sunnyside Avenue/Burgess Road, operations are expected to be acceptable under all conditions studied. The US 17 Business at Sunnyside Road intersection has a small delay for the minor street eastbound approach (Sunnyside Avenue) which is very minor and not considered to be significant and is typical of unsignalized intersections along major collectors.

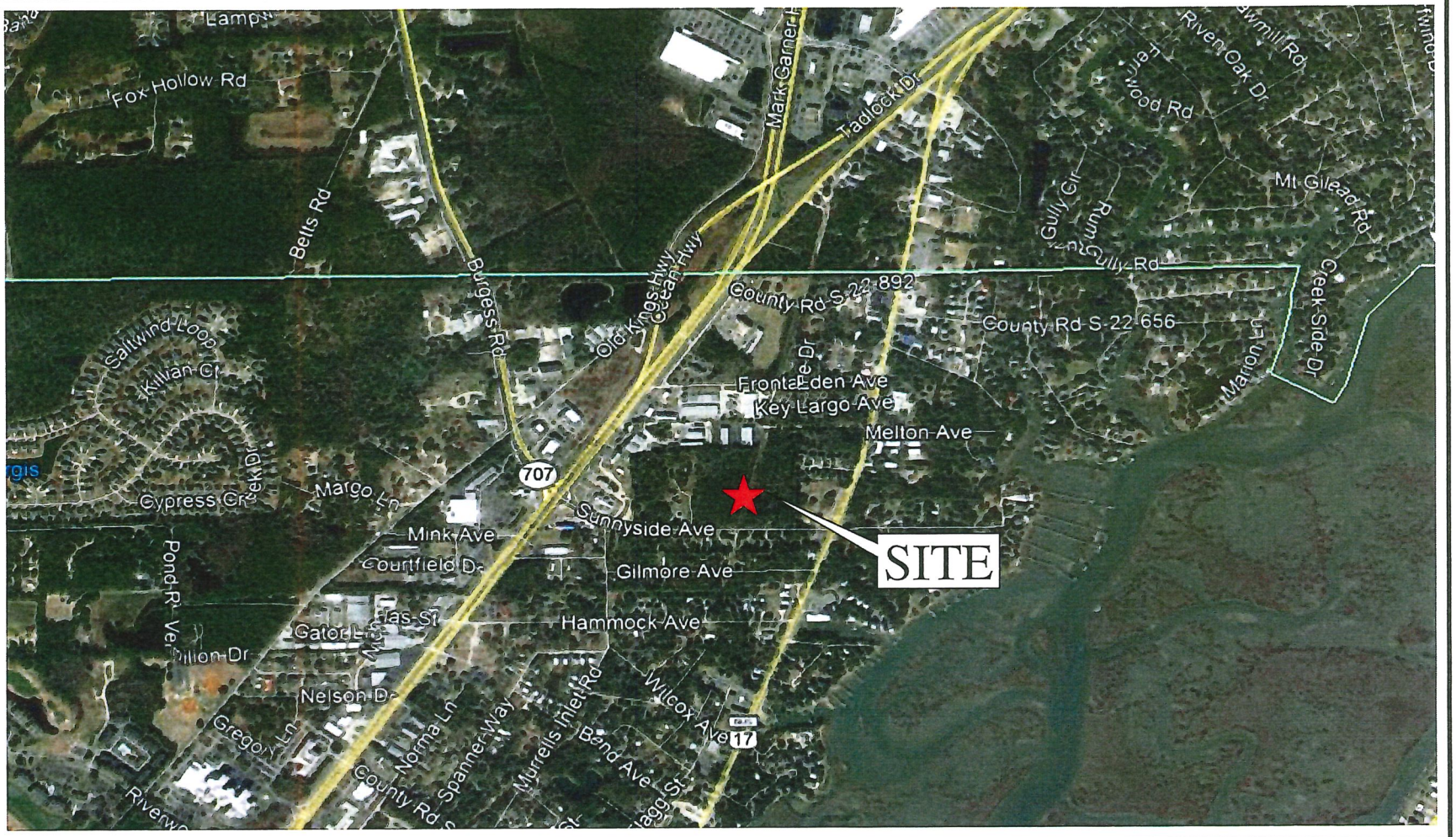
Recommendations have been made for each of the site access drives which include the suggestion of approach cross-sections for each drive. While one of the access drives will require a waiver, it serves only two townhomes (four units).

If you have any questions, please contact me at 803 361 3265.

Todd G. Salvagin

Todd E. Salvagin
EPC, LLC

Attachments



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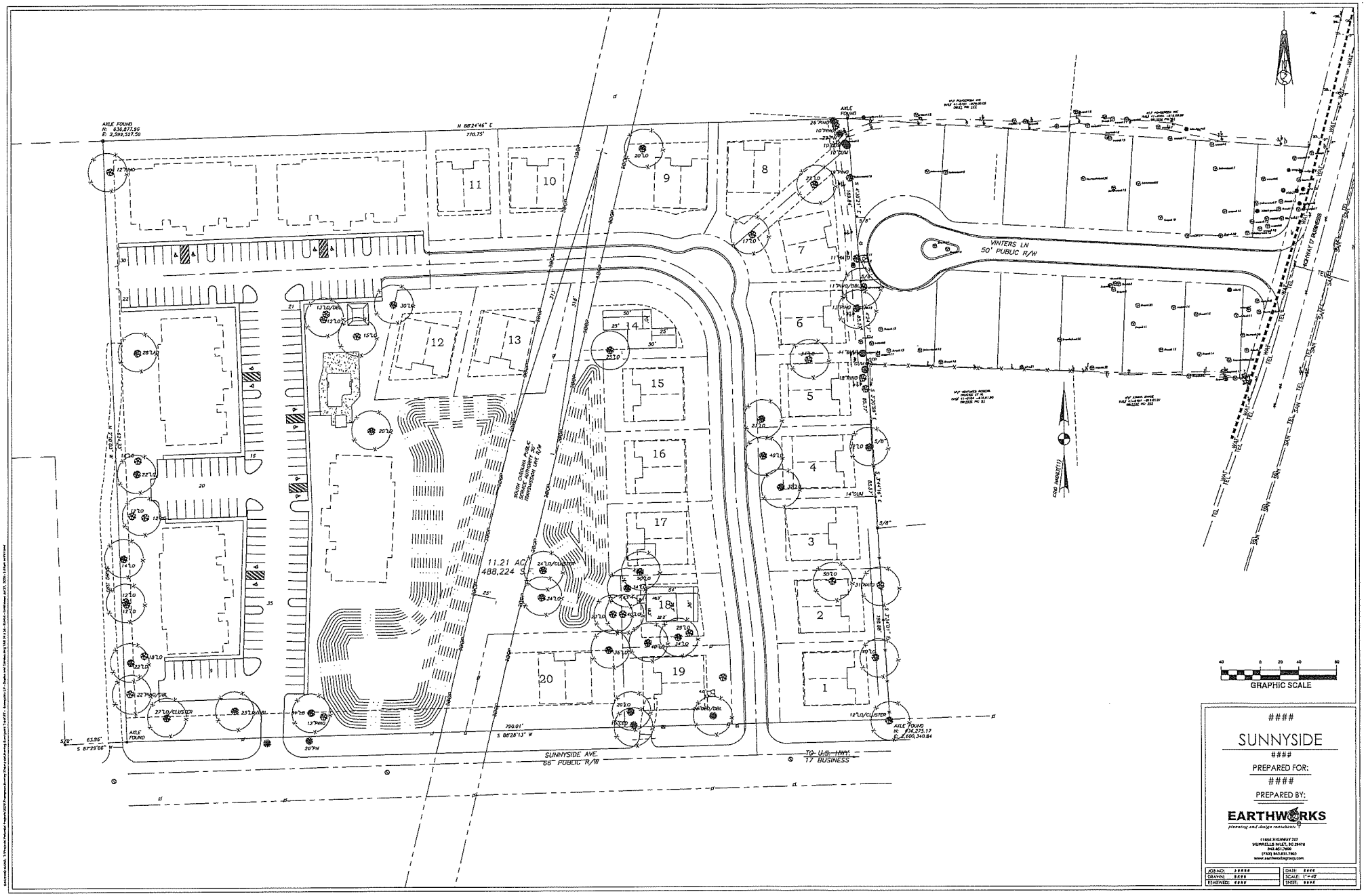
NOT TO SCALE

Figure 1

SITE LOCATION MAP

Sunnyside Residential
Georgetown County, SC

EPC, LLC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11.21 AC
488,224 S.F.
SUNNYSIDE AVE.
66' PUBLIC R/W
790.01'
S 88°28'13" W
TO U.S. HWY. 17 BUSINESS
AXLE FOUND
N: 636,275.17
E: 2,600,340.84
GRAPHIC SCALE
####
SUNNYSIDE
####
PREPARED FOR:
####
PREPARED BY:
EARTHWORKS
planning and design consultants
11858 HIGHWAY 707
MURRELLS INLET, SC 29576
843.651.7900
(FAX) 843.651.7903
www.earthworksgroup.com
JOB NO: ####
DRAWN: ####
REVIEWED: ####
DATE: ####
SCALE: 1" = 40'
SHEET: ####

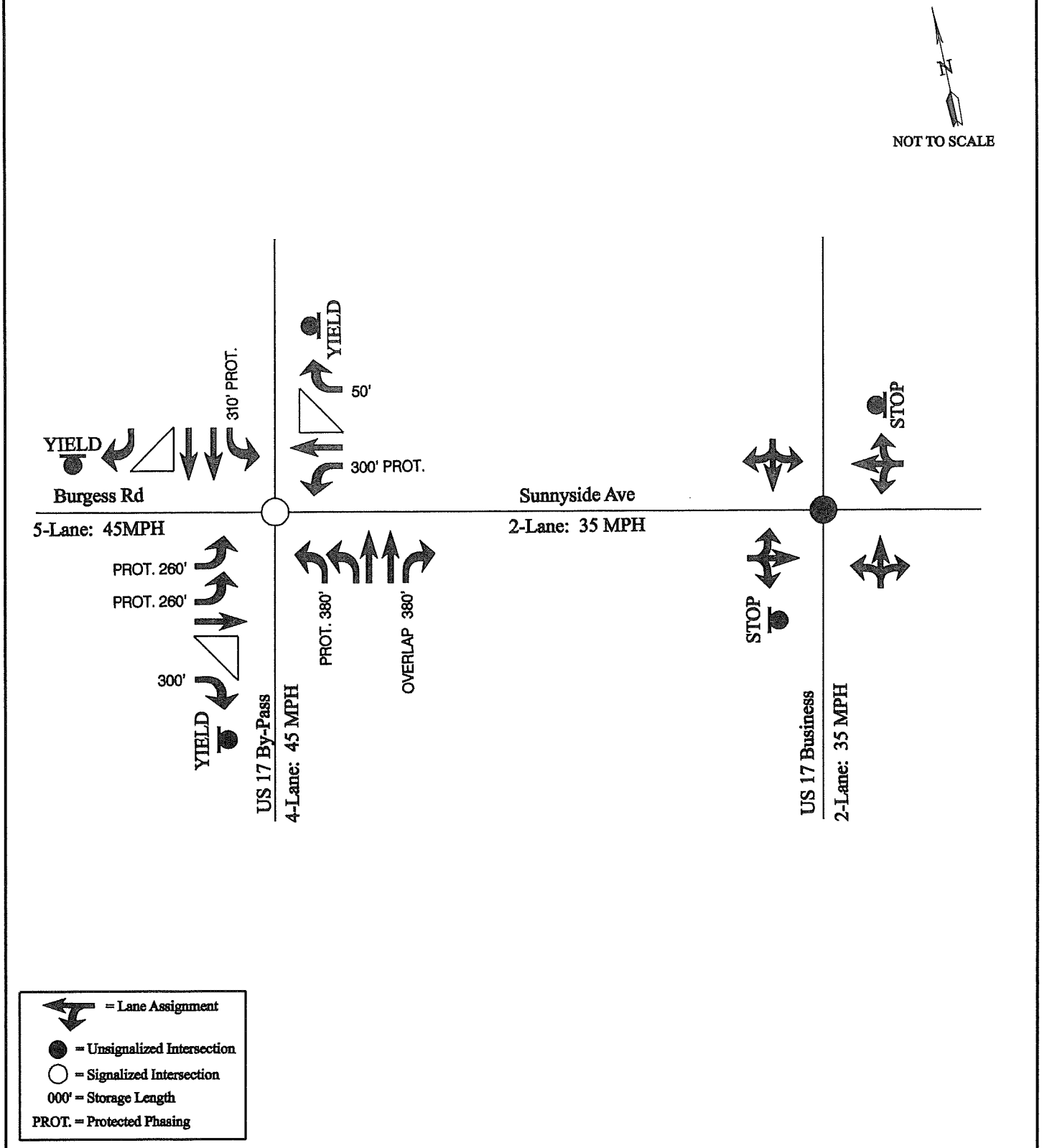

Figure 3

EXISTING GEOMETRICS AND TRAFFIC CONTROL

Sunnyside Residential: Georgetown County, SC

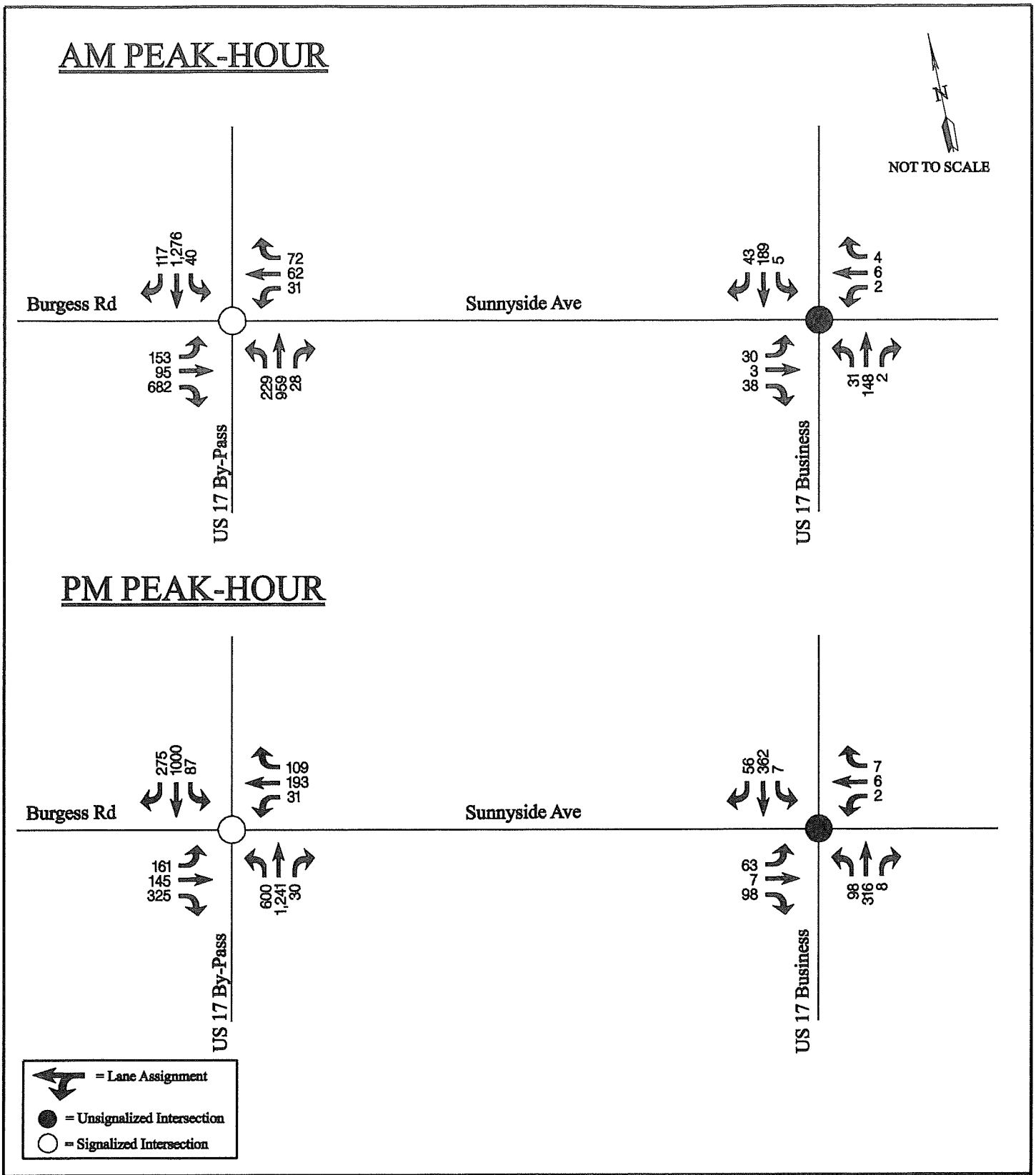

Figure 4

2020 EXISTING PEAK HOUR TRAFFIC VOLUMES

Sunnyside Residential: Georgetown County, SC

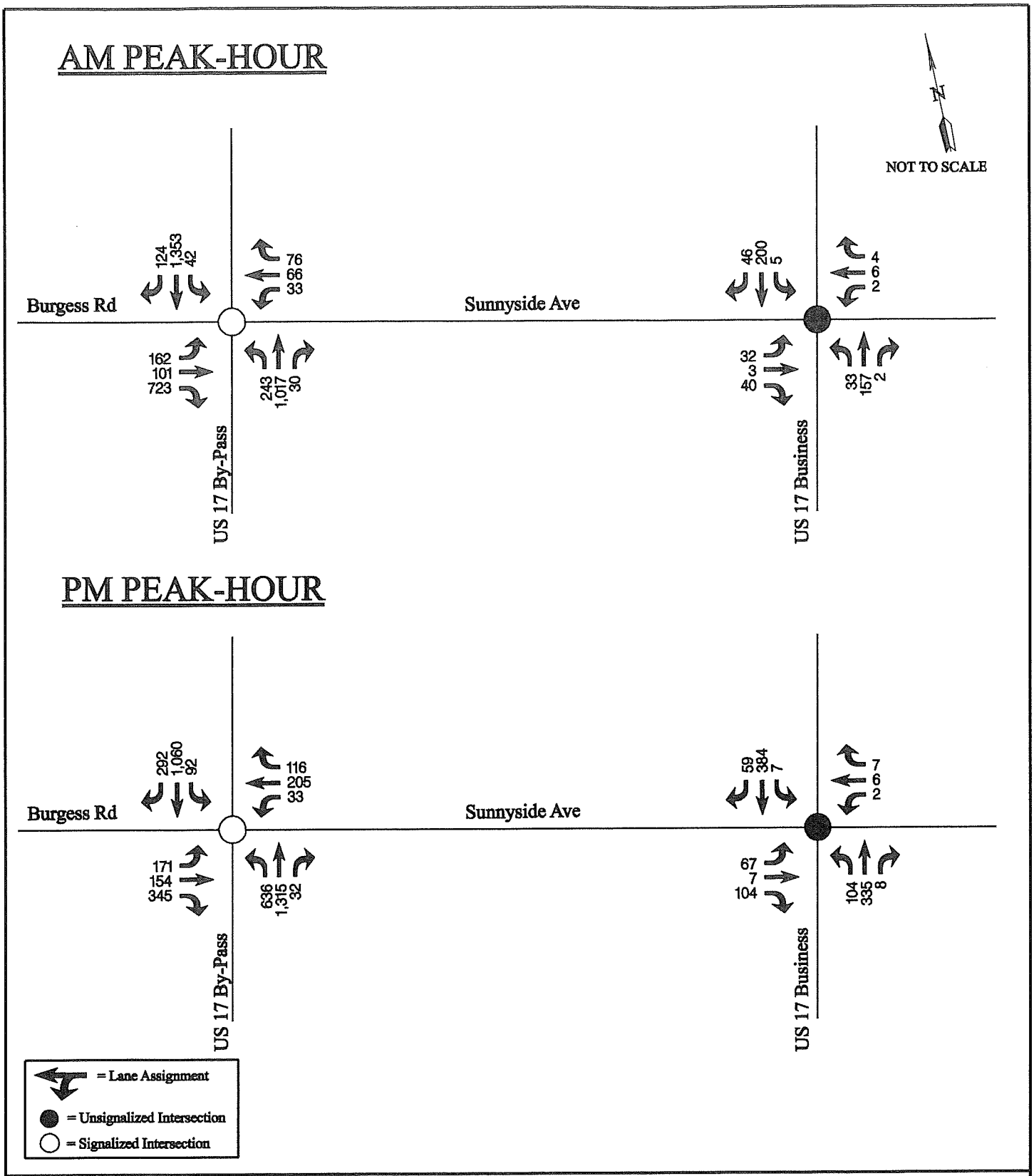

Figure 5

2023 NO BUILD PEAK HOUR TRAFFIC VOLUMES

Sunnyside Residential: Georgetown County, SC

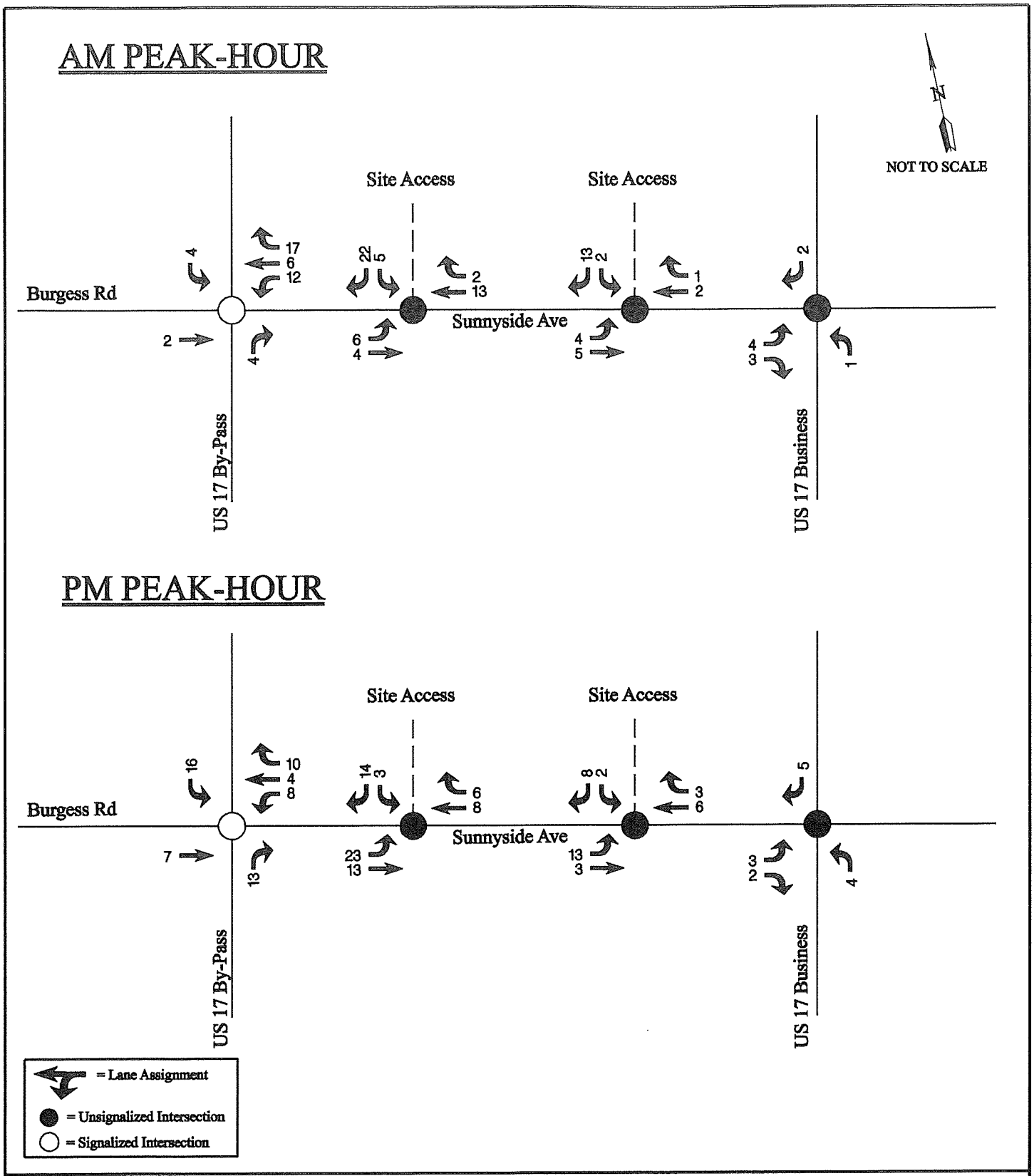

Figure 6

SITE GENERATED PEAK HOUR TRAFFIC VOLUMES

Sunnyside Residential: Georgetown County, SC

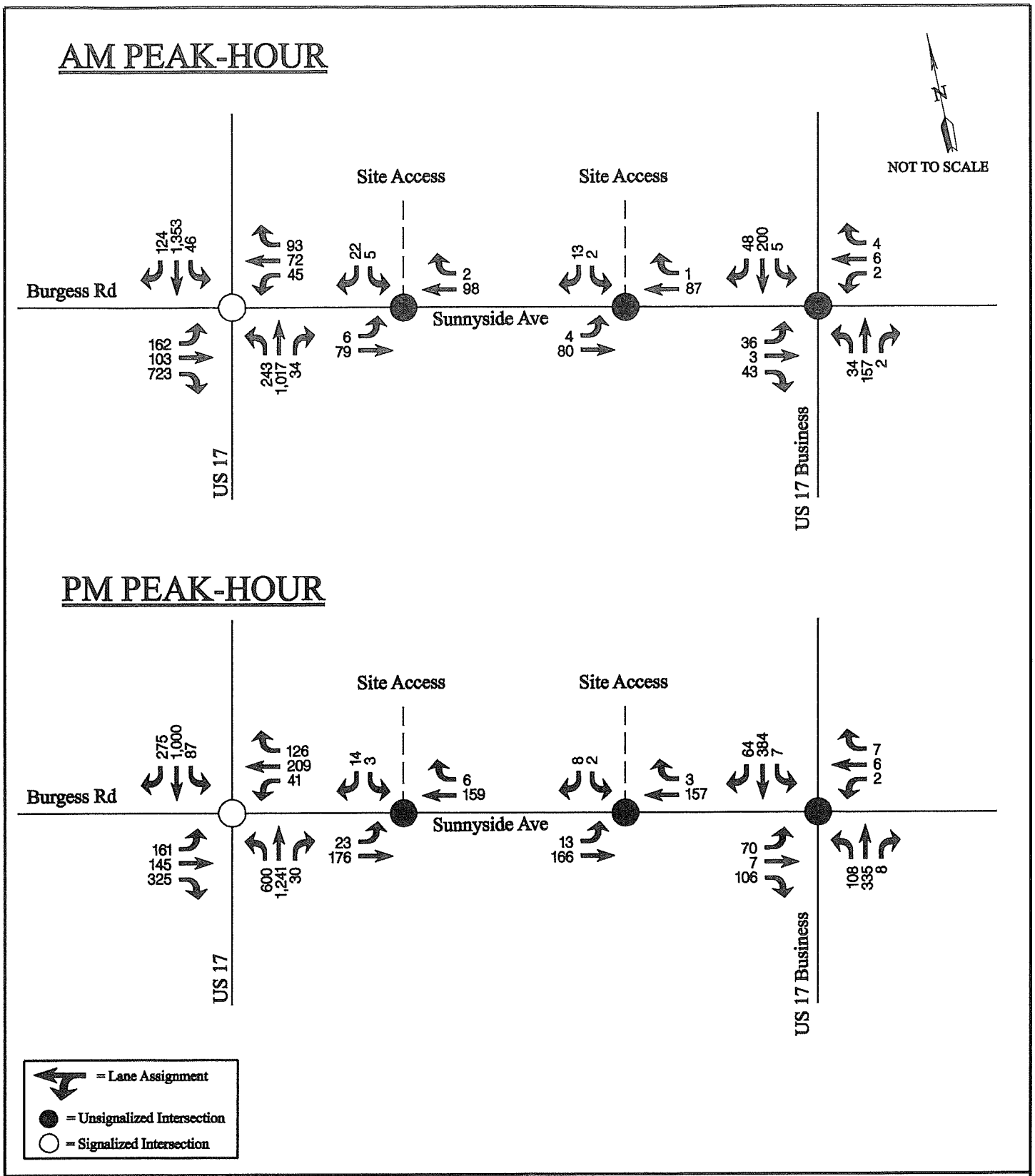

Figure 7

2023 BUILD PEAK HOUR TRAFFIC VOLUMES

Sunnyside Residential: Georgetown County, SC