Department of Planning & Community Development

Franklin County
A Natural Setting for Opportunity

Franklin County Planning Commission
Agenda
February 10, 2026

I. Call to Order

II. Roll Call

III. Approval of Minutes from December 9, 2025, Meeting

IV. Public Hearing: **APPLICATION for ZONING MAP AMENDMENT –** Application of ABoone Development, Inc., Applicant, and Willard Investment Properties, LLC, and Willard Construction Smith Mountain Lake, LLC, Owners, requesting a zoning map amendment on an approximate 82.70 acres of property zoned PCD, Planned Commercial Development District. These parcels are located at 12800 Booker T. Washington Highway in the Gills Creek Election District of Franklin County and further identified by real estate records as Tax Map/Parcel #0300000105 and 0300005228. The purpose of this zoning map amendment request to amend the conceptual plan to allow for 103 +/- single family detached homes as well as five (5) commercial pads designated for business purposes. This property has a future land use designation of Residential Mixed Use and Village Mixed Use and is part of the Westlake-Hales Ford Designated Growth Area (REZO-01-26-18468).

   a. Staff Presentation (Tina Franklin)
   b. Applicant Presentation
   c. Citizen Comment

V. Public Hearing: **APPLICATION for SPECIAL USE PERMIT –** Application of ABoone Development, Inc., Applicant, and Willard Investment Properties, LLC, and Willard Construction Smith Mountain Lake, LLC, Owners, requesting a special use permit on an approximate 82.70 acres of property zoned PCD, Planned Commercial Development District. These parcels are located at 12800 Booker T. Washington Highway in the Gills Creek Election District of Franklin County and further identified by real estate records as Tax Map/Parcel #0300000105 and 0300005228. The purpose of this special use permit request is to allow for 103 +/- dwellings, single family detached. This property has a future land use designation of Residential Mixed Use and Village Mixed Use and is part of the Westlake-Hales Ford Designated Growth Area (SPEC-01-26-18469).

   a. Staff Presentation (Tina Franklin)

b. Applicant Presentation
c. Citizen Comment

VI. Public Hearing: **APPLICATION for SPECIAL USE PERMIT –** Application of ABoone Development, Inc., Applicant, and Willard Investment Properties, LLC, and Willard Construction Smith Mountain Lake, LLC, Owners, requesting a special use permit on an approximate 82.70 acres of property zoned PCD, Planned Commercial Development District. These parcels are located at 12800 Booker T. Washington Highway in the Gills Creek Election District of Franklin County and further identified by real estate records as Tax Map/Parcel #0300000105 and 0300005228. The purpose of this special use permit request is to allow for private street(s) or road(s). This property has a future land use designation of Residential Mixed Use and Village Mixed Use and is part of the Westlake-Hales Ford Designated Growth Area (SPEC-01-26-18470).

a. Staff Presentation (Tina Franklin)
b. Applicant Presentation
c. Citizen Comment

VII. Public Hearing: **APPLICATION for COMPREHENSIVE PLAN AMENDMENT –** Application of Franklin County Board of Supervisors to amend the 2045 Franklin County Comprehensive Plan Chapter 9: Utilities to reflect changes to the map entitled "Map #9.5: Power Transmission Lines" in order to address critical electrical infrastructure needs and to support planned economic development within the County (A-01-26-001).

a. Staff Presentation (Tina Franklin)
b. Applicant Presentation
c. Citizen Comment

VIII. Public Hearing: **APPLICATION for SPECIAL USE PERMIT –** Application of County of Franklin, Applicants and Owners, requesting a special use permit on an approximate 481.29 acres of property zoned REP, Regional Enterprise Park District. These parcels are located in the Boone and Blackwater Election Districts of Franklin County and further identified by real estate records as Tax Map/Parcel #0370005400, 0360020400, 0360020500, and 0440000500. The purpose of this special use permit request is to allow for Utility Services, Major electric substation and associated facilities and transmission lines. This property has a future land use designation of Industrial Mixed Use and is part of the 220-North Corridor Designated Growth Area (SPEC-01-26-18471).

a. Staff Presentation (Tina Franklin)

b. Applicant Presentation
c. Citizen Comment

IX. Citizen Comment

X. Adjourn

*** The Planning Commission's next site visits are scheduled for March 4, 2026.

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A meeting of the Franklin County Planning Commission was held on Tuesday, December 9, 2025, in the Board Room located at the Franklin County Government Center.

THOSE PRESENT:
Angie McGhee- Boone District
Victor Evans- Union Hall District
Sherrie Mitchell- Chair, Snow Creek District
David Pendleton- Vice Chair, Blackwater District
C.W. Doss- Blue Ridge District
David Clements- Rocky Mount District

OTHERS PRESENT:
Tina Franklin- Planner II
Samantha Conner- Clerk
Chris Dadak- County Attorney (via phone)
Lisa Cooper- Planning Director

THOSE ABSENT:
Ron Jefferson- Gills Creek District

Chairwoman Mitchell called the meeting to order at 6:00pm.

The first order of business was the approval of the November 10th minutes. The commissioners agreed to approve the minutes as written.

Chairwoman Mitchell introduced the next item on the agenda: **APPLICATION for SPECIAL USE PERMIT –** Application of Michael and Elizabeth Fair, Applicants and Owners, requesting a special use permit on an approximate 0.68 acres of property zoned A-1, Agricultural District. The parcel is located at 234 Waterwood Drive in the Gills Creek Election District of Franklin County and further identified by real estate records as Tax Map/Parcel #0320309800. The purpose of this special use permit request is to allow for short-term tourist rental of dwelling. This property has a future land use designation of Low Density Residential – County and Lake Influence Area (0.5 M Buffer) (SPEC-10-25-18425).
Ms. Franklin presented the staff report. She stated that this is the only dwelling located on the parcel and where the proposed short-term rental will take place.

The property is located on a secondary state-maintained road and has a driveway that would provide ample parking for the short-term rental. The water is supplied by Park Place Water Works, and the sewer supply is a septic system.

Ms. Franklin stated that the closest residence is approximately forty-three (43') feet from the proposed short-term rental located at 234 Waterwood Drive. Both sides of 234 Waterwood Drive are well vegetated to provide screening, especially in the summertime during the short-term rental season.

Ms. Franklin stated that according to County records, the dwelling is a one-story single-family residence constructed in 1992 and consists of three (3) bedrooms, three (3) full bathrooms and has a total living area of approximately 3,036 square feet. The septic permit was issued by the Virginia Department of Health in 1991 for a three (3) bedroom home. There is one (1) septic tank located at the front of the property and one (1) septic tank located in the middle of the property along the left side property line. Ms. Franklin stated that the short-term rental can be rented to a maximum of six (6) adults.

Ms. Franklin explained that Mr. and Mrs. Fair indicated they plan to eventually retire to this home. They stated the house has been rented long-term since they owned it, and they have had to rent an Airbnb to visit SML due to the long-term renter in their place. Mr. and Mrs. Fair indicated the short-term rental would provide them with the ability to spend some time at the lake. Mr. and Mrs. Fair also stated they would have a local property management handling the rental process, occupancy limits and noise restrictions will be posted and adhered to. The property manager will be Taylor O'Dell, 540-488-4122, taylorml519@icloud.com.

Ms. Franklin stated that staff have received two (2) phone calls: one (1) inquiring about the application and one (1) in opposition. Staff received three (3) emails in opposition.

Ms. Franklin showed the commissioners four (4) maps on the screen: a vicinity, an aerial, a zoning, and a future land use map. She also presented an image of the concept plan and pictures taken at her site visit.

Ms. Franklin stated that the proposed short-term rental is located on a lot consisting of +/-0.68 acres, and the closest single-family dwelling is forty-three (43') feet. During the main short-term rental season, normally May through September, both sides of the subject property will be well vegetated to provide screening. The property is surrounded by single-family dwellings, and the surrounding properties are close in lot sizes.

Ms. Franklin added that the property has a driveway that leads to the dwelling off Waterwood Drive which would provide ample parking. The traffic generated by this short-term rental would be similar to what is generated by a single-family dwelling with full-time residents. The noise of the rental should not be more than normally expected in a residential neighborhood.

Ms. Franklin explained that The Comprehensive Plan designations for this property are Low Density Residential - County and Lake Influence Area. Low density residential represents suburban patterns of development and housing consists of single-family dwellings on a variety of lot sizes. Lake Influence area consists of residential uses, but the increase in tourism around the lake and the need for accommodation for these guests, the County will see an increase in STRs in this future land use designation.

Ms. Franklin added that some of the primary land use types for this designation are lodging and tourism. There needs to be a balance in traditional subdivisions between residents and transients' occupants that allows STRs to be located in subdivisions around the lake where tourists want to rent and property owners want to rent their homes.

Ms. Franklin stated that staff conclude that there will be minimal impacts to the surrounding area. The character of the A-1 zoning district will not be changed. The STR will be in harmony with the purpose and intent of this chapter and with the uses permitted by right in the A-1 zoning district.

Ms. Franklin stated that staff recommends that the Planning Commission recommend approval of the special use permit with the following six (6) conditions:

1. The special use permit authorizing the short-term rental dwelling on Tax

Parcel # 0320309800 shall only apply to the existing dwelling on the property. No additional dwellings on the property shall be used for a short-term rental unless this permit is revised by the Board of Supervisors after review and recommendation of the Planning Commission.

2. The owner shall always comply with the supplementary regulations for short-term rentals found in Section 25-138 and Section 5.5-72 of the Franklin County Code.
3. The owner shall provide and maintain proof of liability insurance covering injury to a guest on the property of no less than $1,000,000.
4. The owner shall register the short-term rental use and shall have the property inspected for compliance with County Code. No short-term rental of the property shall be authorized until these inspections take place, and the property is found to be compliant with the applicable County Code.
5. The owner shall supply the Planning Department with the name and phone number of a property manager or contact person. The Planning Department shall be notified any time this information is changed. Staff will notify adjoining property owners of this information and notify them of any changes to this information.
6. The applicant/owner shall retain existing vegetation on both sides of property to allow for screening due to the closeness of the dwellings.

Ms. Franklin asked if the commissioners had any questions for staff. There were no questions.

Chairwoman Mitchell invited the applicant to the podium to present. Mike Fair presented a PowerPoint showing images of the property. He stated that he and his wife, Lisa, were looking for a lakefront property in the County as they have been visitors to the area for quite some time. They plan to retire in the next few years, but they will rent the property until then. He explained that the cars would be parked off the street and practically invisible to the neighbors.

The Planning Commission did not have any questions for the applicant.

Chairwoman Mitchell opened up the podium for citizen comment.
Mr. Bob Piazza signed up to speak, but he declined.

Mr. Wayne Meyers stated that he was a next-door neighbor to the Fairs. He stated that they are good people, though he is against the application. He presented the Planning Commission with a map of the neighborhood. Mr. Meyers stated that he managed a short-term rental for 3.5 years and struggled with people bringing their friends along and making the property hard to manage. He stated that the Fairs rented their house for a while and, while they did the best they could, still dealt with loud, unmanaged renters. He explained there are no fences to keep animals away, and he is only 46 feet away. He added that the elderly ladies in the neighborhood should be able to walk their dogs in safety. Mr. Meyers also mentioned the shared drain field and is worried that it may become overloaded.

Mr. David Henkins stated that he resides at 232 Waterwood Drive on the other side of Wayne Meyers, so he shares a border with Mike and Lisa Fair. He stated that he purchased his property five years ago and was attracted to Franklin County due to their strict short-term rental regulations compared to Bedford County. He stated that Waterwood is a dead-end street with year-round, full-time residents who would like a quiet neighborhood. He is concerned with changing the dynamic when there are constant strangers cycling in and out. Mr. Henkins stated that rules are not always followed and are not easy to enforce. Mr. Henkins confirmed that the Fairs have had previous tenants that were disruptive. He is also concerned about water safety for children in the neighborhood.

Ms. Betty Stubbs stated that she lives two houses down from the applicant. She stated she is an elderly widow who lives alone with no relatives around. She and another elderly citizen go out to walk their dogs with no police presence. Ms. Stubbs stated that she wished the Planning Commission would consider protecting elderly people in the neighborhood.

Chairwoman Mitchell asked if anyone else in the audience would like to speak. Hearing none and seeing none, she closed the opportunity.

Chairwoman Mitchell asked if the Planning Commission had any discussion.

Mr. Evans asked if the Fairs had any experience with a property management team. Mr. Mike Fair and Ms. Lisa Fair approached the podium and explained that they do have a property management team. They have previously worked with Mr. Wayne

Wright, but he only does long-term rental management. Mr. Fair stated that Taylor O'Dell would be their short-term rental property manager.

Mr. Evans asked for the Fairs to discuss the previous experiences with tenants that the neighbors discussed during citizen comment. Ms. Lisa Fair stated that Taylor O'Dell seems to have a lot of regulations for renters and performs site visits. Ms. O'Dell has been in business for five years and is an Airbnb super host.

Mr. Evans motioned to approve the special use permit application request stating, "I find that the use will not be of substantial detriment to adjacent properties, that the character of the zoning district will not be changed thereby, and that such use will be in harmony with the uses permitted by right in the zoning district, and with the public health, safety, and general welfare to the community. Therefore, I move to recommend approval of the applicant's request for a special use permit to allow for short-term tourist rental of dwelling with the six (6) conditions recommended by staff."

Mr. Pendleton seconded the motion.

A roll call vote was conducted. The motion to approve the special use permit request with the six (6) conditions recommended by staff was approved; 6-0-1-0 voting was as follows:

AYES: Doss, Clements, McGhee, Evans, Pendleton, Mitchell
NAYES: None
ABSENT: Jefferson
ABSTAIN: None

Chairwoman Mitchell announced that the Board of Supervisors would hear this case on January 20, 2026.

Chairwoman Mitchell announced the next item on the agenda: **APPLICATION for SPECIAL USE PERMIT –** Application of Dan Kovarik, Applicant, and RDK Property, LLC, Owners, requesting a special use permit on an approximate 1.00 acres of property zoned A-1, Agricultural District. The parcel is located at 108 Pennsylvania Avenue in the Union Hall Election District of Franklin County and further identified by real estate records as Tax Map/Parcel #0512005800. The purpose of this special use permit

request is to allow for short-term tourist rental of dwelling. This property has a future land use designation of Low Density Residential – County and Lake Influence Area (0.5 M Buffer) (SPEC-10-25-18426).

Ms. Franklin presented the staff report. She stated that this is the only dwelling located on the parcel and where the short-term rental is proposed to take place. The property is located on a private road, which will be taken into the state's secondary system. The driveway is circular with two entrances on Pennsylvania Avenue, and the driveway has ample parking. She added that the water supply is a well, and the sewer supply is a septic system. Ms. Franklin stated that the closest residence is approximately thirty-five (35') feet from the proposed short-term rental located at 108 Pennsylvania Avenue.

Ms. Franklin stated that according to County records, the dwelling is a one-story single-family residence with the Certificate of Occupancy issued in 2025 and consists of five (5) bedrooms, five (5) full bathrooms, and has a total living area of approximately 4,444 square feet. In 2024, the OSE Construction permit was issued by the Virginia Department of Health for a five (5) bedroom home.

Ms. Franklin stated that the septic tank and drain field are located in the rear yard of the property. The short-term rental can be rented for a maximum of ten (10) adults.

Ms. Franklin added that Dan Kovarik, applicant and owner of RDK Property LLC, stated in the letter of application that he is requesting the special use permit in part because this property was purchased as a 1031 Exchange and IRS Regulations require that the property be rented. Mr. Kovarik stated he will be hiring a property management company to ensure that renters are respectful of the property and the neighborhood, and that he has installed security cameras to be able to monitor renter activity. The property manager will be Fulp Properties, 336-423-4720.

Ms. Franklin stated that staff have received seven (7) phone calls and seven (7) emails in opposition to the application. In addition, staff have received one (1) phone call in support.

Ms. Franklin displayed four (4) maps: a vicinity, an aerial, a zoning, and a future land use map. She also displayed the conceptual plan and pictures taken during her site visit on the screen.

Ms. Franklin stated that the proposed short-term rental is located on a lot consisting of 1.00 acre, and the closest single-family dwelling is approximately thirty-five (35') feet. Due to the proximity of the homes, a landscape buffer is one of the conditions of the special use permit to screen the two (2) properties. The property has two (2) single-family dwellings on each side. The surrounding properties are close in lot sizes. She added that the property has a driveway that leads to the dwelling off Pennsylvania Avenue which would provide ample parking.

Ms. Franklin explained that the traffic generated by this short-term rental would be similar to what is generated by a single-family dwelling with full-time residents. The community area at the end of the cul de sac could possibly generate more traffic than this short-term rental when in use for events. Ms. Franklin added that the noise of the rental should not be more than normally expected in a residential neighborhood. The noise in the community area could be more than the STR in the neighborhood.

Ms. Franklin stated that The Comprehensive Plan designations for this property are Low Density Residential - County and Lake Influence Area. Low density residential represents suburban patterns of development and housing consists of single-family dwellings on a variety of lot sizes. Lake Influence area consists of residential uses, but the increase in tourism around the lake and the need for accommodation for these guests, the County will see an increase in STRs in this future land use designation.

Ms. Franklin explained that some of the primary land use types for this designation are lodging and tourism. There needs to be a balance in traditional subdivisions between residents and transients' occupants that allows STRs to be located in subdivisions around the lake. Staff conclude there will be minimal impacts to the surrounding area. The character of the A-1 zoning district will not be changed. The STR will be in harmony with the purpose and intent of this chapter and with the uses permitted by right in the A-1 zoning district.

Ms. Franklin stated that staff recommends that the Planning Commission recommend approval of the special use permit with the following six (6) conditions:

1. The special use permit authorizing the short-term rental dwelling on Tax Parcel # 0512005800 shall only apply to the existing dwelling on the property. No additional dwellings on the property shall be used for a short-term rental unless this permit is revised by the Board of Supervisors after review and recommendation of the Planning Commission.
2. The owner shall always comply with the supplementary regulations for short-term rentals found in Section 25-138 and Section 5.5-72 of the Franklin County Code.
3. The owner shall provide and maintain proof of liability insurance covering injury to a guest on the property of no less than $1,000,000.
4. The owner shall register the short-term rental use and shall have the property inspected for compliance with County Code. No short-term rental of the property shall be authorized until these inspections take place, and the property is found to be compliant with the applicable County Code.
5. The owner shall supply the Planning Department with the name and phone number of a property manager or contact person. The Planning Department shall be notified any time this information is changed. Staff will notify adjoining property owners of this information and notify them of any changes to this information.
6. The owner shall plant a landscape buffer between the subject property and 78 Pennsylvania Avenue from front edge of the home to the 800' contour (along property line). The landscape planting will be approved by the Planning Office prior to the approval of the short-term rental annual registration.

Ms. Franklin asked if the commissioners had any questions for staff.

Mr. Pendleton asked about the 1031 exchange. Chairwoman Mitchell stated that they would wait and ask the applicant.

Chairwoman Mitchell invited the applicant to the podium to present.
Mr. Dan Kovarik stated that he and his wife, Ruth, bought the property this past June. He stated that he checked the restricted convenance, and it stated that short-term rentals were permitted. Mr. Kovarik explained that due to the 1031 Exchange, he

must rent the property to defer tax on the property sold and satisfy the IRS. Mr. Kovarik stated that he plans to abide by all the conditions and is committed to maintaining the peace in the neighborhood. He is hiring a property manager and installing security cameras to monitor the activity of his renters. He plans to screen renters and only rent to five-star tenants. Mr. Kovarik explained that this rental would not have a negative impact on the neighbors. Mr. Kovarik stated that this is not how he would like to be introduced to the neighbors, but the covenants are clear.

There were no questions for the applicant.

Chairwoman Mitchell opened the opportunity for citizen comment.

Ms. Denise Mach stated that her and her husband, Gary, have been full-time residents since February 2020. They chose to move to Franklin County due to its peaceful nature and limited number of short-term rentals. She stated that they rented a property in Bedford County and observed terrible behavior from short-term rental tenants. They are concerned about the safety of their grandkids. She stated that due to misinformation from Frontier Land Development, she thought that the subdivision was already zoned R-1. She added that the average lot size in Kennedy Shores is less than one acre with many being irregularly shaped. Ms. Mach stated that there are less than thirty feet between lots. Fences are prohibited according to their HOA. She stated that a petition was circulated that describes their concerns. Over 80 residents signed the petition in opposition to short-term rentals in Franklin County. She continued by stating that in August 2023, Bedford County was forced to develop an annual short-term rental regulation plan due to the number of concerns.

Ms. Mach presented the commissioners with the petition she referenced.

Ms. Francie Chiado stated that she was reading from an opposition letter submitted to Tina Franklin on December 3rd. She stated that she was drawn to the beauty and peace of Smith Mountain Lake and has lived full-time in her residence there since December 2023. She is concerned about the short-term rental's effect on the health of the lake as short-term rentals could lead to overcrowded waters which can result in algal blooms and harm aquatic ecosystems. Ms. Chiado explained that temporary guests are not invested in the safety of the community. Safety of kids and

pets and protected water quality is a reasonable request from citizens to the County. She stated that there would be an increase in foot traffic, and complaints about loud parties are common. Ms. Chiado stated that this short-term rental would be disruptive of neighborhood character. Many citizens in Kennedy Shores invested in their properties due to short-term rental prohibition. Ms. Chiado added that there may be personal and property damage due to inexperienced watercraft operators.

Ms. Sylvia Holy stated that she and her husband, Jerry, live in Union Hall and have been residents of Kennedy Shores since 2017. Safety was their top priority when moving to the area. Ms. Holy states that homes are for residential use only according to their restricted covenants. She stated concerns about fire, theft, accidents, noise, and the burden on their septic system. Ms. Holy explained that other subdivisions have high privacy fences at other locations where short-term rentals take place. She explained that traffic would also increase due to laundry and cleaning services coming and going from the property. She added that most houses are close together, and fences are prohibited. She stated that trees and shrubs cannot be added in order to keep from screening the lake view. Ms. Holy added that last year a house was illegally rented and was advertised for 15 people; many problems developed as a result. She stated that a short-term rental would make the whole area expensive and undevelopable. Ms. Holy added that houses that are long-term rented typically do not have the same issues as short-term rentals.

Mr. Ed Chiado stated that he and his wife, Francie, are full-time residents in Kennedy Shores. He explained that he submitted a letter to the Planning Commission last week as he is concerned about the investment made to but in Franklin County instead of Bedford County, which has a high number of short-term rentals and negative impacts from them. Mr. Chiado explained that the Kennedy Shores developer led them to believe that the subdivision would be rezoned to R-1, but the developer did not follow up. He stated that short-term rentals are commercial businesses operating in residential neighborhoods. He stated that the property was intended to be low-density residential according to page three of the staff report, which means the property should be predominantly residential. He stated that balance and regulations are needed to adequately limit adverse neighborhood impacts and protect County residents. Mr. Chiado stated that full-time Kennedy Shores residents and neighboring communities are against the short-term rental.

Mr. Mark McGee stated that he lives at 79 Pennsylvania Avenue, next door to the Kovariks. They share a property line. In 2018, he purchased the lot and built the house and became a full-time resident in 2022. He stated that the properties are 35 feet apart with no buffer down the entire property line. He would like to maintain the view of the lake and privacy. Mr. McGee stated that he would be fully exposed to rental activity. He explained that because there is no short-term rental activity currently, there would be a big change in their neighborhood dynamic. He is concerned about property management when violations occur. He asked what the County responsibilities were and who would be responsible locally for the rental. Mr. McGee stated that the restricted covenants allow short-term rentals, but it also states that the subdivision is for residential use only. He stated that the owner must comply with HOA regulations. Mr. McGee stated that there is to be no landscaping on lots without prior approval. Mr. McGee stated that Mr. Kovarik has communicated directly that the property is only to be rented for two years to meet the requirements of the 1031 exchange. He asked if it would be possible for Mr. Kovarik to rent for 30 days or longer or not less than two weeks. He also asked if it would be possible to get a special use permit that expires if Kovarik sells his property.

Mr. Arnold stated that he is a resident of 110 Pennsylvania Avenue. He lives adjacent to Mr. Kovarik's property and is opposed to the application. He stated that in the past he has had people block his driveway and changing the zoning would only make the problem worse. He added that he used to be a resident of Fairfax County and experienced troubles with cars blocking his driveway at night. He states that they were cars from the rental apartment across the street. Mr. Arnold stated that he called the Fairfax County police to get the vehicles towed and was told that it was a public street, and they could not tow the vehicles. Mr. Arnold stated that he was left to take care of the issue himself. He stated that he had to go to the rental apartment across the street and find the person whose vehicle it was and get them to move. The person whose vehicle it was threatened with physical abuse to Mr. Arnold as Mr. Arnold was older than he was. He stated that he considers this rental a life-threatening issue and is opposed to the short-term rental. Mr. Arnold stated that it would lead to a violent confrontation if he has to get someone to move out of his driveway.

Ms. Sheryl Scott stated that she and her husband, Bob, live in Hyannis Point. She stated that she is in support of the application as she has rented property for more than twenty years in Franklin and Bedford Counties. She stated that she has personally never seen the problems mentioned during the hearing and is surprised to learn of them. Ms. Scott stated that the restricted covenants allowed short-term rentals, and it was to her understanding that the HOA had to have a 66% vote to deter a short-term rental from occurring. She explained that the applicant is acting within his property rights and following the Franklin County protocol. Ms. Scott stated that the County provides strong tools for managing short-term rentals, even stronger than an HOA. She added that there are limits on occupancy and parking requirements along with County-level enforcement authority. She stated that there are some neighbors who opposed, but no data supports it. She added that she has spoken with local property management companies, and none saw significant crime related to rentals. Ms. Scott stated that she does believe that Mr. Kovarik will follow the rules. She stated that it will increase property values. Ms. Scott presented a letter of support to the commissioners.

Mr. Charlie White stated that he lives in Highland Lake Section 1 that borders Kennedy Shores. He explained that Frontier Land Development sued him. He stated that the restricted covenants do not have anything against short-term rentals as the only time they are mentioned is in closing. Mr. White explained that Frontier Land Development misled some people in Kennedy Shores. He stated that he has been managing a rental in Highland Lake Section 1 since before zoning and only rented it to people he knew. He explained that someone had a party with over 40 people and had a concert. He stated that he had to apologize to the neighbors the next day as short-term rentals invite this activity in. He added that they had 6 personal watercrafts and boats, but it were only supposed to have one watercraft. Mr. White stated that he tried his best to manage the property, but it still happens.

Mr. Gary Mach stated that he lives in Kennedy Shores. He stated he would like to point out discrepancies that Mr. Chiado was trying to point out before his time ended. Mr. Mach stated that there is only one entry to the driveway, and he does not think it will be ample parking for 10 adults. He added that he has seen a lot of bad activity from renters such as unsafe boating. Mr. Mach stated that the County should look at penalties and ways to enforce the rules since renters often consider violations the cost of doing business.

Mr. Bob Piazza stated that he and his wife, Laura, moved to Belle Isle Drive off Dillards Hill in 2016. He retired in Franklin County and has seen the area deteriorate. He stated that the structure of the roads has gone downhill and points out that the tar and chips on his road is not great for nice cars. Mr. Piazza stated that if the permit were approved, it would create more traffic. He stated that 100 contractor trucks drive down Belle Isle Drive, and it creates a nightmare. He asked what County citizens are getting with the extra tax money coming in. Mr. Piazza stated that there are no lines on the roads, though he realizes that VDOT would be the contact for this. He stated that short-term rentals would increase traffic.

Mr. Brian Peters stated that he lives at Hyannis Point and became full-time residents in October. He is concerned about negative impacts the short-term rental may have. He explained that some people purchased their property with the ability to rent in mind, and he feels for those whose deal was not made clear. Mr. Peters hopes to protect his family and the peaceful, quiet neighborhood. He asked the Planning Commission to recommend denial of the application and stated that a follow-up to this application should be a request to rezone to R-1.

Chairwoman Mitchell asked if there was anyone else in the audience that would like to speak. Hearing none and seeing none, she closed the opportunity.

The applicant declined to present a rebuttal.

Chairwoman Mitchell asked the other commissioners if there was any discussion.

Mr. Evans asked staff about short-term rental complaints. Ms. Franklin explained that the County can enforce their regulations for short-term rentals, but any noise complaints should go to the Sheriff's Office.

Mr. Evans asked if the Planning Office was a "one stop shop" for short-term rental regulation. Ms. Franklin stated that the code enforcement officer inspects properties.
Mr. Evans asked what is done if there is a violation. Ms. Franklin stated that the County can determine what they see upon inspection, send a courtesy letter, and work with the citizens to bring their property into compliance provided that the

property owner contacts the Planning Office. If they do not contact the Planning Office, County staff follows through with violation letters and enforcement letters to take legal action. Ms. Franklin stated that special use permits follow the property, and short-term rental registrations are good for one (1) year.

Mr. Evans asked if registration renewal would be impacted if there were any complaints. Ms. Franklin explained that Planning staff would take the permit back to the Board of Supervisors to potentially revoke the special use permit for short-term rental.

Mr. Evans asked Mr. Kovarik to explain his vetting process for potential tenants. Mr. Kovarik stated that he has engaged a property manager who has experience. The property manager has managed large properties at Lake Norman, but not Smith Mountain Lake, so his property manager is very familiar with managing this type of property. Mr. Kovarik explained that when someone rents on VRBO or Airbnb, hosts have an opportunity to rate tenants. He stated that he will only accept tenants with a five-star rating. He has installed cameras and will monitor where cars are parked and count the number of people there. Mr. Kovarik stated that he plans to be diligent in following the rules including those of the HOA.

Mr. Evans asked if the cameras recorded audio. Mr. Kovarik stated that they do record audio, and he can talk and listen through the cameras. Mr. Evans clarified that Mr. Kovarik will have a recording. Mr. Kovarik confirmed that he could access the recording.

Chairwoman Mitchell asked Mr. Kovarik if he lives in North Carolina. Mr. Kovarik stated that he lives in Greensboro, North Carolina. Chairwoman Mitchell asked if Mr. Kovarik's property manager was located in Greensboro. Mr. Kovarik confirmed. Mr. Kovarik stated that if there were issues either the property manager or he would come to the property in person.

Mr. Evans stated that it is clear that the HOA allows short-term rentals, and that policy is not a new addition. Mr. Kovarik confirmed that he specifically read through the HOA regulations to ensure short-term rentals were allowed before purchasing the property.

Mr. Evans made a motion to approve the special use permit stating, "I find that the use will not be of substantial detriment to adjacent properties, that the character of the zoning district will not be changed thereby, and that such use will be in harmony with the uses permitted by right in the zoning district, and with the public health, safety, and general welfare to the community. Therefore, I move to recommend approval of the applicant's request for a special use permit to allow for short-term tourist rental of dwelling with the six (6) conditions recommended by staff."

Ms. McGhee seconded the motion.

A roll call vote was conducted. The motion to approve the special use permit was approved; 5-1-1-0 voting was as follows:

AYES: Doss, McGhee, Evans, Pendleton, Mitchell
NAYES: Clements
ABSENT: Jefferson
ABSTAIN: None

Chairwoman Mitchell announced that the BOS would hear this case on January 20, 2026.

Chairwoman Mitchell announced the next item on the agenda: **APPLICATION for SPECIAL USE PERMIT –** Application of Leonard Capital, LLC, Applicants and Owners, requesting a special use permit on an approximate 4.08 acres of property zoned A-1, Agricultural District. The parcel is located at 500 Blue Bend Road in the Rocky Mount Election District of Franklin County and further identified by real estate records as Tax Map/Parcel #0550400400. The purpose of this special use permit request is to allow for short-term tourist rental of dwelling. This property has a future land use designation of Rural Area – County (SPEC-10-25-18434).

Ms. Franklin presented the staff report. She stated that this is the only dwelling located on the parcel and where the short-term rental is proposed to take place. The property is located on a secondary state-maintained road and has a driveway that would provide ample parking. The water supply is a well, and the sewer supply is a septic system. The closest residence is approximately 247 feet from the proposed short-term rental located at 500 Blue Bend Road.

Ms. Franklin stated that according to County records, the dwelling is a one-story single-family residence with the Certificate of Occupancy issued in October of 2025 and consists of three (3) bedrooms, two (2) full bathrooms with a total living area of approximately 1,338 square feet. The septic permit was issued by the Virginia Department of Health in 2024 for a three (3) bedroom home. The septic tank and drain field are located on the right side of the home. The short-term rental can be rented for a maximum of six (6) adults.

Ms. Franklin stated that Mr. Perry Leonard, owner, stated in the letter of application that he and his wife built this home to be their retirement home but are not quite able to retire and move at this time. Mr. Leonard also stated in his letter that he will have a local individual managing the short-term rental, Jennifer Chapman of Evolve Vacation Rental Company. He stated that she and her team live nearby, and they are familiar with the rules and customs of the area.

Ms. Franklin stated that staff have received two (2) phone calls and one (1) email inquiring about the application. Staff were also contacted by one (1) couple in opposition to the application. Staff have received two (2) emails in opposition.

Ms. Franklin displayed four (4) maps on the screen: a vicinity map, an aerial map, a zoning map, and a future land use map. She also showed the commissioners the conceptual plan and pictures she took on her site visit.

Ms. Franklin explained that the proposed short-term rental is located on a lot consisting of +/-4.08 acres, and the closest single-family dwelling is approximately 247 feet. The property is well vegetated with mature trees on both sides of the home to offer screening between the proposed short-term rental and the adjoining properties.

Ms. Franklin stated that there is a single-family dwelling to the right side of the proposed short-term rental as well as across Blue Bend Road along with a vacant lot that appears to be farmland/pastureland, and a single-family dwelling to the left side on a large lot, and the dwelling is approximately 1700 feet away. The remaining area from the subject property is residential properties being close in lot sizes or larger of the proposed STR.

Ms. Franklin stated that the property has a driveway that leads to the dwelling off Blue Bend Road which would provide ample parking. The traffic generated by this short-term rental would be similar to what is generated by a single-family dwelling that is not rented. The noise of the rental should not be more than normally expected in a rural residential neighborhood.

Ms. Franklin explained that the Comprehensive Plan designations for this property are Rural Area - County. Rural Area – County represents rural patterns of development, farmland and housing consisting of single-family dwellings on a variety of lots sizes. This particular area on Blue Bend Road could support a STR and have minimal impact on the surrounding area due to the size of the lots and being located in a wooded area. The STR should not generate a lot of traffic to this rural community and disruption to surrounding neighbors should be no more than a normal residential area.

Ms. Franklin stated that staff conclude there will be minimal impacts to the surrounding area due to the location, the area having large lots that are wooded to protect the STR being disruptive to adjacent property owners. The character of the A-1 zoning district will not be changed. The STR will be in harmony with the purpose and intent of this chapter and with the uses permitted by right in the A-1 zoning district.

Ms. Franklin stated that staff recommends that the Planning Commission recommend approval of the special use permit with the following five (5) conditions:

1. The special use permit authorizing the short-term rental dwelling on Tax Parcel # 0550400400 shall only apply to the existing dwelling on the property. No additional dwellings on the property shall be used for a short-term rental unless this permit is revised by the Board of Supervisors after review and recommendation of the Planning Commission.
2. The owner shall always comply with the supplementary regulations for short-term rentals found in Section 25-138 and Section 5.5-72 of the Franklin County Code.
3. The owner shall provide and maintain proof of liability insurance covering injury to a guest on the property of no less than $1,000,000.

4. The owner shall register the short-term rental use and shall have the property inspected for compliance with County Code. No short-term rental of the property shall be authorized until these inspections take place, and the property is found to be compliant with the applicable County Code.
5. The owner shall supply the Planning Department with the name and phone number of a property manager or contact person. The Planning Department shall be notified any time this information is changed. Staff will notify adjoining property owners of this information and notify them of any changes to this information.

Ms. Franklin asked if the commissioners had any questions for her. There were no questions.

Chairwoman Mitchell invited the applicant up to the podium to present.

Mr. Perry Leonard stated that he and his wife purchased the property to have retirement property, but they are not yet prepared to give up their jobs in northern Virginia, and their kids are still in college. He stated that he is a veteran and would like to find a nice, peaceful location to enjoy his retirement; he found that in Blackwater Hollow. Mr. Leonard stated that he plans to abide by the regulations and customs of the area. He explained that he has hired a reputable vacation rental company and has liability insurance. He explained that the company is experienced at screening tenants. He added that Ms. Jennifer Chapman lives near the property, and their housekeeper lives only ten minutes away. Mr. Leonard shared that Mr. Chapman is the handyman of the management team and is the enforcer of rules. Mr. Leonard stated that Mr. Chapman is eager to enforce noise complaints and house rules/policies. Mr. Leonard stated that smoking and parties are not allowed. He added that quiet hours are to be abided by.

Chairwoman Mitchell opened the opportunity for citizen comment.

Mr. Parker Greer stated that he is opposed to the application. He stated that Blue Bend Road was originally a gravel road until it was designated as a rural route. He explained that it has only recently been surface treated and is full of sharp and tight corners. He recalled times when he had to completely pull off the road to allow

other cars to pass. Mr. Greer stated that there are no shoulders in several places. There is a sharp drop off into a side creek, and the area is prone to flooding.

Mr. James White stated that he lives in Blackwater Hollow subdivision close to the Leonards' property. He explained that the subdivision has a stringent number of covenants, but the most concerning covenant is the one that prohibits business or commercial activity in Blackwater Hollow. He stated that he does not feel that they should change the residential use only covenant. Mr. White added that new neighbors are great but not retail business. He agreed with Mr. Greer that the roads are too small. He is worried that many renters that have not driven the roads before will not be able to handle the roads.

Mr. Mark Greer stated that he is Parker's father. He shared that there are places travelling down the road that you cannot see. He explained that it is a narrow road, and many people must pull off. Mr. Greer stated that he has no problem with long term renters, but a short-term rental will disrupt the neighborhood.

Mr. Steve Lewis stated that he owns 52 acres adjacent to Mr. Leonard and 25 acres across the road from Mr. Leonard's house. He stated that the Planning Commission should look at the house and the location as it slopes down into the Blackwater River at a 45-degree angle. He explained that the back of the house is built facing the river. Mr. Lewis explained that it is a dangerous backyard and not a lot of parking. He explained that the road has hills, knolls, and blind corners and is only 15-17 feet wide. He stated that there are speed limits, but unfamiliar drivers may drive residents off the road into the ditch not knowing where they are going. Mr. Lewis stated that he has lived there for the past 44 years and has come close to accidents on that road. He stated that it may be a good house for a single-family dwelling, but he is opposed to short-term rentals. He opposes all short-term rentals in agricultural areas where the roads are dangerous.

Ms. Nancy White stated that she lives on Blue Bend Road. She explained that the road is a flood zone with no guard rails. She stated that if someone had to veer off the road, there is a good chance of them going down a 3–4-foot decline. She stated that drivers must back out of the road if another car is met. Ms. White stated that she purchased her acreage four years ago and mentioned the subdivision covenants. She stated that the covenants state that each lot will be for a residential

dwelling with no businesses running out of the house. She stated that there should be no commercial activity and the outside of the houses must meet certain specifications according to their restricted covenants. Ms. White stated that the decline if steep and can see concrete showing on the outside of the Leonards' house, which is against the covenants. She stated she is concerned about parties and trash. She added that there is not enough parking for six people. Ms. White stated that the homes in their neighborhood were built for older people to retire to. Chairwoman Mitchell asked if anyone else in the audience would like to speak. Hearing none and seeing none, she closed the opportunity.

Mr. Leonard declined the opportunity to present a rebuttal.

Chairwoman Mitchell asked if the commissioners had any discussion. Mr. Clements stated he was ready to make a motion. There was no other discussion.

Mr. Clements motioned to approve the special use permit stating, "I find that the use will not be of substantial detriment to adjacent properties, that the character of the zoning district will not be changed thereby, and that such use will be in harmony with the uses permitted by right in the zoning district, and with the public health, safety, and general welfare to the community. Therefore, I move to recommend approval of the applicant's request for a special use permit to allow for short-term tourist rental of dwelling with the five (5) conditions recommended by staff."

Mr. Pendleton seconded the motion.

A roll call vote was conducted. The motion to approve the special use permit was approved; 6-0-1-0 voting was as follows:

AYES: Doss, Clements, McGhee, Evans, Pendleton, Mitchell
NAYES: None
ABSENT: Jefferson
ABSTAIN: None

Chairwoman Mitchell announced that the Board of Supervisors would hear this case on January 20, 2026.

Chairwoman Mitchell opened the podium for open floor citizen comment.
Mr. Ed Chiado stated that with Franklin County allowing short-term rentals, the County has an obligation to residents and needs to take primary responsibility to ensure issues are documented and resolved. Mr. Chiado suggested that, on the County short-term rental website, the complaint link should be updated to allow more options for selecting types of complaints. He explained that it is impossible for absentee homeowners to respond to violations. He added that the County may want to consider creating a documented policy on the website to track and manage complaints. Mr. Chiado stated that the County may want to consider how complaints are weighed in terms of severity, as some complaints may be viewed as more severe than others. He asked what penalties the County will impose on absentee homeowners. He concluded by saying that the County needed to be swift and significant in these actions.

Chairwoman Mitchell asked if there was anyone else in the audience who would like to speak. Hearing none and seeing none, she closed the opportunity.

Ms. Cooper announced the cancellation of the zoning ordinance work session after the meeting in hopes that commissioners and staff could get home safely in the winter weather.

The Planning Commission along with staff decided to reschedule the work session to January 7, 2026, at 5:30pm. Dinner will be provided.

There is a tentative work session scheduled for January 13, 2026, at the Planning Commission's regularly scheduled public hearing time as there are no new applications to be heard in January.

The meeting was adjourned at 7:49pm.

STAFF REPORT
Case # REZO-01-26-18468

Franklin County
A Natural Setting for Opportunity

To:	Franklin County Planning Commission
From:	Tina Franklin, Planner II
Date:	January 30, 2026
Tax #s:	0300000105 and 0300005228
District:	Gills Creek Election District
Applicant:	A Boone Development, Inc.
Owner:	Willard Construction of Smith Mountain Lake, LLC and Willard Investment Properties, LLC

APPLICATION for ZONING MAP AMENDMENT – Application of ABoone Development, Inc., Applicant, and Willard Investment Properties, LLC, and Willard Construction Smith Mountain Lake, LLC, Owners, requesting a zoning map amendment on an approximate 82.70 acres of property zoned PCD, Planned Commercial Development District. These parcels are located at 12800 Booker T. Washington Highway in the Gills Creek Election District of Franklin County and further identified by real estate records as Tax Map/Parcel #0300000105 and 0300005228. The purpose of this zoning map amendment request to amend the conceptual plan to allow for 103 +/- single family detached homes as well as five (5) commercial pads designated for business purposes. This property has a future land use designation of Residential Mixed Use and Village Mixed Use and is part of the Westlake-Hales Ford Designated Growth Area (REZO-01-26-18468).

RECOMMENDATION:
Staff recommends that the Planning Commission recommend approval of the zoning map amendment with the following two (2) proffers:

1. Developer shall develop the project in General Conformance with the conceptual plan entitled "Master Plan Exhibit Showing Westlake Village Business Park South" dated December 29, 2025, and revised January 5, 2026.
2. Developer shall collaborate with the County to design and connect trails in generally similar locations as shown on the Master Plan Exhibit in coordination with the County's grant-funded trail project and shall work with the County on any necessary easements to promote interconnectivity of the trail system within the greater Westlake Towne Center.

OVERVIEW:

The applicant is requesting to rezone property consisting of approximately 82.7 +/- acres to PCD, Planned Commercial Development District, with possible proffers and requesting three (3) deviations. The purpose of the rezone is to amend the existing conceptual plan for Westlake Village Business Park South dated June 30, 2006. The property is currently zoned PCD, Planned Commercial Development District and identified as Parcel ID #'s 0300000105 and 0300005228 in the Gills Creek Election District.

BACKGROUND

Along with the zoning map amendment, a request to amend the conceptual plan to allow for 103+/- single-family detached dwellings as well as five (5) commercial pads designated for business purposes, there are two (2) special use permits for single-family detached dwellings and private roads.

The existing conceptual plan approved by the Board of Supervisors in June 2006 shows the following mixed-use development consisting of residential and commercial uses as follows:

- Residential 2-story town house apartments (120 units)
- Residential 1-story town house apartments (41 units)
- Office complex consisting of seven (7) 1-story buildings
- Retail/Office complex consisting of seven (7) 1-story buildings for five (5) retail uses with one (1) for large retail or drugstore, drive thru pharmacy, one (1) restaurant use, and one (1) 2-story office

These particular uses on the existing conceptual plan from 2006 would potentially impose a more significant amount of traffic and noise because of the higher density of residential and commercial and have an adverse effect on surrounding properties. The proposed residential with commercial pads is less dense.

A portion of the original area was approved by the Board of Supervisors as a zoning map amendment in May of 2002 and this area will be added to the proposed master plan for tax parcel number 0300000105. This particular area on the proposed master plan will be open space.

The unaddressed property is currently undeveloped, with the ingress/egress for the development to be located on and extending Apron Drive (private road) off of Booker T. Washington Highway (State Route 122) at the intersection with Parkcrest Drive. Willard Construction Smith Mountain Lake, LLC and Willard Investment Properties, LLC owns and maintains all of the private roads within the Towne Center and will own and maintain the extension of Apron Drive within the proposed development. This property is located

beside the Westlake Towne Center and Booker T. Washington National Monument and is referred to as the Westlake Village Business Park South. This development will include the following:

- Single-Family residential development on 45.2 acres consisting of 103 +/- total lots with a proposed density of 2.28 houses per acre.
- Open space in the residential development for a park
- Future potential pedestrian trail path
- Open space to consist of +/- 24.5 acres
- Five (5) commercial outparcels on +/- 13.0 acres consisting of three (3) proposed parcels along Booker T. Washington Highway, (Route 122), one (1) parcel along Apron Road (private road), and one (1) parcel along a future 30 foot right of way off of Apron Road.

The applicant/developer is requesting three (3) deviations.

1. Section 25-282 - Area Regulations – (a) Minimum Lot Size – (1)(a) to allow for minimum lot area of 8,000 square feet within the residential portion of the development community.
2. Section 25-282 – Area Regulations – (a) Minimum Lot Size – (2)(a) to allow for a minimum of 60-foot lot width for residential lots being served by both public water and sewer.
3. Section 25-395 – Minimum Dimensions – (a) Front Setback to allow for a minimum of 25-foot front setback from the proposed right-of-way of each private street within the residential portion of the development community.

The reason for the three (3) deviation requests is to allow for consistency and proposed density within the proposed residential portion of the development community.

- Two (2) new entrances are proposed along Booker T. Washington Highway (Route 122). One (1) entrance is proposed at the intersection of Parkcrest Drive and a new private right of way identified as Road "A" private r/w.
- One (1) entrance is between the commercial outparcels identified as Road "C" private r/w on the conceptual plan connection to Apron Road.

These entrances will be 330 linear feet apart from centerline to centerline. The roads in the development will be private; however, the Westlake Towne Center has road maintenance agreements for all private roads in the Center.

The proposed development indicates a future potential pedestrian trail path to connect to the Westlake Towne Center future trail and existing sidewalks.

In addition, the development proposes a 200-foot natural buffer at the rear of the property along with a residential stormwater facility and a 50-foot buffer setback along the property line shared with Booker T. National Monument.

The development will be served by public water and sewer by Western Virginia Water Authority (WVWA).

The applicant/developer stated in the letter of application that this current proposed community will complement the existing Westlake Towne Center commercial, office and residential uses, including the townhome and condominium community that is currently under construction within the Towne Center. He also stated the proposed development will help meet a critical housing shortage and office homeownership with high quality single and multi-story homes at relatively affordable price points. The applicant indicated that the proposed development would add valuable commercial opportunities along the Route 122 corridor to attract different commercial, retail and restaurant uses. He stated the residents of the proposed residential community will access their neighborhood from Route 122 at its intersection with Parkcrest Drive which is an intersection planned for access improvement as part of this overall development.

The application was advertised, site posted, and notifications sent to all adjacent property owners. The Development Review Team (DRT) reviewed the application at its January 2026 meeting. As of the date of this report, staff has received two (2) phone calls inquiring about the application. Additional comments and concerns may be raised as a result of the public hearings.

SITE STATISTICS:

Location:	Booker T. Washington Highway (Route 122) and Apron Drive
Size:	+/- 83 acres
Existing Land Use:	Vacant
Adjoining Zoning:	PCD, Planned Commercial Development District and A-1, Agricultural
Adjoining Land Uses:	Commercial, Residential and Federal Park
Adj Future Land Uses:	Village Mixed Use and Residential Mixed Use

COMPREHENSIVE PLAN:

Future Land Use

All Comprehensive Plans include a component referred to as "Future Land Use," which includes both map designations and policies. In general, Future Land Use designations are both visionary and strategic – while also flexible to accommodate changes over time. Future Land Use designations and policies are intended to *generally* describe how a given area should look and feel in the future, and what type of development or use would be most appropriate.

The future land use map designates the property as "Village Mixed Use" and "Residential Mixed Use" as provided in the 2045 Comprehensive Plan adopted by the Board of Supervisors in July 2025 and the Westlake Hales Ford Area Plan, adopted by the Board of Supervisors in November 2016. The Westlake Hales Ford Area Plan is a part of the County's Comprehensive Plan.

Residential Mixed Use

Residential Mixed-Use areas in Designated Growth Areas (DGA) are those that would typically flank, or anchor, the Village Mixed Use areas, as a buffer between the Village center and the remaining areas. These areas should provide compact, walkable, and diverse developments that offer a variety of housing sizes and types. Ideally, these areas would be served by public water and sewer if available - and if not, shared or community systems. Developers are encouraged to work with the County, and primarily the Western Virginia Water Authority to understand the potential to extend service to these areas, if none is available.

Appropriate Land Use Types:

- Single-family (detached or attached)
- Townhomes
- Duplexes, triplexes, and fourplexes
- Senior and assisted living facilities
- Multifamily complexes
- Garden/patio homes
- Accessory dwelling units (ADUs)
- Small-scale, community-oriented commercial
- Recreation
- Civic

Character/Development Guidelines:

- Housing types should be mixed and dwellings per acre based on the site.
- Small-scale, community-oriented commercial uses should be screened and/or buffered from residential uses.
- Maintain low-speed, pedestrian- and bicycle-friendly streets.
- Interconnected street network and defined open spaces should be provided.
- Implement low-impact development (LID to the extent possible.
- Strive for materials, scale, and character of new buildings to be compatible with existing neighborhoods.
- Ensure materials, scale, and character of development is compatible within the neighborhood(s)

- Discourage the construction of private roads in new developments. If not feasible, new developments should include formal agreements for the maintenance for any roads not built, or eligible, for inclusion in the state highway system.

Village Mixed Use

Village Mixed Use areas in Designated Growth Areas (DGA) are those that are appropriate for traditional village development – which includes a variety of land use that is typically compact, walkable, and tailored to serve the residents of the immediate area. Village Mixed Use areas should include a variety of land uses to accommodate the needs of the residents – including small-scale housing options, grocery and pharmacy stores, medical offices, childcare facilities, post offices and other public services, personal services, as well as open space and recreation.

To retain the central areas for non-residential development and services, if possible, housing should either be on the second floor within Village Mixed Use areas, or setback from primary corridors. Ideally, these areas would be served by public water and sewer if available – and if not, shared or community systems. Developers are encouraged to work with the County, and primarily the Western Virginia Water Authority to understand the potential to extend service to these areas, if none is available. Additionally, these areas should be a priority for broadband expansion and improvement, to ensure businesses and services have adequate bandwidth for internet access.

Appropriate Land Use Types:

- Commercial
- Offices
- Vertical and horizontal mixed use
- Garden/patio homes
- Duplexes, triplexes, and fourplexes
- Senior and assisted living facilities
- Tourism
- Recreation
- Civic

Character/Development Guidelines:

- Buffer new non-residential development when adjacent to residential uses.
- Discourage the construction of private roads in new developments. If not feasible, new developments should include formal agreements for the maintenance for any roads not built, or eligible, for inclusion in the state highway system.
- Encourage infill development and retrofitting of existing buildings.
- Ensure materials, scale, and character of development is compatible within the DGA.

- Locate non-residential parking and service areas to the side/rear of buildings and screen to the extent possible.
- Encourage traffic calming, particularly along primary routes.
- Incorporate pedestrian infrastructure and safety enhancements, such as sidewalks, crosswalks, and/or multi-use paths.
- Incorporate branding, plantings, and other amenities that contribute to the DGA's identity.

Chapter 12/Implementation

Goal for Housing: In 2045, Franklin County prioritizes a diverse housing stock that serves and attracts residents of all socioeconomic levels and life stages from youth and first-time buyers to the workforce, to retirees, and those aging in place.

Objective 7.1: Ensure adequate and affordable housing options are available for residents
Strategy 7.1.4: Evaluate current zoning regulations – particularly allowable densities and minimum lot sizes – and adjust where appropriate to accommodate neighborhoods with smaller-scale housing (smaller lots, more dense neighborhoods, etc.).

Objective 7.3: Promote the creation of "livable" communities
Strategy 7.3.1: Encourage development of housing within the County's Designated Growth Areas, where amenities and public utilities are typically more available, or have the potential to be available in the future, to support a range of housing types and densities.

Westlake Hales Ford Area Plan – Appendix B: Goals and Strategies

The Westlake Hales Ford Area Plan provides Goals and Strategies to implement the Plan, the following Goal and Strategy bears significance to this application:

- **Goal 5:** Create an inclusive, livable community that provides a balanced inventory of housing opportunities for all residents.
- **Strategy 5.1:** Review and amend the Zoning Ordinance to allow a greater diversity of housing types that would accommodate a range of incomes, lifestyles, and stages of life – including affordable and workforce housing, and housing for those aging in place.

By constructing a new type of housing, attached single family homes, more housing choices will be available within the Westlake Hales Ford Designated Growth Area, meeting the above-mentioned strategy and goal.

Comprehensive Plan Summary

The 2045 Franklin County Comprehensive Plan establishes and encourages different types of housing in the Residential Mixed Use and Village Mixed Use. Both mixed uses

are found in the County's Designated Growth Areas like the Westlake-Hales Ford Designated Growth Area. DGAs in the County are intended to provide a clear distinction between the County's more developed areas and rural areas. In addition, DGAs are ideal for development of both commercial and residential, the effect of sprawl is reduced, and the County's rural character is protected.

Residential Mixed Use in DGA's would be walkable and diverse development that offers a variety of housing sizes and types. These developments would be served by public water and sewer. Residential mixed use would support small-scale commercial development in the village. Appropriate land use types in this designation would be single-family detached dwellings, recreation, and small-scale, community oriented commercial. Development and Character Guidelines are housing types that should be mixed and dwellings per acre based on the site, maintain low-speed, pedestrian and bicycle friendly streets, discourage private roads in new developments; however, if new developments choose private roads formal agreements for maintenance are required.

Village Mixed Use in DGA's are usually traditional village development meaning a variety of land uses that are compact, walkable, and tailored to serve residents in the surrounding area or in the village itself. Water and sewer are public in most cases. Appropriate land use types would be commercial, office, recreation, garden/patio homes, duplexes, and townhomes. Development and Character Guidelines of the Comprehensive Plan suggest buffer for new non-residential development when adjacent to residential uses, ensure materials, scale, and character of the development is compatible within the DGA, and incorporate pedestrian infrastructure and safety enhancement, such as sidewalks, crosswalks, and/or multi-use paths.

The Westlake-Hales Ford Designated Growth Area continues to grow with a mixture of commercial and residential development. The proposed development of single-family detached dwellings and five (5) commercial parcel sites continue to meet the need of the County's critical housing shortages. This proposed 103 homes will enhance the village and the newly approved townhome and condominium development in the Westlake Towne Center. The five (5) commercial parcel sites will serve new commercial business and bring growth to the DGA. New commercial uses will serve both residential housing in the DGA and surrounding area. The new master plan for these two properties helps in the development of the DGA to have commercial development supportive of residential growth in the village and a more walkable community, which is the intention of DGAs. The proposed new master plan for these two parcels for single-family detached dwellings and commercial sites is supported of the 2045 Franklin County's Comprehensive Plan and the Westlake -Hales Ford Area Plan.

ZONING ORDINANCE:

Sec. 25-2. Purpose and intent "(a) The Zoning Ordinance of Franklin County, Virginia is intended to promote the health, safety and general welfare of the public, and to implement the adopted comprehensive plan for the orderly and controlled development of the county.

(b) To these ends, such zoning ordinances shall be designed to give reasonable consideration to each of the following purposes, where applicable:
1) To provide for adequate light, air convenience of access and safety from fire, flood and other dangers;
2) To reduce or prevent congestion in public streets;
3) To facilitate the creation of a convenient, attractive and harmonious community;
4) To facilitate the provision of adequate police and fire protection, disaster evacuation, civil defense, transportation, water, sewerage, flood protection, schools, parks, forests, playgrounds, recreational facilities, airports and other public requirements;
5) To protect against destruction of, or encroachment upon, historic areas;
6) To protect against one (1) or more of the following: overcrowding of land; undue density of population in relation to the community facilities existing or available; obstruction of light and air; danger and congestion in travel and transportation; or loss of life, health or property from fire, flood and panic or other dangers;
7) To encourage economic development activities that provide desirable employment and enlarge the tax base;
8) To provide for the preservation of agricultural and forestal lands."

Sec. 25-3. Relation to the environment "This chapter is designed to treat lands which are similarly situated and environmentally similar in like manner, with reasonable consideration for the existing use and character of properties; the Comprehensive Plan; the suitability of property for various uses; the trends of growth and change; the current and future land and water use and sewerage treatment requirements of the community for various purposes as determined by county-sanctioned studies; the transportation requirements of the community; the requirements for housing, schools, parks, playgrounds, recreation areas and other public services; for the conservation of natural resources; preservation of flood-plains; for the conservation of properties and their values; and the encouragement of the most appropriate use of land throughout the county."

Sec. 25-4. Relation to the Comprehensive Plan "In drawing the Zoning Ordinance and districts with reasonable consideration of the Comprehensive Plan, it is a stated and express purpose of this Zoning Ordinance to create land use regulations which shall encourage the realization and implementation of the Comprehensive Plan. To this end, development is: to be encouraged to take place in clusters to promote efficient and cost effective use of land; to be situated as to make possible future economies in the provision of services by the private and/or public sector; and to be so located as to protect the watersheds and shoreland areas, protect surface and groundwater supplies, discourage development in floodplains, wetlands, and conservation areas and strips."

Sec. 25-733 of the Zoning Ordinance sets forth the County's authority to accept voluntary proffers, in writing for the issuance of a zoning map amendment. The ordinance states prior to any public hearing before the board of supervisors any applicant for rezoning may voluntarily proffer, in writing, reasonable conditions to be applied to such rezoning

as part thereof. Such conditions shall comply with the provisions of section 15.2-2297 of the Code of Virginia, provided that the proffering thereof by the applicant shall be deemed prima facie evidence of such compliance.

Sec. 25-390 of the Zoning Ordinance sets forth the County's purpose of the Planned Commercial Development District (PCD)

(a) The purpose of this district is to promote the efficient use of commercial land by allowing a wide range of land uses of various densities and flexible application of development controls. The district encourages achievement of these goals while also protecting surrounding property, natural features and scenic beauty.

(b) The PCD district recognizes that many commercial, office and residential establishments seek to develop within unified areas, usually under single ownership or control. Because these concentrations of retail, service, and office establishments are generally stable and offer unified internal arrangement and development, potentially detrimental design effects can be recognized and addressed during the review of the development. For these reasons, the PCD district allows flexibility through the adjustment of certain lot, setback and use restrictions. Districts should be proposed and planned for areas that provide for adequate development and expansion space, controlled access points, landscaped parking areas and public utilities. Development of a PCD district will take place in accord with an approved concept plan, which may allow for clustering of uses and densities in various areas of the site.

(c) The PCD district should be a visual asset to the community. Building within the district is to be architecturally similar in style and the relationship among individual establishments should be harmonious.

ANALYSIS

The subject property is currently zoned Planned Commercial Development District (PCD). The applicant is requesting a zoning map amendment (rezone) for a residential development consisting of 103+/- single-family detached dwellings, five (5) commercial outparcels and two separate open spaces with one having a park. The applicant also is requesting three (3) deviations regarding minimum lot size, minimum lot width, and front setback from the proposed right-of-way within the residential portion of the development community.

The proposed project meets the purpose and intent of the Zoning Ordinance and promotes the health, safety and general welfare of the public (community) by demonstrating the following:

- This proposed development of approximately 103 single-family detached dwellings with five (5) commercial parcels will increase traffic in the DGA; however, the density of this proposed development of residential and commercial

use is deemed to be less than the approved existing conceptual plan with more housing and commercial uses approved by the Board of Supervisors in the early 2000s. The developer, County staff and district VDOT employees have been working to reduce and improve congestion on Route 122.

- The proposed project will expand residential and commercial uses of the Towne Center and DGA and will prove to be in character with the intent of this district and the County's comprehensive plan.
- The proposed natural buffers between the proposed development and Booker T. Washington National Monument will serve to protect this historical site from the proposed development.
- The density of this proposed development is not intrusive to the surrounding area or placing a burden on infrastructure in the Towne Center.
- The proposed commercial development is economic development activities the County allows in its DGAs and the residential aspect with support all commercial uses in the DGA.
- The developer has proposed over 24 acres of open space preservation and a small lot in the residential area to be used as a park.

The County's Comprehensive Plan and Westlake-Hales Ford Village Plan would support this proposed development due to the following:

- Housing developments such as the proposed 103 single-family detached dwellings are needed to meet the housing crisis of the County, the need for workforce housing, and to support the commercial businesses in the DGA.
- The proposed development will allow for different types of housing in the DGA. Single-family dwellings will complement the existing housing either existing and/or developing for example the new townhome/condominium project under construction, existing apartments and patio homes.
- Private roads are discouraged in this future land use designation; however, if there is a private road maintenance agreement for the maintenance of the private roads and private roads in the Towne Center are maintained by this type of formal agreement.
- The five (5) commercial parcels will have uses that are compatible with the intent of the DGA and commercial uses are expected to be found in a village.
- The Comprehensive plan goal for housing along with an objective to promote the creation of "livable" communities with a strategy to encourage development of housing within DGAs where there are amenities and public utilities available-the Westlake Towne Center is where residential and commercial growth should be located.

The proposed development of residential and commercial is consistent with the intent of the PCD District purpose of the Zoning Ordinance. The PCD District allows flexibility through the adjustment of setbacks, design guidelines, height, and use restrictions. The proposed project is requesting deviations for the following:

- Minimum lot size – to allow the minimum lot area of 8,000 square feet within the residential portion of the development. When public water and sewer are available smaller lots are common especially in a village and/or DGA
- Minimum lot size – to allow for a minimum of 60-foot lot width. When public water and sewer are available smaller widths are allowed, especially in a village and/or DGA
- Minimum dimensions - A minimum front yard setback to be 25 feet instead of 55 feet from the center of the right of way is a reasonable request with the minimum lot sizes being smaller both in width and area.

The three (3) deviations are a reasonable request and shall be in keeping with the purpose of the PCD District, the intent of the Zoning Ordinance, the Comprehensive Plan and the design guidelines of the PCD. When public water and sewer are available it is expected to see smaller width, lot area reductions, and setback reductions to cluster the single-family dwellings and have a more sense of community on smaller lots with shorter setbacks closer to the road.

In addition, PCD district would encourage this type of development with commercial parcels proposed close to Route 122 and housing behind the proposed commercial development. The developer is preserving open space and protecting a national monument with natural buffers. proposed development complements the existing housing and commercial uses in the PCD zoning district and the DGA. This proposed development meets the intent and purpose of the district.

Given the purpose and intent of the rezone to amend an existing conceptual plan that was a higher density of residential and commercial to a 103+/- single-family subdivision and five (5) proposed commercial parcels that is supported by both the Comprehensive Plan and Area Plan, and meets the intent and purpose of the zoning ordinance staff concludes that the rezone should be approved with the three (3) deviations requested.

DEVELOPMENT REVIEW TEAM (DRT) COMMENTS:

AEP: Elijah Meador had no comments or concerns due to the nature of the application.

VDOT: Lisa Lewis provided the following comments:

1. Please denote the spacing between the proposed entrances.
2. Please provide a traffic study, to include left/right turn lane analysis, for the proposed land use(s). Lisa Lewis stated she understands that District staff have been involved in discussions with Franklin County and the Developer regarding the proposed traffic study.
3. Please denote the intersection sight distance for the proposed entrances.

VDH: Darrin Doss had no comments since the development would be serviced by WVWA with public water and sewer.

WVWA: Aaron Shearer stated he had no comments or concerns due to there already being water and sewer availability in this area.

STORMWATER / E&S: Bill Raney, Development Review Manager stated that along with the Site Plan, Erosion and Sediment Control and Storm Water Management shall be included on the engineered plan for review.

BUILDING: John Broughton, Building Official, stated the applicant and/or owner will be required to obtain all necessary building permits for the proposed development.

FIRE & EMS: Our office has not received any comments or concerns from Andy Pendleton, Fire Marshal.

GIS: Eric Schmidt, GIS Manager stated the applicant and/or owner must contact the GIS Department for addresses for each single-family dwelling and commercial buildings.

SUGGESTED MOTIONS:

The following suggested motions are sample motions that may be used. They include language found in Section 15.2-2283, Purpose of zoning ordinances of the Code of Virginia of 1950, as amended.

(APPROVE) I find that the rezoning will not be of substantial detriment to adjacent properties, that the character of the surrounding area will not be changed thereby, and that such rezoning will be in harmony with the purpose and intent of the County Code, Comprehensive Plan, and with the public health, safety, and general welfare to the community. Therefore, I move to recommend approval of the applicant's request for a zoning map amendment (rezone) to amend the conceptual plan with three (3) deviations requested to allow for a housing and commercial development with the two (2) proffers as recommended in the staff report.

OR

(DENY) I find that such rezoning will be of substantial detriment to adjacent property, that the character of the surrounding area will be changed thereby, and that such use will not be in harmony with the purpose and intent of the County Code, Comprehensive Plan, and with the public health, safety, and general welfare to the community. Therefore, I move to recommend denying the request for the zoning map amendment (rezone) to amend the conceptual plan with three (3) deviations to allow for a housing and commercial development.

OR

(DELAY ACTION) I find that the required information for the submitted petition is incomplete. Therefore, I move to delay action until all necessary materials are submitted to the Planning Commission.

I/We ABoone Development, Inc. as Owner(s), Contract Purchasers, or Owner's Authorized Agent of the property described below, hereby apply to the Franklin County Board of Supervisors for a zoning map amendment on the property described below:

Petitioner's Name: ABoone Development, Inc.

Petitioner's Address: 3934 Electric Road, SW, Suite A Roanoke, VA 24018

Petitioner's Phone Number: [redacted]

Petitioner's Email Address: [redacted]

Property Owner's Name: Willard Investment Properties, LLC

Property Owner's Address: 75 Builders Pride Dr. #200, Hardy, VA 24101

Property Owner's Phone Number: [redacted]

Property Owner's Email Address: [redacted]

Property Information:

A. Proposed Property Address: 12800 Booker T. Washington Highway
Hardy, VA 24101

B. Tax Map and Parcel Number: 030.00/001.05 and 030.00/052.28

C. Election District: Gills Creek

D. Size of Property: 56.62 acres

E. Existing Zoning: PCD

F. Existing Land Use: Vacant

G. Is the property located within any of the following overlay zoning districts:

___ Corridor District X Westlake Overlay District ___ Smith Mountain Lake Surface District

H. Is any land submerged under water or part of Smith Mountain Lake? ___ YES X NO

If yes, please explain: _____

Proposed Zoning Map Amendment Information:

I. Proposed Land Use: Applicant proposes to develop the property into 103 +/- single family detached homes with commercial pads fronting Route 122 to complement the existing Westlake Towne Center and the currently under development townhome and condominium community adjacent to the property. The community would be served by both public water and sewer.

J. Size of Proposed Use: 82.7 acres

K. Other Details of Proposed Use:

The proposed development would meet a critical housing shortage while complementing the existing commercial, office and residential uses of Westlake Towne Center and adding additional commercial uses along the corridor. The community would provide opportunity

to more people for homeownership by offering high quality, detached housing in a desirable location with access to commercial shopping, restaurants and Smith Mountain Lake.

Checklist for Completed Items:

- Application Form
- Letter of Application
- Concept Plan
- Application Fee

I certify that this application for a zoning map amendment and the information submitted is herein complete and accurate.

Petitioner's Name (Printed): ABoone Development, Inc., By: Court Rosen, Dir. of Dev.

Petitioner's Signature: 

Date: January 4, 2026

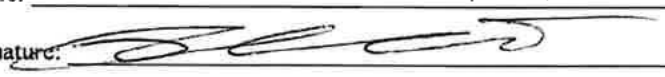
Mailing Address: 3934 Electric Road, SW, Suite A
Roanoke, Virginia 24018

Phone Number: [redacted]

Email Address: [redacted]

Owner's consent, if petitioner is not property owner:

Owner's Name: Ron Willard II - Willard Investment Properties, LLC

Owner's Signature: 

Date: January 4, 2026

Date Received by Planning Staff: _____

ABoone Real Estate Inc.

January 4, 2026

Ms. Lisa Cooper
Planning Director
Franklin County Department of Planning & Community Development
1255 Franklin Street, Suite 103
Rocky Mount, VA 24151

Dear Ms. Cooper,

Thank you for the opportunity to provide this Letter of Application in support of the attached Zoning Map Amendment application (the "Rezoning"). We look forward to working with you. As part of this Letter of Application, we would request that the Board of Supervisors consider fast tracking this rezoning application.

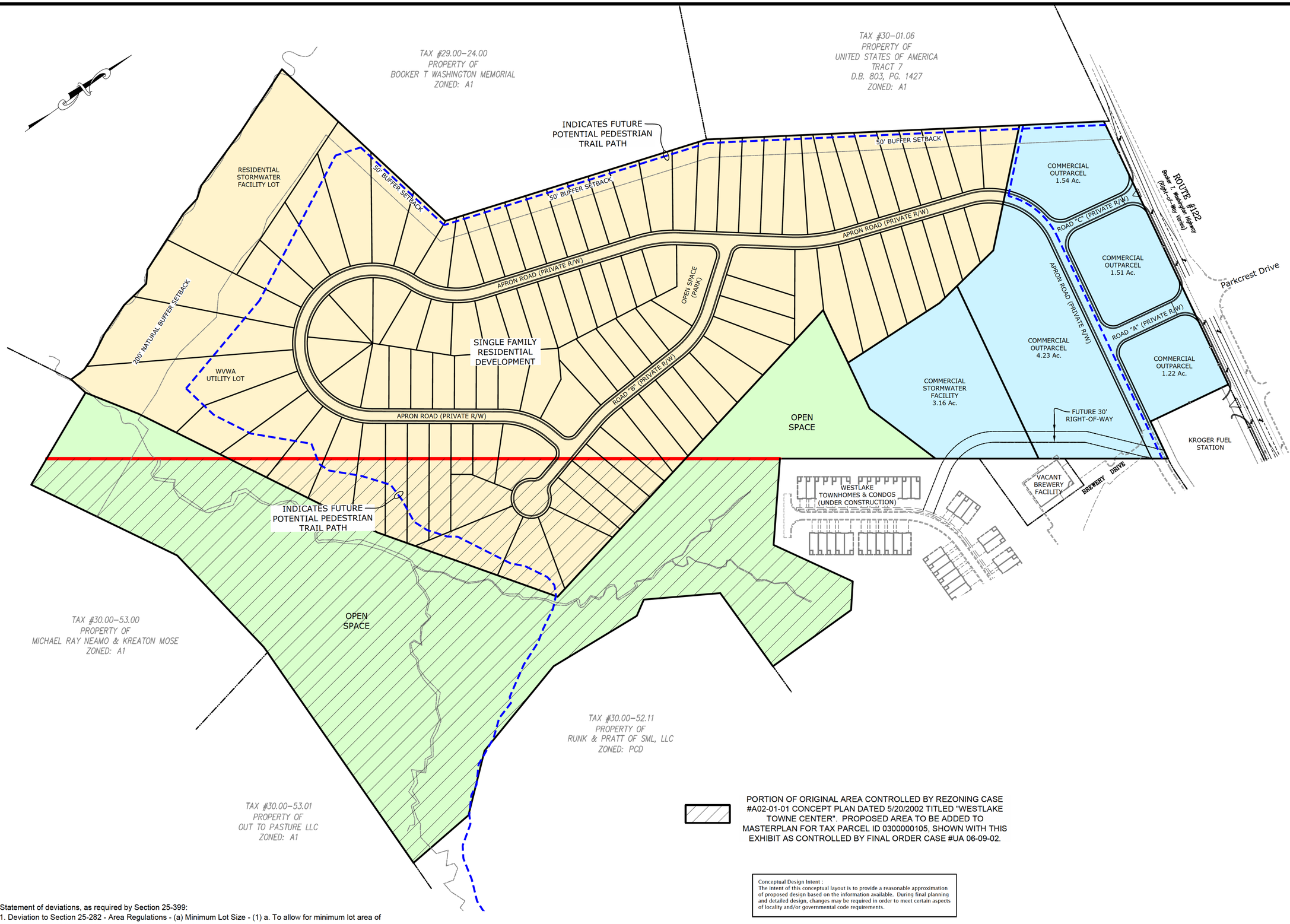
ABoone Development, Inc. proposes to develop a community of 103 +/- single family detached homes offered for sale along with commercial pads fronting Route 122 as shown on the concept plan in support of the Rezoning. We believe that this current proposed community will complement the existing Westlake Towne Center commercial, office and residential uses, including the townhome and condominium community we currently are developing within the Towne Center. Our proposed development will help meet a critical housing shortage and offer homeownership with high quality single and multi-story homes at relatively affordable price points. It additionally will add valuable commercial opportunities along the 122 corridor to attract different commercial, retail and restaurant uses. Residents of our proposed residential community will access their neighborhood from Route 122 at its intersection with Parkcrest Drive, an intersection planned for access improvement as part of this overall development.

The properties for which we request Zoning Map Amendments are identified as Parcel 0300000105 and Parcel 0300005228. The original rezonings for both parcels of land required that any proposed residential use of property within the larger developments would require Zoning Map Amendments. Additionally, we have requested deviations as shown on the Master Plan Exhibit for Westlake Village Business Park South. For these reasons, we request such affirmative action by the Franklin County Board of Supervisors.

Thank you for the opportunity to provide this Letter of Application.

Sincerely,

Court Rosen
ABoone Development, Inc.



PORTION OF ORIGINAL AREA CONTROLLED BY REZONING CASE #A02-01-01 CONCEPT PLAN DATED 5/20/2002 TITLED "WESTLAKE TOWNE CENTER". PROPOSED AREA TO BE ADDED TO MASTERPLAN FOR TAX PARCEL ID 0300000105, SHOWN WITH THIS EXHIBIT AS CONTROLLED BY FINAL ORDER CASE #UA 06-09-02.

Conceptual Design Intent :
The intent of this conceptual layout is to provide a reasonable approximation of proposed design based on the information available. During final planning and detailed design, changes may be required in order to meet certain aspects of locality and/or governmental code requirements.

Statement of deviations, as required by Section 25-399:

1. Deviation to Section 25-282 - Area Regulations - (a) Minimum Lot Size - (1) a. To allow for minimum lot area of 8,000 sf within the residential portion of the development community.
   Reason - To allow for consistency and proposed density within the proposed residential portion of the development community.
2. Deviation to Section 25-282 - Area Regulations - (a) Minimum Lot Size - (2) a. To allow for a minimum of 60 foot lot width for residential lots being served by both public water and sewer.
   Reason - To allow for consistency and proposed density within the proposed residential portion of the development community.
3. Deviation to Section 25-395 - Minimum Dimensions - (a) Front Setback. To allow for a minimum of 25 foot front setback from the proposed right-of-way of each private street within the residential portion of the development community.
   Reason - To allow for consistency and proposed density within the proposed residential portion of the development community.

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

SITE TABULATION & SUMMARY:

TOTAL ACREAGE: (INCLUDES TAX No. 0300000105 & 0300005228)	±82.7 ACRE
COMMERCIAL ACREAGE:	±13.0 ACRE
RESIDENTIAL ACREAGE:	±45.2 ACRE
60' WIDTH SFR LOTS:	103 TOTAL LOTS
PROPOSED DENSITY:	2.28 HOUSES PER ACRE
OPEN SPACE ACREAGE:	±24.5 ACRE

MASTER PLAN EXHIBIT

SHOWING

WESTLAKE VILLAGE BUSINESS PARK SOUTH

LOCATED WITHIN

GILLS CREEK MAGISTERIAL DISTRICT
FRANKLIN COUNTY, VIRGINIA

Lumsden Associates, P.C.
ENGINEERS | SURVEYORS | PLANNERS
4664 BRAMBLETON AVENUE, SW
P.O. BOX 20669
ROANOKE, VIRGINIA 24018
PHONE: (540) 774-4411
FAX: (540) 772-9445
WWW.LUMSDENPC.COM

DATE: "REVISED JANUARY 5, 2026" December 29, 2025
COMM. NO.: 25-259
SCALE: 1" = 100'
SHEET 1 OF 1

The following is a Metes and Bounds Description of Tract 5C (26.1496 Acres), located in Gills Creek Magisterial District, as created in the plat recorded in the Clerks Office of Franklin County, Virginia in Instrument # 250000972.

Beginning at a point being the Southwesterly property corner of Franklin County, Virginia Tax Parcel # 0300005211, Tract 11-A1-A1-A1 of Westlake Towne Center, the property of RUNK & PRATT OF SML, LLC as acquired in Deed Book 907, Page 1757 and being the common corner to the southeasterly property corner with the herein described Tract 5C and lying on the northerly property line of Tax Parcel # 0300005301, Parcel No. 2 of Deed Book 1208. Page 761, the property of OUT TO PASTURE, LLC as acquired in Deed Book 1168, Page 1129 of the aforesaid Clerks Office for the POINT OF BEGINNING.

Thence leaving the property of RUNK & PRATT OF SML, LLC and with the northerly property line of OUT TO PASTURE, LLC, S 89° 12' 34" W, a distance of 669.84 feet to a point;

Thence continuing with the northerly property line of Tax Parcel # 0300005301 the property of OUT TO PASTURE, LLC, S 89° 32' 43" W, a distance of 34.00 feet to a point being the northwesterly property corner of Tax Parcel # 0300005301 and the northeasterly common property corner with Tax Parcel # 0300005300 the property of MICHAEL RAY NEAMO, MOSE KREATON NEAMO and ROBIN JANICE NEAMO as acquired in Deed Book 361, Page 1873 and Deed Book 544, Page 1211;

Thence leaving Tax Parcel # 0300005301 and with the northerly property line of Tax Parcel # 0300005300 for the following four (4) courses:

S 88° 05' 42" W, a distance of 18.81 feet to a point;

Thence S 80° 34' 09" W, a distance of 345.07 feet to a point:

Thence S 59° 48' 26" W, a distance of 445.87 feet to a point;

Thence N 25° 30' 02" W, a distance of 83.48 feet to a point at the southeasterly property corner of Tax Parcel # 0300000105 the property of WILLARD INVESTMENT PROPERTIES, LLC as acquired in Deed Book 1166, Page 1629 of the said Clerks Office.

Thence leaving Tax Parcel # 0300005300 and with the easterly property line of Tax Parcel # 0300000105, N 33° 58' 02" E, a distance of 2014.99 feet to a point being the common property corner of the herein described Tract 5C and Tract 5B both shown and created in Instrument # 250000972.

Thence leaving Tax Parcel # 0300000105 and with the common property lines of Tracts 5C and 5B for the following four (4) courses:

S 51° 47’ 44” E, a distance of 237.85 feet to a point;

Thence N 58° 42’ 44” E, a distance of 239.52 feet to a point;

Thence S 52° 37’ 53” E, a distance of 78.70 feet to a point;

Thence S 01° 46’ 14” E, a distance of 264.51 feet to a point lying on the northerly property line of the said Tax Parcel # 0300005211 the property of RUNK & PRATT OF SML, LLC;

Thence leaving Tract 5B and with the property of RUNK & PRATT OF SML, LLC for the following seven (7) courses:

S 88° 13’ 46” W, a distance of 247.65 feet to a point;

Thence S 29° 06’ 54” W, a distance of 210.83 feet to a point;

Thence S 32° 37’ 03” E, a distance of 48.80 feet to a point;

Thence S 02° 47’ 08” W, a distance of 267.13 feet to a point;

Thence S 16° 47’ 46” E, a distance of 300.11 feet to a point;

Thence S 42° 03’ 52” E, a distance of 182.28 feet to a point;

Thence S 06° 56’ 13” E, a distance of 199.80 feet to the POINT OF BEGINNING and containing 26.1496 Acres, 1,139,078 Square Feet more or less.

The following is a Metes and Bounds Description of Tract 6A-1 (56.31033 Acres), located in Gills Creek Magisterial District, as created in the plat recorded in the Clerks Office of Franklin County, Virginia in Deed Book 1204, Pages 568-569.

Beginning at a point lying on the southerly right-of-way line of U. S. Route # 122, Booker T. Washington Highway (variable width right-of-way) and being the northeasterly property corner of Franklin County, Virginia Tax Parcel # 0300000105, Tract 6A-1, the herein described tract of land and being the property of WILLARD INVESTMENT PROPERTIES, LLC as acquired in Deed Book 1166, Page 1629 of the said Clerks Office and being the common corner to the northwesterly property corner with Tax Parcel # 0300005207B, Tract 19A-1B1 also created in Deed Book 1204, Pages 568-569 being the property of KROGER LIMITED PARTNERSHIP I, as acquired in Deed Book 1209, Page 1949 of the said Clerks Office for the POINT OF BEGINNING.

Thence leaving the southerly right-of-way line of U. S. Route # 122 and with the common property line between Parcels 6A-1 and 19A-1B1 for the following two (2) courses:

S 10° 19’ 20” W, a distance of 236.90 feet to a point;

Thence S 79° 33’ 29” E, a distance of 112.97 feet to a point being the northwesterly corner to Tax Parcel # 0300005226 and the 40’ wide private road designated Apron Road;

Thence leaving Tax Parcel # 0300005207B, Tract 19A-1B1 and partially with the westerly property line of Tax Parcel # 0300005200 the property of WILLARD CONSTRUCTION OF SMITH MOUNTAIN LAKE, LLC as acquired in Deed Book 667, Page 367 and Deed Book 689, Page 160, S 35° 44’ 16” W, passing along the westerly property line of Tax Parcel # 0300005225 the property of LAKESIDE IMPORTS & DISTRIBUTING, LLC as acquired in Deed Book 1018, Page 1759, and passing along the westerly property line of Tax Parcel # 0300005227 the property of ABOONE DEVELOPMENT, INC. as acquired in Deed Book 1225, Page 546 and with the westerly property line of Tax Parcel # 0300005228 the property of WILLARD CONSTRUCTION OF SMITH MOUNTAIN LAKE, LLC as acquired in Deed Book 667, Page 367, all of the said Clerks Office for a total distance of 3,081.16 feet to a point at the southwesterly property corner of Tax Parcel # 0300005228 and lying on the northerly property line of Tax Parcel # 0300005300 the property of MICHAEL RAY NEAMO, MOSE KREATON NEAMO and ROBIN JANICE NEAMO as acquired in Deed Book 361, Page 1873 and Deed Book 544, Page 1211;

Thence leaving Tax Parcel # 0300005228 and with Tax Parcel # 0300005300 for the following two (2) courses:

N 23° 43’ 56” W, a distance of 210.39 feet to a point;

Thence S 78° 23’ 33” W, a distance of 53.49 feet to a point on the northerly property line of Tax Parcel # 0300005300, said point being the common property corner with Tax Parcel # 0290002400 the property of the BOOKER T. WASHINGTON NATIONAL MONUMENT FOUNDATION as acquired in Deed Book 148, Page 427;

Thence leaving Tax Parcel # 0300005300 and with Tax Parcel # 0290002400 for the following thirteen (13) courses:

N 00° 58’ 09” W, a distance of 44.49 feet to a point;

Thence N 20° 04’ 57” W, a distance of 43.46 feet to a point;

Thence N 27° 44’ 17” W, a distance of 69.92 feet to a point;

Thence N 20° 02’ 39” W, a distance of 95.64 feet to a point;

Thence N 08° 11’ 27” W, a distance of 84.63 feet to a point;

Thence N 49° 20’ 52” W, a distance of 38.81 feet to a point;

Thence N 21° 32’ 38” W, a distance of 182.86 feet to a point;

Thence N 11° 45’ 17” W, a distance of 55.52 feet to a point;

Thence N 36° 22’ 59” W, a distance of 38.19 feet to a point;

Thence N 18° 01’ 13” W, a distance of 184.72 feet to a point;

Thence N 20° 54’ 11” W, a distance of 204.38 feet to a point;

Thence N 78° 40’ 10” E, a distance of 612.36 feet to a point;

Thence N 18° 24’ 28” E, a distance of 752.04 feet to a point at the southeasterly property corner of Tax Parcel # 0300000106 the property of The UNITED STATES OF AMERICA as acquired in Deed Book 803, Page 1427;

Thence leaving Tax Parcel # 0290002400 and with Tax Parcel # 0300000106, N 33° 07’ 44” E, a distance of 1093.07 feet to a point lying on the southerly right-of-way line of U. S. Route 122, Booker T. Washington Highway;

Thence leaving Tax Parcel # 0300000106 and with the southerly right-of-way line of U. S. Route 122, S 79° 35’ 34” E, a distance of 799.59 feet to the POINT OF BEGINNING and containing 56.31033 Acres, 2,452,878 Square Feet more or less.

X:\word\2024\24193\Description of Tract 6A-1.docx

GOROVE SLADE
Transportation Planners and Engineers

WESTLAKE TOWN CENTER

TRIP GENERATION ANALYSIS

To:	Lisa Cooper	Franklin County
Cc:	Court Rosen	ABoone Real Estate, Inc.
	Alexander Boone	ABoone Real Estate, Inc.
From:	Carl Hultgren, P.E., PTOE	Gorove Slade
Date:	December 31, 2025	
Subject:	**Westlake Town Center – Trip Generation Analysis**	

ABoone Real Estate, Inc. is proposing a mixed-use development on the south side of Route 122 (Booker T. Washington Highway) across from Parkcrest Drive. The proposed access plan includes one full-movement driveway on Route 122 aligned with Parkcrest Drive, one right-in / right-out driveway on Route 122, and connection to Apron Road to the east.

The subject parcels are part of the overall Westlake Town Center mixed-use project, which is partially built-out. The approved TIA for Westlake Town Center was submitted on November 21, 2014, which assumed the following land uses on the subject parcels:

- 54 single-family lots
- 140 multi-family units
- Approximately 30,000 square feet (s.f.) of specialty retail space (on the two 1.7 acre outparcels shown in Appendix A)
- One 10,000 s.f. quality restaurant
- One 4,000 s.f. fast-food restaurant with drive-through window

ABoone Real Estate's preliminary development plan includes the following assumed land uses:

- 103 single-family lots
- 12,500 s.f. of retail space
- One 14,000 s.f. pharmacy with drive-through window
- One 4,000 s.f. fast-food restaurant with drive-through window

The proposed development plan requires a zoning map amendment and Special Use Permit (SUP), and the end users on the commercial outparcels are unknown at this time. The end users listed above are for planning purposes only.

Table 1 shows the trip estimate from the November 2014 TIA based on the 9th edition of the Trip Generation Manual, which was current at the time, and the trip potential of the preliminary development plan based on the 11th edition of the Trip Generation Manual.

Table 1: ITE Trip Generation – Typical Weekday

Land Use (ITE Land Use Code)	Size	Average Daily Traffic (vpd)		AM Peak Hour (vph)		PM Peak Hour (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit
November 2014 TIA (9th Edition of ITE Trip Generation Manual)							
Single-Family Detached Housing (210)	54 lots	298	298	12	36	38	22
Apartment (220)	140 apartments	486	486	15	58	62	33
Specialty Retail Center (826)	30,000 s.f.	665	665	5	5	41	52
Quality Restaurant (931)	10,000 s.f.	450	450	4	4	50	25
Fast-Food Restaurant with Drive-Through Window (934)	4,000 s.f.	992	992	93	89	69	63
Subtotal		2,891	2,891	129	192	260	195
Preliminary Development Plan (11th Edition of ITE Trip Generation Manual)							
Single-Family Detached Housing (210)	103 lots	519	519	19	58	64	38
Strip Retail Plaza (< 40 ksf) (822)	12,500 s.f.	379	379	20	13	46	45
Pharmacy / Drugstore with Drive-Through Window (881)	14,000 s.f.	759	759	27	25	72	72
Fast-Food Restaurant with Drive-Through Window (934)	4,000 s.f.	935	935	91	87	69	63
Subtotal		2,592	2,592	157	183	251	218
% Difference Compared to November 2014 TIA		-10%		+6%		+3%	

ITE did not publish AM peak hour trip rates for specialty retail centers in the 9th edition of the Trip Generation Manual, so those trips are estimated based on engineering judgement.

The November 2014 TIA assumed that Phase 1 of the Westlake Town Center project would include 20,000 s.f. of specialty retail space, the 10,000 s.f. quality restaurant, and the 4,000 s.f. fast-food restaurant with drive-through window. The following roadway improvements were recommended in the November 2014 TIA for the intersection of Route 122 at Parkcrest Drive with Phase 1 of the project:

- Construct an eastbound right-turn lane on Route 122 with at least 100 feet of storage and a 100-foot taper
- Construct a westbound left-turn lane on Route 122 with at least 300 feet of storage and a 100-foot taper
- Construct an eastbound left-turn lane on Route 122 with 100 feet of storage and a 100-foot taper
- Install a traffic signal, which will be coordinated with the existing traffic signal on Route 122 at Scruggs Road

Conclusions

The preliminary development plan generates approximately 10% fewer daily trips, 6% more AM peak hour trips, and 3% more PM peak hour trips as the development plan that was assumed in the November 2014 TIA.

The traffic capacity analysis in the November 2014 TIA was based on the AM and PM peak hour traffic volumes, therefore, the conclusions and recommendations in the November 2014 TIA listed above are still valid with the proposed development plan.

TRAFFIC IMPACT ANALYSIS
For

Westlake Towne Center
On Route 122
Franklin County, VA

For
The Willard Companies
P.O. Box 540
Wirtz, VA 24184

November 21, 2014

Commission No. 3364

Mattern & Craig
ENGINEERS • SURVEYORS
701 FIRST STREET, S.W.
ROANOKE, VIRGINIA 24016

(540) 345-9342
FAX: (540) 345-7691

WESTLAKE TOWNE CENTER
TRAFFIC IMPACT ANALYSIS

EXCECUTIVE SUMMARY

This document presents the results of the traffic impact analysis performed for a proposed multi-use development south of Route 122 between the Booker T. Washington National Monument property and Route 616 in Franklin County, VA. The development is proposed by The Willard Companies.

Route 122 is a two lane minor arterial connecting the towns of Rocky Mount and Bedford and surrounding communities in the Smith Mountain Lake region. Route 122 is posted at 55 mph west of the proposed development and the speed limit reduces to 45 mph between Parkcrest Drive and Village Springs Drive.

The Willard Companies proposes to construct the multi-use development in two phases.

Phase 1 will consist of:

- 1 Fast-Food Restaurant with Drive-Through Window – Approximately 4,000 SF
- 1 Quality Restaurant – Approximately 10,000 SF
- 1 Retail facility – Approximately 20,000 SF

Phase 2 will consist of:

- All of Phase 1 development
- 54 Single-Family Detached Housing dwelling units
- 140 Apartment dwelling units
- 34 Low-Rise Residential Condominium dwelling units
- 3 Senior Adult Housing – Detached dwelling units
- 5,000 SF Day Care Center
- 88,000 SF General Office Buildings
- 62,720 SF Specialty Retail Center
- 14,700 SF Quality Restaurants

In the analysis, Phase 1 is anticipated to be fully occupied in 2018 and Phase 2 is anticipated to be fully occupied in 2023.

The study analyzes 2013 Existing, 2018 Background, 2018 Phase 1, 2023 Background, 2023 Phase 1, 2023 Phase 2, 2029 Background, 2029 Phase 1, and 2029 Phase 2 traffic volumes. The study area consists of two existing unsignalized intersections, one signalized intersection, and one proposed intersection. The study investigates warranted geometric improvements to the study network and traffic signal warrants for the appropriate study area intersection in each

scenario. Additionally, level of service operations were determined at each intersection for each scenario and study period.

The study analyzed traffic for two peak hours: PM Weekday and Saturday Midday. These peak hour periods represent the larger traffic volumes consistently experienced in the study network.

After analyzing the study network as described above, the following recommendations are offered:

1. Construct a full-width right turn lane at the eastbound approach of the Parkcrest Drive and Route 122 intersection. This right turn lane will extend through the proposed intersection west of Parkcrest Drive. The right turn lane will have at least 100' of storage and 100' of taper length at the eastbound approach of the proposed entrance intersection terminating at the Booker T. Washington National Monument property.

2. Due to access management restrictions, the northbound approach to the proposed intersection west of Parkcrest Drive will be right-in/right-out only configuration.

3. Developer should petition VDOT to relocate the 45 mph speed limit sign to the west of the proposed development.

4. The study findings indicate that with minimal traffic growth, left turn lanes should be implemented at the eastbound and westbound approaches to the intersection of Village Springs Drive and Route 122. These left turn lanes should contain at least 100' of storage and 100' taper.

5. To mitigate less than desirable level of service at the Village Springs Drive intersection during future design years, the developer should construct the connector road between the existing shopping center area and Parkcrest Drive as an initial phase to provide an alternative means of entering and exiting the shopping center area.

6. The study results indicate that 2018 Phase 1 traffic volumes warrant a signal at the intersection of Parkcrest Drive and Route 122. The signal should be coordinated with the existing signal at the intersection of Route 616 and Route 122.

7. Construct a left turn lane at the westbound approach to the intersection of Parkcrest Drive and Route 122 by 2018 with the Phase 1 development. Left turn lane should contain at least 300' of storage and 100' taper.

8. Construct a left turn lane at the eastbound approach to the intersection of Parkcrest Drive and Route 122 by 2018 with the Phase 1 development. Left turn lane should contain minimum storage (100') and minimum taper (100').

TABLE OF CONTENTS

List of Figures

List of Tables

Appendices

1.0 Introduction

Mattern & Craig, Inc. was commissioned by The Willard Companies to perform a Traffic Impact Analysis for the proposed Westlake Towne Center in Westlake Corner, Virginia. The development is scheduled to be constructed in two phases consisting of a combination of commercial and residential land uses. **Figure 1.1** depicts the location of the proposed development and the surrounding area (Figure 1.1 is oriented for ease of reference with the development layout in **Appendix A** and with the traffic volume figures throughout this report). This report includes a description of the proposed development, discussion of existing and projected traffic volumes in the study area, vehicular trips generated by the development, level of service analyses, signal warrant analysis, and identification of recommended geometric improvements to mitigate impacts to the roadway network in the study area.

The analysis will consider weekday PM peak hour and midday Saturday peak hour traffic to determine the warranted improvements to the study area roadway network with respect to the proposed development.

2.0 Proposed Development

The proposed development will be built in two phases. Phase 1 will include commercial facilities directly adjacent to Route 122. Phase 2 will include commercial and residential facilities located south and east of Phase 1. The proposed development layout by phase is provided in **Appendix A**.

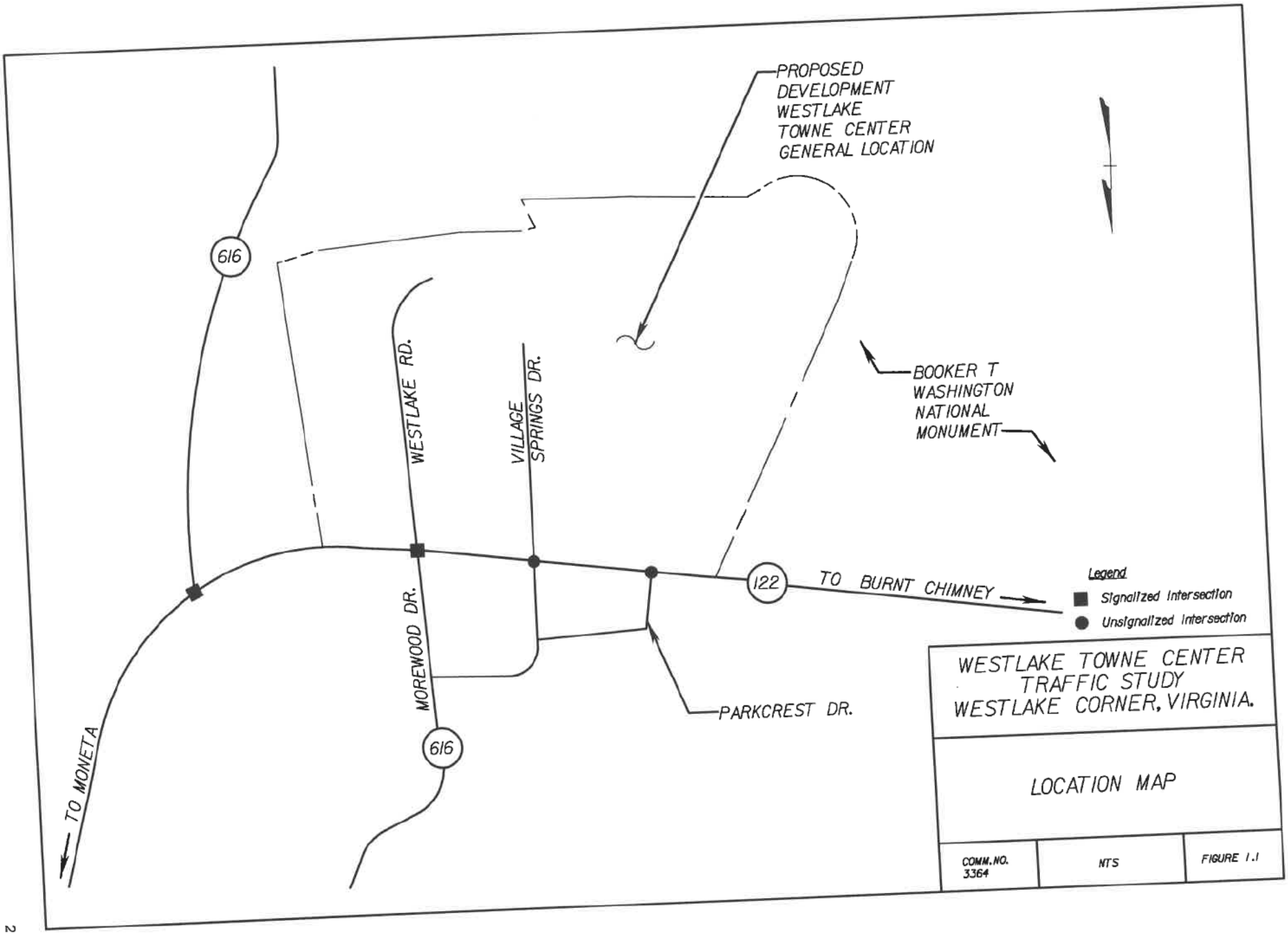
2.1 Phase 1

Phase 1 of the proposed development will be located on the south side of Route 122 between the existing intersections of Parkcrest Drive and Village Springs Drive. Access to Phase 1 will be via the two existing intersections and by a new access road (Entrance #1) constructed 330 feet west of the Parkcrest Drive intersection. Entrance #1 will provide right in/right out access only to Route 122. An internal road will be constructed parallel to Route 122 to provide direct access to the Phase 1 parcels.

Phase 1 will consist of:

- 1 Fast-Food Restaurant with Drive-Through Window – 4,000 SF
- 1 Quality Restaurant – 10,000 SF
- 1 Retail facility – 20,000 SF

Phase 1 is anticipated to be completed and fully occupied by 2018.


PROPOSED
DEVELOPMENT
WESTLAKE
TOWNE CENTER
GENERAL LOCATION
616
WESTLAKE RD.
VILLAGE
SPRINGS DR.
BOOKER T
WASHINGTON
NATIONAL
MONUMENT
122
TO BURNT CHIMNEY
MOREWOOD DR.
616
PARKCREST DR.
TO MONETA
Legend
Signalized Intersection
Unsignalized Intersection
WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.
LOCATION MAP
COMM. NO.
3364
NTS
FIGURE 1.1

2.2 Phase 2

Phase 2 of the proposed development will be located south of Route 122 and south and east of Phase 1. Access to the Phase 2 area will be via all intersections in the study area, including the new access road (Entrance #1).

As indicated on the development layout in **Appendix A**, construction has previously occurred on several parcels in the Phase 2 area. Certain of these structures were not fully occupied at the time traffic counts were made for this project. Growth factors applied to existing counts for study analysis in future years will account for the full occupancy of these facilities. Parcels with partially occupied structures currently within the proposed development area include: 2, 4, 6, 11, 13, and 15A-1.

The portion of the development to be completed in Phase 2 will consist of:

- 54 Single-Family Detached Housing dwelling units
- 140 Apartment dwelling units
- 34 Low-Rise Residential Condominium dwelling units
- 3 Senior Adult Housing – Detached dwelling units
- 5,000 SF Day Care Center
- 88,000 SF General Office Buildings
- 62,720 SF Specialty Retail Center
- 14,700 SF Quality Restaurants

Phase 2 is anticipated to be completed and fully occupied by 2023.

3.0 Existing Volumes

Twelve hour turning movement counts were collected on Wednesday, May 22, 2013 by The Traffic Group, a sub-consultant to Mattern & Craig. Turning movement counts were performed on Route 122 at the unsignalized intersections of Parkcrest Drive and Village Springs Drive and at the signalized intersection of Morewood Road/Westlake Road (Route 616). The 2013 existing traffic counts are included in **Appendix B**. As indicated by the turning movement counts, the PM peak hour is 4:15 – 5:15 PM.

During the scoping of this study VDOT noted that, based upon local knowledge of conditions in the area, the true peak hour occurred midday on Saturdays in the summer months.

VDOT provided raw directional traffic count data on Route 122 for the following four Saturdays: 5/18/2013, 6/1/2013, 6/8/2013, and 6/15/2013. Averaging the four Saturdays yields a 900 vehicle per hour peak with 60% eastbound and 40% westbound directional distribution. The Saturday peak hour occurs between 11:30 AM and 12:30 PM. The averaged 2013 Saturday directional traffic counts on Route 122 are included in **Appendix B**. Additionally, supporting

one-hour interval Saturday raw day is included in **Appendix B**. For the side streets (Parkcrest Drive, Village Spring Drive, and Rt. 616) the PM peak hour turning movement counts were used for the Saturday peak hour analyses.

The resulting balanced existing volumes are presented in **Figure 3.1**.

These volumes were used to quantify the existing volumes along Route 122 and to determine the directional distribution of existing peak hour traffic. The directional distributions for the PM Weekday and Saturday peak hours along Route 122 are delineated in Table 3.1.

Table 3.1 – Directional Distribution on Route 122

Peak Hour	Eastbound Percentage	Westbound Percentage
PM Weekday	50%	50%
Saturday	60%	40%

3.1 Projected Growth Rates

Projected annual growth rate on Route 122 in the vicinity of the study area is assumed to be 2.1%, as provided by VDOT.

4.0 Background Traffic Volumes

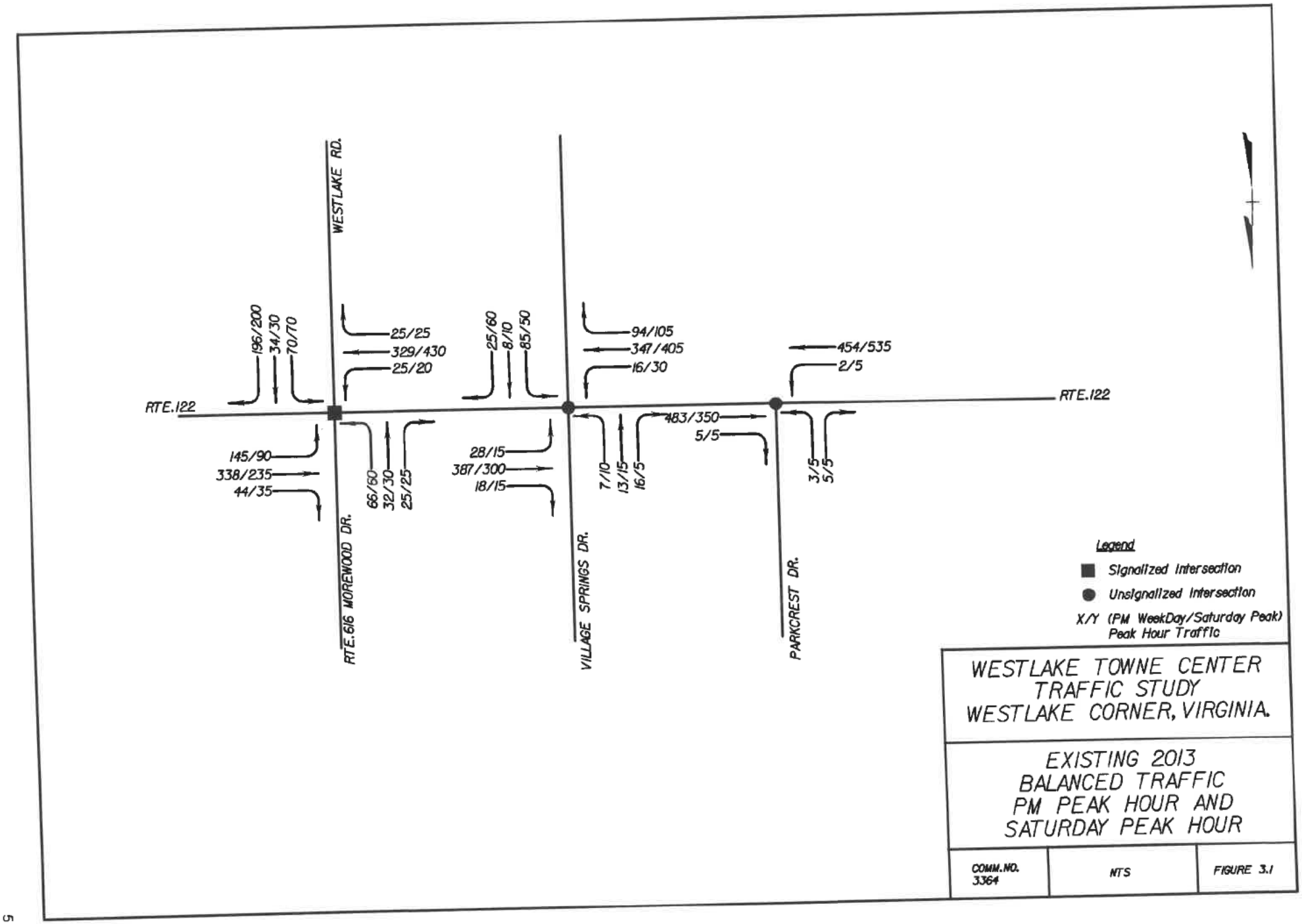
Construction of Phase 1 of the proposed development is anticipated to be completed in year 2018 and the construction of Phase 2 is projected to be completed in year 2023. Therefore, the design years 2018 and 2023 were used for analysis of the impacts to traffic and geometric improvements required on Route 122 as a result of the Phase 1 and Phase 2 buildout. Furthermore, per VDOT's Chapter 527 guidelines 2029 future conditions were determined and analyzed for background, Phase 1 buildout, and Phase 2 buildout conditions.

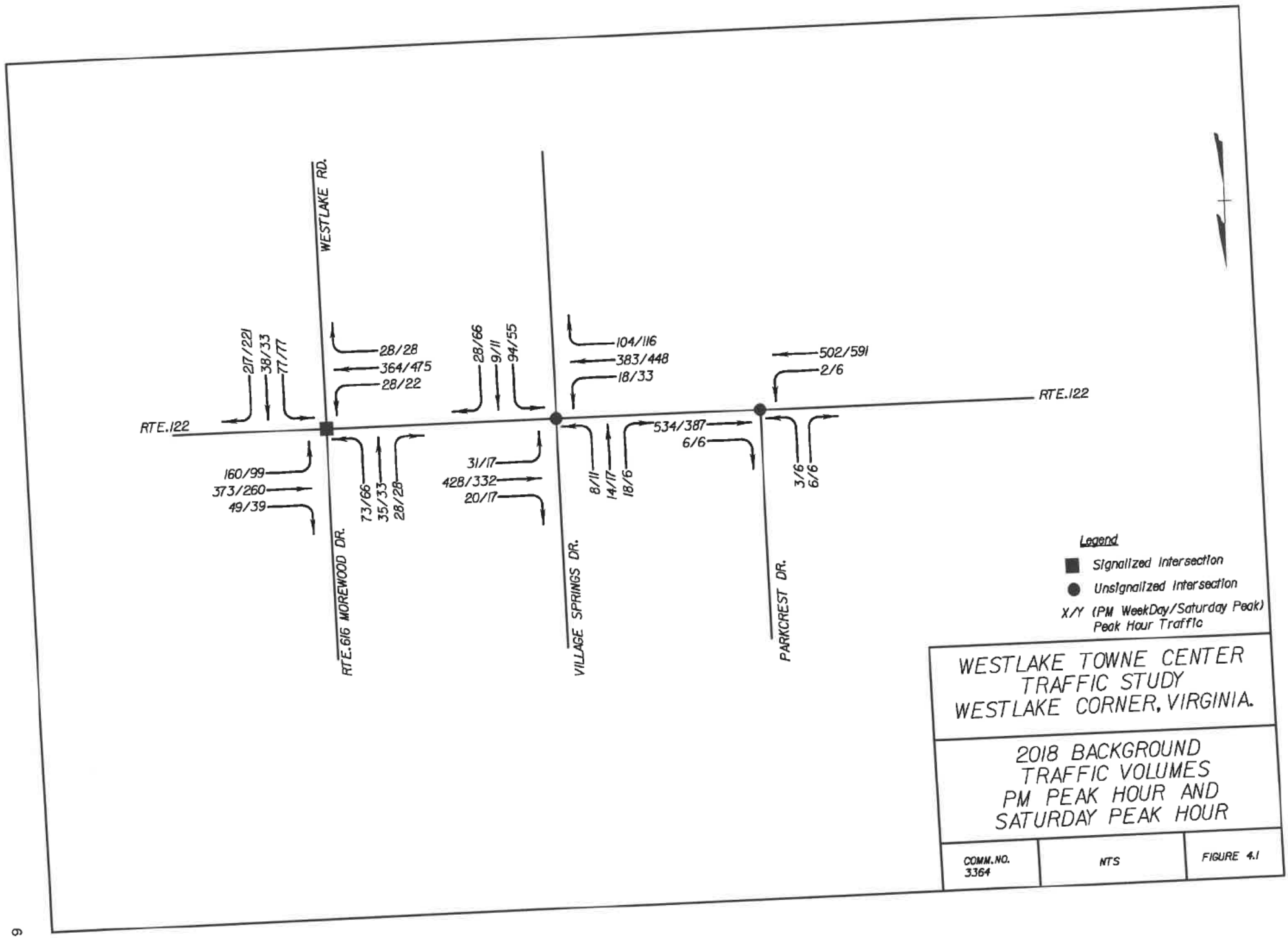
Background traffic is that which is anticipated to be utilizing the existing roadway network at the time the proposed development is expected to be completed, but not including the additional traffic generated by the new development. The existing, balanced 2013 traffic volumes were converted to 2018, 2023, and 2029 background traffic data by utilizing the annual growth rate of 2.1% from year 2013 (see Section 3.1).

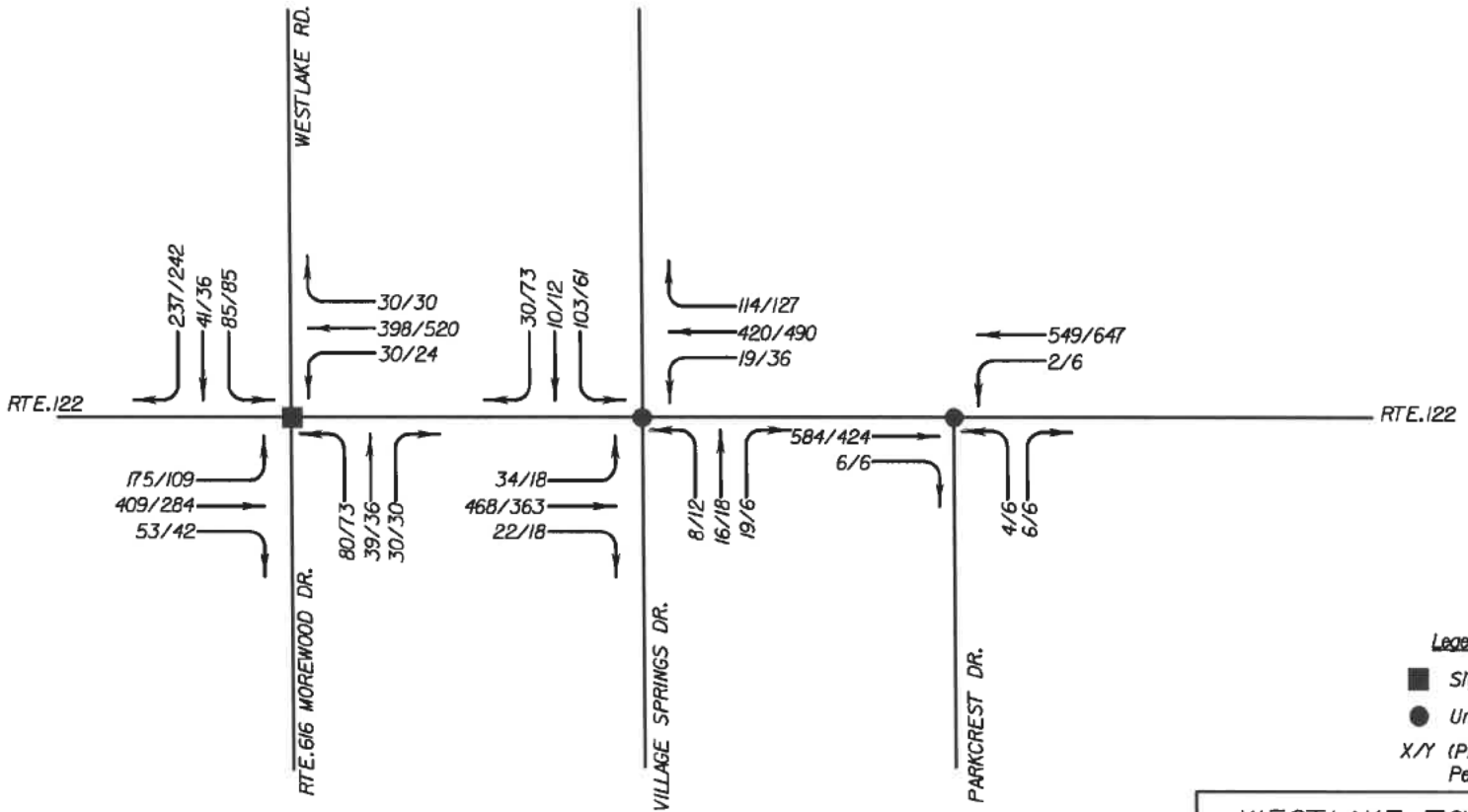
Design year 2018 background traffic volumes are presented in **Figure 4.1**.

Design year 2023 background traffic volumes are presented in **Figure 4.2**.

Design year 2029 background traffic volumes are presented in **Figure 4.3**.


WESTLAKE RD.
RTE.122
196/200
34/30
70/70
25/25
329/430
25/20
25/60
8/10
85/50
94/105
347/405
16/30
454/535
2/5
RTE.122
145/90
338/235
44/35
66/60
32/30
25/25
28/15
387/300
18/15
7/10
13/15
16/5
483/350
5/5
3/5
5/5
RTE.616 MOREWOOD DR.
VILLAGE SPRINGS DR.
PARKCREST DR.
Legend
Signalized Intersection
Unsignalized Intersection
X/Y (PM WeekDay/Saturday Peak) Peak Hour Traffic
WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.
EXISTING 2013
BALANCED TRAFFIC
PM PEAK HOUR AND
SATURDAY PEAK HOUR
COMM. NO. 3364
NTS
FIGURE 3.1


WESTLAKE RD.
RTE.122
RTE.122
RTE.616 MOREWOOD DR.
VILLAGE SPRINGS DR.
PARKCREST DR.
217/221
38/33
77/77
28/28
364/475
28/22
28/66
9/11
94/55
104/116
383/448
18/33
502/591
2/6
534/387
6/6
160/99
373/260
49/39
73/66
35/33
28/28
31/17
428/332
20/17
8/11
14/17
18/6
3/6
6/6
Legend
Signalized Intersection
Unsignalized Intersection
X/Y (PM WeekDay/Saturday Peak) Peak Hour Traffic
WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.
2018 BACKGROUND
TRAFFIC VOLUMES
PM PEAK HOUR AND
SATURDAY PEAK HOUR
COMM. NO. 3364
NTS
FIGURE 4.1



Legend

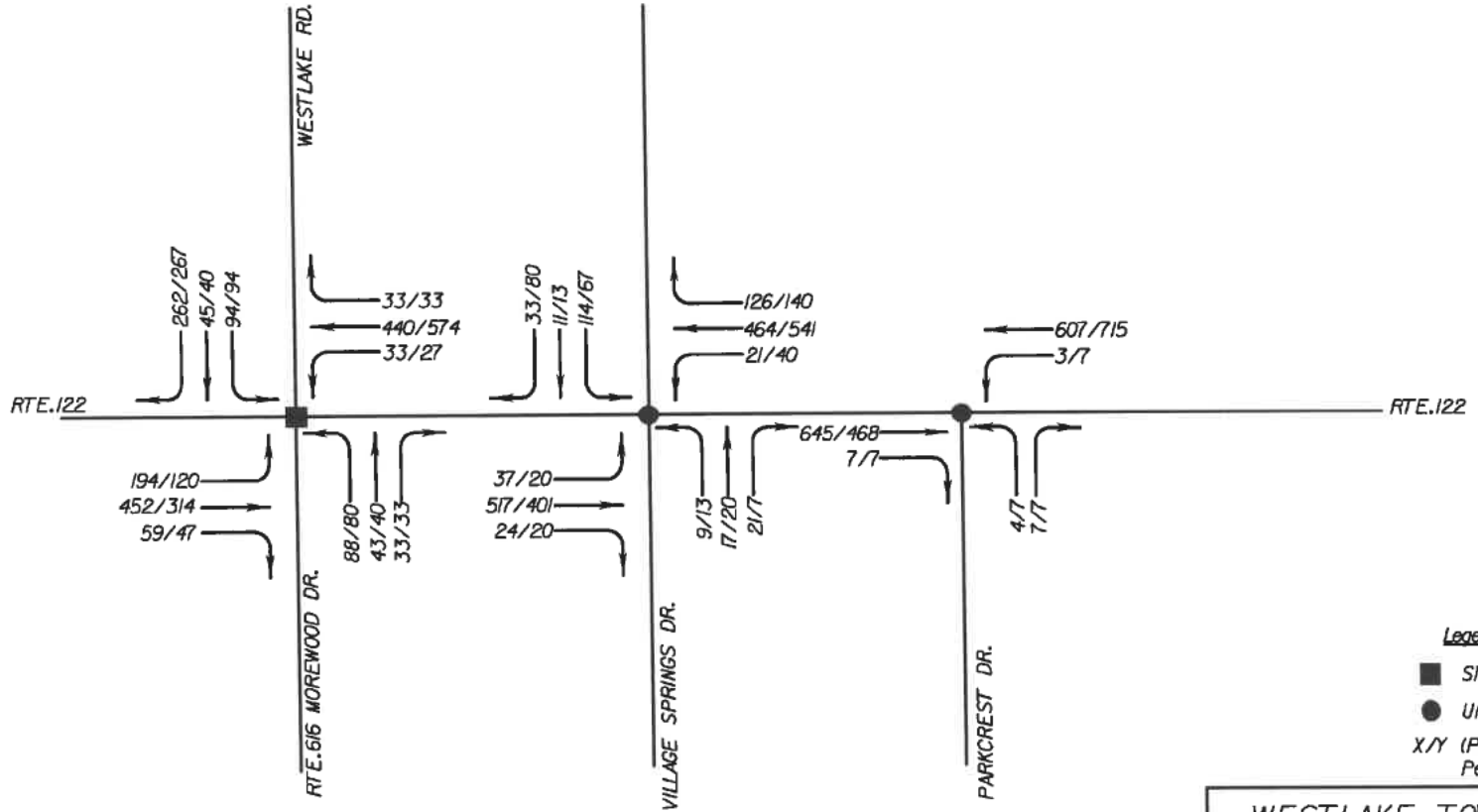
- Signalized Intersection
- Unsignalized Intersection

X/Y (PM WeekDay/Saturday Peak) Peak Hour Traffic

WESTLAKE TOWNE CENTER TRAFFIC STUDY WESTLAKE CORNER, VIRGINIA.

2023 BACKGROUND TRAFFIC VOLUMES PM PEAK HOUR AND SATURDAY PEAK HOUR

COMM. NO. 3364	NTS	FIGURE 4.2



Legend

- Signalized Intersection
- Unsignalized Intersection

X/Y (PM WeekDay/Saturday Peak) Peak Hour Traffic

WESTLAKE TOWNE CENTER TRAFFIC STUDY WESTLAKE CORNER, VIRGINIA.

2029 BACKGROUND TRAFFIC VOLUMES PM PEAK HOUR AND SATURDAY PEAK HOUR

COMM.NO. 3364	NTS	FIGURE 4.3

5.0 Projected Development Volumes

Trip generation was performed using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition. The land uses in Phase 1 and Phase 2 of the proposed development are described in Section 2.0. The Manual assigns land use codes to the land uses. Based on known size of the facility for each land use and the peak hour, the Manual provides an estimate of the new trips generated by each of the proposed land uses.

Due to the presence of existing commercial development adjacent to the proposed development area and because Route 122 is a primary collector route between communities within the vicinity, trip adjustment factors are allowed for internal capture trips and pass-by trips reductions.

Trip generation and appropriate reductions are discussed in sections 5.1 and 5.2.

5.1 Phase 1 Trip Generation

5.1.1 ITE Trip Generation

Table 5.1 provides the number of trips generated by the proposed land uses in Phase 1.

Table 5.1 – Phase 1 Trips Generated

Land Use	ITE Land Use Code	Size	PM Weekday Peak Hour		Saturday Peak Hour	
			Entering	Exiting	Entering	Exiting
Specialty Retail Center	826*	20,000 SF	24	30	56	44
Quality Restaurant	931	10,000 SF	50	25	64	44
Fast-Food Restaurant with Drive-Through Window	934	4,000 SF	69	63	120	116
		TOTAL	143	118	240	204

* Land Use 826 does not provide Saturday Peak Hour data; this study uses "Weekday, PM Peak Hour of Generator" trip generations for Saturday peak hour of land use 826.

5.1.2 Trip Adjustment Factors

After compiling the total trips generated during the PM Weekday and Saturday peak hours for the study area, site specific trip adjustment factors were utilized for internal capture and pass-by trips reduction allowance during each of the two peak hours. Per the Trip Generation Handbook, 2nd Edition, internal trips were subtracted out before pass-by trip reductions were applied.

5.1.2.1 Internal Capture Trips Adjustment

Internal capture rates consider site trips "captured" within a mixed use development, recognizing that trips from one land use can access another land use within a development without having to access the adjacent roadway system. Internal capture allows reduction of site trips from external intersections and roadways.

As established in the VDOT Pre-Scoping meeting (October 2, 2013), Phase 1 internal capture allowance is 5% for trips internally captured between the proposed land uses. The 5% internal capture allowance is applied to the PM Weekday and Saturday peak hour Phase 1 trips, per ITE Trip Generation Handbook methodology. See **Appendix C** for a Multi-Use Development Trip Generation and Internal Capture Summary Worksheet from the Trip Generation Handbook, 2nd Edition Chapter 7.

5.1.2.2 Pass-By Trip Adjustment

Trips projected to enter and exit the site area are a combination of new trips to the area and trips diverted from the adjacent roadway network. The trips that are diverted from the adjacent roadway network are pass-by trips. The ITE Trip Generation Handbook, 2nd Edition Chapter 5 provides pass-by trip estimations for specific land uses which may have pass-by trips.

Phase 1 pass-by trip reductions were applied to land uses 931 and 934; Quality Restaurant and Fast-Food Restaurant with Drive-Through Window, respectively. The ITE Trip Generation Handbook reports an average pass-by trip percentage of 44% for land use 931 in the PM Weekday peak hour and 50% in the PM peak hour for land use 934. As agreed upon in the VDOT Pre-Scoping meeting (October 2, 2013), a conservative average of 45% is used for both land uses.

Due to the nature of the Westlake Corner community and its vicinity to Smith Mountain Lake, it is assumed that Route 122 traffic will make stops at the proposed Westlake Towne Center in route to their destination to or from Smith Mountain Lake. Therefore, this analysis also utilizes the 45% pass-by trip reduction rate for the Saturday peak hour.

5.1.3 Phase 1 Net Trip Generation and Distribution

The net trips generated after reductions are presented in **Table 5.2**.

Table 5.2 – Phase 1 Net Trips Generated

Peak Hour	Vehicles Per Hour		
	Entering	Exiting	Total
Phase 1 PM Weekday Peak Hour	139	115	254
Phase 1 Saturday Peak Hour	235	199	434

Figure 5.1 illustrates the Phase 1 trips through the study area.

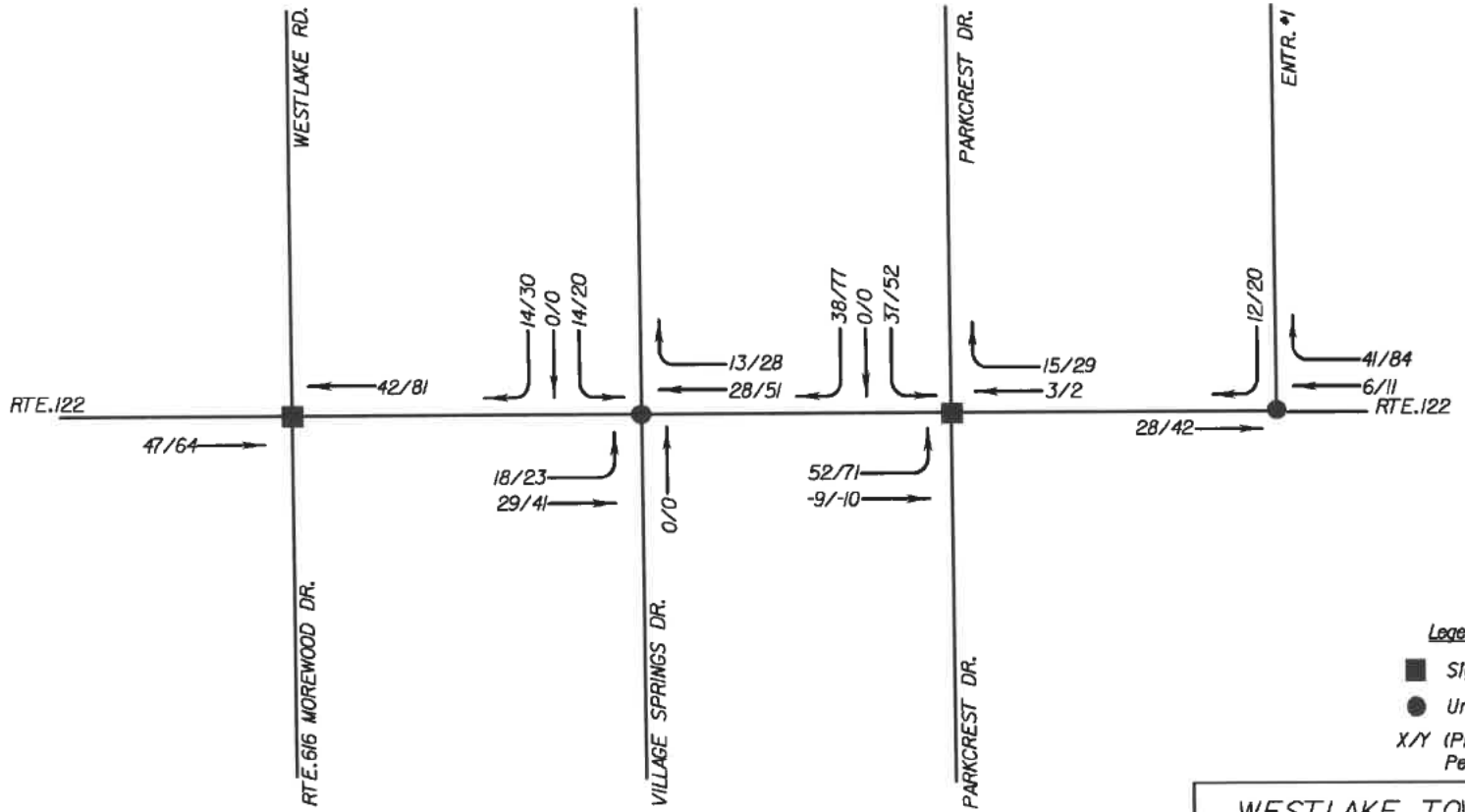
Generated trips are distributed within the study area based on the existing directional distribution along Route 122 as shown in **Table 3.1**. Furthermore, trips were distributed to each entrance using the assumption that the Parkcrest Drive intersection will be signalized and will therefore be the primary development entrance. The new entrance to the west (Entrance #1) and the existing entrance at the Village Springs Drive intersection will be considered secondary entrances.

A breakdown per intersection of the distribution percentages for the PM Weekday and Saturday peak hours is provided in **Figure 5.2**.

5.1.4 Phase 1 Trip Generation Applied to Background Traffic Volumes

Phase 1 trips in **Figure 5.1** are added to the 2018, 2023, and 2029 background traffic volumes as provided in **Figure 4.1**, **Figure 4.2**, and **Figure 4.3**, respectively, to illustrate the projected traffic volumes in 2018, 2023, and 2029 with the implementation of Phase 1. Phase 1 trips in **Figure 5.1** have been reduced as allowed by internal capture and pass-by trips reduction allowance. See **Figure 5.3** for 2018 Phase 1 Traffic Volumes, **Figure 5.4** for 2023 Phase 1 Traffic Volumes, and **Figure 5.5** for 2029 Phase 1 Traffic Volumes

Analysis of these traffic volumes is provided later in this report.



Legend

- Signalized Intersection
- Unsignalized Intersection

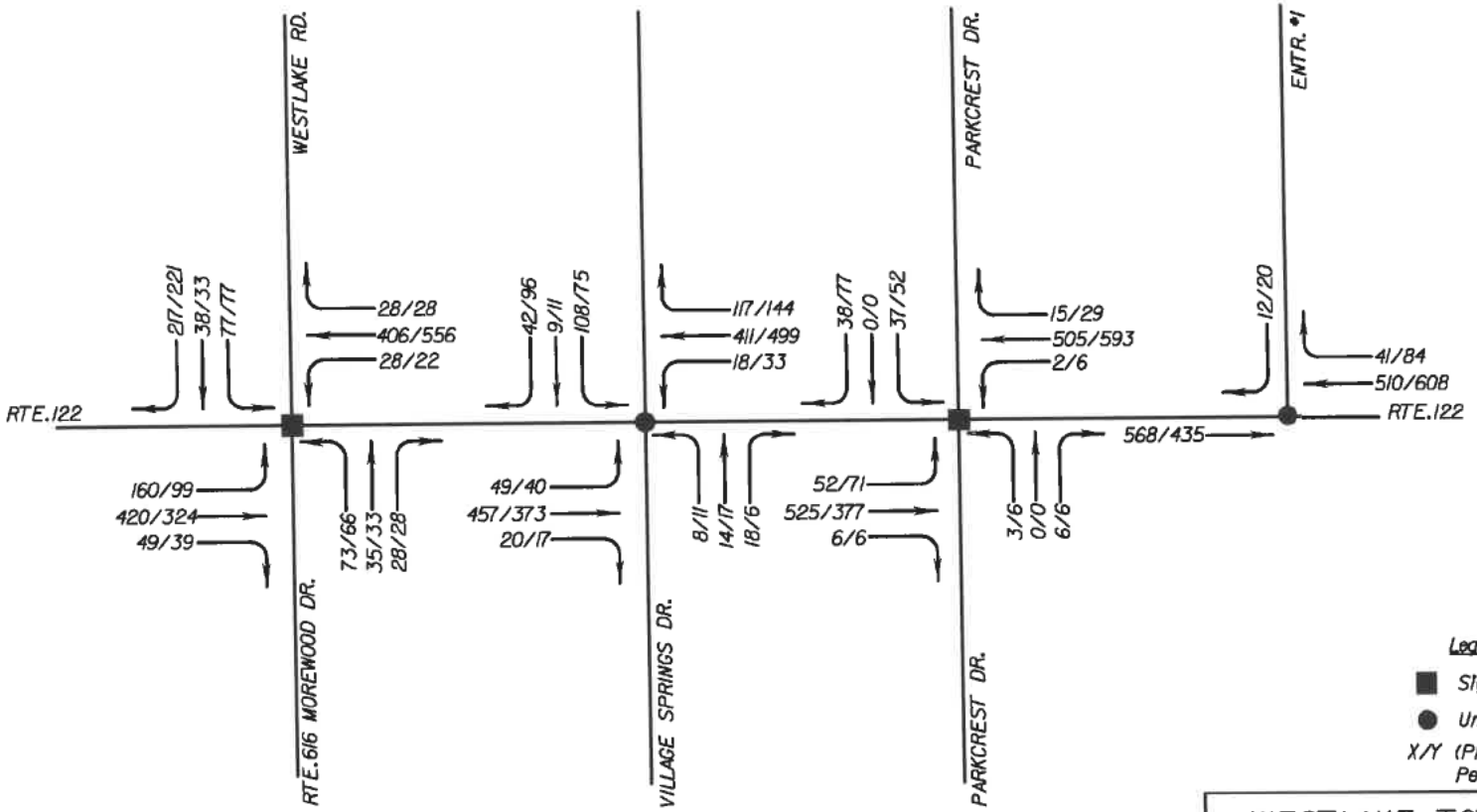
X/Y (PM WeekDay/Saturday Peak) Peak Hour Traffic

WESTLAKE TOWNE CENTER TRAFFIC STUDY WESTLAKE CORNER, VIRGINIA.

PHASE I TRIPS PM PEAK HOUR AND SATURDAY PEAK HOUR

COMM.NO. 3364	NTS	FIGURE 5J

PM
SATURDAY
Legend
Signalized Intersection
Unsignalized Intersection
WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA
PHASE I
TRIP DISTRIBUTIONS
PM PEAK HOUR AND
SATURDAY PEAK HOUR
COMM. NO. 3364
NTS
FIGURE 5.2
RTE. 122
RTE. 616 MOREWOOD DR.
WESTLAKE RD.
VILLAGE SPRINGS DR.
PARKCREST DR.
ENTR. #1
A 50% OF 50% ENTERING TRIPS
B 50% OF 50% ENTERING TRIPS
A' 20% OF 50% ENTERING TRIPS
B' 20% OF 50% ENTERING TRIPS
C 60% OF 50% ENTERING TRIPS
A 50% OF 40% ENTERING TRIPS
B 50% OF 40% ENTERING TRIPS
A' 20% OF 60% ENTERING TRIPS
B' 20% OF 60% ENTERING TRIPS
C 60% OF 60% ENTERING TRIPS
45% OF EXITING TRIPS
50%
0%
50%
60%
0%
40%
10% OF EXITING TRIPS
100%
20%
50%
60%



Legend

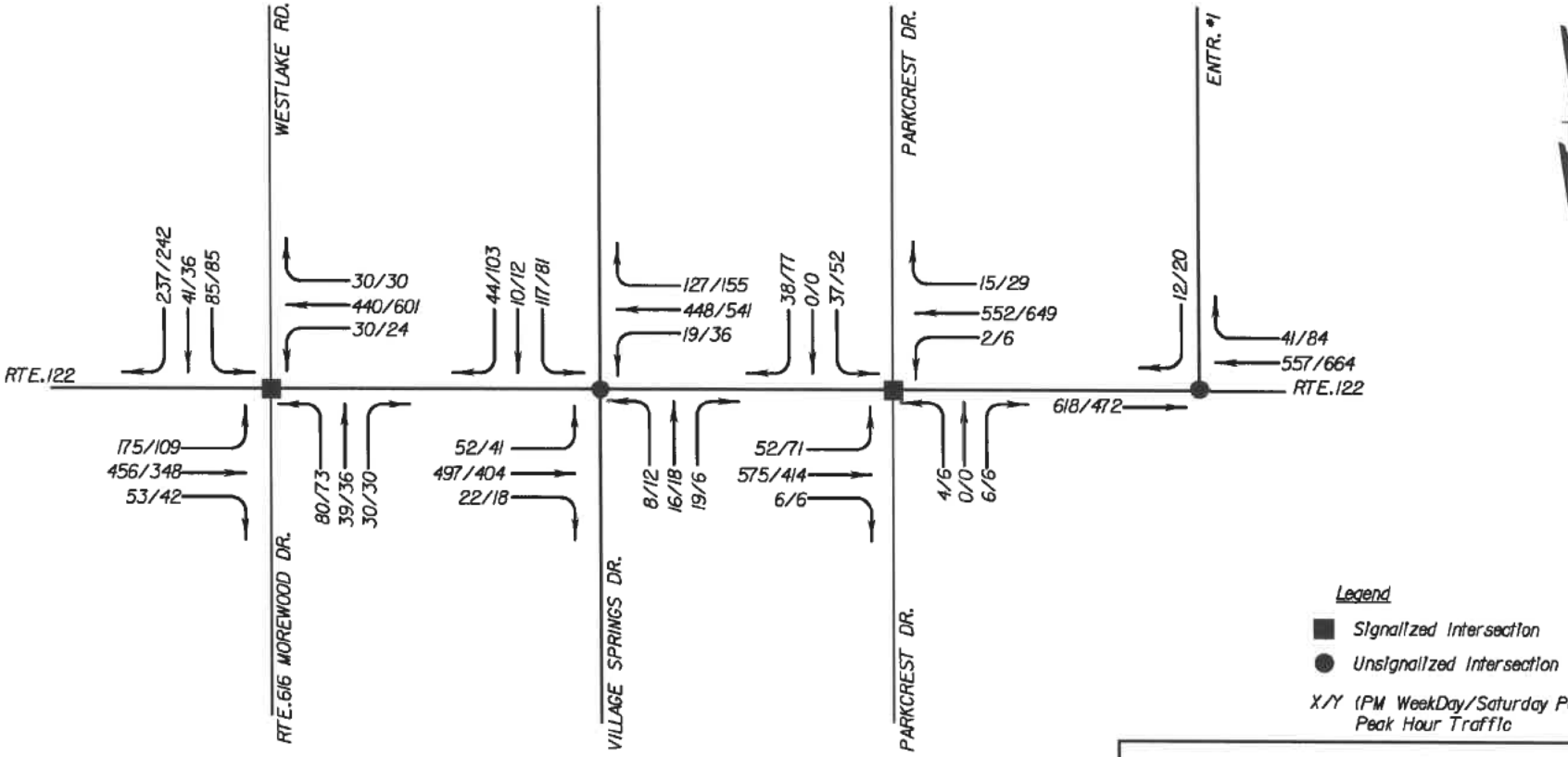
- Signalized Intersection
- Unsignalized Intersection

X/Y (PM WeekDay/Saturday Peak) Peak Hour Traffic

WESTLAKE TOWNE CENTER TRAFFIC STUDY WESTLAKE CORNER, VIRGINIA.

2018 PHASE I TRAFFIC VOLUMES PM PEAK HOUR AND SATURDAY PEAK HOUR

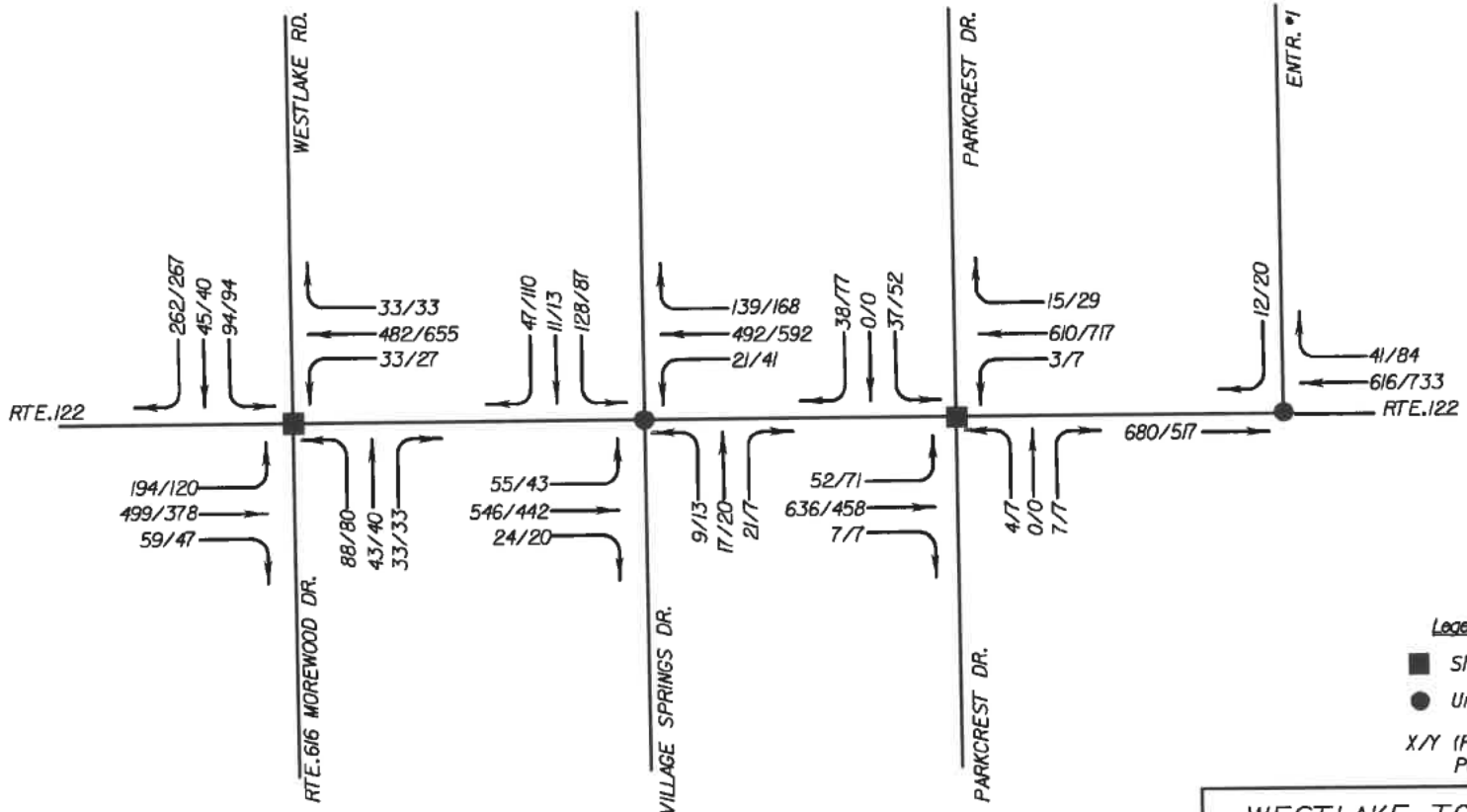
COMM.NO. 3364	NTS	FIGURE 5.3



WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.

2023 PHASE I
TRAFFIC VOLUMES
PM PEAK HOUR AND
SATURDAY PEAK HOUR

COMM.NO. 3364	NTS	FIGURE 5.4



WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.

2029 PHASE I
TRAFFIC VOLUMES
PM PEAK HOUR AND
SATURDAY PEAK HOUR

COMM. NO. 3364	NTS	FIGURE 5.5

5.2 Phase 2 Trip Generation

5.2.1 ITE Trip Generation

Table 5.3 provides information for the trips generated in Phase 2 per ITE Trip Generation Manual, 9th Edition.

Table 5.3 - Phase 2 Trips Generated

Land Use	ITE Land Use Code	Size	PM Weekday Peak Hour		Saturday Peak Hour	
			Entering	Exiting	Entering	Exiting
Phase 1*	--	--	143	118	240	204
Single-Family Detached Housing	210	54 Dwelling Units	38	22	31	26
Apartment	220**	140 Dwelling Units	62	33	60	39
Low-Rise Residential Condominium	231	34 Dwelling Units	16	11	13	10
Senior Adult Housing – Detached	251	3 Dwelling Units	1	0	0	1
Day Care Center	565	5,000 SF	29	33	6	3
General Office Buildings	710	88,000 SF	30	147	21	17
Specialty Retail Center	826***	62,720 SF	75	95	176	139
Quality Restaurant	931	14,700 SF	74	36	94	65
		TOTAL	468	495	641	504

* Phase 1 trips included here are total trips without reductions.

** Land Use 220 Saturday peak hour trips are derived from "Weekday, PM Peak Hour of Generator" to create a more conservative estimated trip generation projection.
*** Land Use 826 does not provide Saturday Peak Hour data; this study uses "Weekday, PM Peak Hour of Generator" trip generations for Saturday peak hour of land use 826.

5.2.2 Trip Adjustment Factors

After compiling the total trips generated during the PM Weekday and Saturday peak hours for the study area, site specific trip adjustment factors were utilized for internal capture and pass-by trips reduction allowance during each of the two peak hours. Per the Trip Generation Handbook, 2nd Edition, internal trips were subtracted out before pass-by trip reductions were applied.

5.2.2.1 Internal Capture Trip Adjustment

As established in the VDOT Pre-Scoping meeting (October 2, 2013), Phase 2 internal capture allowance is 15% for trips internally captured between the proposed land uses. The 15% internal capture allowance is applied to the Saturday peak hour Phase 2 trips. To provide a conservative forecast of the net Phase 2 trips generated during the PM weekday peak hour, internal capture allowance between Phase 2 land uses is determined by the values provided in Table 7.1 and Table 7.2 of the Trip Generation Handbook, 2nd Edition Chapter 7.

See **Appendix C** for a Multi-Use Development Trip Generation and Internal Capture Summary Worksheet from the Trip Generation Handbook, 2nd Edition Chapter 7 for the PM Weekday and Saturday peak hours.

5.2.2.2 Pass-By Trip Adjustment

As in Phase 1, Phase 2 pass-by trip reductions were applied to land uses 931 and 934; Quality Restaurant and Fast-Food Restaurant with Drive-Through Window, respectively. The ITE Trip Generation Handbook reports an average pass-by trip percentage of 44% for land use 931 in the PM Weekday peak hour and 50% in the PM peak hour for land use 934. As agreed upon in the VDOT Pre-Scoping meeting (October 2, 2013), a conservative average of 45% is used for both land uses. As in Phase 1, this analysis utilizes the 45% pass-by rate for the Saturday peak hour.

5.2.3 Phase 2 Net Trip Generation and Distribution

The net trips generated after reductions are presented in **Table 5.4**.

Table 5.4 – Phase 2 Net Trips Generated

Peak Hour	Vehicles Per Hour		
	Entering	Exiting	Total
Phase 2 PM Weekday Peak Hour	346	374	720
Phase 2 Saturday Peak Hour	494	379	873

Figure 5.6 illustrates the Phase 2 trips through the study area.

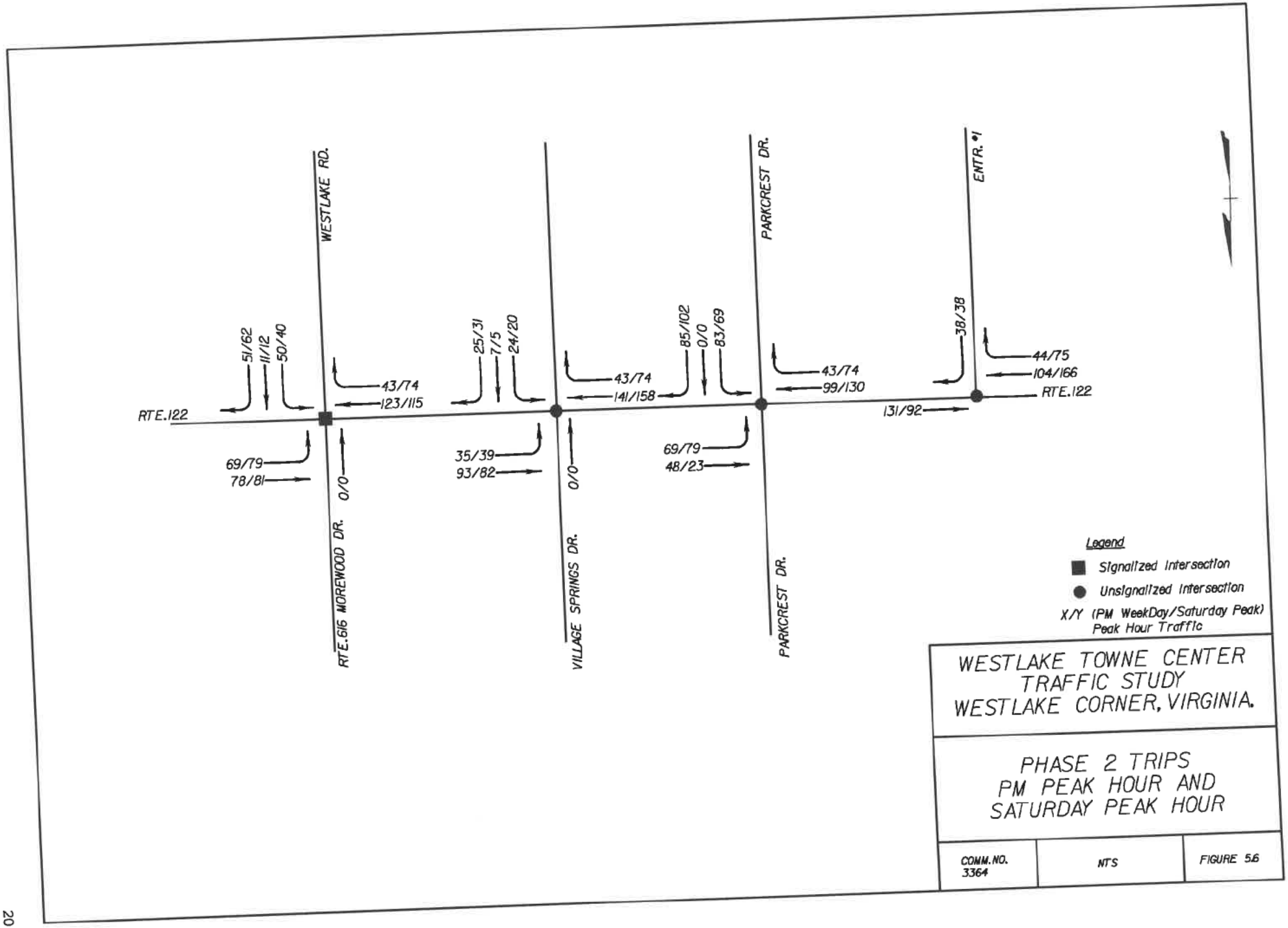
Generated trips are distributed within the study area based on the existing directional distribution along Route 122 as shown in **Table 3.1**. Furthermore, trips were distributed to each entrance using the assumption that the Parkcrest Drive intersection will be signalized and will therefore be the primary development entrance. The new entrance to the west (Entrance #1) and the existing entrances at the Village Springs Drive and Route 616 intersections will be considered secondary entrances.

A breakdown per intersection of the distribution percentages for the PM Weekday and Saturday peak hours is provided in **Figure 5.7**.

5.2.4 Phase 2 Trip Generation Applied to Background Traffic Volumes

Phase 2 trips in **Figure 5.6** are added to the 2023 and 2029 background traffic volumes, as provided in **Figure 4.2** and **Figure 4.3**, respectively, to illustrate the projected traffic volumes in 2023 and 2029 with the implementation of Phase 2. See **Figure 5.8** for 2023 Phase 2 Traffic Volumes and **Figure 5.9** for 2029 Phase 2 Traffic Volumes.

Analysis of these traffic volumes is provided later in this report.



WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.

PHASE 2 TRIPS
PM PEAK HOUR AND
SATURDAY PEAK HOUR

COMM. NO. 3364	NTS	FIGURE 5.6

PM
SATURDAY
Legend
Signalized Intersection
Unsignalized Intersection
WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.
PHASE 2
TRIP DISTRIBUTIONS
PM PEAK HOUR AND
SATURDAY PEAK HOUR
COMM. NO. 3364
NTS
FIGURE 5.7
RTE.122
WESTLAKE RD.
RTE.616 MOREWOOD DR.
VILLAGE SPRINGS DR.
PARKCREST DR.
ENTR. #1
(A) 40% OF 50% ENTERING TRIPS
(B) 20% OF 50% ENTERING TRIPS
(C) 40% OF 50% ENTERING TRIPS
(A') 25% OF 50% ENTERING TRIPS
(B') 25% OF 50% ENTERING TRIPS
(C') 25% OF 50% ENTERING TRIPS
(D') 25% OF 50% ENTERING TRIPS
(A) 40% OF 40% ENTERING TRIPS
(B) 20% OF 40% ENTERING TRIPS
(C) 40% OF 40% ENTERING TRIPS
(A') 25% OF 60% ENTERING TRIPS
(B') 25% OF 60% ENTERING TRIPS
(C') 25% OF 60% ENTERING TRIPS
(D') 25% OF 60% ENTERING TRIPS
30% OF EXITING TRIPS
45%
10%
45%
15% OF EXITING TRIPS
45%
10%
45%
45% OF EXITING TRIPS
50%
0%
50%
10% OF EXITING TRIPS
100%
30% OF EXITING TRIPS
55%
10%
35%
15% OF EXITING TRIPS
55%
10%
35%
45% OF EXITING TRIPS
60%
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10% OF EXITING TRIPS
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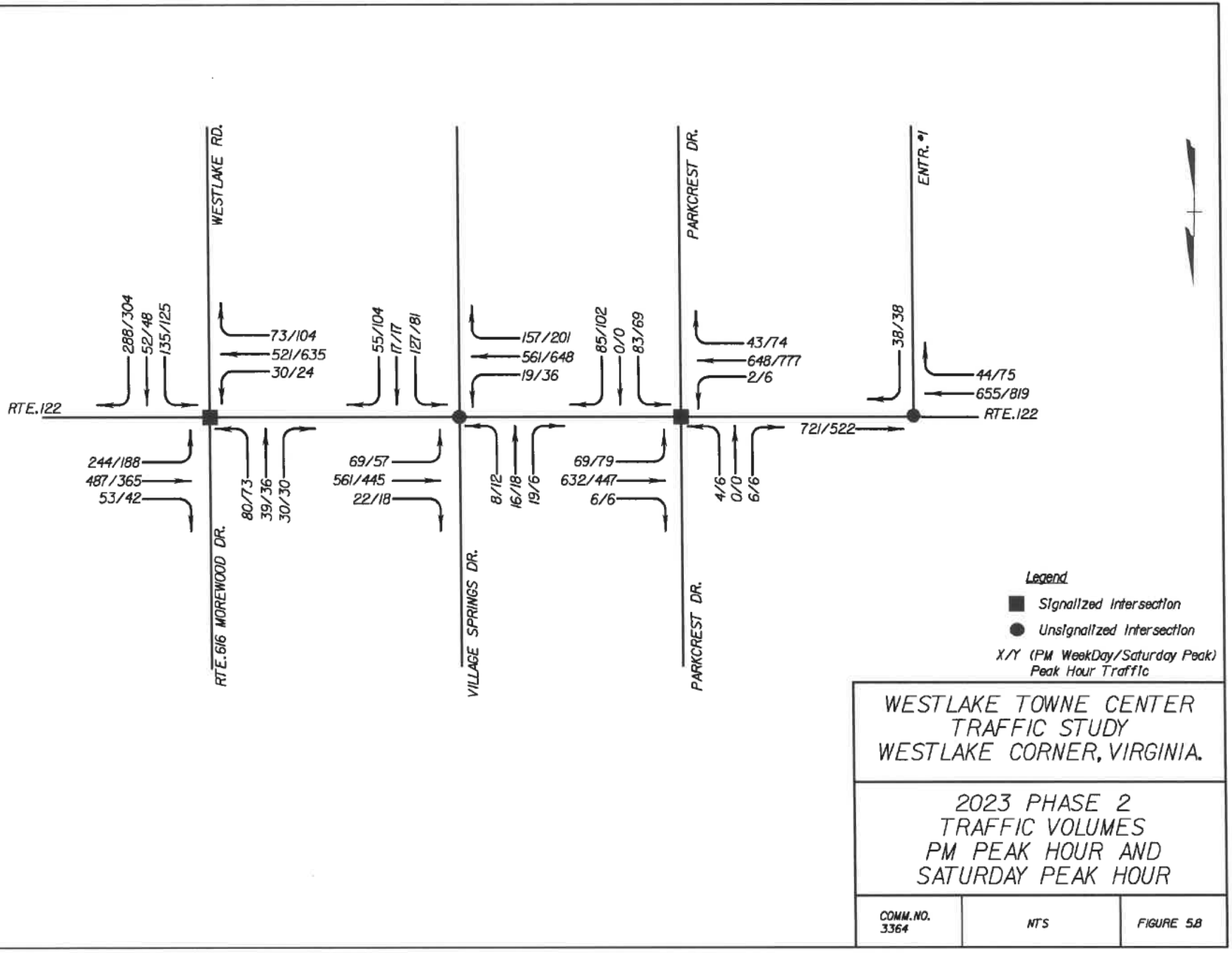
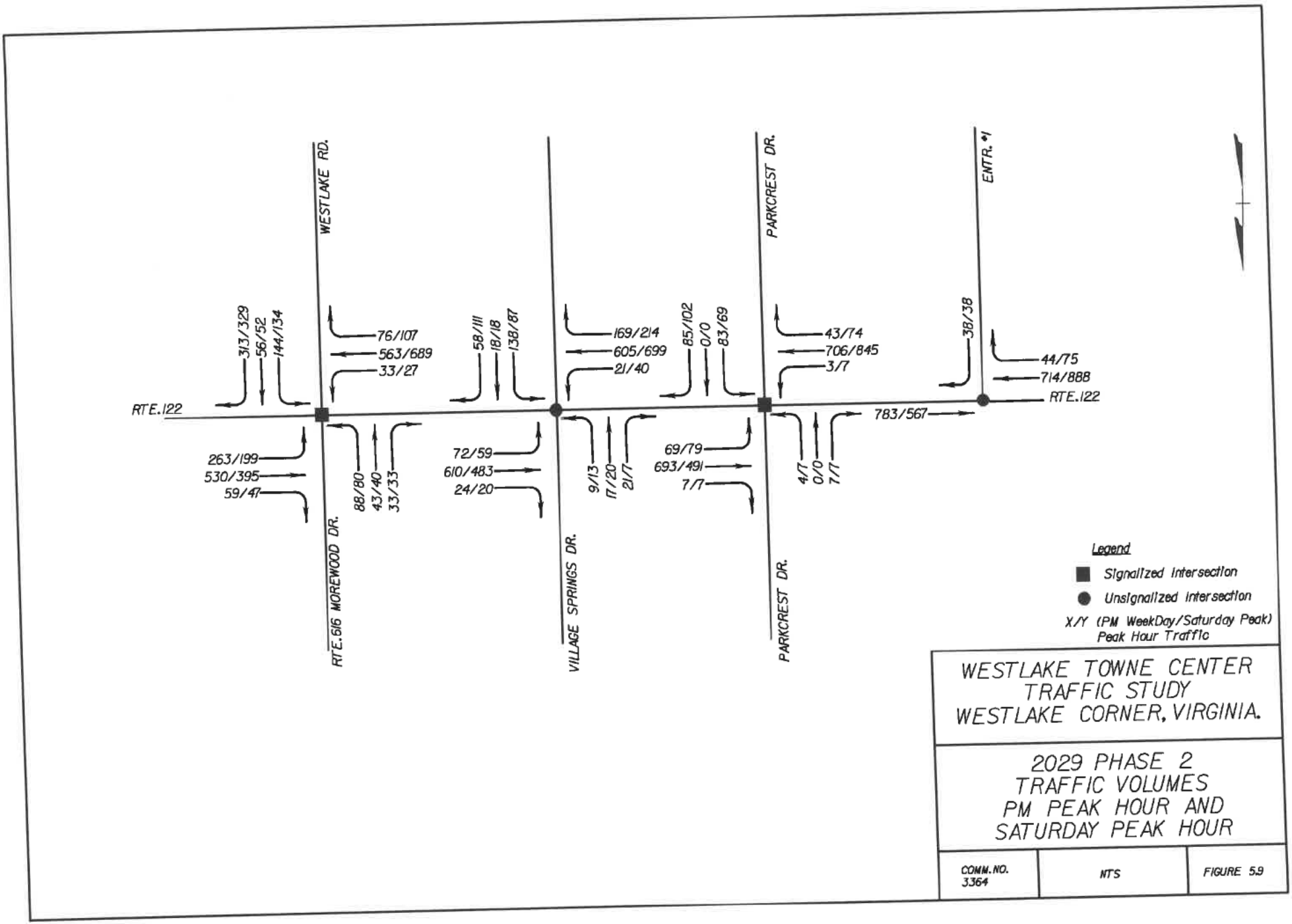
25%
25%
25%
25%



WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.

2023 PHASE 2
TRAFFIC VOLUMES
PM PEAK HOUR AND
SATURDAY PEAK HOUR

COMM.NO. 3364	NTS	FIGURE 5.8


WESTLAKE RD.
PARKCREST DR.
ENTR. #1
RTE.122
RTE.616 MOREWOOD DR.
VILLAGE SPRINGS DR.
PARKCREST DR.
313/329
56/52
144/134
76/107
563/689
33/27
58/111
18/18
138/87
169/214
605/699
21/40
85/102
0/0
83/69
43/74
706/845
3/7
38/38
44/75
714/888
RTE.122
783/567
263/199
530/395
59/47
88/80
43/40
33/33
72/59
610/483
24/20
9/13
17/20
21/7
69/79
693/491
7/7
4/7
0/0
7/7
Legend
Signalized Intersection
Unsignalized Intersection
X/Y (PM WeekDay/Saturday Peak)
Peak Hour Traffic
WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.
2029 PHASE 2
TRAFFIC VOLUMES
PM PEAK HOUR AND
SATURDAY PEAK HOUR
COMM. NO. 3364
NTS
FIGURE 5.9

6.0 Intersection Analysis

This section analyzes the geometric improvements warranted for the 2013 existing conditions, 2018, 2023, and 2029 design years and the addition of the Phase 1 and Phase 2 trips generated by the development. Section 6.1 analyzes the warrants for right and left turn lanes along Route 122. Section 6.2 analyzes the warrants for a signalized intersection at Parkcrest Drive.

The Access Management Design Standards in the VDOT Road Design Manual (pg. F-23) Minimum Spacing Standards for Commercial Entrances, Intersections, and Median Crossovers for a Minor Arterial (Route 122) indicates that the minimum centerline to centerline spacing between signalized intersections is 1,050'. The centerline to centerline spacing between the existing signalized Route 616 intersection and Village Springs Drive intersection is 750 feet. A signal will not be allowed at this intersection. The centerline to centerline spacing between the signalized Route 616 intersection and the Parkcrest Drive intersection is approximately 1,500 feet. If warranted, a signal would be allowed at the Parkcrest Drive intersection, based upon meeting the signal spacing criteria. The proposed location of Entrance #1 is approximately 330 feet from the intersection of Parkcrest Drive. A signal will not be allowed at Entrance #1. No signal warrant analyses were performed at the intersections of Village Springs Drive and Entrance #1.

The Access Management Design Standards in the VDOT Road Design Manual (pg. F-23) Minimum Spacing Standards for Commercial Entrances, Intersections, and Median Crossovers for a Minor Arterial (Route 122) indicates that the minimum centerline to centerline spacing from partial access one or two way entrances to any type of entrance, intersection or median crossover for legal speed limit greater than or equal to 50 mph is 425 feet. The proposed right-in/right-out entrance west of Parkcrest Drive is approximately 330 feet centerline to centerline from Parkcrest Drive. An access management exception will be pursued for the proposed right-in/right-out entrance location. An initial suggestion will be to petition VDOT to relocate the current change in speed limit from 55 mph to 45 mph to the west of the development site through the proper process. With a 45 mph speed limit Access Management minimum intersection spacing is met.

6.1 Geometric Improvements

On two-lane high volume roads, vehicles slowing or stopping to turn create a hazard for other vehicles. This hazard increases as the number of turning vehicles increases. The VDOT Road Design Manual provides guidelines for turn lanes on two-lane roads. These guidelines are based on the design speed, turning volume, approach volume, and opposing volume.

6.1.1 Right Turn Treatment

The existing conditions include a full width right turn lane and taper that extends from the Parkcrest Drive intersection to the Route 616 intersection in the westbound direction. The eastbound approaches to the Village Springs Drive and the Route 616 intersection also contain existing full width right turn lanes each approximately 200' long.

Figure 3-26 of Appendix F of the VDOT Road Design Manual (See **Appendix D**) was used to determine the required right turn treatments at the intersection approaches detailed in **Table 6.1**.

Table 6.1 – Required Right Turn Treatments by Condition and Peak Hour

Condition	Entrance	Direction	Improvement Required
2018 Phase 1 PM Weekday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Taper Only
	Parkcrest Drive & Rt. 122	EB	None
2018 Phase 1 Saturday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Taper Only
2023 Phase 1 PM Weekday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Taper Only
	Parkcrest Drive & Rt. 122	EB	None
2023 Phase 1 Saturday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Taper Only

2029 Phase 1 PM Weekday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	None
2029 Phase 1 Saturday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Taper Only
2023 Phase 2 PM Weekday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Full-width right turn lane and taper
2023 Phase 2 Saturday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Full-width right turn lane and taper
2029 Phase 2 PM Weekday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Full-width right turn lane and taper
2029 Phase 2 Saturday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Full-width right turn lane and taper

Table 6.1 shows that the proposed Entrance #1 eastbound approach warrants a full-width right turn lane during the 2018 Phase 1 Saturday peak hour. The Parkcrest Drive intersection eastbound approach warrants a right turn taper during the 2018 Phase 1 Saturday peak hour. The 2023 Phase 2 PM Weekday and Saturday peak hours warrant a full-width right turn lane at the eastbound approach to the Parkcrest Drive intersection.

In this analysis the Synchro traffic model assumes that a full-width right turn lane on eastbound Route 122 will be constructed for the 2018 Phase 1 buildout for both intersections. The proposed full-width right turn lane at Entrance #1 will have 100' of storage and 100' taper length. The full-width right turn lane at Parkcrest Drive will extend to the right-in/right-out Entrance #1 intersection.

Due to the left turn lane warrants at Parkcrest Drive and Village Springs Drive, discussed in Section 6.1.2, the Route 122 offset alignment will need to be adjusted per Figure 3-4, Passing/Left Turn Lane on Two-Lane Highway (pg. F-54) of the VDOT Road Design Manual. That being said, a queuing analysis was performed for the study network using SimTraffic. The analysis was performed to create recommendations for necessary storage lengths of proposed geometric improvements on Route 122 due to the proposed development. SimTraffic reports are provided in **Appendix F**.

The queuing analysis indicates that the existing 200' right turn lane at the eastbound approach to Village Spring Drive is excessive in length for all future study years, based on projected traffic volumes. With the offset alignment of Route 122 adjusted to accommodate warranted geometric improvements it is recommended that the right turn lane at the eastbound approach to Village Springs Drive have 100' storage length and 100' taper at its adjusted location, based on the maximum queue length reported by SimTraffic.

All proposed widening of Route 122 through the study network will be performed on the south side of Route 122. The existing eastbound through lane will become the proposed left turn lanes.

6.1.2 Left Turn Lanes

The existing conditions include a left turn lane for both eastbound and westbound approaches to the Route 616 intersection.

Table 3-1 (page F-53) of Appendix F of the VDOT Road Design Manual (See **Appendix D**) was used to determine if a left turn lane is warranted at the intersection approaches detailed in **Table 6.2**.

Table 6.2 – Required Left Turn Treatments by Condition and Peak Hour

Condition	Entrance	Direction	Improvement Required
2013 Existing PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2013 Existing Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	None
2018 Background PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2018 Background Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2023 Background PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane

2023 Background Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2029 Background PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2029 Background Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2018 Phase 1 PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2018 Phase 1 Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2023 Phase 1 PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane

2023 Phase 1 Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2029 Phase 1 PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2029 Phase 1 Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2023 Phase 2 PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2023 Phase 2 Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2029 Phase 2 PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane

2029 Phase 2 Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane

Table 6.2 shows that left turn lanes are warranted for the eastbound and westbound approaches at the Village Springs Drive intersection with 2013 existing traffic conditions. A left turn lane is warranted for the westbound approach to the Parkcrest Drive intersection in the 2018 Phase 1 PM Weekday and Saturday peak hour conditions.

A queuing analysis was performed for the study network using SimTraffic. The SimTraffic reports (See **Appendix F**) indicate that left turn lanes at the eastbound and westbound approaches to Village Springs Drive have 100' storage length and 100' taper are adequate for the projected traffic volumes. The westbound approach to the signalized Parkcrest Drive intersection will require a 300' storage length and 100' taper to accommodate the maximum queue length as reported by SimTraffic. There is adequate space between the intersections of Parkcrest Drive and Village Springs Drive to accommodate the recommended length of the left turn lanes.

Although a left turn lane is not warranted at the eastbound approach to Parkcrest Drive it is advisable to include one of minimum length and taper as there will be room due to transition lengths associated with the Route 122 offset alignment required to accommodate for the left turn lanes.

All proposed widening of Route 122 through the study network will be performed on the south side of Route 122. The existing eastbound through lane will become the proposed left turn lanes.

6.2 Signal Warrant Analysis

The Manual of Uniform Traffic Control Devices (MUTCD) 2009 Edition traffic signal warrants serve as the basis for the signal warrants analysis. Signal warrant analyses were performed for all scenarios analyzed in this study.

The signal warrant analysis is for Warrant 3 – Peak Hour. This analysis used Figure 4C-4 of the MUTCD to determine signal warrants. Figure 4C-4 is for a community with less than 10,000 population or above 40 MPH on the major street.

The signal warrant analysis is for the existing unsignalized intersection of Parkcrest Drive and Route 122.

Table 6.3 provides the results of the Peak Hour Signal Warrant Analysis for the Parkcrest Drive intersection. Please see **Appendix G** for MUTCD peak hour signal warrant figures and plotted points for each scenario analyzed.

Table 6.3 – Peak Hour Signal Warrant Analysis

Condition	Signal Warranted?
2013 Existing PM Weekday Peak Hour	No
2013 Existing Saturday Peak Hour	No
2018 Background PM Weekday Peak Hour	No
2018 Background Saturday Peak Hour	No
2023 Background PM Weekday Peak Hour	No
2023 Background Saturday Peak Hour	No
2029 Background PM Weekday Peak Hour	No
2029 Background Saturday Peak Hour	No
2018 Phase 1 PM Weekday Peak Hour	No
2018 Phase 1 Saturday Peak Hour	Yes
2023 Phase 1 PM Weekday Peak Hour	No
2023 Phase 1 Saturday Peak Hour	Yes
2029 Phase 1 PM Weekday Peak Hour	No
2029 Phase 1 Saturday Peak Hour	Yes
2023 Phase 2 PM Weekday Peak Hour	Yes
2023 Phase 2 Saturday Peak Hour	Yes
2029 Phase 2 PM Weekday Peak Hour	Yes
2029 Phase 2 Saturday Peak Hour	Yes

Table 6.3 indicates that a traffic signal is warranted in 2018 with the Phase 1 development conditions by the Peak Hour Signal Warrant thresholds.

Additionally, an operational analysis was performed to compare an unsignalized verses signalized Parkcrest Drive intersection with the 2018 Phase 1 buildout volumes. Unsignalized Parkcrest Drive intersection Synchro PM and Saturday peak hour reports are provided in **Appendix H**. The delay reported at the northbound and southbound approaches is considerably higher for the unsignalized case. **Table 6.4** summarizes the delays in the unsignalized scenario as compared to the signalized scenario.

Table 6.4 – Signalized vs. Unsignalized Parkcrest Drive

Scenario	Peak Hour	NB Approach Delay (Sec.)	SB Approach Delay (Sec.)
2018 Phase 1 w/ Signal	PM	18.6	17.5
2018 Phase 1 w/o Signal	PM	34.2	21.1
2018 Phase 1 w/ Signal	Saturday	23.1	20.5
2018 Phase 1 w/o Signal	Saturday	43.5	28.2

The difference in delay is considerable between the two scenarios with Phase 1 development only. The difference will expand in magnitude as Phase 2 development is implemented, particularly for the northbound approach. The operational analysis provides further justification for installation of a traffic signal at the Parkcrest Drive intersection with the Phase 1 development.

7.0 Level of Service Analysis

Synchro traffic software was used to analyze the operational conditions for the study area for all study scenarios.

Delay within Synchro is reported with a Level of Service (LOS) designation. Level of service is a quantitative measure of driver perception of delay (waiting time) experienced at an intersection, and LOS is based on the delay thresholds specified in the 2010 Highway Capacity Manual (HCM). LOS conditions range from "A" (little delay) to "F" (very long delay). **Table 7.1** reflects the delay ranges in seconds drivers may experience for a corresponding level of service for both signalized and unsignalized intersections. The criteria used to measure LOS for signalized intersections are different from the criteria used for unsignalized intersections. LOS for signalized intersections is based on control delay per vehicle. Control delay, as defined by HCM, includes initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. According to this definition the minimum design acceptable delay is "D" for design purposes, particularly in a more developed area. For signalized intersections, LOS F indicates that more than one signal change cycle may be required for a driver to pass through the intersection. For unsignalized intersections, levels of service are based on critical gap, the minimum time interval in the major street traffic stream that allows entry for one minor street vehicle from an intersection, particularly the left turn vehicles. Level of service "E" is generally considered to be the minimum design standard. At an unsignalized intersection, LOS F occurs when there are not enough minimum gaps to allow the movements on the minor street to enter the major street in a "reasonable" amount of time.

Table 7.1 – Level of Service and Delay

Unsignalized Intersection		Signalized Intersection	
Level of Service	Average Control Delay per Vehicle (Seconds)	Level of Service	Average Control Delay per Vehicle (Seconds)
A	0-10	A	0-10
B	>10-15	B	>10-20
C	>15-25	C	>20-35
D	>25-35	D	>35-55
E	>35-50	E	>55-80
F	>50	F	>80

Synchro traffic software was used to analyze all signalized and unsignalized intersections in this report. The procedures used by Synchro are in accordance with the methodologies stated in the 2010 Highway Capacity Manual (HCM) for intersection analysis.

Analysis results for signalized intersections provide level of service calculations for all approaches as well as an overall intersection level of service. Please note that analysis results for

unsignalized intersections do not provide level of service results for all approaches or an overall intersection level of service, but rather a level of service for movements and/or approaches that have a conflicting movement. In this study, level of service is the basis for the evaluation of existing and background traffic conditions and the impacts of the traffic generated by the proposed site on the existing roadway network.

LOS, and delay are summarized for all study network scenarios (See **Table 7.2**)

See **Appendix E** for detailed Synchro 2010 HCM LOS Reports.

Table 7.2

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Parkcrest Drive / Route 122	WEEKDAY PM													
	2013 Existing	-	A (8.7)		-	-	-	-	-	-	-	C (16.1)		
			A (8.7)			-			-			C (16.1)		
	2018 Background	-	A (8.6)		-	-	-	-	-	-	-	C (16.2)		
			A (8.6)			-			-			C (16.2)		
	2018 Phase 1 *	D (35.2)	D (45.1)	D (35.8)	C (21.7)	D (47.4)	D (36.7)	C (23.4)	B (18.6)			B (17.5)		
			D (35.4)			D (37.5)			B (18.6)			B (17.5)		
	2023 Background	-	A (8.8)		-	-	-	-	-	-	-	C (18.7)		
			A (8.8)			-			-			C (18.7)		
	2023 Phase 1 *	C (33.5)	D (42.9)	C (33.8)	B (18.9)	D (45.0)	C (34.6)	C (20.7)	C (20.5)			B (19.2)		
			C (33.4)			C (35.3)			C (20.5)			B (19.2)		
	2023 Phase 2 *	D (35.2)	D (43.6)	D (37.6)	B (17.5)	D (49.0)	D (35.1)	B (19.5)	C (26.6)			C (22.3)		
			D (36.4)			D (36.3)			C (26.6)			C (22.3)		
	2029 Background	-	A (9.0)		-	-	-	-	-	-	-	C (20.7)		
			A (9.0)			-			-			C (20.7)		
	2029 Phase 1 *	D (35.9)	D (47.2)	C (34.5)	B (18.4)	D (49.0)	D (38.3)	C (21.4)	C (23.6)			C (22.2)		
			C (34.2)			D (38.9)			C (23.6)			C (22.2)		
	2029 Phase 2 *	D (37.2)	D (49.8)	D (42.2)	B (18.8)	E (59.2)	C (32.9)	B (17.5)	C (30.9)			C (26.1)		
			D (40.9)			D (35.1)			C (30.9)			C (26.1)		

Table 7.2 (con't)

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Parkcrest Drive / Route 122	SATURDAY PEAK HOUR													
	2013 Existing	-	A (8.1)		-	-	-	-	-	-	-	C (15.3)		
			A (8.1)			-			-			C (15.3)		
	2018 Background	-	A (8.2)		-	-	-	-	-	-	-	C (16.8)		
			A (8.2)			-			-			C (16.8)		
	2018 Phase 1 *	C (25.5)	C (20.6)	D (39.6)	C (20.5)	D (49.5)	A (0.8)	A (0.5)	C (23.1)			C (20.5)		
			D (38.5)			A (8.4)			C (23.1)			C (20.5)		
	2023 Background	-	A (8.3)		-	-	-	-	-	-	-	C (18.5)		
			A (8.3)			-			-			C (18.5)		
	2023 Phase 1 *	C (34.9)	C (34.3)	D (38.6)	B (18.3)	D (52.2)	C (30.8)	C (21.0)	C (25.7)			C (22.8)		
			D (37.7)			C (33.7)			C (25.7)			C (22.8)		
	2023 Phase 2 *	C (31.5)	C (26.1)	D (37.8)	B (14.4)	D (52.2)	B (19.0)	B (12.8)	C (34.4)			C (28.4)		
			D (35.7)			C (23.9)			C (34.4)			C (28.4)		
	2029 Background	-	A (8.4)		-	-	-	-	-	-	-	C (21.2)		
			A (8.4)			-			-			C (21.2)		
	2029 Phase 1 *	C (23.7)	B (14.7)	D (36.1)	B (14.9)	D (46.0)	A (0.3)	A (0.0)	C (28.8)			C (25.3)		
			D (35.0)			A (6.4)			C (28.8)			C (25.3)		
	2029 Phase 2 *	C (34.5)	C (27.1)	D (43.1)	B (15.9)	E (71.4)	B (14.6)	B (10.2)	D (41.8)			D (35.1)		
			D (40.8)			C (22.3)			D (41.8)			D (35.1)		

Table 7.2 (con't)

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Unsignalized Village Spring Drive / Route 122	WEEKDAY PM													
	2013 Existing	-	A (8.3)		-	A (8.1)			D (32.5)			C (17.1)		
			A (8.3)			A (8.1)			D (32.5)			C (17.1)		
	2018 Background	-	A (8.3)		-	A (8.3)			E (43.5)			C (18.9)		
			A (8.3)			A (8.3)			E (43.5)			C (18.9)		
	2018 Phase 1	-	A (8.4)	-	-	A (8.4)	-	-	F (109.4)			C (23.7)		
			A (8.4)			A (8.4)			F (109.4)			C (23.7)		
	2023 Background	-	A (8.5)		-	A (8.4)		-	F (73.0)			C (21.5)		
			A (8.5)			A (8.4)			F (73.0)			C (21.5)		
	2023 Phase 1	-	A (8.6)	-	-	A (8.6)	-	-	F (146.6)			C (24.6)		
			A (8.6)			A (8.6)			F (146.6)			C (24.6)		
	2023 Phase 2	-	A (8.8)	-	-	A (9.1)	-	-	F (461.3)			E (36.5)		
			A (8.8)			A (9.1)			F (461.3)			E (36.5)		
	2029 Background	-	A (8.7)		-	A (8.6)		-	F (154.7)			D (25.6)		
			A (8.7)			A (8.6)			F (154.7)			D (25.6)		
	2029 Phase 1	-	A (8.7)	-	-	A (8.7)	-	-	F (289.4)			D (29.7)		
			A (8.7)			A (8.7)			F (289.4)			D (29.7)		
	2029 Phase 2	-	A (9.0)	-	-	A (9.3)	-	-	F (741.4)			E (48.5)		
			A (9.0)			A (9.3)			F (741.4)			E (48.5)		

Table 7.2 (con't)

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Unsignalized Village Spring Drive / Route 122	SATURDAY PEAK HOUR													
	2013 Existing	-	A (8.0)		-	A (8.3)		-	C (20.9)			C (19.7)		
			A (8.0)			A (8.3)			C (20.9)			C (19.7)		
	2018 Background	-	A (8.1)		-	A (8.4)		-	D (26.2)			C (22.6)		
			A (8.1)			A (8.4)			D (26.2)			C (22.6)		
	2018 Phase 1	-	A (8.2)	-	-	A (8.7)		-	F (52.9)			D (29.4)		
			A (8.2)			A (8.7)			F (52.9)			D (29.4)		
	2023 Background	-	A (8.2)		-	A (8.6)		-	E (35.2)			D (26.8)		
			A (8.2)			A (8.6)			E (35.2)			D (26.8)		
	2023 Phase 1	-	A (8.3)	-	-	A (8.9)	-	-	F (91.2)			E (35.9)		
			A (8.3)			A (8.9)			F (91.2)			E (35.9)		
	2023 Phase 2	-	A (8.5)	-	-	A (9.4)	-	-	F (241.2)			F (56.2)		
			A (8.5)			A (9.4)			F (241.2)			F (56.2)		
	2029 Background	-	A (8.3)		-	A (8.8)		-	F (59.0)			D (33.3)		
			A (8.3)			A (8.8)			F (59.0)			D (33.3)		
	2029 Phase 1	-	A (8.5)	-	-	A (9.1)	-	-	F (190.8)			E (46.9)		
			A (8.5)			A (9.1)			F (190.8)			E (46.9)		
	2029 Phase 2	-	A (8.6)	-	-	A (9.6)	-	-	F (418.3)			F (82.1)		
			A (8.6)			A (9.6)			F (418.3)			F (82.1)		

Table 7.2 (con't)

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Signalized Route 616 / Route 122	WEEKDAY PM													
	2013 Existing	C (29.1)	B (16.6)	C (24.3)	B (17.5)	B (16.1)	C (20.0)	B (14.8)	C (29.2)	D (53.8)		D (43.0)	D (42.2)	
			C (23.4)			B (18.5)			D (48.1)			D (42.6)		
	2018 Background	C (30.9)	B (16.5)	C (25.0)	B (17.5)	B (16.4)	C (20.0)	B (14.7)	C (30.9)		E (62.5)	D (46.2)	D (45.4)	
			C (23.9)			B (18.6)			E (55.1)			D (45.8)		
	2018 Phase 1	C (34.8)	B (15.0)	B (16.7)	B (11.5)	B (14.6)	B (18.7)	B (13.3)	D (37.0)	F (101.7)		D (52.7)	D (51.7)	
			B (16.3)			B (17.2)			F (86.7)			D (52.2)		
	2023 Background	D (36.3)	B (16.6)	C (25.8)	B (17.3)	B (17.3)	C (21.1)	B (14.9)	C (32.0)		F (89.6)	D (46.8)	D (46.0)	
			C (24.6)			B (19.5)			E (76.2)			D (46.4)		
	2023 Phase 1	D (38.3)	B (16.3)	C (20.3)	B (12.9)	B (16.3)	C (20.9)	B (14.2)	D (35.1)	F (113.4)		D (50.1)	D (49.2)	
			B (19.6)			B (19.2)			F (95.2)			D (49.7)		
	2023 Phase 2	E (59.6)	B (17.0)	C (25.4)	B (14.3)	C (21.9)	C (20.9)	B (13.7)	D (39.2)	F (226.4)		D (52.3)	D (51.3)	
			C (23.7)			C (20.7)			F (173.2)			D (51.9)		
	2029 Background	D (39.8)	B (19.6)	D (41.6)	C (20.3)	C (24.5)	C (27.2)	B (16.8)	C (27.3)	E (77.0)		D (41.4)	D (40.7)	
			D (38.8)			C (25.6)			E (65.4)			D (41.1)		
	2029 Phase 1	D (54.1)	B (16.1)	B (19.2)	B (12.0)	B (16.1)	C (20.6)	B (13.6)	D (40.8)		F (207.1)	E (55.3)	D (54.1)	
			B (18.6)			B (18.9)			F (168.2)			D (54.8)		
	2029 Phase 2	F (80.5)	B (17.2)	C (30.8)	B (18.4)	C (26.7)	C (20.7)	B (13.4)	D (49.6)	F (330.2)		E (63.1)	E (61.6)	
			C (28.7)			C (22.0)			F (251.2)			E (62.4)		

Table 7.2 (con't)

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
	SATURDAY PEAK HOUR													
	2013 Existing	C (30.3)	B (13.3)	C (21.3)	B (14.2)	B (14.4)	B (15.2)	B (12.9)	C (33.7)	E (63.8)		D (49.5)	D (50.0)	
			C (20.6)			B (14.8)			E (56.8)			D (49.7)		
	2018 Background	C (31.2)	B (14.8)	C (26.8)	B (15.7)	B (16.9)	B (17.4)	B (14.3)	C (29.7)	E (58.6)		D (44.7)	D (45.1)	
			C (25.7)			B (17.0)			D (51.8)			D (44.9)		
	2018 Phase 1	C (33.3)	B (12.5)	A (3.6)	A (0.1)	B (11.8)	B (15.6)	B (12.3)	D (40.1)	F (124.1)		E (56.1)	E (56.5)	
			A (3.8)			B (14.5)			F (104.5)			E (56.3)		
	2023 Background	D (37.5)	B (14.4)	C (27.3)	B (15.3)	B (17.8)	B (17.6)	B (14.3)	C (32.0)		F (89.6)	D (47.1)	D (47.3)	
			C (26.1)			B (17.4)			E (76.2)			D (47.2)		
	2023 Phase 1	D (48.4)	B (13.3)	C (26.1)	B (14.0)	B (17.5)	B (16.3)	B (12.6)	D (40.4)		F (159.5)	E (55.8)	E (56.1)	
			C (25.1)			B (16.1)			F (131.7)			E (56.0)		
	2023 Phase 2	E (74.9)	B (14.6)	C (32.3)	B (16.7)	C (25.7)	B (16.6)	B (12.6)	D (42.1)	F (286.7)		E (55.8)	E (56.1)	
			C (29.6)			B (19.2)			F (222.4)			E (56.0)		
	2029 Background	D (46.3)	B (15.1)	C (33.0)	B (16.0)	C (20.2)	B (18.5)	B (14.6)	C (32.7)	F (124.2)		D (47.1)	D (47.3)	
			C (31.4)			B (18.6)			F (102.7)			D (47.2)		
	2029 Phase 1	D (44.9)	B (13.7)	B (11.0)	A (1.8)	B (14.0)	B (18.2)	B (13.6)	D (37.6)		F (173.2)	D (52.2)	D (52.4)	
			B (10.7)			B (16.9)			F (141.4)			D (52.3)		
	2029 Phase 2	F (92.7)	B (15.1)	D (43.7)	C (23.8)	D (36.9)	B (17.3)	B (13.0)	D (53.9)	F (344.7)		E (72.2)	E (72.3)	
			D (40.2)			C (23.1)			F (269.0)			E (72.3)		

Table 7.2 (con't)

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach (Delay In sec/veh)											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Entrance #1 / Route 122	WEEKDAY PM													
	2018 Phase 1	-	-	-		-	-		-	-	B (11.9)		-	
			-			-				B (11.9)			-	
	2023 Phase 1	-	-	-		-	-		-	-	B (12.4)		-	
			-			-				B (12.4)			-	
	2023 Phase 2	-	-	-		-	-		-	-	B (14.2)		-	
			-			-				B (14.2)			-	
	2029 Phase 1	-	-	-		-	-		-	-	B (13.1)		-	
			-			-				B (13.1)			-	
	2029 Phase 2	-	-	-		-	-		-	-	C (15.1)		-	
			-			-				C (15.1)			-	
	SATURDAY PEAK HOUR													
	2018 Phase 1	-	-	-		-	-		-	-	B (13.2)		-	
			-			-				B (13.2)			-	
	2023 Phase 1	-	-	-		-	-		-	-	B (13.9)		-	
			-			-				B (13.9)			-	
	2023 Phase 2	-	-	-		-	-		-	-	C (17.0)		-	
			-			-				C (17.0)			-	
	2029 Phase 1	-	-	-		-	-		-	-	B (14.9)		-	
			-			-				B (14.9)			-	
	2029 Phase 2	-	-	-		-	-		-	-	C (18.4)		-	
			-			-				C (18.4)			-	

7.1 Specific Intersection Analysis

The following subsections discuss the data presented in **Table 7.2**.

7.1.1 Intersection of Parkcrest Drive/Route 122

The intersection of Parkcrest Drive and Route 122 experiences acceptable overall LOS for all scenarios. During the 2018 Phase 1, 2023 Phase 1, 2023 Phase 2, 2029 Phase 1, and 2029 Phase 2 scenarios the intersection is analyzed with a signal and experiences acceptable LOS at all approaches.

7.1.2 Unsignalized Intersection of Village Springs Drive/Route 122

The unsignalized intersection of Village Springs Drive and Route 122 experiences poor LOS at the northbound approach beginning with the 2018 Background PM Weekday scenario. The northbound and southbound minor street approaches experience poor LOS during all of the future conditions.

7.1.3 Signalized Intersection of Route 616 / Route 122

The signalized intersection of Route 616 and Route 122 experiences acceptable overall LOS for all scenarios except the 2023 and 2029 Phase 2 scenarios. The northbound through and right lane experiences significant delays beginning with the Saturday 2013 Existing conditions.

7.1.4 Unsignalized Intersection of Proposed Entrance #1 / Route 122

The proposed right-in/right-out intersection of Entrance #1 and Route 122 experiences acceptable LOS for all approaches in all scenarios.

8.0 Conclusions and Recommendations

Mattern & Craig examined the projected increase in traffic volumes associated with the proposed Westlake Towne Center Phases 1 and 2 developments and the resulting warrants for turn lane and traffic control improvements along Route 122 in the vicinity of the proposed development. Additionally, operational analyses were completed for all analysis conditions.

The projected traffic volumes do not warrant a full-width right turn lane at the eastbound approach to the Parkcrest Drive intersection until the 2023 Phase 2 scenario. That being said, traffic volumes are expected to increase to a level that warrants a full-width right turn lane in a short period of time after 2018. This is confirmed by the need for a full-width turn lane in the 2023 design year. From a practical aspect, it is recommended that the full-width right turn lane be constructed with the initial improvements and signalization of the Parkcrest Drive intersection. This analysis includes a full-width right turn lane in the Synchro model for the eastbound approaches to the Parkcrest Drive and Entrance #1 intersections for the 2018 Phase 1 scenario and all other proposed future scenarios. It is recommended that a full-width right turn lane be implemented with the proposed development that will extend from the Parkcrest Drive intersection to Entrance #1. A full-width right turn lane at the eastbound approach of the proposed Entrance #1 is warranted during the 2018 Phase 1 Saturday peak hour scenario. The storage length of the full-width right turn lane at the eastbound approach to Entrance #1 will be at least 100' and the taper length will extend to the Booker T. Washington National Monument property.

The projected traffic volumes warrant left turn lanes at the Village Springs Drive intersection for both the eastbound and westbound approaches in the 2013 Existing PM Weekday peak hour conditions. Left turn lanes are warranted at the Village Springs Drive intersection for both the eastbound and westbound approaches in the 2018 Background Saturday peak hour conditions. It is recommended that regardless of the proposed development, left turn lanes should be constructed at the eastbound and westbound approaches of the Village Springs Drive intersection. It is recommended that the left turn lanes be 100' long with 100' taper for both approaches based on the maximum queue lengths as reported on the SimTraffic reports.

The projected traffic volumes warrant a left turn lane at the westbound approach of the Parkcrest Drive intersection in the 2018 Phase 1 conditions. It is recommended that a left turn lane at the westbound approach be implemented with the proposed development. The westbound left turn lane should be 300' long with 100' taper. Although a left turn lane is not warranted at the eastbound approach to Parkcrest Drive, it is advisable to include one of minimum length and taper as there will be space due to necessary transition lengths associated with the Route 122 offset alignment required to accommodate for warranted left turn lanes on Route 122. Widening of Route 122 will occur on the south side of Route 122; the eastbound through lanes will become the left turn lanes.

Due to access management restrictions, proposed Entrance #1 is recommended to be a right-in/right-out entrance. Entrance #1 is located approximately 330' centerline to centerline from Parkcrest Drive.

This traffic impact analysis performed a peak hour signal warrant analysis and operational analysis for the unsignalized intersection of Parkcrest Drive and Route 122. The results conclude that a signal is warranted at the Parkcrest Drive intersection with the 2018 Phase 1 development. This signal should be coordinated with the existing signal at the Route 616 intersection.

The existing signalized intersection at Route 616 (Morewood Road) and the proposed signalized intersection at Parkcrest Drive are projected to function in an acceptable manner during all scenarios considered. The unsignalized intersection of Village Springs Drive is projected to experience significant delays under the Phase 1 and Phase 2 development conditions. The delay at this intersection will promote the use of the signalized intersections of Route 616 and Parkcrest Drive as primary entrances for the proposed development.

It is recommended that the connector road between the existing shopping center area and Parkcrest Drive and onto the proposed right-in/right-out entrance be constructed initially such that vehicles may utilize the right-in/right-out entrance and/or Parkcrest Drive to enter and exit the existing shopping center area and mitigate the projected delays at Village Springs Drive. Alternatively, the connector road may be constructed to Parkcrest Drive along with the proposed right turn lane at the eastbound approach to the Parkcrest Drive intersection; the right turn lane and taper should extend to the Booker T. Washington National Monument property.

APPENDIX A

Proposed Development Layout

VICINITY MAP NTS

Phase 2

CARILION
7
FORMER LOTS
7, 8, 9A, 10A, & 11A
21.10 AC

12
1.13 AC

9
1.11 AC

ASSISTED LIVING
11
9.45 AC

11-A1-A
19.13 AC

10-A
2.30 AC

4A
1.54 AC

4
1.66 AC

3A
MULLINS AUTOMOTIVE
6
1.13 AC

WATER TOWER
0.45 AC

PROFESSIONAL PARK
13
5.18 AC

SWM

UPSCALE RESIDENTIAL
18.4 AC

CLUBHOUSE COMMON AREA
2.1 AC

SANITARY SEWER PUMP STATION

HIGHER DENSITY MULTI-FAMILY

1A
FERGUSON
BUILDER'S SUPPLY
1
4.01 AC

4 SQUARE
2
3.02 AC

KROGER
15
5.12 AC

CINEMA
15A-1
5.99 AC

20B
2.34 AC

20A

SWM

BANK
16
0.89 AC

FUELING
17
1.45 AC

WENDY'S
18A
1.03 AC

0.90 AC

1.06 AC

1.7 AC

1.7 AC

MAIN PROJECT IDENTIFICATION SIGN

ROUTE 122 BOOKER T. WASHINGTON HIGHWAY

ROUTE 616

WESTLAKE ROAD

BUILDERS RIDGE DRIVE

VILLAGE SPRING DR

PARKCREST DR

RETIREMENT DRIVE

CAREFREE COURT

SOUTHAMPTON DRIVE

PROFESSIONAL DRIVE

SIDEWALK SYSTEM THROUGHOUT

PEDESTRIAN CROSSWALK (TYP.)

Retail

Quality Restaurant

Fast Food Restaurant

Phase 1

Phase 2

GRAPHIC SCALE

Appendix A
Proposed Development Layout

CJMW ARCHITECTURE

papit

SCHEMATIC MASTER PLAN
FOR
WESTLAKE TOWNE CENTER
PREPARED FOR
WILLARD CONSTRUCTION
OF SMITH MOUNTAIN LAKE, LLC
GILLS CREEK MAGISTERIAL DISTRICT
FRANKLIN COUNTY, VIRGINIA

LUMSDEN ASSOCIATES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
ROANOKE, VIRGINIA

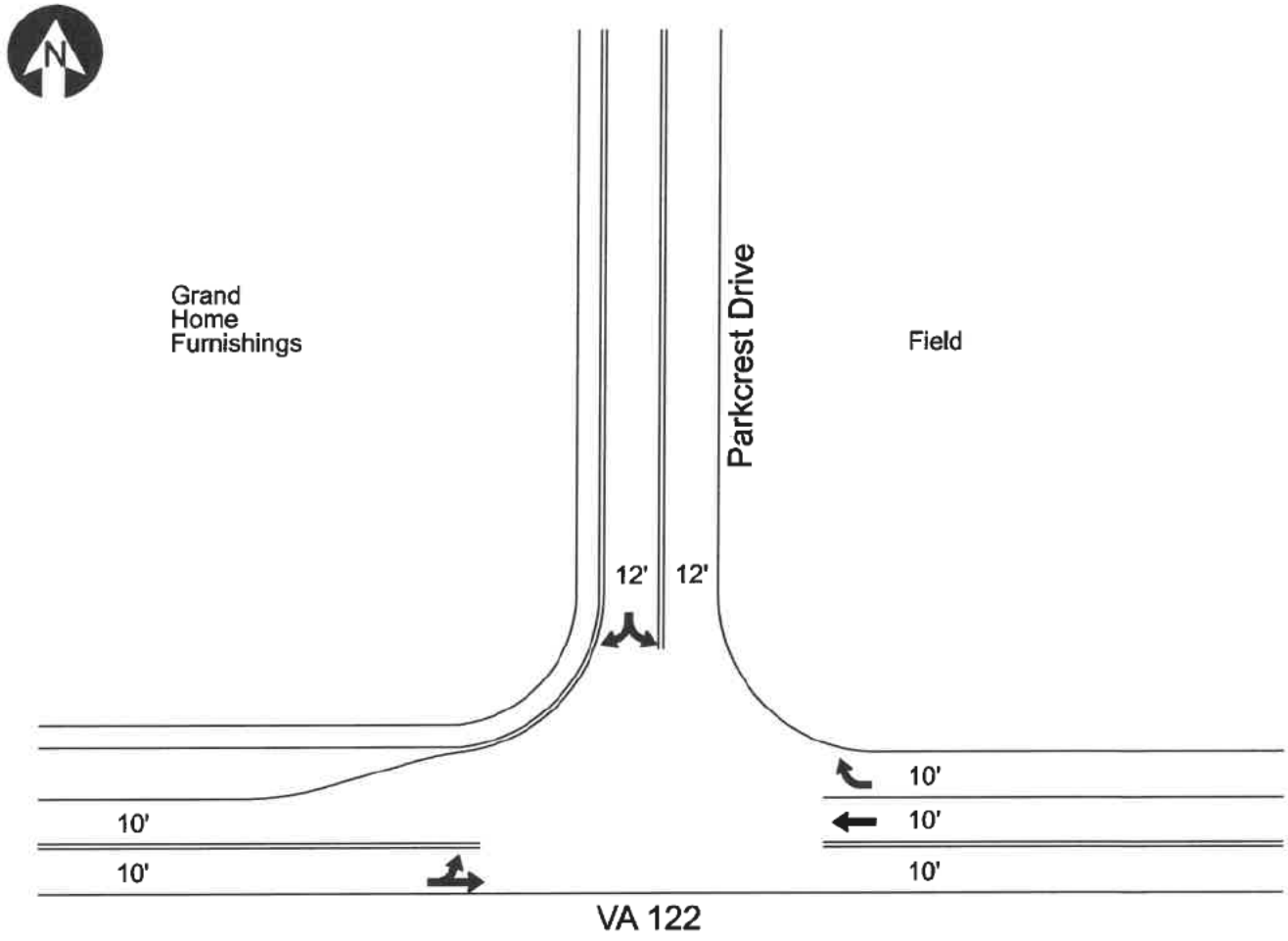
1604 HEMBRIDGE AVENUE, SW
P.O. BOX 20660
ROANOKE, VIRGINIA 24018

PHONE: (540) 774-4477
FAX: (540) 772-9456
E-MAIL: MAIL@LUMSDENPC.COM

DATE: July 2, 2013
COMM NO.: 2013.107
SCALE: 1" = 100'
SHEET 1 OF 1

APPENDIX B

Turning Movement Counts



The Traffic Group

VA 122 at Parkcrest Drive

FIELD WORK BY: *C. Hinkey*
DRAWN BY: *C. Pryseski*
DATE: *May 23, 2013*
SCALE: *N/A*
JOB NO.: *2012-0503*
DGN NAME: *VA 122 at Parkcrest*
LOCATION: *VA*
SHEET NO.: *1* OF *1*

PASSENGER VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Parkcrest Drive
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

TIME	TRAFFIC FROM NORTH on: Parkcrest Drive					TRAFFIC FROM SOUTH on:					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	0		0	0	0					0	0	91		0	91		58	0	0	58	149
7:15-7:30	1		0	0	1					0	0	94		0	94		66	0	0	66	161
7:30-7:45	0		0	0	0					0	1	82		0	83		65	0	0	65	148
7:45-8:00	0		0	0	0					0	0	101		0	101		88	1	0	89	190
8:00-8:15	0		0	0	0					0	0	71		0	71		85	0	0	85	156
8:15-8:30	0		1	0	1					0	1	67		0	68		101	0	1	102	171
8:30-8:45	0		0	0	0					0	1	49		0	50		76	2	0	78	128
8:45-9:00	0		0	0	0					0	0	67		0	67		105	3	0	108	175
9:00-9:15	0		0	0	0					0	0	57		0	57		88	0	0	88	145
9:15-9:30	0		0	0	0					0	1	67		0	68		70	1	0	71	139
9:30-9:45	1		1	0	2					0	2	73		0	75		81	0	0	81	158
9:45-10:00	0		1	0	1					0	0	68		0	68		67	1	0	68	137
3 Hr Totals	2	0	3	0	5	0	0	0	0	0	6	887	0	0	893	0	950	8	1	959	1857
1 Hr Totals																					
7:00-8:00	1	0	0	0	1	0	0	0	0	0	1	368	0	0	369	0	277	1	0	278	648
7:15-8:15	1	0	0	0	1	0	0	0	0	0	1	348	0	0	349	0	304	1	0	305	655
7:30-8:30	0	0	1	0	1	0	0	0	0	0	2	321	0	0	323	0	339	1	1	341	665
7:45-8:45	0	0	1	0	1	0	0	0	0	0	2	288	0	0	290	0	350	3	1	354	645
8:00-9:00	0	0	1	0	1	0	0	0	0	0	2	254	0	0	256	0	367	5	1	373	630
8:15-9:15	0	0	1	0	1	0	0	0	0	0	2	240	0	0	242	0	370	5	1	376	619
8:30-9:30	0	0	0	0	0	0	0	0	0	0	2	240	0	0	242	0	339	6	0	345	587
8:45-9:45	1	0	1	0	2	0	0	0	0	0	3	264	0	0	267	0	344	4	0	348	617
9:00-10:00	1	0	2	0	3	0	0	0	0	0	3	265	0	0	268	0	306	2	0	308	579
PEAK HOUR																					
7:30-8:30	0	0	1	0	1	0	0	0	0	0	2	321	0	0	323	0	339	1	1	341	665
PM																					
4:00-4:15	1		0	0	1					0	0	85		0	85		119	0	0	119	205
4:15-4:30	2		1	0	3					0	2	109		0	111		109	1	0	110	224
4:30-4:45	0		0	0	0					0	0	112		0	112		111	0	0	111	223
4:45-5:00	1		1	0	2					0	1	99		0	100		109	1	0	110	212
5:00-5:15	2		1	0	3					0	2	148		0	150		110	0	0	110	263
5:15-5:30	1		0	0	1					0	1	109		0	110		98	1	0	99	210
5:30-5:45	0		1	0	1					0	0	96		0	96		104	1	0	105	202
5:45-6:00	0		0	0	0					0	0	82		0	82		102	0	0	102	184
6:00-6:15	1		0	0	1					0	1	88		0	89		93	1	0	94	184
6:15-6:30	2		1	0	3					0	0	95		0	95		108	0	0	108	206
6:30-6:45	0		0	0	0					0	0	98		0	98		73	0	0	73	171
6:45-7:00	0		0	0	0					0	1	59		0	60		75	1	0	76	136
3 Hr Totals	10	0	5	0	15	0	0	0	0	0	8	1180	0	0	1188	0	1211	6	0	1217	2420
1 Hr Totals																					
4:00-5:00	4	0	2	0	6	0	0	0	0	0	3	405	0	0	408	0	448	2	0	450	864
4:15-5:15	5	0	3	0	8	0	0	0	0	0	5	468	0	0	473	0	439	2	0	441	922
4:30-5:30	4	0	2	0	6	0	0	0	0	0	4	468	0	0	472	0	428	2	0	430	908
4:45-5:45	4	0	3	0	7	0	0	0	0	0	4	452	0	0	456	0	421	3	0	424	887
5:00-6:00	3	0	2	0	5	0	0	0	0	0	3	435	0	0	438	0	414	2	0	416	859
5:15-6:15	2	0	1	0	3	0	0	0	0	0	2	375	0	0	377	0	397	3	0	400	780
5:30-6:30	3	0	2	0	5	0	0	0	0	0	1	361	0	0	362	0	407	2	0	409	776
5:45-6:45	3	0	1	0	4	0	0	0	0	0	1	363	0	0	364	0	376	1	0	377	745
6:00-7:00	3	0	1	0	4	0	0	0	0	0	2	340	0	0	342	0	349	2	0	351	697
PEAK HOUR																					
4:15-5:15	5	0	3	0	8	0	0	0	0	0	5	468	0	0	473	0	439	2	0	441	922

HEAVY TRUCK TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Parkcrest Drive
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

TIME	TRAFFIC FROM NORTH on: Parkcrest Drive					TRAFFIC FROM SOUTH on: 0					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	0		0	0	0					0	0	3		0	3		3	0	0	3	6
7:15-7:30	0		0	0	0					0	0	6		0	6		3	0	0	3	9
7:30-7:45	0		0	0	0					0	0	4		0	4		4	0	0	4	8
7:45-8:00	0		0	0	0					0	0	4		0	4		1	0	0	1	5
8:00-8:15	0		0	0	0					0	0	9		0	9		5	0	0	5	14
8:15-8:30	0		0	0	0					0	0	1		0	1		3	0	0	3	4
8:30-8:45	0		0	0	0					0	0	3		0	3		5	0	0	5	8
8:45-9:00	0		0	0	0					0	0	2		0	2		7	0	0	7	9
9:00-9:15	0		0	0	0					0	0	6		0	6		5	0	0	5	11
9:15-9:30	0		0	0	0					0	0	2		0	2		10	0	0	10	12
9:30-9:45	0		0	0	0					0	0	5		0	5		6	0	0	6	11
9:45-10:00	0		0	0	0					0	0	2		0	2		6	0	0	6	8
3 Hr Totals	0	0	0	0	0	0	0	0	0	0	0	47	0	0	47	0	58	0	0	58	105
1 Hr Totals																					
7:00-8:00	0	0	0	0	0	0	0	0	0	0	0	17	0	0	17	0	11	0	0	11	28
7:15-8:15	0	0	0	0	0	0	0	0	0	0	0	23	0	0	23	0	13	0	0	13	36
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	18	0	0	18	0	13	0	0	13	31
7:45-8:45	0	0	0	0	0	0	0	0	0	0	0	17	0	0	17	0	14	0	0	14	31
8:00-9:00	0	0	0	0	0	0	0	0	0	0	0	15	0	0	15	0	20	0	0	20	35
8:15-9:15	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	20	0	0	20	32
8:30-9:30	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	0	27	0	0	27	40
8:45-9:45	0	0	0	0	0	0	0	0	0	0	0	15	0	0	15	0	28	0	0	28	43
9:00-10:00	0	0	0	0	0	0	0	0	0	0	0	15	0	0	15	0	27	0	0	27	42
PEAK HOUR																					
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	18	0	0	18	0	13	0	0	13	31
PM																					
4:00-4:15					0					0	0	5		0	5		4	0	0	4	9
4:15-4:30					0					0	0	5		0	5		3	0	0	3	8
4:30-4:45					0					0	0	3		0	3		3	0	0	3	6
4:45-5:00					0					0	0	5		0	5		2	0	0	2	7
5:00-5:15					0					0	0	0		0	0		4	0	0	4	4
5:15-5:30					0					0	0	4		0	4		0	0	0	0	4
5:30-5:45					0					0	0	4		0	4		2	0	0	2	6
5:45-6:00					0					0	0	1		0	1		1	0	0	1	2
6:00-6:15					0					0	0	2		0	2		0	0	0	0	2
6:15-6:30					0					0	0	1		0	1		2	0	0	2	3
6:30-6:45					0					0	0	1		0	1		2	0	0	2	3
6:45-7:00					0					0	0	2		0	2		1	0	0	1	3
3 Hr Totals	0	0	0	0	0	0	0	0	0	0	0	33	0	0	33	0	24	0	0	24	57
1 Hr Totals																					
4:00-5:00	0	0	0	0	0	0	0	0	0	0	0	18	0	0	18	0	12	0	0	12	30
4:15-5:15	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	0	12	0	0	12	25
4:30-5:30	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	9	0	0	9	21
4:45-5:45	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	0	8	0	0	8	21
5:00-6:00	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	7	0	0	7	16
5:15-6:15	0	0	0	0	0	0	0	0	0	0	0	11	0	0	11	0	3	0	0	3	14
5:30-6:30	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8	0	5	0	0	5	13
5:45-6:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	5	0	0	5	10
6:00-7:00	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	5	0	0	5	11
PEAK HOUR																					
4:30-5:30	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	9	0	0	9	21

VEHICLE TURNING MOVEMENT COUNT - SUMMARY

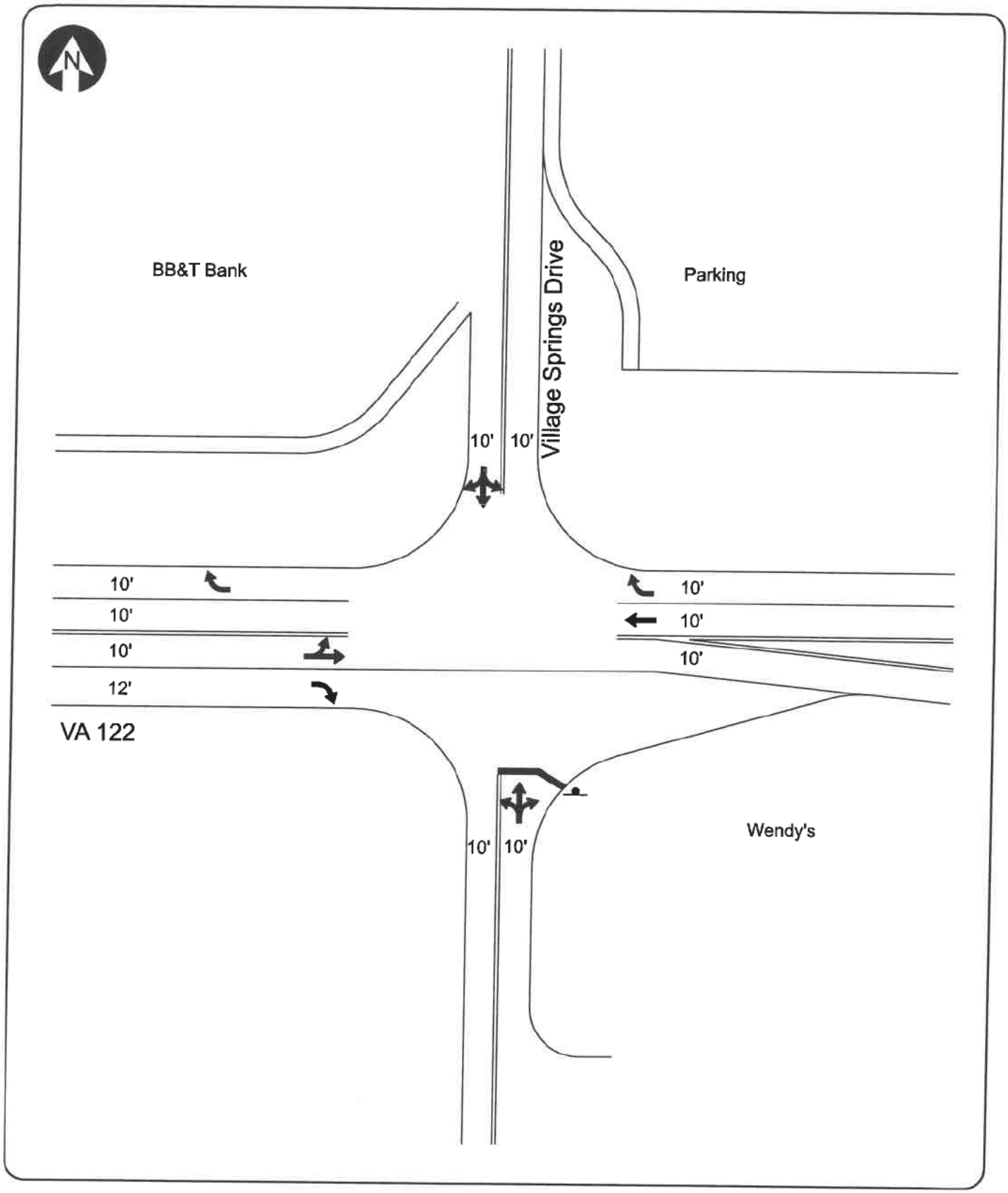
Intersection of: VA 122 (Booker T. Washington Hwy)
and: Parkcrest Drive
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

The Traffic Group

TIME	TRAFFIC FROM NORTH on: Parkcrest Drive					TRAFFIC FROM SOUTH on: 0					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	94	0	0	94	0	61	0	0	61	155
7:15-7:30	1	0	0	0	1	0	0	0	0	0	0	100	0	0	100	0	69	0	0	69	170
7:30-7:45	0	0	0	0	0	0	0	0	0	0	1	86	0	0	87	0	69	0	0	69	156
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	105	0	0	105	0	89	1	0	90	195
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	80	0	0	80	0	90	0	0	90	170
8:15-8:30	0	0	1	0	1	0	0	0	0	0	1	68	0	0	69	0	104	0	1	105	175
8:30-8:45	0	0	0	0	0	0	0	0	0	0	1	52	0	0	53	0	81	2	0	83	136
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	69	0	0	69	0	112	3	0	115	184
9:00-9:15	0	0	0	0	0	0	0	0	0	0	0	63	0	0	63	0	93	0	0	93	156
9:15-9:30	0	0	0	0	0	0	0	0	0	0	1	69	0	0	70	0	80	1	0	81	151
9:30-9:45	1	0	1	0	2	0	0	0	0	0	2	78	0	0	80	0	87	0	0	87	169
9:45-10:00	0	0	1	0	1	0	0	0	0	0	0	70	0	0	70	0	73	1	0	74	145
3 Hr Totals	2	0	3	0	5	0	0	0	0	0	6	934	0	0	940	0	1008	8	1	1017	1962
1 Hr Totals																					
7:00-8:00	1	0	0	0	1	0	0	0	0	0	1	385	0	0	386	0	288	1	0	289	676
7:15-8:15	1	0	0	0	1	0	0	0	0	0	1	371	0	0	372	0	317	1	0	318	691
7:30-8:30	0	0	1	0	1	0	0	0	0	0	2	339	0	0	341	0	352	1	1	354	696
7:45-8:45	0	0	1	0	1	0	0	0	0	0	2	305	0	0	307	0	364	3	1	368	676
8:00-9:00	0	0	1	0	1	0	0	0	0	0	2	269	0	0	271	0	387	5	1	393	665
8:15-9:15	0	0	1	0	1	0	0	0	0	0	2	252	0	0	254	0	390	5	1	396	651
8:30-9:30	0	0	0	0	0	0	0	0	0	0	2	253	0	0	255	0	386	6	0	372	627
8:45-9:45	1	0	1	0	2	0	0	0	0	0	3	279	0	0	282	0	372	4	0	376	660
9:00-10:00	1	0	2	0	3	0	0	0	0	0	3	280	0	0	283	0	333	2	0	335	621
PEAK HOUR																					
7:30-8:30	0	0	1	0	1	0	0	0	0	0	2	339	0	0	341	0	352	1	1	354	696
PM																					
4:00-4:15	1	0	0	0	1	0	0	0	0	0	0	90	0	0	90	0	123	0	0	123	214
4:15-4:30	2	0	1	0	3	0	0	0	0	0	2	114	0	0	116	0	112	1	0	113	232
4:30-4:45	0	0	0	0	0	0	0	0	0	0	0	115	0	0	115	0	114	0	0	114	229
4:45-5:00	1	0	1	0	2	0	0	0	0	0	1	104	0	0	105	0	111	1	0	112	219
5:00-5:15	2	0	1	0	3	0	0	0	0	0	2	148	0	0	150	0	114	0	0	114	267
5:15-5:30	1	0	0	0	1	0	0	0	0	0	1	113	0	0	114	0	98	1	0	99	214
5:30-5:45	0	0	1	0	1	0	0	0	0	0	0	100	0	0	100	0	106	1	0	107	208
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	83	0	0	83	0	103	0	0	103	186
6:00-6:15	1	0	0	0	1	0	0	0	0	0	1	90	0	0	91	0	93	1	0	94	186
6:15-6:30	2	0	1	0	3	0	0	0	0	0	0	96	0	0	96	0	110	0	0	110	209
6:30-6:45	0	0	0	0	0	0	0	0	0	0	0	99	0	0	99	0	75	0	0	75	174
6:45-7:00	0	0	0	0	0	0	0	0	0	0	1	61	0	0	62	0	76	1	0	77	139
3 Hr Totals	10	0	5	0	15	0	0	0	0	0	8	1213	0	0	1221	0	1235	6	0	1241	2477
1 Hr Totals																					
4:00-5:00	4	0	2	0	6	0	0	0	0	0	3	423	0	0	426	0	460	2	0	462	894
4:15-5:15	5	0	3	0	8	0	0	0	0	0	5	481	0	0	486	0	451	2	0	453	947
4:30-5:30	4	0	2	0	6	0	0	0	0	0	4	480	0	0	484	0	437	2	0	439	929
4:45-5:45	4	0	3	0	7	0	0	0	0	0	4	465	0	0	469	0	429	3	0	432	908
5:00-6:00	3	0	2	0	5	0	0	0	0	0	3	444	0	0	447	0	421	2	0	423	875
5:15-6:15	2	0	1	0	3	0	0	0	0	0	2	386	0	0	388	0	400	3	0	403	794
5:30-6:30	3	0	2	0	5	0	0	0	0	0	1	369	0	0	370	0	412	2	0	414	789
5:45-6:45	3	0	1	0	4	0	0	0	0	0	1	368	0	0	369	0	381	1	0	382	755
6:00-7:00	3	0	1	0	4	0	0	0	0	0	2	346	0	0	348	0	354	2	0	356	708
PEAK HOUR																					
4:15-5:15	5	0	3	0	8	0	0	0	0	0	5	481	0	0	486	0	451	2	0	453	947



The Traffic Group

VA 122 at Village Springs Drive

FIELD WORK BY: C. Hinkey
JOB NO.: 2012-0503
DRAWN BY: C. Pryseski
DGN NAME: VA 122 at Village Springs
DATE: May 23, 2013
LOCATION: VA
SCALE: N/A
SHEET NO.: 1 OF 1

PASSENGER VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Village Springs Drive
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

The Traffic Group

TIME	TRAFFIC FROM NORTH on: Village Springs Drive					TRAFFIC FROM SOUTH on: Village Springs Drive					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	2	1	0	0	3	0	1	9	0	10	0	77	1	0	78	6	47	4	0	57	148
7:15-7:30	3	0	0	0	3	0	0	10	0	10	1	83	1	0	85	3	60	0	0	63	161
7:30-7:45	3	0	1	0	4	0	1	8	0	9	3	72	0	0	75	8	57	2	0	67	155
7:45-8:00	6	0	0	0	6	1	0	8	0	9	1	90	1	0	92	8	76	2	0	86	193
8:00-8:15	3	1	2	0	6	5	0	6	0	11	5	64	3	0	72	13	68	4	0	85	174
8:15-8:30	1	1	3	0	5	1	0	7	0	8	3	61	1	0	65	18	83	3	0	104	182
8:30-8:45	1	0	2	0	3	1	0	6	0	7	2	48	5	0	55	16	61	2	0	79	144
8:45-9:00	3	2	2	0	7	3	0	6	0	9	5	55	6	0	66	10	90	4	0	104	186
9:00-9:15	2	0	3	0	5	7	2	5	0	14	5	48	4	0	57	7	76	4	0	87	163
9:15-9:30	4	3	4	0	11	3	2	9	0	14	5	52	6	0	63	11	58	2	0	71	159
9:30-9:45	2	3	2	0	7	2	2	11	0	15	3	57	1	0	61	11	65	4	0	80	163
9:45-10:00	1	2	0	0	3	2	0	4	0	6	2	51	8	0	61	11	55	1	0	67	137
3 Hr Totals	31	13	19	0	63	25	8	89	0	122	35	756	37	0	830	122	796	32	0	950	1965
1 Hr Totals																					
7:00-8:00	14	1	1	0	16	1	2	35	0	38	5	322	3	0	330	25	240	8	0	273	657
7:15-8:15	15	1	3	0	19	6	1	32	0	39	10	309	5	0	324	32	261	8	0	301	683
7:30-8:30	13	2	6	0	21	7	1	29	0	37	12	287	5	0	304	47	284	11	0	342	704
7:45-8:45	11	2	7	0	20	8	0	27	0	35	11	263	10	0	284	55	268	11	0	354	693
8:00-9:00	8	4	9	0	21	10	0	25	0	35	15	228	15	0	258	57	302	13	0	372	686
8:15-9:15	7	3	10	0	20	12	2	24	0	38	15	212	16	0	243	51	310	13	0	374	675
8:30-9:30	10	5	11	0	26	14	4	26	0	44	17	203	21	0	241	44	285	12	0	341	652
8:45-9:45	11	8	11	0	30	15	6	31	0	52	18	212	17	0	247	39	289	14	0	342	671
9:00-10:00	9	8	9	0	26	14	6	29	0	49	15	208	19	0	242	40	254	11	0	305	622
PEAK HOUR																					
7:30-8:30	13	2	6	0	21	7	1	29	0	37	12	287	5	0	304	47	284	11	0	342	704
PM																					
4:00-4:15	3	3	2	0	8	3	4	11	0	18	5	70	4	0	79	30	91	1	0	122	227
4:15-4:30	4	6	1	0	11	11	2	15	0	28	5	92	13	0	110	15	95	1	0	111	260
4:30-4:45	1	3	3	0	7	3	3	25	0	31	7	92	6	0	105	24	77	9	0	110	253
4:45-5:00	6	3	2	0	11	3	1	18	0	22	2	75	5	0	82	25	85	3	0	113	228
5:00-5:15	5	1	1	0	7	8	2	25	0	35	4	117	3	0	124	30	79	3	0	112	278
5:15-5:30	0	1	8	0	9	5	1	32	0	38	2	79	10	0	91	16	77	6	0	99	237
5:30-5:45	3	2	1	0	6	9	1	17	0	27	6	77	10	0	93	27	68	7	0	102	228
5:45-6:00	2	1	3	0	6	5	0	21	0	26	3	58	2	0	63	23	74	7	0	104	199
6:00-6:15	1	0	1	0	2	9	1	14	0	24	1	77	9	0	87	19	67	5	0	91	204
6:15-6:30	4	2	1	0	7	7	1	14	0	22	1	71	7	0	79	34	69	3	0	106	214
6:30-6:45	2	0	2	0	4	6	0	29	0	35	0	72	8	0	80	24	46	5	0	75	194
6:45-7:00	1	0	2	0	3	7	2	19	0	28	1	39	8	0	48	19	56	1	0	76	155
3 Hr Totals	32	22	27	0	81	76	18	240	0	334	37	919	85	0	1041	286	884	51	0	1221	2677
1 Hr Totals																					
4:00-5:00	14	15	8	0	37	20	10	69	0	99	19	329	28	0	376	94	348	14	0	456	968
4:15-5:15	16	13	7	0	36	25	8	83	0	116	18	376	27	0	421	94	336	16	0	446	1019
4:30-5:30	12	8	14	0	34	19	7	100	0	126	15	363	24	0	402	95	318	21	0	434	996
4:45-5:45	14	7	12	0	33	25	5	92	0	122	14	348	28	0	390	98	309	19	0	426	971
5:00-6:00	10	5	13	0	28	27	4	95	0	126	15	331	25	0	371	96	298	23	0	417	942
5:15-6:15	6	4	13	0	23	28	3	84	0	115	12	291	31	0	334	85	286	25	0	396	868
5:30-6:30	10	5	6	0	21	30	3	66	0	99	11	263	28	0	322	103	278	22	0	403	845
5:45-6:45	9	3	7	0	19	27	2	78	0	107	5	278	26	0	309	100	256	20	0	376	811
6:00-7:00	8	2	6	0	16	29	4	76	0	109	3	259	32	0	294	96	238	14	0	348	767
PEAK HOUR																					
4:15-5:15	16	13	7	0	36	25	8	83	0	116	18	376	27	0	421	94	336	16	0	446	1019

HEAVY TRUCK TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Village Springs Drive
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

The Traffic Group

TIME	TRAFFIC FROM NORTH on: Village Springs Drive					TRAFFIC FROM SOUTH on: Village Springs Drive					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	2	5	0	0	7	10
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	6	0	0	6	12
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	5	0	0	5	10
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	1	2	0	0	3	7
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	5	1	0	6	15
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	2	0	0	3	6
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	5	0	0	5	9
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	2	7	0	0	9	12
9:00-9:15	0	0	0	0	0	0	0	1	0	1	0	7	0	0	7	0	5	0	0	5	13
9:15-9:30	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	10	0	0	10	13
9:30-9:45	0	0	0	0	0	0	0	1	0	1	0	6	0	0	6	0	8	0	0	8	15
9:45-10:00	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	1	6	0	0	7	12
3 Hr Totals	1	0	0	0	1	0	0	2	0	2	0	56	1	0	57	7	66	1	0	74	134
1 Hr Totals																					
7:00-8:00	1	0	0	0	1	0	0	0	0	0	0	17	0	0	17	3	18	0	0	21	39
7:15-8:15	0	0	0	0	0	0	0	0	0	0	0	24	0	0	24	1	18	1	0	20	44
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	21	0	0	21	2	14	1	0	17	38
7:45-8:45	0	0	0	0	0	0	0	0	0	0	0	20	0	0	20	2	14	1	0	17	37
8:00-9:00	0	0	0	0	0	0	0	0	0	0	0	18	1	0	19	3	19	1	0	23	42
8:15-9:15	0	0	0	0	0	0	0	1	0	1	0	16	1	0	17	3	19	0	0	22	40
8:30-9:30	0	0	0	0	0	0	0	1	0	1	0	16	1	0	17	2	27	0	0	29	47
8:45-9:45	0	0	0	0	0	0	0	2	0	2	0	18	1	0	19	2	30	0	0	32	53
9:00-10:00	0	0	0	0	0	0	0	2	0	2	0	21	0	0	21	1	29	0	0	30	53
PEAK HOUR																					
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	21	0	0	21	2	14	1	0	17	38
PM																					
4:00-4:15	1	0	0	0	1	0	1	0	0	1	0	5	0	0	5	0	3	1	0	4	11
4:15-4:30	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	3	0	0	3	7
4:30-4:45	0	0	0	0	0	0	0	0	0	0	0	3	1	0	4	0	3	0	0	3	7
4:45-5:00	0	0	0	0	0	0	0	2	0	2	0	3	0	0	3	0	2	0	0	2	7
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	0	3	4
5:15-5:30	0	0	0	0	0	2	0	0	0	2	0	4	1	0	5	0	1	0	0	1	8
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	3	0	0	3	8
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
6:00-6:15	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
6:15-6:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	0	3	4
6:30-6:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	2	3
6:45-7:00	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	4
3 Hr Totals	1	0	0	0	1	2	1	2	0	5	0	33	2	0	35	1	24	1	0	26	67
1 Hr Totals																					
4:00-5:00	1	0	0	0	1	0	1	2	0	3	0	15	1	0	16	0	11	1	0	12	32
4:15-5:15	0	0	0	0	0	0	0	2	0	2	0	11	1	0	12	0	11	0	0	11	25
4:30-5:30	0	0	0	0	0	2	0	2	0	4	0	11	2	0	13	0	9	0	0	9	26
4:45-5:45	0	0	0	0	0	2	0	2	0	4	0	13	1	0	14	0	9	0	0	9	27
5:00-6:00	0	0	0	0	0	2	0	0	0	2	0	11	1	0	12	0	8	0	0	8	22
5:15-6:15	0	0	0	0	0	2	0	0	0	2	0	12	1	0	13	0	5	0	0	5	20
5:30-6:30	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	7	0	0	7	16
5:45-6:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	1	5	0	0	6	11
6:00-7:00	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	1	5	0	0	6	13
PEAK HOUR																					
4:15-5:15	0	0	0	0	0	0	0	2	0	2	0	11	1	0	12	0	11	0	0	11	25

VEHICLE TURNING MOVEMENT COUNT - SUMMARY

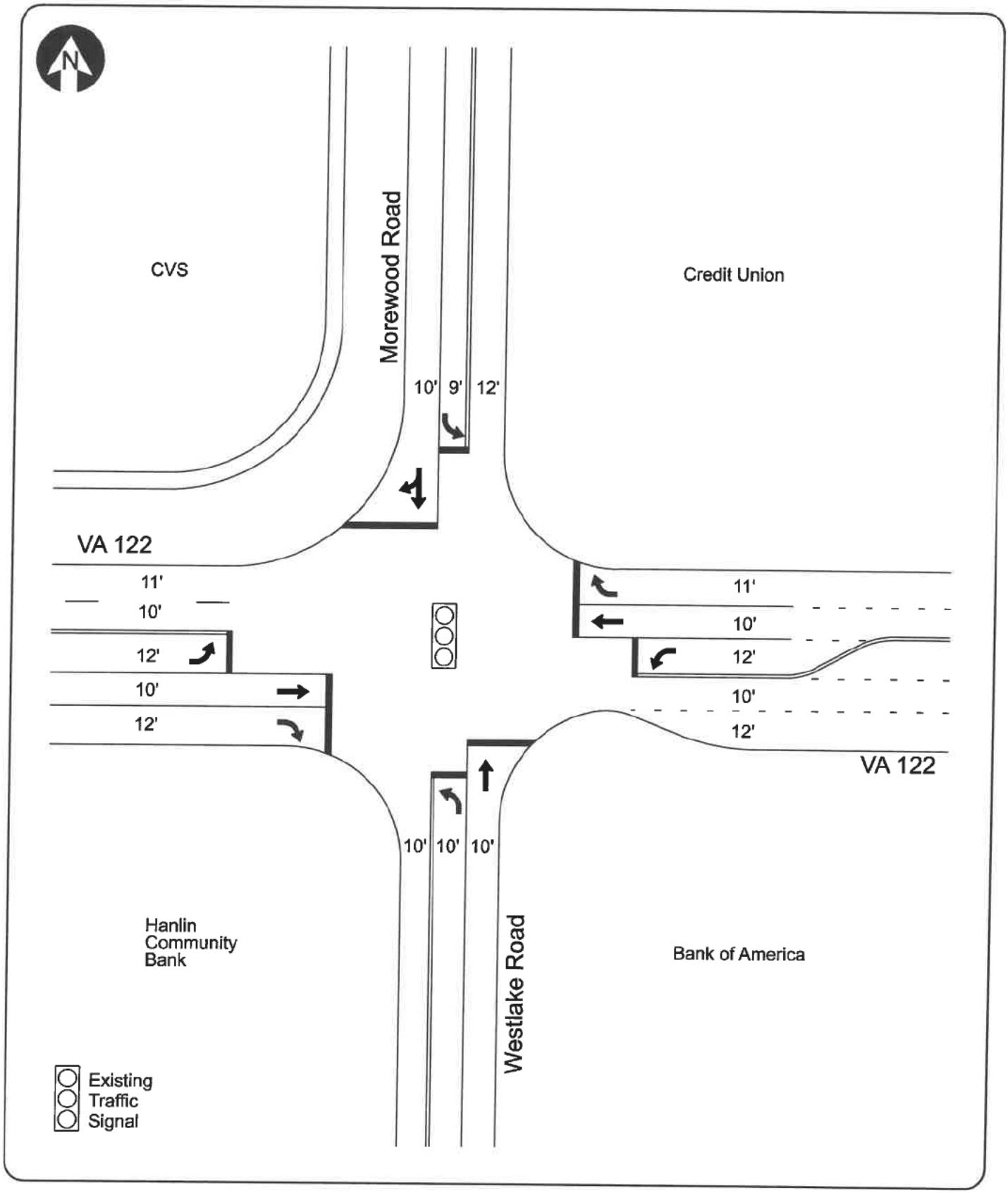
Intersection of: VA 122 (Booker T. Washington Hwy)
and: Village Springs Drive
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

The Traffic Group

TIME	TRAFFIC FROM NORTH on: Village Springs Drive					TRAFFIC FROM SOUTH on: Village Springs Drive					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	3	1	0	0	4	0	1	9	0	10	0	79	1	0	80	8	52	4	0	64	158
7:15-7:30	3	0	0	0	3	0	0	10	0	10	1	89	1	0	91	3	66	0	0	69	173
7:30-7:45	3	0	1	0	4	0	1	8	0	9	3	77	0	0	80	8	62	2	0	72	165
7:45-8:00	6	0	0	0	6	1	0	8	0	9	1	94	1	0	96	9	78	2	0	89	200
8:00-8:15	3	1	2	0	6	5	0	6	0	11	5	73	3	0	81	13	73	5	0	91	189
8:15-8:30	1	1	3	0	5	1	0	7	0	8	3	64	1	0	68	19	85	3	0	107	188
8:30-8:45	1	0	2	0	3	1	0	6	0	7	2	52	5	0	59	16	66	2	0	84	153
8:45-9:00	3	2	2	0	7	3	0	6	0	9	5	57	7	0	69	12	97	4	0	113	198
9:00-9:15	2	0	3	0	5	7	2	6	0	15	5	55	4	0	64	7	81	4	0	92	176
9:15-9:30	4	3	4	0	11	3	2	9	0	14	5	55	6	0	66	11	68	2	0	81	172
9:30-9:45	2	3	2	0	7	2	2	12	0	16	3	63	1	0	67	11	73	4	0	88	176
9:45-10:00	1	2	0	0	3	2	0	4	0	6	2	56	8	0	66	12	61	1	0	74	149
3 Hr Totals	32	13	19	0	64	25	8	91	0	124	35	814	38	0	887	129	862	33	0	1024	2099
1 Hr Totals																					
7:00-8:00	15	1	1	0	17	1	2	35	0	38	5	339	3	0	347	28	258	8	0	294	696
7:15-8:15	15	1	3	0	19	6	1	32	0	39	10	333	5	0	348	33	279	9	0	321	727
7:30-8:30	13	2	6	0	21	7	1	29	0	37	12	308	5	0	325	49	298	12	0	359	742
7:45-8:45	11	2	7	0	20	8	0	27	0	35	11	283	10	0	304	57	302	12	0	371	730
8:00-9:00	8	4	9	0	21	10	0	25	0	35	15	246	16	0	277	60	321	14	0	395	728
8:15-9:15	7	3	10	0	20	12	2	25	0	39	15	228	17	0	260	54	329	13	0	396	715
8:30-9:30	10	5	11	0	26	14	4	27	0	45	17	219	22	0	258	46	312	12	0	370	699
8:45-9:45	11	8	11	0	30	15	6	33	0	54	18	230	18	0	266	41	319	14	0	374	724
9:00-10:00	9	8	9	0	26	14	6	31	0	51	15	229	19	0	263	41	283	11	0	335	675
PEAK HOUR																					
7:30-8:30	13	2	6	0	21	7	1	29	0	37	12	308	5	0	325	49	298	12	0	359	742
PM																					
4:00-4:15	4	3	2	0	9	3	5	11	0	19	5	75	4	0	84	30	94	2	0	126	238
4:15-4:30	4	6	1	0	11	11	2	15	0	28	5	96	13	0	114	15	98	1	0	114	267
4:30-4:45	1	3	3	0	7	3	3	25	0	31	7	95	7	0	109	24	80	9	0	113	260
4:45-5:00	6	3	2	0	11	3	1	20	0	24	2	78	5	0	85	25	87	3	0	115	235
5:00-5:15	5	1	1	0	7	8	2	25	0	35	4	118	3	0	125	30	82	3	0	115	282
5:15-5:30	0	1	8	0	9	7	1	32	0	40	2	83	11	0	96	16	78	6	0	100	245
5:30-5:45	3	2	1	0	6	9	1	17	0	27	6	82	10	0	98	27	71	7	0	105	236
5:45-6:00	2	1	3	0	6	5	0	21	0	26	3	59	2	0	64	23	75	7	0	105	201
6:00-6:15	1	0	1	0	2	9	1	14	0	24	1	79	9	0	89	19	67	5	0	91	206
6:15-6:30	4	2	1	0	7	7	1	14	0	22	1	72	7	0	80	34	72	3	0	109	218
6:30-6:45	2	0	2	0	4	6	0	29	0	35	0	73	8	0	81	25	47	5	0	77	197
6:45-7:00	1	0	2	0	3	7	2	19	0	28	1	42	8	0	51	19	57	1	0	77	159
3 Hr Totals	33	22	27	0	82	78	19	242	0	339	37	952	87	0	1076	287	908	52	0	1247	2744
1 Hr Totals																					
4:00-5:00	15	15	8	0	38	20	11	71	0	102	19	344	29	0	392	94	359	15	0	468	1000
4:15-5:15	16	13	7	0	36	25	8	85	0	118	18	387	28	0	433	94	347	16	0	457	1044
4:30-5:30	12	8	14	0	34	21	7	102	0	130	15	374	26	0	415	95	327	21	0	443	1022
4:45-5:45	14	7	12	0	33	27	5	94	0	126	14	361	29	0	404	98	318	19	0	435	998
5:00-6:00	10	5	13	0	28	29	4	95	0	128	15	342	26	0	383	96	306	23	0	425	964
5:15-6:15	6	4	13	0	23	30	3	84	0	117	12	303	32	0	347	85	291	25	0	401	888
5:30-6:30	10	5	6	0	21	30	3	66	0	99	11	292	28	0	331	103	285	22	0	410	861
5:45-6:45	9	3	7	0	19	27	2	78	0	107	5	283	26	0	314	101	261	20	0	382	822
6:00-7:00	8	2	6	0	16	29	4	76	0	109	3	266	32	0	301	97	243	14	0	354	780
PEAK HOUR																					
4:15-5:15	16	13	7	0	36	25	8	85	0	118	18	387	28	0	433	94	347	16	0	457	1044



The Traffic Group

VA 122 at Westlake and Morewood Roads

FIELD WORK BY:	C. Hinkey	JOB NO.:	2012-0503
DRAWN BY:	C. Pryseski	DGN NAME:	VA 122 at Morewood
DATE:	May 23, 2013	LOCATION:	VA
SCALE:	N/A	SHEET NO.:	1 OF 1

PASSENGER VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Morewood Road/Westlake Road
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

TIME	TRAFFIC FROM NORTH on: Morewood Road					TRAFFIC FROM SOUTH on: Westlake Road					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	5	1	9	0	15	5	0	3	0	8	2	73	14	0	89	3	42	2	0	47	159
7:15-7:30	6	3	6	0	15	7	0	2	0	9	4	77	12	0	93	2	56	3	0	61	178
7:30-7:45	8	2	4	0	14	7	1	1	0	9	7	71	12	0	90	7	48	4	0	59	172
7:45-8:00	10	2	4	0	16	6	1	3	0	10	5	79	23	0	107	7	67	6	0	80	213
8:00-8:15	7	2	3	0	12	8	3	4	0	15	9	63	33	0	105	8	61	3	0	72	204
8:15-8:30	4	6	10	0	20	12	4	3	0	19	16	56	18	0	90	8	75	3	0	86	215
8:30-8:45	5	2	6	0	13	29	1	6	0	36	13	44	27	0	84	10	57	3	0	70	203
8:45-9:00	3	4	12	0	19	25	3	3	0	31	8	60	25	0	93	7	84	4	0	95	238
9:00-9:15	3	2	19	0	24	24	2	4	0	30	8	48	27	0	83	7	77	2	0	86	223
9:15-9:30	4	4	8	0	16	21	1	3	0	25	5	57	25	0	87	6	56	4	0	66	194
9:30-9:45	2	4	13	0	19	23	3	7	0	33	9	57	22	0	88	3	63	4	0	70	210
9:45-10:00	1	4	10	0	15	20	2	1	0	23	12	57	32	0	101	4	52	4	0	60	199
3 Hr Totals	58	36	104	0	198	187	21	40	0	248	98	742	270	0	1110	72	738	42	0	852	2408
1 Hr Totals																					
7:00-8:00	29	8	23	0	60	25	2	9	0	36	18	300	61	0	379	19	213	15	0	247	722
7:15-8:15	31	9	17	0	57	28	5	10	0	43	25	290	80	0	395	24	232	16	0	272	767
7:30-8:30	29	12	21	0	62	33	9	11	0	53	37	269	86	0	392	30	251	16	0	297	804
7:45-8:45	26	12	23	0	61	55	9	16	0	80	43	242	101	0	386	33	260	15	0	308	835
8:00-9:00	19	14	31	0	64	74	11	16	0	101	46	223	103	0	372	33	277	13	0	323	860
8:15-9:15	15	14	47	0	76	90	10	16	0	116	45	208	97	0	350	32	293	12	0	337	879
8:30-9:30	15	12	45	0	72	99	7	16	0	122	34	209	104	0	347	30	274	13	0	317	858
8:45-9:45	12	14	52	0	78	93	9	17	0	119	30	222	99	0	351	23	280	14	0	317	865
9:00-10:00	10	14	50	0	74	88	8	15	0	111	34	219	106	0	359	20	248	14	0	282	826
PEAK HOUR																					
8:45-9:45	12	14	52	0	78	93	9	17	0	119	30	222	99	0	351	23	280	14	0	317	865
PM																					
4:00-4:15	4	3	14	0	21	50	10	13	0	73	9	73	32	0	114	13	78	8	0	99	307
4:15-4:30	6	9	15	0	30	41	1	10	0	52	12	85	42	0	139	6	86	5	0	97	318
4:30-4:45	9	9	18	0	36	45	13	17	0	75	9	76	35	0	120	5	77	7	0	89	320
4:45-5:00	2	4	18	0	24	64	8	13	0	85	11	63	30	0	104	8	82	2	0	92	305
5:00-5:15	3	8	15	0	26	46	12	27	0	85	12	97	38	0	147	4	73	4	0	81	339
5:15-5:30	3	4	23	0	30	46	5	3	0	54	20	83	36	0	139	8	84	6	0	98	321
5:30-5:45	6	3	17	0	26	35	5	6	0	46	10	74	35	0	119	4	66	6	0	76	267
5:45-6:00	1	1	19	0	21	51	6	7	0	64	11	53	26	0	90	4	72	7	0	83	258
6:00-6:15	3	2	8	0	13	31	1	6	0	38	12	71	42	0	125	4	73	5	0	82	258
6:15-6:30	3	3	10	0	16	38	7	4	0	49	6	72	25	0	103	1	65	4	0	70	238
6:30-6:45	3	1	8	0	12	34	3	3	0	40	2	71	33	0	106	1	58	2	0	61	219
6:45-7:00	3	3	10	0	16	34	4	0	0	38	6	43	38	0	87	1	55	7	0	63	204
3 Hr Totals	46	50	175	0	271	515	75	109	0	699	120	861	412	0	1393	59	869	63	0	991	3354
1 Hr Totals																					
4:00-5:00	21	25	65	0	111	200	32	53	0	285	41	297	139	0	477	32	323	22	0	377	1250
4:15-5:15	20	30	66	0	116	196	34	67	0	297	44	321	145	0	510	23	318	18	0	359	1282
4:30-5:30	17	25	74	0	116	201	38	60	0	299	52	319	139	0	510	25	316	19	0	360	1285
4:45-5:45	14	19	73	0	106	191	30	49	0	270	53	317	139	0	509	24	305	18	0	347	1232
5:00-6:00	13	16	74	0	103	178	28	43	0	249	53	307	135	0	495	20	295	23	0	338	1185
5:15-6:15	13	10	67	0	90	163	17	22	0	202	53	281	139	0	473	20	295	24	0	339	1104
5:30-6:30	13	9	54	0	76	155	19	23	0	197	39	270	128	0	437	13	276	22	0	311	1021
5:45-6:45	10	7	45	0	62	154	17	20	0	191	31	267	126	0	424	10	268	18	0	296	973
6:00-7:00	12	9	36	0	57	137	15	13	0	165	26	257	138	0	421	7	251	18	0	276	919
PEAK HOUR																					
4:30-5:30	17	25	74	0	116	201	38	60	0	299	52	319	139	0	510	25	316	19	0	360	1285

HEAVY TRUCK TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Morewood Road/Westlake Road
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

The Traffic Group

TIME	TRAFFIC FROM NORTH on: Morewood Road					TRAFFIC FROM SOUTH on: Westlake Road					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	0	0	0	0	0	0	0	0	0	0	3	2	0	0	5	0	3	0	0	3	8
7:15-7:30	1	0	0	0	1	1	0	0	0	1	0	5	0	0	5	0	6	0	0	6	13
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	3	1	0	4	9
7:45-8:00	0	0	1	0	1	0	0	1	0	1	1	5	0	0	6	0	0	0	0	0	8
8:00-8:15	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	0	3	1	0	4	11
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	3
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	3	0	0	4	7
8:45-9:00	0	0	1	0	1	1	0	0	0	1	2	3	1	0	6	0	4	0	0	4	12
9:00-9:15	0	0	2	0	2	0	0	0	0	0	1	7	0	0	8	0	5	1	0	6	16
9:15-9:30	0	0	1	0	1	1	0	1	0	2	0	2	0	0	2	0	10	0	0	10	15
9:30-9:45	0	0	0	0	0	0	0	0	0	0	0	5	1	0	6	0	5	1	0	6	12
9:45-10:00	0	0	1	0	1	0	0	0	0	0	0	4	0	0	4	1	5	0	0	6	11
3 Hr Totals	1	1	6	0	8	3	0	2	0	5	7	48	2	0	57	2	49	4	0	55	125
1 Hr Totals																					
7:00-8:00	1	0	1	0	2	1	0	1	0	2	4	17	0	0	21	0	12	1	0	13	38
7:15-8:15	1	1	1	0	3	1	0	1	0	2	1	21	0	0	22	0	12	2	0	14	41
7:30-8:30	0	1	1	0	2	0	0	1	0	1	1	17	0	0	18	0	8	2	0	10	31
7:45-8:45	0	1	1	0	2	0	0	1	0	1	1	15	0	0	16	1	8	1	0	10	29
8:00-9:00	0	1	1	0	2	1	0	0	0	1	2	13	1	0	16	1	12	1	0	14	33
8:15-9:15	0	0	3	0	3	1	0	0	0	1	3	14	1	0	18	1	14	1	0	16	38
8:30-9:30	0	0	4	0	4	2	0	1	0	3	3	15	1	0	19	1	22	1	0	24	50
8:45-9:45	0	0	4	0	4	2	0	1	0	3	3	17	2	0	22	0	24	2	0	26	55
9:00-10:00	0	0	4	0	4	1	0	1	0	2	1	18	1	0	20	1	25	2	0	28	54
PEAK HOUR																					
8:45-9:45	0	0	4	0	4	2	0	1	0	3	3	17	2	0	22	0	24	2	0	26	55
PM																					
4:00-4:15	1	0	2	0	3	0	0	0	0	0	0	5	0	0	5	1	2	0	0	3	11
4:15-4:30	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	2	0	2	6
4:30-4:45	2	2	0	0	4	0	0	0	0	0	0	2	0	0	2	0	3	0	0	3	9
4:45-5:00	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	4
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	0	3	4
5:15-5:30	0	0	0	0	0	0	1	1	0	2	0	5	0	0	5	0	1	0	0	1	8
5:30-5:45	1	0	0	0	1	0	0	0	0	0	2	5	0	0	7	0	1	1	0	2	10
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
6:00-6:15	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	3
6:15-6:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
6:30-6:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	3
6:45-7:00	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	3
3 Hr Totals	4	2	2	0	8	0	1	1	0	2	2	33	0	0	35	1	15	3	0	19	64
1 Hr Totals																					
4:00-5:00	3	2	2	0	7	0	0	0	0	0	0	15	0	0	15	1	5	2	0	8	30
4:15-5:15	2	2	0	0	4	0	0	0	0	0	0	11	0	0	11	0	6	2	0	8	23
4:30-5:30	2	2	0	0	4	0	1	1	0	2	0	12	0	0	12	0	7	0	0	7	25
4:45-5:45	1	0	0	0	1	0	1	1	0	2	2	15	0	0	17	0	5	1	0	6	26
5:00-6:00	1	0	0	0	1	0	1	1	0	2	2	12	0	0	14	0	5	1	0	6	23
5:15-6:15	1	0	0	0	1	0	1	1	0	2	2	13	0	0	15	0	3	1	0	4	22
5:30-6:30	1	0	0	0	1	0	0	0	0	0	2	9	0	0	11	0	3	1	0	4	16
5:45-6:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	4	0	0	4	9
6:00-7:00	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	5	0	0	5	11
PEAK HOUR																					
4:30-5:30	2	2	0	0	4	0	1	1	0	2	0	12	0	0	12	0	7	0	0	7	25

VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Morewood Road/Westlake Road
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

The Traffic Group

TIME	TRAFFIC FROM NORTH on: Morewood Road					TRAFFIC FROM SOUTH on: Westlake Road					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	5	1	9	0	15	5	0	3	0	8	5	75	14	0	94	3	45	2	0	50	167
7:15-7:30	7	3	6	0	16	8	0	2	0	10	4	82	12	0	98	2	62	3	0	67	191
7:30-7:45	8	2	4	0	14	7	1	1	0	9	7	76	12	0	95	7	51	5	0	63	181
7:45-8:00	10	2	5	0	17	6	1	4	0	11	6	84	23	0	113	7	67	6	0	80	221
8:00-8:15	7	3	3	0	13	8	3	4	0	15	9	69	33	0	111	8	64	4	0	76	215
8:15-8:30	4	6	10	0	20	12	4	3	0	19	16	57	18	0	91	8	77	3	0	88	218
8:30-8:45	5	2	6	0	13	29	1	6	0	36	13	47	27	0	87	11	60	3	0	74	210
8:45-9:00	3	4	13	0	20	26	3	3	0	32	10	63	26	0	99	7	88	4	0	99	250
9:00-9:15	3	2	21	0	26	24	2	4	0	30	9	55	27	0	91	7	82	3	0	92	239
9:15-9:30	4	4	9	0	17	22	1	4	0	27	5	59	25	0	89	6	66	4	0	76	209
9:30-9:45	2	4	13	0	19	23	3	7	0	33	9	62	23	0	94	3	68	5	0	76	222
9:45-10:00	1	4	11	0	16	20	2	1	0	23	12	61	32	0	105	5	57	4	0	66	210
3 Hr Totals	59	37	110	0	206	190	21	42	0	253	105	790	272	0	1167	74	787	46	0	907	2533
1 Hr Totals																					
7:00-8:00	30	8	24	0	62	26	2	10	0	38	22	317	61	0	400	19	225	16	0	260	760
7:15-8:15	32	10	18	0	60	29	5	11	0	45	26	311	80	0	417	24	244	18	0	286	808
7:30-8:30	29	13	22	0	64	33	9	12	0	54	38	286	86	0	410	30	259	18	0	307	835
7:45-8:45	26	13	24	0	63	55	9	17	0	81	44	257	101	0	402	34	268	16	0	318	864
8:00-9:00	19	15	32	0	66	75	11	16	0	102	48	236	104	0	388	34	289	14	0	337	893
8:15-9:15	15	14	50	0	79	91	10	16	0	117	48	222	98	0	368	33	307	13	0	353	917
8:30-9:30	15	12	49	0	76	101	7	17	0	125	37	224	105	0	366	31	296	14	0	341	908
8:45-9:45	12	14	56	0	82	95	9	18	0	122	33	239	101	0	373	23	304	16	0	343	920
9:00-10:00	10	14	54	0	78	89	8	16	0	113	35	237	107	0	379	21	273	16	0	310	880
PEAK HOUR																					
8:45-9:45	12	14	56	0	82	95	9	18	0	122	33	239	101	0	373	23	304	16	0	343	920
PM																					
4:00-4:15	5	3	16	0	24	50	10	13	0	73	9	78	32	0	119	14	80	8	0	102	318
4:15-4:30	6	9	15	0	30	41	1	10	0	52	12	89	42	0	143	6	86	7	0	99	324
4:30-4:45	11	11	18	0	40	45	13	17	0	75	9	78	35	0	122	5	80	7	0	92	329
4:45-5:00	2	4	18	0	24	64	8	13	0	85	11	67	30	0	108	8	82	2	0	92	309
5:00-5:15	3	8	15	0	26	46	12	27	0	85	12	98	38	0	148	4	76	4	0	84	343
5:15-5:30	3	4	23	0	30	46	6	4	0	56	20	88	36	0	144	8	85	6	0	99	329
5:30-5:45	7	3	17	0	27	35	5	6	0	46	12	79	35	0	126	4	67	7	0	78	277
5:45-6:00	1	1	19	0	21	51	6	7	0	64	11	54	26	0	91	4	72	7	0	83	259
6:00-6:15	3	2	8	0	13	31	1	6	0	38	12	73	42	0	127	4	74	5	0	83	261
6:15-6:30	3	3	10	0	16	38	7	4	0	49	6	73	25	0	104	1	66	4	0	71	240
6:30-6:45	3	1	8	0	12	34	3	3	0	40	2	72	33	0	107	1	60	2	0	63	222
6:45-7:00	3	3	10	0	16	34	4	0	0	38	6	45	38	0	89	1	56	7	0	64	207
3 Hr Totals	50	52	177	0	279	515	76	110	0	701	122	894	412	0	1428	60	884	66	0	1010	3418
1 Hr Totals																					
4:00-5:00	24	27	67	0	118	200	32	53	0	285	41	312	139	0	492	33	328	24	0	385	1280
4:15-5:15	22	32	66	0	120	196	34	67	0	297	44	332	145	0	521	23	324	20	0	367	1305
4:30-5:30	19	27	74	0	120	201	39	61	0	301	52	331	139	0	522	25	323	19	0	367	1310
4:45-5:45	15	19	73	0	107	191	31	50	0	272	55	332	139	0	526	24	310	19	0	353	1258
5:00-6:00	14	16	74	0	104	178	29	44	0	251	55	319	135	0	509	20	300	24	0	344	1208
5:15-6:15	14	10	67	0	91	163	18	23	0	204	55	294	139	0	488	20	298	25	0	343	1126
5:30-6:30	14	9	54	0	77	155	19	23	0	197	41	279	128	0	448	13	279	23	0	315	1037
5:45-6:45	10	7	45	0	62	154	17	20	0	191	31	272	126	0	429	10	272	18	0	300	982
6:00-7:00	12	9	36	0	57	137	15	13	0	165	26	263	138	0	427	7	256	18	0	281	930
PEAK HOUR																					
4:30-5:30	19	27	74	0	120	201	39	61	0	301	52	331	139	0	522	25	323	19	0	367	1310

Route 122 South- SR 116 Burnt Chimney to 33-636 Lost Mt Rd

Average*

Time	Avg. Total	Time	
12:00:00 AM	43	0	
1:00:00 AM	26	100	
2:00:00 AM	14	200	
3:00:00 AM	20	300	
4:00:00 AM	23	400	
5:00:00 AM	41	500	
6:00:00 AM	96	600	
7:00:00 AM	158	700	
8:00:00 AM	235	800	
9:00:00 AM	301	900	
10:00:00 AM	350	1000	
11:00:00 AM	352	1100	
12:00:00 PM	382	1200	43% << SB Direction
1:00:00 PM	352	1300	
2:00:00 PM	373	1400	
3:00:00 PM	385	1500	
4:00:00 PM	414	1600	
5:00:00 PM	390	1700	
6:00:00 PM	378	1800	
7:00:00 PM	304	1900	
8:00:00 PM	271	2000	
9:00:00 PM	241	2100	
10:00:00 PM	171	2200	
11:00:00 PM	132	2300	
	5445		

Peak Hour: 11:30 - 12:30

* Average of May 18, 2013; June 1, 2013; June 8, 2013; and June 15, 2013
Count station located west of site on Route 122 between Route 116 and Route 636

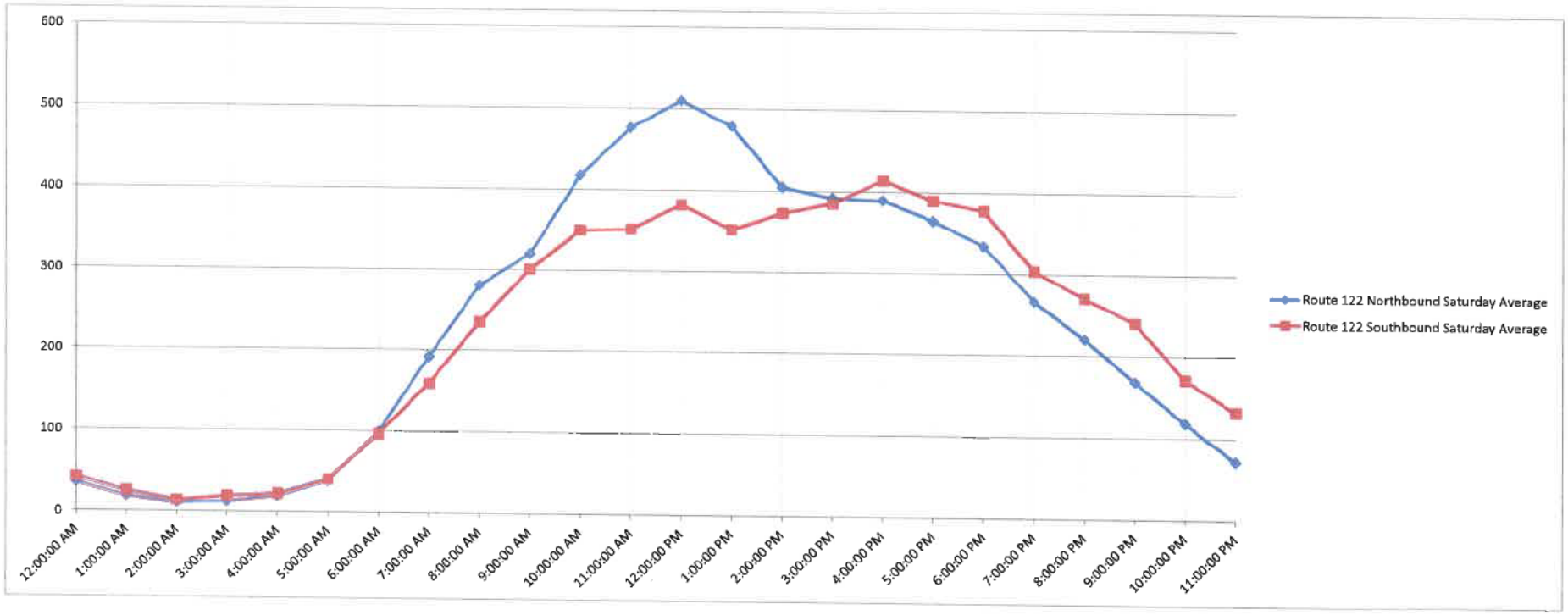
Route 122 North- SR 116 Burnt Chimney to 33-636 Lost Mt Rd

Average*

Time	Avg. Total	Time	
12:00:00 AM	36	0	
1:00:00 AM	19	100	
2:00:00 AM	11	200	
3:00:00 AM	13	300	
4:00:00 AM	20	400	
5:00:00 AM	39	500	
6:00:00 AM	99	600	
7:00:00 AM	192	700	
8:00:00 AM	281	800	
9:00:00 AM	320	900	
10:00:00 AM	418	1000	
11:00:00 AM	477	1100	
12:00:00 PM	510	1200	**57%** << NB Direction
1:00:00 PM	479	1300	
2:00:00 PM	405	1400	
3:00:00 PM	392	1500	
4:00:00 PM	390	1600	
5:00:00 PM	365	1700	
6:00:00 PM	335	1800	
7:00:00 PM	267	1900	
8:00:00 PM	221	2000	
9:00:00 PM	168	2100	
10:00:00 PM	118	2200	
11:00:00 PM	72	2300	
	5647		

Peak Hour: 11:30 - 12:30

* Average of May 18, 2013; June 1, 2013; June 8, 2013; and June 15, 2013
Count station located west of site on Route 122 between Route 116 and Route 636.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10:00:00 AM
11:00:00 AM
12:00:00 PM
1:00:00 PM
2:00:00 PM
3:00:00 PM
4:00:00 PM
5:00:00 PM
6:00:00 PM
7:00:00 PM
8:00:00 PM
9:00:00 PM
10:00:00 PM
11:00:00 PM
Route 122 Northbound Saturday Average
Route 122 Southbound Saturday Average

Route 122 South- SR 116 Burnt Chimney to 33-636 Lost Mt Rd

May 18 Sat

Start Date	DIRECTION	Interval Total
2013/05/18 0000	South	32
2013/05/18 0100	South	26
2013/05/18 0200	South	15
2013/05/18 0300	South	23
2013/05/18 0400	South	22
2013/05/18 0500	South	58
2013/05/18 0600	South	89
2013/05/18 0700	South	121
2013/05/18 0800	South	215
2013/05/18 0900	South	273
2013/05/18 1000	South	313
2013/05/18 1100	South	317
2013/05/18 1200	South	370
2013/05/18 1300	South	316
2013/05/18 1400	South	397
2013/05/18 1500	South	364
2013/05/18 1600	South	340
2013/05/18 1700	South	343
2013/05/18 1800	South	335
2013/05/18 1900	South	249
2013/05/18 2000	South	215
2013/05/18 2100	South	183
2013/05/18 2200	South	100
2013/05/18 2300	South	87

Jun 8 Sat

Start Date	DIRECTION	Interval Total
2013/06/08 0000	South	34
2013/06/08 0100	South	20
2013/06/08 0200	South	12
2013/06/08 0300	South	12
2013/06/08 0400	South	26
2013/06/08 0500	South	33
2013/06/08 0600	South	68
2013/06/08 0700	South	119
2013/06/08 0800	South	171
2013/06/08 0900	South	228
2013/06/08 1000	South	320
2013/06/08 1100	South	336
2013/06/08 1200	South	373
2013/06/08 1300	South	304
2013/06/08 1400	South	346
2013/06/08 1500	South	371
2013/06/08 1600	South	377
2013/06/08 1700	South	357
2013/06/08 1800	South	356
2013/06/08 1900	South	317
2013/06/08 2000	South	268
2013/06/08 2100	South	240
2013/06/08 2200	South	171
2013/06/08 2300	South	134

Jun 1 Sat

Start Date	DIRECTION	Interval Total
2013/06/01 0000	South	50
2013/06/01 0100	South	34
2013/06/01 0200	South	17
2013/06/01 0300	South	23
2013/06/01 0400	South	22
2013/06/01 0500	South	33
2013/06/01 0600	South	101
2013/06/01 0700	South	152
2013/06/01 0800	South	257
2013/06/01 0900	South	363
2013/06/01 1000	South	410
2013/06/01 1100	South	408
2013/06/01 1200	South	411
2013/06/01 1300	South	391
2013/06/01 1400	South	333
2013/06/01 1500	South	351
2013/06/01 1600	South	409
2013/06/01 1700	South	396
2013/06/01 1800	South	405
2013/06/01 1900	South	278
2013/06/01 2000	South	284
2013/06/01 2100	South	248
2013/06/01 2200	South	190
2013/06/01 2300	South	117

Jun 15 Sat

Start Date	DIRECTION	Interval Total
2013/06/15 0000	South	54
2013/06/15 0100	South	22
2013/06/15 0200	South	12
2013/06/15 0300	South	20
2013/06/15 0400	South	20
2013/06/15 0500	South	39
2013/06/15 0600	South	125
2013/06/15 0700	South	241
2013/06/15 0800	South	296
2013/06/15 0900	South	338
2013/06/15 1000	South	356
2013/06/15 1100	South	346
2013/06/15 1200	South	374
2013/06/15 1300	South	397
2013/06/15 1400	South	414
2013/06/15 1500	South	454
2013/06/15 1600	South	528
2013/06/15 1700	South	462
2013/06/15 1800	South	414
2013/06/15 1900	South	371
2013/06/15 2000	South	315
2013/06/15 2100	South	292
2013/06/15 2200	South	222
2013/06/15 2300	South	188

May 22 Wed

Start Date	DIRECTION	Interval Total
2013/05/22 0000	South	21
2013/05/22 0100	South	7
2013/05/22 0200	South	3
2013/05/22 0300	South	20
2013/05/22 0400	South	27
2013/05/22 0500	South	67
2013/05/22 0600	South	210
2013/05/22 0700	South	374
2013/05/22 0800	South	269
2013/05/22 0900	South	257
2013/05/22 1000	South	293
2013/05/22 1100	South	278
2013/05/22 1200	South	311
2013/05/22 1300	South	343
2013/05/22 1400	South	337
2013/05/22 1500	South	368
2013/05/22 1600	South	409
2013/05/22 1700	South	427
2013/05/22 1800	South	287
2013/05/22 1900	South	225
2013/05/22 2000	South	182
2013/05/22 2100	South	112
2013/05/22 2200	South	74
2013/05/22 2300	South	18

Route 122 North- SR 116 Burnt Chimney to 33-636 Lost Mt Rd

May 18 Sat

Start Date	DIRECTION	Interval Total	Time
2013/05/18 0000	North	27	0000
2013/05/18 0100	North	27	0100
2013/05/18 0200	North	12	0200
2013/05/18 0300	North	9	0300
2013/05/18 0400	North	26	0400
2013/05/18 0500	North	43	0500
2013/05/18 0600	North	71	0600
2013/05/18 0700	North	156	0700
2013/05/18 0800	North	256	0800
2013/05/18 0900	North	313	0900
2013/05/18 1000	North	369	1000
2013/05/18 1100	North	393	1100
2013/05/18 1200	North	399	1200
2013/05/18 1300	North	379	1300
2013/05/18 1400	North	354	1400
2013/05/18 1500	North	313	1500
2013/05/18 1600	North	334	1600
2013/05/18 1700	North	365	1700
2013/05/18 1800	North	297	1800
2013/05/18 1900	North	202	1900
2013/05/18 2000	North	162	2000
2013/05/18 2100	North	113	2100
2013/05/18 2200	North	101	2200
2013/05/18 2300	North	57	2300

Jun 8 Sat

Start Date	DIRECTION	Interval Total
2013/06/08 0000	North	31
2013/06/08 0100	North	15
2013/06/08 0200	North	12
2013/06/08 0300	North	13
2013/06/08 0400	North	18
2013/06/08 0500	North	32
2013/06/08 0600	North	72
2013/06/08 0700	North	163
2013/06/08 0800	North	217
2013/06/08 0900	North	247
2013/06/08 1000	North	364
2013/06/08 1100	North	461
2013/06/08 1200	North	508
2013/06/08 1300	North	474
2013/06/08 1400	North	419
2013/06/08 1500	North	398
2013/06/08 1600	North	378
2013/06/08 1700	North	317
2013/06/08 1800	North	341
2013/06/08 1900	North	278
2013/06/08 2000	North	228
2013/06/08 2100	North	175
2013/06/08 2200	North	129
2013/06/08 2300	North	69

Jun 1 Sat

Start Date	DIRECTION	Interval Total
2013/06/01 0000	North	47
2013/06/01 0100	North	15
2013/06/01 0200	North	11
2013/06/01 0300	North	19
2013/06/01 0400	North	18
2013/06/01 0500	North	39
2013/06/01 0600	North	154
2013/06/01 0700	North	244
2013/06/01 0800	North	328
2013/06/01 0900	North	362
2013/06/01 1000	North	433
2013/06/01 1100	North	483
2013/06/01 1200	North	477
2013/06/01 1300	North	427
2013/06/01 1400	North	395
2013/06/01 1500	North	404
2013/06/01 1600	North	431
2013/06/01 1700	North	380
2013/06/01 1800	North	329
2013/06/01 1900	North	264
2013/06/01 2000	North	218
2013/06/01 2100	North	190
2013/06/01 2200	North	108
2013/06/01 2300	North	69

Jun 15 Sat

Start Date	DIRECTION	Interval Total
2013/06/15 0000	North	39
2013/06/15 0100	North	20
2013/06/15 0200	North	9
2013/06/15 0300	North	10
2013/06/15 0400	North	19
2013/06/15 0500	North	43
2013/06/15 0600	North	99
2013/06/15 0700	North	203
2013/06/15 0800	North	322
2013/06/15 0900	North	359
2013/06/15 1000	North	505
2013/06/15 1100	North	570
2013/06/15 1200	North	656
2013/06/15 1300	North	637
2013/06/15 1400	North	452
2013/06/15 1500	North	454
2013/06/15 1600	North	417
2013/06/15 1700	North	399
2013/06/15 1800	North	372
2013/06/15 1900	North	323
2013/06/15 2000	North	274
2013/06/15 2100	North	195
2013/06/15 2200	North	134
2013/06/15 2300	North	94

May 22 Wed

Start Date	DIRECTION	Interval Total
2013/05/22 0000	North	27
2013/05/22 0100	North	11
2013/05/22 0200	North	10
2013/05/22 0300	North	6
2013/05/22 0400	North	23
2013/05/22 0500	North	42
2013/05/22 0600	North	155
2013/05/22 0700	North	283
2013/05/22 0800	North	373
2013/05/22 0900	North	320
2013/05/22 1000	North	311
2013/05/22 1100	North	285
2013/05/22 1200	North	309
2013/05/22 1300	North	271
2013/05/22 1400	North	330
2013/05/22 1500	North	375
2013/05/22 1600	North	436
2013/05/22 1700	North	406
2013/05/22 1800	North	377
2013/05/22 1900	North	201
2013/05/22 2000	North	166
2013/05/22 2100	North	105
2013/05/22 2200	North	56
2013/05/22 2300	North	26

APPENDIX C

Internal Capture Worksheets

Analyst THL
Date 9/23/2014

MULTI-USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt WESTLAKE TOWNE CENTER
Time Period WEEKDAY PM PEAK HOUR OF ADJACENT STREET

PHASE 1

LAND USE A RETAIL

ITE LU Code 826
Size 20,000 SF

	Total	Internal	External
Enter	24	1	23
Exit	30	2	28
Total	54	3	51
%	100%	6%	94%

Exit to External: 28
Enter from External: 23

* AS ESTABLISHED IN VDOT PRE-SCOPING MEETING *

5% | 2 Demand — 2 Balanced — * 5% | 6 Demand
5% | 1 Demand — 1 Balanced — 5% | 4 Demand
% | Demand — Balanced — % | Demand
% | Demand — Balanced — % | Demand

LAND USE B RESTAURANT

ITE LU Code 931/934
Size 14,000

	Total	Internal	External
Enter	119	2	117
Exit	88	1	87
Total	207	3	204
%	100%	1%	99%

Exit to External: 87
Enter from External: 116

% | Demand — Balanced — % | Demand
% | Demand — Balanced — % | Demand

LAND USE C

ITE LU Code
Size

	Total	Internal	External
Enter			
Exit			
Total			
%			

Enter from External
Exit to External

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	TOTAL
Enter	23	117	—	140
Exit	28	87	—	115
Total	51	204	—	255
Single-Use Trip Gen. Est.	54	207	—	261

INTERNAL CAPTURE 2%

Source: Kaku Associates, Inc.

Analyst THL
Date 4-29-2014

MULTI-USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt WESTLAKE TOWNE CENTER
Time Period SATURDAY PEAK HOUR

PHASE 1

*AS ESTABLISHED IN VDOT PRE-SCOPING MEETING

LAND USE A RETAIL

ITE LU Code 826
Size 20,000 SF

	Total	Internal	External
Enter	56	3	53
Exit	44	2	42
Total	100	5	95
%	100%	5%	95%

Exit to External: 42
Enter from External: 53

5% 2 Demand — 2 Balanced
5% 3 Demand — 3 Balanced
* 5% 9 Demand
5% 8 Demand

% Demand — Balanced
% Demand — Balanced
% Demand
% Demand

LAND USE B RESTAURANT

ITE LU Code 931/934
Size 14,000 SF

	Total	Internal	External
Enter	184	2	182
Exit	160	3	157
Total	344	5	339
%	100%	1%	99%

Exit to External: 157
Enter from External: 182

% Demand — Balanced
% Demand — Balanced
% Demand
% Demand

LAND USE C

ITE LU Code
Size

	Total	Internal	External
Enter			
Exit			
Total			
%			

Enter from External
Exit to External

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	TOTAL
Enter	53	182	—	235
Exit	42	157	—	199
Total	95	339	—	434
Single-Use Trip Gen. Est.	100	344	—	444

INTERNAL CAPTURE: 2%

Source: Kaku Associates, I

PHASE 1 + 2

Analyst THL
Date 9/23/2014

MULTI- USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt WESTLAKE TOWN CENTER
Time Period WEEKDAY PM PEAK HR. OF ADJACENT S

LAND USE A RESIDENTIAL

ITE LU Code 210, 220, 231, 251
Size 231 DWELLING UNITS

	Total	Internal	External
Enter	117	35	82
Exit	66	19	47
Total	183	54	129
%	100%	30%	70%

Exit to External: 47
Enter from External: 82

LAND USE B OFFICE

ITE LU Code 710
Size 88,000 SF

	Total	Internal	External
Enter	30	9	21
Exit	147	26	121
Total	177	35	142
%	100%	20%	80%

Enter from External: 21
Exit to External: 121

LAND USE C RETAIL

ITE LU Code 826
Size 82,720 SF

	Total	Internal	External
Enter	99	26	73
Exit	125	38	87
Total	224	64	160
%	100%	29%	71%

Exit to External: 87
Enter from External: 73

LAND USE D * RESTAURANT

ITE LU Code 931, 934
Size 28,700 SF

	Total	Internal	External
Enter	193	51	142
Exit	124	38	86
Total	317	89	228
%	100%	28%	72%

Enter from External: 141
Exit to External: 86

Demand 2% 2 | Balanced 2 | Demand 2% 3
Demand 0% 0 | Balanced 0 | Demand 0% 0
Demand 23% 34 | Balanced 2 | Demand 2% 2
Demand 15% 10 | Balanced 10
Demand 53% 35 | Balanced 9 | Demand 9% 9
Demand 31% 36 | Balanced 15 | Demand 12% 15
Demand 15% 29 | Balanced 18 | Demand 15% 19
Demand 31% 9 | Balanced 4 | Demand 3% 4
Demand 15% 22 | Balanced 22 | Demand 15% 29
Demand 15% 5 | Balanced 5 | Demand 15% 19
Demand 15% 15 | Balanced 15 | Demand 15% 19
Demand 15% 19 | Balanced 19 | Demand 15% 29

* AS ESTABLISHED IN VDOT PRE-SCOPING MEETING

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	LAND USE D	TOTAL
Enter	82	21	73	142	318
Exit	47	121	87	86	341
Total	129	142	160	228	659
Single-Use Trip Gen. Est.	183	177	224	317	901

Source: Kaku Associates, In

INTERNAL CAPTURE: 27%

PHASE 1 + 2

Analyst THL
Date 9/23/2014

MULTI- USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt WESTLAKE TOWN CENTER
Time Period WEEKDAY PM PEAK HR. OF ADJACENT S

LAND USE A RESIDENTIAL

ITE LU Code 210, 220, 231, 251
Size 231 DWELLING UNITS

	Total	Internal	External
Enter	117	35	82
Exit	66	19	47
Total	183	54	129
%	100%	30%	70%

Exit to External: 47
Enter from External: 82

LAND USE B OFFICE

ITE LU Code 710
Size 88,000 SF

	Total	Internal	External
Enter	30	9	21
Exit	147	26	121
Total	177	35	142
%	100%	20%	80%

Enter from External: 21
Exit to External: 121

LAND USE C RETAIL

ITE LU Code 826
Size 82,700 SF

	Total	Internal	External
Enter	99	26	73
Exit	125	38	87
Total	224	64	160
%	100%	29%	71%

Exit to External: 87
Enter from External: 73

LAND USE D * RESTAURANT

ITE LU Code 931, 934
Size 28,700 SF

	Total	Internal	External
Enter	193	51	142
Exit	124	38	86
Total	317	89	228
%	100%	28%	72%

Enter from External: 141
Exit to External: 86

Demand 2% 2 | Balanced 2 | Demand 2% 3
0% 0 Demand | 0 Balanced | 0% 0 Demand
53% 35 Demand | 9 Balanced | 9% 9 Demand
31% 36 Demand | 15 Balanced | 12% 15 Demand
15% 10 Demand | 10 Balanced | 15% 29 Demand
23% 34 Demand | 2 Balanced | 2% 2 Demand
15% 18 Demand | 18 Balanced | 15% 19 Demand
31% 9 Demand | 4 Balanced | 3% 4 Demand
15% 22 Demand | 22 Balanced | 15% 29 Demand
15% 5 Demand | 5 Balanced | 15% 19 Demand
Demand 15% 15 | Balanced 15 | Demand 15% 19
15% 19 Demand | 19 Balanced | 15% 29 Demand

*AS ESTABLISHED IN VDOT PRE-SCOPING MEETING

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	LAND USE D	TOTAL
Enter	82	21	73	142	318
Exit	47	121	87	86	341
Total	129	142	160	228	659
Single-Use Trip Gen. Est.	183	177	224	317	901

Source: Kaku Associates, In

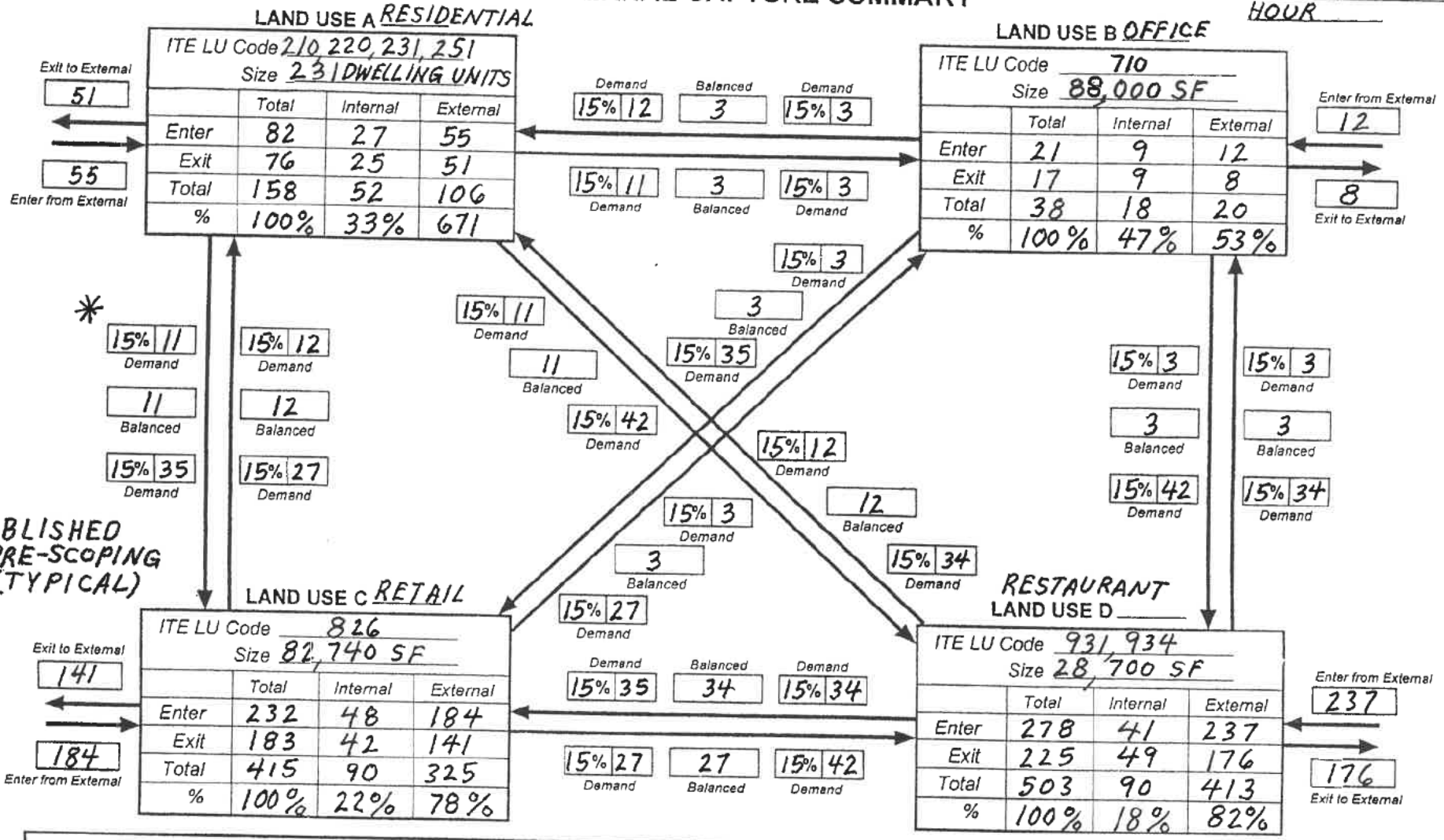
INTERNAL CAPTURE 27%

PHASE 1 & 2

MULTI- USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Analyst
Date 4/29/2014

Name of Dvlpt WESTLAKE TOWNE CENTER
Time Period SATURDAY PEAK HOUR



*AS ESTABLISHED IN VDOT PRE-SCOPING MEETING (TYPICAL)

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	LAND USE D	TOTAL
Enter	55	12	184	237	488
Exit	51	8	141	176	376
Total	106	20	325	413	864
Single-Use Trip Gen. Est.	158	38	415	503	1,114

Source: Kaku Associates, Inc.

INTERNAL CAPTURE 22%

APPENDIX D

Left and Right Turn Lane Warrants (VDOT Road Design Manual)

Warrants for Left Turn Storage Lanes on Two-Lane Highways

Advancing volume and opposing volumes (VPH), speed and percent left turns are used to determine whether a left turn storage lane is warranted on two-lane highways.

The warrants in table below are taken from the 2011 AASHTO Green Book, Chapter 9, Section 9.7.3, Page 9-132, Table 9-23. They were derived from Highway Research Report No. 211, Figures 2 through 19, for required storage length determinations.

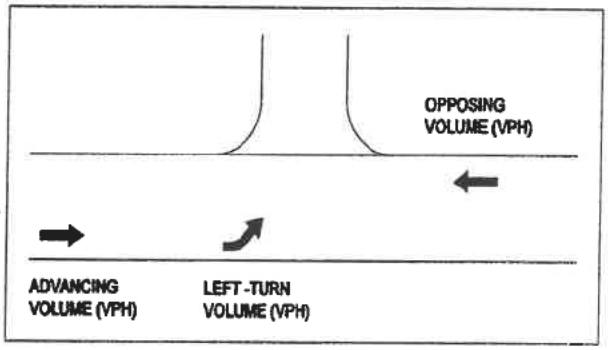
WARRANTS FOR LEFT TURN LANES ON TWO-LANE HIGHWAYS

VPH OPPOSING VOLUME	ADVANCING VOLUME			
	5% LEFT TURNS	10% LEFT TURNS	20% LEFT TURNS	30% LEFT TURNS
	40-MPH DESIGN SPEED*			
800	330	240	180	160
600	410	305	225	200
400	510	380	275	245
200	640	470	350	305
100	720	515	390	340
	50-MPH DESIGN SPEED*			
800	280	210	165	135
600	350	280	195	170
400	430	320	240	210
200	550	400	300	270
100	615	445	335	295
	60-MPH DESIGN SPEED*			
800	230	170	125	115
600	290	210	160	140
400	365	270	200	175
200	450	330	250	215
100	505	370	275	240

TABLE 3-1

Source: Adapted from 2011 AASHTO Green Book, Chapter 9, Section 9.7.3, Page 9-132, Table 9-23

* USE DESIGN SPEED IF AVAILABLE, IF NOT USE LEGAL SPEED LIMIT.



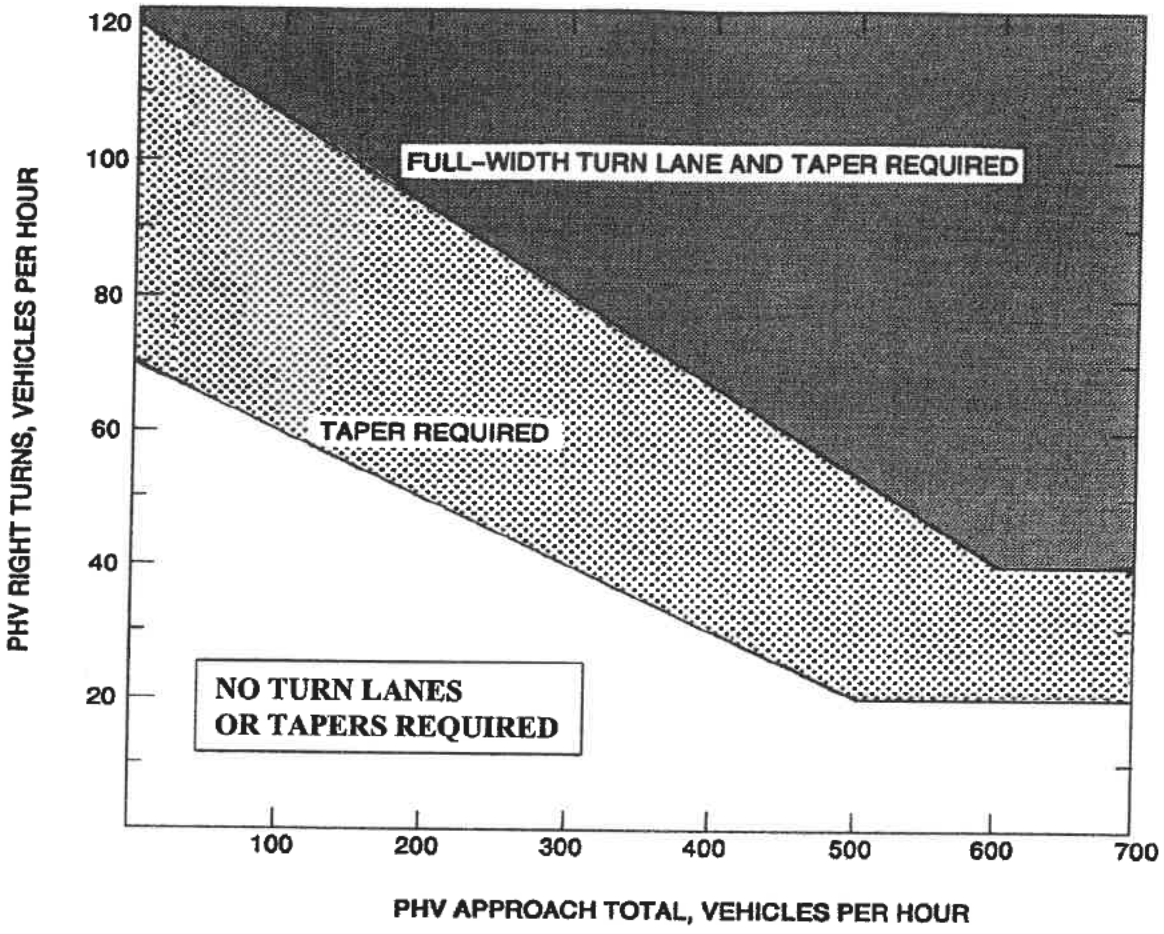
Example:

Two-lane highway with 40-MPH operating speed

Opposing Volume (VPH) - 600
Advancing Volume (VPH) - 440
Left-Turn Volume (VPH) - 44 or 10% of Advancing Volume

With opposing volume (VPH) of 600 and 10% of advancing volume (VPH) making left turns, and advancing volume (VPH) of 305 or more will warrant a left-turn lane.

When the Average Running Speed on an existing facility is available, the corresponding Design Speed may be obtained from IIM LD- 117.



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.
Adjusted right turns = PHV Right Turns - 20
If PHV is not known use formula: PHV = ADT x K x D

K = the percent of AADT occurring in the peak hour
D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

FIGURE 3-26 GUIDELINES FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)

APPENDIX E

Synchro Reports

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	454	483	5	3	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	99	99	81	81	67	67
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	2	459	596	6	4	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	596	0	-	0	1059	596
Stage 1	-	-	-	-	596	-
Stage 2	-	-	-	-	463	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	980	-	-	-	221	487
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	602	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	980	-	-	-	220	487
Mov Cap-2 Maneuver	-	-	-	-	220	-
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	600	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	980	-	-	-	335
HCM Lane V/C Ratio	0.002	-	-	-	0.036
HCM Control Delay (s)	8.7	0	-	-	16.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	16	347	94	28	387	18	85	8	25	7	13	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	87	87	87	84	84	84	82	82	82
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	16	351	95	32	445	21	101	10	30	9	16	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	445	0	0	351	0	0	910	892	351	911	892	445
Stage 1	-	-	-	-	-	-	383	383	-	509	509	-
Stage 2	-	-	-	-	-	-	527	509	-	402	383	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1115	-	-	1197	-	-	255	281	692	255	281	613
Stage 1	-	-	-	-	-	-	640	612	-	547	538	-
Stage 2	-	-	-	-	-	-	535	538	-	625	612	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1115	-	-	1197	-	-	226	266	692	228	266	613
Mov Cap-2 Maneuver	-	-	-	-	-	-	226	266	-	228	266	-
Stage 1	-	-	-	-	-	-	628	600	-	537	519	-
Stage 2	-	-	-	-	-	-	484	519	-	577	600	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	32.5	17.1
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	267	1115	-	-	1197	-	-	341
HCM Lane V/C Ratio	0.526	0.014	-	-	0.027	-	-	0.129
HCM Control Delay (s)	32.5	8.3	0	-	8.1	0	-	17.1
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.8	0	-	-	0.1	-	-	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	329	25	145	338	44	70	34	196	66	32	25
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1718	1843
Adj Flow Rate, veh/h	27	354	27	165	384	50	80	39	225	88	43	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.75	0.75	0.75
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	353	657	559	439	779	669	331	45	258	132	69	53
Arrive On Green	0.02	0.36	0.36	0.08	0.42	0.42	0.18	0.18	0.18	0.08	0.08	0.08
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	242	1394	1721	903	693
Grp Volume(v), veh/h	27	354	27	165	384	50	80	0	264	88	0	76
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1635	1721	0	1595
Q Serve(g_s), s	0.9	12.7	0.9	4.7	12.5	1.6	3.2	0.0	13.0	4.1	0.0	3.8
Cycle Q Clear(g_c), s	0.9	12.7	0.9	4.7	12.5	1.6	3.2	0.0	13.0	4.1	0.0	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.43
Lane Grp Cap(c), veh/h	353	657	559	439	779	669	331	0	302	132	0	122
V/C Ratio(X)	0.08	0.54	0.05	0.38	0.49	0.07	0.24	0.00	0.87	0.67	0.00	0.62
Avail Cap(c_a), veh/h	395	657	559	498	779	669	359	0	327	332	0	308
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.6	21.2	17.4	15.6	17.8	14.6	28.8	0.0	32.9	37.3	0.0	37.1
Incr Delay (d2), s/veh	0.1	3.2	0.2	0.5	2.2	0.2	0.4	0.0	20.9	5.7	0.0	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	7.0	0.4	2.4	6.9	0.7	1.6	0.0	7.6	2.2	0.0	1.9
LnGrp Delay(d),s/veh	16.6	24.3	17.5	16.1	20.0	14.8	29.2	0.0	53.8	43.0	0.0	42.2
LnGrp LOS	B	C	B	B	C	B	C		D	D		D
Approach Vol, veh/h		408			599			344			164	
Approach Delay, s/veh		23.4			18.5			48.1			42.6	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.8	35.9		20.7	9.1	40.7		12.5
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	9.4	29.1		* 17	4.0	34.5		16.0
Max Q Clear Time (g_c+I1), s	6.7	14.7		15.0	2.9	14.5		6.1
Green Ext Time (p_c), s	0.1	3.8		0.3	0.0	4.3		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	29.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	535	350	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	5	582	380	5	5	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	380	0	-	0	972	380
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	592	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1178	-	-	-	251	653
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	518	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1178	-	-	-	249	653
Mov Cap-2 Maneuver	-	-	-	-	249	-
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	515	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1178	-	-	-	361
HCM Lane V/C Ratio	0.005	-	-	-	0.03
HCM Control Delay (s)	8.1	0	-	-	15.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	30	405	105	15	300	15	50	10	60	10	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	33	440	114	16	326	16	54	11	65	11	16	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	326	0	0	440	0	0	875	864	440	902	864	326
Stage 1	-	-	-	-	-	-	505	505	-	359	359	-
Stage 2	-	-	-	-	-	-	370	359	-	543	505	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1234	-	-	1109	-	-	270	292	617	259	292	715
Stage 1	-	-	-	-	-	-	549	540	-	659	627	-
Stage 2	-	-	-	-	-	-	650	627	-	524	540	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1234	-	-	1109	-	-	245	276	617	215	276	715
Mov Cap-2 Maneuver	-	-	-	-	-	-	245	276	-	215	276	-
Stage 1	-	-	-	-	-	-	528	519	-	633	616	-
Stage 2	-	-	-	-	-	-	617	616	-	441	519	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4	20.9	19.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	355	1234	-	-	1109	-	-	278
HCM Lane V/C Ratio	0.367	0.026	-	-	0.015	-	-	0.117
HCM Control Delay (s)	20.9	8	0	-	8.3	0	-	19.7
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.6	0.1	-	-	0	-	-	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	430	25	90	235	35	70	30	200	60	30	25
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	22	467	27	98	255	38	76	33	217	65	33	27
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	504	835	710	406	904	776	309	37	244	101	52	42
Arrive On Green	0.02	0.45	0.45	0.05	0.48	0.48	0.17	0.17	0.17	0.06	0.06	0.06
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	215	1416	1721	875	716
Grp Volume(v), veh/h	22	467	27	98	255	38	76	0	250	65	0	60
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1631	1721	0	1591
Q Serve(g_s), s	0.7	17.3	0.9	2.7	7.6	1.2	3.4	0.0	14.0	3.4	0.0	3.4
Cycle Q Clear(g_c), s	0.7	17.3	0.9	2.7	7.6	1.2	3.4	0.0	14.0	3.4	0.0	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.45
Lane Grp Cap(c), veh/h	504	835	710	406	904	776	309	0	281	101	0	94
V/C Ratio(X)	0.04	0.56	0.04	0.24	0.28	0.05	0.25	0.00	0.89	0.64	0.00	0.64
Avail Cap(c_a), veh/h	543	835	710	441	904	776	319	0	291	295	0	273
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.2	18.6	14.1	14.1	14.4	12.8	33.3	0.0	37.7	42.9	0.0	42.9
Incr Delay (d2), s/veh	0.0	2.7	0.1	0.3	0.8	0.1	0.4	0.0	26.1	6.6	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.3	9.3	0.4	1.3	4.1	0.5	1.7	0.0	8.3	1.8	0.0	1.7
LnGrp Delay(d),s/veh	13.3	21.3	14.2	14.4	15.2	12.9	33.7	0.0	63.8	49.5	0.0	50.0
LnGrp LOS	B	C	B	B	B	B	C		E	D		D
Approach Vol, veh/h		516			391			326			125	
Approach Delay, s/veh		20.6			14.8			56.8			49.7	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.5	48.6		21.5	8.9	51.2		11.6
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	6.1	42.4		* 17	4.0	44.5		16.0
Max Q Clear Time (g_c+I1), s	4.7	19.3		16.0	2.7	9.6		5.4
Green Ext Time (p_c), s	0.0	4.3		0.1	0.0	4.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	30.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	502	534	6	3	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	2	546	580	7	3	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	580	0	-	0	1130	580
Stage 1	-	-	-	-	580	-
Stage 2	-	-	-	-	550	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	994	-	-	-	199	498
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	544	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	994	-	-	-	198	498
Mov Cap-2 Maneuver	-	-	-	-	198	-
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	542	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	994	-	-	-	331
HCM Lane V/C Ratio	0.002	-	-	-	0.03
HCM Control Delay (s)	8.6	0	-	-	16.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	383	104	31	428	20	94	9	28	8	14	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	20	416	113	34	465	22	102	10	30	9	15	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	465	0	0	416	0	0	1005	988	416	1009	988	465
Stage 1	-	-	-	-	-	-	455	455	-	533	533	-
Stage 2	-	-	-	-	-	-	550	533	-	476	455	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1096	-	-	1132	-	-	220	247	637	219	247	597
Stage 1	-	-	-	-	-	-	585	569	-	531	525	-
Stage 2	-	-	-	-	-	-	519	525	-	570	569	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1096	-	-	1132	-	-	192	231	637	192	231	597
Mov Cap-2 Maneuver	-	-	-	-	-	-	192	231	-	192	231	-
Stage 1	-	-	-	-	-	-	570	554	-	517	503	-
Stage 2	-	-	-	-	-	-	467	503	-	519	554	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	43.5	18.9
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	229	1096	-	-	1132	-	-	302
HCM Lane V/C Ratio	0.622	0.018	-	-	0.03	-	-	0.144
HCM Control Delay (s)	43.5	8.3	0	-	8.3	0	-	18.9
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	3.7	0.1	-	-	0.1	-	-	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	364	28	160	373	49	77	38	217	73	35	28
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	30	396	30	174	405	53	84	41	236	79	38	30
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	359	697	592	430	817	702	337	46	262	119	62	49
Arrive On Green	0.02	0.38	0.38	0.08	0.44	0.44	0.19	0.19	0.19	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	242	1393	1721	890	703
Grp Volume(v), veh/h	30	396	30	174	405	53	84	0	277	79	0	68
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1635	1721	0	1593
Q Serve(g_s), s	1.0	15.1	1.1	5.1	13.7	1.7	3.5	0.0	14.6	3.9	0.0	3.7
Cycle Q Clear(g_c), s	1.0	15.1	1.1	5.1	13.7	1.7	3.5	0.0	14.6	3.9	0.0	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.44
Lane Grp Cap(c), veh/h	359	697	592	430	817	702	337	0	308	119	0	110
V/C Ratio(X)	0.08	0.57	0.05	0.40	0.50	0.08	0.25	0.00	0.90	0.66	0.00	0.62
Avail Cap(c_a), veh/h	394	697	592	485	817	702	337	0	308	312	0	289
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	21.6	17.3	15.8	17.9	14.5	30.5	0.0	35.0	40.0	0.0	39.9
Incr Delay (d2), s/veh	0.1	3.3	0.2	0.6	2.1	0.2	0.4	0.0	27.5	6.2	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	8.2	0.5	2.6	7.6	0.8	1.8	0.0	8.9	2.1	0.0	1.8
LnGrp Delay(d),s/veh	16.5	25.0	17.5	16.4	20.0	14.7	30.9	0.0	62.5	46.2	0.0	45.4
LnGrp LOS	B	C	B	B	C	B	C		E	D		D
Approach Vol, veh/h		456			632			361			147	
Approach Delay, s/veh		23.9			18.6			55.1			45.8	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.3	39.7		22.0	9.3	44.7		12.2
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	9.8	32.7		* 17	4.0	38.5		16.0
Max Q Clear Time (g_c+I1), s	7.1	17.1		16.6	3.0	15.7		5.9
Green Ext Time (p_c), s	0.1	4.3		0.0	0.0	4.9		0.3

Intersection Summary			
HCM 2010 Ctrl Delay		30.9	
HCM 2010 LOS		C	

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	6	591	387	6	6	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	7	642	421	7	7	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	421	0	-	0	1076	421
Stage 1	-	-	-	-	421	-
Stage 2	-	-	-	-	655	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1138	-	-	-	215	618
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	481	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1138	-	-	-	213	618
Mov Cap-2 Maneuver	-	-	-	-	213	-
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	476	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1138	-	-	-	317
HCM Lane V/C Ratio	0.006	-	-	-	0.041
HCM Control Delay (s)	8.2	0	-	-	16.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	33	448	116	17	332	17	55	11	66	11	17	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	36	487	126	18	361	18	60	12	72	12	18	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	361	0	0	487	0	0	969	957	487	999	957	361
Stage 1	-	-	-	-	-	-	559	559	-	398	398	-
Stage 2	-	-	-	-	-	-	410	398	-	601	559	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1198	-	-	1066	-	-	233	258	581	222	258	684
Stage 1	-	-	-	-	-	-	513	511	-	628	603	-
Stage 2	-	-	-	-	-	-	619	603	-	487	511	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1198	-	-	1066	-	-	206	241	581	178	241	684
Mov Cap-2 Maneuver	-	-	-	-	-	-	206	241	-	178	241	-
Stage 1	-	-	-	-	-	-	489	487	-	598	590	-
Stage 2	-	-	-	-	-	-	581	590	-	397	487	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4	26.2	22.6
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	310	1198	-	-	1066	-	-	241
HCM Lane V/C Ratio	0.463	0.03	-	-	0.017	-	-	0.153
HCM Control Delay (s)	26.2	8.1	0	-	8.4	0	-	22.6
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.3	0.1	-	-	0.1	-	-	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	475	28	99	260	39	77	33	221	66	33	28
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	24	516	30	108	283	42	84	36	240	72	36	30
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	435	735	625	322	809	694	340	40	269	113	57	47
Arrive On Green	0.02	0.40	0.40	0.05	0.43	0.43	0.19	0.19	0.19	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	213	1418	1721	867	722
Grp Volume(v), veh/h	24	516	30	108	283	42	84	0	276	72	0	66
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1631	1721	0	1589
Q Serve(g_s), s	0.7	20.0	1.0	3.0	8.6	1.3	3.4	0.0	14.0	3.5	0.0	3.4
Cycle Q Clear(g_c), s	0.7	20.0	1.0	3.0	8.6	1.3	3.4	0.0	14.0	3.5	0.0	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.45
Lane Grp Cap(c), veh/h	435	735	625	322	809	694	340	0	310	113	0	104
V/C Ratio(X)	0.06	0.70	0.05	0.34	0.35	0.06	0.25	0.00	0.89	0.64	0.00	0.64
Avail Cap(c_a), veh/h	478	735	625	322	809	694	349	0	318	323	0	299
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.7	21.3	15.6	16.3	16.2	14.1	29.3	0.0	33.6	38.8	0.0	38.8
Incr Delay (d2), s/veh	0.1	5.5	0.1	0.6	1.2	0.2	0.4	0.0	25.0	5.9	0.0	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.3	11.2	0.5	1.5	4.7	0.6	1.7	0.0	8.4	1.8	0.0	1.7
LnGrp Delay(d),s/veh	14.8	26.8	15.7	16.9	17.4	14.3	29.7	0.0	58.6	44.7	0.0	45.1
LnGrp LOS	B	C	B	B	B	B	C		E	D		D
Approach Vol, veh/h		570			433			360			138	
Approach Delay, s/veh		25.7			17.0			51.8			44.9	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.6	40.3		21.6	8.9	43.0		11.7
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	4.4	34.1		* 17	4.0	34.5		16.0
Max Q Clear Time (g_c+I1), s	5.0	22.0		16.0	2.7	10.6		5.5
Green Ext Time (p_c), s	0.0	3.8		0.1	0.0	5.0		0.3

Intersection Summary			
HCM 2010 Ctrl Delay		31.2	
HCM 2010 LOS		C	

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	505	15	52	525	6	37	0	38	3	0	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	2	549	16	57	571	7	40	0	41	3	0	7
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	115	637	547	169	838	719	338	17	309	210	23	435
Arrive On Green	0.35	0.35	0.35	0.01	0.15	0.15	0.41	0.00	0.41	0.41	0.00	0.41
Sat Flow, veh/h	832	1845	1583	1774	1845	1583	692	42	752	397	56	1058
Grp Volume(v), veh/h	2	549	16	57	571	7	81	0	0	10	0	0
Grp Sat Flow(s),veh/h/ln	832	1845	1583	1774	1845	1583	1485	0	0	1511	0	0
Q Serve(g_s), s	0.2	27.7	0.7	0.0	29.3	0.4	1.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	29.5	27.7	0.7	0.0	29.3	0.4	3.1	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.49		0.51	0.30		0.70
Lane Grp Cap(c), veh/h	115	637	547	169	838	719	664	0	0	668	0	0
V/C Ratio(X)	0.02	0.86	0.03	0.34	0.68	0.01	0.12	0.00	0.00	0.01	0.00	0.00
Avail Cap(c_a), veh/h	263	965	828	212	1205	1034	664	0	0	668	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	45.0	30.5	21.7	46.2	35.7	23.4	18.2	0.0	0.0	17.5	0.0	0.0
Incr Delay (d2), s/veh	0.1	5.3	0.0	1.2	1.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	15.0	0.3	1.6	15.2	0.2	1.5	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	45.1	35.8	21.7	47.4	36.7	23.4	18.6	0.0	0.0	17.5	0.0	0.0
LnGrp LOS	D	D	C	D	D	C	B			B		
Approach Vol, veh/h		567			635			81			10	
Approach Delay, s/veh		35.4			37.5			18.6			17.5	
Approach LOS		D			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		46.9	10.9	42.2		46.9		53.1
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 21	5.6	* 52		* 21		65.3
Max Q Clear Time (g_c+I1), s		5.1	2.0	31.5		2.4		31.3
Green Ext Time (p_c), s		0.4	1.2	3.0		0.4		3.5

Intersection Summary	
HCM 2010 Ctrl Delay	35.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	14.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	411	117	49	457	20	108	9	42	8	14	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	20	447	127	53	497	22	117	10	46	9	15	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	497	0	0	447	0	0	1107	1089	447	1117	1089	497
Stage 1	-	-	-	-	-	-	486	486	-	603	603	-
Stage 2	-	-	-	-	-	-	621	603	-	514	486	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.52	6.92	6.42	7.52	6.92	6.42
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1067	-	-	1103	-	-	166	191	597	163	191	557
Stage 1	-	-	-	-	-	-	533	522	-	454	457	-
Stage 2	-	-	-	-	-	-	443	457	-	513	522	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1067	-	-	1103	-	-	142	178	597	137	178	557
Mov Cap-2 Maneuver	-	-	-	-	-	-	142	178	-	137	178	-
Stage 1	-	-	-	-	-	-	523	512	-	445	435	-
Stage 2	-	-	-	-	-	-	393	435	-	456	512	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.8	109.4	23.7
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	180	1067	-	-	1103	-	-	236
HCM Lane V/C Ratio	0.96	0.018	-	-	0.048	-	-	0.184
HCM Control Delay (s)	109.4	8.4	-	-	8.4	-	-	23.7
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	7.6	0.1	-	-	0.2	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	406	28	160	420	49	77	38	217	73	35	28
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	30	441	30	174	457	53	84	41	236	79	38	30
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	378	819	696	483	928	796	297	40	231	115	60	47
Arrive On Green	0.03	0.59	0.59	0.07	0.50	0.50	0.17	0.17	0.17	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	242	1393	1721	890	703
Grp Volume(v), veh/h	30	441	30	174	457	53	84	0	277	79	0	68
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1635	1721	0	1593
Q Serve(g_s), s	1.0	14.4	0.8	5.2	16.3	1.7	4.1	0.0	16.6	4.5	0.0	4.2
Cycle Q Clear(g_c), s	1.0	14.4	0.8	5.2	16.3	1.7	4.1	0.0	16.6	4.5	0.0	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.44
Lane Grp Cap(c), veh/h	378	819	696	483	928	796	297	0	271	115	0	107
V/C Ratio(X)	0.08	0.54	0.04	0.36	0.49	0.07	0.28	0.00	1.02	0.69	0.00	0.64
Avail Cap(c_a), veh/h	406	819	696	513	928	796	297	0	271	275	0	255
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.9	14.2	11.4	14.1	16.8	13.2	36.5	0.0	41.7	45.6	0.0	45.5
Incr Delay (d2), s/veh	0.1	2.5	0.1	0.5	1.9	0.2	0.5	0.0	59.9	7.0	0.0	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	7.8	0.4	2.6	8.9	0.8	2.1	0.0	12.0	2.4	0.0	2.0
LnGrp Delay(d),s/veh	15.0	16.7	11.5	14.6	18.7	13.3	37.0	0.0	101.7	52.7	0.0	51.7
LnGrp LOS	B	B	B	B	B	B	D		F	D		D
Approach Vol, veh/h		501			684			361			147	
Approach Delay, s/veh		16.3			17.2			86.7			52.2	
Approach LOS		B			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.4	50.8		22.0	9.5	55.7		12.8
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	8.8	33.7		* 17	4.0	38.5		16.0
Max Q Clear Time (g_c+I1), s	7.2	16.4		18.6	3.0	18.3		6.5
Green Ext Time (p_c), s	0.1	5.1		0.0	0.0	5.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	34.8
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	510	41	0	568	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	554	45	0	617	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	554	0	1171	554
Stage 1	-	-	-	-	554	-
Stage 2	-	-	-	-	617	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1016	-	213	532
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	538	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1016	-	213	532
Mov Cap-2 Maneuver	-	-	-	-	213	-
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	538	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	532	-	-	1016	-
HCM Lane V/C Ratio	0.025	-	-	-	-
HCM Control Delay (s)	11.9	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	593	29	71	377	6	52	0	77	6	0	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	7	645	32	77	410	7	57	0	84	7	0	7
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	433	711	610	155	907	778	260	19	341	314	16	279
Arrive On Green	0.39	0.39	0.39	0.07	0.98	0.98	0.38	0.00	0.38	0.38	0.00	0.38
Sat Flow, veh/h	965	1845	1583	1774	1845	1583	558	49	895	690	42	732
Grp Volume(v), veh/h	7	645	32	77	410	7	141	0	0	14	0	0
Grp Sat Flow(s),veh/h/ln	965	1845	1583	1774	1845	1583	1503	0	0	1463	0	0
Q Serve(g_s), s	0.5	35.0	1.3	0.0	0.7	0.0	3.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.2	35.0	1.3	0.0	0.7	0.0	6.5	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.40		0.60	0.50		0.50
Lane Grp Cap(c), veh/h	433	711	610	155	907	778	620	0	0	608	0	0
V/C Ratio(X)	0.02	0.91	0.05	0.50	0.45	0.01	0.23	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	592	1015	871	206	1258	1080	620	0	0	608	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.6	30.8	20.4	47.1	0.5	0.5	22.2	0.0	0.0	20.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	8.8	0.0	2.4	0.4	0.0	0.9	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	19.5	0.6	2.2	0.3	0.0	3.0	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	20.6	39.6	20.5	49.5	0.8	0.5	23.1	0.0	0.0	20.5	0.0	0.0
LnGrp LOS	C	D	C	D	A	A	C			C		
Approach Vol, veh/h		684			494			141			14	
Approach Delay, s/veh		38.5			8.4			23.1			20.5	
Approach LOS		D			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		46.2	11.3	48.5		46.2		59.8
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 20	6.6	* 58		* 20		72.3
Max Q Clear Time (g_c+I1), s		8.5	2.0	37.0		2.5		2.7
Green Ext Time (p_c), s		0.6	1.0	3.8		0.8		2.5

Intersection Summary	
HCM 2010 Ctrl Delay	25.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	33	499	144	40	373	17	75	11	96	11	17	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	36	542	157	43	405	18	82	12	104	12	18	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	405	0	0	542	0	0	1119	1106	542	1164	1106	405
Stage 1	-	-	-	-	-	-	614	614	-	492	492	-
Stage 2	-	-	-	-	-	-	505	492	-	672	614	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1154	-	-	1017	-	-	184	210	540	171	210	646
Stage 1	-	-	-	-	-	-	479	483	-	558	548	-
Stage 2	-	-	-	-	-	-	549	548	-	445	483	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1154	-	-	1017	-	-	160	195	540	124	195	646
Mov Cap-2 Maneuver	-	-	-	-	-	-	160	195	-	124	195	-
Stage 1	-	-	-	-	-	-	464	468	-	541	525	-
Stage 2	-	-	-	-	-	-	502	525	-	339	468	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.8	52.9	29.4
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	259	1154	-	-	1017	-	-	184
HCM Lane V/C Ratio	0.764	0.031	-	-	0.043	-	-	0.201
HCM Control Delay (s)	52.9	8.2	-	-	8.7	-	-	29.4
HCM Lane LOS	F	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	5.6	0.1	-	-	0.1	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	556	28	99	324	39	77	33	221	66	33	28
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1863	1845	1863	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	24	604	30	108	352	42	84	36	240	72	36	30
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	474	920	782	545	974	836	281	33	222	106	53	44
Arrive On Green	0.04	1.00	1.00	0.05	0.53	0.53	0.16	0.16	0.16	0.06	0.06	0.06
Sat Flow, veh/h	1620	1835	1560	1774	1845	1583	1792	213	1418	1721	867	722
Grp Volume(v), veh/h	24	604	30	108	352	42	84	0	276	72	0	66
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1774	1845	1583	1792	0	1631	1721	0	1589
Q Serve(g_s), s	0.8	0.0	0.0	3.1	11.8	1.4	4.4	0.0	16.6	4.3	0.0	4.3
Cycle Q Clear(g_c), s	0.8	0.0	0.0	3.1	11.8	1.4	4.4	0.0	16.6	4.3	0.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.45
Lane Grp Cap(c), veh/h	474	920	782	545	974	836	281	0	255	106	0	98
V/C Ratio(X)	0.05	0.66	0.04	0.20	0.36	0.05	0.30	0.00	1.08	0.68	0.00	0.67
Avail Cap(c_a), veh/h	504	920	782	545	974	836	281	0	255	260	0	240
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	0.0	11.6	14.6	12.1	39.6	0.0	44.7	48.7	0.0	48.7
Incr Delay (d2), s/veh	0.0	3.6	0.1	0.2	1.0	0.1	0.6	0.0	79.4	7.4	0.0	7.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.3	0.9	0.0	1.5	6.2	0.6	2.2	0.0	13.1	2.3	0.0	2.1
LnGrp Delay(d),s/veh	12.5	3.6	0.1	11.8	15.6	12.3	40.1	0.0	124.1	56.1	0.0	56.5
LnGrp LOS	B	A	A	B	B	B	D		F	E		E
Approach Vol, veh/h		658			502			360			138	
Approach Delay, s/veh		3.8			14.5			104.5			56.3	
Approach LOS		A			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	59.4		22.0	9.2	62.1		12.6
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	4.8	43.7		* 17	4.0	44.5		16.0
Max Q Clear Time (g_c+I1), s	5.1	2.0		18.6	2.8	13.8		6.3
Green Ext Time (p_c), s	0.0	6.9		0.0	0.0	6.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	33.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	608	84	0	435	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	661	91	0	473	0	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	661	0	1134	661
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	473	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	927	-	224	462
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	927	-	224	462
Mov Cap-2 Maneuver	-	-	-	-	224	-
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	627	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	462	-	-	927	-
HCM Lane V/C Ratio	0.047	-	-	-	-
HCM Control Delay (s)	13.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	549	584	6	4	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	2	597	635	7	4	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	635	0	-	0	1236	635
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	601	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	948	-	-	-	170	462
Stage 1	-	-	-	-	492	-
Stage 2	-	-	-	-	512	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	948	-	-	-	169	462
Mov Cap-2 Maneuver	-	-	-	-	169	-
Stage 1	-	-	-	-	492	-
Stage 2	-	-	-	-	510	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	948	-	-	-	273
HCM Lane V/C Ratio	0.002	-	-	-	0.04
HCM Control Delay (s)	8.8	0	-	-	18.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	19	420	114	34	468	22	103	10	30	8	16	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	21	457	124	37	509	24	112	11	33	9	17	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	509	0	0	457	0	0	1100	1081	457	1103	1081	509
Stage 1	-	-	-	-	-	-	498	498	-	583	583	-
Stage 2	-	-	-	-	-	-	602	583	-	520	498	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1056	-	-	1093	-	-	190	218	604	189	218	564
Stage 1	-	-	-	-	-	-	554	544	-	498	499	-
Stage 2	-	-	-	-	-	-	486	499	-	539	544	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1056	-	-	1093	-	-	161	201	604	161	201	564
Mov Cap-2 Maneuver	-	-	-	-	-	-	161	201	-	161	201	-
Stage 1	-	-	-	-	-	-	537	528	-	483	475	-
Stage 2	-	-	-	-	-	-	429	475	-	484	528	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	73	21.5
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	193	1056	-	-	1093	-	-	264
HCM Lane V/C Ratio	0.805	0.02	-	-	0.034	-	-	0.177
HCM Control Delay (s)	73	8.5	0	-	8.4	0	-	21.5
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	5.6	0.1	-	-	0.1	-	-	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	398	30	175	409	53	85	41	237	80	39	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	33	433	33	190	445	58	92	45	258	87	42	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	336	714	607	404	823	707	330	45	257	128	66	52
Arrive On Green	0.02	0.39	0.39	0.08	0.44	0.44	0.18	0.18	0.18	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	243	1393	1721	892	701
Grp Volume(v), veh/h	33	433	33	190	445	58	92	0	303	87	0	75
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1636	1721	0	1594
Q Serve(g_s), s	1.1	17.0	1.2	5.7	15.7	1.9	4.0	0.0	16.6	4.4	0.0	4.1
Cycle Q Clear(g_c), s	1.1	17.0	1.2	5.7	15.7	1.9	4.0	0.0	16.6	4.4	0.0	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.44
Lane Grp Cap(c), veh/h	336	714	607	404	823	707	330	0	302	128	0	118
V/C Ratio(X)	0.10	0.61	0.05	0.47	0.54	0.08	0.28	0.00	1.00	0.68	0.00	0.63
Avail Cap(c_a), veh/h	368	714	607	404	823	707	330	0	302	306	0	283
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	22.0	17.2	16.4	18.5	14.7	31.6	0.0	36.7	40.6	0.0	40.5
Incr Delay (d2), s/veh	0.1	3.8	0.2	0.9	2.5	0.2	0.5	0.0	52.9	6.2	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	9.3	0.5	2.8	8.6	0.9	2.0	0.0	11.9	2.3	0.0	2.0
LnGrp Delay(d),s/veh	16.6	25.8	17.3	17.3	21.1	14.9	32.0	0.0	89.6	46.8	0.0	46.0
LnGrp LOS	B	C	B	B	C	B	C		F	D		D
Approach Vol, veh/h		499			693			395			162	
Approach Delay, s/veh		24.6			19.5			76.2			46.4	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	41.2		22.0	9.4	45.8		12.8
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	6.8	25.7		* 17	4.0	28.5		16.0
Max Q Clear Time (g_c+I1), s	7.7	19.0		18.6	3.1	17.7		6.4
Green Ext Time (p_c), s	0.0	2.9		0.0	0.0	4.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	36.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	6	647	424	6	6	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	7	703	461	7	7	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	461	0	-	0	1177	461
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	716	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1100	-	-	-	185	585
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	447	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1100	-	-	-	183	585
Mov Cap-2 Maneuver	-	-	-	-	183	-
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	443	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	18.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1100	-	-	-	279
HCM Lane V/C Ratio	0.006	-	-	-	0.047
HCM Control Delay (s)	8.3	0	-	-	18.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	36	490	127	18	363	18	61	12	73	12	18	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	39	533	138	20	395	20	66	13	79	13	20	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	395	0	0	533	0	0	1058	1045	533	1091	1045	395
Stage 1	-	-	-	-	-	-	611	611	-	434	434	-
Stage 2	-	-	-	-	-	-	447	434	-	657	611	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1164	-	-	1025	-	-	203	229	547	192	229	654
Stage 1	-	-	-	-	-	-	481	484	-	600	581	-
Stage 2	-	-	-	-	-	-	591	581	-	454	484	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1164	-	-	1025	-	-	176	211	547	147	211	654
Mov Cap-2 Maneuver	-	-	-	-	-	-	176	211	-	147	211	-
Stage 1	-	-	-	-	-	-	455	457	-	567	566	-
Stage 2	-	-	-	-	-	-	551	566	-	356	457	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.4	35.2	26.8
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	272	1164	-	-	1025	-	-	204
HCM Lane V/C Ratio	0.583	0.034	-	-	0.019	-	-	0.192
HCM Control Delay (s)	35.2	8.2	0	-	8.6	0	-	26.8
HCM Lane LOS	E	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	3.4	0.1	-	-	0.1	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	520	30	109	284	42	85	36	242	73	36	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1716	1843
Adj Flow Rate, veh/h	26	565	33	118	309	46	92	39	263	79	39	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	431	780	663	301	840	721	330	39	262	119	60	50
Arrive On Green	0.02	0.43	0.43	0.04	0.45	0.45	0.18	0.18	0.18	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	211	1420	1721	860	728
Grp Volume(v), veh/h	26	565	33	118	309	46	92	0	302	79	0	72
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1631	1721	0	1588
Q Serve(g_s), s	0.8	23.0	1.1	3.3	9.8	1.5	4.0	0.0	16.6	4.0	0.0	4.0
Cycle Q Clear(g_c), s	0.8	23.0	1.1	3.3	9.8	1.5	4.0	0.0	16.6	4.0	0.0	4.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.46
Lane Grp Cap(c), veh/h	431	780	663	301	840	721	330	0	301	119	0	110
V/C Ratio(X)	0.06	0.72	0.05	0.39	0.37	0.06	0.28	0.00	1.00	0.66	0.00	0.66
Avail Cap(c_a), veh/h	469	780	663	301	840	721	330	0	301	306	0	282
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	21.5	15.2	17.0	16.4	14.1	31.6	0.0	36.7	40.9	0.0	40.8
Incr Delay (d2), s/veh	0.1	5.8	0.1	0.8	1.2	0.2	0.5	0.0	52.9	6.2	0.0	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	12.9	0.5	1.7	5.4	0.7	2.0	0.0	11.9	2.1	0.0	1.9
LnGrp Delay(d),s/veh	14.4	27.3	15.3	17.8	17.6	14.3	32.0	0.0	89.6	47.1	0.0	47.3
LnGrp LOS	B	C	B	B	B	B	C		F	D		D
Approach Vol, veh/h		624			473			394			151	
Approach Delay, s/veh		26.1			17.4			76.2			47.2	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.2	44.5		22.0	9.1	46.6		12.3
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	4.0	28.5		* 17	4.0	28.5		16.0
Max Q Clear Time (g_c+I1), s	5.3	25.0		18.6	2.8	11.8		6.0
Green Ext Time (p_c), s	0.0	1.7		0.0	0.0	4.9		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	37.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	552	15	52	575	6	37	0	38	4	0	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	2	600	16	57	625	7	40	0	41	4	0	7
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	119	694	596	177	902	774	310	18	279	231	22	353
Arrive On Green	0.38	0.38	0.38	0.01	0.16	0.16	0.37	0.00	0.37	0.37	0.00	0.37
Sat Flow, veh/h	792	1845	1583	1774	1845	1583	686	48	752	485	59	953
Grp Volume(v), veh/h	2	600	16	57	625	7	81	0	0	11	0	0
Grp Sat Flow(s),veh/h/ln	792	1845	1583	1774	1845	1583	1486	0	0	1497	0	0
Q Serve(g_s), s	0.2	28.9	0.6	0.0	30.7	0.4	1.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	30.9	28.9	0.6	0.0	30.7	0.4	3.2	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.49		0.51	0.36		0.64
Lane Grp Cap(c), veh/h	119	694	596	177	902	774	607	0	0	606	0	0
V/C Ratio(X)	0.02	0.86	0.03	0.32	0.69	0.01	0.13	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	237	967	830	204	1197	1028	607	0	0	606	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	42.9	27.7	18.9	43.9	33.5	20.7	20.0	0.0	0.0	19.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	6.1	0.0	1.0	1.1	0.0	0.5	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	15.8	0.3	1.5	16.0	0.2	1.5	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	42.9	33.8	18.9	45.0	34.6	20.7	20.5	0.0	0.0	19.2	0.0	0.0
LnGrp LOS	D	C	B	D	C	C	C			B		
Approach Vol, veh/h		618			689			81			11	
Approach Delay, s/veh		33.4			35.3			20.5			19.2	
Approach LOS		C			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		41.4	10.8	43.8		41.4		54.6
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 20	4.6	* 50		* 20		62.3
Max Q Clear Time (g_c+I1), s		5.2	2.0	32.9		2.4		32.7
Green Ext Time (p_c), s		0.4	1.0	3.2		0.4		3.9

Intersection Summary	
HCM 2010 Ctrl Delay	33.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	19.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	19	448	127	52	497	22	117	10	44	8	16	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	21	487	138	57	540	24	127	11	48	9	17	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	540	0	0	487	0	0	1200	1181	487	1211	1181	540
Stage 1	-	-	-	-	-	-	528	528	-	653	653	-
Stage 2	-	-	-	-	-	-	672	653	-	558	528	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1028	-	-	1066	-	-	162	190	581	159	190	542
Stage 1	-	-	-	-	-	-	534	528	-	456	464	-
Stage 2	-	-	-	-	-	-	445	464	-	514	528	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1028	-	-	1066	-	-	136	176	581	131	176	542
Mov Cap-2 Maneuver	-	-	-	-	-	-	136	176	-	131	176	-
Stage 1	-	-	-	-	-	-	523	517	-	447	439	-
Stage 2	-	-	-	-	-	-	389	439	-	452	517	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.8	146.6	24.6
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	172	1028	-	-	1066	-	-	230
HCM Lane V/C Ratio	1.081	0.02	-	-	0.053	-	-	0.203
HCM Control Delay (s)	146.6	8.6	-	-	8.6	-	-	24.6
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	9.3	0.1	-	-	0.2	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	440	30	175	456	53	85	41	237	80	39	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	33	478	33	190	496	58	92	45	258	87	42	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	332	761	647	431	881	756	310	42	241	125	65	51
Arrive On Green	0.03	0.55	0.55	0.08	0.47	0.47	0.17	0.17	0.17	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	243	1393	1721	892	701
Grp Volume(v), veh/h	33	478	33	190	496	58	92	0	303	87	0	75
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1636	1721	0	1594
Q Serve(g_s), s	1.1	17.1	0.9	5.7	18.3	1.9	4.3	0.0	16.6	4.7	0.0	4.4
Cycle Q Clear(g_c), s	1.1	17.1	0.9	5.7	18.3	1.9	4.3	0.0	16.6	4.7	0.0	4.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.44
Lane Grp Cap(c), veh/h	332	761	647	431	881	756	310	0	283	125	0	116
V/C Ratio(X)	0.10	0.63	0.05	0.44	0.56	0.08	0.30	0.00	1.07	0.69	0.00	0.65
Avail Cap(c_a), veh/h	360	761	647	434	881	756	310	0	283	287	0	266
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.2	16.4	12.8	15.6	18.3	14.0	34.6	0.0	39.7	43.5	0.0	43.3
Incr Delay (d2), s/veh	0.1	3.9	0.1	0.7	2.6	0.2	0.5	0.0	73.7	6.7	0.0	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	9.3	0.4	2.8	10.0	0.9	2.2	0.0	13.3	2.5	0.0	2.1
LnGrp Delay(d),s/veh	16.3	20.3	12.9	16.3	20.9	14.2	35.1	0.0	113.4	50.1	0.0	49.2
LnGrp LOS	B	C	B	B	C	B	D		F	D		D
Approach Vol, veh/h		544			744			395			162	
Approach Delay, s/veh		19.6			19.2			95.2			49.7	
Approach LOS		B			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.9	46.0		22.0	9.5	51.4		13.1
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	7.8	30.7		* 17	4.0	34.5		16.0
Max Q Clear Time (g_c+I1), s	7.7	19.1		18.6	3.1	20.3		6.7
Green Ext Time (p_c), s	0.0	4.6		0.0	0.0	5.1		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	38.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	557	41	0	618	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	605	45	0	672	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	605	0	1277	605
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	672	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	973	-	184	498
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	508	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	973	-	184	498
Mov Cap-2 Maneuver	-	-	-	-	184	-
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	498	-	-	973	-
HCM Lane V/C Ratio	0.026	-	-	-	-
HCM Control Delay (s)	12.4	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	649	29	71	414	6	52	0	77	6	0	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	7	705	32	77	450	7	57	0	84	7	0	7
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	253	772	662	156	968	831	240	19	312	289	16	254
Arrive On Green	0.42	0.42	0.42	0.01	0.17	0.17	0.35	0.00	0.35	0.35	0.00	0.35
Sat Flow, veh/h	931	1845	1583	1774	1845	1583	554	54	896	686	46	732
Grp Volume(v), veh/h	7	705	32	77	450	7	141	0	0	14	0	0
Grp Sat Flow(s),veh/h/ln	931	1845	1583	1774	1845	1583	1504	0	0	1463	0	0
Q Serve(g_s), s	0.6	38.1	1.3	0.0	23.3	0.4	3.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	23.9	38.1	1.3	0.0	23.3	0.4	6.8	0.0	0.0	0.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.40		0.60	0.50		0.50
Lane Grp Cap(c), veh/h	253	772	662	156	968	831	571	0	0	560	0	0
V/C Ratio(X)	0.03	0.91	0.05	0.49	0.46	0.01	0.25	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	393	1049	901	190	1276	1095	571	0	0	560	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	34.3	29.0	18.3	49.9	30.4	21.0	24.7	0.0	0.0	22.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	9.6	0.0	2.4	0.3	0.0	1.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.2	21.4	0.6	2.3	12.0	0.2	3.1	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	34.3	38.6	18.3	52.2	30.8	21.0	25.7	0.0	0.0	22.8	0.0	0.0
LnGrp LOS	C	D	B	D	C	C	C			C		
Approach Vol, veh/h		744			534			141			14	
Approach Delay, s/veh		37.7			33.7			25.7			22.8	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		42.7	11.3	52.0		42.7		63.3
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 19	5.6	* 60		* 19		73.3
Max Q Clear Time (g_c+I1), s		8.8	2.0	40.1		2.6		25.3
Green Ext Time (p_c), s		0.6	0.9	4.2		0.8		2.7

Intersection Summary	
HCM 2010 Ctrl Delay	34.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	13.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	36	541	155	41	404	18	81	12	103	12	18	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	39	588	168	45	439	20	88	13	112	13	20	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	439	0	0	588	0	0	1207	1194	588	1257	1194	439
Stage 1	-	-	-	-	-	-	666	666	-	528	528	-
Stage 2	-	-	-	-	-	-	541	528	-	729	666	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1121	-	-	977	-	-	160	187	509	148	187	618
Stage 1	-	-	-	-	-	-	449	457	-	534	528	-
Stage 2	-	-	-	-	-	-	525	528	-	414	457	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1121	-	-	977	-	-	136	172	509	102	172	618
Mov Cap-2 Maneuver	-	-	-	-	-	-	136	172	-	102	172	-
Stage 1	-	-	-	-	-	-	433	441	-	515	504	-
Stage 2	-	-	-	-	-	-	476	504	-	302	441	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.8	91.2	35.9
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	226	1121	-	-	977	-	-	155
HCM Lane V/C Ratio	0.943	0.035	-	-	0.046	-	-	0.252
HCM Control Delay (s)	91.2	8.3	-	-	8.9	-	-	35.9
HCM Lane LOS	F	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	8.2	0.1	-	-	0.1	-	-	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	601	30	109	348	42	85	36	242	73	36	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1716	1843
Adj Flow Rate, veh/h	26	653	33	118	378	46	92	39	263	79	39	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	452	904	769	320	978	839	281	33	222	114	57	48
Arrive On Green	0.02	0.49	0.49	0.05	0.52	0.52	0.16	0.16	0.16	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	211	1420	1721	860	728
Grp Volume(v), veh/h	26	653	33	118	378	46	92	0	302	79	0	72
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1631	1721	0	1588
Q Serve(g_s), s	0.8	29.7	1.2	3.4	12.8	1.5	4.8	0.0	16.6	4.8	0.0	4.7
Cycle Q Clear(g_c), s	0.8	29.7	1.2	3.4	12.8	1.5	4.8	0.0	16.6	4.8	0.0	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.46
Lane Grp Cap(c), veh/h	452	904	769	320	978	839	281	0	255	114	0	105
V/C Ratio(X)	0.06	0.72	0.04	0.37	0.39	0.05	0.33	0.00	1.18	0.69	0.00	0.69
Avail Cap(c_a), veh/h	481	904	769	329	978	839	281	0	255	260	0	240
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.2	21.2	13.9	16.8	15.2	12.5	39.7	0.0	44.7	48.4	0.0	48.4
Incr Delay (d2), s/veh	0.1	5.0	0.1	0.7	1.2	0.1	0.7	0.0	114.8	7.4	0.0	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	16.1	0.5	1.7	6.9	0.7	2.5	0.0	15.6	2.5	0.0	2.3
LnGrp Delay(d),s/veh	13.3	26.1	14.0	17.5	16.3	12.6	40.4	0.0	159.5	55.8	0.0	56.1
LnGrp LOS	B	C	B	B	B	B	D		F	E		E
Approach Vol, veh/h		712			542			394			151	
Approach Delay, s/veh		25.1			16.3			131.7			56.0	
Approach LOS		C			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.4	58.5		22.0	9.3	61.6		13.1
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	5.8	42.7		* 17	4.0	44.5		16.0
Max Q Clear Time (g_c+I1), s	5.4	31.7		18.6	2.8	14.8		6.8
Green Ext Time (p_c), s	0.0	4.8		0.0	0.0	7.3		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	48.4
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	664	84	0	472	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	722	91	0	513	0	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	722	0	1235	722
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	513	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	880	-	195	427
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	601	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	880	-	195	427
Mov Cap-2 Maneuver	-	-	-	-	195	-
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	601	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	427	-	-	880	-
HCM Lane V/C Ratio	0.051	-	-	-	-
HCM Control Delay (s)	13.9	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	648	43	69	632	6	83	0	85	4	0	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	2	704	47	75	687	7	90	0	92	4	0	7
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	123	772	662	162	978	840	283	17	252	211	21	321
Arrive On Green	0.42	0.42	0.42	0.01	0.18	0.18	0.33	0.00	0.33	0.33	0.00	0.33
Sat Flow, veh/h	747	1845	1583	1774	1845	1583	684	51	752	485	63	959
Grp Volume(v), veh/h	2	704	47	75	687	7	182	0	0	11	0	0
Grp Sat Flow(s),veh/h/ln	747	1845	1583	1774	1845	1583	1487	0	0	1507	0	0
Q Serve(g_s), s	0.3	35.9	1.8	0.0	35.0	0.4	7.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	35.3	35.9	1.8	0.0	35.0	0.4	9.0	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.49		0.51	0.36		0.64
Lane Grp Cap(c), veh/h	123	772	662	162	978	840	552	0	0	554	0	0
V/C Ratio(X)	0.02	0.91	0.07	0.46	0.70	0.01	0.33	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	216	1002	860	196	1238	1062	552	0	0	554	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	43.5	27.4	17.4	47.0	33.8	19.5	25.0	0.0	0.0	22.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	10.3	0.0	2.1	1.3	0.0	1.6	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	20.4	0.8	2.1	18.2	0.2	4.0	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	43.6	37.6	17.5	49.0	35.1	19.5	26.6	0.0	0.0	22.3	0.0	0.0
LnGrp LOS	D	D	B	D	D	B	C			C		
Approach Vol, veh/h		753			769			182			11	
Approach Delay, s/veh		36.4			36.3			26.6			22.3	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		39.3	11.2	49.5		39.3		60.7
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 19	5.4	* 54		* 19		67.1
Max Q Clear Time (g_c+I1), s		11.0	2.0	37.9		2.4		37.0
Green Ext Time (p_c), s		0.7	1.4	3.9		1.0		4.5

Intersection Summary	
HCM 2010 Ctrl Delay	35.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	57.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	19	561	157	69	561	22	127	17	55	8	16	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	21	610	171	75	610	24	138	18	60	9	17	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	610	0	0	610	0	0	1430	1411	610	1450	1411	610
Stage 1	-	-	-	-	-	-	651	651	-	760	760	-
Stage 2	-	-	-	-	-	-	779	760	-	690	651	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	969	-	-	959	-	-	~ 112	138	494	109	138	494
Stage 1	-	-	-	-	-	-	457	465	-	398	414	-
Stage 2	-	-	-	-	-	-	389	414	-	435	465	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	969	-	-	959	-	-	~ 89	124	494	79	124	494
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 89	124	-	79	124	-
Stage 1	-	-	-	-	-	-	447	455	-	389	382	-
Stage 2	-	-	-	-	-	-	328	382	-	359	455	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1	$ 461.3	36.5
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	119	969	-	-	959	-	-	160
HCM Lane V/C Ratio	1.818	0.021	-	-	0.078	-	-	0.292
HCM Control Delay (s)	$ 461.3	8.8	-	-	9.1	-	-	36.5
HCM Lane LOS	F	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	16.9	0.1	-	-	0.3	-	-	1.1

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	521	73	244	487	53	135	52	288	80	39	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	33	566	79	265	529	58	147	57	313	87	42	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	328	755	642	393	915	786	297	42	230	124	64	51
Arrive On Green	0.03	0.55	0.55	0.10	0.49	0.49	0.17	0.17	0.17	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	252	1385	1721	892	701
Grp Volume(v), veh/h	33	566	79	265	529	58	147	0	370	87	0	75
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1637	1721	0	1594
Q Serve(g_s), s	1.2	23.7	2.5	8.1	20.1	1.9	7.5	0.0	16.6	4.9	0.0	4.6
Cycle Q Clear(g_c), s	1.2	23.7	2.5	8.1	20.1	1.9	7.5	0.0	16.6	4.9	0.0	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.44
Lane Grp Cap(c), veh/h	328	755	642	393	915	786	297	0	272	124	0	115
V/C Ratio(X)	0.10	0.75	0.12	0.67	0.58	0.07	0.49	0.00	1.36	0.70	0.00	0.65
Avail Cap(c_a), veh/h	354	755	642	405	915	786	297	0	272	275	0	255
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.9	18.7	13.9	17.7	18.2	13.6	37.9	0.0	41.7	45.3	0.0	45.2
Incr Delay (d2), s/veh	0.1	6.7	0.4	4.2	2.7	0.2	1.3	0.0	184.7	7.0	0.0	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	13.2	1.1	4.4	11.0	0.9	3.8	0.0	21.4	2.6	0.0	2.2
LnGrp Delay(d),s/veh	17.0	25.4	14.3	21.9	20.9	13.7	39.2	0.0	226.4	52.3	0.0	51.3
LnGrp LOS	B	C	B	C	C	B	D		F	D		D
Approach Vol, veh/h		678			852			517			162	
Approach Delay, s/veh		23.7			20.7			173.2			51.9	
Approach LOS		C			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.3	47.4		22.0	9.6	55.1		13.3
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	10.8	31.7		* 17	4.0	38.5		16.0
Max Q Clear Time (g_c+I1), s	10.1	25.7		18.6	3.2	22.1		6.9
Green Ext Time (p_c), s	0.1	3.4		0.0	0.0	6.4		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	59.6
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	655	44	0	721	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	712	48	0	784	0	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	712	0	1496	712
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	784	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	888	-	135	432
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	450	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	888	-	135	432
Mov Cap-2 Maneuver	-	-	-	-	135	-
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	450	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	432	-	-	888	-
HCM Lane V/C Ratio	0.096	-	-	-	-
HCM Control Delay (s)	14.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	777	74	79	447	6	69	0	102	6	0	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	7	845	80	86	486	7	75	0	111	7	0	7
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	339	909	780	157	1107	950	195	19	245	226	16	191
Arrive On Green	0.49	0.49	0.49	0.02	0.40	0.40	0.27	0.00	0.27	0.27	0.00	0.27
Sat Flow, veh/h	900	1845	1583	1774	1845	1583	539	69	900	642	59	701
Grp Volume(v), veh/h	7	845	80	86	486	7	186	0	0	14	0	0
Grp Sat Flow(s),veh/h/ln	900	1845	1583	1774	1845	1583	1508	0	0	1402	0	0
Q Serve(g_s), s	0.6	45.5	2.9	0.0	20.3	0.3	7.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	20.9	45.5	2.9	0.0	20.3	0.3	10.6	0.0	0.0	0.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.40		0.60	0.50		0.50
Lane Grp Cap(c), veh/h	339	909	780	157	1107	950	459	0	0	433	0	0
V/C Ratio(X)	0.02	0.93	0.10	0.55	0.44	0.01	0.41	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	416	1067	916	172	1276	1095	459	0	0	433	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.1	25.2	14.4	49.2	18.7	12.8	31.8	0.0	0.0	28.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	12.6	0.1	3.0	0.3	0.0	2.6	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	26.2	1.3	2.6	10.4	0.1	4.8	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	26.1	37.8	14.4	52.2	19.0	12.8	34.4	0.0	0.0	28.4	0.0	0.0
LnGrp LOS	C	D	B	D	B	B	C			C		
Approach Vol, veh/h		932			579			186			14	
Approach Delay, s/veh		35.7			23.9			34.4			28.4	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		34.7	11.4	59.9		34.7		71.3
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 19	4.6	* 61		* 19		73.3
Max Q Clear Time (g_c+I1), s		12.6	2.0	47.5		2.6		22.3
Green Ext Time (p_c), s		0.6	0.8	4.8		1.1		3.0

Intersection Summary	
HCM 2010 Ctrl Delay	31.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	31.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	36	648	201	57	445	18	81	17	104	12	18	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	39	704	218	62	484	20	88	18	113	13	20	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	484	0	0	704	0	0	1404	1391	704	1456	1391	484
Stage 1	-	-	-	-	-	-	783	783	-	608	608	-
Stage 2	-	-	-	-	-	-	621	608	-	848	783	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1079	-	-	885	-	-	117	142	437	108	142	583
Stage 1	-	-	-	-	-	-	387	404	-	483	486	-
Stage 2	-	-	-	-	-	-	475	486	-	356	404	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1079	-	-	885	-	-	94	127	437	66	127	583
Mov Cap-2 Maneuver	-	-	-	-	-	-	94	127	-	66	127	-
Stage 1	-	-	-	-	-	-	373	389	-	466	452	-
Stage 2	-	-	-	-	-	-	418	452	-	242	389	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1	241.2	56.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	164	1079	-	-	885	-	-	108
HCM Lane V/C Ratio	1.339	0.036	-	-	0.07	-	-	0.362
HCM Control Delay (s)	241.2	8.5	-	-	9.4	-	-	56.2
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	13.2	0.1	-	-	0.2	-	-	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	635	104	188	365	42	125	48	304	73	36	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1716	1843
Adj Flow Rate, veh/h	26	690	113	204	397	46	136	52	330	79	39	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	440	855	727	304	978	839	281	35	221	114	57	48
Arrive On Green	0.02	0.47	0.47	0.08	0.52	0.52	0.16	0.16	0.16	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	222	1410	1721	860	728
Grp Volume(v), veh/h	26	690	113	204	397	46	136	0	382	79	0	72
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1633	1721	0	1588
Q Serve(g_s), s	0.9	34.1	4.4	6.1	13.6	1.5	7.3	0.0	16.6	4.8	0.0	4.7
Cycle Q Clear(g_c), s	0.9	34.1	4.4	6.1	13.6	1.5	7.3	0.0	16.6	4.8	0.0	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		0.46
Lane Grp Cap(c), veh/h	440	855	727	304	978	839	281	0	256	114	0	105
V/C Ratio(X)	0.06	0.81	0.16	0.67	0.41	0.05	0.48	0.00	1.49	0.69	0.00	0.69
Avail Cap(c_a), veh/h	468	855	727	309	978	839	281	0	256	260	0	240
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.5	24.2	16.3	20.3	15.4	12.5	40.8	0.0	44.7	48.4	0.0	48.4
Incr Delay (d2), s/veh	0.1	8.1	0.5	5.4	1.3	0.1	1.3	0.0	242.0	7.4	0.0	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	19.2	2.0	3.4	7.4	0.7	3.7	0.0	24.6	2.5	0.0	2.3
LnGrp Delay(d),s/veh	14.6	32.3	16.7	25.7	16.6	12.6	42.1	0.0	286.7	55.8	0.0	56.1
LnGrp LOS	B	C	B	C	B	B	D		F	E		E
Approach Vol, veh/h		829			647			518			151	
Approach Delay, s/veh		29.6			19.2			222.4			56.0	
Approach LOS		C			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.3	55.6		22.0	9.3	61.6		13.1
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	8.4	40.1		* 17	4.0	44.5		16.0
Max Q Clear Time (g_c+I1), s	8.1	36.1		18.6	2.9	15.6		6.8
Green Ext Time (p_c), s	0.0	2.4		0.0	0.0	8.1		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		74.9
HCM 2010 LOS		E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	819	75	0	522	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	890	82	0	567	0	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	890	0	1457	890
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	567	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	761	-	143	342
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	568	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	761	-	143	342
Mov Cap-2 Maneuver	-	-	-	-	143	-
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	568	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	342	-	-	761	-
HCM Lane V/C Ratio	0.121	-	-	-	-
HCM Control Delay (s)	17	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	3	607	645	7	4	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	3	660	701	8	4	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	701	0	-	0	1367	701
Stage 1	-	-	-	-	701	-
Stage 2	-	-	-	-	666	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	896	-	-	-	139	422
Stage 1	-	-	-	-	455	-
Stage 2	-	-	-	-	474	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	896	-	-	-	138	422
Mov Cap-2 Maneuver	-	-	-	-	138	-
Stage 1	-	-	-	-	455	-
Stage 2	-	-	-	-	472	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	896	-	-	-	241
HCM Lane V/C Ratio	0.004	-	-	-	0.05
HCM Control Delay (s)	9	0	-	-	20.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	18.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	21	464	126	37	517	24	114	11	33	9	17	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	23	504	137	40	562	26	124	12	36	10	18	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	562	0	0	504	0	0	1213	1192	504	1216	1192	562
Stage 1	-	-	-	-	-	-	550	550	-	642	642	-
Stage 2	-	-	-	-	-	-	663	642	-	574	550	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1009	-	-	1050	-	-	159	187	568	158	187	526
Stage 1	-	-	-	-	-	-	519	516	-	463	469	-
Stage 2	-	-	-	-	-	-	450	469	-	504	516	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1009	-	-	1050	-	-	130	170	568	130	170	526
Mov Cap-2 Maneuver	-	-	-	-	-	-	130	170	-	130	170	-
Stage 1	-	-	-	-	-	-	500	497	-	446	442	-
Stage 2	-	-	-	-	-	-	389	442	-	444	497	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	154.7	25.6
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	158	1009	-	-	1050	-	-	225
HCM Lane V/C Ratio	1.087	0.023	-	-	0.038	-	-	0.227
HCM Control Delay (s)	154.7	8.7	0	-	8.6	0	-	25.6
HCM Lane LOS	F	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	8.9	0.1	-	-	0.1	-	-	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	440	33	194	452	59	94	45	262	88	43	33
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1718	1843
Adj Flow Rate, veh/h	36	478	36	211	491	64	102	49	285	96	47	36
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	252	560	476	317	701	601	371	50	289	142	75	57
Arrive On Green	0.03	0.30	0.30	0.10	0.37	0.37	0.21	0.21	0.21	0.08	0.08	0.08
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	240	1395	1721	903	692
Grp Volume(v), veh/h	36	478	36	211	491	64	102	0	334	96	0	83
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1635	1721	0	1595
Q Serve(g_s), s	1.2	19.8	1.3	6.4	17.9	2.1	3.9	0.0	16.4	4.4	0.0	4.1
Cycle Q Clear(g_c), s	1.2	19.8	1.3	6.4	17.9	2.1	3.9	0.0	16.4	4.4	0.0	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.43
Lane Grp Cap(c), veh/h	252	560	476	317	701	601	371	0	339	142	0	132
V/C Ratio(X)	0.14	0.85	0.08	0.67	0.70	0.11	0.27	0.00	0.99	0.68	0.00	0.63
Avail Cap(c_a), veh/h	287	560	476	317	701	601	371	0	339	341	0	316
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.4	26.3	19.9	19.3	21.4	16.5	26.9	0.0	31.9	35.9	0.0	35.8
Incr Delay (d2), s/veh	0.3	15.3	0.3	5.2	5.8	0.4	0.4	0.0	45.2	5.5	0.0	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.6	12.3	0.6	3.6	10.4	1.0	1.9	0.0	11.6	2.3	0.0	2.0
LnGrp Delay(d),s/veh	19.6	41.6	20.3	24.5	27.2	16.8	27.3	0.0	77.0	41.4	0.0	40.7
LnGrp LOS	B	D	C	C	C	B	C		E	D		D
Approach Vol, veh/h		550			766			436			179	
Approach Delay, s/veh		38.8			25.6			65.4			41.1	
Approach LOS		D			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	30.8		22.1	9.4	36.4		12.8
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	7.8	24.6		* 17	4.0	28.4		16.0
Max Q Clear Time (g_c+I1), s	8.4	21.8		18.4	3.2	19.9		6.4
Green Ext Time (p_c), s	0.0	1.6		0.0	0.0	3.8		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	39.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	7	715	468	7	7	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	8	777	509	8	8	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	509	0	-	0	1301	509
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	792	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1056	-	-	-	154	548
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	409	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1056	-	-	-	152	548
Mov Cap-2 Maneuver	-	-	-	-	152	-
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	404	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	21.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1056	-	-	-	238
HCM Lane V/C Ratio	0.007	-	-	-	0.064
HCM Control Delay (s)	8.4	0	-	-	21.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	40	541	140	20	401	20	67	13	80	13	20	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	43	588	152	22	436	22	73	14	87	14	22	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	436	0	0	588	0	0	1169	1154	588	1205	1154	436
Stage 1	-	-	-	-	-	-	675	675	-	479	479	-
Stage 2	-	-	-	-	-	-	494	479	-	726	675	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1124	-	-	977	-	-	170	197	509	161	197	620
Stage 1	-	-	-	-	-	-	444	453	-	568	555	-
Stage 2	-	-	-	-	-	-	557	555	-	416	453	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1124	-	-	977	-	-	141	178	509	116	178	620
Mov Cap-2 Maneuver	-	-	-	-	-	-	141	178	-	116	178	-
Stage 1	-	-	-	-	-	-	414	423	-	530	538	-
Stage 2	-	-	-	-	-	-	512	538	-	311	423	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.4	59	33.3
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	227	1124	-	-	977	-	-	170
HCM Lane V/C Ratio	0.766	0.039	-	-	0.022	-	-	0.256
HCM Control Delay (s)	59	8.3	0	-	8.8	0	-	33.3
HCM Lane LOS	F	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	5.4	0.1	-	-	0.1	-	-	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	574	33	120	314	47	94	40	267	80	40	33
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	29	624	36	130	341	51	102	43	290	87	43	36
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	407	762	648	264	834	716	328	39	260	128	64	54
Arrive On Green	0.02	0.42	0.42	0.05	0.45	0.45	0.18	0.18	0.18	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	211	1420	1721	865	724
Grp Volume(v), veh/h	29	624	36	130	341	51	102	0	333	87	0	79
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1631	1721	0	1589
Q Serve(g_s), s	0.9	27.3	1.3	3.8	11.2	1.6	4.5	0.0	16.6	4.5	0.0	4.4
Cycle Q Clear(g_c), s	0.9	27.3	1.3	3.8	11.2	1.6	4.5	0.0	16.6	4.5	0.0	4.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.46
Lane Grp Cap(c), veh/h	407	762	648	264	834	716	328	0	298	128	0	118
V/C Ratio(X)	0.07	0.82	0.06	0.49	0.41	0.07	0.31	0.00	1.12	0.68	0.00	0.67
Avail Cap(c_a), veh/h	441	762	648	264	834	716	328	0	298	303	0	280
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.0	23.5	15.9	18.8	17.1	14.4	32.1	0.0	37.1	40.9	0.0	40.9
Incr Delay (d2), s/veh	0.1	9.5	0.2	1.4	1.5	0.2	0.5	0.0	87.1	6.2	0.0	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	15.7	0.6	1.9	6.1	0.8	2.3	0.0	14.6	2.3	0.0	2.1
LnGrp Delay(d),s/veh	15.1	33.0	16.0	20.2	18.5	14.6	32.7	0.0	124.2	47.1	0.0	47.3
LnGrp LOS	B	C	B	C	B	B	C		F	D		D
Approach Vol, veh/h		689			522			435			166	
Approach Delay, s/veh		31.4			18.6			102.7			47.2	
Approach LOS		C			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	43.9		22.0	9.3	46.6		12.8
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	4.8	37.7		* 17	4.0	38.5		16.0
Max Q Clear Time (g_c+I1), s	5.8	29.3		18.6	2.9	13.2		6.5
Green Ext Time (p_c), s	0.0	3.8		0.0	0.0	6.5		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	46.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	610	15	52	636	7	37	0	38	4	0	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	3	663	16	57	691	8	40	0	41	4	0	8
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	112	762	654	172	953	818	296	16	268	203	21	357
Arrive On Green	0.41	0.41	0.41	0.01	0.17	0.17	0.36	0.00	0.36	0.36	0.00	0.36
Sat Flow, veh/h	744	1845	1583	1774	1845	1583	688	45	752	443	58	1002
Grp Volume(v), veh/h	3	663	16	57	691	8	81	0	0	12	0	0
Grp Sat Flow(s),veh/h/ln	744	1845	1583	1774	1845	1583	1485	0	0	1504	0	0
Q Serve(g_s), s	0.4	34.9	0.6	0.0	37.6	0.4	1.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	38.0	34.9	0.6	0.0	37.6	0.4	3.6	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.49		0.51	0.33		0.67
Lane Grp Cap(c), veh/h	112	762	654	172	953	818	580	0	0	581	0	0
V/C Ratio(X)	0.03	0.87	0.02	0.33	0.73	0.01	0.14	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	227	1049	901	194	1258	1080	580	0	0	581	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	47.2	28.5	18.4	47.9	36.8	21.4	23.1	0.0	0.0	22.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	6.0	0.0	1.1	1.4	0.0	0.5	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	19.0	0.3	1.7	19.6	0.2	1.7	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	47.2	34.5	18.4	49.0	38.3	21.4	23.6	0.0	0.0	22.2	0.0	0.0
LnGrp LOS	D	C	B	D	D	C	C			C		
Approach Vol, veh/h		682			756			81			12	
Approach Delay, s/veh		34.2			38.9			23.6			22.2	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		43.5	11.0	51.5		43.5		62.5
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 20	4.6	* 60		* 20		72.3
Max Q Clear Time (g_c+I1), s		5.6	2.0	40.0		2.5		39.6
Green Ext Time (p_c), s		0.4	1.1	3.8		0.4		4.6

Intersection Summary	
HCM 2010 Ctrl Delay	35.9
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	37

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	21	492	139	55	546	24	128	11	47	9	17	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	23	535	151	60	593	26	139	12	51	10	18	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	593	0	0	535	0	0	1314	1293	535	1325	1293	593
Stage 1	-	-	-	-	-	-	580	580	-	713	713	-
Stage 2	-	-	-	-	-	-	734	713	-	612	580	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	983	-	-	1023	-	-	~ 135	163	545	133	163	506
Stage 1	-	-	-	-	-	-	500	500	-	423	435	-
Stage 2	-	-	-	-	-	-	412	435	-	480	500	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	983	-	-	1023	-	-	~ 110	150	545	106	150	506
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 110	150	-	106	150	-
Stage 1	-	-	-	-	-	-	488	488	-	413	409	-
Stage 2	-	-	-	-	-	-	354	409	-	414	488	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.8	289.4	29.7
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	141	983	-	-	1023	-	-	196
HCM Lane V/C Ratio	1.434	0.023	-	-	0.058	-	-	0.261
HCM Control Delay (s)	289.4	8.7	-	-	8.7	-	-	29.7
HCM Lane LOS	F	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	13.3	0.1	-	-	0.2	-	-	1

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	482	33	194	499	59	94	45	262	88	43	33
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1718	1843
Adj Flow Rate, veh/h	36	524	36	211	542	64	102	49	285	96	47	36
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	335	828	704	443	950	815	281	38	219	132	69	53
Arrive On Green	0.03	0.60	0.60	0.08	0.51	0.51	0.16	0.16	0.16	0.08	0.08	0.08
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	240	1395	1721	903	692
Grp Volume(v), veh/h	36	524	36	211	542	64	102	0	334	96	0	83
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1635	1721	0	1595
Q Serve(g_s), s	1.3	19.5	1.0	6.5	21.3	2.2	5.4	0.0	16.6	5.8	0.0	5.4
Cycle Q Clear(g_c), s	1.3	19.5	1.0	6.5	21.3	2.2	5.4	0.0	16.6	5.8	0.0	5.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.43
Lane Grp Cap(c), veh/h	335	828	704	443	950	815	281	0	256	132	0	122
V/C Ratio(X)	0.11	0.63	0.05	0.48	0.57	0.08	0.36	0.00	1.30	0.73	0.00	0.68
Avail Cap(c_a), veh/h	356	828	704	464	950	815	281	0	256	260	0	241
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.9	15.5	11.8	15.3	18.1	13.4	40.0	0.0	44.7	47.9	0.0	47.7
Incr Delay (d2), s/veh	0.1	3.7	0.1	0.8	2.5	0.2	0.8	0.0	162.4	7.5	0.0	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.6	10.7	0.5	3.3	11.6	1.0	2.7	0.0	19.0	3.0	0.0	2.6
LnGrp Delay(d),s/veh	16.1	19.2	12.0	16.1	20.6	13.6	40.8	0.0	207.1	55.3	0.0	54.1
LnGrp LOS	B	B	B	B	C	B	D		F	E		D
Approach Vol, veh/h		596			817			436			179	
Approach Delay, s/veh		18.6			18.9			168.2			54.8	
Approach LOS		B			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.7	54.0		22.0	9.8	60.0		14.2
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	9.8	38.7		* 17	4.0	44.5		16.0
Max Q Clear Time (g_c+I1), s	8.5	21.5		18.6	3.3	23.3		7.8
Green Ext Time (p_c), s	0.1	6.3		0.0	0.0	6.8		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	54.1
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	616	41	0	680	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	670	45	0	739	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	670	0	1409	670
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	739	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	920	-	153	457
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	472	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	920	-	153	457
Mov Cap-2 Maneuver	-	-	-	-	153	-
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	472	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	457	-	-	920	-
HCM Lane V/C Ratio	0.029	-	-	-	-
HCM Control Delay (s)	13.1	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	717	29	71	458	6	52	0	77	7	0	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	8	779	32	77	498	7	57	0	84	8	0	8
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	481	848	728	164	1055	905	209	20	263	253	17	216
Arrive On Green	0.46	0.46	0.46	0.07	1.00	1.00	0.29	0.00	0.29	0.29	0.00	0.29
Sat Flow, veh/h	890	1845	1583	1774	1845	1583	542	68	898	679	58	736
Grp Volume(v), veh/h	8	779	32	77	498	7	141	0	0	16	0	0
Grp Sat Flow(s),veh/h/ln	890	1845	1583	1774	1845	1583	1507	0	0	1473	0	0
Q Serve(g_s), s	0.5	39.5	1.1	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	39.5	1.1	0.0	0.0	0.0	7.0	0.0	0.0	0.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.40		0.60	0.50		0.50
Lane Grp Cap(c), veh/h	481	848	728	164	1055	905	492	0	0	486	0	0
V/C Ratio(X)	0.02	0.92	0.04	0.47	0.47	0.01	0.29	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	585	1063	912	178	1278	1097	492	0	0	486	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.7	25.3	14.9	44.0	0.0	0.0	27.4	0.0	0.0	25.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	10.8	0.0	2.1	0.3	0.0	1.5	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	22.5	0.5	2.1	0.1	0.0	3.2	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	14.7	36.1	14.9	46.0	0.3	0.0	28.8	0.0	0.0	25.3	0.0	0.0
LnGrp LOS	B	D	B	D	A	A	C			C		
Approach Vol, veh/h		819			582			141			16	
Approach Delay, s/veh		35.0			6.4			28.8			25.3	
Approach LOS		D			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		35.1	11.2	53.7		35.1		64.9
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 17	4.3	* 58		* 17		69.3
Max Q Clear Time (g_c+I1), s		9.0	2.0	41.5		2.7		2.0
Green Ext Time (p_c), s		0.5	0.7	4.5		0.7		3.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	27.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	41	592	168	43	442	20	87	13	110	13	20	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	45	643	183	47	480	22	95	14	120	14	22	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	480	0	0	643	0	0	1322	1307	643	1373	1307	480
Stage 1	-	-	-	-	-	-	733	733	-	574	574	-
Stage 2	-	-	-	-	-	-	589	574	-	799	733	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1082	-	-	932	-	-	133	160	473	123	160	586
Stage 1	-	-	-	-	-	-	412	426	-	504	503	-
Stage 2	-	-	-	-	-	-	494	503	-	379	426	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1082	-	-	932	-	-	108	146	473	79	146	586
Mov Cap-2 Maneuver	-	-	-	-	-	-	108	146	-	79	146	-
Stage 1	-	-	-	-	-	-	395	408	-	483	478	-
Stage 2	-	-	-	-	-	-	442	478	-	262	408	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.8	190.8	46.9
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	186	1082	-	-	932	-	-	128
HCM Lane V/C Ratio	1.227	0.041	-	-	0.05	-	-	0.34
HCM Control Delay (s)	190.8	8.5	-	-	9.1	-	-	46.9
HCM Lane LOS	F	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	12.3	0.1	-	-	0.2	-	-	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	655	33	120	378	47	94	40	267	80	40	33
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	29	712	36	130	411	51	102	43	290	87	43	36
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	402	860	731	411	918	788	297	35	236	124	63	52
Arrive On Green	0.04	0.94	0.94	0.04	0.49	0.49	0.17	0.17	0.17	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	211	1420	1721	865	724
Grp Volume(v), veh/h	29	712	36	130	411	51	102	0	333	87	0	79
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1631	1721	0	1589
Q Serve(g_s), s	0.9	10.9	0.2	3.8	14.3	1.7	5.0	0.0	16.6	4.9	0.0	4.9
Cycle Q Clear(g_c), s	0.9	10.9	0.2	3.8	14.3	1.7	5.0	0.0	16.6	4.9	0.0	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.46
Lane Grp Cap(c), veh/h	402	860	731	411	918	788	297	0	271	124	0	115
V/C Ratio(X)	0.07	0.83	0.05	0.32	0.45	0.06	0.34	0.00	1.23	0.70	0.00	0.69
Avail Cap(c_a), veh/h	431	860	731	411	918	788	297	0	271	275	0	254
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	2.0	1.7	13.5	16.6	13.4	36.9	0.0	41.7	45.3	0.0	45.3
Incr Delay (d2), s/veh	0.1	9.0	0.1	0.4	1.6	0.2	0.7	0.0	131.5	6.9	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	6.1	0.1	1.9	7.8	0.8	2.5	0.0	17.3	2.6	0.0	2.4
LnGrp Delay(d),s/veh	13.7	11.0	1.8	14.0	18.2	13.6	37.6	0.0	173.2	52.2	0.0	52.4
LnGrp LOS	B	B	A	B	B	B	D		F	D		D
Approach Vol, veh/h		777			592			435			166	
Approach Delay, s/veh		10.7			16.9			141.4			52.3	
Approach LOS		B			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.6	53.1		22.0	9.4	55.3		13.3
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	4.4	38.1		* 17	4.0	38.5		16.0
Max Q Clear Time (g_c+I1), s	5.8	12.9		18.6	2.9	16.3		6.9
Green Ext Time (p_c), s	0.0	7.9		0.0	0.0	7.5		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	44.9
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	733	84	0	517	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	797	91	0	562	0	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	797	0	1359	797
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	562	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	825	-	164	387
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	571	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	825	-	164	387
Mov Cap-2 Maneuver	-	-	-	-	164	-
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	571	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	387	-	-	825	-
HCM Lane V/C Ratio	0.056	-	-	-	-
HCM Control Delay (s)	14.9	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	706	43	69	693	7	83	0	85	4	0	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	3	767	47	75	753	8	90	0	92	4	0	8
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	125	829	711	141	1003	861	283	14	258	194	18	344
Arrive On Green	0.45	0.45	0.45	0.02	0.36	0.36	0.34	0.00	0.34	0.34	0.00	0.34
Sat Flow, veh/h	702	1845	1583	1774	1845	1583	692	42	750	447	53	1001
Grp Volume(v), veh/h	3	767	47	75	753	8	182	0	0	12	0	0
Grp Sat Flow(s),veh/h/ln	702	1845	1583	1774	1845	1583	1484	0	0	1502	0	0
Q Serve(g_s), s	0.5	47.0	2.0	0.0	42.9	0.4	8.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	43.3	47.0	2.0	0.0	42.9	0.4	10.8	0.0	0.0	0.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.49		0.51	0.33		0.67
Lane Grp Cap(c), veh/h	125	829	711	141	1003	861	555	0	0	556	0	0
V/C Ratio(X)	0.02	0.93	0.07	0.53	0.75	0.01	0.33	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	221	1081	928	170	1281	1099	555	0	0	556	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.7	31.2	18.8	56.1	31.0	17.5	29.3	0.0	0.0	26.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	11.1	0.0	3.1	1.9	0.0	1.6	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	26.4	0.9	2.6	22.4	0.2	4.7	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	49.8	42.2	18.8	59.2	32.9	17.5	30.9	0.0	0.0	26.1	0.0	0.0
LnGrp LOS	D	D	B	E	C	B	C			C		
Approach Vol, veh/h		817			836			182			12	
Approach Delay, s/veh		40.9			35.1			30.9			26.1	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		47.0	11.4	61.6		47.0		73.0
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 23	5.6	* 70		* 23		83.3
Max Q Clear Time (g_c+I1), s		12.8	2.0	49.0		2.6		44.9
Green Ext Time (p_c), s		0.8	1.6	4.9		1.1		5.3

Intersection Summary	
HCM 2010 Ctrl Delay	37.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	91.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	21	605	169	72	610	24	138	18	58	9	17	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	23	658	184	78	663	26	150	20	63	10	18	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	663	0	0	658	0	0	1543	1523	658	1565	1523	663
Stage 1	-	-	-	-	-	-	703	703	-	820	820	-
Stage 2	-	-	-	-	-	-	840	820	-	745	703	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	926	-	-	920	-	-	~ 94	118	464	90	118	461
Stage 1	-	-	-	-	-	-	428	440	-	369	389	-
Stage 2	-	-	-	-	-	-	360	389	-	406	440	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	926	-	-	920	-	-	~ 71	105	464	61	105	461
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 71	105	-	61	105	-
Stage 1	-	-	-	-	-	-	417	429	-	360	356	-
Stage 2	-	-	-	-	-	-	297	356	-	327	429	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.9	$ 741.4	48.5
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	96	926	-	-	920	-	-	132
HCM Lane V/C Ratio	2.423	0.025	-	-	0.085	-	-	0.387
HCM Control Delay (s)	$ 741.4	9	-	-	9.3	-	-	48.5
HCM Lane LOS	F	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	21.2	0.1	-	-	0.3	-	-	1.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	563	76	263	530	59	144	56	313	88	43	33
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1718	1843
Adj Flow Rate, veh/h	36	612	83	286	576	64	157	61	340	96	47	36
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	339	855	726	386	1011	868	278	39	215	128	67	51
Arrive On Green	0.02	0.47	0.47	0.10	0.54	0.54	0.16	0.16	0.16	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	249	1388	1721	903	692
Grp Volume(v), veh/h	36	612	83	286	576	64	157	0	401	96	0	83
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1637	1721	0	1595
Q Serve(g_s), s	1.4	32.1	3.6	9.5	24.5	2.3	9.7	0.0	18.6	6.6	0.0	6.1
Cycle Q Clear(g_c), s	1.4	32.1	3.6	9.5	24.5	2.3	9.7	0.0	18.6	6.6	0.0	6.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.43
Lane Grp Cap(c), veh/h	339	855	726	386	1011	868	278	0	254	128	0	118
V/C Ratio(X)	0.11	0.72	0.11	0.74	0.57	0.07	0.57	0.00	1.58	0.75	0.00	0.70
Avail Cap(c_a), veh/h	356	855	726	417	1011	868	278	0	254	229	0	213
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.1	25.7	18.1	20.4	18.3	13.2	47.0	0.0	50.7	54.5	0.0	54.3
Incr Delay (d2), s/veh	0.1	5.1	0.3	6.4	2.3	0.2	2.6	0.0	279.5	8.6	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.6	17.4	1.6	5.4	13.3	1.1	5.0	0.0	28.1	3.4	0.0	2.9
LnGrp Delay(d),s/veh	17.2	30.8	18.4	26.7	20.7	13.4	49.6	0.0	330.2	63.1	0.0	61.6
LnGrp LOS	B	C	B	C	C	B	D		F	E		E
Approach Vol, veh/h		731			926			558			179	
Approach Delay, s/veh		28.7			22.0			251.2			62.4	
Approach LOS		C			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.9	62.1		24.0	10.0	71.0		15.0
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	13.8	46.7		* 19	4.1	56.4		16.0
Max Q Clear Time (g_c+I1), s	11.5	34.1		20.6	3.4	26.5		8.6
Green Ext Time (p_c), s	0.2	6.1		0.0	0.0	9.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	80.5
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	714	44	0	783	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	776	48	0	851	0	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	776	0	1627	776
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	851	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	840	-	112	397
Stage 1	-	-	-	-	454	-
Stage 2	-	-	-	-	419	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	840	-	112	397
Mov Cap-2 Maneuver	-	-	-	-	112	-
Stage 1	-	-	-	-	454	-
Stage 2	-	-	-	-	419	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	397	-	-	840	-
HCM Lane V/C Ratio	0.104	-	-	-	-
HCM Control Delay (s)	15.1	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	845	74	79	491	7	69	0	102	7	0	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	8	918	80	86	534	8	75	0	111	8	0	8
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	373	976	837	130	1132	972	196	15	257	223	12	196
Arrive On Green	0.53	0.53	0.53	0.03	0.61	0.61	0.29	0.00	0.29	0.29	0.00	0.29
Sat Flow, veh/h	860	1845	1583	1774	1845	1583	555	51	897	639	43	683
Grp Volume(v), veh/h	8	918	80	86	534	8	186	0	0	16	0	0
Grp Sat Flow(s),veh/h/ln	860	1845	1583	1774	1845	1583	1503	0	0	1365	0	0
Q Serve(g_s), s	0.8	63.5	3.4	0.3	21.4	0.3	10.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	22.2	63.5	3.4	0.3	21.4	0.3	13.4	0.0	0.0	0.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.40		0.60	0.50		0.50
Lane Grp Cap(c), veh/h	373	976	837	130	1132	972	469	0	0	431	0	0
V/C Ratio(X)	0.02	0.94	0.10	0.66	0.47	0.01	0.40	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	464	1171	1005	153	1347	1156	469	0	0	431	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.1	30.0	15.9	63.2	14.3	10.2	39.2	0.0	0.0	34.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	13.1	0.0	8.2	0.3	0.0	2.5	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.2	35.7	1.5	3.4	10.9	0.1	6.0	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	27.1	43.1	15.9	71.4	14.6	10.2	41.8	0.0	0.0	35.1	0.0	0.0
LnGrp LOS	C	D	B	E	B	B	D			D		
Approach Vol, veh/h		1006			628			186			16	
Approach Delay, s/veh		40.8			22.3			41.8			35.1	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		44.8	11.5	79.6		44.8		91.2
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 23	5.6	* 86		* 23		99.3
Max Q Clear Time (g_c+I1), s		15.4	2.3	65.5		2.9		23.4
Green Ext Time (p_c), s		0.7	1.0	6.4		1.2		3.4

Intersection Summary	
HCM 2010 Ctrl Delay	34.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	53.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	40	699	214	59	483	20	87	18	111	13	20	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	43	760	233	64	525	22	95	20	121	14	22	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	525	0	0	760	0	0	1515	1500	760	1570	1500	525
Stage 1	-	-	-	-	-	-	847	847	-	653	653	-
Stage 2	-	-	-	-	-	-	668	653	-	917	847	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1042	-	-	843	-	-	98	122	406	90	122	552
Stage 1	-	-	-	-	-	-	357	378	-	456	464	-
Stage 2	-	-	-	-	-	-	448	464	-	326	378	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1042	-	-	843	-	-	~ 75	108	406	50	108	552
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 75	108	-	50	108	-
Stage 1	-	-	-	-	-	-	342	362	-	437	429	-
Stage 2	-	-	-	-	-	-	388	429	-	208	362	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1	$ 418.3	82.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	135	1042	-	-	843	-	-	87
HCM Lane V/C Ratio	1.739	0.042	-	-	0.076	-	-	0.5
HCM Control Delay (s)	$ 418.3	8.6	-	-	9.6	-	-	82.1
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	17.5	0.1	-	-	0.2	-	-	2.1

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	689	107	199	395	47	134	52	329	80	40	33
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	29	749	116	216	429	51	146	57	358	87	43	36
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	455	957	814	280	1071	919	285	36	224	115	58	48
Arrive On Green	0.01	0.35	0.35	0.07	0.57	0.57	0.16	0.16	0.16	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	224	1409	1721	865	724
Grp Volume(v), veh/h	29	749	116	216	429	51	146	0	415	87	0	79
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1633	1721	0	1589
Q Serve(g_s), s	1.1	49.7	6.9	7.4	17.3	1.9	10.1	0.0	21.6	6.8	0.0	6.6
Cycle Q Clear(g_c), s	1.1	49.7	6.9	7.4	17.3	1.9	10.1	0.0	21.6	6.8	0.0	6.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		0.46
Lane Grp Cap(c), veh/h	455	957	814	280	1071	919	285	0	259	115	0	106
V/C Ratio(X)	0.06	0.78	0.14	0.77	0.40	0.06	0.51	0.00	1.60	0.76	0.00	0.75
Avail Cap(c_a), veh/h	472	957	814	310	1071	919	285	0	259	202	0	187
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.1	37.3	23.4	26.5	16.2	12.9	52.4	0.0	57.2	62.4	0.0	62.3
Incr Delay (d2), s/veh	0.1	6.3	0.4	10.4	1.1	0.1	1.6	0.0	287.5	9.8	0.0	10.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	26.9	3.1	5.1	9.3	0.9	5.2	0.0	30.4	3.5	0.0	3.2
LnGrp Delay(d),s/veh	15.1	43.7	23.8	36.9	17.3	13.0	53.9	0.0	344.7	72.2	0.0	72.3
LnGrp LOS	B	D	C	D	B	B	D		F	E		E
Approach Vol, veh/h		894			696			561			166	
Approach Delay, s/veh		40.2			23.1			269.0			72.3	
Approach LOS		D			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.7	77.2		27.0	9.9	84.0		15.2
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	11.8	61.7		* 22	4.1	69.4		16.0
Max Q Clear Time (g_c+I1), s	9.4	51.7		23.6	3.1	19.3		8.8
Green Ext Time (p_c), s	0.1	5.4		0.0	0.0	10.2		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	92.7
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	888	75	0	567	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	965	82	0	616	0	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	965	0	1581	965
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	616	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	714	-	120	309
Stage 1	-	-	-	-	370	-
Stage 2	-	-	-	-	539	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	714	-	120	309
Mov Cap-2 Maneuver	-	-	-	-	120	-
Stage 1	-	-	-	-	370	-
Stage 2	-	-	-	-	539	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	309	-	-	714	-
HCM Lane V/C Ratio	0.134	-	-	-	-
HCM Control Delay (s)	18.4	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

APPENDIX F

SimTraffic Reports

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	38	26
Average Queue (ft)	2	5
95th Queue (ft)	17	20
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	LT	R	LTR	LTR
Maximum Queue (ft)	40	9	71	2	92	50
Average Queue (ft)	5	0	12	0	39	24
95th Queue (ft)	24	5	46	2	73	48
Link Distance (ft)	718		662	662	253	334
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		200				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	54	222	41	114	206	48	96	169	98	90
Average Queue (ft)	14	115	11	54	90	14	38	73	40	35
95th Queue (ft)	44	193	33	97	167	40	78	133	80	74
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	155			260	150					
Storage Blk Time (%)		3			0	1				
Queuing Penalty (veh)		1			0	2				

Network Summary

Network wide Queuing Penalty: 3

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	35	24
Average Queue (ft)	2	6
95th Queue (ft)	17	22
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	LT	R	LTR	LTR
Maximum Queue (ft)	50	6	59	4	94	57
Average Queue (ft)	8	0	8	0	39	20
95th Queue (ft)	33	3	36	4	70	49
Link Distance (ft)	718		662	662	253	334
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		200				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	92	281	44	85	156	45	106	216	103	91
Average Queue (ft)	12	133	9	40	63	12	43	85	43	36
95th Queue (ft)	54	235	31	74	125	36	86	168	88	75
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)								0		
Queuing Penalty (veh)								0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		5			0					
Queuing Penalty (veh)		2			0					

Network Summary

Network wide Queuing Penalty: 3

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	34	22
Average Queue (ft)	2	6
95th Queue (ft)	19	21
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LT	LTR	LTR
Maximum Queue (ft)	57	14	102	110	61
Average Queue (ft)	7	1	16	45	26
95th Queue (ft)	35	7	59	87	53
Link Distance (ft)	718		662	253	334
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		200			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	83	264	43	156	225	70	113	220	116	113
Average Queue (ft)	17	134	11	62	104	17	44	101	52	41
95th Queue (ft)	56	230	33	116	188	54	90	189	100	86
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)					0	0		0		
Queuing Penalty (veh)					0	0		0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		5		0	2					
Queuing Penalty (veh)		3		0	3					

Network Summary

Network wide Queuing Penalty: 7

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	46	31
Average Queue (ft)	4	8
95th Queue (ft)	27	27
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	LT	R	LTR	LTR
Maximum Queue (ft)	62	11	74	4	100	55
Average Queue (ft)	9	0	8	0	41	23
95th Queue (ft)	37	6	41	2	76	50
Link Distance (ft)	718		662	662	253	334
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		200				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	135	306	39	102	168	42	134	206	94	103
Average Queue (ft)	15	150	10	44	72	12	45	89	42	38
95th Queue (ft)	70	257	32	83	139	36	94	170	82	79
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)								0		
Queuing Penalty (veh)								0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		8			1					
Queuing Penalty (veh)		4			1					

Network Summary

Network wide Queuing Penalty: 4

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	41	340	29	199	461	23	87	22
Average Queue (ft)	3	215	6	43	218	3	29	3
95th Queue (ft)	32	325	24	119	376	15	69	14
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		3						
Queuing Penalty (veh)		9						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		33			4			
Queuing Penalty (veh)		1			2			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	NB	SB
Directions Served	L	R	L	LTR	LTR
Maximum Queue (ft)	37	20	68	152	58
Average Queue (ft)	7	1	19	59	25
95th Queue (ft)	29	10	50	117	53
Link Distance (ft)				247	328
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100	100	100		
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	97	272	42	197	264	47	114	237	123	113
Average Queue (ft)	17	98	8	64	112	11	51	111	55	41
95th Queue (ft)	62	211	29	129	208	35	97	216	103	89
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)								1		
Queuing Penalty (veh)								0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		6		0	3					
Queuing Penalty (veh)		3		1	5					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	NB
Directions Served	T	R
Maximum Queue (ft)	49	38
Average Queue (ft)	3	11
95th Queue (ft)	26	37
Link Distance (ft)	519	341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Network Summary

Network wide Queuing Penalty: 20

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	117	363	47	160	333	20	131	28
Average Queue (ft)	9	276	14	57	148	1	49	4
95th Queue (ft)	65	386	40	119	288	11	99	19
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		11						
Queuing Penalty (veh)		36						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		38			1			
Queuing Penalty (veh)		2			1			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	R	L	R	LTR	LTR
Maximum Queue (ft)	50	35	56	2	140	67
Average Queue (ft)	12	1	15	0	61	23
95th Queue (ft)	38	13	46	2	113	54
Link Distance (ft)				661	247	328
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100	100	100			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	72	292	46	119	196	41	140	250	108	122
Average Queue (ft)	12	121	8	46	81	10	55	117	48	44
95th Queue (ft)	47	246	30	88	162	31	112	219	94	93
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)								1		
Queuing Penalty (veh)								0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		7		0	1					
Queuing Penalty (veh)		4		0	1					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	NB
Directions Served	T	R
Maximum Queue (ft)	160	48
Average Queue (ft)	22	17
95th Queue (ft)	96	44
Link Distance (ft)	519	341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	1	
Queuing Penalty (veh)	1	

Network Summary

Network wide Queuing Penalty: 44

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	32	22
Average Queue (ft)	1	6
95th Queue (ft)	18	22
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LT	LTR	LTR
Maximum Queue (ft)	78	9	123	122	67
Average Queue (ft)	10	0	20	53	26
95th Queue (ft)	45	5	70	102	54
Link Distance (ft)	718		662	253	334
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		200			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	132	285	49	192	284	76	133	253	132	126
Average Queue (ft)	22	155	11	74	128	17	51	117	55	48
95th Queue (ft)	76	256	36	142	232	56	102	219	108	98
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)					1	0	0	2		
Queuing Penalty (veh)					0	0	0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)	0	9		0	5					
Queuing Penalty (veh)	0	5		1	9					

Network Summary

Network wide Queuing Penalty: 15

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	42	30
Average Queue (ft)	3	7
95th Queue (ft)	20	26
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	LT	R	LTR	LTR
Maximum Queue (ft)	82	8	83	2	122	55
Average Queue (ft)	15	0	12	0	51	24
95th Queue (ft)	55	3	54	2	98	52
Link Distance (ft)	718		662	662	253	334
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		200				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	195	386	43	107	188	49	131	247	122	112
Average Queue (ft)	24	196	12	50	83	14	53	117	50	43
95th Queue (ft)	109	331	35	92	156	40	102	211	100	91
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)							0	1		
Queuing Penalty (veh)							0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		15			1					
Queuing Penalty (veh)		8			1					

Network Summary

Network wide Queuing Penalty: 9

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	61	342	46	216	446	22	86	22
Average Queue (ft)	3	223	6	42	226	1	28	3
95th Queue (ft)	32	339	25	117	388	11	66	15
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		4						
Queuing Penalty (veh)		13						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		32			4			
Queuing Penalty (veh)		1			2			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	LTR	LTR
Maximum Queue (ft)	44	2	29	72	15	165	64
Average Queue (ft)	8	0	1	19	1	63	29
95th Queue (ft)	30	2	12	52	16	120	56
Link Distance (ft)		723			661	247	328
Upstream Blk Time (%)						0	
Queuing Penalty (veh)						0	
Storage Bay Dist (ft)	100		100	100			
Storage Blk Time (%)				0	0		
Queuing Penalty (veh)				0	0		

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	128	279	35	181	301	41	133	256	123	115
Average Queue (ft)	20	127	10	70	127	14	53	115	59	46
95th Queue (ft)	71	242	32	136	241	38	107	220	107	94
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)								3		
Queuing Penalty (veh)								0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		9		0	4					
Queuing Penalty (veh)		6		1	8					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	NB
Directions Served	T	R
Maximum Queue (ft)	108	38
Average Queue (ft)	6	12
95th Queue (ft)	49	37
Link Distance (ft)	519	341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Network Summary

Network wide Queuing Penalty: 31

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	100	354	41	213	357	25	134	29
Average Queue (ft)	10	277	11	61	149	3	51	5
95th Queue (ft)	66	390	35	138	291	15	107	22
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		11						
Queuing Penalty (veh)		39						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		37			1			
Queuing Penalty (veh)		2			1			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	R	L	T	LTR	LTR
Maximum Queue (ft)	53	20	65	19	183	69
Average Queue (ft)	12	1	17	1	75	25
95th Queue (ft)	39	9	48	14	145	56
Link Distance (ft)				661	247	328
Upstream Blk Time (%)					0	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	100	100	100			
Storage Blk Time (%)			0	0		
Queuing Penalty (veh)			0	0		

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	151	352	82	105	209	39	149	255	121	114
Average Queue (ft)	17	146	9	48	92	10	59	133	51	46
95th Queue (ft)	76	294	59	89	174	33	118	243	100	93
Link Distance (ft)		661			520	520	241	241	322	322
Upstream Blk Time (%)							0	2		
Queuing Penalty (veh)							0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		10		0	2					
Queuing Penalty (veh)		6		0	2					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	EB	NB
Directions Served	T	R	R
Maximum Queue (ft)	184	20	53
Average Queue (ft)	25	1	17
95th Queue (ft)	108	20	46
Link Distance (ft)	519		341
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)	2		
Queuing Penalty (veh)	1		

Network Summary

Network wide Queuing Penalty: 51

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	61	354	51	286	512	22	195	33
Average Queue (ft)	2	251	15	61	225	2	78	4
95th Queue (ft)	24	371	42	167	423	14	149	20
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		8						
Queuing Penalty (veh)		27						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		33			5			
Queuing Penalty (veh)		1			3			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	34	2	43	77	16	2	244	66
Average Queue (ft)	9	0	4	28	1	0	98	29
95th Queue (ft)	31	2	20	63	16	2	195	59
Link Distance (ft)		723			661	661	705	328
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100	100				
Storage Blk Time (%)				0	0			
Queuing Penalty (veh)				1	0			

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	185	425	174	239	323	47	233	269	149	129
Average Queue (ft)	31	204	26	108	159	15	103	178	61	47
95th Queue (ft)	116	376	105	192	271	40	193	293	118	95
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)							0	15		
Queuing Penalty (veh)							0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		26		3	8					
Queuing Penalty (veh)		27		14	21					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	EB	NB
Directions Served	T	R	R
Maximum Queue (ft)	137	20	68
Average Queue (ft)	14	1	27
95th Queue (ft)	76	20	58
Link Distance (ft)	519		341
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)	1		
Queuing Penalty (veh)	0		

Network Summary

Network wide Queuing Penalty: 93

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	98	294	62	174	371	21	197	39
Average Queue (ft)	7	259	22	66	115	2	84	7
95th Queue (ft)	53	327	51	132	256	13	159	25
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		10						
Queuing Penalty (veh)		45						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		36			1			
Queuing Penalty (veh)		2			1			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	50	17	51	74	9	2	216	68
Average Queue (ft)	12	1	4	25	0	0	92	28
95th Queue (ft)	40	23	28	58	9	2	186	58
Link Distance (ft)		723			661	661	247	328
Upstream Blk Time (%)							2	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)	100		100	100				
Storage Blk Time (%)		0		0	0			
Queuing Penalty (veh)		0		0	0			

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	190	474	137	188	232	40	234	282	135	133
Average Queue (ft)	21	228	31	89	113	12	103	205	55	46
95th Queue (ft)	93	416	130	154	208	35	213	313	110	97
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)		0					2	34		
Queuing Penalty (veh)		1					0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		26		1	3					
Queuing Penalty (veh)		33		4	6					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	EB	NB
Directions Served	T	R	R
Maximum Queue (ft)	423	137	93
Average Queue (ft)	101	7	34
95th Queue (ft)	306	67	74
Link Distance (ft)	519		341
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)		100	
Storage Blk Time (%)	7		
Queuing Penalty (veh)	5		

Network Summary

Network wide Queuing Penalty: 97

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	80	26
Average Queue (ft)	5	8
95th Queue (ft)	48	25
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LT	LTR	LTR
Maximum Queue (ft)	113	12	144	167	66
Average Queue (ft)	14	1	29	66	30
95th Queue (ft)	61	6	94	134	58
Link Distance (ft)	718		662	253	334
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		200			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	181	398	91	233	298	57	116	230	121	129
Average Queue (ft)	35	206	16	93	157	21	51	113	54	50
95th Queue (ft)	122	355	67	178	265	48	92	208	103	102
Link Distance (ft)		662			292	292	239	239	322	322
Upstream Blk Time (%)					1			1		
Queuing Penalty (veh)					0			0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		20		1	8					
Queuing Penalty (veh)		13		4	16					

Network Summary

Network wide Queuing Penalty: 33

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	64	29
Average Queue (ft)	5	8
95th Queue (ft)	34	26
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LT	LTR	LTR
Maximum Queue (ft)	115	13	118	173	57
Average Queue (ft)	17	1	18	64	25
95th Queue (ft)	65	7	70	129	53
Link Distance (ft)	718		662	253	334
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		200			
Storage Blk Time (%)	0				
Queuing Penalty (veh)	0				

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	195	483	132	109	214	49	162	256	122	110
Average Queue (ft)	31	222	15	55	99	16	61	136	57	43
95th Queue (ft)	129	372	65	94	184	41	122	241	110	88
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)							0	3		
Queuing Penalty (veh)							0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		20		0	2					
Queuing Penalty (veh)		12		0	3					

Network Summary

Network wide Queuing Penalty: 15

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	32	349	31	254	549	94	89	32
Average Queue (ft)	3	249	5	52	267	6	29	5
95th Queue (ft)	17	366	23	160	479	77	69	21
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		7						
Queuing Penalty (veh)		23						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		34			8			
Queuing Penalty (veh)		1			4			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	R	L	R	LTR	LTR
Maximum Queue (ft)	46	30	70	2	196	69
Average Queue (ft)	11	2	22	0	81	29
95th Queue (ft)	36	16	54	2	159	58
Link Distance (ft)				661	247	328
Upstream Blk Time (%)					0	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	100	100	100			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	119	282	33	225	332	44	159	262	150	139
Average Queue (ft)	21	132	8	86	158	14	65	152	64	53
95th Queue (ft)	67	262	27	170	282	37	127	270	120	111
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)							0	8		
Queuing Penalty (veh)							0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		10		1	7					
Queuing Penalty (veh)		7		7	14					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	NB
Directions Served	T	R
Maximum Queue (ft)	133	40
Average Queue (ft)	12	11
95th Queue (ft)	70	36
Link Distance (ft)	519	341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	1	
Queuing Penalty (veh)	0	

Network Summary

Network wide Queuing Penalty: 56

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	132	361	55	146	380	17	146	29
Average Queue (ft)	8	272	13	54	149	1	58	6
95th Queue (ft)	57	381	40	113	306	11	121	22
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		10						
Queuing Penalty (veh)		38						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		35			1			
Queuing Penalty (veh)		2			1			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	EB	WB	NB	SB
Directions Served	L	T	R	L	LTR	LTR
Maximum Queue (ft)	54	19	27	66	200	73
Average Queue (ft)	17	0	3	21	83	27
95th Queue (ft)	46	10	16	55	164	59
Link Distance (ft)		723			247	328
Upstream Blk Time (%)					1	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	100		100	100		
Storage Blk Time (%)		0		0		
Queuing Penalty (veh)		0		0		

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	195	533	131	148	253	40	167	263	137	135
Average Queue (ft)	27	236	15	62	111	13	64	165	61	51
95th Queue (ft)	118	436	82	119	206	35	127	275	114	106
Link Distance (ft)		661			520	520	241	241	322	322
Upstream Blk Time (%)		0					0	8		
Queuing Penalty (veh)		0					0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		27		0	3					
Queuing Penalty (veh)		16		0	3					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	EB	NB
Directions Served	T	R	R
Maximum Queue (ft)	313	60	57
Average Queue (ft)	34	3	18
95th Queue (ft)	167	42	49
Link Distance (ft)	519		341
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)		100	
Storage Blk Time (%)	2		
Queuing Penalty (veh)	2		

Network Summary

Network wide Queuing Penalty: 64

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	44	363	50	345	619	25	196	30
Average Queue (ft)	3	275	16	67	265	2	83	5
95th Queue (ft)	26	391	41	205	521	15	155	20
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		13			0			
Queuing Penalty (veh)		48			0			
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		35			9			
Queuing Penalty (veh)		1			6			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	41	9	33	78	50	9	305	69
Average Queue (ft)	12	0	3	30	2	0	127	30
95th Queue (ft)	37	7	18	66	27	5	243	60
Link Distance (ft)		723			661	661	705	328
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100	100				
Storage Blk Time (%)				0	0			
Queuing Penalty (veh)				1	0			

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	119	425	134	250	446	96	235	287	151	149
Average Queue (ft)	23	182	23	138	211	18	115	233	73	56
95th Queue (ft)	83	354	88	246	384	74	208	313	132	112
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)		0			0	0	1	51		
Queuing Penalty (veh)		0			0	0	0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		17		7	13					
Queuing Penalty (veh)		19		38	34					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	EB	NB
Directions Served	T	R	R
Maximum Queue (ft)	272	79	83
Average Queue (ft)	33	2	31
95th Queue (ft)	157	35	68
Link Distance (ft)	519		341
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)	2		
Queuing Penalty (veh)	1		

Network Summary

Network wide Queuing Penalty: 148

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	149	363	60	216	398	27	226	42
Average Queue (ft)	10	319	21	73	154	2	96	8
95th Queue (ft)	67	393	50	149	319	14	180	29
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		21						
Queuing Penalty (veh)		98						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		37			3			
Queuing Penalty (veh)		3			2			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	EB	WB	NB	SB
Directions Served	L	T	R	L	LTR	LTR
Maximum Queue (ft)	47	56	67	82	265	88
Average Queue (ft)	14	3	6	27	146	33
95th Queue (ft)	42	38	38	62	274	73
Link Distance (ft)		723			247	328
Upstream Blk Time (%)					13	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	100		100	100		
Storage Blk Time (%)		0		0		
Queuing Penalty (veh)		0		0		

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	234	567	378	239	302	43	210	288	158	157
Average Queue (ft)	26	264	46	112	143	12	101	247	68	61
95th Queue (ft)	121	491	215	199	253	35	183	305	132	121
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)		0					1	67		
Queuing Penalty (veh)		1					0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		19		5	7					
Queuing Penalty (veh)		26		18	13					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	EB	NB
Directions Served	T	R	R
Maximum Queue (ft)	499	200	124
Average Queue (ft)	129	21	43
95th Queue (ft)	388	123	99
Link Distance (ft)	519		341
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)		100	
Storage Blk Time (%)	9		
Queuing Penalty (veh)	7		

Network Summary

Network wide Queuing Penalty: 169

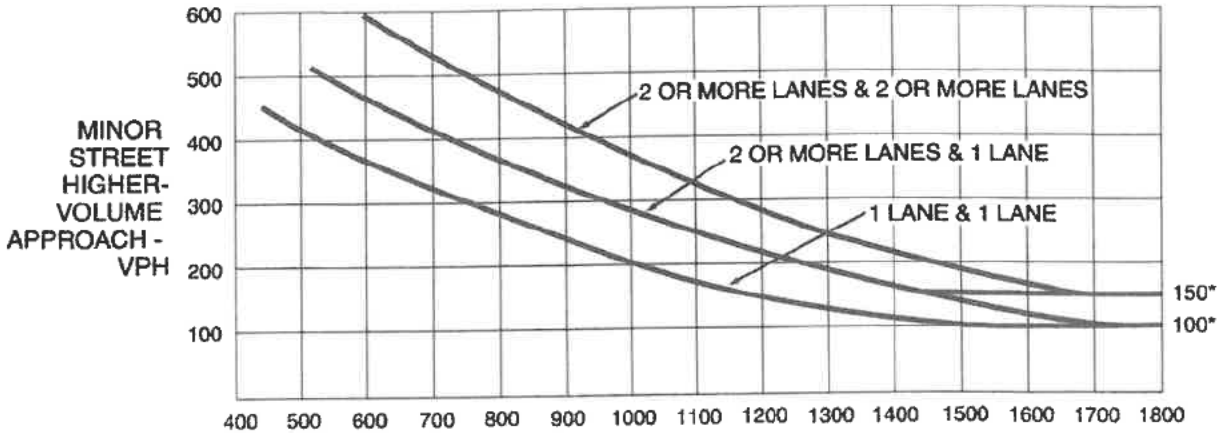
Appendix G

MUTCD Peak Hour Signal Warrants

Appendix G

MUTCD Peak Hour Signal Warrants

Figure 4C-3. Warrant 3, Peak Hour

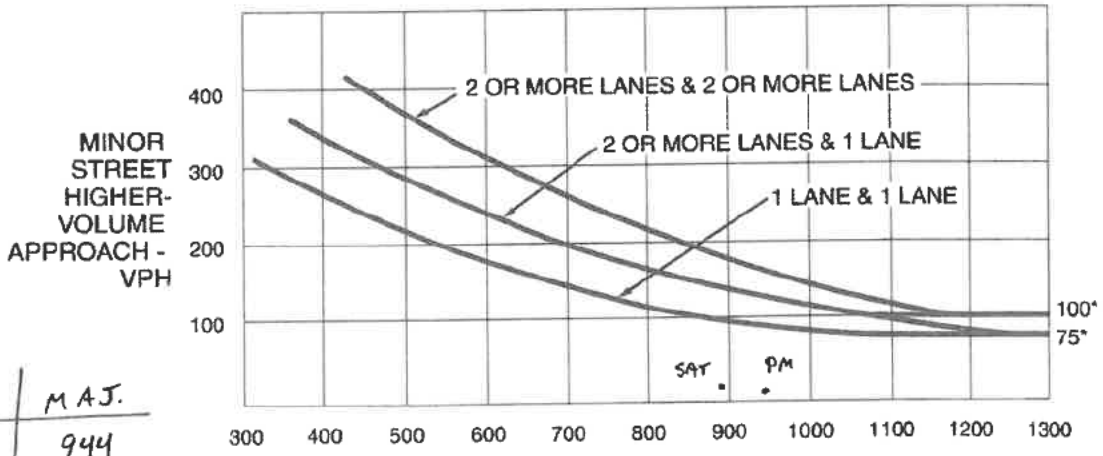


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2013 EXIST PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

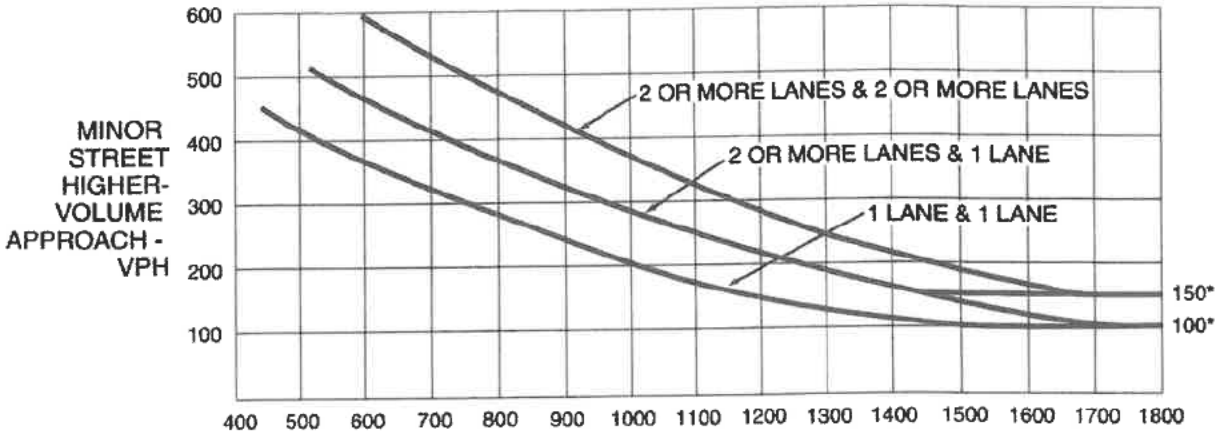
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



	MIN.	MAJ.
PM	8	944
SAT	10	895

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour

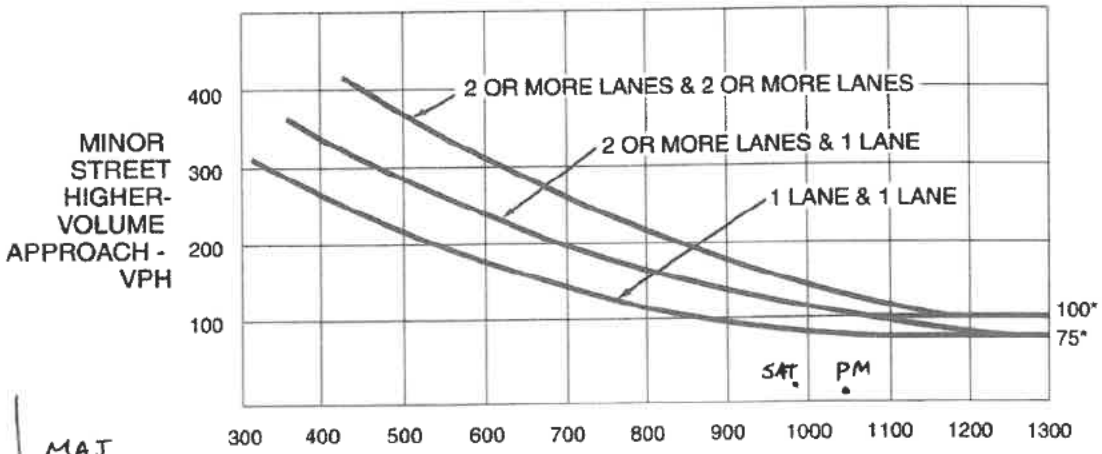


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2018 BACKGROUND
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

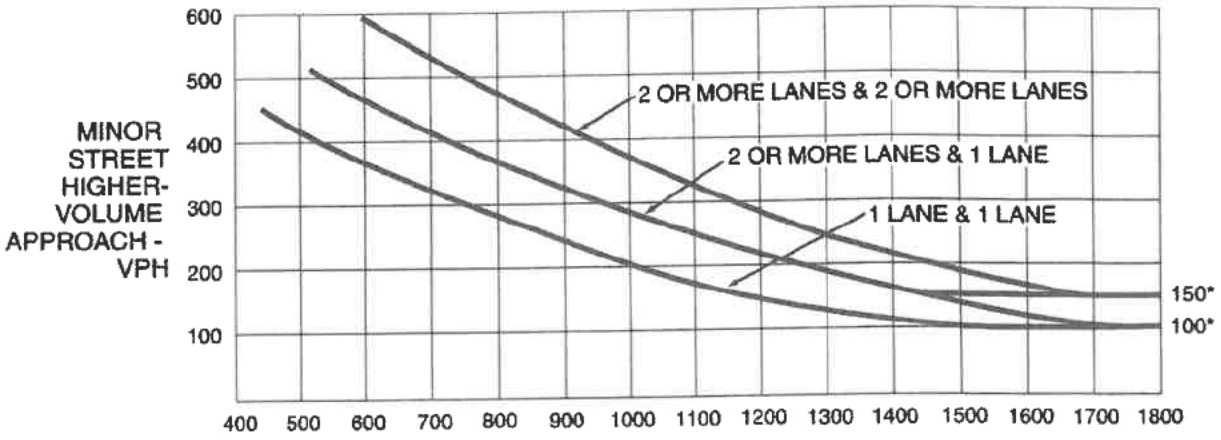
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

	MIN.	MAJ
PM	9	1044
SAT	12	990

Figure 4C-3. Warrant 3, Peak Hour

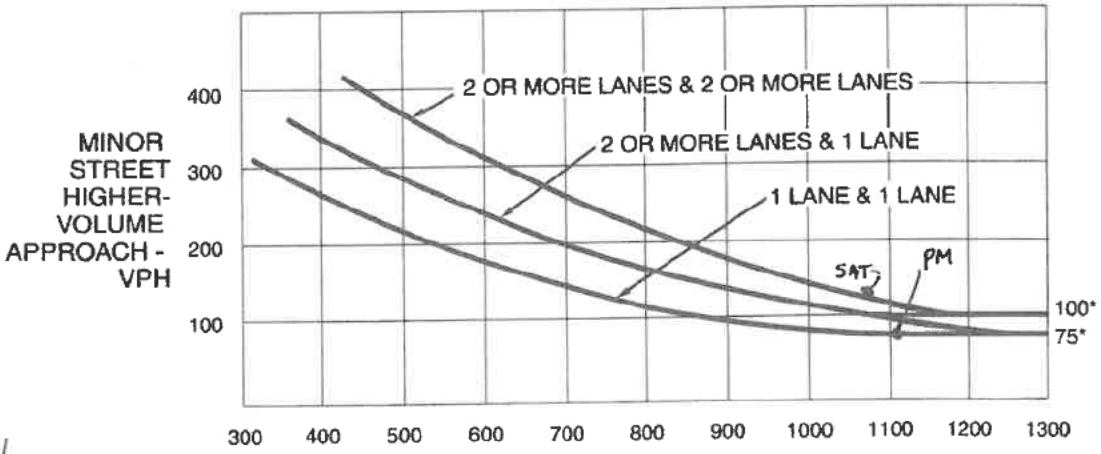


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2018 Phase 1
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

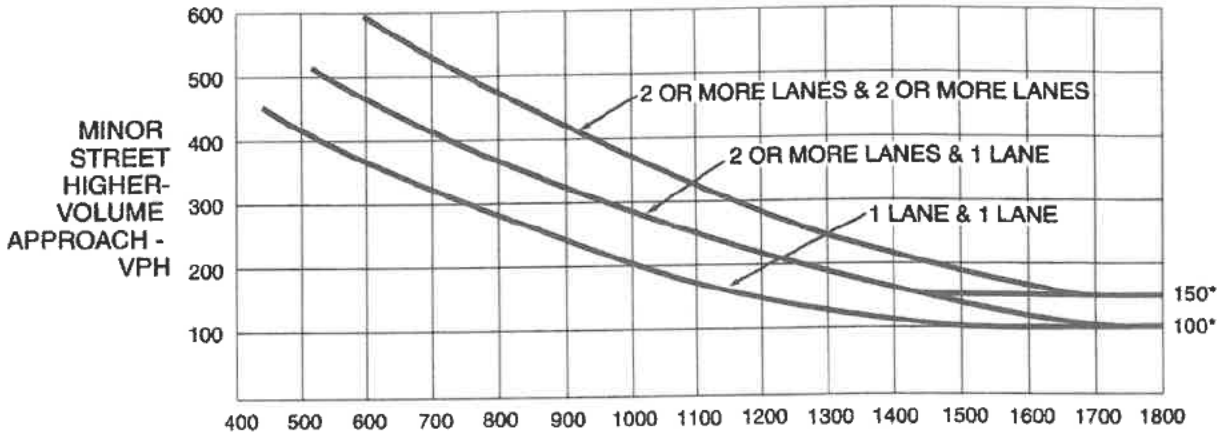
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

	MIN	MAJ	
PM	75	1105	NO
SAT	129	1082	YES

Figure 4C-3. Warrant 3, Peak Hour

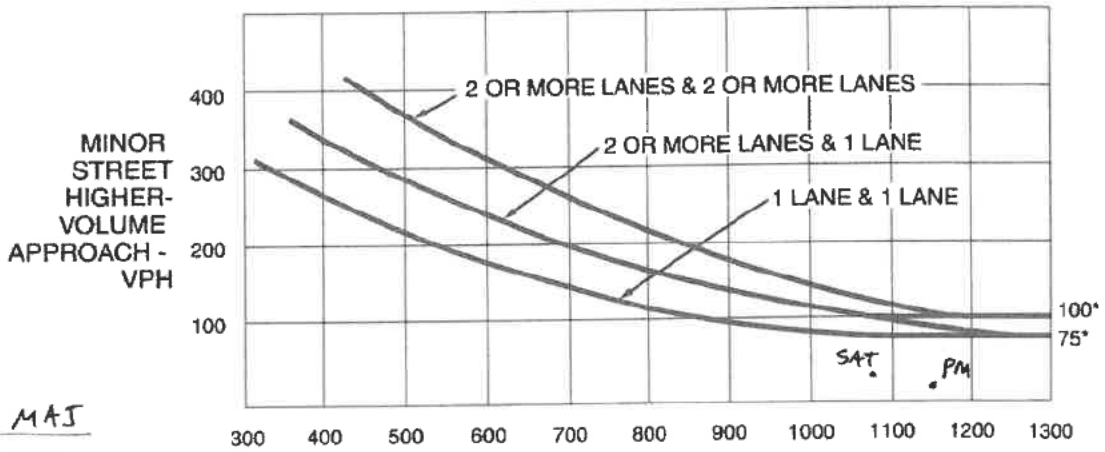


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2023 BACKGROUND
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

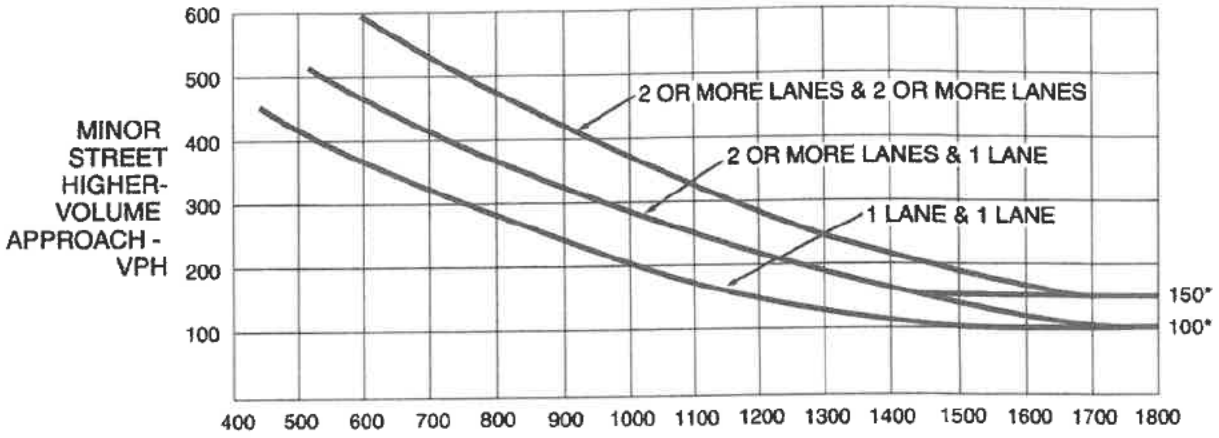
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



	MIN	MAJ
PM	10	1141
SAT	12	1083

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour

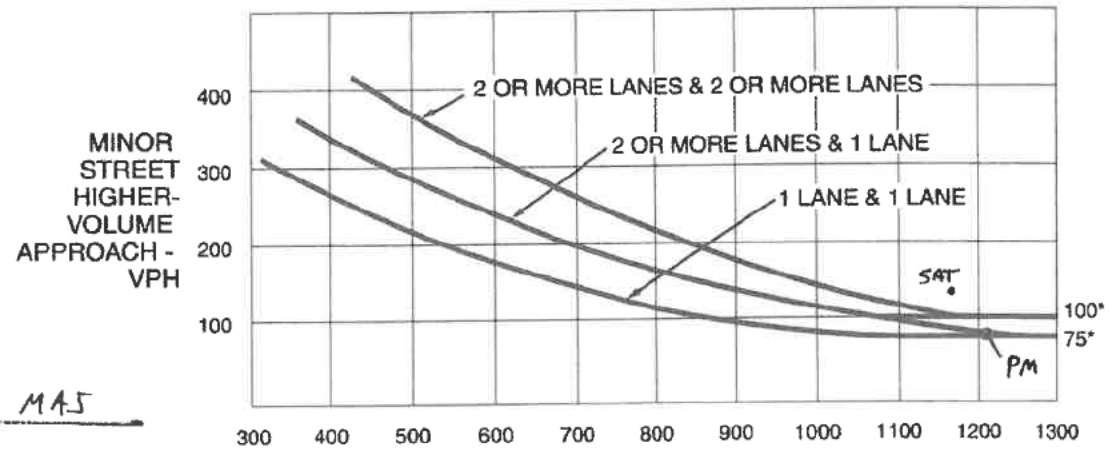


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2023 PHASE 1
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

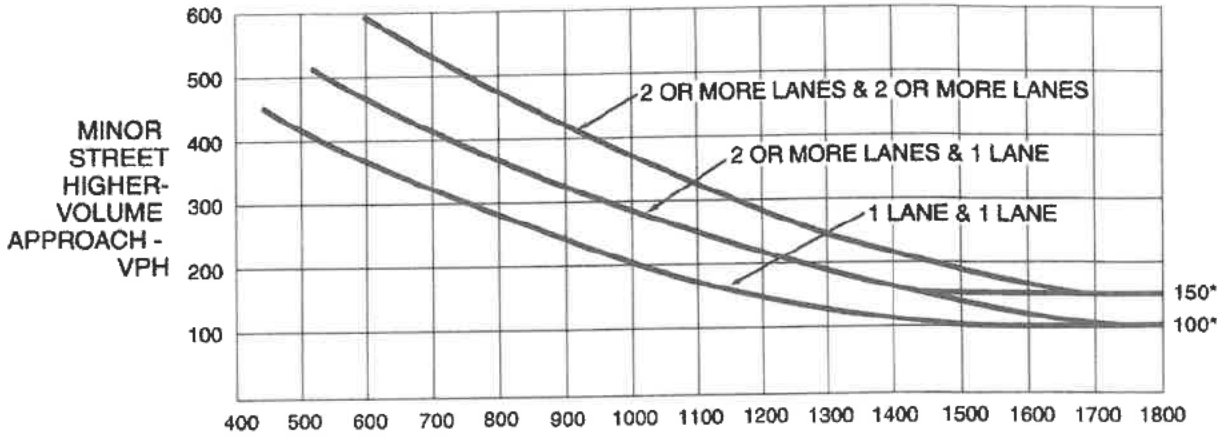
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



	MIN	MAX
PM	75	1202
SAT	129	1175

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour

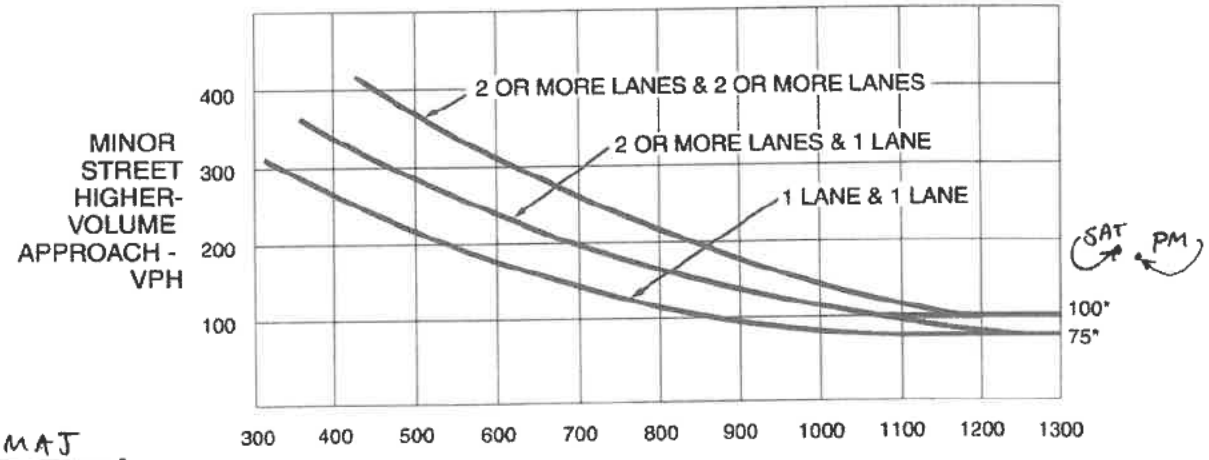


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2023 PHASE 2
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

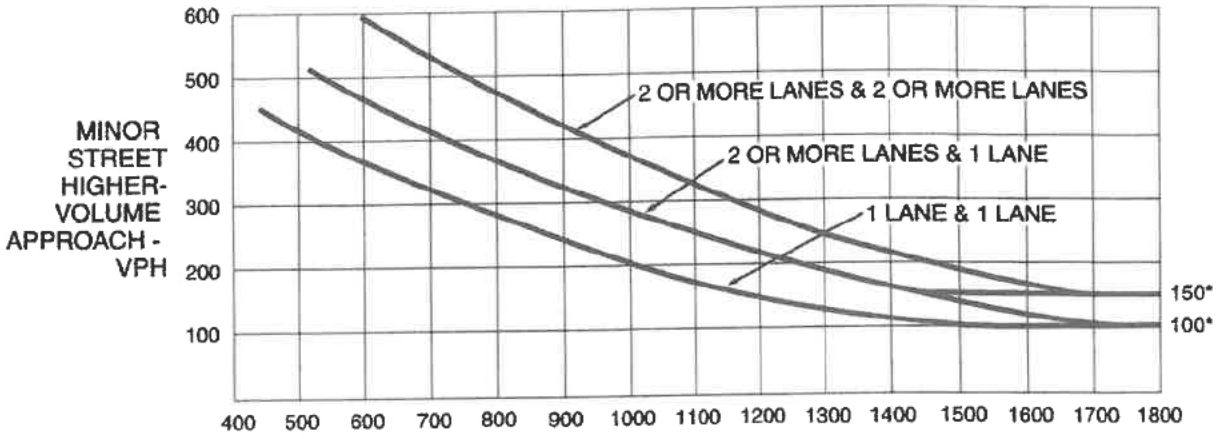
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

	MIN	MAJ
PM	168	1400
SAT	171	1389

Figure 4C-3. Warrant 3, Peak Hour

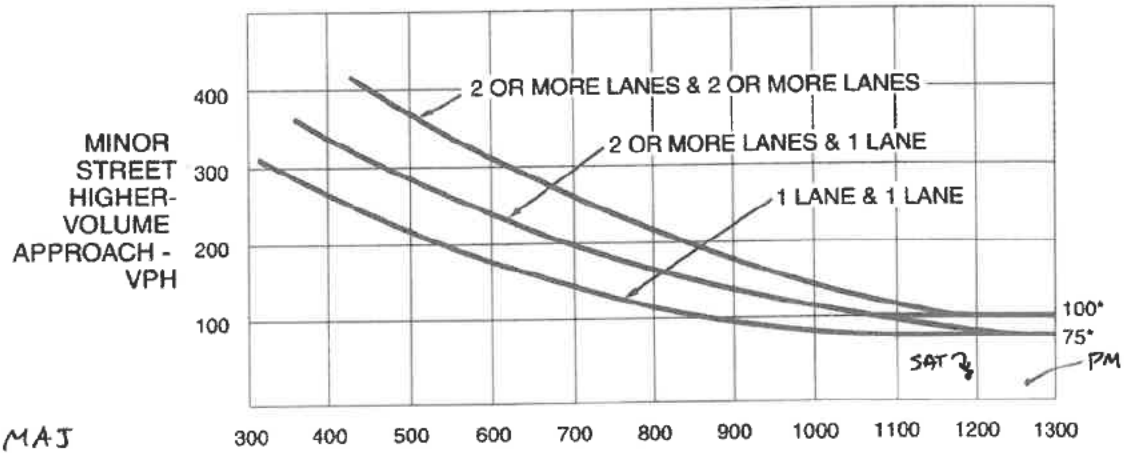


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2029 BACKGROUND PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

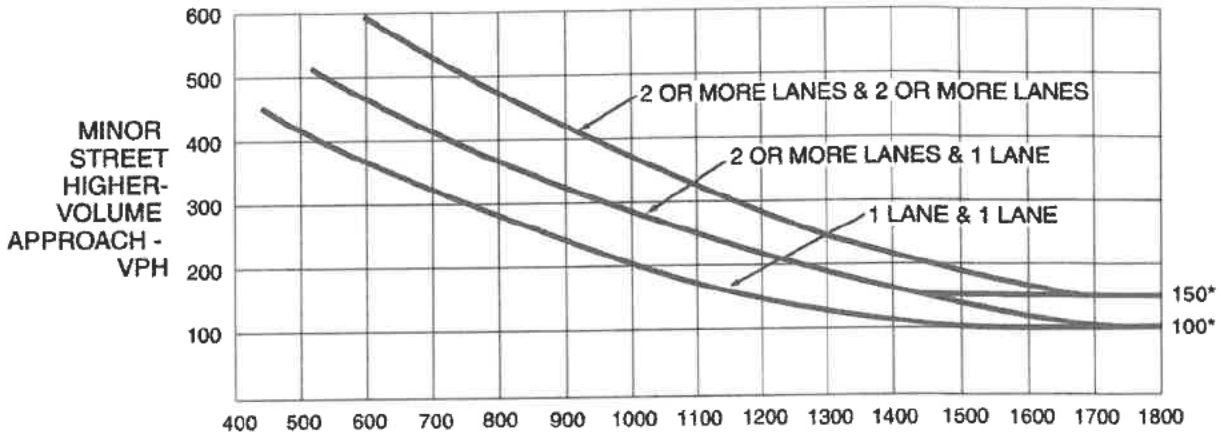
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

	MIN	MAJ
PM	11	1262
SAT	14	1197

Figure 4C-3. Warrant 3, Peak Hour

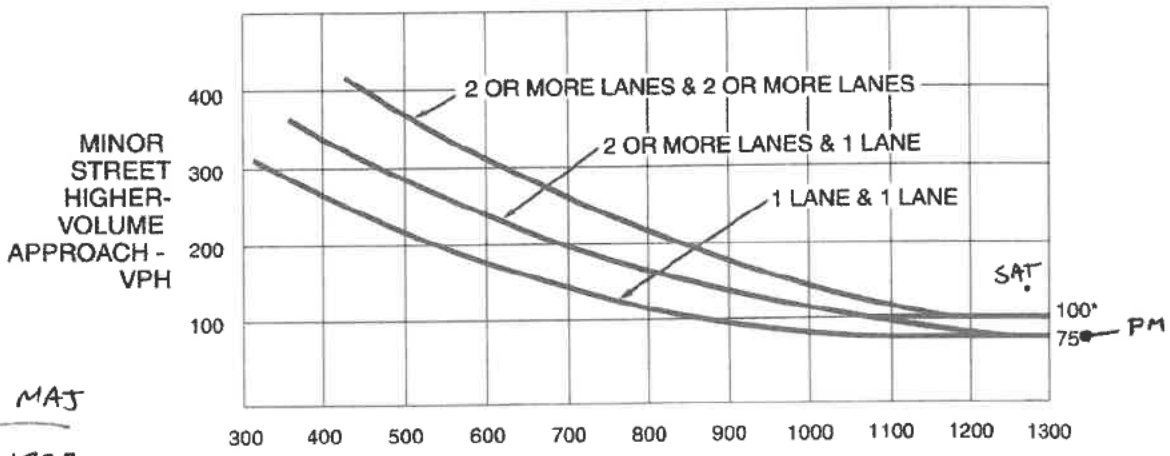


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2029 PHASE 1
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

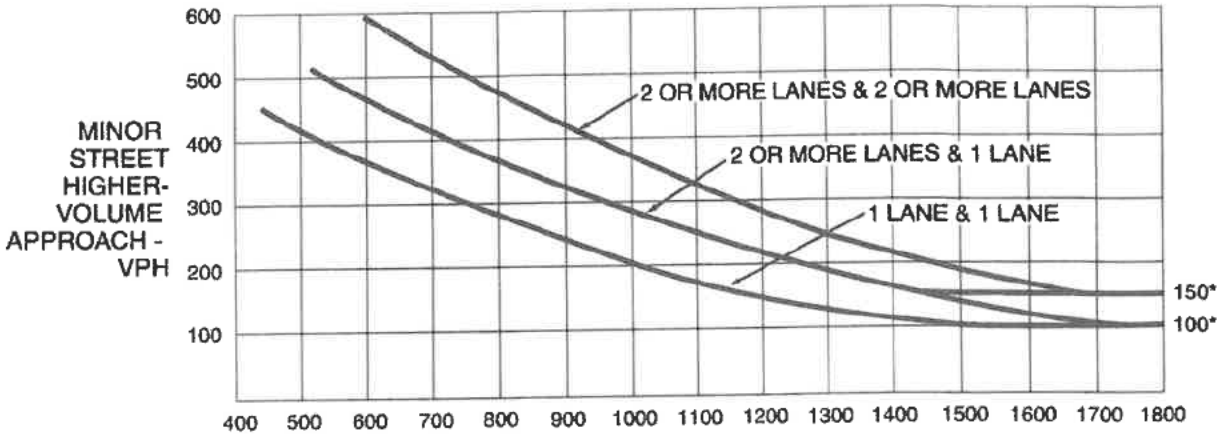
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

	MIN	MAJ
PM	75	1323
SAT	129	1288

Figure 4C-3. Warrant 3, Peak Hour

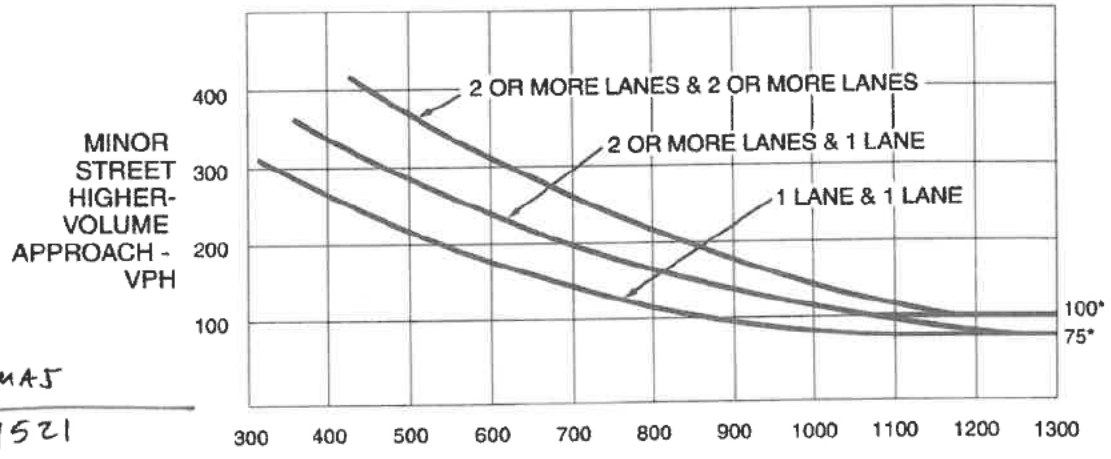


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2029 PHASE 2
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



SAT PM

	MIN	MAJ
PM	168	1521
SAT	171	1503

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Appendix H

Synchro Reports

(No Signal at Parkcrest Drive)

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	505	15	52	525	6	37	0	38	3	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	0	300	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	2	3	2	2	2	2	2	2	2
Mvmt Flow	2	549	16	57	571	7	40	0	41	3	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	571	0	0	549	0	0	1240	1237	549	1258	1237	571
Stage 1	-	-	-	-	-	-	553	553	-	684	684	-
Stage 2	-	-	-	-	-	-	687	684	-	574	553	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.92	6.42	7.52	6.92	6.42
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1002	-	-	1021	-	-	132	153	519	128	153	504
Stage 1	-	-	-	-	-	-	487	484	-	407	416	-
Stage 2	-	-	-	-	-	-	405	416	-	473	484	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1002	-	-	1021	-	-	125	144	519	113	144	504
Mov Cap-2 Maneuver	-	-	-	-	-	-	125	144	-	113	144	-
Stage 1	-	-	-	-	-	-	486	483	-	406	393	-
Stage 2	-	-	-	-	-	-	377	393	-	434	483	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	34.2	21.1
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	203	1002	-	-	1021	-	-	234
HCM Lane V/C Ratio	0.402	0.002	-	-	0.055	-	-	0.042
HCM Control Delay (s)	34.2	8.6	-	-	8.7	-	-	21.1
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.8	0	-	-	0.2	-	-	0.1

Intersection	
Int Delay, s/veh	14.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	411	117	49	457	20	108	9	42	8	14	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	20	447	127	53	497	22	117	10	46	9	15	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	497	0	0	447	0	0	1107	1089	447	1117	1089	497
Stage 1	-	-	-	-	-	-	486	486	-	603	603	-
Stage 2	-	-	-	-	-	-	621	603	-	514	486	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.52	6.92	6.42	7.52	6.92	6.42
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1067	-	-	1103	-	-	166	191	597	163	191	557
Stage 1	-	-	-	-	-	-	533	522	-	454	457	-
Stage 2	-	-	-	-	-	-	443	457	-	513	522	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1067	-	-	1103	-	-	142	178	597	137	178	557
Mov Cap-2 Maneuver	-	-	-	-	-	-	142	178	-	137	178	-
Stage 1	-	-	-	-	-	-	523	512	-	445	435	-
Stage 2	-	-	-	-	-	-	393	435	-	456	512	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.8	109.4	23.7
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	180	1067	-	-	1103	-	-	236
HCM Lane V/C Ratio	0.96	0.018	-	-	0.048	-	-	0.184
HCM Control Delay (s)	109.4	8.4	-	-	8.4	-	-	23.7
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	7.6	0.1	-	-	0.2	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	406	28	160	420	49	77	38	217	73	35	28
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	30	441	30	174	457	53	84	41	236	79	38	30
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	335	744	633	399	836	718	330	45	257	119	61	48
Arrive On Green	0.02	0.41	0.41	0.06	0.45	0.45	0.18	0.18	0.18	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	242	1393	1721	890	703
Grp Volume(v), veh/h	30	441	30	174	457	53	84	0	277	79	0	68
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1635	1721	0	1593
Q Serve(g_s), s	1.0	16.9	1.0	5.1	16.1	1.7	3.6	0.0	15.0	4.0	0.0	3.7
Cycle Q Clear(g_c), s	1.0	16.9	1.0	5.1	16.1	1.7	3.6	0.0	15.0	4.0	0.0	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.44
Lane Grp Cap(c), veh/h	335	744	633	399	836	718	330	0	302	119	0	110
V/C Ratio(X)	0.09	0.59	0.05	0.44	0.55	0.07	0.25	0.00	0.92	0.67	0.00	0.62
Avail Cap(c_a), veh/h	369	744	633	399	836	718	330	0	302	306	0	283
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.8	20.9	16.2	15.9	18.2	14.3	31.4	0.0	36.0	40.9	0.0	40.8
Incr Delay (d2), s/veh	0.1	3.5	0.1	0.8	2.6	0.2	0.4	0.0	31.5	6.3	0.0	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	9.3	0.5	2.6	8.8	0.8	1.8	0.0	9.4	2.1	0.0	1.8
LnGrp Delay(d),s/veh	15.9	24.4	16.4	16.7	20.8	14.5	31.8	0.0	67.5	47.2	0.0	46.3
LnGrp LOS	B	C	B	B	C	B	C		E	D		D
Approach Vol, veh/h		501			684			361			147	
Approach Delay, s/veh		23.4			19.3			59.2			46.8	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	42.7		22.0	9.3	46.4		12.3
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	5.8	26.7		* 17	4.0	28.5		16.0
Max Q Clear Time (g_c+I1), s	7.1	18.9		17.0	3.0	18.1		6.0
Green Ext Time (p_c), s	0.0	3.3		0.0	0.0	4.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	31.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	510	41	0	568	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	554	45	0	617	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	554	0	1171	554
Stage 1	-	-	-	-	554	-
Stage 2	-	-	-	-	617	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1016	-	213	532
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	538	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1016	-	213	532
Mov Cap-2 Maneuver	-	-	-	-	213	-
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	538	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	532	-	-	1016	-
HCM Lane V/C Ratio	0.025	-	-	-	-
HCM Control Delay (s)	11.9	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	593	29	71	377	6	52	0	77	6	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	0	300	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	2	3	2	2	2	2	2	2	2
Mvmt Flow	7	645	32	77	410	7	57	0	84	7	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	410	0	0	645	0	0	1225	1222	645	1263	1222	410
Stage 1	-	-	-	-	-	-	658	658	-	564	564	-
Stage 2	-	-	-	-	-	-	567	564	-	699	658	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.92	6.42	7.52	6.92	6.42
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1149	-	-	940	-	-	136	157	456	127	157	627
Stage 1	-	-	-	-	-	-	421	429	-	479	478	-
Stage 2	-	-	-	-	-	-	477	478	-	398	429	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1149	-	-	940	-	-	126	143	456	97	143	627
Mov Cap-2 Maneuver	-	-	-	-	-	-	126	143	-	97	143	-
Stage 1	-	-	-	-	-	-	418	426	-	476	439	-
Stage 2	-	-	-	-	-	-	433	439	-	323	426	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.4	45.5	28.2
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	222	1149	-	-	940	-	-	168
HCM Lane V/C Ratio	0.632	0.006	-	-	0.082	-	-	0.078
HCM Control Delay (s)	45.5	8.2	-	-	9.2	-	-	28.2
HCM Lane LOS	E	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	3.8	0	-	-	0.3	-	-	0.2

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	33	499	144	40	373	17	75	11	96	11	17	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	36	542	157	43	405	18	82	12	104	12	18	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	405	0	0	542	0	0	1119	1106	542	1164	1106	405
Stage 1	-	-	-	-	-	-	614	614	-	492	492	-
Stage 2	-	-	-	-	-	-	505	492	-	672	614	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1154	-	-	1017	-	-	184	210	540	171	210	646
Stage 1	-	-	-	-	-	-	479	483	-	558	548	-
Stage 2	-	-	-	-	-	-	549	548	-	445	483	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1154	-	-	1017	-	-	160	195	540	124	195	646
Mov Cap-2 Maneuver	-	-	-	-	-	-	160	195	-	124	195	-
Stage 1	-	-	-	-	-	-	464	468	-	541	525	-
Stage 2	-	-	-	-	-	-	502	525	-	339	468	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.8	52.9	29.4
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	259	1154	-	-	1017	-	-	184
HCM Lane V/C Ratio	0.764	0.031	-	-	0.043	-	-	0.201
HCM Control Delay (s)	52.9	8.2	-	-	8.7	-	-	29.4
HCM Lane LOS	F	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	5.6	0.1	-	-	0.1	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	556	28	99	324	39	77	33	221	66	33	28
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1863	1845	1863	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	24	604	30	108	352	42	84	36	240	72	36	30
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	406	789	671	278	838	720	330	39	262	111	56	47
Arrive On Green	0.02	0.43	0.43	0.04	0.45	0.45	0.18	0.18	0.18	0.06	0.06	0.06
Sat Flow, veh/h	1620	1835	1560	1774	1845	1583	1792	213	1418	1721	867	722
Grp Volume(v), veh/h	24	604	30	108	352	42	84	0	276	72	0	66
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1774	1845	1583	1792	0	1631	1721	0	1589
Q Serve(g_s), s	0.7	25.2	1.0	3.1	11.6	1.3	3.6	0.0	14.9	3.7	0.0	3.6
Cycle Q Clear(g_c), s	0.7	25.2	1.0	3.1	11.6	1.3	3.6	0.0	14.9	3.7	0.0	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.45
Lane Grp Cap(c), veh/h	406	789	671	278	838	720	330	0	301	111	0	102
V/C Ratio(X)	0.06	0.77	0.04	0.39	0.42	0.06	0.25	0.00	0.92	0.65	0.00	0.64
Avail Cap(c_a), veh/h	445	789	671	278	838	720	330	0	301	306	0	283
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.3	21.8	14.9	17.3	16.6	13.8	31.4	0.0	36.0	41.1	0.0	41.1
Incr Delay (d2), s/veh	0.1	7.0	0.1	0.9	1.5	0.2	0.4	0.0	31.4	6.3	0.0	6.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.3	14.1	0.5	1.5	6.2	0.6	1.8	0.0	9.4	1.9	0.0	1.8
LnGrp Delay(d),s/veh	14.4	28.8	15.0	18.2	18.1	13.9	31.8	0.0	67.4	47.4	0.0	47.7
LnGrp LOS	B	C	B	B	B	B	C		E	D		D
Approach Vol, veh/h		658			502			360			138	
Approach Delay, s/veh		27.6			17.8			59.1			47.5	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.2	44.9		22.0	9.0	47.1		11.9
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	4.0	28.5		* 17	4.0	28.5		16.0
Max Q Clear Time (g_c+I1), s	5.1	27.2		16.9	2.7	13.6		5.7
Green Ext Time (p_c), s	0.0	0.8		0.0	0.0	5.2		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	33.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	608	84	0	435	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	661	91	0	473	0	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	661	0	1134	661
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	473	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	927	-	224	462
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %	-	-				
Mov Cap-1 Maneuver	-	-	927	-	224	462
Mov Cap-2 Maneuver	-	-	-	-	224	-
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	627	-

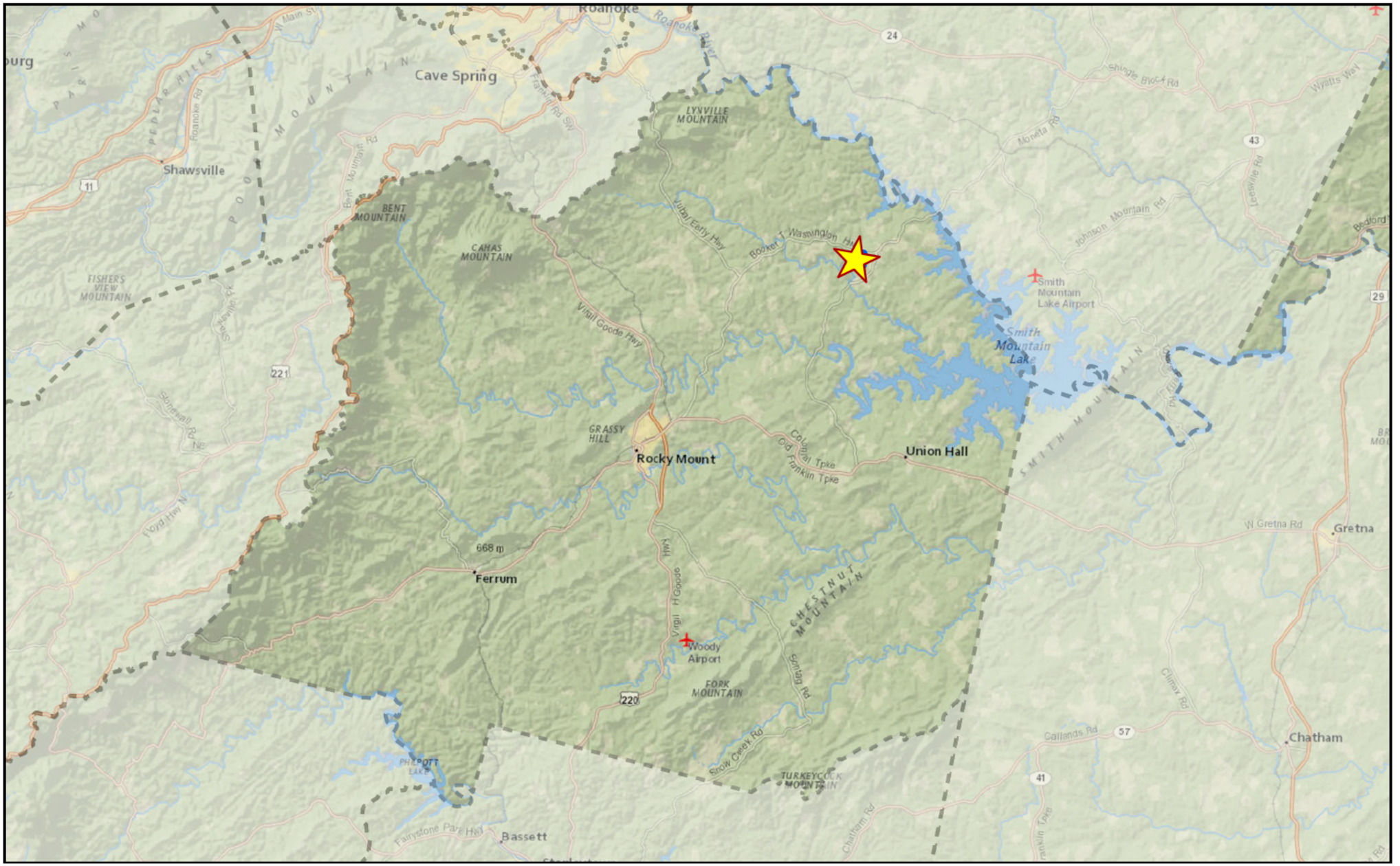
Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	462	-	-	927	-
HCM Lane V/C Ratio	0.047	-	-	-	-
HCM Control Delay (s)	13.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-


5


129


1441



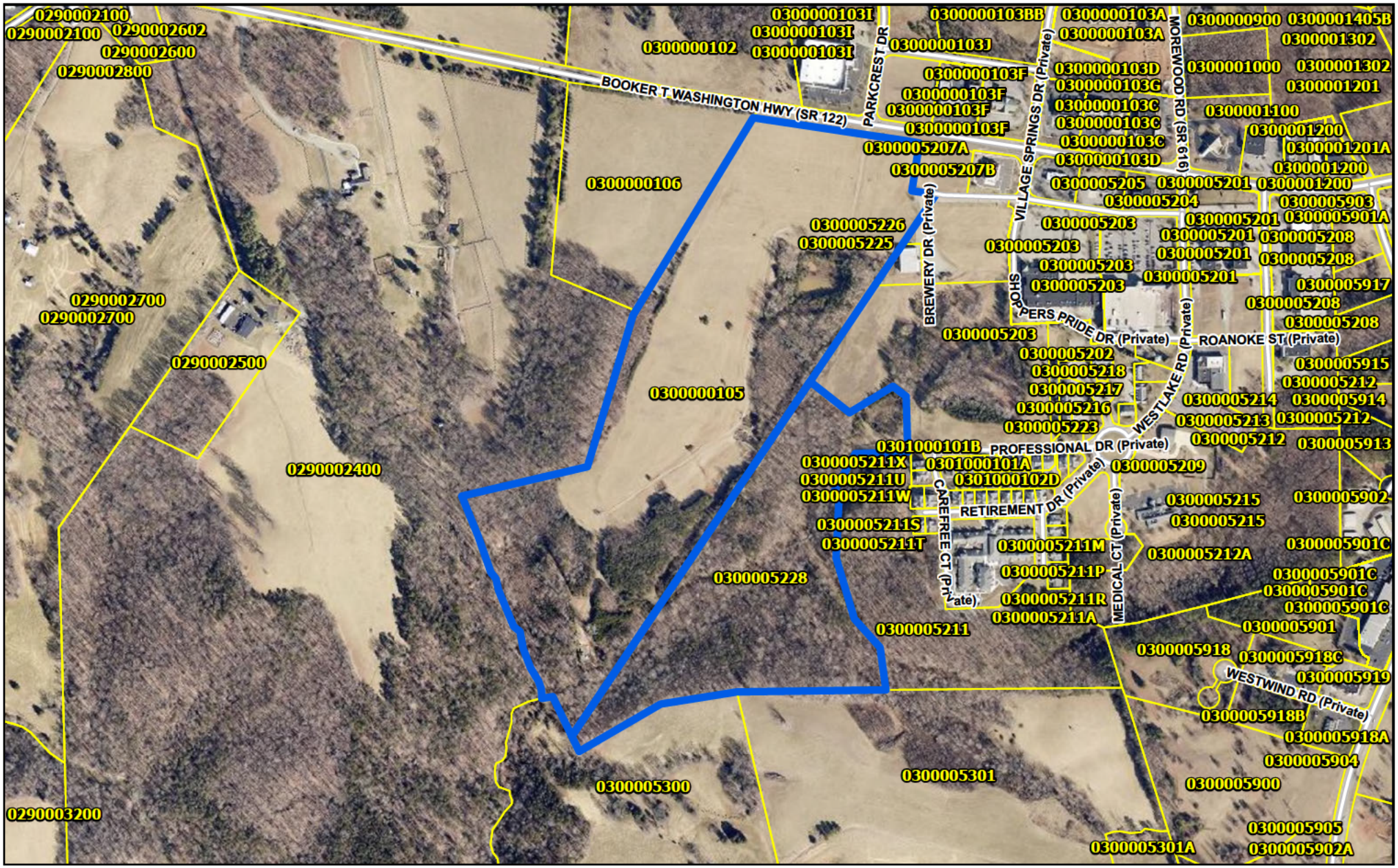
Subject Property Location

Tax Map # 0300000105 & 0300005228
REZO-01-26-18468
ABoone Development, Inc.

0 1.5 3 6 9 12
Miles

The data layers provided herein were compiled from various sources within a geographic information system (GIS) for the primary use of Franklin County. The data provided herein are believed to be accurate but are provided for reference purposes only. These GIS data are in no way meant as a replacement for a legal survey, legal description, or standard due diligence. No guarantee, expressed or implied, is made regarding their accuracy, currency, adequacy, usefulness, or reliability. These data are provided "as is" and neither Franklin County nor its employees shall be held responsible for their inappropriate use.

Date: 1/13/2026



Legend

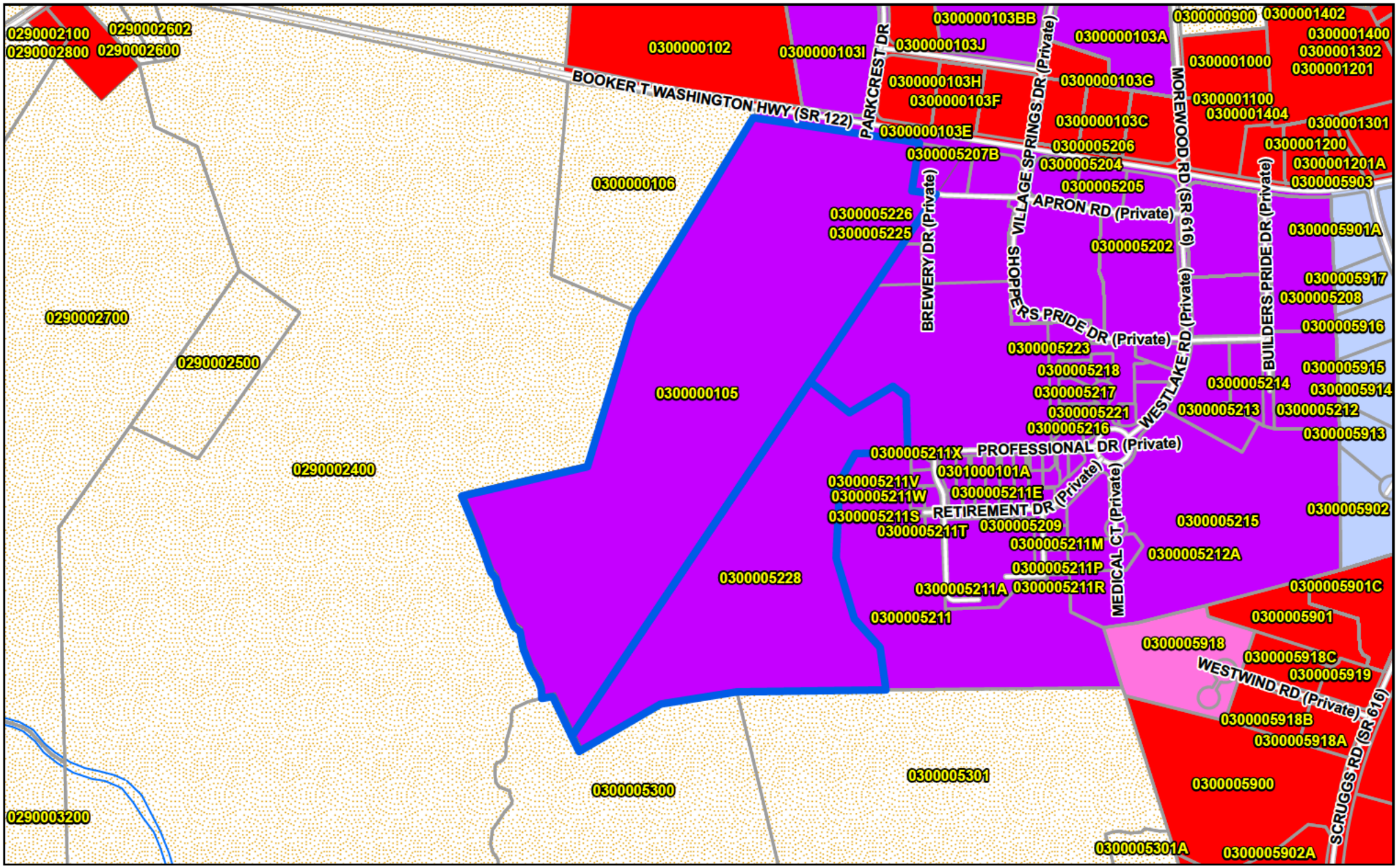
- Tax Parcels
- Road Centerlines
- Subject Parcel 0300005228
- Subject Parcel 0300000105

2024 Eagleview Imagery

Tax Map # 0300000105 & 0300005228
REZO-01-26-18468
ABoone Development, Inc.

0 375 750 1,500 Ft

Date: 1/13/2026

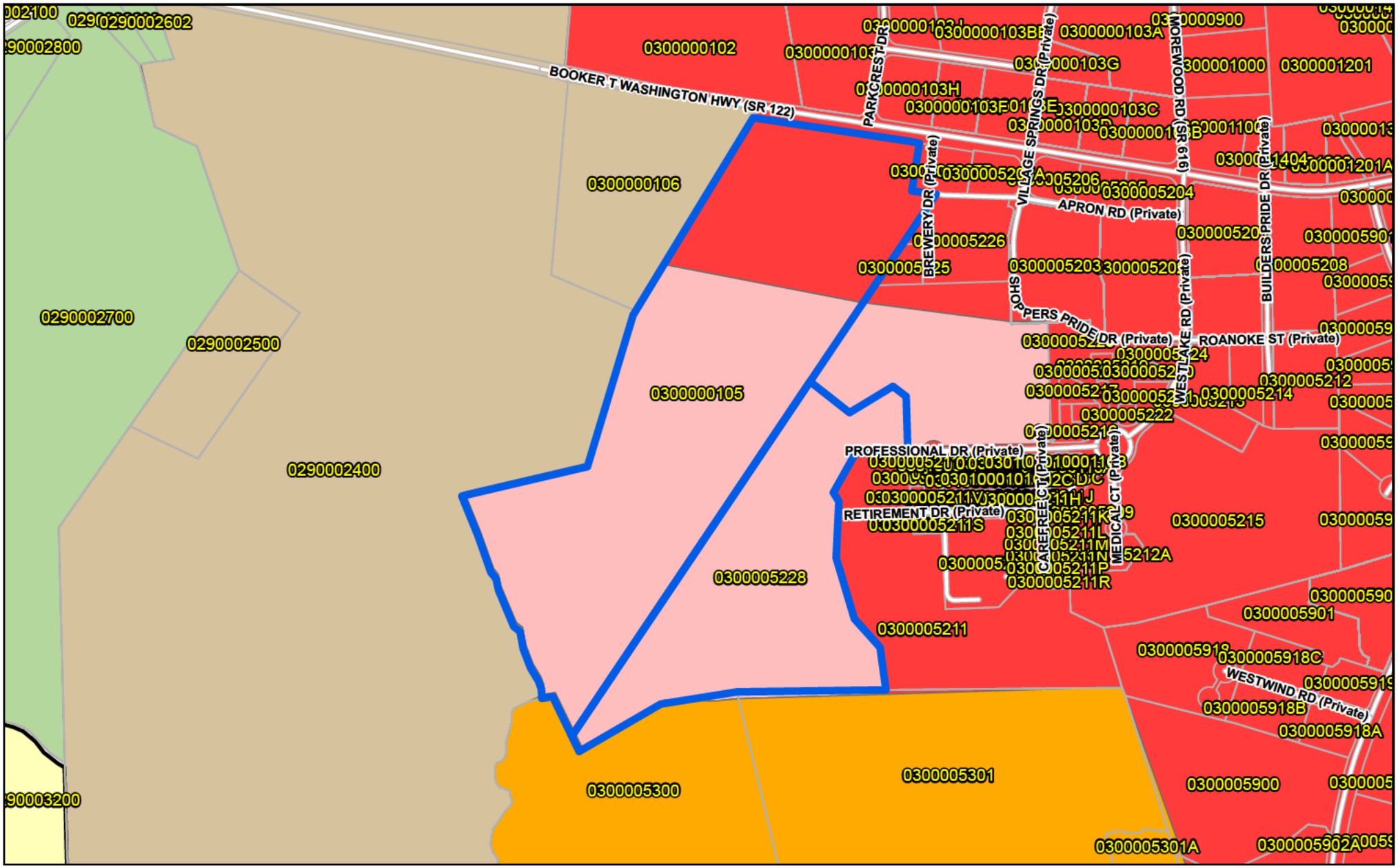


Tax Parcels
Rivers
A1 - Agricultural
B2 - General Business District
M1 - Light Industry
PCD - Planned Commercial District
RMF - Residential Muli-Family
Subject Parcel 0300000105
Subject Parcel 0300005228

Tax Map # 0300000105 & 0300005228
REZO-01-26-18468
ABoone Development, Inc.

0 190 380 760 1,140 1,520 Ft

Date: 1/13/2026



Tax Parcels
Road Centerlines
Designated Growth Areas
Village Mixed Use
Residential Mixed Use
Medium Density Residential
Rural Areas
Conservation Area
Conservation Areas - County
Low Density Residential - County
Rural Area - County

Tax Map # 0300000105 & 0300005228
REZO-01-26-18468
ABoone Development, Inc.

0 375 750 1,500 Ft

Date: 1/13/2026

STAFF REPORT
Case # SPEC-01-26-18469

Franklin County
A Natural Setting for Opportunity

To:	Franklin County Planning Commission
From:	Tina Franklin, Planner II
Date:	January 30, 2026
Tax #s:	0300000105 and 0300005228
District:	Gills Creek Election District
Applicant:	A Boone Real Estate, Inc.
Owner:	Willard Construction of Smith Mountain Lake, LLC and Willard Investment Properties, LLC

APPLICATION for SPECIAL USE PERMIT – Application of ABoone Development, Inc., Applicant, and Willard Investment Properties, LLC, and Willard Construction Smith Mountain Lake, LLC, Owners, requesting a special use permit on an approximate 82.70 acres of property zoned PCD, Planned Commercial Development District. These parcels are located at 12800 Booker T. Washington Highway in the Gills Creek Election District of Franklin County and further identified by real estate records as Tax Map/Parcel #0300000105 and 0300005228. The purpose of this special use permit request is to allow for 103 +/- dwellings, single family detached. This property has a future land use designation of Residential Mixed Use and Village Mixed Use and is part of the Westlake-Hales Ford Designated Growth Area (SPEC-01-26-18469).

RECOMMENDATION:
Staff recommends that the Planning Commission recommend approval of the special use permit with the following eight (8) conditions:

1. Developer shall develop the project in General Conformance with the conceptual plan entitled "Master Plan Exhibit Showing Westlake Village Business Park South" dated December 29, 2025, and revised January 5, 2026.
2. Developer shall collaborate with the County to design and connect trails in generally similar locations as shown on the Master Plan Exhibit in coordination with the County's grant-funded trail project and shall work with the County on any necessary easements to promote interconnectivity of the trail system within the greater Westlake Towne Center.
3. A subdivision plat shall be submitted to the Planning office for review and approval and recorded in the Clerk of Circuit Court office prior to site plan approval.
4. As a part of site plan approval, the applicant shall obtain all necessary approvals from the Western Virginia Water Authority (WVWA).
5. As a part of site plan approval, the applicant must adhere to all VDOT regulations for the two (2) entrances along Booker T. Washington Highway (SR 122).

6. The applicant/developer shall obtain addressing from the GIS Department for the residential development.
7. The applicant/developer shall obtain all necessary approvals and permits for erosion and sediment control, stormwater management, and building.
8. The applicant/developer shall adhere to the 200' buffer requirement between the subject property and Booker T. Washington National Monument, tax id and parcel numbers 0290002400 and 0300000106.

OVERVIEW:

The applicant is requesting a special use permit with possible conditions for +/- 103 single-family detached dwellings. The proposed project consisting of approximately 82.7 +/- acres zoned to PCD, Planned Commercial Development District, and requesting three (3) deviations. The property is identified as Parcel ID #'s 0300000105 and 0300005228 in the Gills Creek Election District.

BACKGROUND:

Along with the special use permit for the single-family detached dwellings, the proposed project also is requesting a zoning map amendment (rezone) to amend the existing conceptual plan to allow for 103+/- single-family detached dwellings as well as five (5) commercial pads designated for business purposes and a special use permit for private roads.

This development will include the following:

- Single-Family residential development on 45.2 acres consisting of 103 +/- total lots with a proposed density of 2.28 houses per acre.
- Open space in the residential development for a park
- Future potential pedestrian trail path
- Open space to consist of +/- 24.5 acres
- Five (5) commercial outparcels on +/- 13.0 acres consisting of three (3) proposed parcels along Booker T. Washington Highway, (Route 122), one (1) parcel along Apron Road (private road), and one (1) parcel along a future 30 foot right of way off of Apron Road.

The applicant/developer is requesting three (3) deviations.

1. Section 25-282 - Area Regulations – (a) Minimum Lot Size – (1)(a) to allow for minimum lot area of 8,000 square feet within the residential portion of the development community.

2. Section 25-282 – Area Regulations – (a) Minimum Lot Size – (2)(a) to allow for a minimum of 60-foot lot width for residential lots being served by both public water and sewer.
3. Section 25-395 – Minimum Dimensions – (a) Front Setback to allow for a minimum of 25-foot front setback from the proposed right-of-way of each private street within the residential portion of the development community.

The reason for the three (3) deviation requests is to allow for consistency and proposed density within the proposed residential portion of the development community.

The proposed residential development shall have ingress/egress from the following:

- Two (2) new entrances are proposed along Booker T. Washington Highway (Route 122).
    - One (1) entrance is proposed at the intersection of Parkcrest Drive and a new private right of way identified as Road "A" private r/w. The applicant/developer stated in the letter of application that the residential development will use this entrance.
    - One (1) entrance is between the commercial outparcels identified as Road "C" private r/w on the conceptual plan connection to Apron Road.

The proposed residential development will have road frontage on Apron Road (private road) that will be extended and circle around the development and connect to a new road named Road "B" (private road) that will be a cul de sac. (See "Master Plan Exhibit showing Westlake Business Park South")

The proposed development indicates a future potential pedestrian trail path to connect to the Westlake Towne Center future trail and existing sidewalks. The development proposes a park for the residential development.

In addition, the development proposes a 200-foot natural buffer at the rear of the property along with a residential stormwater facility and a 50-foot buffer setback along the property line shared with Booker T. National Monument.

The applicant/developer stated in the letter of application that this proposed development would complement the existing Westlake Towne Center commercial, office, and residential uses, including the townhome and condominium community that the developer is currently developing within the Towne Center. He further stated that the proposed development will help meet a critical housing shortage with high quality single-family homes at relatively affordable price points.

The development will be served by public water and sewer by Western Virginia Water Authority (WVWA).

The application was advertised, site posted, and notifications sent to all adjacent property owners. The Development Review Team (DRT) reviewed the application at its January 2026 meeting. As of the date of this report, staff has received two (2) phone calls inquiring about the application. Additional comments and concerns may be raised as a result of the public hearings.

SITE STATISTICS:

Location:	Booker T. Washington Highway (Route 122) and Apron Drive
Size:	+/- 83 acres
Existing Land Use:	Vacant
Adjoining Zoning:	PCD, Planned Commercial Development District
Adjoining Land Uses:	Commercial, Residential and Federal Park
Adj Future Land Uses:	Village Mixed Use and Residential Mixed Use

COMPREHENSIVE PLAN:

Future Land Use

All Comprehensive Plans include a component referred to as "Future Land Use," which includes both map designations and policies. In general, Future Land Use designations are both visionary and strategic – while also flexible to accommodate changes over time. Future Land Use designations and policies are intended to *generally* describe how a given area should look and feel in the future, and what type of development or use would be most appropriate.

The future land use map designates the property as "Village Mixed Use" and "Residential Mixed Use" as provided in the 2045 Comprehensive Plan adopted by the Board of Supervisors in July 2025 and the Westlake Hales Ford Area Plan, adopted by the Board of Supervisors in November 2016. The Westlake Hales Ford Area Plan is a part of the County's Comprehensive Plan.

Residential Mixed Use

Residential Mixed-Use areas in Designated Growth Areas (DGA) are those that would typically flank, or anchor, the Village Mixed Use areas, as a buffer between the Village center and the remaining areas. These areas should provide compact, walkable, and diverse developments that offer a variety of housing sizes and types. Ideally, these areas would be served by public water and sewer if available - and if not, shared or community systems. Developers are encouraged to work with the County, and primarily the Western Virginia Water Authority to understand the potential to extend service to these areas, if none is available.

Appropriate Land Use Types:

- Single-family (detached or attached)
- Townhomes
- Duplexes, triplexes, and fourplexes
- Senior and assisted living facilities
- Multifamily complexes
- Garden/patio homes
- Accessory dwelling units (ADUs)
- Small-scale, community-oriented commercial
- Recreation
- Civic

Character/Development Guidelines:

- Housing types should be mixed and dwellings per acre based on the site.
- Small-scale, community-oriented commercial uses should be screened and/or buffered from residential uses.
- Maintain low-speed, pedestrian- and bicycle-friendly streets.
- Interconnected street network and defined open spaces should be provided.
- Implement low-impact development (LID to the extent possible.
- Strive for materials, scale, and character of new buildings to be compatible with existing neighborhoods.
- Ensure materials, scale, and character of development is compatible within the neighborhood(s)
- Discourage the construction of private roads in new developments. If not feasible, new developments should include formal agreements for the maintenance for any roads not built, or eligible, for inclusion in the state highway system.

Village Mixed Use

Village Mixed Use areas in Designated Growth Areas (DGA) are those that are appropriate for traditional village development – which includes a variety of land use that is typically compact, walkable, and tailored to serve the residents of the immediate area. Village Mixed Use areas should include a variety of land uses to accommodate the needs of the residents – including small-scale housing options, grocery and pharmacy stores, medical offices, childcare facilities, post offices and other public services, personal services, as well as open space and recreation.

To retain the central areas for non-residential development and services, if possible, housing should either be on the second floor within Village Mixed Use areas, or setback from primary corridors. Ideally, these areas would be served by public water and sewer if available – and if not, shared or community systems. Developers are encouraged to work

with the County, and primarily the Western Virginia Water Authority to understand the potential to extend service to these areas, if none is available. Additionally, these areas should be a priority for broadband expansion and improvement, to ensure businesses and services have adequate bandwidth for internet access.

Appropriate Land Use Types:

- Commercial
- Offices
- Vertical and horizontal mixed use
- Garden/patio homes
- Duplexes, triplexes, and fourplexes
- Senior and assisted living facilities
- Tourism
- Recreation
- Civic

Character/Development Guidelines:

- Buffer new non-residential development when adjacent to residential uses.
- Discourage the construction of private roads in new developments. If not feasible, new developments should include formal agreements for the maintenance for any roads not built, or eligible, for inclusion in the state highway system.
- Encourage infill development and retrofitting of existing buildings.
- Ensure materials, scale, and character of development is compatible within the DGA.
- Locate non-residential parking and service areas to the side/rear of buildings and screen to the extent possible.
- Encourage traffic calming, particularly along primary routes.
- Incorporate pedestrian infrastructure and safety enhancements, such as sidewalks, crosswalks, and/or multi-use paths.
- Incorporate branding, plantings, and other amenities that contribute to the DGA's identity.

Chapter 12/Implementation

Goal for Housing: In 2045, Franklin County prioritizes a diverse housing stock that serves and attracts residents of all socioeconomic levels and life stages from youth and first-time buyers to the workforce, to retirees, and those aging in place.

Objective 7.1: Ensure adequate and affordable housing options are available for residents
Strategy 7.1.4: Evaluate current zoning regulations – particularly allowable densities and minimum lot sizes – and adjust where appropriate to accommodate neighborhoods with smaller-scale housing (smaller lots, more dense neighborhoods, etc.).

Objective 7.3: Promote the creation of "livable" communities
Strategy 7.3.1: Encourage development of housing within the County's Designated Growth Areas, where amenities and public utilities are typically more available, or have the potential to be available in the future, to support a range of housing types and densities.

Westlake Hales Ford Area Plan – Appendix B: Goals and Strategies

The Westlake Hales Ford Area Plan provides Goals and Strategies to implement the Plan; the following Goal and Strategy bears significance to this application:

- **Goal 5:** Create an inclusive, livable community that provides a balanced inventory of housing opportunities for all residents.
- **Strategy 5.1:** Review and amend the Zoning Ordinance to allow a greater diversity of housing types that would accommodate a range of incomes, lifestyles, and stages of life – including affordable and workforce housing, and housing for those aging in place.

By constructing a new type of housing, attached single family homes, more housing choices will be available within the Westlake Hales Ford Designated Growth Area, meeting the above-mentioned strategy and goal.

Comprehensive Plan Summary

The 2045 Franklin County Comprehensive Plan establishes and encourages different types of housing in the Residential Mixed Use and Village Mixed Use. Both mix uses are found in the County's Designated Growth Areas like the Westlake-Hales Ford Designated Growth Area. DGAs in the County are intended to provide a clear distinction between the County's more developed areas and rural areas. In addition, DGAs are ideal for development of both commercial and residential, the effect of sprawl is reduced, and the County's rural character is protected.

Residential Mixed Use in DGA's would be walkable and diverse development that offers a variety of housing sizes and types. These developments would be served by public water and sewer. Residential mixed use would support small-scale commercial development in the village. Appropriate land use types in this designation would be single-family detached dwellings, recreation, and small-scale, community oriented commercial. Development and Character Guidelines are housing types that should be mixed and dwellings per acre based on the site, maintain low-speed, pedestrian and bicycle friendly streets, discourage private roads in new developments; however, if new developments choose private roads formal agreements for maintenance are required.

Village Mixed Use in DGA's are usually traditional village development meaning a variety of land uses that are compact, walkable, and tailored to serve residents in the surrounding area or in the village itself. Water and sewer are public in most cases.

Appropriate land use types would be commercial, office, recreation, garden/patio homes, duplexes, townhomes. Development and Character Guidelines of the Comprehensive Plan suggest buffer for new non-residential development when adjacent to residential uses, ensure materials, scale, and character of the development is compatible within the DGA, and incorporate pedestrian infrastructure and safety enhancement, such as sidewalks, crosswalks, and/or multi-use paths.

The Westlake-Hales Ford Designated Growth Area continues to grow with a mixture of commercial and residential development. The proposed development of single-family detached dwellings and five (5) commercial parcel sites continue to meet the need of the County's critical housing shortages. This proposed 103 homes will enhance the village and the newly approved townhome and condominium development in the Westlake Towne Center. The five (5) commercial parcel sites will serve new commercial business and bring growth to the DGA. New commercial uses will serve both residential housing in the DGA and surrounding area. The new master plan for these two properties helps in the development of the DGA to have commercial development supportive of residential growth in the village and a more walkable community, which is the intention of DGAs. The proposed new master plan for these two parcels for single-family detached dwellings and commercial site is supported of the 2045 Franklin County's Comprehensive Plan and the Westlake -Hales Ford Area Plan.

ZONING ORDINANCE:

Special uses for the PCD district are set forth in Section 25-392 of the Zoning Ordinance. The requested use is referenced as a townhome development.

Sec. 25-638 of the Zoning Ordinance sets forth the County's authority to issue special use permits for certain uses. In order to issue a special use permit, the Board of Supervisors must find that such use will not be a substantial detriment to adjacent properties, that the character of the zoning district will not be changed thereby, and that such use will be in harmony with the uses permitted by-right in the zoning district, and with the public health, safety, and general welfare to the community.

Sec. 25-640 of the Zoning Ordinance sets forth the County's authority to impose conditions for the issuance of special use permits. The ordinance states that the Board of Supervisors *"may impose upon any such permit such conditions relating to the use for which such permit is granted as it may deem necessary in the public interest…"* Conditions associated with a special use permit must be related to the particular land use which required the permit and must be related to some impact generated by or associated with such land use.

Sec. 25-641 of the Zoning Ordinance states that a special use permit shall expire eighteen (18) months from the date of issuance if *"no commencement of use, structure or activity has taken place."* The ordinance states that "commencement" shall consist of "extensive obligations or substantial expenditures in relation to the project," including engineering, architectural design, land clearing, and/or construction.

ANALYSIS

In accordance with Section 25-638, the proposed special use permit is evaluated to determine if it will be a substantial detriment to adjacent properties, change the character of the zoning district, and be in harmony with the uses permitted by-right in the zoning district, and the public health, safety, and general welfare to the community.

The proposed residential development is consistent with the intent of the PCD District purpose of the Zoning Ordinance. The PCD District allows flexibility through the adjustment of setbacks, design guidelines, height, and use restrictions. The proposed project is requesting deviations for the following:

- Minimum lot size – to allow the minimum lot area of 8,000 square feet within the residential portion of the development. When public water and sewer are available smaller lots are common especially in a village and/or DGA
- Minimum lot size – to allow for a minimum of 60-foot lot width. When public water and sewer are available smaller widths are allowed, especially in a village and/or DGA
- Minimum dimensions - A minimum front yard setback to be 25 feet instead of 55 feet from the center of the right of way is a reasonable request with the minimum lot sizes being smaller both in width and area.

The three (3) deviations are a reasonable request shall be in keeping with the purpose of the PCD District, the intent of the Zoning Ordinance, the Comprehensive Plan and the design guidelines of the PCD. When public water and sewer are available it is expected to see smaller width, lot area reductions, and setback reductions to cluster the single-family dwellings and have a more sense of community on smaller lots with shorter setbacks closer to the road.

- The proposed residential development of approximately 103 single-family detached dwellings with five (5) commercial parcels will increase traffic in the DGA; however, the density of this proposed development of residential and commercial uses is deemed to be less than the approved existing conceptual plan with more housing and commercial uses approved by the Board of Supervisors in the early 2000s. The developer, County staff and district VDOT employees have been working to reduce and improve congestion on Route 122. The applicant has supplied a copy of the Trip Generation Analysis for the Westlake Towne Center dated December 31, 2025.
- The residential development will increase noise in the Towne Center due to the fact that there will be an additional 103 single-family detached dwellings. However, in a DGA the expectations are there would be more residential housing to support the commercial uses in the DGA and the anticipation of more noise similar to what you expect in a traditional subdivision.
- The proposed residential development could have an impact on Dudley Elementary school. At the end of the 2023-2024 school year, Burnt Chimney

Elementary school closed. The students in the area where the residential development is proposed were enrolled the following year to Dudley Elementary. Statistics show the increase in population went from 204 enrolled in 2023-2024 to 317 enrolled in 2024-2025. An increase in housing could cause a demand for this elementary school and boundaries between Dudley Elementary School and Windy Gap Elementary School may need to be discussed in the future.

- The proposed project will expand residential and commercial uses of the Towne Center and DGA and will prove to be in character with the intent of this district and the County's comprehensive plan.
- The proposed natural buffers between the proposed development and Booker T. Washington National Monument will serve to protect this historical site from the proposed development.
- The density of this proposed development is not intrusive to the surrounding area or placing a burden on infrastructure in the Towne Center.
- The proposed commercial development is economic development activities the County allows in its DGAs and the residential aspect with support all commercial uses in the DGA.
- The developer has proposed over 24 acres of open space preservation and a small lot in the residential area to be used as a park.

The County's Comprehensive Plan and Westlake-Hales Ford Village Plan would support this proposed development due to the following:

- Housing developments such as the proposed 103 single-family detached dwellings are needed to meet the housing crisis of the County, the need for workforce housing, and to support the commercial businesses in the DGA.
- The proposed development will allow for different types of housing in the DGA. Single-family detached dwellings will complement the existing housing, for example the new townhome/condominium project under construction, existing apartments and patio homes.
- Private roads are discouraged in this future land use designation; however, if there is a private road maintenance agreement for the maintenance of the private roads and private roads in the Towne Center are maintained by this type of formal agreement.
- The Comprehensive plan goal for housing along with an objective to promote the creation of a "liveable" communities with a strategy to encourage development of housing within DGAs where there are amenities and public utilities are available- the Westlake Towne Center is where residential and commercial growth should be located.

In addition, PCD district would encourage this type of development with commercial parcels proposed close to Route 122 and housing behind the proposed commercial development. The developer is preserving open space and protecting a national monument with natural buffers. proposed development complements the existing housing

and commercial uses in the PCD zoning district and the DGA. This proposed development meets the intent and purpose of the district.

These particular uses could potentially have a more significant amount of traffic accessing the development than the new proposed residential use, which would be consistent with the PCD purpose, along with the comprehensive plan and village plan for the area. However, the residential development of single-family dwellings would also be consistent with the purpose of the PCD district, comprehensive plan and village plan for the area. In the PCD district there is a mixture of commercial uses; however, there is a need for residential uses to support the planned development.

Given the purpose and intent of the special use permit to allow +/-103 dwellings, single-family detached that is supported by both the Comprehensive Plan and Area Plan. Staff concluded that the special use permit would not be a substantial detriment to adjacent properties, that the character of the zoning district will not be changed thereby such use would be in harmony with the uses permitted by-right in the zoning district, and with the public health, safety, and general welfare to the community.

DEVELOPMENT REVIEW TEAM (DRT) COMMENTS:

AEP: Elijah Meador had no comments or concerns due to the nature of the application.

VDOT: Lisa Lewis provided the following comments:

1. Please denote the spacing between the proposed entrances.
2. Please provide a traffic study, to include left/right turn lane analysis, for the proposed land use(s). Lisa Lewis stated she understands that District staff has been involved in discussions with Franklin County and the Developer regarding the proposed traffic study.
3. Please denote the intersection sight distance for the proposed entrances.

VDH: Darrin Doss had no comments due to being served by public water and sewer (WVWA).

WVWA: Aaron Shearer stated he had no comments or concerns due to there already being water and sewer availability in this area.

STORMWATER / E&S: Bill Raney, Development Review Manager stated that along with the Site Plan, Erosion and Sediment Control and Storm Water Management shall be included on the engineered plan for review.

BUILDING: John Broughton, Building Official, stated the applicant and/or owner will be required to obtain all necessary building permits for the proposed single-family dwelling and commercial development.

FIRE & EMS: Our office has not received any comments or concerns from Andy Pendleton, Fire Marshal.

GIS: Eric Schmidt, GIS Manager stated the applicant and/or owner must contact the GIS Department for addresses for each single-family dwelling and commercial building.

SUGGESTED MOTIONS:

The following suggested motions are sample motions that may be used. They include language found in Section 15.2-2283, Purpose of zoning ordinances of the Code of Virginia of 1950, as amended.

(APPROVE) I find that such use will not be of substantial detriment to adjacent property, that the character of the zoning district will not be changed thereby, and that such use will be in harmony with the purpose and intent of the County Code with the uses permitted by right in the zoning district, and with the public health, safety, and general welfare to the community. Therefore, I move to recommend approval of the applicant's request for a Special Use Permit to allow +/-103 dwellings, single-family detached in accordance with Section 25-392 of the Zoning Ordinance, with the eight (8) conditions as recommended in the staff report.

OR

(DENY) I find that such use will be of substantial detriment to adjacent property, that the character of the zoning district will be changed thereby, and that such use will not be in harmony with the purpose and intent of the County Code with the uses permitted by right in the zoning district, and with the public health, safety, and general welfare to the community. Therefore, I move to recommend denying the request for the Special Use Permit for +/-103 dwellings, single-family detached.

OR

(DELAY ACTION) I find that the required information for the submitted petition is incomplete. Therefore, I move to delay action until all necessary materials are submitted to the Planning Commission.

FRANKLIN COUNTY

SPECIAL USE PERMIT APPLICATION

I/We ABoone Development, Inc. as Owner(s), Contract Purchasers, or Owner's Authorized Agent of the property described below, hereby apply to the Franklin County Board of Supervisors for a special use permit on the property described below:

Petitioner's Name: ABoone Development, Inc.

Petitioner's Address: 3934 Electric Road, SW, Suite A Roanoke, Virginia 24018

Petitioner's Phone Number: [redacted]

Petitioner's Email Address: [redacted]

Property Owner's Name: Williard Investment Properties, LLC

Property Owner's Address: 75 Builders Pride Dr #200, Hardy, VA 24101

Property Owner's Phone Number: [redacted]

Property Owner's Email Address: [redacted]

Property Information:

A. Proposed Property Address: 12800 Booker T. Washington Highway
Hardy, VA 24101

B. Tax Map and Parcel Number: 030.00/001.05 and 030.00/052.28

C. Election District: Gills Creek

D. Size of Property: 82.7 acres

E. Existing Zoning: PCD

F. Existing Land Use: Vacant

G. Is the property located within any of the following overlay zoning districts:
☐ Corridor District ☑ Westlake Overlay District ☐ Smith Mountain Lake Surface District

H. Is any land submerged under water or part of Smith Mountain Lake? ☐ YES ☑ NO

I. If yes, please explain: _____

Proposed Special Use Permit Information:

J. Proposed Land Use: Applicant proposes to develop the property into 103 +/- single family detached homes (for which this SUP is required) with commercial pads fronting Route 122 to complement the existing Westlake Towne Center and the currently under development townhome and condominium community adjacent to the property. The community would be served by both public water and sewer.

K. Size of Proposed Use: 82.7

L. Other Details of Proposed Use: The proposed development would meet a critical housing shortage while complementing the existing commercial, office and residential uses of Westlake Towne Center and adding additional commercial uses along the corridor. The community would provide opportunity to more people for homeownership by offering high quality, detached housing in a desirable location with access to commercial shopping, restaurants and Smith Mountain Lake.

Checklist for Completed Items:

- Application Form
- Letter of Application
- Concept Plan
- Application Fee

I certify that this application for a special use permit and the information submitted is herein complete and accurate.

Petitioner's Name (Printed): ABoone Development, Inc., By: Court Rosen, Dir. of Dev.

Petitioner's Signature: [signature]

Date: January 4, 2026

Mailing Address: 3934 Electric Road, SW, Suite A
Roanoke, Virginia 24018

Phone Number: [redacted]

Email Address: [redacted]

Owner's consent, if petitioner is not property owner:

Owner's Name: Ron Willard II

Owner's Signature: [signature]

Date: 12-30-2025

Date Received by Planning Staff: _____

ABoone Real Estate Inc.

January 4, 2026

Ms. Lisa Cooper
Planning Director
Franklin County Department of Planning & Community Development
1255 Franklin Street, Suite 103
Rocky Mount, VA 24151

Dear Ms. Cooper,

Thank you for the opportunity to provide this Letter of Application in support of the attached Special Use Permit application (the "Rezoning"). We look forward to working with you. As part of this Letter of Application, we would request that the Board of Supervisors consider fast tracking this rezoning application.

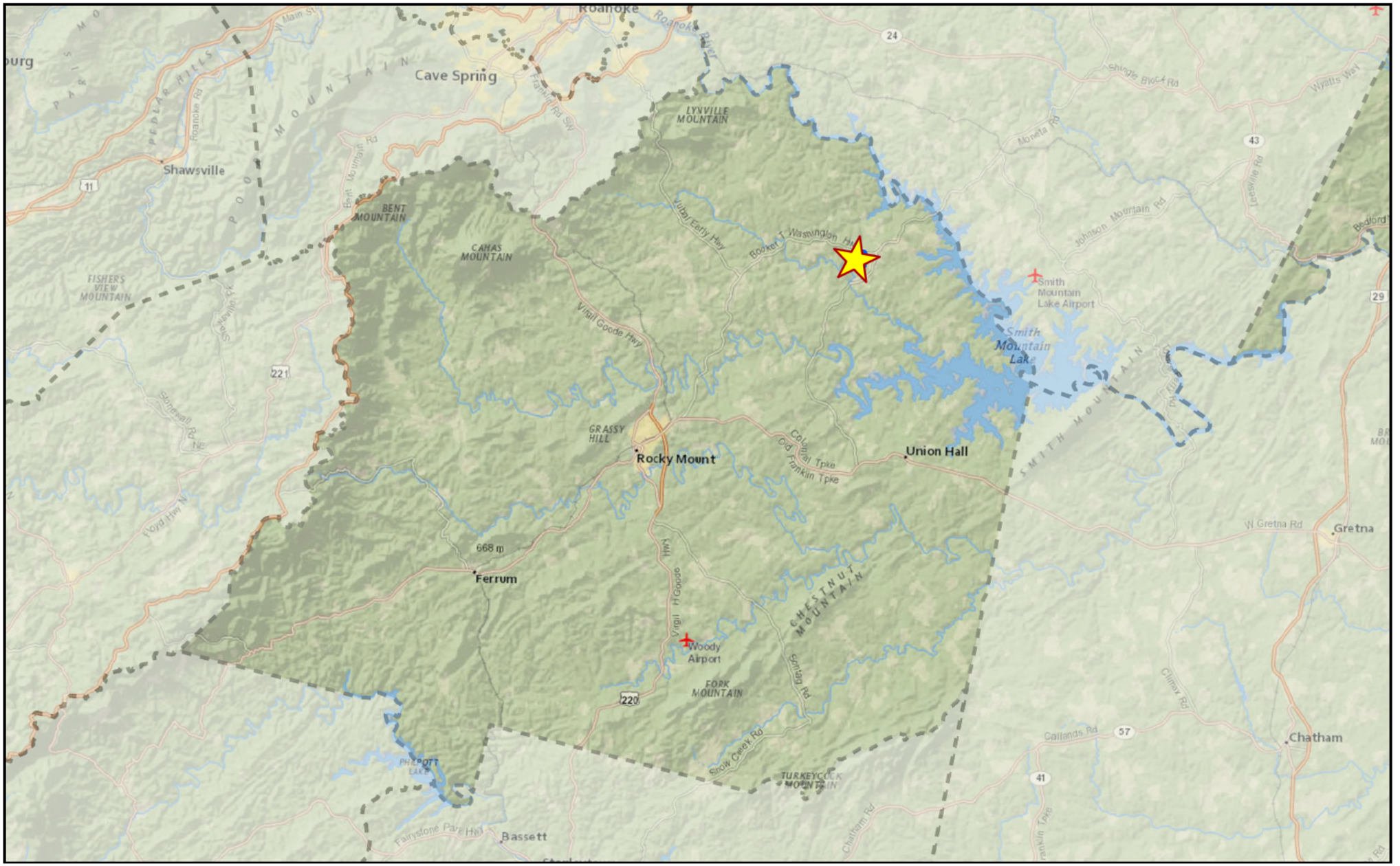
ABoone Development, Inc. proposes to develop a community of 103 +/- single family detached homes offered for sale along with commercial pads fronting Route 122 as shown on the concept plan in support of the Rezoning. We believe that this current proposed community will complement the existing Westlake Towne Center commercial, office and residential uses, including the townhome and condominium community we currently are developing within the Towne Center. Our proposed development will help meet a critical housing shortage and offer homeownership with high quality single and multi-story homes at relatively affordable price points. It additionally will add valuable commercial opportunities along the 122 corridor to attract different commercial, retail and restaurant uses. Residents of our proposed residential community will access their neighborhood from Route 122 at its intersection with Parkcrest Drive, an intersection planned for access improvement as part of this overall development.

The properties for which we request Special Use Permits are identified as Parcel 0300000105 and Parcel 0300005228.
The original rezonings for both parcels of land required a Special Use Permit for a single-family detached use, which we propose. Additionally, a second Special Use Permit is required for both the residential and commercial portions of the property in order to serve both sections with private roads. Lastly, we have requested deviations as shown on the Master Plan Exhibit for Westlake Village Business Park South. For these reasons, we request such affirmative action by the Franklin County Board of Supervisors.

Thank you for the opportunity to provide this Letter of Application.

Sincerely,

Court Rosen
ABoone Development, Inc.

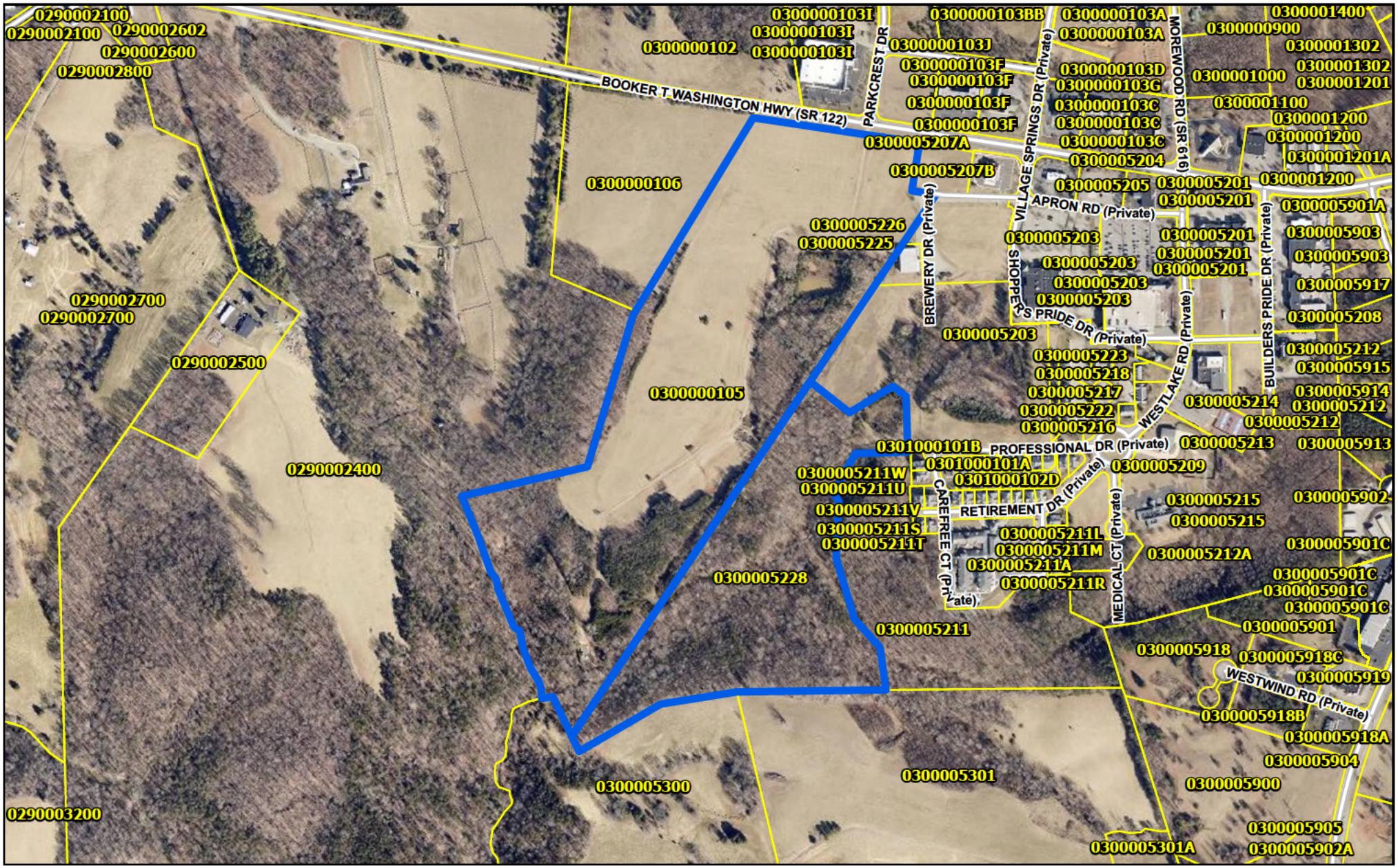


Subject Property Location

Tax Map # 0300000105 & 0300005228
SPEC-01-26-18469
ABoone Development, Inc.

0 1.5 3 6 9 12
Miles

Date: 1/13/2026



Legend

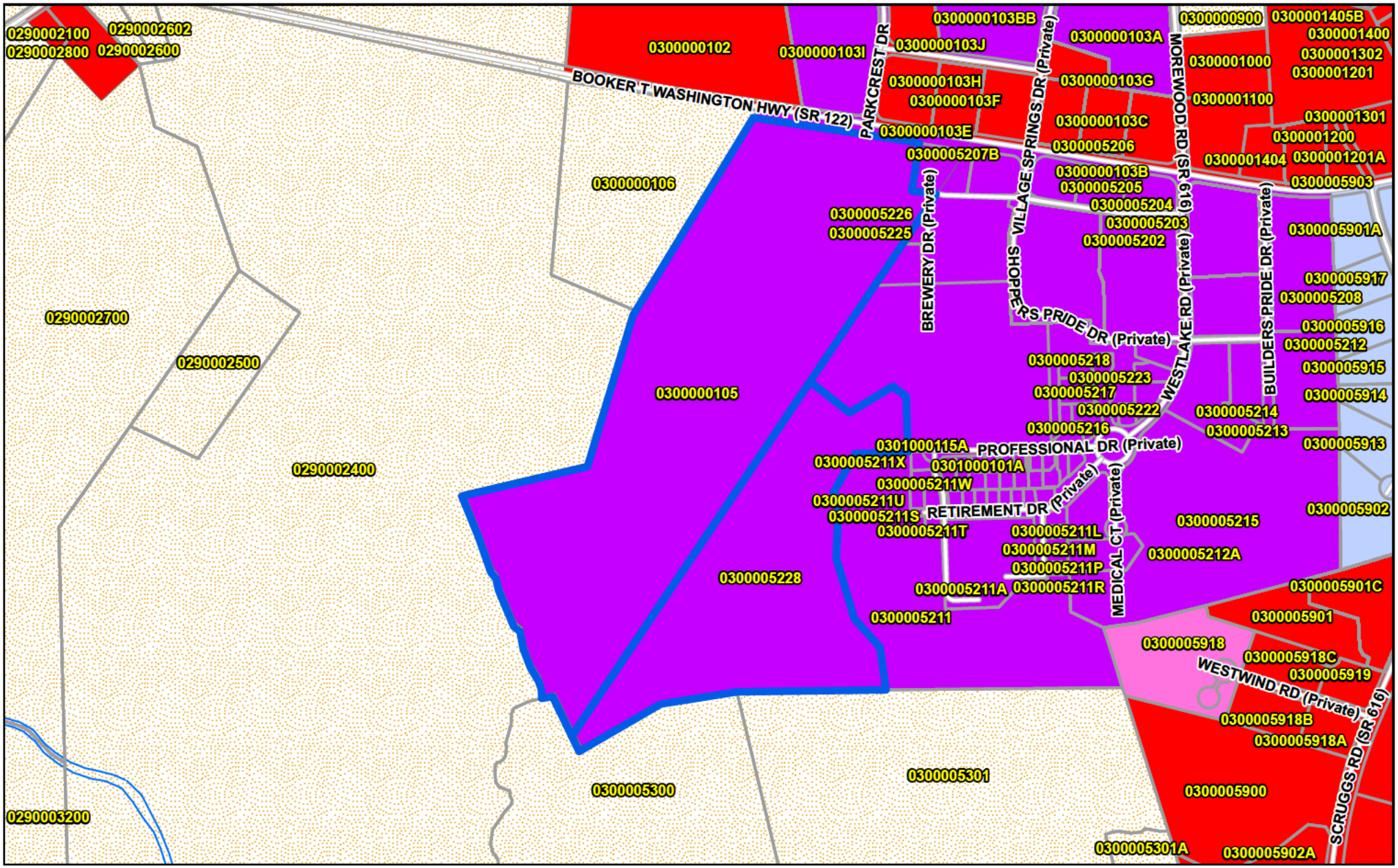
- Tax Parcels
- Road Centerlines
- Subject Parcel 0300005228
- Subject Parcel 0300000105

2024 Eagleview Imagery

Tax Map # 0300000105 & 0300005228
SPEC-01-26-18469
ABoone Development, Inc.

0 375 750 1,500 Ft

Date: 1/13/2026

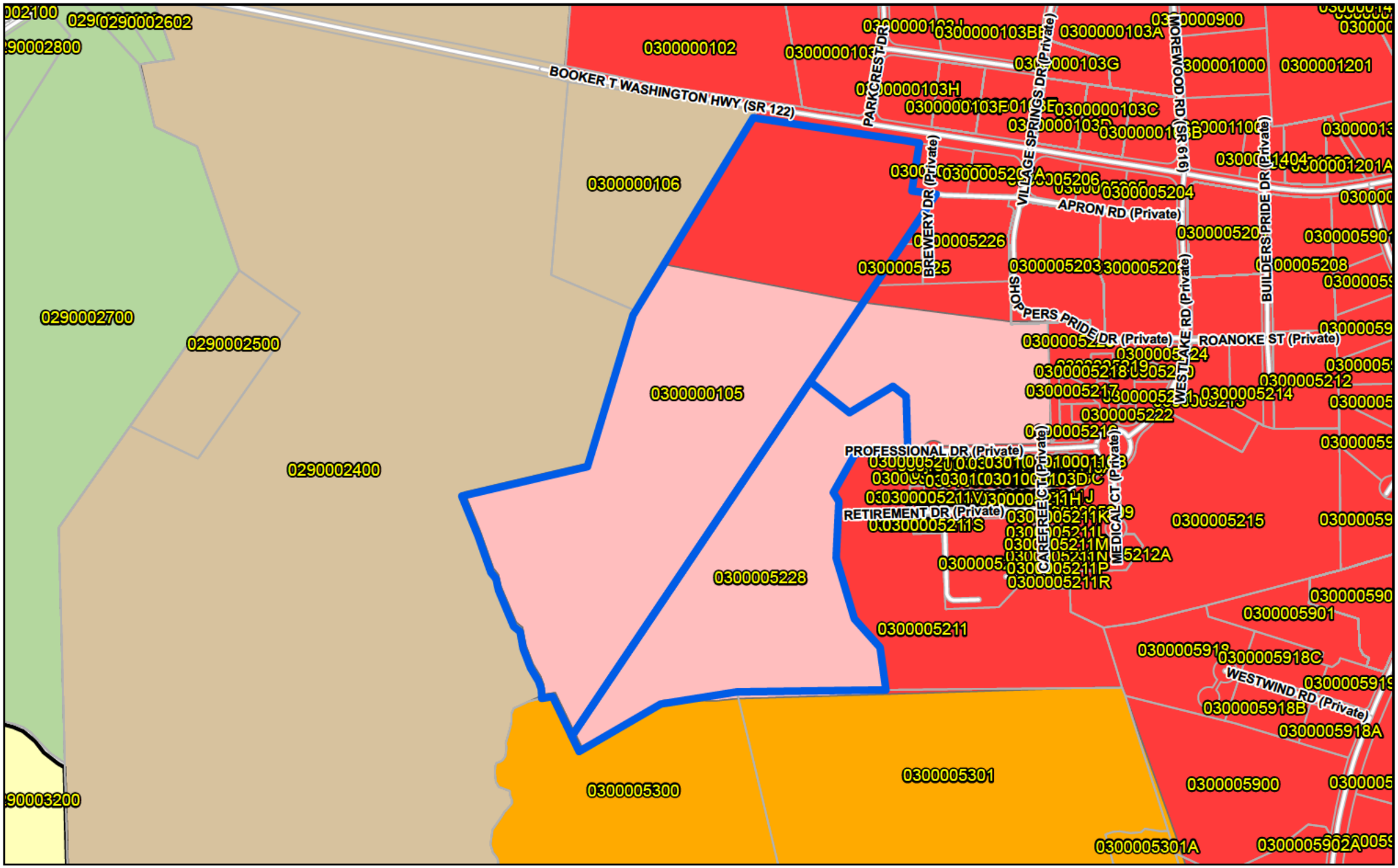


Tax Parcels
Rivers
A1 - Agricultural
B2 - General Business District
M1 - Light Industry
PCD - Planned Commercial District
RMF - Residential Muli-Family
Subject Parcel 0300000105
Subject Parcel 0300005228

Tax Map # 0300000105 & 0300005228
SPEC-01-26-18469
ABoone Development, Inc.

0 190 380 760 1,140 1,520 Ft

Date: 1/13/2026



Tax Parcels
Road Centerlines
Designated Growth Areas
Village Mixed Use
Residential Mixed Use
Medium Density Residential
Rural Areas
Conservation Area
Conservation Areas - County
Low Density Residential - County
Rural Area - County

Tax Map # 0300000105 & 0300005228
SPEC-01-26-18469
ABoone Development, Inc.

0 375 750 1,500 Ft

Date: 1/13/2026

STAFF REPORT
Case # SPEC-01-26-18470

Franklin County
A Natural Setting for Opportunity

To:	Franklin County Planning Commission
From:	Tina Franklin, Planner II
Date:	January 30, 2026
Tax #s:	0300000105 and 0300005228
District:	Gills Creek Election District
Applicant:	A Boone Real Estate, Inc.
Owner:	Willard Construction of Smith Mountain Lake, LLC and Willard Investment Properties, LLC

APPLICATION for SPECIAL USE PERMIT – Application of ABoone Development, Inc., Applicant, and Willard Investment Properties, LLC, and Willard Construction Smith Mountain Lake, LLC, Owners, requesting a special use permit on an approximate 82.70 acres of property zoned PCD, Planned Commercial Development District. These parcels are located at 12800 Booker T. Washington Highway in the Gills Creek Election District of Franklin County and further identified by real estate records as Tax Map/Parcel #0300000105 and 0300005228. The purpose of this special use permit request is to allow for private street(s) or road(s). This property has a future land use designation of Residential Mixed Use and Village Mixed Use and is part of the Westlake-Hales Ford Designated Growth Area (SPEC-01-26-18470).

RECOMMENDATION:
Staff recommends that the Planning Commission recommend approval of the special use permit with the following three (3) conditions:

1. Developer shall develop the project in General Conformance with the conceptual plan entitled "Master Plan Exhibit Showing Westlake Village Business Park South" dated December 29, 2025, and revised January 5, 2026.
2. The applicant/developer shall record any road maintenance agreement document in the land records of the Clerk of the Circuit Court simultaneously with the first subdivision plat approved pursuant to the rezoning request.
3. Surety shall be posted with Franklin County for the construction of the private road and shall not be released until the County has received a certification from an individual licensed by the Commonwealth of Virginia to provide such service stating that the construction of the road meets grade and pavement construction requirements consistent with VDOT Subdivision Street Requirements.

OVERVIEW:

The applicant is requesting a special use permit with possible conditions for private roads. The proposed project consisting of approximately 82.7 +/- acres zoned to PCD, Planned Commercial Development District, and requesting three (3) deviations. The property is identified as Parcel ID #'s 0300000105 and 0300005228 in the Gills Creek Election District.

BACKGROUND:

The applicant is requesting a special use permit to allow private street(s) or road(s) within the proposed development to consist of +/-103 dwellings, single-family detached and five (5) commercial pads designated for business purposes. This application is concurrent with a rezoning (zoning map amendment) to amend the existing conceptual plan from multi-family uses and commercial to single-family dwelling lots and commercial pad sites and a special use permit for single-family detached dwellings.

The proposed development will have the following private roads based on the "Master Plan Exhibit showing Westlake Village Business Park South":

- Road "A" (private right-of-way) is a new private road to be located at the intersection of Parkcrest Drive and Route 122 and Road "A". Road "A" is in between two (2) commercial pads and connects an existing private road called Apron Road. The applicant/developer stated in the letter of application that the residential development will use this entrance.

- Road "B" (private right-of-way) is a new private road in the residential development that will be constructed off the new extension of Apron Road to the cul de sac.

- Road "C" (private right-of-way) is a new private road that is proposed to be a new entrance off of Route 122 between two (2) commercial pads connecting to the existing Apron Road.

- The existing Apron Road will be extended from the Kroger Fuel Center behind commercial pads into the proposed residential development connecting to new Road "B".

Franklin County's zoning ordinance, Section 25-396 (b) states that all private streets may be permitted by special use permit in the PCD district, however, unless specifically approved by the board of supervisors as a special use permit the arrangement, character, extent, width, grade, and location of all streets shall be designed and constructed in accordance with specifications acceptable to the Virginia Department of Transportation (VDOT) for inclusion in the state highway system for maintenance. A road maintenance

agreement will be required prior to subdivision approval. All roads in the Westlake Towne Center are private and maintained by Willard Investment Properties, LLC.

The application was advertised, site posted, and notifications sent to all adjacent property owners. The Development Review Team (DRT) reviewed the application at its January 2026 meeting. As of the date of this report, staff has received two (2) phone calls inquiring about the application. Additional comments and concerns may be raised as a result of the public hearings.

SITE STATISTICS:

Location:	Booker T. Washington Highway (Route 122) and Apron Drive
Size:	+/- 83 acres
Existing Land Use:	Vacant
Adjoining Zoning:	PCD, Planned Commercial Development District
Adjoining Land Uses:	Commercial, Residential and Federal Park
Adj Future Land Uses:	Village Mixed Use and Residential Mixed Use

COMPREHENSIVE PLAN:

Future Land Use

All Comprehensive Plans include a component referred to as "Future Land Use," which includes both map designations and policies. In general, Future Land Use designations are both visionary and strategic – while also flexible to accommodate changes over time. Future Land Use designations and policies are intended to *generally* describe how a given area should look and feel in the future, and what type of development or use would be most appropriate.

The future land use map designates the property as "Village Mixed Use" and "Residential Mixed Use" as provided in the 2045 Comprehensive Plan adopted by the Board of Supervisors in July 2025 and the Westlake Hales Ford Area Plan, adopted by the Board of Supervisors in November 2016. The Westlake Hales Ford Area Plan is a part of the County's Comprehensive Plan.

Residential Mixed Use

Residential Mixed-Use areas in Designated Growth Areas (DGA) are those that would typically flank, or anchor, the Village Mixed Use areas, as a buffer between the Village center and the remaining areas. These areas should provide compact, walkable, and diverse developments that offer a variety of housing sizes and types. Ideally, these areas would be served by public water and sewer if available - and if not, shared or community

systems. Developers are encouraged to work with the County, and primarily the Western Virginia Water Authority to understand the potential to extend service to these areas, if none is available.

Appropriate Land Use Types:

- Single-family (detached or attached)
- Townhomes
- Duplexes, triplexes, and fourplexes
- Senior and assisted living facilities
- Multifamily complexes
- Garden/patio homes
- Accessory dwelling units (ADUs)
- Small-scale, community-oriented commercial
- Recreation
- Civic

Character/Development Guidelines:

- Housing types should be mixed and dwellings per acre based on the site.
- Small-scale, community-oriented commercial uses should be screened and/or buffered from residential uses.
- Maintain low-speed, pedestrian- and bicycle-friendly streets.
- Interconnected street network and defined open spaces should be provided.
- Implement low-impact development (LID to the extent possible.
- Strive for materials, scale, and character of new buildings to be compatible with existing neighborhoods.
- Ensure materials, scale, and character of development is compatible within the neighborhood(s)
- Discourage the construction of private roads in new developments. If not feasible, new developments should include formal agreements for the maintenance for any roads not built, or eligible, for inclusion in the state highway system.

Village Mixed Use

Village Mixed Use areas in Designated Growth Areas (DGA) are those that are appropriate for traditional village development – which includes a variety of land use that is typically compact, walkable, and tailored to serve the residents of the immediate area. Village Mixed Use areas should include a variety of land uses to accommodate the needs of the residents – including small-scale housing options, grocery and pharmacy stores, medical offices, childcare facilities, post offices and other public services, personal services, as well as open space and recreation.

To retain the central areas for non-residential development and services, if possible, housing should either be on the second floor within Village Mixed Use areas, or setback from primary corridors. Ideally, these areas would be served by public water and sewer if available – and if not, shared or community systems. Developers are encouraged to work with the County, and primarily the Western Virginia Water Authority to understand the potential to extend service to these areas, if none is available. Additionally, these areas should be a priority for broadband expansion and improvement, to ensure businesses and services have adequate bandwidth for internet access.

Appropriate Land Use Types:

- Commercial
- Offices
- Vertical and horizontal mixed use
- Garden/patio homes
- Duplexes, triplexes, and fourplexes
- Senior and assisted living facilities
- Tourism
- Recreation
- Civic

Character/Development Guidelines:

- Buffer new non-residential development when adjacent to residential uses.
- Discourage the construction of private roads in new developments. If not feasible, new developments should include formal agreements for the maintenance for any roads not built, or eligible, for inclusion in the state highway system.
- Encourage infill development and retrofitting of existing buildings.
- Ensure materials, scale, and character of development is compatible within the DGA.
- Locate non-residential parking and service areas to the side/rear of buildings and screen to the extent possible.
- Encourage traffic calming, particularly along primary routes.
- Incorporate pedestrian infrastructure and safety enhancements, such as sidewalks, crosswalks, and/or multi-use paths.
- Incorporate branding, plantings, and other amenities that contribute to the DGA's identity.

Chapter 12/Implementation

Goal for Housing: In 2045, Franklin County prioritizes a diverse housing stock that serves and attracts residents of all socioeconomic levels and life stages from youth and first-time buyers to the workforce, to retirees, and those aging in place.

Objective 7.1: Ensure adequate and affordable housing options are available for residents
Strategy 7.1.4: Evaluate current zoning regulations – particularly allowable densities and minimum lot sizes – and adjust where appropriate to accommodate neighborhoods with smaller-scale housing (smaller lots, more dense neighborhoods, etc.).

Objective 7.3: Promote the creation of "livable" communities
Strategy 7.3.1: Encourage development of housing within the County's Designated Growth Areas, where amenities and public utilities are typically more available, or have the potential to be available in the future, to support a range of housing types and densities.

Westlake Hales Ford Area Plan – Appendix B: Goals and Strategies

The Westlake Hales Ford Area Plan provides Goals and Strategies to implement the Plan; the following Goal and Strategy bears significance to this application:

- **Goal 5:** Create an inclusive, livable community that provides a balanced inventory of housing opportunities for all residents.
- **Strategy 5.1:** Review and amend the Zoning Ordinance to allow a greater diversity of housing types that would accommodate a range of incomes, lifestyles, and stages of life – including affordable and workforce housing, and housing for those aging in place.

By constructing a new type of housing, attached single family homes, more housing choices will be available within the Westlake Hales Ford Designated Growth Area, meeting the above-mentioned strategy and goal.

Comprehensive Plan Summary

The 2045 Franklin County Comprehensive Plan establishes and encourages different types of housing in the Residential Mixed Use and Village Mixed Use. Both mixed uses are found in the County's Designated Growth Areas like the Westlake-Hales Ford Designated Growth Area. DGAs in the County are intended to provide a clear distinction between the County's more developed areas and rural areas. In addition, DGAs are ideal for development of both commercial and residential, the effect of sprawl is reduced, and the County's rural character is protected.

- Residential Mixed Use in DGA's would be walkable and diverse development that offers a variety of housing sizes and types. These developments would be served by public water and sewer. Residential mixed use would support small-scale commercial development in the village. Appropriate land use types in this designation would be single-family detached dwellings, recreation, and small-scale, community oriented commercial. Development and Character Guidelines are housing types that should be mixed and dwellings per acre based on the site, maintain low-speed, pedestrian and bicycle friendly streets, discourage private

roads in new developments; however, if new developments choose private roads formal agreements for maintenance are required.

Village Mixed Use in DGA's are usually traditional village development meaning a variety of land uses that are compact, walkable, and tailored to serve residents in the surrounding area or in the village itself. Water and sewer are public in most cases. Appropriate land use types would be commercial, office, recreation, garden/patio homes, duplexes, townhomes. Development and Character Guidelines of the Comprehensive Plan suggest buffer for new non-residential development when adjacent to residential uses, ensure materials, scale, and character of the development is compatible within the DGA, and incorporate pedestrian infrastructure and safety enhancement, such as sidewalks, crosswalks, and/or multi-use paths.

The Westlake-Hales Ford Designated Growth Area continues to grow with a mixture of commercial and residential development. The proposed development of single-family detached dwellings and five (5) commercial parcel sites continue to meet the need of the County's critical housing shortages. This proposed 103+/- homes will enhance the village and the newly approved townhome and condominium development in the Westlake Towne Center. The five (5) commercial parcel sites will serve new commercial business and bring growth to the DGA. New commercial uses will serve both residential housing in the DGA and surrounding area. The new master plan for these two properties helps in the development of the DGA to have commercial development supportive of residential growth in the village and a more walkable community, which is the intention of DGAs. The proposed new master plan for these two parcels for single-family detached dwellings and commercial site is supported of the 2045 Franklin County's Comprehensive Plan and the Westlake -Hales Ford Area Plan.

ZONING ORDINANCE:

Special uses for the PCD district are set forth in Section 25-392 of the Zoning Ordinance. The requested use is referenced as private street(s) or road(s).

Sec. 25-638 of the Zoning Ordinance sets forth the County's authority to issue special use permits for certain uses. In order to issue a special use permit, the Board of Supervisors must find that such use will not be a substantial detriment to adjacent properties, that the character of the zoning district will not be changed thereby, and that such use will be in harmony with the uses permitted by-right in the zoning district, and with the public health, safety, and general welfare to the community.

Sec. 25-640 of the Zoning Ordinance sets forth the County's authority to impose conditions for the issuance of special use permits. The ordinance states that the Board of Supervisors *"may impose upon any such permit such conditions relating to the use for which such permit is granted as it may deem necessary in the public interest…"* Conditions associated with a special use permit must be related to the particular land use

which required the permit and must be related to some impact generated by or associated with such land use.

Sec. 25-641 of the Zoning Ordinance states that a special use permit shall expire eighteen (18) months from the date of issuance if *"no commencement of use, structure or activity has taken place."* The ordinance states that "commencement" shall consist of "extensive obligations or substantial expenditures in relation to the project," including engineering, architectural design, land clearing, and/or construction.

ANALYSIS

In accordance with Section 25-638, the proposed special use permit is evaluated to determine if it will be a substantial detriment to adjacent properties, change the character of the zoning district, and be in harmony with the uses permitted by-right in the zoning district, and the public health, safety, and general welfare to the community.

The subject property is currently zoned Planned Commercial Development District (PCD). The applicant is requesting a special use permit to allow private street(s) or road(s) that will allow access from Booker T. Washington Highway (SR 122) to the proposed residential and commercial development.

The Comprehensive Plan discourages privates roads in this future land use designation of Residential Mixed Use and Village Mixed Use; however, if there are private roads a maintenance agreement and/or formal agreement for the maintenance of the private roads could be an alternative. Private roads in the Westlake Towne Center are maintained by this type of formal agreement, and furthermore the center has a network of private roads throughout its development.

In DGAs it is not uncommon to find developments both residential and commercial that would prefer private roads but built to state standards. Some developments want to place accents in the right of way where VDOT maintained roads would not allow.

The private road network in the Towne Center has connectivity both vehicular traffic and pedestrians to walk safely.

Given the purpose and intent of the special use permit to allow private street(s) or road(s) for ingress/egress to the +/-103 dwellings, single-family detached as well as the commercial pad sites proposed would be supported by both the Comprehensive Plan and Area Plan. Staff concluded that the special use permit would not be a substantial detriment to adjacent properties, that the character of the zoning district will not be changed, thereby such use would be in harmony with the uses permitted by-right in the zoning district, and with the public health, safety, and general welfare to the community.

DEVELOPMENT REVIEW TEAM (DRT) COMMENTS:

AEP: Elijah Meador had no comments or concerns due to the nature of the application.

VDOT: Lisa Lewis provided the following comments:

1. Please denote the spacing between the proposed entrances.
2. Please provide a traffic study, to include left/right turn lane analysis, for the proposed land use(s). Lisa Lewis stated she understands that District staff has been involved in discussions with Franklin County and the Developer regarding the proposed traffic study.
3. Please denote the intersection sight distance for the proposed entrances.

VDH: Darrin Doss had no comments due to being served by public water and sewer (WVWA).

WVWA: Aaron Shearer he had no comments or concerns due to there already being water and sewer availability in this area.

STORMWATER / E&S: Bill Raney, Development Review Manager stated that along with the Site Plan, Erosion and Sediment Control and Storm Water Management shall be included on the engineered plan for review.

BUILDING: John Broughton, Building Official, stated the applicant and/or owner will be required to obtain all necessary building permits for the proposed single-family dwelling and commercial development.

FIRE & EMS: Our office has not received any comments or concerns from Andy Pendleton, Fire Marshal.

GIS: Eric Schmidt, GIS Manager stated the applicant and/or owner must contact the GIS Department for addresses for each single-family dwelling and commercial building.

SUGGESTED MOTIONS:

The following suggested motions are sample motions that may be used. They include language found in Section 15.2-2283, Purpose of zoning ordinances of the Code of Virginia of 1950, as amended.

(APPROVE) I find that such use will not be of substantial detriment to adjacent property, that the character of the zoning district will not be changed thereby, and that such use will be in harmony with the purpose and intent of the County Code with the uses permitted by right in the zoning district, and with the public health, safety, and general welfare to the community. Therefore, I move to recommend approval of the applicant's request for a Special Use Permit to allow for private street(s) or road(s) in accordance with Section 25-392 of the Zoning Ordinance, with the three (3) conditions as recommended in the staff report.

OR

(DENY) I find that such use will be of substantial detriment to adjacent property, that the character of the zoning district will be changed thereby, and that such use will not be in harmony with the purpose and intent of the County Code with the uses permitted by right in the zoning district, and with the public health, safety, and general welfare to the community. Therefore, I move to recommend denying the request for the Special Use Permit to allow for private street(s) or road(s).

OR

(DELAY ACTION) I find that the required information for the submitted petition is incomplete. Therefore, I move to delay action until all necessary materials are submitted to the Planning Commission.

FRANKLIN COUNTY

SPECIAL USE PERMIT APPLICATION

I/We ABoone Development, Inc. as Owner(s), Contract Purchasers, or Owner's Authorized Agent of the property described below, hereby apply to the Franklin County Board of Supervisors for a special use permit on the property described below:

Petitioner's Name: ABoone Development, Inc.

Petitioner's Address: 3934 Electric Road, SW, Suite A Roanoke, Virginia 24018

Petitioner's Phone Number: [redacted]

Petitioner's Email Address: [redacted]

Property Owner's Name: Williard Investment Properties, LLC

Property Owner's Address: 75 Builders Pride Dr #200, Hardy, VA 24101

Property Owner's Phone Number: [redacted]

Property Owner's Email Address: [redacted]

Property Information:

A. Proposed Property Address: 12800 Booker T. Washington Highway
Hardy, VA 24101

B. Tax Map and Parcel Number: 030.00/001.05 and 030.00/052.28

C. Election District: Gills Creek

D. Size of Property: 82.7 acres

E. Existing Zoning: PCD

F. Existing Land Use: Vacant

G. Is the property located within any of the following overlay zoning districts:
☐ Corridor District ☑ Westlake Overlay District ☐ Smith Mountain Lake Surface District

H. Is any land submerged under water or part of Smith Mountain Lake? ☐ YES ☑ NO

I. If yes, please explain:

Proposed Special Use Permit Information:

J. Proposed Land Use: Applicant proposes to develop the property into 103 +/- single family detached homes with commercial pads fronting Route 122 to complement the existing Westlake Towne Center and the currently under development townhome and condominium community adjacent to the property. The community would be served by both public water and sewer as well as private roads, for which this SUP is required.

K. Size of Proposed Use: 82.7

L. Other Details of Proposed Use: The proposed development would meet a critical housing shortage while complementing the existing commercial, office and residential uses of Westlake Towne Center and adding additional commercial uses along the corridor. The community would provide opportunity to more people for homeownership by offering high quality, detached housing in a desirable location with access to commercial shopping, restaurants and Smith Mountain Lake.

Checklist for Completed Items:

- Application Form
- Letter of Application
- Concept Plan
- Application Fee

I certify that this application for a special use permit and the information submitted is herein complete and accurate.

Petitioner's Name (Printed): ABoone Development, Inc., By: Court Rosen, Dir. of Dev.

Petitioner's Signature: _____

Date: January 4, 2026

Mailing Address: 3934 Electric Road, SW, Suite A
Roanoke, Virginia 24018

Phone Number: [redacted]

Email Address: [redacted]

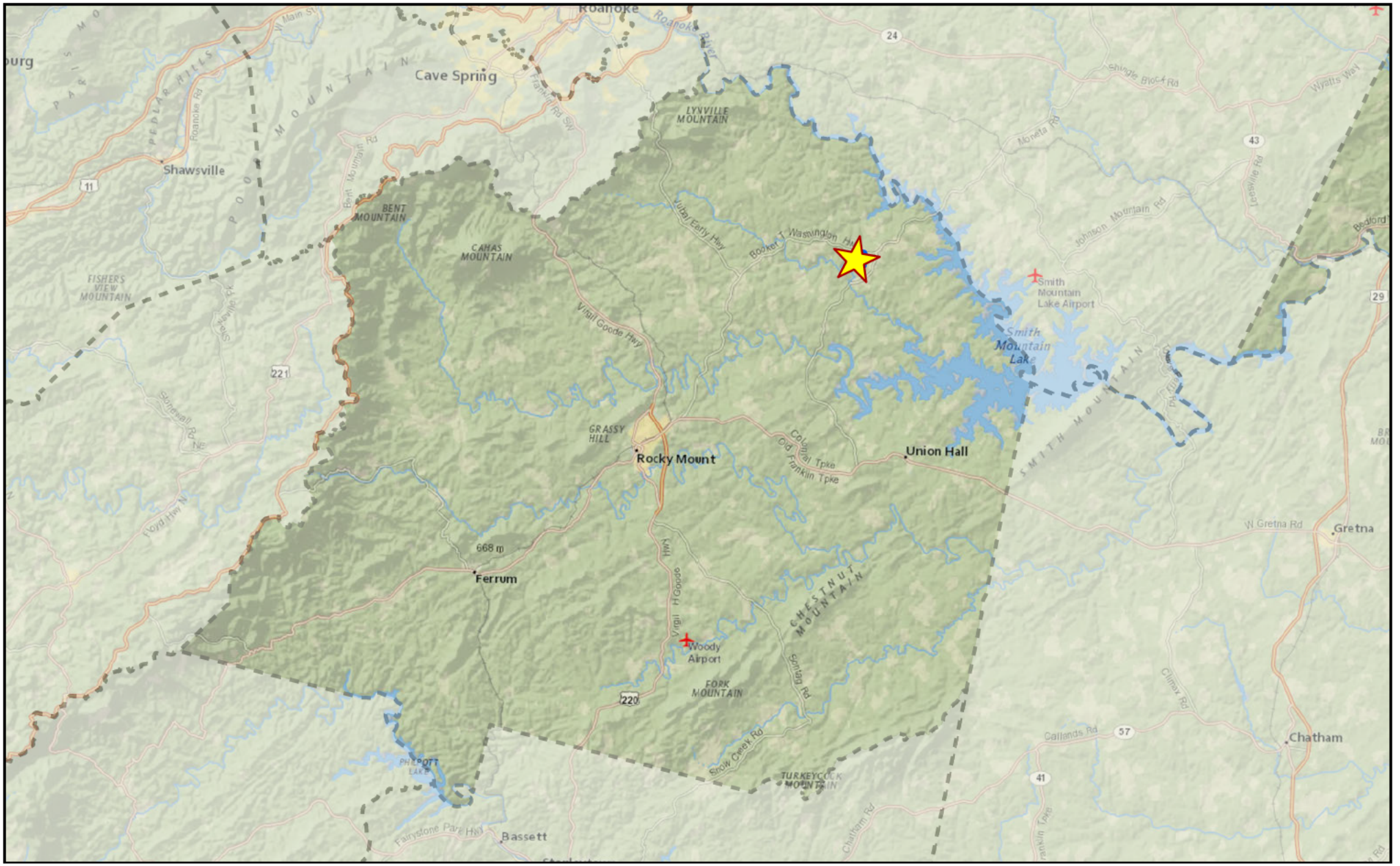
Owner's consent, if petitioner is not property owner:

Owner's Name: Ron Willard II

Owner's Signature: _____

Date: 12-30-2025

Date Received by Planning Staff: _____



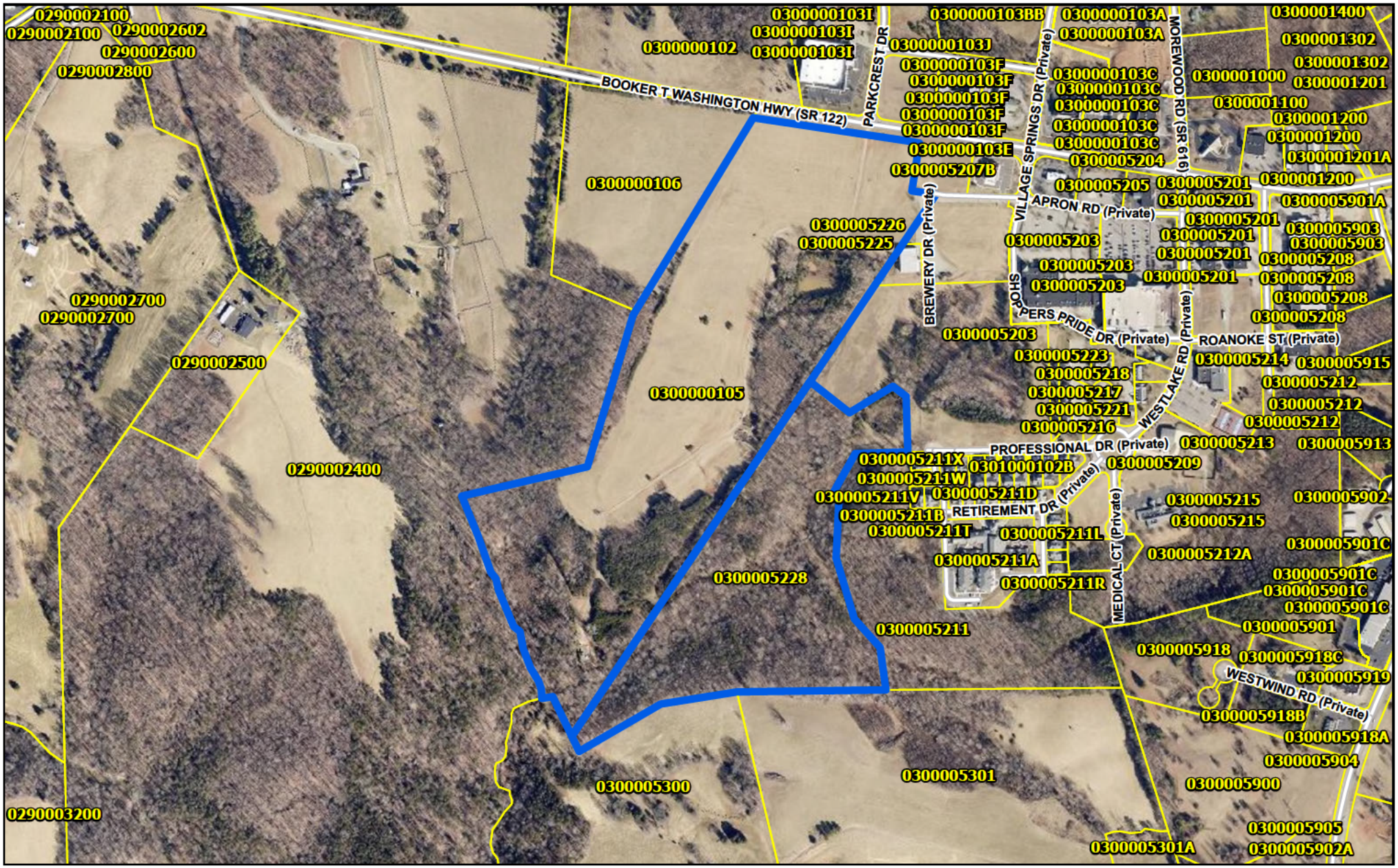
Tax Map # 0300000105 & 0300005228
SPEC-01-26-18470
ABoone Development, Inc.

★ Subject Property Location

0 1.5 3 6 9 12
Miles

The data layers provided herein were compiled from various sources within a geographic information system (GIS) for the primary use of Franklin County. The data provided herein are believed to be accurate but are provided for reference purposes only. These GIS data are in no way meant as a replacement for a legal survey, legal description, or standard due diligence. No guarantee, expressed or implied, is made regarding their accuracy, currency, adequacy, usefulness, or reliability. These data are provided "as is" and neither Franklin County nor its employees shall be held responsible for their inappropriate use.

Date: 1/13/2026



Legend

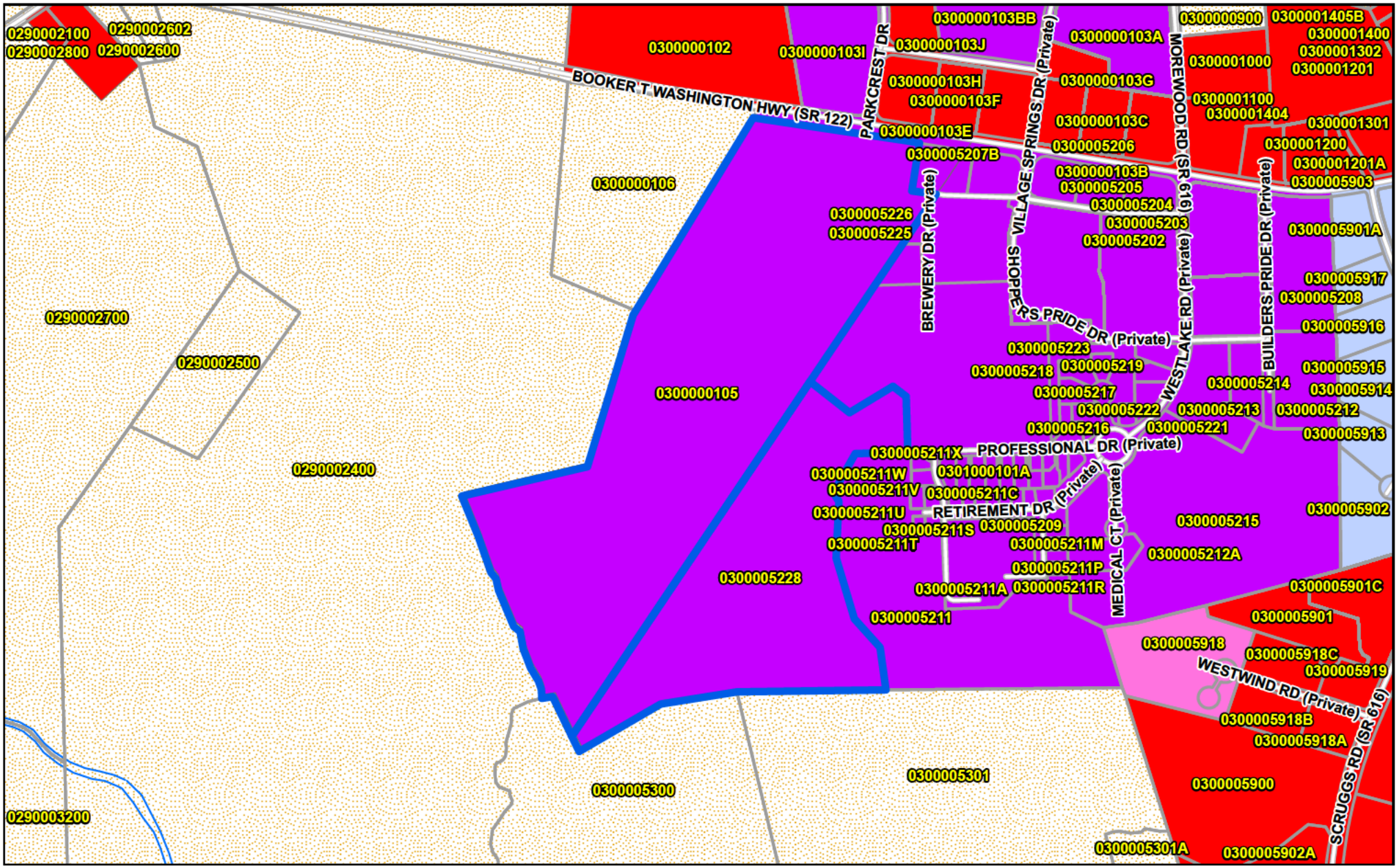
- Tax Parcels
- Road Centerlines
- Subject Parcel 0300005228
- Subject Parcel 0300000105

2024 Eagleview Imagery

Tax Map # 0300000105 & 0300005228
SPEC-01-26-18470
ABoone Development, Inc.

0 375 750 1,500 Ft

Date: 1/13/2026

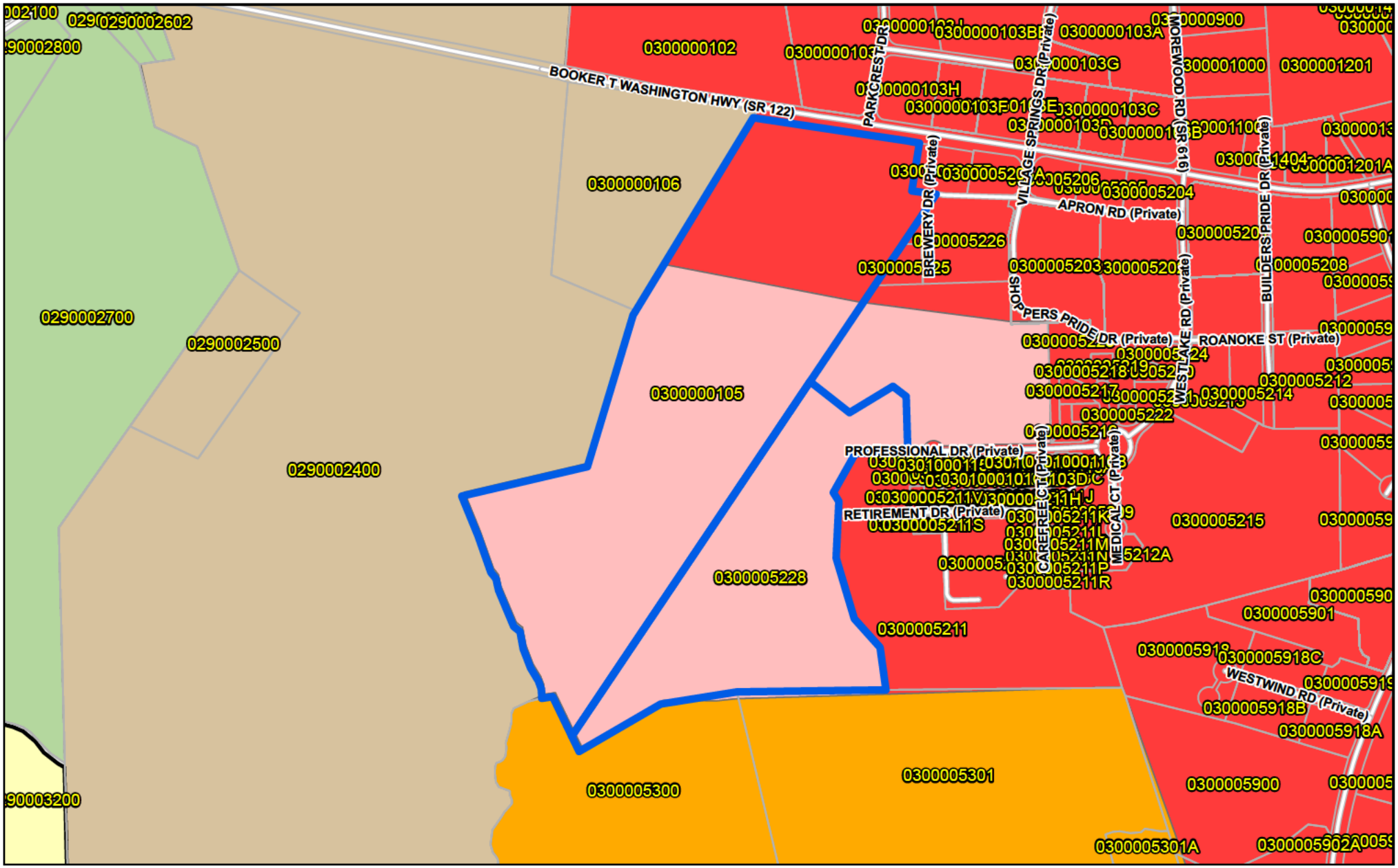


Tax Parcels
Rivers
A1 - Agricultural
B2 - General Business District
M1 - Light Industry
PCD - Planned Commercial District
RMF - Residential Muli-Family
Subject Parcel 0300000105
Subject Parcel 0300005228

Tax Map # 0300000105 & 0300005228
SPEC-01-26-18470
ABoone Development, Inc.

0 190 380 760 1,140 1,520 Ft

Date: 1/13/2026



Tax Parcels
Road Centerlines
Designated Growth Areas
Village Mixed Use
Residential Mixed Use
Medium Density Residential
Rural Areas
Conservation Area
Conservation Areas - County
Low Density Residential - County
Rural Area - County

Tax Map # 0300000105 & 0300005228
SPEC-01-26-18470
ABoone Development, Inc.

0 375 750 1,500 Ft

Date: 1/13/2026

MEMORANDUM
Case # A-11-19-001

Franklin County
A Natural Setting for Opportunity

To: Franklin County Planning Commission

From: Lisa Cooper, Planning Director

Date: January 30, 2026

RE: Amendment to the 2045 Franklin County Comprehensive Plan
Chapter 9, 2045 Franklin County Comprehensive Plan: Utilities Chapter to reflect changes to an existing map entitled "Map #9.5: Power Transmission Lines" for a proposed electrical substation and electrical transmission line extension.

BACKGROUND AND DISCUSSION

Franklin County Board of Supervisors adopted the 2045 Franklin County Comprehensive Plan in July of 2025.

On January 5, 2026, the Board of Supervisors in their regular monthly afternoon session voted to initiate a Comprehensive Plan amendment associated with the proposed electrical substation and related electrical transmission lines. The proposed amendment involves an amendment to the existing map #9.5: Power Transmission Lines as shown on the attached exhibit to include a proposed substation and associated transmission lines within Summit View Business Park. This amendment is necessary to address critical electrical infrastructure needs and to support planned economic development within the County.

Section 15.2-2223 of the Code of Virginia, as amended, outlines the scope and purpose of the County's Comprehensive Plan. The Plan is for the physical development of territory (County) within its jurisdiction.

Chapter 9 is the Utilities Chapter for the 2045 Comprehensive Plan, discusses infrastructure such as but not limited to, water and wastewater services, solid waste management, broadband, national gas, and energy generation.

The Implementation Chapter (Chapter 12) for Public Utilities, of the 2045 Comprehensive Plan states the following:

Objective 8.2: Continue working towards the complete vision of Summit View Business Park.
Strategy 8.2.1 - Continue working with industry partners to market and promote Summit View Business Park to appropriate clientele. Seek addition partnerships and marketing opportunities, when available, to supplement current efforts.

Strategy 8.2.2 - Continue pursuing all available mechanisms to invest in Summit View Business Park to ensure the Park offers adequate infrastructure for large employers – such as water, wastewater, roads, utilities, etc.

Objective 8.3: Leverage the County's assets and seek initiatives that create a business-friendly environment that is attractive to investors and strengthen the County's workforce.
Strategy 8.3.1 - Partner with the necessary entities to make strategic investments in essential infrastructure needed to boost the County's economy.

RECOMMENDATION:
Staff recommends that the Planning Commission consider and approve the following:

Staff recommends that the Planning Commission adopt the amendment to the existing map entitled "Map #9.5: Power Transmission Lines" and incorporate the map as part of the County's Comprehensive Plan.

SUGGESTED MOTIONS:

(1) (RECOMMEND) Pursuant to the requirements of Section 15.2-2223 of the Code of Virginia I recommend, that the revision to "Map #9.5: Power Transmission Lines" be adopted and incorporated into the County's Comprehensive Plan as an amendment.

(2) (DENY) I find that the "Map #9.5: Power Transmission Lines" for Franklin County does not satisfy the requirements of Section 15.2-2223. Therefore, I move to recommend denial of the revision to "Map #9.5: Power Transmission Lines" as an amendment to the County's Comprehensive Plan.

(3) (DELAY ACTION) I find that the required information presented is incomplete. Therefore, I move to delay action until additional information can be provided to the Planning Commission.

Franklin County
A Natural Setting for Opportunity

January 9, 2025

Franklin County Planning Commission
Attn: Ms. Lisa Cooper, Planning Director
1255 Franklin Street, Suite 103
Rocky Mount, VA 24151

Re: Comprehensive Plan Amendment – Proposed Substation and Electrical Transmission Map

Dear Members of the Planning Commission:

At its January 5, 2026, meeting, the Franklin County Board of Supervisors voted to initiate a Comprehensive Plan amendment associated with the proposed electrical substation and related electrical transmission lines. The proposed amendment would involve an amendment to the existing map #9.5 as shown on the attached exhibit.

By this action, the Board of Supervisors is directing the Planning Commission to commence review of the proposed Comprehensive Plan amendment and to fast-track the amendment process in accordance with applicable state law and County procedures by scheduling a public hearing on February 10, 2026. The Board has determined that timely consideration of this amendment is necessary to address critical electrical infrastructure needs and to support planned economic development within the County.

This letter serves as formal notice of the Board's directive. County staff will provide the Planning Commission with supporting materials, and assistance as needed to facilitate an expedited review and recommendation to the Board of Supervisors.

The Board of Supervisors appreciates the Planning Commission's prompt attention to this matter and looks forward to receiving the Commission's recommendation.

Please contact my office should additional information be required.

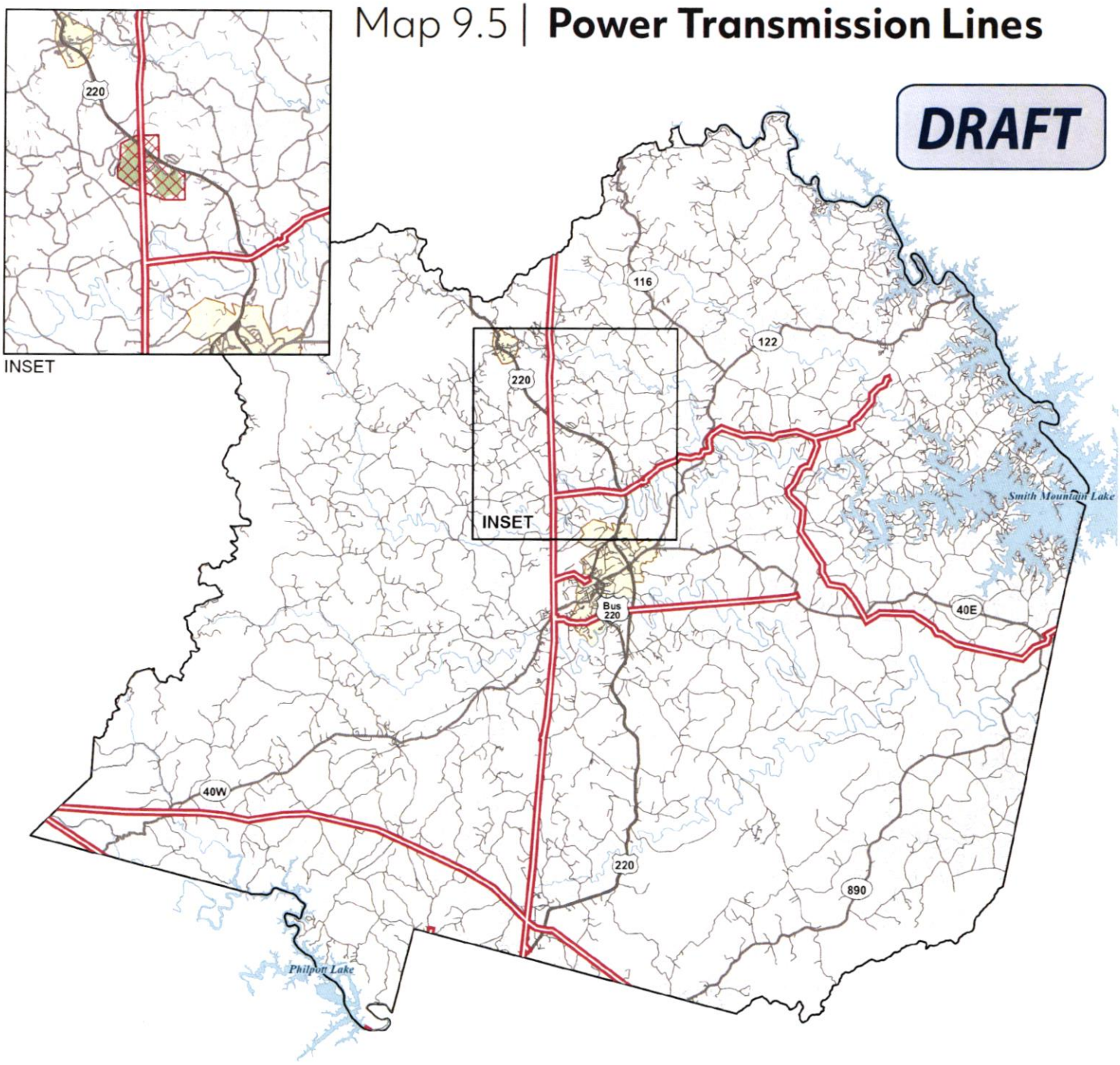
Sincerely,

Christopher L. Whitlow
County Administrator

COUNTY ADMINISTRATOR
1255 FRANKLIN STREET, SUITE 112
ROCKY MOUNT, VIRGINIA 24151
(540) 483-3030
administration@franklincountyva.gov
www.franklincountyva.gov

Map 9.5 | **Power Transmission Lines**

DRAFT



Electric Transmission Lines

2045 Comprehensive Plan

- Electric Transmission Lines
- Potential Substation & Line Extension
- Summit View Business Park
- Towns
- County Boundary
- Lakes

Franklin County, VA

0 3 6 12 Miles

N W E S

The data layers provided herein were compiled from various sources within a geographic information system (GIS) for the primary use of Franklin County. The data provided herein are believed to be accurate but are provided for reference purposes only. These GIS data are in no way meant as a replacement for a legal survey, legal description, or standard due diligence. No guarantee, expressed or implied, is made regarding their accuracy, currency, adequacy, usefulness, or reliability. These data are provided "as is" and neither Franklin County nor its employees shall be held responsible for their inappropriate use.

1/8/2026

STAFF REPORT
Case # SPEC-01-26-18471

Franklin County
A Natural Setting for Opportunity

To:	Franklin County Planning Commission
From:	Tina Franklin, Planner II
Date:	January 30, 2026
Tax #s:	0370005400, 0360020400, 0360020500, and 044000500
District:	Boone and Blackwater Election Districts
Applicant:	County of Franklin
Owner:	County of Franklin

APPLICATION for SPECIAL USE PERMIT – Application of County of Franklin, Applicants and Owners, requesting a special use permit on an approximate 481.29 acres of property zoned REP, Regional Enterprise Park District. These parcels are located in the Boone and Blackwater Election Districts of Franklin County and further identified by real estate records as Tax Map/Parcel #0370005400, 0360020400, 0360020500, and 0440000500. The purpose of this special use permit request is to allow for Utility Services, Major electric substation and associated facilities and transmission lines. This property has a future land use designation of Industrial Mixed Use and is part of the 220-North Corridor Designated Growth Area (SPEC-01-26-18471).

RECOMMENDATION:
Staff recommends that the Planning Commission recommend approval of the special use permit with the following six (6) conditions:

1. Applicant/owner shall develop the project in General Conformance with the conceptual plan entitled "APCO Brick Church, Alternate Site B - Eagle" dated January 16, 2026.
2. All site lighting shall be of a downward directed design LED lights and full cut-off. No site lighting shall exceed 0.5-foot candles at any property line.
3. As part of site plan approval, the applicant/owner shall obtain all necessary approvals from the Department of Transportation (VDOT).
4. A site plan, erosion and sediment control and storm water management plan must be submitted to the Planning office and approved prior to commencement of construction.
5. Applicant/owner shall obtain all necessary building permits required prior to commencement of construction.
6. The applicant/owner shall obtain addressing from the GIS Department for the residential development.

OVERVIEW:

The applicant is requesting a special use permit on approximately +/-481.29 acres of property is zoned REP, Regional Enterprise Park District, to allow for Utility Services, Major electric substation and associated facilities and transmission lines to be located on a parcel within the Summit View Business Park. Approximately 8 acres of the 481.29 acres will be used for this project. The project is also located in the 220-North Designated Growth Area.

BACKGROUND:

The County has provided information describing the current system design stating that the development of a new substation is necessary to continue to provide reliable electrical service to support existing and future businesses located in the business park.

This proposed use involves the construction and operation of an electrical substation and associated transmission line(s) intended to support existing and future commercial and industrial development within Summit View Business Park and the surrounding U.S. Route 220 corridor. The proposed facility will provide critical infrastructure necessary to ensure reliable electrical service and accommodate anticipated growth.

The proposed electrical substation is consistent with the 2045 Franklin County Comprehensive Plan, which identifies the U.S. Route 220 corridor as the County's primary growth and economic development corridor. The Plan recognizes the importance of expanding and upgrading utility infrastructure in designated growth areas to support industrial and commercial development. Also stated was that the electrical transmission facilities and supporting infrastructure are anticipated and mapped components of the County's long-range planning framework, and the proposed substation represents a necessary and appropriate investment to ensure reliable electric service for existing and future development within this strategic industrial area.

The proposed electrical substation has been approved for the Electric Infrastructure Program. The Virginia Economic Development Partnership does certify that the site meets the eligibility requirement as described in Sections 56-576 and 56-585.1:10 of the Code of Virginia.

The application was advertised, site posted, and notifications sent to all adjacent property owners. The Development Review Team (DRT) reviewed the application at its January 2026 meeting. As of the date of this report, staff has received nine (9) phone calls and one (1) walk-in to the office inquiring about the application. Additional comments and concerns may be raised as a result of the public hearings.

SITE STATISTICS:

Location:	Summit View Business Park
Size:	+/- 8 acre portion of +/-481.29 acres
Existing Land Use:	Vacant
Adjoining Zoning:	REP, Regional Enterprise Park District
Adjoining Land Uses:	Commercial, Industrial and Residential
Adj Future Land Uses:	Industrial Mixed Use and 220 North Corridor Designated Growth Area

COMPREHENSIVE PLAN:

Future Land Use

All Comprehensive Plans include a component referred to as "Future Land Use," which includes both map designations and policies. In general, Future Land Use designations are both visionary and strategic – while also flexible to accommodate changes over time. Future Land Use designations and policies are intended to *generally* describe how a given area should look and feel in the future, and what type of development or use would be most appropriate.

The future land use map designates the property as "Industrial Mixed Use" and "220 North Corridor Designated Growth Area" as provided in the 2045 Comprehensive Plan adopted by the Board of Supervisors in July 2025.

Industrial Mixed Use

Industrial Mixed-Use areas in Designated Growth Areas (DGA) are those slated for industrial, business, and technology development. A primary example of this type of area is Summit View Business Park. These areas are primarily intended for more-intense development and residential uses are not appropriate. These areas rely heavily on adequate infrastructure-including water and sewer capacity, strong telecommunications service, and convenient locations to primary transportation routes, such as Route 220. While various areas of industrial development have occurred overtime, it is the County's priority to encourage new industrial development to Summit View Business Park.

Appropriate Land Use Types:

- Manufacturing
- Major utilities
- Logistics, warehousing and distribution
- Offices

- Heavy commercial
- Mining and extraction

Character/Development Guidelines:

- Buffer new development when adjacent to residential uses.
- Discourage the construction of private roads in new developments. If not feasible, new developments should include formal agreements for the maintenance for any roads not built, or eligible for inclusion in the state highway system.

Chapter 12, Implementation Chapter of the Comprehensive Plan, which includes the following objectives and strategies:

Objective 8.2: Continue working towards the complete vision of Summit View Business Park.
Strategy 8.2.1 - Continue working with industry partners to market and promote Summit View Business Park to appropriate clientele. Seek addition partnerships and marketing opportunities, when available, to supplement current efforts.

Strategy 8.2.2 - Continue pursuing all available mechanisms to invest in Summit View Business Park to ensure the Park offers adequate infrastructure for large employers – such as water, wastewater, roads, utilities, etc.

Objective 8.3: Leverage the County's assets and seek initiatives that create a business-friendly environment that is attractive to investors and strengthen the County's workforce.
Strategy 8.3.1 - Partner with the necessary entities to make strategic investments in essential infrastructure needed to boost the County's economy.

Comprehensive Plan Summary

The 2045 Franklin County Comprehensive Plan establishes U.S. Route 220 as the County's primary north-south transportation and economic development corridor and identifies it as a Corridor of Statewide Significance. The Plan places Route 220 at the center of the Blue Ridge Innovation Corridor, a regional initiative focused on advanced manufacturing, industrial development, and large-scale employment centers.

Summit View Business Park is specifically identified in the Comprehensive Plan as a strategic, building-ready industrial site comprising approximately 550 acres. The Plan anticipates continued industrial and commercial growth within this corridor and recognizes that such development requires robust and reliable utility infrastructure.

Chapter 9 of the Comprehensive Plan emphasizes the need to expand and upgrade infrastructure in key commercial and industrial areas and encourages coordination with utility providers and development partners to support economic growth. Electrical transmission facilities and supporting infrastructure are mapped and discussed as anticipated components of the County's long-range utility framework.

The Plan further acknowledges increasing regional and statewide energy demand associated with industrial growth and advanced manufacturing. Proactive investment in electrical infrastructure is identified as essential to maintaining reliability, supporting economic competitiveness, and protecting public health, safety, and welfare.

The proposed electrical substation within Summit View Business park is consistent with the 2045 Comprehensive Plan's goals, objectives, and strategies and represents a necessary infrastructure investment to support existing and future development along the U.S. Route 220 Corridor.

ZONING ORDINANCE:

Special uses for the REP district are set forth in Section 25-412 of the Zoning Ordinance. The requested use is referenced as Utility services, major.

Sec. 25-638 of the Zoning Ordinance sets forth the County's authority to issue special use permits for certain uses. In order to issue a special use permit, the Board of Supervisors must find that such use will not be a substantial detriment to adjacent properties, that the character of the zoning district will not be changed thereby, and that such use will be in harmony with the uses permitted by-right in the zoning district, and with the public health, safety, and general welfare to the community.

Sec. 25-640 of the Zoning Ordinance sets forth the County's authority to impose conditions for the issuance of special use permits. The ordinance states that the Board of Supervisors *"may impose upon any such permit such conditions relating to the use for which such permit is granted as it may deem necessary in the public interest..."* Conditions associated with a special use permit must be related to the particular land use which required the permit and must be related to some impact generated by or associated with such land use.

Sec. 25-641 of the Zoning Ordinance states that a special use permit shall expire eighteen (18) months from the date of issuance if *"no commencement of use, structure or activity has taken place."* The ordinance states that "commencement" shall consist of "extensive obligations or substantial expenditures in relation to the project," including engineering, architectural design, land clearing, and/or construction.

ANALYSIS

In accordance with Section 25-638, the proposed special use permit is evaluated to determine if it will be a substantial detriment to adjacent properties, change the character

of the zoning district, and be in harmony with the uses permitted by-right in the zoning district, and the public health, safety, and general welfare to the community.

The subject property is currently zoned Regional Enterprise Park District, REP. The applicant is requesting a special use permit to allow for Utility Services, Major electric substation and associated facilities and transmission lines.

The proposed electrical substation will be designed and located to minimize impacts on adjacent property and the surrounding area. The use is not expected to generate significant traffic, noise, or other adverse impacts and will operate largely unattended once constructed. The proposed use is compatible with the existing zoning district and aligns with the purpose and intent of the Franklin County Zoning Ordinance. The proposed project supports the public health, safety, and welfare by strengthening electrical infrastructure and ensuring dependable service capacity necessary for continued growth within the County.

The Comprehensive Plan states the Route 220 Corridor as Franklin County's primary north-south transportation and economic development corridor. U.S. Route 220 is identified as a Corridor of Statewide Significance by VDOT and the Commonwealth Transportation Board (CTB) in their long-range transportation plan, VTRans. One of the objectives for the Comprehensive Plan is to continue working towards the complete vision of Summit View Business Park with a strategy to continue pursuing all available mechanisms to invest in Summit View Business Park to ensure the Park offers adequate infrastructure for large employers – such as water, wastewater, roads, utilities, etc.

Given the purpose and intent of the special use permit to allow for Utility Services, Major electric substation and associated facilities and transmission lines that is supported by both the Comprehensive Plan and 220 North Corridor Designated Growth Area, staff concludes that the special use permit should be approved and is in harmony with the existing uses permitted by right in the zoning district, and with the public health, safety, and general welfare to the community.

DEVELOPMENT REVIEW TEAM (DRT) COMMENTS:

AEP: Elijah Meador had no comments or concerns due to the nature of the application.

VDOT: Lisa Lewis provided the following comments:

1. Please provide a traffic study, to include left/right turn lane analysis, for the proposed lane use.
2. Denote the intersection/stopping sight distance for the proposed entrance.
3. This entrance will ultimately be permitted as a private entrance. If sight distance cannot be met, "Trucks Entering Highway" signage will need to be installed during construction of the substation/facilities.

VDH: Darrin Doss had no comments due to being served by public water and sewer (WVWA).

WVWA: Our office has not received any comments or concerns from Aaron Shearer, WVWA

STORMWATER / E&S: Bill Raney, Development Review Manager stated that along with the Site Plan, Erosion and Sediment Control and Storm Water Management shall be included on the engineered plan for review.

BUILDING: John Broughton, Building Official, stated the applicant and/or owner will be required to obtain all necessary building permits for the proposed substation facility.

FIRE & EMS: Our office has not received any comments or concerns from Andy Pendleton, Fire Marshal.

GIS: Eric Schmidt, GIS Manager stated the applicant and/or owner must contact the GIS Department for addresses for the site.

SUGGESTED MOTIONS:

The following suggested motions are sample motions that may be used. They include language found in Section 15.2-2283, Purpose of zoning ordinances of the Code of Virginia of 1950, as amended.

(APPROVE) I find that such use will not be of substantial detriment to adjacent property, that the character of the zoning district will not be changed thereby, and that such use will be in harmony with the purpose and intent of the County Code with the uses permitted by right in the zoning district, and with the public health, safety, and general welfare to the community. Therefore, I move to recommend approval of the applicant's request for a Special Use Permit to allow for Utility Services, Major electric substation and associated facilities and transmission lines in accordance with Section 25-412 of the Zoning Ordinance, with the six (6) conditions as recommended in the staff report.

OR

(DENY) I find that such use will be of substantial detriment to adjacent property, that the character of the zoning district will be changed thereby, and that such use will not be in harmony with the purpose and intent of the County Code with the uses permitted by right in the zoning district, and with the public health, safety, and general welfare to the community. Therefore, I move to recommend denying the request for the Special Use Permit to allow for Utility Services, Major electric substation and associated facilities and transmission lines.

OR

(DELAY ACTION) I find that the required information for the submitted petition is incomplete. Therefore, I move to delay action until all necessary materials are submitted to the Planning Commission.

FRANKLIN COUNTY

SPECIAL USE PERMIT APPLICATION

I/We County of Franklin as Owner(s), Contract Purchasers, or Owner's Authorized Agent of the property described below, hereby apply to the Franklin County Board of Supervisors for a special use permit on the property described below:

Petitioner's Name: County of Franklin

Petitioner's Address: 1255 Franklin Street, Suite 112 Rocky Mount, VA 24151

Petitioner's Phone Number: 540-483-3030

Petitioner's Email Address: administration@franklincountyva.gov

Property Owner's Name: County of Franklin

Property Owner's Address: 1255 Franklin Street, Suite 112 Rocky Mount, VA 24151

Property Owner's Phone Number: 540-483-3030

Property Owner's Email Address: administration@franklincountyva.gov

Property Information:

A. Proposed Property Address: _____

B. Tax Map and Parcel Number: 0370005400, 0360020400, 0360020500, 0440000500

C. Election District: Blackwater & Boone

D. Size of Property: 481.29 (based on records)

E. Existing Zoning: REP

F. Existing Land Use: Industrial/Business

G. Is the property located within any of the following overlay zoning districts:

☑ Corridor District ☐ Westlake Overlay District ☐ Smith Mountain Lake Surface District

H. Is any land submerged under water or part of Smith Mountain Lake? ☐ YES ☑ NO

I. If yes, please explain: _____

Proposed Special Use Permit Information:

J. Proposed Land Use: Utility, Major electric substation and associated facilities and transmission lines

K. Size of Proposed Use: 8 acres +/-

L. Other Details of Proposed Use: _____

Checklist for Completed Items:

- Application Form
- Letter of Application
- Concept Plan
- Application Fee

I certify that this application for a special use permit and the information submitted is herein complete and accurate.

Petitioner's Name (Printed): County of Franklin

Petitioner's Signature: Christopher L Whitlow, County Administrator

Date: 1/5/26

Mailing Address: 1255 Franklin Street, Suite 112 Rocky Mount, VA 24151

Phone Number: 540-483-3030

Email Address: administration@franklincountyva.gov

Owner's consent, if petitioner is not property owner:

Owner's Name: County of Franklin

Owner's Signature: Christopher L. Whitlow, County Administrator

Date: 1/5/26

Date Received by Planning Staff: Lisa M Cooper

Franklin County
A Natural Setting for Opportunity

January 5, 2026

Franklin County Department of Planning and Community Development
1255 Franklin Street, Suite 103
Rocky Mount, VA 24151

Re: Special Use Permit Application – Electrical Substation - Summit View Business Park
Tax Map and Parcel Nos. 0370005400, 0360020400, 0360020500, 0440000500

Dear Members of the Planning Commission and Board of Supervisors:

This letter is submitted in support of a Special Use Permit application for the development of an electrical substation within Summit View Business Park. The Summit View Business Park is located on parcels identified as Tax Map and Parcel Numbers 0370005400, 0360020400, 0360020500, and 0440000500.

The proposed use involves the construction and operation of an electrical substation and associated transmission line intended to support existing and future commercial and industrial development within Summit View Business Park and the surrounding U.S. Route 220 corridor. The facility will provide critical infrastructure necessary to ensure reliable electrical service and accommodate anticipated growth.

The proposed electrical substation is consistent with the 2045 Franklin County Comprehensive Plan, which identifies the U.S. Route 220 corridor as the County's primary growth and economic development corridor. The Plan recognizes the importance of expanding and upgrading utility infrastructure in designated growth areas to support industrial and commercial development. Electrical transmission facilities and supporting infrastructure are anticipated and mapped components of the County's long-range planning framework, and the proposed substation represents a necessary and appropriate investment to ensure reliable electric service for existing and future development within this strategic industrial area.

County Administrator
1255 Franklin Street, Suite 112
Rocky Mount, Virginia 24151
(540) 483-3030
administration@franklincountyva.gov
www.franklincountyva.gov

The proposed electrical substation will be designed and located to minimize impacts on adjacent properties. The use is not expected to generate significant traffic, noise, or other adverse impacts and will operate largely unattended once constructed.

The proposed use is compatible with the existing zoning district and aligns with the purpose and intent of the Franklin County Zoning Ordinance. The project supports the public health, safety, and welfare by strengthening electrical infrastructure and ensuring dependable service capacity necessary for continued growth within the County.

Enclosed with this letter are the completed application form, concept plan, parcel information, and all other required materials for your review and consideration. We respectfully request approval of this Special Use Permit. At their December 16, 2025, meeting, the Board authorized the fast tracking of this application for economic development purposes.

Should you have any questions concerning this application, please feel free to contact me or Dani Poe, Economic Development Director.

Sincerely,

Christopher L. Whitlow

Christopher L. Whitlow
County Administrator

2045 Comprehensive Plan – Policy Summary
Support for Electrical Substation in the U.S. Route 220 Corridor
January 5, 2026

The 2045 Franklin County Comprehensive Plan establishes U.S. Route 220 as the County's primary north–south transportation and economic development corridor and identifies it as a Corridor of Statewide Significance. The Plan places Route 220 at the center of the Blue Ridge Innovation Corridor, a regional initiative focused on advanced manufacturing, industrial development, and large-scale employment centers.

Summit View Business Park is specifically identified in the Comprehensive Plan as a strategic, building-ready industrial site comprising approximately 550 acres. The Plan anticipates continued industrial and commercial growth within this corridor and recognizes that such development requires robust and reliable utility infrastructure.

Chapter 9 of the Comprehensive Plan emphasizes the need to expand and upgrade infrastructure in key commercial and industrial areas and encourages coordination with utility providers and development partners to support economic growth. Electrical transmission facilities and supporting infrastructure are mapped and discussed as anticipated components of the County's long-range utility framework.

The Plan further acknowledges increasing regional and statewide energy demand associated with industrial growth and advanced manufacturing. Proactive investment in electrical infrastructure is identified as essential to maintaining reliability, supporting economic competitiveness, and protecting public health, safety, and welfare.

The proposed electrical substation within Summit View Business Park is consistent with the 2045 Comprehensive Plan's goals and policies and represents a necessary infrastructure investment to support existing and future development along the U.S. Route 220 corridor.

*See attached excerpts from 2045 Comprehensive Plan (pages 242-244 and 282), Map # 9.5 (page 192)

Limitations and Assets

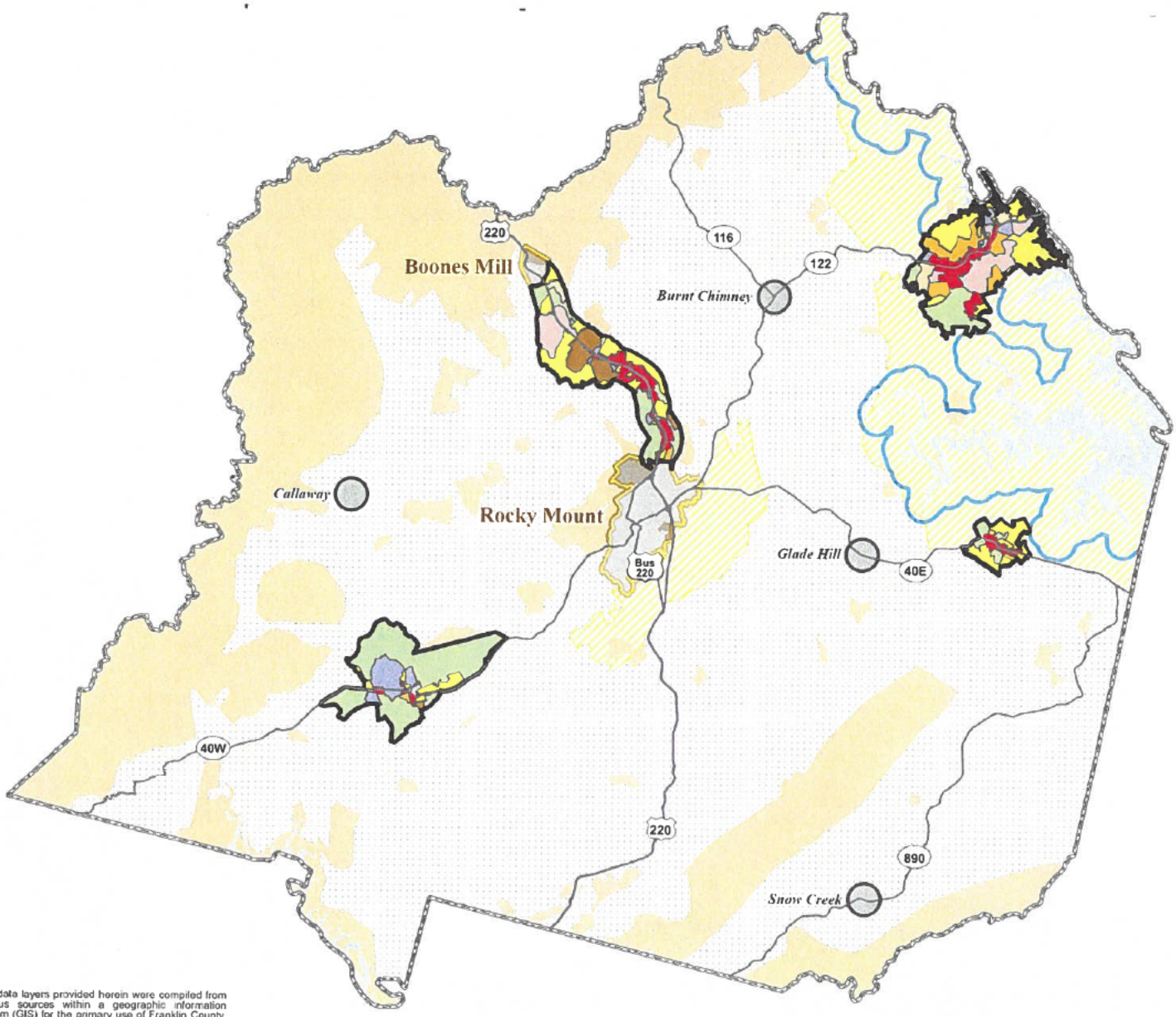
Development, particularly in a predominately rural area, is a complex process that involves a delicate balance of working with existing limitations *and* assets. Limitations to development can be environmental, financial, social, or even logistical. Assets of development are the strengths, resources, and opportunities that make growth and improvement possible in a particular area, such as infrastructure, location, and existing development.

As noted previously, since the last update to the Comprehensive Plan, the County has identified targeted areas for new development, with some being more ripe for development than others. Table 11.1 provides a basic snapshot of the four DGAs and four Rural Villages, and *generally* shows the presence of various development assets and limitations to show which are more "ready" for development. As shown, all targeted areas have both assets and limitations. As such, the County must continue to work towards implementing necessary improvements and forging needed partnerships to continue building on the County's development assets, when appropriate.

Table 11.1 | **DGA and Rural Village Development Characteristics**

	Westlake-Hales Ford	Ferrum	Union Hall	220-North Corridor	Burnt Chimney	Callaway	Snow Creek	Glade Hill
Designated Growth Area (DGA)	Yes	Yes	Yes	Yes				
Potential to be a DGA								
Assets								
Water Service								
Wastewater (Sewer) Service								
Proximity to a Primary Transportation Facility								
School, Community Center, or Religious Assembly								
Public Safety Facility (Fire/EMS), or nearby								
Park/Recreation Amenity								
Existing Residential Development								
Existing Commercial or Industrial Development								
Limitations								
Steep Slopes						Y	Y	
Proximity to Significant Waterways/Bodies	Y		Y					
Floodplain		Y				Y		
Limited Septic Suitability (Poor Soils)	Y	Y	Y	Y	Y	Y	Y	Y

Generally present or available | *Somewhat available* | *Limited or none*



The data layers provided herein were compiled from various sources within a geographic information system (GIS) for the primary use of Franklin County. The data provided herein are believed to be accurate but are provided for reference purposes only. These GIS data are in no way meant as a replacement for a legal survey, legal description, or standard due diligence. No guarantee, expressed or implied, is made regarding their accuracy, currency, adequacy, usefulness, or reliability. These data are provided "as is" and neither Franklin County nor its employees shall be held responsible for their inappropriate use.

Countywide Future Land Use
2045 Comprehensive Plan

Franklin County, VA

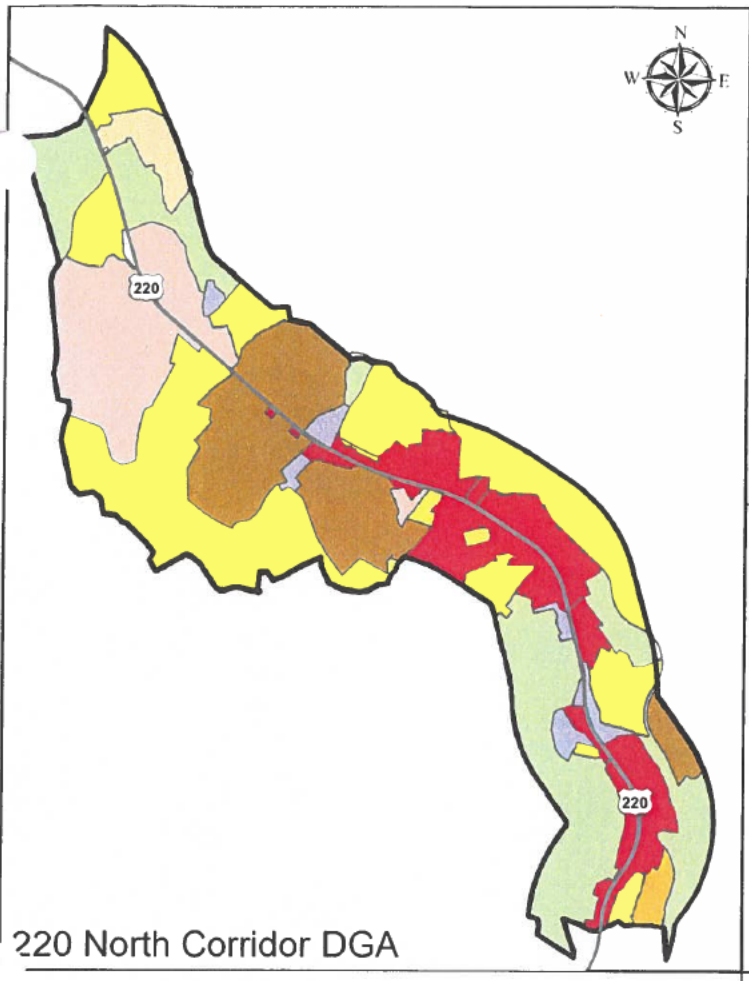
- Designated Growth Areas
- Incorporated Towns
- Low Density Residential - County
- Conservation Areas - County
- Rural Area - County
- Rural Village
- Lake Influence Area (0.5 Mi Buffer)

0 3 6 12 Miles

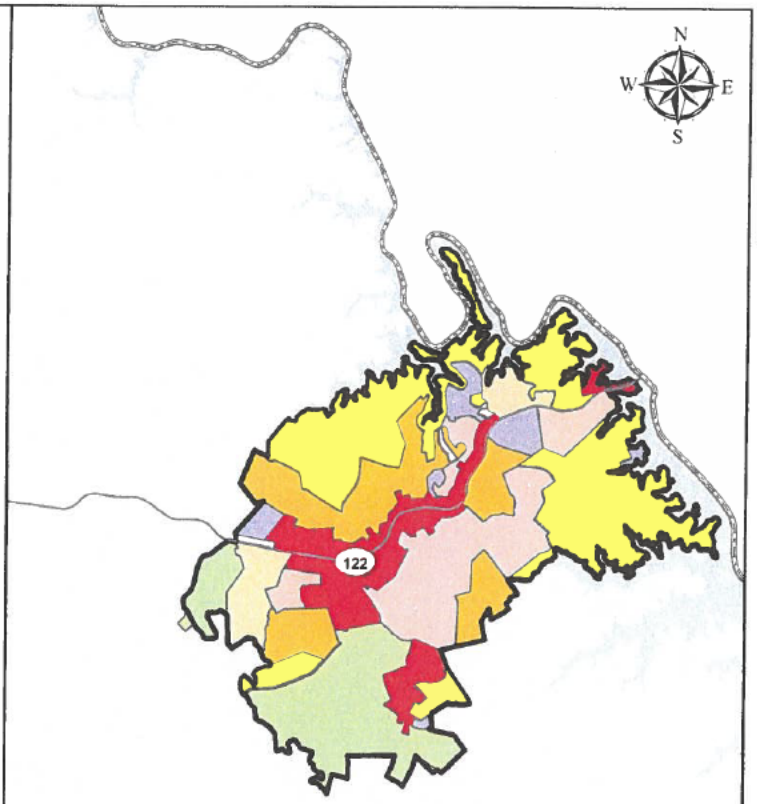
9/11/2025

Future Land Use

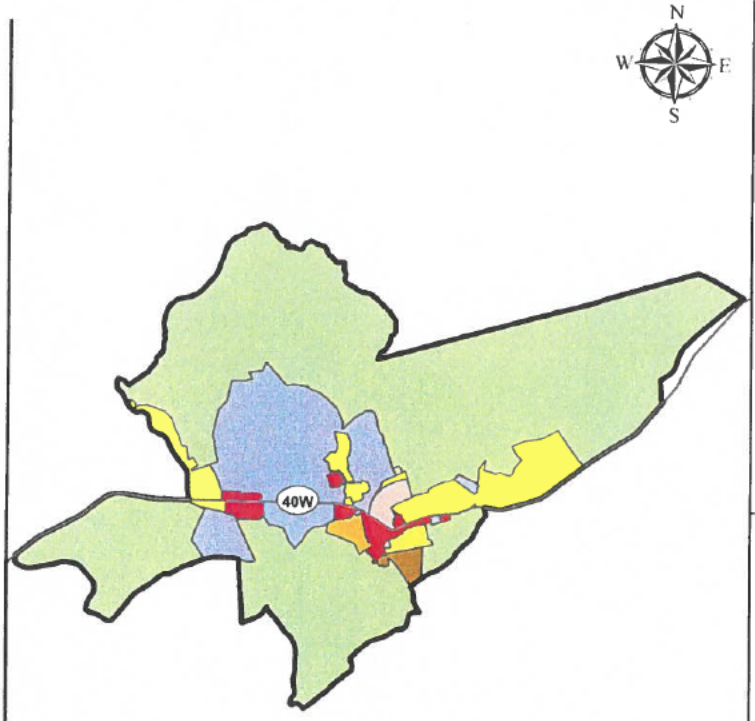
- Village Mixed Use
- Residential Mixed Use
- Low Density Residential
- Medium Density Residentia
- Rural Areas
- Industrial Mixed Use
- Civic/Institutional
- Conservation Area



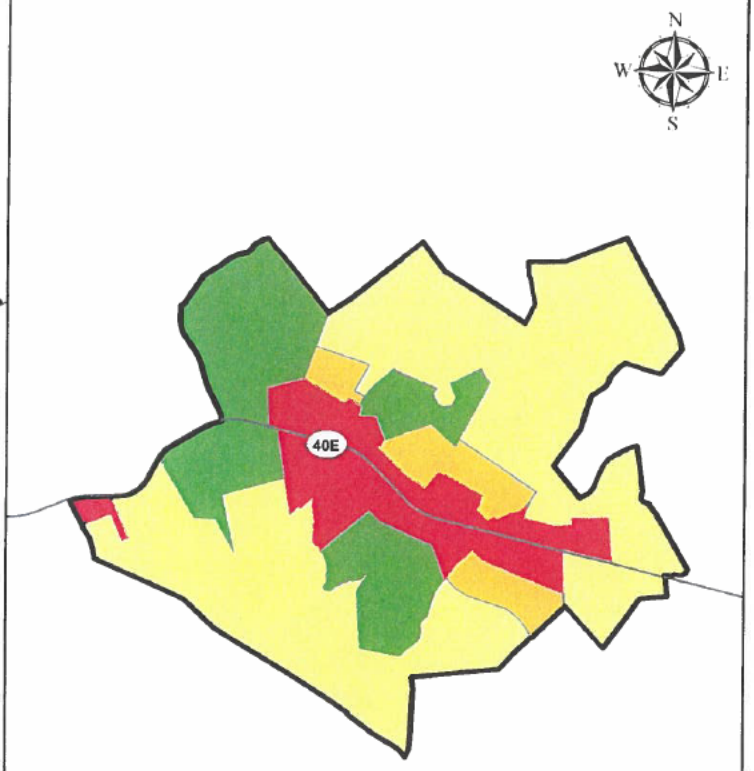
220 North Corridor DGA



Westlake-Hales Ford DGA



Ferrum DGA



Union Hall DGA

Industrial Mixed Use

Description	Industrial Mixed-Use areas in Designated Growth Areas (DGA) are those slated for industrial, business, and technology development. A primary example of this type of area is Summit View Business Park. These areas are primarily intended for more-intense development and residential uses are not appropriate. These areas rely heavily on adequate infrastructure – including water and sewer capacity, strong telecommunications service, and convenient locations to primary transportation routes, such as Route 220. While various areas of industrial development have occurred overtime, it is the County's priority to encourage new industrial development to Summit View Business Park.
Appropriate Land Use Types	• Manufacturing • Major utilities • Logistics, warehousing and distribution • Offices • Heavy commercial • Mining and extraction
Character / Development Guidelines	• Buffer new development when adjacent to residential uses. • Discourage the construction of private roads in new developments. If not feasible, new developments should include formal agreements for the maintenance for any roads not built, or eligible, for inclusion in the state highway system.

VEDP | Virginia Economic Development Partnership

May 30, 2024

Mr. Brad Hall
Appalachian Power Company
40 Franklin Road, SW – 5th Floor
Roanoke, VA 24011

Dear Mr. Hall:

I am pleased to inform you that the Appalachian Power Company application for the Electric Infrastructure Program for the site located at the Summit View Business Park in Franklin County has been approved. The Virginia Economic Development Partnership hereby certifies that the aforementioned site meets the eligibility requirements as described in § 56-576 and § 56-585.1:10 of the Code of Virginia.

We ask the State Corporation Commission (SCC) to deem as reasonable and prudent, the costs incurred by the utility to construct, operate, and maintain transmission lines and associated substations installed in order to provide service to the business park participating in the program and to consider making these costs recoverable by the utility by approving a rate adjustment pursuant to subdivision A of § 56-585.1:10 of the Code of Virginia.

Please let us know if you have any questions. We look forward to working together to further grow Virginia's economy.

Sincerely,

Michael Dreiling
Vice President, Real Estate Solutions
804.956.2123
mdreiling@vedp.org

cc: Christopher Whitlow, County Administrator, Franklin County
Danielle Poe, Economic Development Director, Franklin County
John Hull, Executive Director, Roanoke Regional Partnership
Whitney Czelusniak, Manager, Economic & Business Development, Appalachian Power Company
Katherine Goodwin, Vice President, Incentives, VEDP

§ 56-585.1:10. Program for electric infrastructure serving business parks

The Virginia Economic Development Partnership shall conduct a program with each Phase I and Phase II Utility, as those terms are defined in subsection A of § 56-585, in each such utility's service territory or transmission zone for the purpose of promoting economic development in areas of the Commonwealth. The program shall allow any such utility to complete the construction phase of a transmission line and any associated substation and other associated facilities to provide electric transmission and distribution infrastructure to a business park, as defined in § 56-576, located within the utility's transmission zone where investments by a locality or an industrial development authority or a similar political subdivision of the Commonwealth created pursuant to § 15.2-4903 or other act of the General Assembly in the siting, environmental review, pre-engineering design, and transmission right-of-way acquisition have been made prior to the public announcement of a prospective occupant of the business park. Each program shall be subject to the following terms, conditions, and restrictions:

1. The costs incurred by a Phase I or Phase II Utility after January 1, 2019, to construct, operate, and maintain the business park electric infrastructure in order to provide service to a business park participating in the program outlined by this section shall be recovered by the utility pursuant to a rate adjustment clause approved by the Commission in subdivision A 4 of § 56-585.1.

2. Each individual qualifying project shall be less than 10 miles in length.

3. The role of the Virginia Economic Development Partnership in conducting the program outlined by this section is to certify that up to two petitions per year for each Phase I and Phase II utility address the eligibility criteria for participation in the program set forth in § 56-576 and in this section.

4. For construction of business park electric infrastructure, a utility shall either (i) obtain a certificate from the Commission pursuant to subdivision A 1 of § 56-265.2, unless such infrastructure is an ordinary extension or improvement in the usual course of business or (ii) obtain approval pursuant to the requirements of § 15.2-2232 and any applicable zoning ordinances by the locality or localities in which the business park electric infrastructure will be located. If the utility seeks a certificate pursuant to subdivision A 1 of § 56-265.2, the Commission shall issue its decision on the expedited certificate application no later than six months from the date of filing. The need for any business park electric infrastructure shall be satisfied if the business park to be served is approved for the program by the Virginia Economic Development Partnership.

2019, c. 535;2022, c. 216;2023, cc. 704, 705.

The chapters of the acts of assembly referenced in the historical citation at the end of this section(s) may not constitute a comprehensive list of such chapters and may exclude chapters whose provisions have expired.

Code of Virginia
Title 56. Public Service Companies
Chapter 23. Virginia Electric Utility Regulation Act

§ 56-576. Definitions

As used in this chapter:

"Affiliate" means any person that controls, is controlled by, or is under common control with an electric utility.

"Aggregator" means a person that, as an agent or intermediary, (i) offers to purchase, or purchases, electric energy or (ii) offers to arrange for, or arranges for, the purchase of electric energy, for sale to, or on behalf of, two or more retail customers not controlled by or under common control with such person. The following activities shall not, in and of themselves, make a person an aggregator under this chapter: (i) furnishing legal services to two or more retail customers, suppliers or aggregators; (ii) furnishing educational, informational, or analytical services to two or more retail customers, unless direct or indirect compensation for such services is paid by an aggregator or supplier of electric energy; (iii) furnishing educational, informational, or analytical services to two or more suppliers or aggregators; (iv) providing default service under § 56-585;(v) engaging in activities of a retail electric energy supplier, licensed pursuant to § 56-587, which are authorized by such supplier's license; and (vi) engaging in actions of a retail customer, in common with one or more other such retail customers, to issue a request for proposal or to negotiate a purchase of electric energy for consumption by such retail customers.

"Business park" means a land development containing a minimum of 100 contiguous acres classified as a Tier 4 site under the Virginia Economic Development Partnership's Business Ready Sites Program that is developed and constructed by a locality, an industrial development authority, or a similar political subdivision of the Commonwealth created pursuant to § 15.2-4903 or other act of the General Assembly, in order to promote business development.

"Combined heat and power" means a method of using waste heat from electrical generation to offset traditional processes, space heating, air conditioning, or refrigeration.

"Commission" means the State Corporation Commission.

"Community in which a majority of the population are people of color" means a U.S. Census tract where more than 50 percent of the population comprises individuals who identify as belonging to one or more of the following groups: Black, African American, Asian, Pacific Islander, Native American, other non-white race, mixed race, Hispanic, Latino, or linguistically isolated.

"Cooperative" means a utility formed under or subject to Chapter 9.1 (§ 56-231.15 et seq.).

"Covered entity" means a provider in the Commonwealth of an electric service not subject to competition but does not include default service providers.

"Covered transaction" means an acquisition, merger, or consolidation of, or other transaction involving stock, securities, voting interests or assets by which one or more persons obtains control of a covered entity.

"Curtailment" means inducing retail customers to reduce load during times of peak demand so as

to ease the burden on the electrical grid.

"Customer choice" means the opportunity for a retail customer in the Commonwealth to purchase electric energy from any supplier licensed and seeking to sell electric energy to that customer.

"Demand response" means measures aimed at shifting time of use of electricity from peak-use periods to times of lower demand by inducing retail customers to curtail electricity usage during periods of congestion and higher prices in the electrical grid.

"Distribute," "distributing," or "distribution of" electric energy means the transfer of electric energy through a retail distribution system to a retail customer.

"Distributor" means a person owning, controlling, or operating a retail distribution system to provide electric energy directly to retail customers.

"Electric distribution grid transformation project" means a project associated with electric distribution infrastructure, including related data analytics equipment, that is designed to accommodate or facilitate the integration of utility-owned or customer-owned renewable electric generation resources with the utility's electric distribution grid or to otherwise enhance electric distribution grid reliability, electric distribution grid security, customer service, or energy efficiency and conservation, including advanced metering infrastructure; intelligent grid devices for real time system and asset information; automated control systems for electric distribution circuits and substations; communications networks for service meters; intelligent grid devices and other distribution equipment; distribution system hardening projects for circuits, other than the conversion of overhead tap lines to underground service, and substations designed to reduce service outages or service restoration times; physical security measures at key distribution substations; cyber security measures; energy storage systems and microgrids that support circuit-level grid stability, power quality, reliability, or resiliency or provide temporary backup energy supply; electrical facilities and infrastructure necessary to support electric vehicle charging systems; LED street light conversions; and new customer information platforms designed to provide improved customer access, greater service options, and expanded access to energy usage information.

"Electric utility" means any person that generates, transmits, or distributes electric energy for use by retail customers in the Commonwealth, including any investor-owned electric utility, cooperative electric utility, or electric utility owned or operated by a municipality.

"Electrification" means measures that (i) electrify space heating, water heating, cooling, drying, cooking, industrial processes, and other building and industrial end uses that would otherwise be served by onsite, nonelectric fuels, provided that the electrification measures reduce site energy consumption; (ii) to the maximum extent practical, seek to combine with federally authorized customer rebates for heat pump technology; and (iii) for those measures that provide measurable and verifiable energy savings to low-income customers or elderly customers, to the maximum extent practical, seek to combine with either contemporaneously installed measures or previously installed measures that are or were provided under federally funded weatherization programs or state-provided, locality-provided, or utility-provided energy efficiency programs.

"Energy efficiency program" means a program that reduces the total amount of energy that is required for the same process or activity implemented after the expiration of capped rates but does not include electrification of any process or activity primarily fueled by natural gas. Energy

efficiency programs include equipment, physical, or program change designed to produce measured and verified reductions in the amount of site energy required to perform the same function and produce the same or a similar outcome. Energy efficiency programs may include (i) electrification; (ii) programs that result in improvements in lighting design, heating, ventilation, and air conditioning systems, appliances, building envelopes, and industrial and commercial processes; (iii) measures, such as the installation of advanced meters, implemented or installed by utilities, that reduce fuel use or losses of electricity and otherwise improve internal operating efficiency in generation, transmission, and distribution systems; and (iv) customer engagement programs that result in measurable and verifiable energy savings that lead to efficient use patterns and practices. Energy efficiency programs include demand response, combined heat and power and waste heat recovery, curtailment, or other programs that are designed to reduce site energy consumption so long as they reduce the total amount of site energy that is required for the same process or activity. Utilities shall be authorized to install and operate such advanced metering technology and equipment on a customer's premises; however, nothing in this chapter establishes a requirement that an energy efficiency program be implemented on a customer's premises and be connected to a customer's wiring on the customer's side of the inter-connection without the customer's expressed consent. Electricity consumption increases that result from Commission-approved electrification measures shall not be considered as a reduction in energy savings under the energy savings requirements set forth in subsection B of § 56-596.2. Utilities may apply verified total site energy reductions that are attributable to Commission-approved electrification measures to the energy savings requirements set forth in subsection B of § 56-596.2, subject to a conversion of British thermal unit-based energy savings to an equivalent kilowatt-hour-based energy savings, which conversion shall be subject to Commission approval.

"Generate," "generating," or "generation of" electric energy means the production of electric energy.

"Generator" means a person owning, controlling, or operating a facility that produces electric energy for sale.

"Geothermal electric generating resource" means an electric generating unit that is powered by geothermal energy as defined in § 45.2-2000.

"Geothermal heating and cooling system" means a system that:

1. Exchanges thermal energy from groundwater or a shallow ground source to generate thermal energy through an electric geothermal heat pump or a system of electric geothermal heat pumps interconnected with any geothermal extraction facility that is (i) a closed loop or a series of closed loop systems in which fluid is permanently confined within a pipe or tubing and does not come in contact with the outside environment or (ii) an open loop system in which ground or surface water is circulated in an environmentally safe manner directly into the facility and returned to the same aquifer or surface water source;

2. Meets or exceeds the current federal Energy Star product specification standards;

3. Replaces or displaces less efficient space or water heating systems, regardless of fuel type;

4. Replaces or displaces less efficient space cooling systems that do not meet federal Energy Star product specification standards; and

5. Does not feed electricity back to the grid.

"Historically economically disadvantaged community" means (i) a community in which a majority of the population are people of color or (ii) a low-income geographic area.

"Incremental annual savings" means the total combined kilowatt-hour savings achieved by electric utility energy efficiency and demand response programs and measures in the program year in which they are installed.

"Incumbent electric utility" means each electric utility in the Commonwealth that, prior to July 1, 1999, supplied electric energy to retail customers located in an exclusive service territory established by the Commission.

"Independent system operator" means a person that may receive or has received, by transfer pursuant to this chapter, any ownership or control of, or any responsibility to operate, all or part of the transmission systems in the Commonwealth.

"In the public interest," for purposes of assessing energy efficiency programs prior to the 2029 program year, describes an energy efficiency program if the Commission determines that the net present value of the benefits exceeds the net present value of the costs as determined by not less than any three of the following four tests: (i) the Total Resource Cost Test; (ii) the Utility Cost Test (also referred to as the Program Administrator Test); (iii) the Participant Test; and (iv) the Ratepayer Impact Measure Test. Such determination shall include an analysis of all four tests, and a program or portfolio of programs shall be approved if the net present value of the benefits exceeds the net present value of the costs as determined by not less than any three of the four tests. For programs proposed for the 2029 program year and all subsequent years, the Commission shall establish targets pursuant to subdivision B 4 of § 56-596.2, and a program shall be approved if the Commission determines it is cost-effective pursuant to applicable Commission regulations and that the net present value of the benefits exceeds the net present value of the costs as determined by the Total Resource Cost Test. If the Commission determines that an energy efficiency program or portfolio of programs is not in the public interest, its final order shall include all work product and analysis conducted by the Commission's staff in relation to that program, including testimony relied upon by the Commission's staff, that has bearing upon the Commission's decision. If the Commission reduces the proposed budget for a program or portfolio of programs, its final order shall include an analysis of the impact such budget reduction has upon the cost-effectiveness of such program or portfolio of programs. An order by the Commission (a) finding that a program or portfolio of programs is not in the public interest or (b) reducing the proposed budget for any program or portfolio of programs shall adhere to existing protocols for extraordinarily sensitive information. In addition, an energy efficiency program may be deemed to be "in the public interest" if the program (1) provides measurable and verifiable energy savings to low-income customers or elderly customers or (2) is a pilot program of limited scope, cost, and duration, that is intended to determine whether a new or substantially revised program or technology would be cost-effective.

"Low-income geographic area" means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service.

"Low-income utility customer" means any person or household whose income is no more than 80 percent of the median income of the locality in which the customer resides. The median income of the locality is determined by the U.S. Department of Housing and Urban Development.

"Measured and verified" means a process determined pursuant to methods accepted for use by utilities and industries to measure, verify, and validate energy savings and peak demand savings. This may include the protocol established by the United States Department of Energy, Office of Federal Energy Management Programs, Measurement and Verification Guidance for Federal Energy Projects, measurement and verification standards developed by the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), or engineering-based estimates of energy and demand savings associated with specific energy efficiency measures, as determined by the Commission.

"Municipality" means a city, county, town, authority, or other political subdivision of the Commonwealth.

"New underground facilities" means facilities to provide underground distribution service. "New underground facilities" includes underground cables with voltages of 69 kilovolts or less, pad-mounted devices, connections at customer meters, and transition terminations from existing overhead distribution sources.

"Peak-shaving" means measures aimed solely at shifting time of use of electricity from peak-use periods to times of lower demand by inducing retail customers to curtail electricity usage during periods of congestion and higher prices in the electrical grid.

"Percentage of Income Payment Program (PIPP) eligible utility customer" means any person or household whose income does not exceed 150 percent of the federal poverty level.

"Person" means any individual, corporation, partnership, association, company, business, trust, joint venture, or other private legal entity, and the Commonwealth or any municipality.

"Previously developed project site" means any property, including related buffer areas, if any, that has been previously disturbed or developed for non-single-family residential, non-agricultural, or non-silvicultural use, regardless of whether such property currently is being used for any purpose.

"Previously developed project site" includes a brownfield as defined in § 10.1-1230 or any parcel that has been previously used (i) for a retail, commercial, or industrial purpose; (ii) as a parking lot; (iii) as the site of a parking lot canopy or structure; (iv) for mining, which is any lands affected by coal mining that took place before August 3, 1977, or any lands upon which extraction activities have been permitted by the Department of Energy under Title 45.2; (v) for quarrying; or (vi) as a landfill.

"Qualified waste heat resource" means (i) exhaust heat or flared gas from an industrial process that does not have, as its primary purpose, the production of electricity and (ii) a pressure drop in any gas for an industrial or commercial process.

"Renewable energy" means energy derived from sunlight, wind, falling water, biomass, sustainable or otherwise, (the definitions of which shall be liberally construed), energy from waste, landfill gas, municipal solid waste, wave motion, tides, geothermal heating and cooling systems, and geothermal electric generating resources and does not include energy derived from coal, oil, natural gas, or nuclear power. "Renewable energy" also includes the proportion of the thermal or electric energy from a facility that results from the co-firing of biomass. "Renewable energy" does not include waste heat from fossil-fired facilities or electricity generated from pumped storage but includes run-of-river generation from a combined pumped-storage and run-

of-river facility.

"Renewable thermal energy" means the thermal energy output from (i) a renewable-fueled combined heat and power generation facility that is (a) constructed, or renovated and improved, after January 1, 2012, (b) located in the Commonwealth, and (c) utilized in industrial processes other than the combined heat and power generation facility or (ii) a solar energy system, certified to the OG-100 standard of the Solar Ratings and Certification Corporation or an equivalent certification body, that (a) is constructed, or renovated and improved, after January 1, 2013, (b) is located in the Commonwealth, and (c) heats water or air for residential, commercial, institutional, or industrial purposes.

"Renewable thermal energy equivalent" means the electrical equivalent in megawatt hours of renewable thermal energy calculated by dividing (i) the heat content, measured in British thermal units (BTUs), of the renewable thermal energy at the point of transfer to a residential, commercial, institutional, or industrial process by (ii) the standard conversion factor of 3.413 million BTUs per megawatt hour.

"Renovated and improved facility" means a facility the components of which have been upgraded to enhance its operating efficiency.

"Retail customer" means any person that purchases retail electric energy for its own consumption at one or more metering points or nonmetered points of delivery located in the Commonwealth.

"Retail electric energy" means electric energy sold for ultimate consumption to a retail customer.

"Revenue reductions related to energy efficiency programs" means reductions in the collection of total non-fuel revenues, previously authorized by the Commission to be recovered from customers by a utility, that occur due to measured and verified decreased consumption of electricity caused by energy efficiency programs approved by the Commission and implemented by the utility, less the amount by which such non-fuel reductions in total revenues have been mitigated through other program-related factors, including reductions in variable operating expenses.

"Rooftop solar installation" means a distributed electric generation facility, storage facility, or generation and storage facility utilizing energy derived from sunlight, with a rated capacity of not less than 50 kilowatts, that is installed on the roof structure of an incumbent electric utility's commercial or industrial class customer, including host sites on commercial buildings, multifamily residential buildings, school or university buildings, and buildings of a church or religious body.

"Solar energy system" means a system of components that produces heat or electricity, or both, from sunlight.

"Supplier" means any generator, distributor, aggregator, broker, marketer, or other person who offers to sell or sells electric energy to retail customers and is licensed by the Commission to do so, but it does not mean a generator that produces electric energy exclusively for its own consumption or the consumption of an affiliate.

"Supply" or "supplying" electric energy means the sale of or the offer to sell electric energy to a retail customer.

"Total annual energy savings" means (i) the total combined kilowatt-hour savings achieved by

electric utility energy efficiency and demand response programs and measures installed in that program year, as well as savings still being achieved by measures and programs implemented in prior years, or (ii) savings attributable to newly installed combined heat and power facilities, including waste heat-to-power facilities, and any associated reduction in transmission line losses, provided that biomass is not a fuel and the total efficiency, including the use of thermal energy, for eligible combined heat and power facilitates must meet or exceed 65 percent and have a nameplate capacity rating of less than 25 megawatts.

"Transmission of," "transmit," or "transmitting" electric energy means the transfer of electric energy through the Commonwealth's interconnected transmission grid from a generator to either a distributor or a retail customer.

"Transmission system" means those facilities and equipment that are required to provide for the transmission of electric energy.

"Waste heat to power" means a system that generates electricity through the recovery of a qualified waste heat resource.

1999, c. 411;2000, c. 991;2001, c. 421;2007, cc. 888, 933;2008, cc. 272, 883;2009, cc. 748, 824; 2012, cc. 46, 200, 210, 821;2013, c. 494;2014, cc. 212, 548;2018, c. 296;2019, cc. 535, 741;2020, cc. 1193, 1194, 1225;2021, Sp. Sess. I, cc. 308, 532;2022, c. 216;2024, cc. 597, 607, 794, 818;2025, c. 714.

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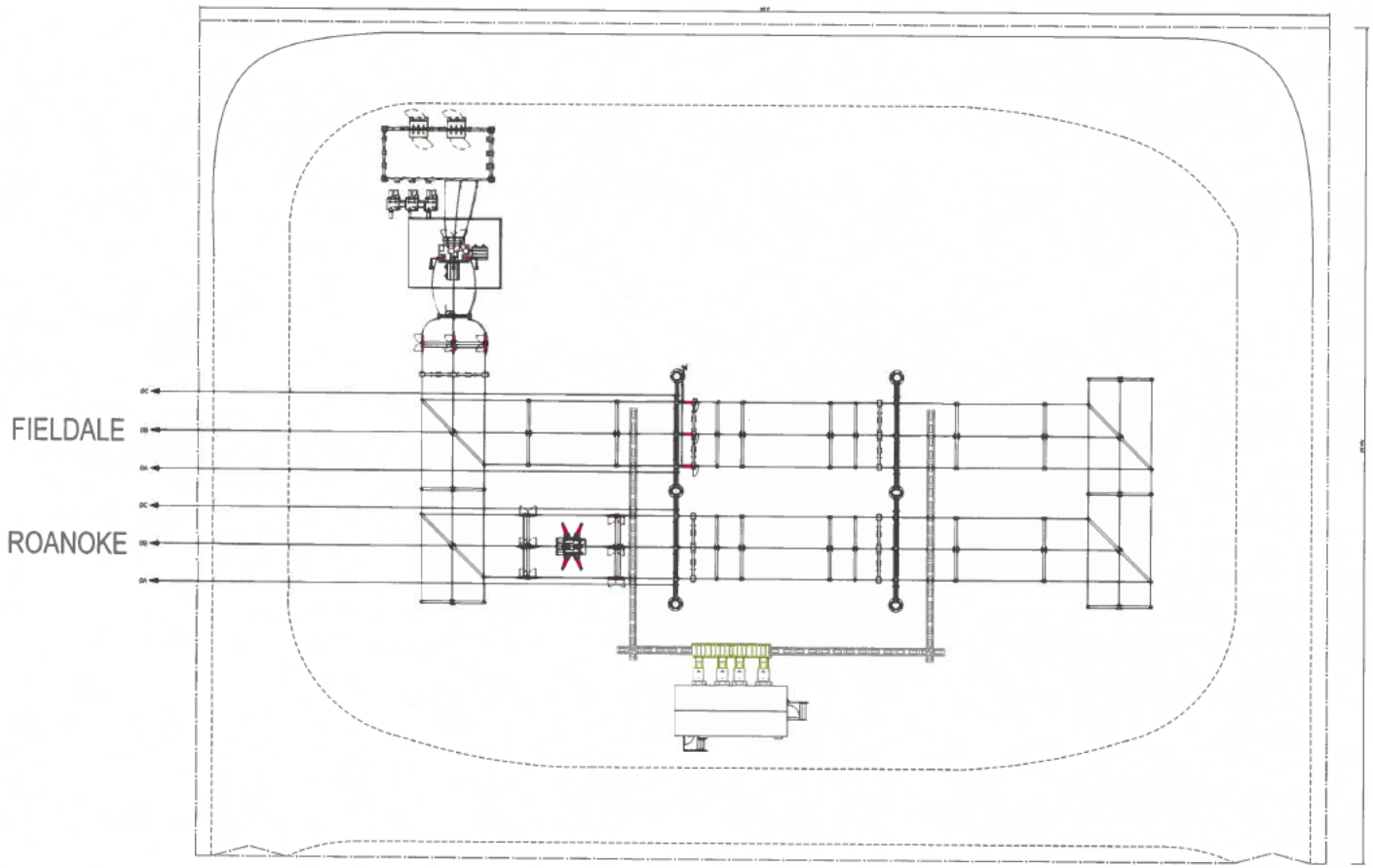


BRICK CHURCH STATION

ONE LINE DIAGRAM

2U-SL01

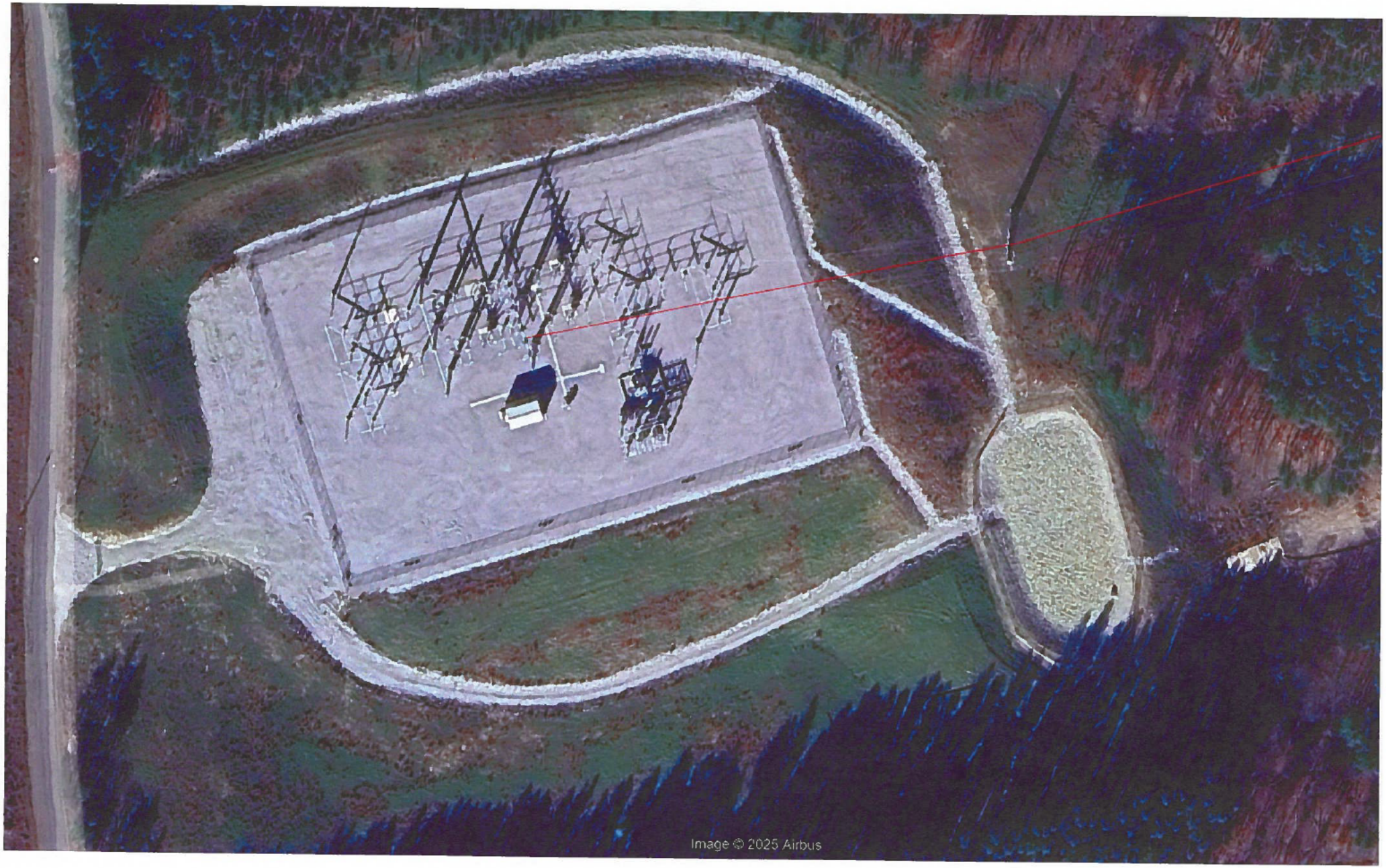
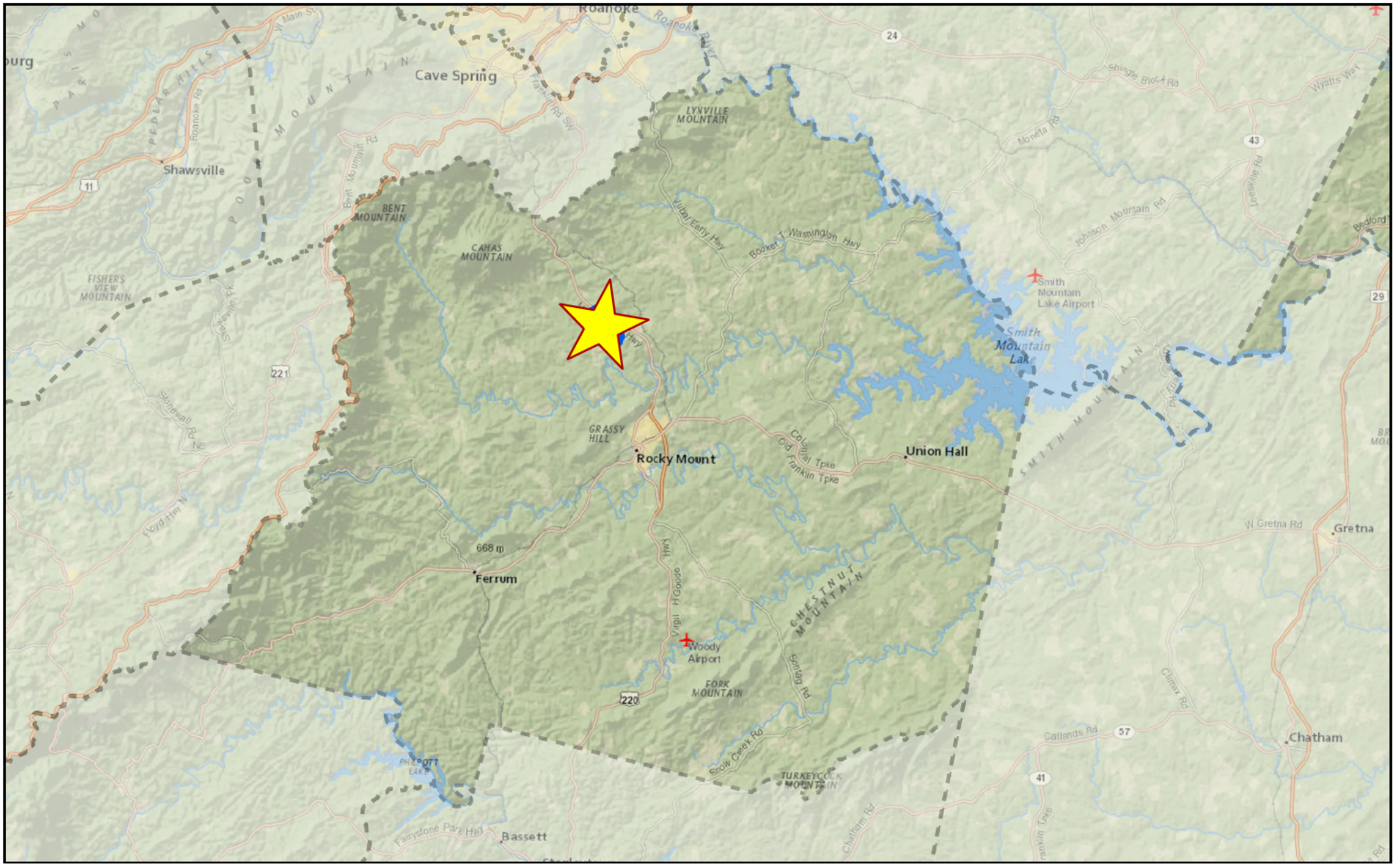


Image © 2025 Airbus



Subject Property Location

Tax Map # 0370005400, 0360020400, 036020500, 0440000500
SPEC-01-26-18471
County of Franklin

0 1.5 3 6 9 12
Miles

The data layers provided herein were compiled from various sources within a geographic information system (GIS) for the primary use of Franklin County. The data provided herein are believed to be accurate but are provided for reference purposes only. These GIS data are in no way meant as a replacement for a legal survey, legal description, or standard due diligence. No guarantee, expressed or implied, is made regarding their accuracy, currency, adequacy, usefulness, or reliability. These data are provided "as is" and neither Franklin County nor its employees shall be held responsible for their inappropriate use.

Date: 1/14/2026

Legend

- Tax Parcels
- Road Centerlines
- Subject Parcel 0440000500
- Subject Parcel 0360020500
- Subject Parcel 0360020400
- Subject Parcel 0370005400

2024 Eagleview Imagery

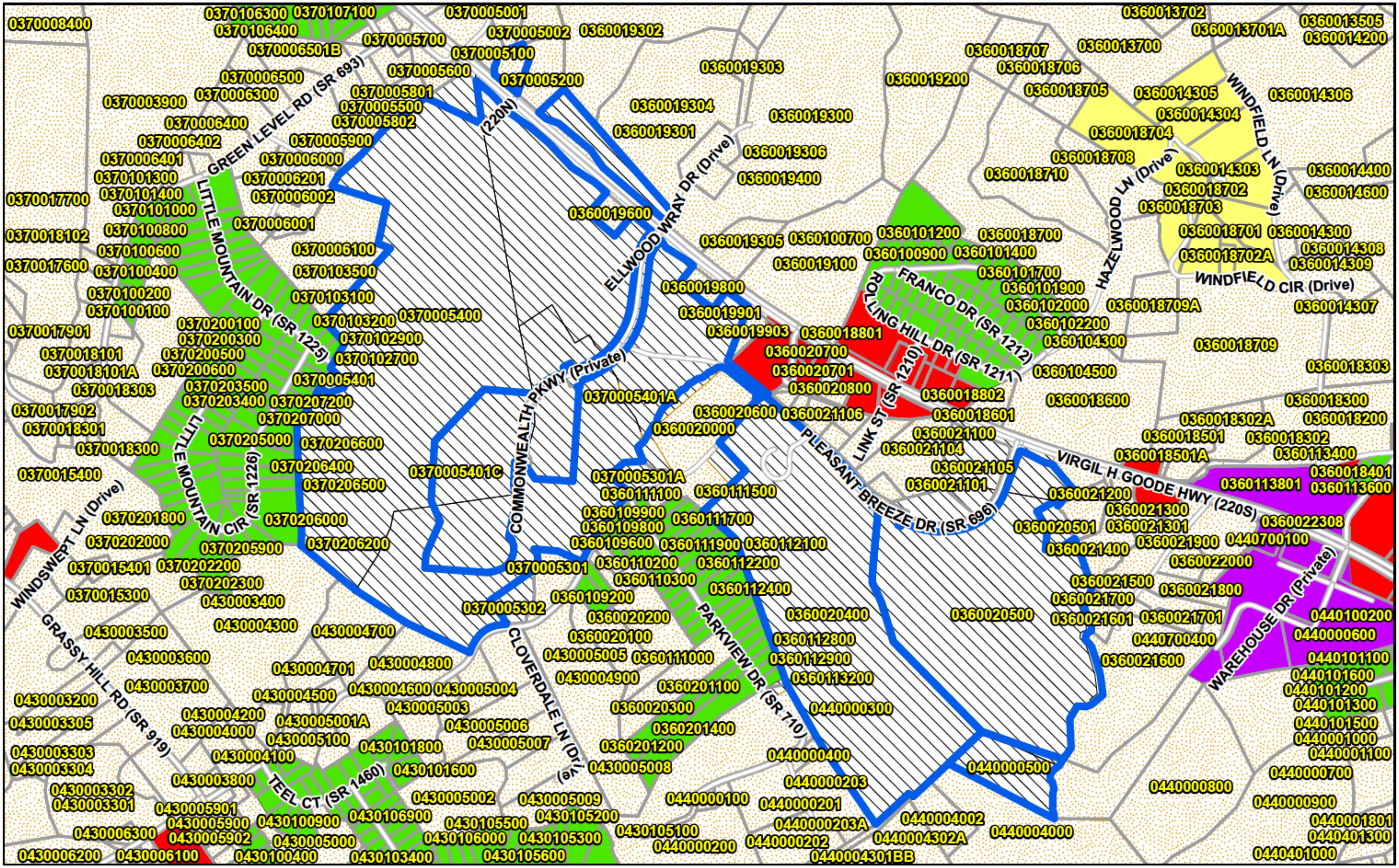
Tax Map # 0370005400, 0360020400, 036020500, 0440000500

SPEC-01-26-18471

County of Franklin

0 750 1,500 3,000 Ft

Date: 1/14/2026



Tax Map # 0370005400, 0360020400, 036020500, 0440000500

Tax Parcels
A1 - Agricultural
B2 - General Business District
M1 - Light Industry
PCD - Planned Commercial District
R1 - Residential Suburban Subdivision
RE - Residential Estates
Town Zoning
Subject Parcel 0440000500
Subject Parcel 0360020500
Subject Parcel 0360020400
Subject Parcel 0370005400

SPEC-01-26-18471
County of Franklin

0 385 770 1,540 2,310 3,080 Ft

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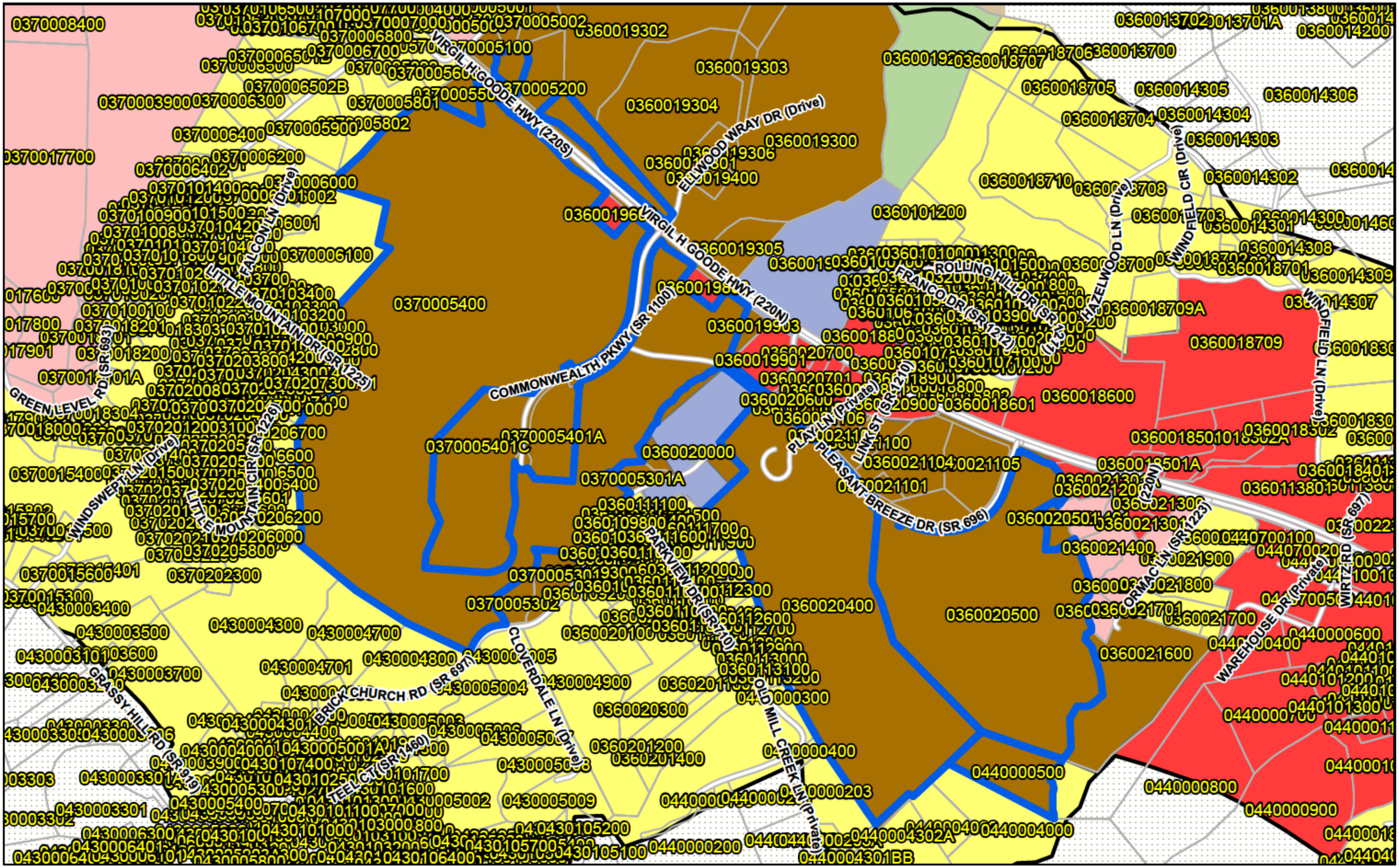

Tax Parcels	Residential Mixed Use	Civic/Institutional
Road Centerlines	Low Density Residential	Conservation Areas - County
Designated Growth Areas	Rural Areas	Rural Area - County
Village Mixed Use	Industrial Mixed Use	

Tax Map # 0370005400, 0360020400, 036020500, 0440000500
SPEC-01-26-18471
County of Franklin

0 750 1,500 3,000 Ft

Date: 1/14/2026