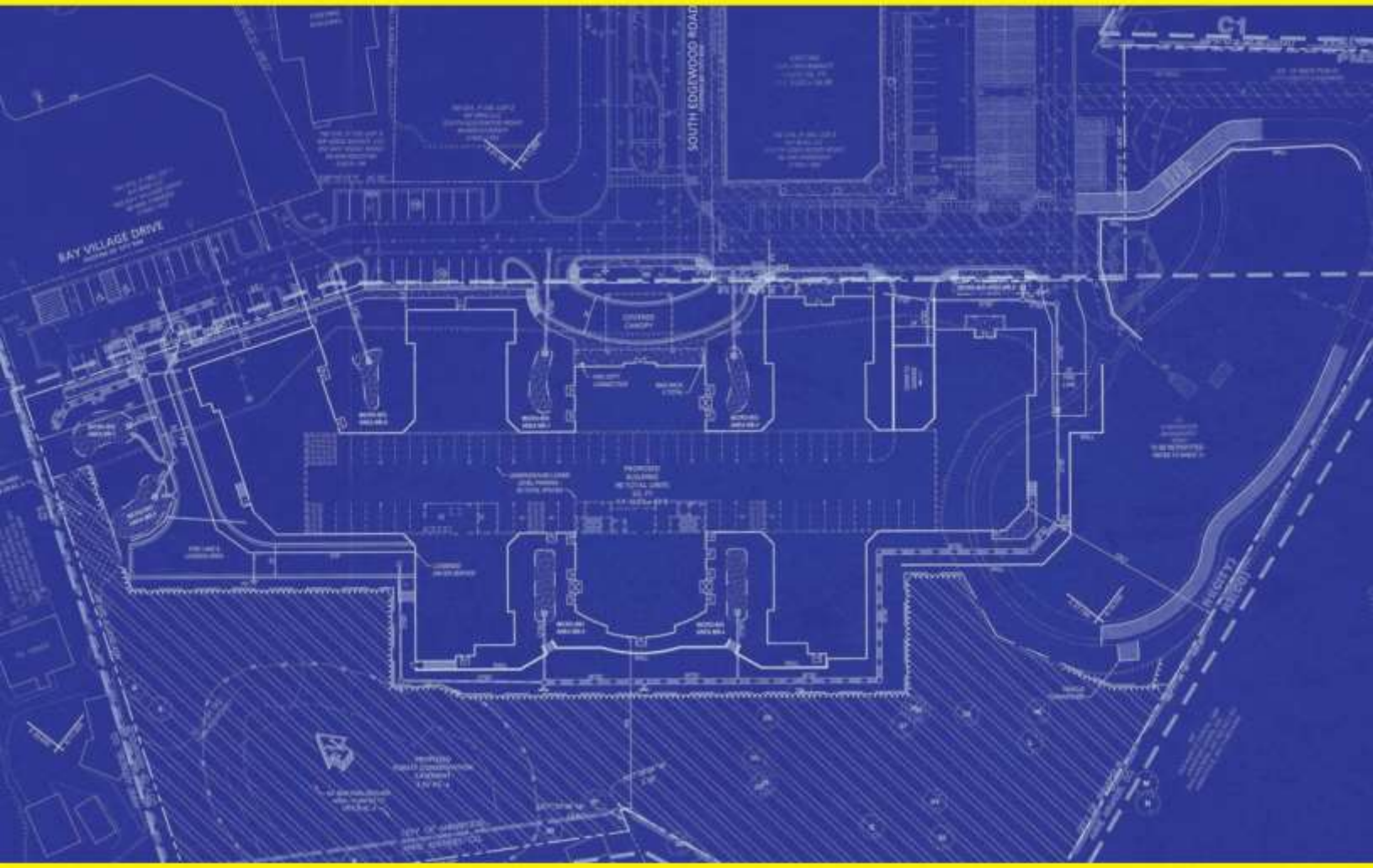
BAY VILLAGE ASSISTED LIVING FACILITY TRAFFIC IMPACT ANALYSIS

CITY OF ANNAPOLIS DEPARTMENT OF PLANNING & ZONING



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I. INTRODUCTION AND SUMMARY

Purpose

The City of Annapolis Department of Planning and Zoning requested a traffic impact study be performed for the development of the unimproved lot at 979 Bay Village Drive in Annapolis, MD. An assisted living facility, Bay Village Assisted Living Center, is proposed on the parcel. The proposed development will be located immediately south of the intersection of Edgewood Road and Bay Village Drive south of Bay Ridge Road. Primary access to the site will be on Bay Village Drive (via a full movement access driveway). The purpose of this study is to assess the impacts of traffic associated with the proposed development on the surrounding roadway network and, if necessary, to recommend improvements to mitigate any adverse impacts.

Executive Summary

The findings for the traffic impact analysis are as follows:

- A 92,020 square feet Bay Village Assisted Living development is proposed on the site. The development will house 88 units, and will include 24 surface parking spaces and 66 underground spaces. The project is expected to be completed by 2017.
- The proposed site will have its primary full movement entrance from a garage driveway off of Bay Village Drive. Additionally, a layby off of Bay village Drive is proposed for pick-up/drop-off. The site has direct access to Bay Ridge Road via Edgewood Road.
- Existing Traffic Counts were conducted in the late Fall of 2015.
- No intersections currently have a failing Level of Service (LOS). The northbound *approach* only of Edgewood Road at Bay Ridge Drive is currently failing.
- Background developments and regional growth in through traffic were evaluated to analyze the 2017 No-build condition.
- A total of 16 AM peak hour trips, 32 PM peak hour trips, and 29 Saturday peak hour trips are expected for the proposed Assisted Living Center.
- The study area intersections continue to have an acceptable LOS in the 2017 No-Build and 2017 Build scenarios. Changes in intersection queue lengths throughout the overall study area, due to the development and background conditions, are negligible.
- The northbound *approach* of Edgewood Road and Bay Ridge Road continues to fail in the PM and Saturday time frames for Year 2017 No-Build and 2017 Build scenarios, as well as for the existing conditions scenario, despite short queue lengths. Given the very low volume and the short 95% queue lengths for the northbound approach, no mitigation is recommended

II. PROPOSED DEVELOPMENT

Site Location

A location map of the study area is shown in Figure 1. The site is located within the corporate limits of the City of Annapolis on Edgewood Road and Bay Village Drive.

Figure 1: Site Location

Land Use and Intensity

The site is currently zoned R1 (single family residence). A 92,020 square feet Bay Village Assisted Living development with 88 units is proposed on the site.

Site Plan

The site will have a full movement entrance onto Edgewood Road via Bay Ridge Drive. The site will provide up to 66 garage parking spaces and 24 surface spaces. The site plan is shown in Figure 2.

III. STUDY AREA

The proposed development will be located within the corporate limits of the City of Annapolis. The traffic impact study area includes five (5) existing intersections and the site access point at Bay Village Drive & Edgewood Road. The following intersections were included in this study:

1. Bay Ridge Road and Bay Ridge Avenue/Hillsmere Drive
2. Bay Ridge Road and George town Road
3. Bay Ridge Road and Edgewood Road
4. Bay Ridge Road and Carrollton Road
5. Bay Ridge Road and Arundel on the Bay Road
6. Bay Village Drive and Edgewood Road

Figure 3 shows the location of the study area intersections relative to the proposed development site.

Figure 2: Site Plan

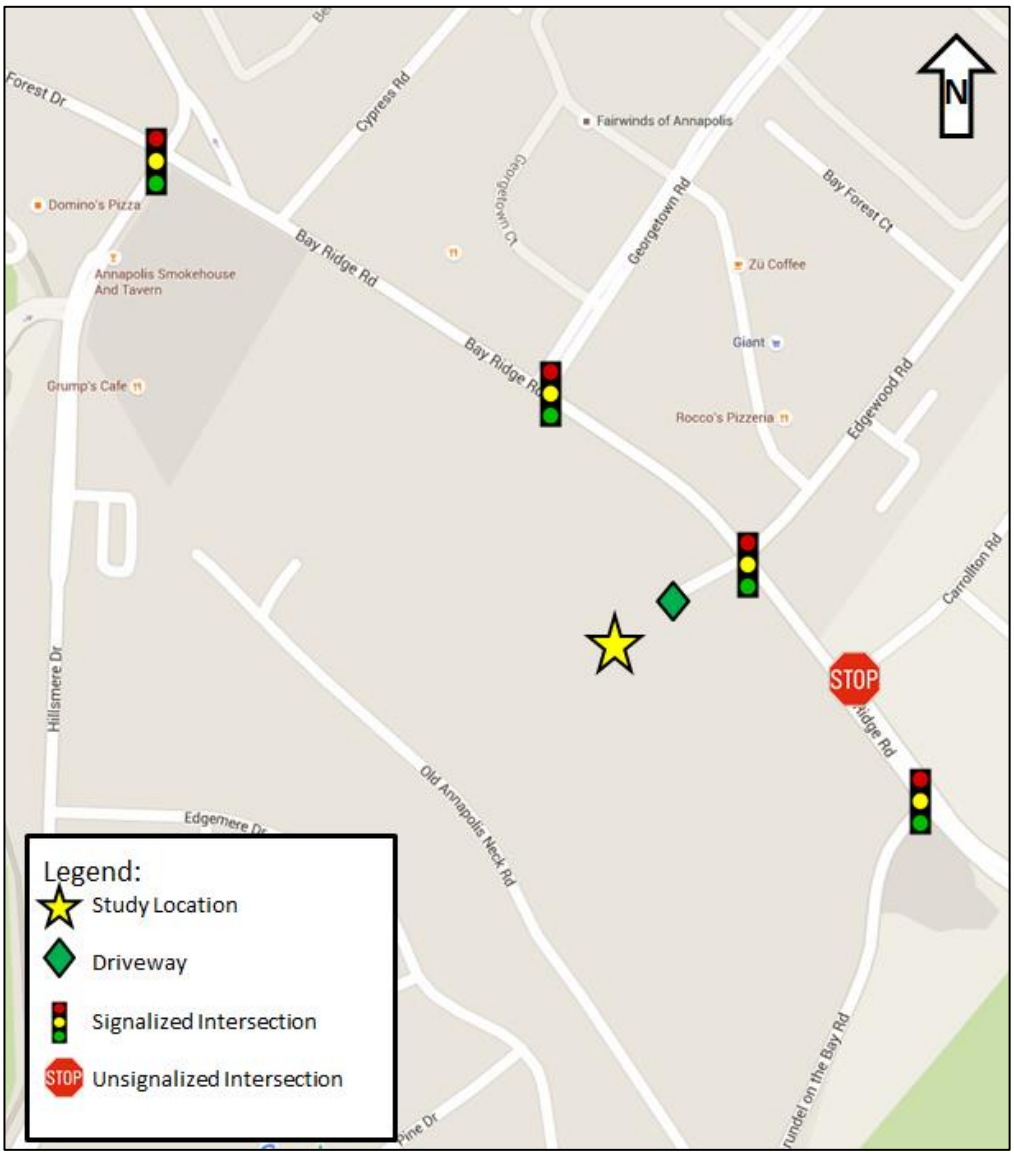


Figure 3: Site Location and study area intersections

Site Accessibility

The roadways in the study area include the following:

- Bay Ridge Road is a four-lane undivided Major Arterial with a posted speed limit of 40 mph.
- Bay Ridge Avenue is a four-lane undivided Minor Arterial. The posted speed limit is 30 mph.
- Georgetown Road is a two lane, two-way divided Minor Collector. The speed limit is 25 mph.
- Edgewood Road is a two-lane, two-way undivided Minor Collector with a posted speed limit of 25 mph.
- Carrollton Road is a two-lane, two-way undivided Local Street. The posted speed limit is 25 mph.
- Arundel on the Bay Road is a two-lane Local Street with a posted speed limit of 35 mph.

IV. EXISTING CONDITIONS ANALYSIS

Physical Characteristics

- Bay Village Assisted Living Center – The proposed Bay Village Assisted Living development is located the intersection of Edgewood Road and Bay Village. The development will have 66 underground and 24 surface parking spaces.

- Driveways - The proposed full movement driveway for the development will be located on the eastern side of a "T" intersection at the end of Edgewood Road. A layby is proposed for pick-up/drop-off at the south leg of the intersection of Edgewood Road and Bay Village Drive.

- Sight Distance - Sight distance along Edgewood Road will not change with the proposed Assisted Living Center. The existing "T" intersection at Bay Ridge Drive and Edgewood Road will remain in use and has adequate sight distance.

- Bicycle and Pedestrian Facilities - Sidewalks exist along both the sides of Edgewood Road and Bay Ridge Road. Bike lanes exist on both the east and west sides of Edgewood Road north of the intersection with Bay Ridge Road. No bicycle facilities exist along Bay Ridge Road.

- Transit Services – A bus stop signs is located on Edgewood Road one block north of the intersection at Bay Ridge Drive. This stop services the Brown and Purple routes. Annapolis Transit also has bus stops at the intersection of Bay Ridge Road and Bay Ridge Avenue/Hillsmere Drive servicing the Brown and Purple routes.

Lane configurations and traffic control devices for the six study intersections are shown in Figure 4.

Traffic Volumes

Weekday AM and PM peak period traffic data for the existing study intersections along Bay Ridge Road was collected between November 17th, 2015 and November 19th, 2015. Saturday peak period data was collected on December 12th, 2015. Figure 5, Figure 6, and Figure 7 summarize the existing AM, PM, and Saturday peak hour traffic volumes, respectively. Detailed traffic counts, in 15-min increments, are included in Appendix A.

Existing Level of Service

All study intersections and exiting traffic volumes were coded into a Synchro network to perform the capacity analysis. Synchro™ is a deterministic and macroscopic signal analysis computer software program that models street networks and traffic signal systems. Geometric data such as number of lanes, lane configuration, storage lengths, tapers, and distances between intersections were input into Synchro. Additionally, existing signal timings and phasing were obtained from Anne Arundel County and coded into a Synchro traffic model along with existing traffic volumes. The traffic signals are adaptive control, meaning the timings vary throughout the time of day. The data from the "Basic Timing" and "Coordinated Data" signal timing sheets provided were inputted into Synchro for all study intersections. The following TOD schedules were used: Pattern 1 for AM, Pattern 10 for Off-peak (Saturday), Pattern 22 for PM. Upon plugging in all default data, the adaptive pattern history was used to replicate the signal timing splits experienced in the field.

For the AM and PM peak hours, historical splits on Wednesday, March 9, 2016 data were used at 8:00 AM and 5:00 PM, respectively. For the Saturday peak hour model, historical splits from Saturday, March 12, 2016 were used at 12:00 PM.

Intersection capacity analyses were performed using the industry standard National Academy of Sciences Transportation Research Board's Highway Capacity Manual (HCM) methodology for all study intersections. Performance measures of effectiveness include level of service (LOS), volume-to-capacity (v/c) ratio, and average vehicle delay. Key performance measures are defined as follows:

Level of Service (LOS) is a qualitative measure describing operational conditions of an intersection or any other transportation facility. LOS measures the quality of traffic service, and may be determined for intersections, roadway segments, or arterial corridors on the basis of delay, congested speed, volume to capacity (v/c) ratio, or vehicle density by functional class. At intersections, LOS is a letter designation that corresponds to a certain range of roadway operating conditions. The levels of service range from 'A' to 'F', with 'A' indicating the best operating conditions and 'F' indicating the worst, or a failing, operating condition. The volume-to-capacity ratio (v/c ratio) is the ratio of current flow rate to the capacity of the intersection. This ratio is often used to determine how sufficient capacity is on a given roadway. Generally speaking, a ratio of 1.0 indicates that the roadway is operating at capacity. A ratio of greater than 1.0 indicates that the facility is operating above capacity as the number of vehicles exceeds the roadway capacity. Overall delay can be categorized into deceleration delay, stopped delay, and acceleration delay. Table 1 describes each Level of Service and their corresponding delay values for signalized and unsignalized intersections.

Table 1: Intersection Level of Service Delay Ranges

	Signalized intersections	**Unsignalized intersections**
Level of service	**Delay range (sec)**	**Delay range (sec)**
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Figure 4: Existing Lane Configuration and Traffic Control

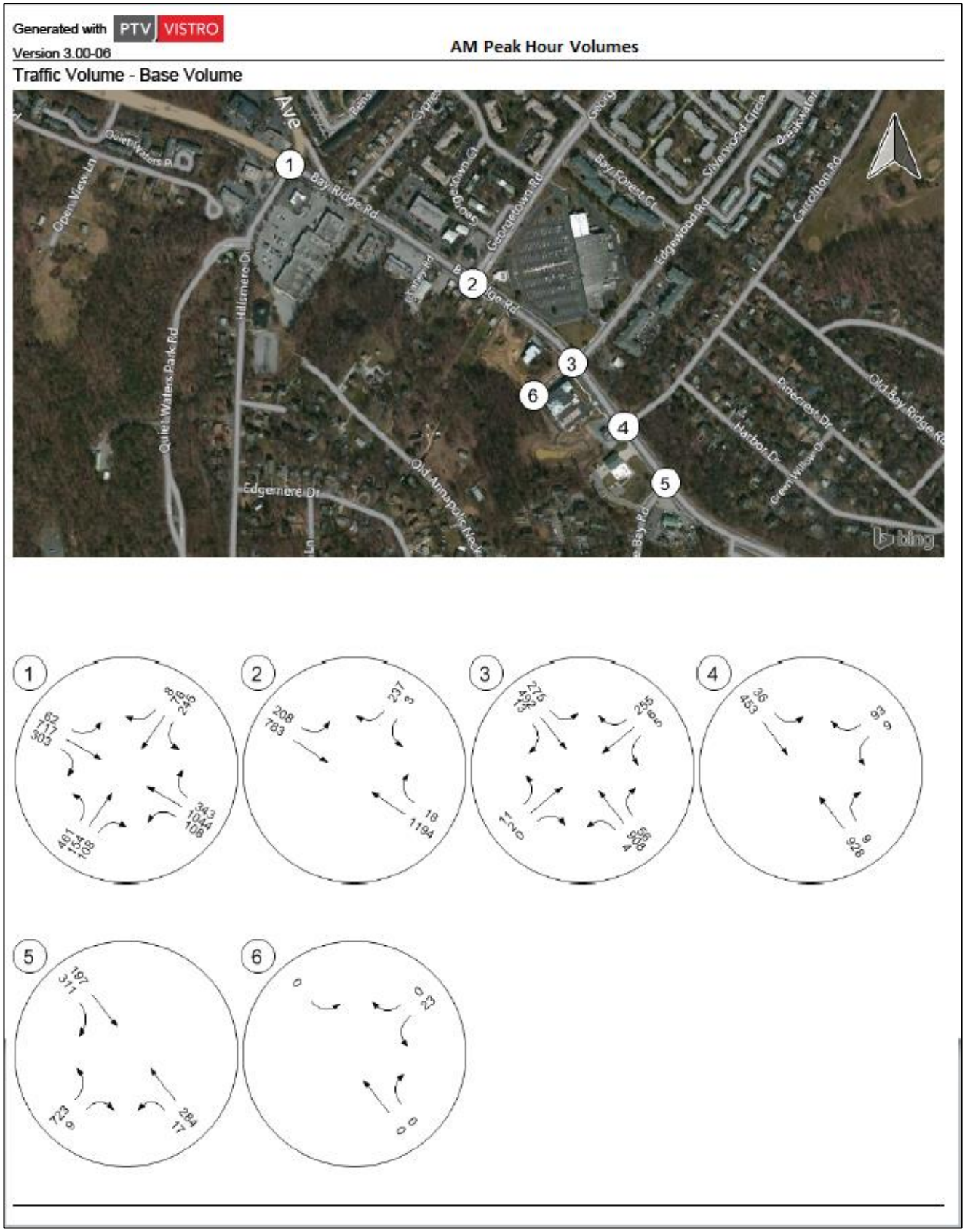


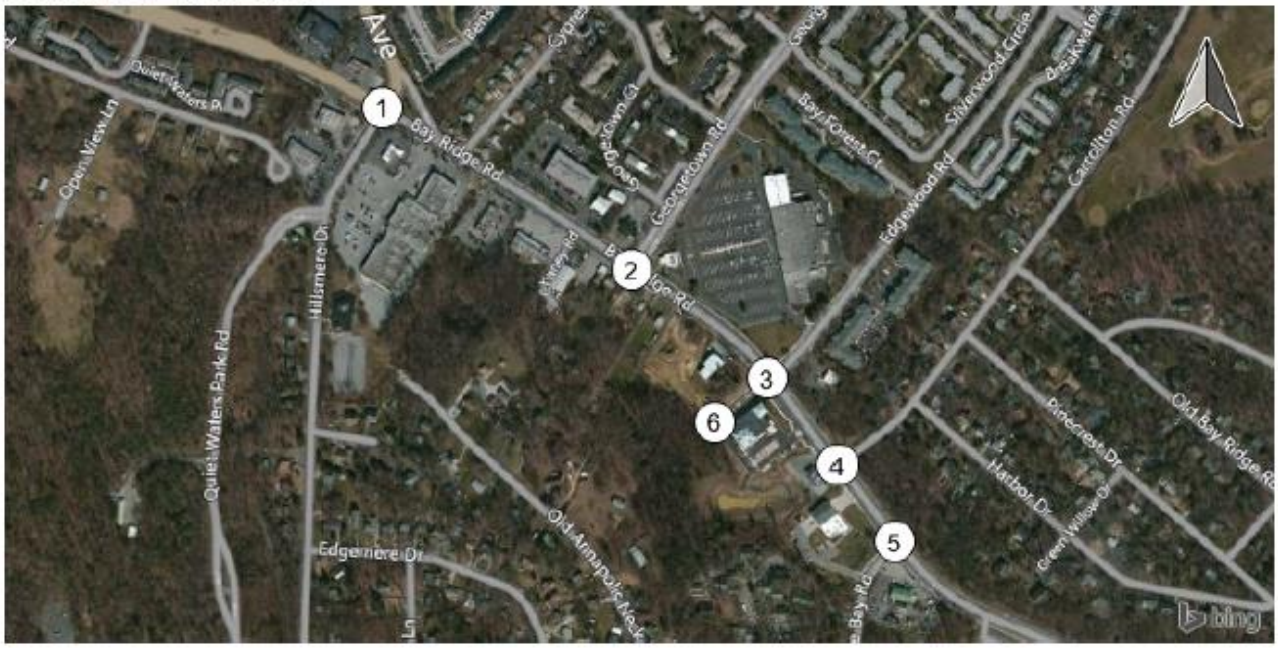
Figure 5: Existing AM Peak Hour Volumes

Figure 6: Existing PM Peak Hour Volumes

Generated with PTV VISTRO

Version 3.00-06 Saturday Peak Hour Volumes

Traffic Volume - Base Volume



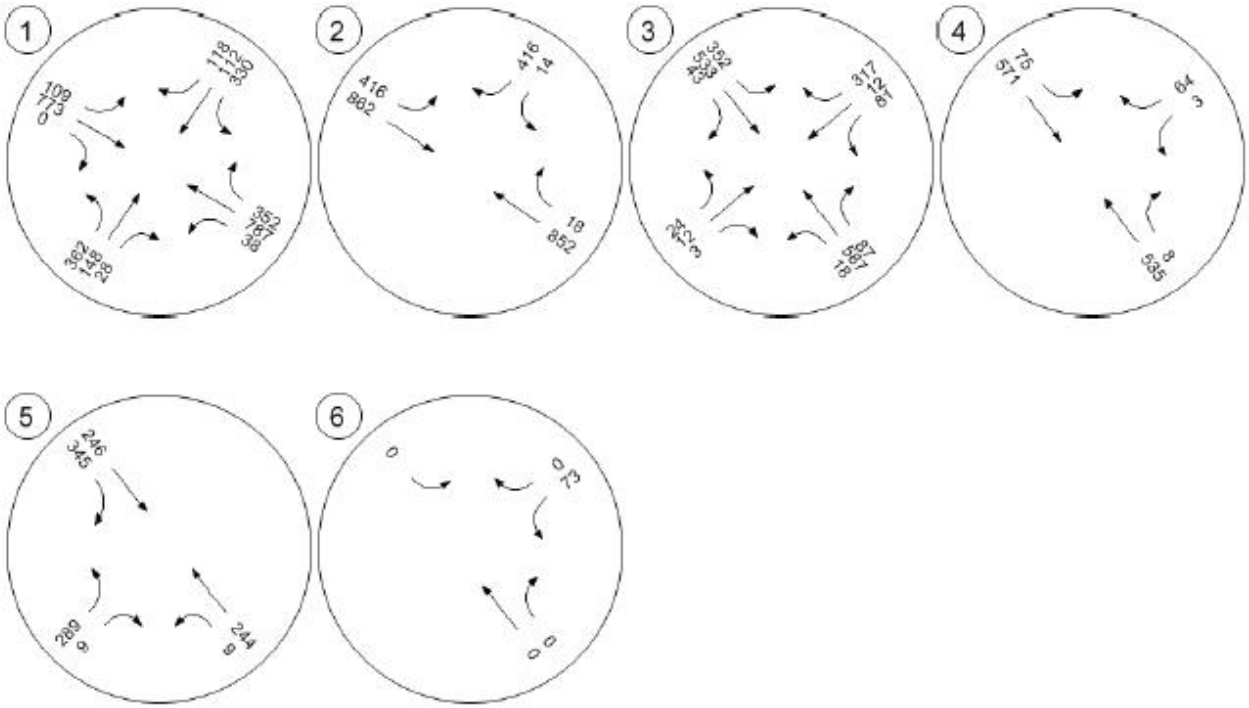


Figure 7: Existing Saturday Peak Hour Volumes

Synchro™ implements Highway Capacity Manual 2000 (HCM) methods of analysis to determine LOS. Table 2 summarizes the HCM analysis performed under existing traffic conditions, where failing intersections or approaches are highlighted in red. Appendix B contains the existing HCM reports.

Queuing was assessed using SimTraffic. SimTraffic is a microscopic and stochastic simulation computer software program that pairs with Synchro and can output queue lengths. To determine average and 95% queue lengths at each intersection approach, five (5) 60-minute simulations with 15 minute seeding intervals were run for each peak hour. The 95th percentile queue lengths are shown in Table 2.

Table 2: Existing Conditions Analysis

#	Intersection	Movement	Existing - AM (PM) {Saturday}			
			Level of Service	Delay/Veh (sec)	Volume/Capacity Ratio	95th Percentile Queue Length (ft)
1	Bay Ridge Rd & Bay Ridge Ave / Hillsmere Dr	**Overall**	**D (D) {D}**	**39.4 (37.0) {36.4}**	**0.65 (0.71) {0.62}**	**-**
		Eastbound	C (C) {C}	24.7 (30.8) {25.9}	0.46 (0.60) {0.58}	340 (485) {386}
		Westbound	D (C) {C}	37.1 (22.2) {30.1}	0.64 (0.54) {0.53}	199 (200) {205}
		Northbound	E (E) {D}	55.2 (56.8) {51}	0.72 (0.70) {0.61}	364 (251) {288}
		Southbound	E (E) {D}	60.8 (58.2) {48.3}	0.64 (0.69) {0.78}	140 (155) {156}
2	Bay Ridge Rd & Georgetown Rd	**Overall**	**B (B) {B}**	**11.8 (11.7) {18.0}**	**0.62 (0.57) {0.79}**	**-**
		Eastbound	A (A) {B}	6.6 (5.7) {12.5}	0.62 (0.59) {0.80}	180 (179) {576}
		Westbound	A (A) {A}	5.5 (5.7) {8.0}	0.48 (0.33) {0.45}	196 (141) {251}
		Southbound	E (E) {D}	65.7 (63.0) {54.9}	0.45 (0.16) {0.61}	174 (136) {391}
3	Bay Ridge Rd & Edgewood Rd	**Overall**	**B (C) {C}**	**18.0 (25.4) {25.5}**	**0.56 (0.75) {0.74}**	**-**
		Eastbound	B (B) {B}	13.5 (15) {15.3}	0.57 (0.64) {0.73}	170 (147) {183}
		Westbound	B (B) {C}	11.8 (18.9) {26.9}	0.46 (0.33) {0.47}	150 (108) {190}
		Northbound	E (F) {F}	66.5 (183.7) {96.1}	0.29 (1.04) {0.76}	50 (106) {80}
		Southbound	D (D) {D}	72.7 (53.1) {39.4}	0.32 (0.21) {0.67}	136 (130) {142}
4	Bay Ridge Rd & Carrollton Rd	Southbound	C (B) {A}	16.8 (12.5) {8.3}	0.27 (0.12) {0.05}	75 (49) {47}
5	Bay Ridge Rd & Arundel on the Bay Rd	**Overall**	**B (A) {A}**	**17.3 (9.9) {9.3}**	**0.70 (0.50) {0.40}**	**-**
		Eastbound	B (A) {A}	10.0 (6.6) {5.7}	0.35 (0.48) {0.32}	165 (173) {133}
		Westbound	C (B) {A}	21.7 (13.5) {9.3}	0.50 (0.30) {0.28}	158 (142) {107}
		Northbound	C (B) {B}	20.5 (15.3) {16.6}	0.82 (0.52) {0.52}	379 (210) {205}
6	Bay Village Dr & Edgewood Rd	Eastbound	A (A) {A}	0.0 (0.0) {0.0}	0.00 (0.00) {0.00}	0 (0) {0}
		Westbound	A (A) {A}	0.0 (0.0) {0.0}	0.00 (0.00) {0.00}	0 (0) {0}
		Southbound	A (A) {A}	7.2 (7.4) {7.5}	0.03 (0.03) {0.03}	40 (47) {50}

Under the existing conditions, no intersections have an overall LOS worse than D for any peak period. The northbound approach at the signalized intersection of Bay Ridge Road and Edgewood Road fails (LOS F) during the weekday PM peak hour and Saturday peak hour. The failing northbound approach LOS is the result of long delays from signal timings, not a deficiency in intersection capacity (the 95% queue remain very short).

The heaviest queuing occurred during the PM and Saturday peak hours on the eastbound approach of Bay Ridge Road and Hillsmere Drive for the through movement. Eastbound through queue lengths were estimated at 485ft (about 19 cars) and 386ft (about 15 cars) during the PM and Saturday peak hours, respectively, despite the approach operating at LOS C during all peak hours analyzed.

Critical Gaps in Traffic Flow

Critical gaps in traffic flow were not studied because the access to the proposed site will be on Edgewood Road, where volumes and speeds are low and access is controlled by an all-way stop control.

V. BACKGROUND CONDITIONS ANALYSIS

Background Development

Five total background developments are anticipated to be built by the Bay Village Assisting Living Center's build year of 2017. These background developments are located to the northwest of the study area along Forest Drive. Figure 8 shows a map of the proposed background developments and their proximity to the study area.

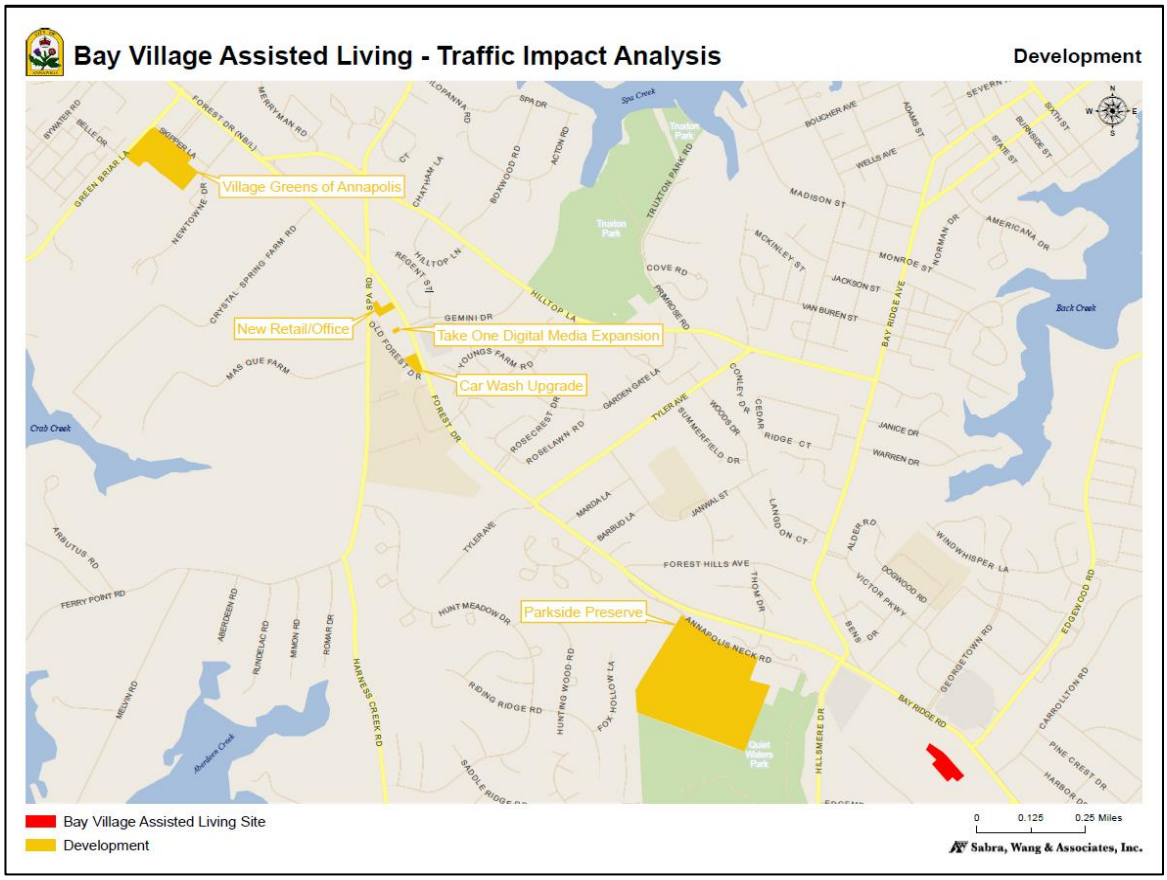


Figure 8: Map of Background Developments

The following information was used to estimate the net trip generation for each proposed background development[1] using the 9th Edition of the ITE *Trip Generation Handbook*:

[1] Because some of the developments are not leased, assumptions were made about the type of retail that would be coincident with a mixed-use office building.

1. Village Greens of Annapolis
    a. 89 multifamily dwelling units: ITE Code 220
2. New Retail/Office
    a. 18,900 SF of general office space: ITE Code 710
    b. 3,780 SF of retail space
        i. 2,460 SF convenience market: ITE Code 852
        ii. 1,320 SF coffee/doughnut shop: ITE Code 936
3. Take One Digital Media Expansion
    a. 2,986 SF convenience market: ITE Code 852
4. Car Wash Upgrade
    a. 2,000 SF automated car wash: ITE Code 948
5. Parkside Preserve
    a. 86 single family detached housing dwelling units: ITE Code 210
    b. 72 townhouse dwelling units: ITE Code 230

The net number of trips generated per land use, and total generated by all of the background developments combined for each peak hour studied is shown in Table 3. These trip generation estimates are conservative, as no discount was taken for pass-by trips, internal capture, or non-driving modes.

Table 3: Background Site Generated Trips

Land Use	Size	AM Peak Hour		PM Peak Hour		SAT Peak Hour	
		Entry	Exit	Entry	Exit	Entry	Exit
230 - Residential Condominium/Townhouse	72 Dwelling Units	7	32	15	17	13	16
Non-pass-by		7	32	15	17	13	16
948 - Automated Car Wash	2 1000 Sq. Feet Gross Floor Area	0	0	12	11	14	14
Non-pass-by		0	0	12	11	14	14
852 - Convenience Market (Open 15-16 Hours) - 1	2.99 1000 Sq. Feet Gross Floor Area	48	49	53	55	53	55
Non-pass-by		48	49	53	55	53	55
852 - Convenience Market (Open 15-16 Hours)	2.46 1000 Sq. Feet Gross Floor Area	41	39	44	45	44	45
Non-pass-by		41	39	44	45	44	45
710 - General Office Building	18.9 1000 Sq. Feet Gross Floor Area	44	6	17	83	4	4
Non-pass-by		44	6	17	83	4	4
936 - Coffee/Donut Shop without Drive-Through Window	1.32 1000 Sq. Feet Gross Floor Area	43	42	17	17	42	45
Non-pass-by		43	42	17	17	42	45
220 - Apartment	89 Dwelling Units	15	36	41	27	56	89
Non-pass-by		15	36	41	27	56	89
210 - Single Family Detached Housing	86 Dwelling Units	19	53	60	34	46	39
Non-pass-by		19	53	60	34	46	39
Total		217	257	259	289	272	307
Total Non-pass-by		217	257	259	289	272	307

The traffic distribution within the study area, from background developments was based upon existing traffic patterns. Accordingly, 55% of the total traffic generated by the background developments was assumed to pass through the study. Figure 9 shows how this 55% of the total background site generated traffic is distributed throughout the study area.

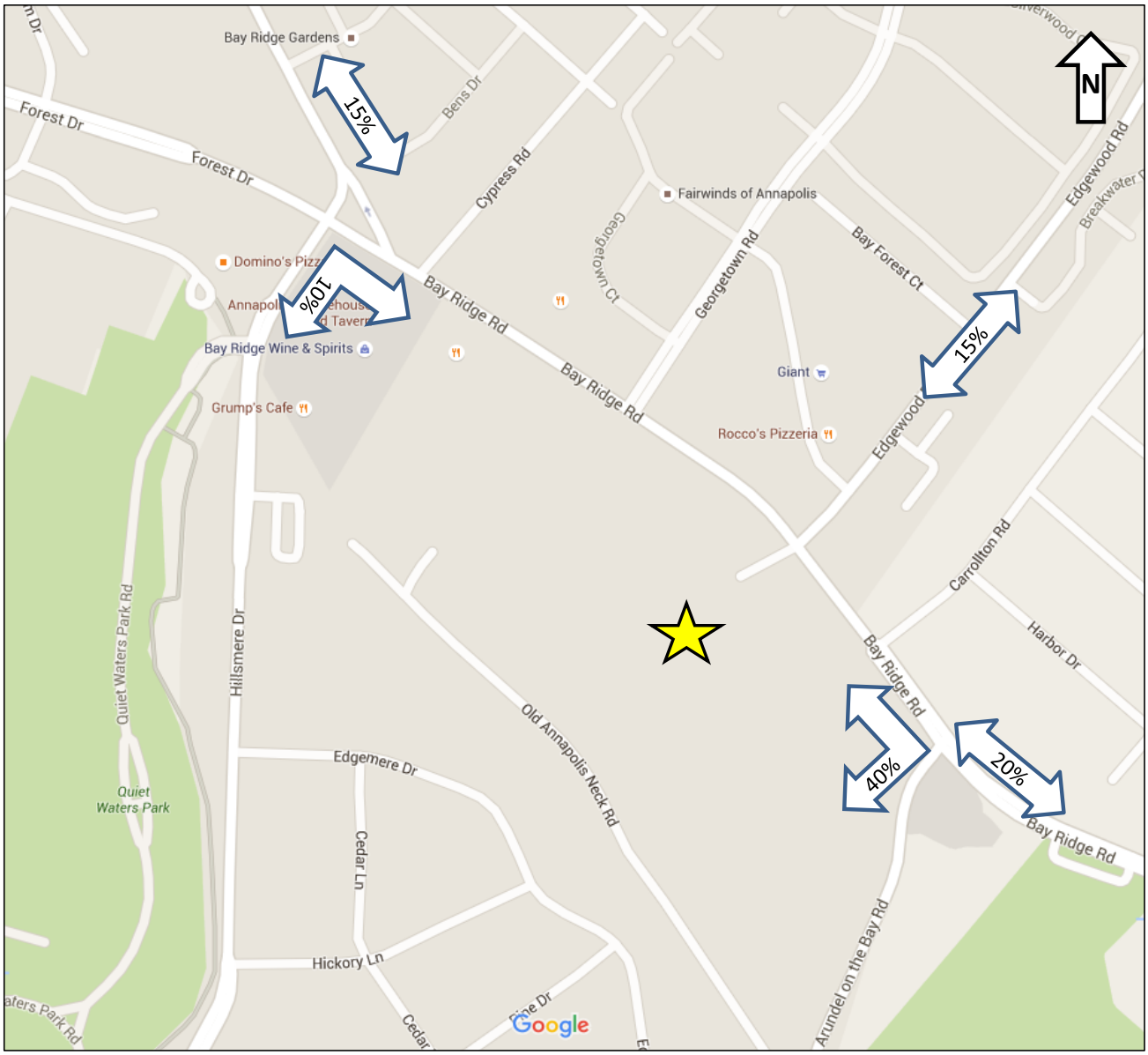


Figure 9: Distribution of Background Site Generated Traffic

Background Regional Traffic Growth

Annual growth in regional traffic through the study area was estimated using a 1% annual growth rate. The annual growth rate was applied to the through volumes along Bay Ridge Road for two years to represent regional growth by the build year of 2017.

Programmed Roadway Improvements

Currently there are no programmed roadway improvements by City or State anticipated prior to the completed redevelopment of the proposed site.

VI. SITE GENERATED TRAFFIC

Site Trip Generation

The objective of a trip generation analysis is to forecast the number of new trips that will begin or end at a proposed land use. A primary source for data on vehicular trip generation is the *Trip Generation Handbook* published by the Institute of Transportation Engineers. The *Handbook* compiles data from over 5,500 surveys of trip rates at hundreds of specific types of land uses such as recreational, residential, commercial, office, institutional, and industrial throughout the country. The data is sorted by various time periods such as morning and evening peak hour, and plotted against independent variables for specific land uses such as square feet of commercial space, number of hotel rooms, number of dwelling units, etc. The data is presented in graphical format with weighted averages, and fitted curve linear regression equations, where enough data is available.

Using the ITE Trip Generation Manual, 9th Edition (2012) peak hour trip generation rates were determined based on the future land uses. The average number of vehicle trip ends and percentage of entering and exiting volumes were calculated. Land use category 254 – Assisted Living Facility was selected for the proposed site.

Several site-specific factors can reduce the number of new personal vehicular trips generated by a new development or land use. These include the 1) the availability of alternative modes of transportation such as sidewalks, bicycle facilities, and public transportation; 2) the effect of pass-by traffic which includes vehicles already on the roadway network making an intermediate stop on the way from an origin to a primary trip destination without a route diversion, and 3) the effect of internally captured trips composed of traffic originating and destined for different land uses within the same development that do not travel on the external public roadway network. As an initial forecasting assumption, it was assumed that there was no modal choice discount – all trips would be via automobile.

The effect of pass-by traffic is quantified from data available in *Trip Generation Handbook.* For certain developments, primarily retail and service-oriented land uses, the traffic entering and exiting the site may be significantly different than the total number of new personal vehicle trips added to the roadway network. The difference between the total entering and exiting traffic and new vehicle trips - pass-by traffic – can range from 20% to 60%, but averages around 34%. The variance is largely dependent on the specific type(s) of retail or service uses and size of the development. A pass-by discount of 0% was assumed for the AM, PM and Saturday peak hour.

Based on the above assumptions, the future vehicular trips generated by the proposed 88 unit Bay Village Assisted Living facility were calculated and assigned to the network. A total of 16 AM peak hour trips, 32 PM peak hour trips, and 32 Saturday peak hour trips are generated by the proposed development. Table 4 summarizes the site trip generation.

Table 4: Site Trip Generation

Land Use	Size	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
		Entry	Exit	Entry	Exit	Entry	Exit
254 - Assisted Living	88 Beds	11	5	15	17	13	16
Reduction		0	0	0	0	0	0
Internal		0	0	0	0	0	0
Pass-by		0	0	0	0	0	0
Non-pass-by		11	5	15	17	13	16
Total		11	5	15	17	13	16
Total Reduction		0	0	0	0	0	0
Total Internal		0	0	0	0	0	0
Total Pass-by		0	0	0	0	0	0
Total Non-pass-by		11	5	15	17	13	16

Trip Distribution

Distribution to the proposed Bay Village Assisted Living facility was assumed based on existing traffic patterns and can be summarized as follows:

- 40% to/from the west via Forest Dr
- 5% to/from the south via Hillsmere Dr to Bay Ridge Rd
- 10% to/from the north via Bay Ridge Ave to Bay Ridge Rd
- 10% to/from the north via Edgewood Rd
- 10% to/from the east via Bay Ridge Rd
- 25% to/from the south via Arundel on the Bay Rd to Bay Ridge Rd

The distribution of the new site trips is shown in Figure 10.

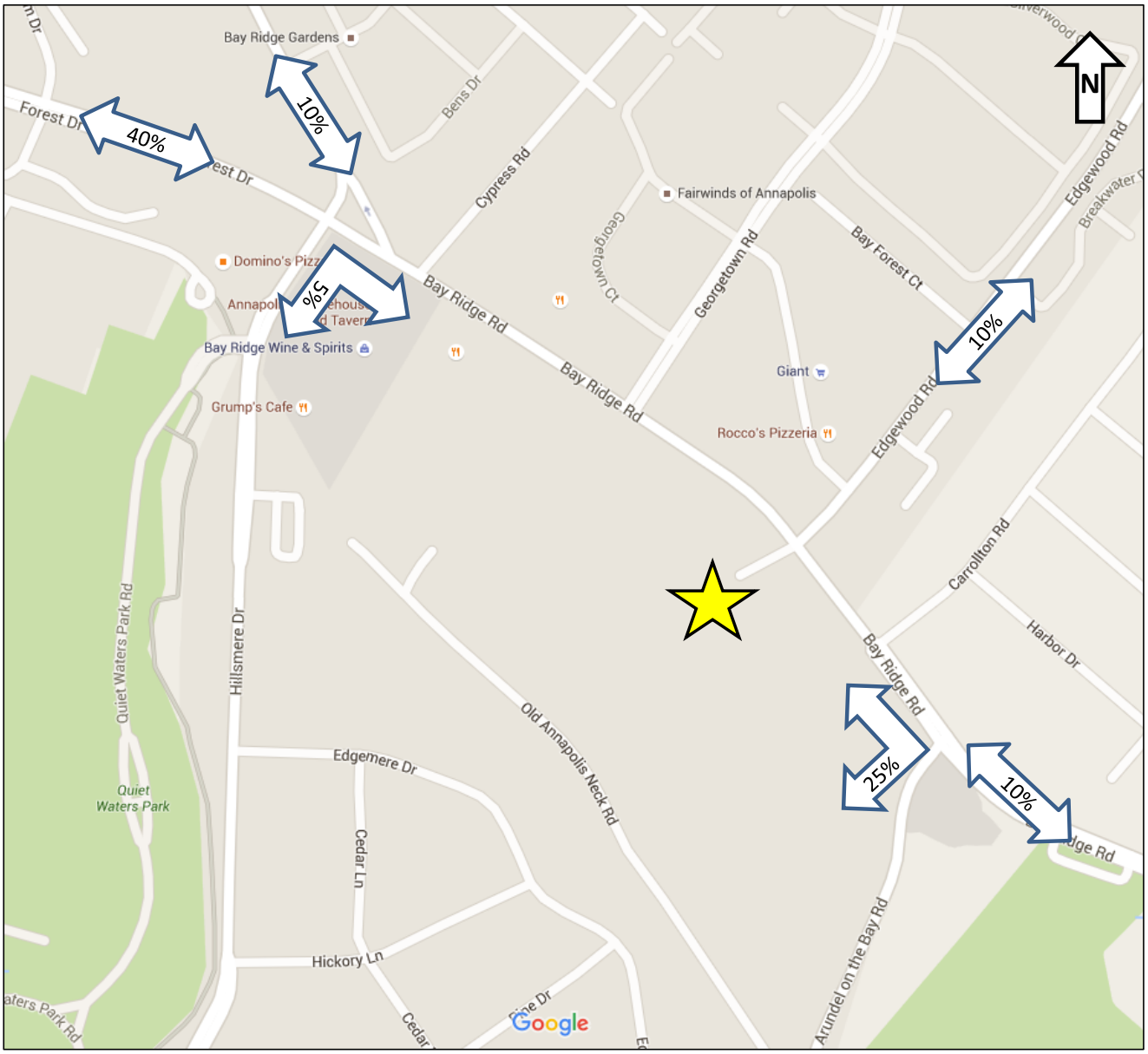


Figure 10: Distribution of New Site Trips

Site Traffic Assignment

Using the trip distribution described above the proposed site generated trips was assigned to the network for AM, PM and Saturday peak hours as shown in Figure 11, Figure 12, and Figure 13, respectively.

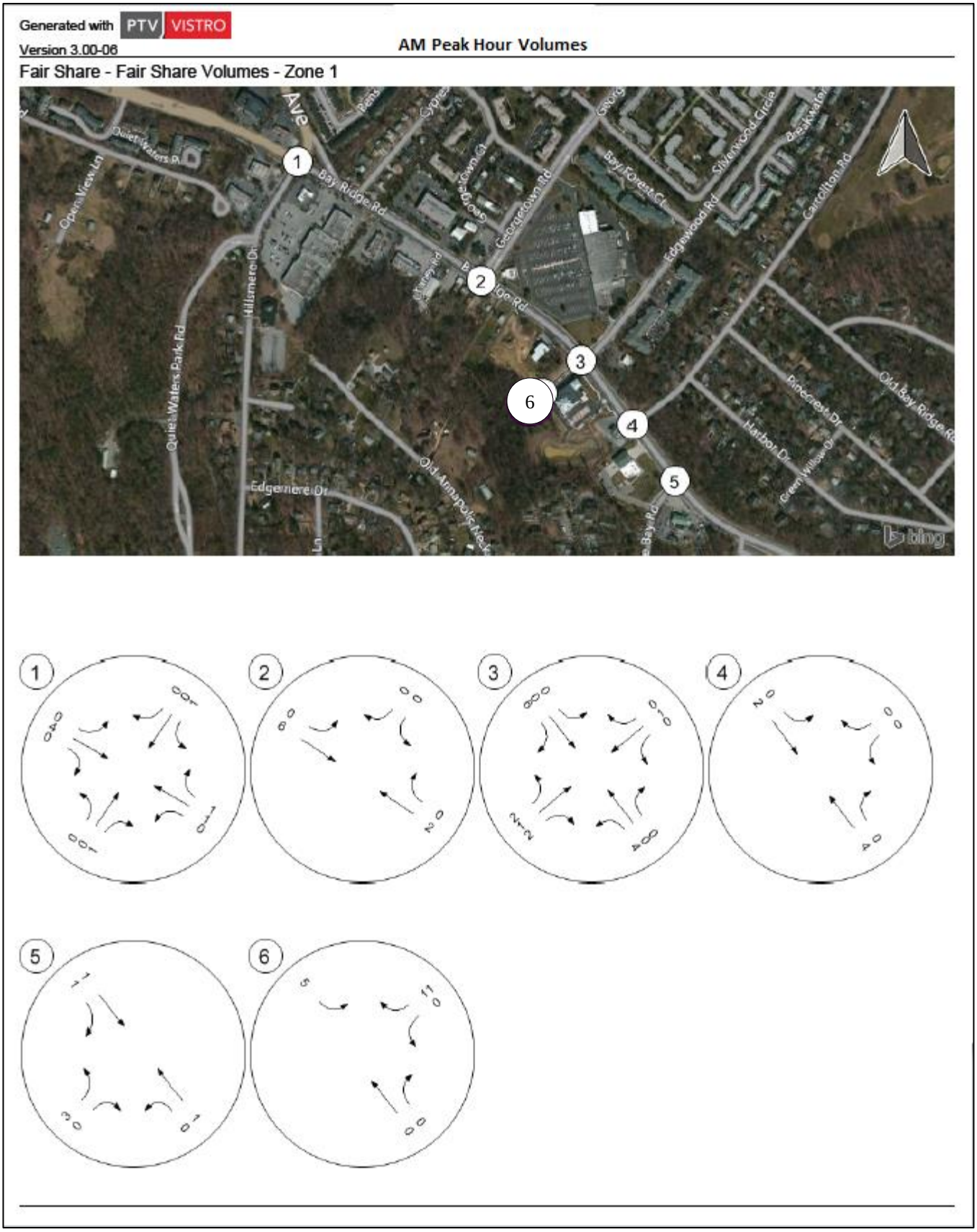


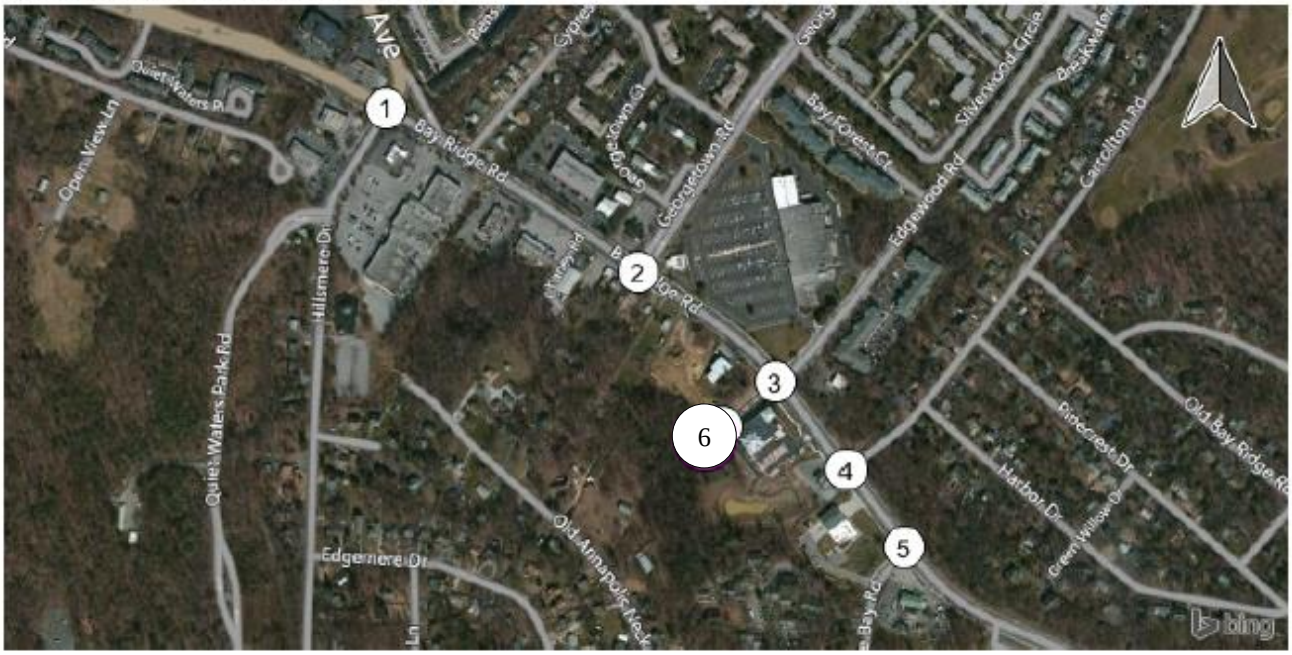
Figure 11: Proposed Site Net New AM Peak Hour Generated Site Trips

Generated with PTV VISTRO

Scenario: Base Scenario

Version 3.00-06

Fair Share - Fair Share Volumes - Zone 1



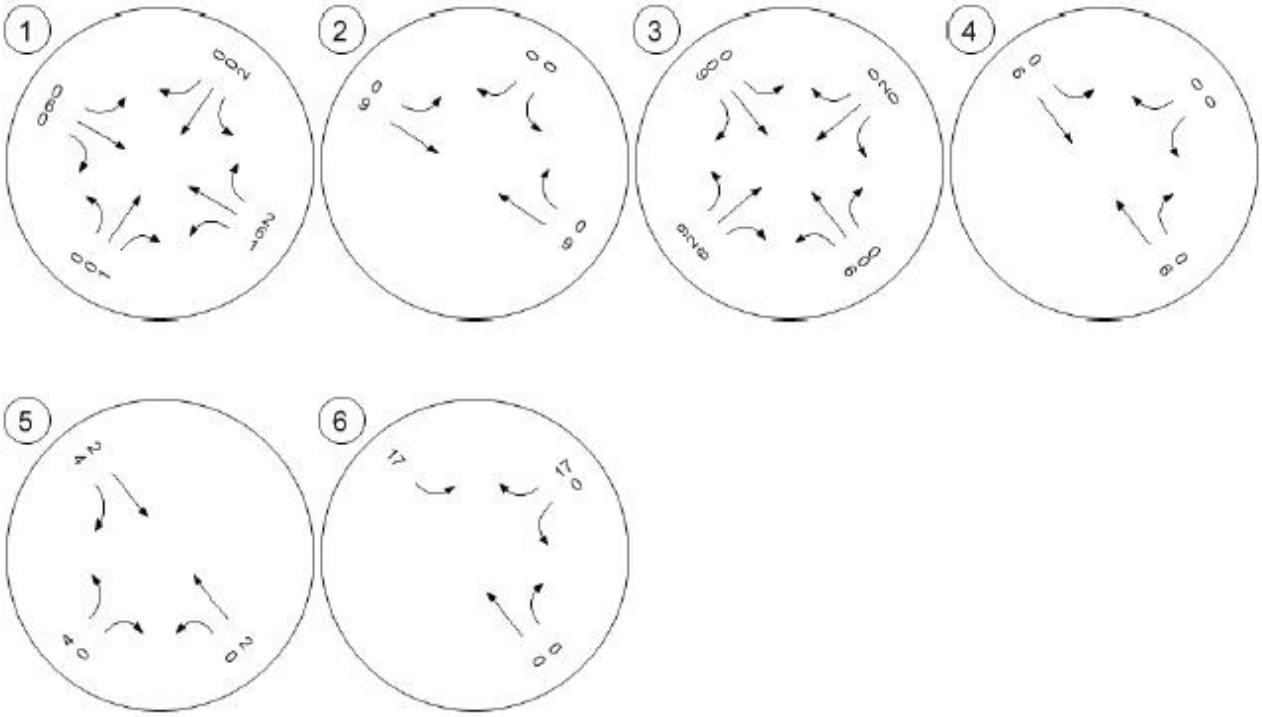


Figure 12: Proposed Site Net New PM Peak Hour Generated Site Trips

Figure 13: Proposed Site Net New Saturday Peak Hour Generated Site Trips

VII. TOTAL TRAFFIC ANALYSIS

Future year (2017) no-build traffic volumes were developed by adding the existing traffic volume, growth in existing regional traffic (assumed to be 1%), and background development traffic. Figure 14, Figure 15, and Figure 16 show the future year No-Build traffic volumes for the AM, PM, and Saturday peak hours, respectively.

Future Year *Build* traffic volumes were developed by adding the No-Build traffic volumes to the net new trips generated by the Bay Village Assisted Living Center. Figure 17, Figure 18, and Figure 19 show the total future traffic volumes for the AM, PM, and Saturday peak hours, respectively.

Future Level of Service Analysis and other Measures of Effectiveness

A capacity analysis was performed for the 2017 No-Build and 2017 Build scenarios. As discussed in the existing conditions, a Synchro™ model implementing Highway Capacity Manual 2000 methods was used to perform the analyses. The results of the future capacity analysis are summarized in Table 5. Detailed future HCM and Queuing reports for the 2017 No-build and 2017 Build scenarios are included in Appendix C-1 and C-2, respectively.

Under the future total Build traffic conditions, there is no change in overall LOS for any intersection from No-Build conditions. While no intersection has an overall failing LOS, the low-volume northbound approach at Edgewood Road and Bay Ridge Road continues to fail in the PM and Saturday peak hours for both the Build scenario and No-Build scenario.

Queuing was assessed using SimTraffic using the same methodology as for the existing conditions: Five 60-minute simulations with 15 minute seeding intervals were run for each peak hour. The 95th percentile queue lengths are shown in Table 5. Overall queues remain very similar to those of the No-Build scenario.

Given the very low volume and short 95% queue lengths for the northbound approaches, no mitigation is recommended

Table 5: Future Total Traffic Conditions Analysis

#	Intersection	Movement	2017 No-Build - AM (PM) {Saturday}				2017 Build - AM (PM) {Saturday}			
			Level of Service	Delay/Veh (sec)	Volume/Capacity Ratio	95th Percentile Queue Length (ft)	Level of Service	Delay/Veh (sec)	Volume/Capacity Ratio	95th Percentile Queue Length (ft)
1	Bay Ridge Rd & Bay Ridge Ave / Hillsmere Dr	**Overall**	**D (D) {D}**	**40.8 (40.7) {38.2}**	**0.69 (0.77) {0.73}**	**-**	**D (D) {D}**	**40.8 (41.0) {38.0}**	**0.70 (0.78) {0.73}**	**-**
		Eastbound	C (D) {C}	26.3 (36.5) {29.8}	0.53 (0.85) {0.72}	359 (603) {452}	C (D) {C}	26.3 (36.9) {30.3}	0.56 (0.86) {0.73}	382 (608) {482}
		Westbound	D (C) {C}	40.7 (28.2) {33.3}	0.72 (0.61) {0.64}	196 (208) {202}	D (C) {C}	40.8 (29) {32.4}	0.74 (0.62) {0.64}	195 (206) {206}
		Northbound	E (E) {D}	55.9 (57) {51.9}	0.72 (0.73) {0.61}	344 (257) {302}	E (E) {D}	56 (57) {51.5}	0.67 (0.70) {0.72}	374 (264) {312}
		Southbound	E (E) {D}	60.3 (58.8) {48.8}	0.62 (0.73) {0.83}	145 (160) {155}	E (E) {D}	60.3 (58.9) {48.8}	0.61 (0.69) {0.73}	138 (154) {153}
2	Bay Ridge Rd & Georgetown Rd	**Overall**	**B (B) {B}**	**11.8 (11.7) {19.7}**	**0.68 (0.65) {0.86}**	**-**	**B (B) {B}**	**11.7 (11.6) {19.9}**	**0.68 (0.65) {0.87}**	**-**
		Eastbound	A (A) {B}	6.6 (7.4) {15}	0.68 (0.67) {0.86}	201 (278) {304}	A (A) {B}	6.6 (7.3) {15.2}	0.68 (0.68) {0.87}	200 (260) {439}
		Westbound	A (A) {A}	5.9 (4.8) {7.7}	0.53 (0.37) {0.52}	243 (177) {224}	A (A) {A}	5.7 (4.8) {7.7}	0.53 (0.37) {0.52}	229 (193) {263}
		Southbound	E (E) {E}	68.2 (63.0) {63.0}	0.55 (0.16) {0.73}	178 (138) {360}	E (E) {E}	68.2 (63.0) {64.1}	0.55 (0.16) {0.74}	176 (157) {444}
3	Bay Ridge Rd & Edgewood Rd	**Overall**	**B (C) {C}**	**18.9 (28.6) {27.0}**	**0.61 (0.81) {0.79}**	**-**	**B (C) {C}**	**19.2 (34.6) {32.0}**	**0.62 (0.93) {0.86}**	**-**
		Eastbound	B (B) {B}	13.3 (19.3) {17.8}	0.62 (0.70) {0.79}	184 (184) {199}	B (C) {C}	13.5 (24.0) {21.6}	0.63 (0.77) {0.85}	177 (169) {200}
		Westbound	B (C) {C}	14.6 (20.6) {29.8}	0.51 (0.39) {0.56}	188 (124) {218}	B (C) {C}	14.8 (24.9) {34.9}	0.52 (0.43) {0.63}	183 (123) {224}
		Northbound	E (F) {F}	67.0 (224.6) {97.0}	0.29 (1.15) {0.76}	50 (103) {75}	E (F) {F}	67.1 (245.7) {140.9}	0.35 (1.29) {0.96}	56 (112) {93}
		Southbound	D (D) {D}	50 (52.4) {38.2}	0.32 (0.38) {0.67}	143 (135) {148}	D (D) {D}	50.2 (53.9) {38.6}	0.35 (0.43) {0.68}	171 (147) {161}
4	Bay Ridge Rd & Carrollton Rd	Southbound	C (B) {A}	18.6 (13.7) {8.3}	0.30 (0.14) {0.05}	71 (47) {49}	C (B) {A}	18.6 (13.8) {8.3}	0.30 (0.14) {0.05}	98 (53) {50}
5	Bay Ridge Rd & Arundel on the Bay Rd	**Overall**	**B (B) {B}**	**19.7 (10.6) {10.1}**	**0.75 (0.56) {0.48}**	**-**	**B (B) {B}**	**19.8 (10.1) {10.3}**	**0.75 (0.57) {0.48}**	**-**
		Eastbound	B (A) {A}	10.7 (7.3) {6.7}	0.39 (0.55) {0.40}	161 (204) {158}	B (A) {A}	10.6 (6.4) {7.1}	0.40 (0.56) {0.40}	162 (188) {159}
		Westbound	C (B) {B}	22.0 (15.0) {11.3}	0.54 (0.36) {0.34}	163 (140) {123}	C (B) {B}	22.1 (15.2) {11.3}	0.54 (0.37) {0.34}	173 (151) {122}
		Northbound	C (B) {B}	25.5 (15.4) {15.7}	0.88 (0.57) {0.57}	418 (237) {242}	C (B) {B}	25.8 (15.3) {15.8}	0.88 (0.58) {0.57}	411 (246) {267}
6	Bay Village Dr & Edgewood Rd	Eastbound	A (A) {A}	0.0 (0.0) {0.0}	0.00 (0.00) {0.00}	0 (0) {0}	A (A) {A}	7.2 (7.3) {7.4}	0.01 (0.02) {0.02}	22 (38) {40}
		Westbound	A (A) {A}	0.0 (0.0) {0.0}	0.00 (0.00) {0.00}	0 (0) {0}	A (A) {A}	0.0 (0.0) {0.0}	0.00 (0.00) {0.00}	0 (0) {0}
		Southbound	A (A) {A}	7.2 (7.4) {7.5}	0.03 (0.03) {0.03}	43 (48) {47}	A (A) {A}	7.0 (7.4) {7.5}	0.04 (0.07) {0.11}	48 (49) {49}

Figure 14: 2017 AM Peak Hour No-Build Volumes

Figure 15: 2017 PM Peak Hour No-Build Volumes

Figure 16: 2017 Saturday Peak Hour No-Build Volumes

Figure 17: Future Total AM Peak Hour Volumes

Figure 18: Future Total PM Peak Hour Volumes

Figure 19: Future Total Saturday Peak Hour Volumes

VIII. Summary of Findings

The following is a summary of the traffic analysis findings:

- A 92,020 square feet Bay Village Assisted Living development is proposed on the site. The development will house 88 units, and will include 24 surface parking spaces and 66 underground spaces. The project is expected to be completed by 2017.
- The proposed site will have its primary full movement entrance from a garage driveway off of Bay Village Drive. Additionally, a layby off of Bay village Drive is proposed for pick-up/drop-off. The site has direct access to Bay Ridge Road via Edgewood Road.
- Existing Traffic Counts were conducted in the late Fall of 2015. No intersections currently have a failing Level of Service (LOS). The northbound *approach* of Edgewood Road at Bay Ridge Drive is currently failing.
- Background developments and regional growth in through traffic were evaluated to analyze the 2017 No-build condition.
- A total of 16 AM peak hour trips, 32 PM peak hour trips, and 29 Saturday peak hour trips are expected for the proposed Assisted Living Center.
- The study area intersections continue to have an acceptable LOS in the 2017 No-Build and 2017 Build scenarios. Changes in intersection queue lengths throughout the overall study area, due to the development and background conditions, are negligible.
- The northbound *approach* of Edgewood Road and Bay Ridge Road continues to fail in the PM and Saturday time frames for Year 2017 No-Build and 2017 Build scenarios, as well as for the existing conditions scenario, despite short queue lengths. Given the very low volume and the short 95% queue lengths for the northbound approach, no mitigation is recommended