Avalon Point Planned Development master plan has been developed in consideration to topography, existing environmental conditions, surrounding community and aesthetics. Unless otherwise stated, the criteria that follows below will be the guiding principles for the City of Goose Creek planning and zoning staff to review and approve building and site plans.

The following guidelines include architectural standards for residential and commercial buildings, parking, landscape,tree mitigation, signage and amenities.

Architectural Standards

8.a. Single Family/Townhome Overview: The following images below represent the intent and direction of the building materials for the single family detached and attached development.

- Horizontal Vinyl Siding and Trim Boards
- Shake and Board & Batten Details
- Louver, Solid and None Shutter Options
- Stone and Brick Wainscot Options
- Stone Base Columns Options
- Dark Architectural Roof Shingles

Example of Single Family homes and Townhomes

8.b Commercial Overview:

The following standards are established to guide appropriate building design for commercial properties within the Avalon Point Planned Development and, more specifically, to support the City of Goose Creek's Red Bank District. Material selections and design requirements have been implemented to ensure quality and durability. Land Uses for the commercial development are listed below.

- Arts/Crafts or dance studios/art galleries
- Microbrewery
- Retail, commercial, grocery, home furnishings, hardware (having less than 5,000 SF of floor area)
- Pet shop (retail sales only, no selling/boarding of animals)
- Radio/television studios
- Specialty shops, such as florist, gift shop, boutiques, coffee shop, bakery and the like
- Restaurants
- Vet Clinic/animal hospital without boarding
- Drive-thru Establishments permitted with City Zoning Administrator approval

The following uses shall be prohibited:

- Tobacco and Vape Shops
- Fast food restaurants with drive-thru facilities
- Non-depository personal credit institutions
- Vehicle sales, service, and/or repair including oil change shops
- Automatic and manual car washes
- Sexually Oriented Businesses
- Laundromats
- Auto Parts Stores
- Bail bonds
- Gas Stations

All other uses not identified within the land use listing above shall require City Zoning Administrator approval.

Activating outdoor space to support retail, food & beverage, and other commercial businesses like yoga studios is an important requirement of these standards. Certain physical characteristics of the parcels—such as frontage along Red Bank Road for Parcel B or the mowed green, under the power easement at the back of Parcel A—lend themselves to pedestrian focused outdoor gathering areas. **Exhibit F** illustrates one way that activated outdoor spaces may be designed into the site and building plans.

Kentucky Native, Lexington KY

Urban planners use the term "third spaces" to describe community gathering spaces that are not classified specifically as "work" or "residence". A "third space" can take many forms. Some common examples are a ***coffee shop, a casual food and beverage establishment or a unique retail shop, like a bookstore.*** These base use businesses become meeting areas for organized events and may combine multiple uses together, such as a bookstore with a coffee shop. Organized events such as a poetry reading, or musical performance may be scheduled to bring patrons together. Another example may be a small plant-focused landscape nursery (as opposed to bulk materials) that includes a café and beer garden such as Kentucky Native Café in Lexington, KY. For the Avalon Point example, the left end cap for Building A could be a garden shop with interior plants and an outdoor plant nursery in the power easement. The shop could double as a café and host how-to events with refreshments in the outdoor patio.

The goal of the developer is to attract at least one "third space" establishment within Avalon Point. To reinforce this desire, Avalon Point will create marketing materials to specifically highlight the opportunity to businesses that are catalysts for "third place" development. Prior to final approval of Avalon Point Boulevard, developer shall provide to the Zoning Administrator marketing materials that highlight the "third space" opportunity for Avalon Point.

Example of high-quality composite wood used as accent material for entry cover.

Commercial Design Guidelines:

These design guidelines provide a certain degree of flexibility to allow for creative building design and inclusion of artistic elements such as sculpture and murals.

Example of corrugated metal, wood, awnings and two-tone paint schemes to create simple, attractive facades

Applications for commercial development shall provide a description on how the commercial design and site plan will meet the building massing, design, materials and site features. The City of Goose Creek staff will be responsible for reviewing and approving plans based on the design standards that follow:

OVERALL MASSING AND DESIGN

Buildings should be organized in a manner to engage the streetscape on Red Bank Road and Avalon Point Boulevard. The primary facades and pedestrian connections of the buildings should be along these two roads with the corner closest to the main intersection being the most architecturally significant. Garage access shall not be allowed to front Red Bank Road.

It is desirable to orient parking to the side or behind the building to promote a pleasant pedestrian experience. However, given regulatory limitations dictating the existing ditch easement crossing on Parcel A, parking may need to be placed in the front of the building. In this situation, design plans should take measures to limit the pedestrian impact through the use of

Example of blending murals and signage in an artistic blend and COR-TEN steel entry vestibule

accentuated pedestrian crossings to Red Bank Road. Pedestrian connections to Red Bank Road are important to reinforce the City's plans to revitalize the Red Bank Road corridor.

Overall building design should be complimentary with the smaller commercial and residential scale along Red Bank Road. One-story buildings are permitted and the maximum building height is two stories or 35'to peak of building roof.

Building Materials

•Siding: A wide variety of traditional building siding materials are acceptable along with a list of contingent materials that are newer and more modern.

◊ Acceptable Materials
- Hardiplank
- Wood
- Brick, painted
- Board and batten
- Painted block
- Or other similar materials that meet the intent of these design guidelines w/ approval from the City Zoning Administrator.

◊ Contingent Materials: Other high-quality materials, such as modern panel systems and composite wood, may be approved as long as samples and specification sheets are provided that the materials are of durable quality and used in moderation. These materials are ideal for architectural accents.

•Visible Roofing: The material standards below are only applicable for pitched roofs with visible roof lines. Flat roofs shall include parapet walls to shield views of membrane and bituminous roofing.

◊ Acceptable Materials
- Architectural asphalt Shingles
- Non-reflective Metal Roofing, including double v crimp and standing seam

Building Design Characteristics

- Windows and Fenestration: Buildings shall have a ratio of 40-50% window-to-wall ratio for the facades facing Avalon Point Boulevard and Red Bank Road. Windows should be appropriately spaced and organized along the main facades. Windows are not to be flush mounted with the exterior walls. Windows are to be located as far inward into the wall to maximize depth and shadow. Storefront entries are encouraged to indicate the commercial nature of the building

Example of unique outdoor lighting

and increase transparency and visibility.

- Foundation: Foundations should be at grade or near at grade to enable ADA accessibility without the need for extensive ramping. Site and building should be designed to eliminate the need for switchback ramps.
- Overhangs: Pitched roofing structures shall be designed to ensure overhangs of at least 12" to enhance architectural interest
- Porches and Awnings: Awnings or porches are required over building entrances. No fabric awnings allowed.
- Painting: Utilizing two-toned paint
- Murals: Murals are encouraged, especially on larger, visible, flat surfaces. Murals visible from Red Bank Road are of particular interest to reinforce the arts district.

Site Design Features:

- Alternative parking: To complement the spirit of the neighborhood and arts district, provide bicycle and golf cart parking to encourage easy trips from Avalon Point and surrounding neighborhoods. One (1) bike space per 1,000 Square Feet shall be provided.
- Lighting: Outdoor festival lighting is encouraged to create attractive, lively, night time environments. Festoon lights, string lighting and unique outdoor hanging fixtures are examples of acceptable outdoor lighting.
- Community Seating areas: Community seating areas may be specific for patrons of a certain business, or they may be shared amongst multiple businesses. **Exhibit F** shows one scenario with outdoor seating along Red Bank Road for Building B and seating on the back side of Building A. Outdoor seating areas may be hardscaped or crushed stone patios and decks with tables and chairs and could be covered or uncovered. Additional elements like water features or fire pits are permitted.

8.c. Signage

Signage is necessary to enhance commercial viability and the Avalon Point PD encourages diversity of signage within the residential and commercial develop areas.

While more traditional residential and business signs are permitted, the Avalon Point PD shall permit signage solutions that incorporate three dimensional elements, murals or other artistic touches that signify the uniqueness of the Red Bank District. This will allow for a more organic evolution of signage.

Overall signage guidelines are as follows:

1. No sign shall interfere with the motorists' vision, nor simulate traffic control or emergency vehicle lighting.

2. Hazard and directional Signs less than four square feet in area, consisting of arrows, name and colors of the business, graphics or such words as "Step", "Fire", "Escape", "Danger" or similar symbols, shall not be included in computing maximum allowable sign area.

3. Individual businesses shall not have individual freestanding signs. Only one (1) freestanding sign will be permitted along Red Bank Road. A secondary residential freestanding sign shall be permitted at Wisteria Road Entrance.

4. Only one (1) freestanding residential sign will be permitted along Red Bank Road and one (1) freestanding residential sign will be permitted along Wisteria Road.

5. Illumination
   a. No sign lighting is allowed which switches on and off intermittently, changes intensity and/or color or otherwise creates an illusion of flashing or movement;
   b. All bare light bulbs, except bulbs less than 15 watts, shall be directed toward the face of the sign;
   c. Signs within 50 feet of a residential district shall be shielded from casting glare into the district; and

Example of string lighting in a community seating area

Example of Neighborhood entry signage

Unique Hanging Sign

Example of a third place and varied signage

d. Signs within residential districts shall be shielded from casting illumination into residences within 100 feet
e. Signs may only be illuminated in one of the following ways: halo lit, reverse halo lit, using up/down lighting, and marquee lighting.

6. Height, setback and location.

a. A projecting wall sign shall project no more than five feet from a building, have bottom ten feet (minimum) above grade and top 25 feet above grade or height of the building, whichever is lower and have no exposed guy wires;
b. Free-standing signs, awning signs, canopy signs, marquee signs and temporary signs shall have a minimum setback of ten feet from the street curb, and shall not be installed within, nor project into the vertical plane of, the street right-of-way;
c. Fascia signs may project no more than 18 inches from a wall, and extend no more than 18 inches above the parapet, eaves or building facade;
d. Roof mounted signs may project no more than ten feet above the highest point of the roof or parapet;
e. No sign shall be attached to or obstruct any fire escape or opening intended as a fire fighting point of ingress or egress, interfere with any opening required for legal ventilation or prevent free passage from one part of a roof to another;
f. Street furniture, such as benches, waste receptacles, fountains and the like shall not be used for advertising purposes; and
g. When a sign extends over sidewalks, walkways or other spaces accessible to pedestrians, the bottom of the sign structure shall be at least eight feet above the ground.

7. Construction of signs. All permanent signs shall conform to International Building Code and National Electrical Code requirements as to design, materials, support, installation, fixtures and wiring. Specifically, all permanent signs must be able to withstand a pressure of 24 pounds per square foot, which is equivalent to 110 mph wind. The Zoning Administrator may require certification by an engineer when he or she is uncertain that the proposed method of construction is adequate.

8. A sign permit is required through the City of Goose Creek prior to placing a sign within the City Limits. All signage plans must be submitted to the City of Goose Creek zoning and planning staff for review and approval in accordance with this section 8.c. prior to sign permit being issued.

9. The maximum area permissible for signs shall correlate to the base zoning district and applicable Red Bank Overlay District. To encourage creativity, there shall be no area limitations on application of painted wall signage and/or mural themed applications. Zoning Adminstrator and Staff shall review all requests for permits.

8.d Parking Requirements

Single Family Residential Parking:

- Two off-street spaces shall be provided per residential lot. The minimum driveway length for each residential unit shall be 20 ft measured from back of sidewalk to front of garage door, as to not impede pedestrian travel on proposed site sidewalks. Additional on-street parking will be provided as generally identified per the master plan.

Townhome Residential Parking:

- Alley fed access to the garages at the Townhome development will be provided. Each Townhome unit will require two off-street spaces. The minimum driveway length for each unit shall be 20 ft. measured from edge of alleyway to face of garage door.
- Guest/overflow parking will be provided as on-street parking to benefit homeowners.

Commercial Parking Requirement

1. 1 space per 350 SF. Square footage excludes storage, hallways and stairwells/ elevators.
2. Shared parking for commercial uses is permitted. Required parking for commercial uses shall be located within the 3.45 acres of commercial zone of Avalon Point.
3. *Parking Area and paving required for parking spaces.*
   a. Each automobile parking space shall measure nine feet by 18 feet minimum (162 square feet), excluding any aisle or maneuvering space. However, the paved length of a 90-degree parking stall may be reduced to 17 feet, provided that the curbing or anchored concrete wheel stops are furnished at the edge of paving to allow the vehicle to overhang a landscaped area of at least five feet in width. Parking stall length shall not be reduced where the vehicle would overhang a sidewalk. Areas in public rights-of-way shall not be used in providing parking or maneuvering space.
   b. Parking plans shall be submitted in the form of a scale drawing of the proposed parking and loading spaces, with landscaped areas and demonstrated conformance with these regulations.
   c. Approved parking spaces shall be paved or pervious paving as design dictates. City of Goose Creek staff shall review and approve material selections for parking stalls and driveway aisles in accordance with section 8.d.

Images above are intended to be for illustrative purpose and are representational ONLY for proposed amenities

4. *Parking requirements for the disabled person(s).*
    a. All governmental buildings, public buildings, commercial facilities and places for public uses, including churches and private clubs, with the exception of single-family and two-family residences, shall have parking spaces designated and signs posted in accordance with the following requirements.
        - The international symbol of access to the physically disabled person(s) shall be permanently displayed (marked) on the ground for parking spaces that are reserved for such use. In addition, a sign bearing the international symbol of access to the physically disabled person(s) shall be posted facing each reserved parking space for the disabled person(s). Examples of the signs included one foot by one and one half foot in dimension, with the international symbol and "reserved parking" clearly marked on the sign.
        - Standard ADA parking spaces and van accessible spaces shall be provided in accordance to current federal guidelines. (2010 ADA standards for Accessible Design)

8.e. Building Height

Section 3 of this document describes building height. Building height is measured from the average foundation grade to the top of the roof. Unoccupied portions of building, including decorative cupolas and/or fireplace chimneys may exceed this height, with prior approval from City of Goose Creek staff.

8.f. 30' Red Bank Road Activity Zone

To meet the desire intent of the Red Bank District, the Avalon Point development will enhance the existing frontage with landscape and hardscape. Upon submittal of commercial site plans, the City of Goose Creek staff will review and approve the activity zone which shall include enhanced sidewalk, lighting, low ornamental walls, landscaping, walkway and trail connections and may include public art, outdoor terraces, and other signage elements in accordance to Section 8.c.

8.g. Landscaping & Buffering Requirements

Landscaping and buffering shall generally be in accordance with the Avalon Point master plan. The following are guidelines for landscape and buffer submission to be reviewed and approved by the City of Goose Creek staff.

1. Landscape design shall be integrated with the overall project design concept. Proposed landscaping shall be evaluated in relation to the existing natural landscape and to existing and proposed landscaping, including the landscape elements existing on adjacent properties and street rights-of-way, and in relation to adjacent buildings, existing or proposed.

2. The existing natural landscape character shall be preserved whenever possible. Greatest diligence and care shall be exercised to retain and protect existing trees in the proposed landscape design.

3. All landscape areas shall provide an attractive transition to adjoining properties. The landscaping plans for the proposed development shall provide visually harmonious and compatible settings for structures on the development, with adjacent properties, and shall blend with the surrounding natural landscape.

4. Landscaping shall be generally planted between buildings and sidewalks and/or buildings and curbing, and between parking lots and driveways.

5. Location of trees shall be coordinated with the location of exterior lighting, security cameras and overhead power lines in order for trees to have room to mature and not conflict.

BUFFER:

An existing buffer shall exist to serve as a perimeter buffer between differing land uses adjacent to the planned development and between commercial and residential uses within the planned development. Landscaping plans shall be submitted to the City of Goose Creek staff for review and approval.

- Avalon Point PD- Residential adjacent to Residential (generally not required between like uses)
  - Proposed 10' vegetated buffer.
  - The 10'wide buffer shall consist of at least four canopy trees, eight understory trees, and 30 shrubs per 100 linear feet. This plant material can be made up of new or existing plant material.
- Avalon Point PD - Residential adjacent to Commercial
  - 20' vegetated buffer.
  - The 20'wide buffer shall consist of at least four canopy trees, eight understory trees, and 30 shrubs per 100 linear feet. This plant material can be made up of new or existing plant material.
  - Avalon Point PD - Residential adjacent to the Kennedy Center
  - 35' vegetated buffer.
  - Where buffer is impacted by land disturbance, planting shall be provided. The 35'wide buffer shall consist of at least four canopy trees, eight understory trees, and 30 shrubs per 100 linear feet. This plant material can be made up of new or existing plant material.
- Avalon Point PD – Commercial parcel adjacent to Residential property
  - 20' vegetated buffer.
  - The 20'wide buffer shall consist of at least four canopy trees, eight understory trees, and 30 shrubs per 100 linear feet. This plant material can be made up of new or existing plant material.
- Avalon Point PD – Commercial adjacent to Mt. Carmel Church Property:
  - An existing 13.5' Sanitary Sewer Easement exists at this abutment. Easement will remain and no additional buffer is required.
- Red Bank Road Activity Zone – 30'
- No required buffers between commercial land uses internal to Avalon Point PD
- No required buffers between single family attached or detached land uses internal to Avalon Point PD

STREETSCAPE

Street trees shall be installed in a consistant rhythm and spacing generally illustrated in Exhibit E- Master Plan. All street trees and landscape tree caliper inches provided shall count towards mitigation inches. A minimum of 2.5" caliper canopy tree shall be required.

LANDSCAPE FOR PARKING LOTS

1. To create shade over the majority of a paved surface, the majority of the trees shall be canopy trees. Tree canopies soften the visual impact of parking areas and relieve them from heat build-up.
2. To provide a canopy, a planted island or break at least five feet wide with at least one tree and/or shrubs, groundcover, ornamental grasses, or two trees shall be installed for every ten spaces of parking area. Shall be no more than 10 continuous parking spaces without a tree island.
3. Parking islands shall extend the full length of the adjacent parking aisles.
4. Parking lots shall provide a minimum ten percent net area of landscaping on the interior or exterior of parking lots.
5. Tree islands shall be placed along the perimeter of the parking area at each end of the drive aisles and interspersed as needed.
6. Where vehicles overhang a foundation planting strip, the width of the planting strip must be expanded to six feet.
7. For parking lots exceeding 75,000 square feet, linear planting strips are required every 250 linear feet which shall include, in addition to the required trees, 15 shrubs per 100 linear feet. These are minimum standards; additional landscaping is encouraged.
8. All landscaped areas shall be protected from vehicular encroachment by concrete curb and gutter unless planted per best management practices for Low Impact Development site design.

Zoning Administrator shall review and approve landscape plans prior to approval of the final plat.

Example of low impact development site design

Example of retention ponds and edges

LANDSCAPE FOR COMMERCIAL BUILDINGS

1. Landscape plans shall be generally in accordance with the design guidelines described in section 8 and shall include screening for equipment and refuse collection areas.

LANDSCAPE FOR RETENTION AREAS

1. Retention ponds shall be landscaped generally as illustrated in Exhibit E- Master Plan with plants and materials as recommended by best management practices for bio retention areas.
2. Plant materials shall be compatible with the use.
3. The slopes shall not exceed 3:1.

All single family residential front yards shall be landscaped prior to closing.

The Avalon Point Stormwater Ponds shall include a 5-foot perimeter path that may be constructed of a semi-pervious material.

8.i. Tree Removal and Protection

The proposed planned development is located on undeveloped parcels and the developer shall work toward preserving existing vegetation where possible. The following will be required:

Tree survey

A tree survey is required prior to any new development or substantial redevelopment, or when the Planning Director deems it necessary. The following information shall be shown on a tree survey:

1. Name, phone number, address, signature, and seal of a licensed surveyor, landscape architect, or civil engineer registered in the State of South Carolina;
2. Tree survey clearly identifying the location and species of protected and grand trees and whether those trees are to be preserved, relocated, or removed;
3. The boundaries of the proposed development, including the different phases of development;
4. The boundaries of the buildable areas, and any proposed structures and parking areas;
5. The location, species and DBH of trees eight inches or greater DBH;
6. For sites greater than ten acres, the survey may consist of all grand trees for the entire site and a detailed sample survey of at least one acre that is representative of the majority of the site. For the purposes of determining mitigation, the detailed sample will be considered in determining the number of protected trees per acre;
7. Tree protection methods and specifications;
8. Trees shall be true to name and variety established by the American Joint Committee on Horticultural Nomenclature "Standardized Plant Names";
9. Any other information as deemed necessary by the applicant or by the Planning Director.

Tree protection.

The city expects that the following tree protection methods shall be followed. The intent is not to have the city hire an arborist in order to enforce any section of this section. It is the responsibility of every applicant and his or her representative to conserve and protect trees according to the tree survey.

a. Temporary protective barriers shall be erected at least up to the drip lines of trees to be saved.
b. Provide protection fencing for trees designated to remain. The fencing shall be orange safety fencing at least three feet high supported by wood or metal poles.
c. There shall be no construction, paving, operation of equipment or vehicles, or storage and dumping of materials within this protected zone. Where grading must occur, trees shall be protected.
d. Temporary protective barriers shall be maintained until the issuance of the certificate of occupancy.
e. No fill material shall be placed within the drip line of any tree in excess of acceptable level for the particular species.
f. Landscaping activities taking place after the removal of temporary protective barriers shall be accomplished with light machinery or by hand.
g. The Planning Director shall be notified prior to any deviation from the above-mentioned criteria.
h. Protected trees shall be marked with surveyor's flagging for easy identification and inspection.
i. Corrective measures shall be taken for trees in declining health. Such measures may include:
    1. Initiation of pest control measures;
    2. Pruning for good forestry;
    3. Fertilizing to restore vigor; and
    4. Other mitigation measures as deemed necessary.

Tree replacement, relocation and mitigation.

The intent of this section is to create conscientiousness in tree conservation and protection. The objective is to retain existing trees as much as possible, replant reasonably larger trees and provide alternate methods for tree replacement. Trees shall be mitigated according to the specifications provided herein.

a. Each protected or grand tree that is determined by planning and zoning staff to be hazardous, diseased or injured to the extent it is irreparably damaged shall be approved for removal. The burden of providing proof of the extent of the hazard, disease or injury shall rest with the applicant, who must provide documentation from a certified arborist.
b. Each protected or grand tree that is determined by planning and zoning staff to conflict with the implementation of this master plan shall be approved for removal.
c. Removal of protected or grand trees shall be mitigated at 100%. Removal of the protected or grand trees in accordance with an approved site development plan shall be replaced by the applicant on the property through the replanting of species approved by the city at a minimum of four inch caliper to meet mitigation.

1. All existing trees including significant trees to be saved within the buildable area may count toward the total number of replacement trees required; and
2. Replacement trees may be the predominant species on the property, or of species approved by staff.

c. A tree replacement schedule is required showing the location, species and sizes of any replacement trees to be planted.

d. In areas outside the buildable areas (yard areas), with the exception of significant trees, all trees over four inches DBH shall be saved when practicable. This does not preclude an applicant from removing trees that unnecessarily hinder the development process, or trees that are in the way of driveways, easements and the like. The Planning Director shall be consulted prior to removing any trees.

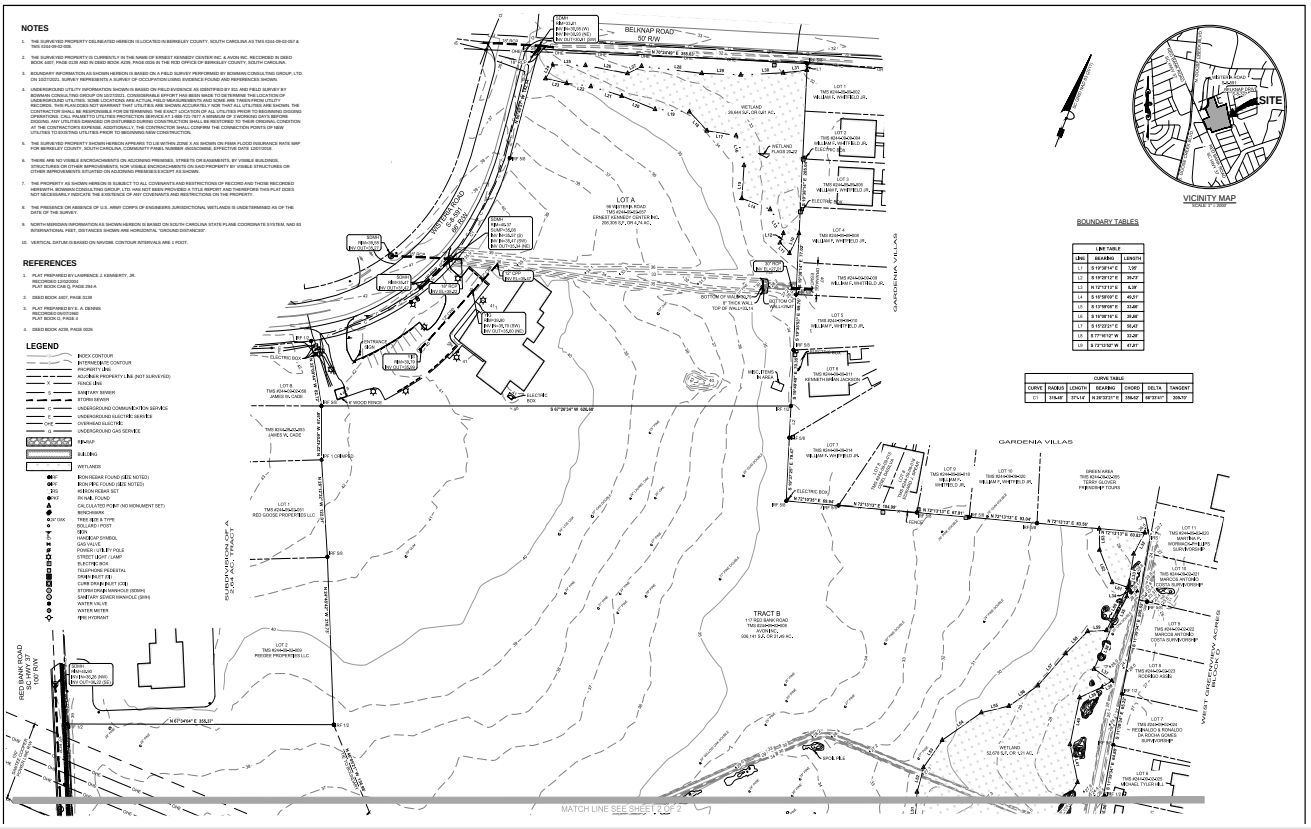
e. Prior to issuance of a Certificate of Occupancy for a completed structure, the Planning Director shall provide a compliance inspection including the provisions in this PD. It is the responsibility of the owner or agent to contact the Planning Director regarding the compliance inspection. The Certificate of Occupancy will be withheld pending verification of compliance. The Planning Director shall approve a delayed schedule for planting materials when the immediate planting schedule would impair the health of the plants. When a delayed planting schedule is approved, the applicant shall provide a bond equivalent to one and one-half times the projected cost of the planting materials.

    1. All trees planted, replanted, relocated or mitigated may count toward the landscaping requirement for trees. The City of Goose Creek encourages the planting of trees as an integral part of the landscaping design of a development. Tree planting shall be at least 10% of the landscape design of a project. The use of native trees is preferred.

EXHIBIT A - LOCATION MAP

EXHIBIT B - EXISTING ZONING MAP

EXHIBIT C - SURVEY



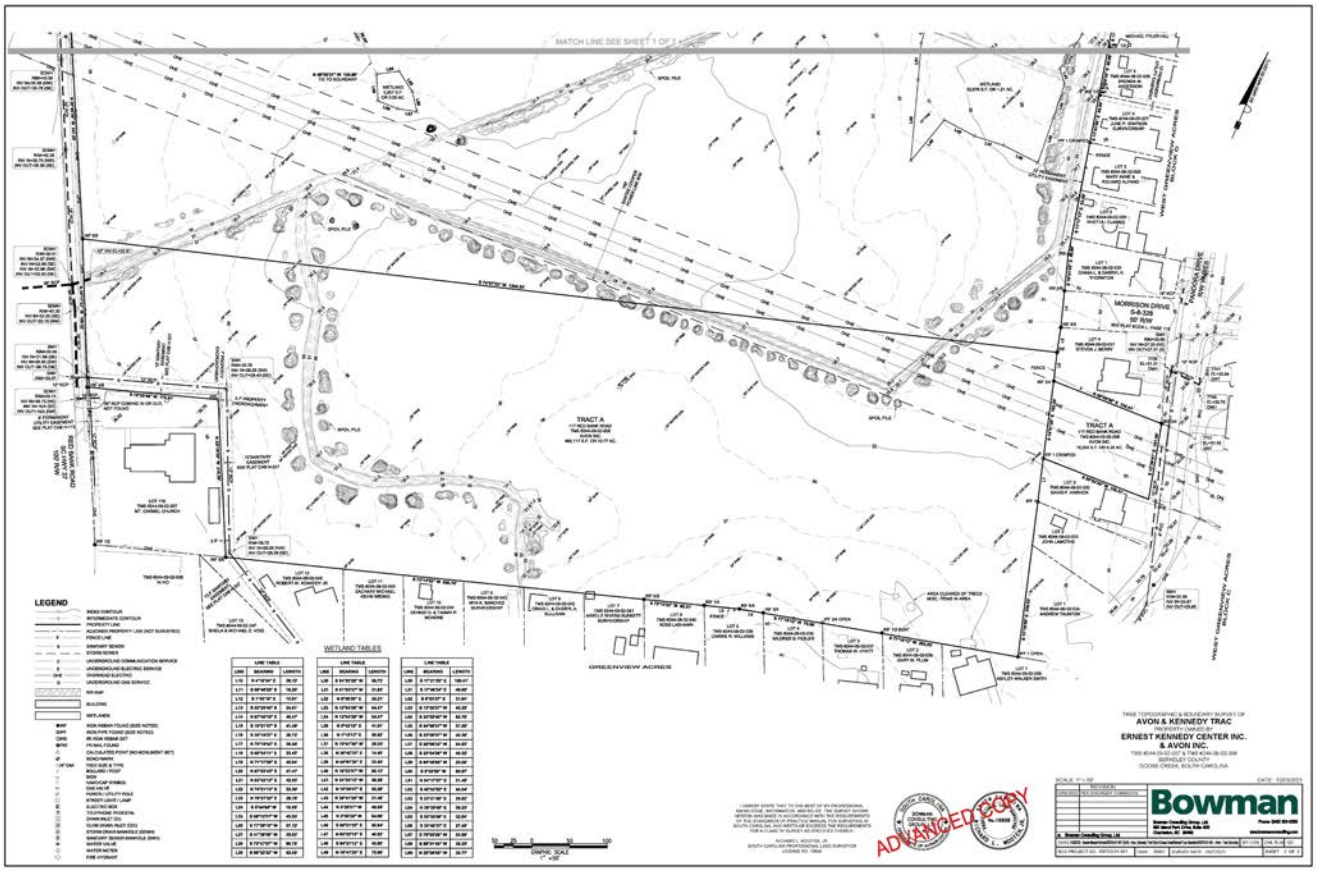


EXHIBIT D - PROPOSED PLANNED DEVELOPMENT LAND USE

LEGEND:

- COMMERCIAL USE
- COMMERCIAL USE - GREEN SPACE
- RESIDENTIAL USE
- RESIDENTIAL USE - GREEN SPACE
- RESIDENTIAL ATTACHED USE

EXHIBIT E - MASTER PLAN

Legend

- Red Bank Road Access
- Red Bank Road 30' Activity Zone
- Commercial Frontage
- Wisteria Road Access
- Townhome Neighborhood
- Community Garden
- Single Family Neighborhood
- Single Family Amenities:
  - Loop Trail
  - Wooden Bridge
  - Fenced Dog Run
- Townhome Amenities:
  - Trail connections
  - Picnic Shelter
  - Fire Feature
  - Playground
- 100' Community Greenway
- Loop Trail
- Pandora Road Trailhead

EXHIBIT F - COMMERCIAL

EXHIBIT G - CENTRAL COMMUNITY AMENITY

EXHIBIT H - GARDEN FRONTAGE TOWNHOMES

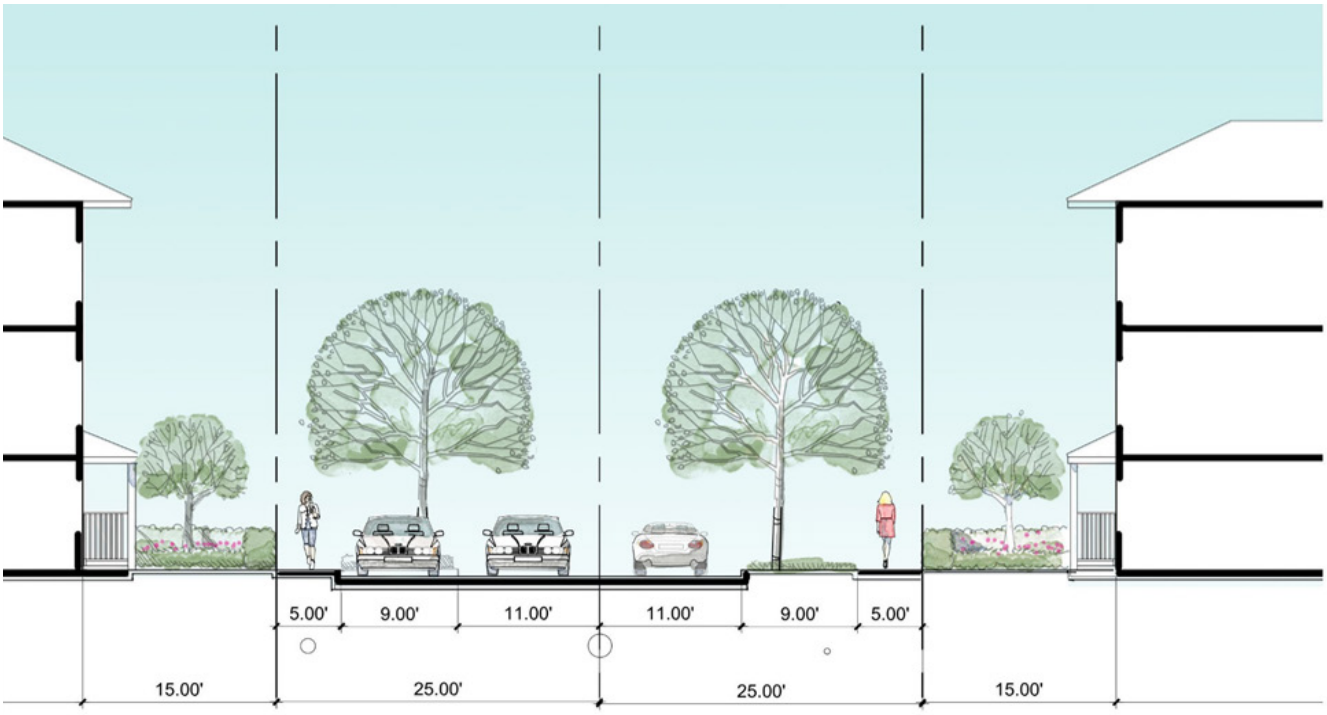
EXHIBIT I - FOREST CLEARING DOG PARK

EXHIBIT J - BUFFER

Legend

1. 10' BUFFER
2. 20' BUFFER
3. 35' BUFFER
4. 15' WETLAND BUFFER
5. WETLAND
6. HOA AMENITY AREA
7. EXISTING EASEMENT
8. 30' RED BANK ACTIVITY ZONE

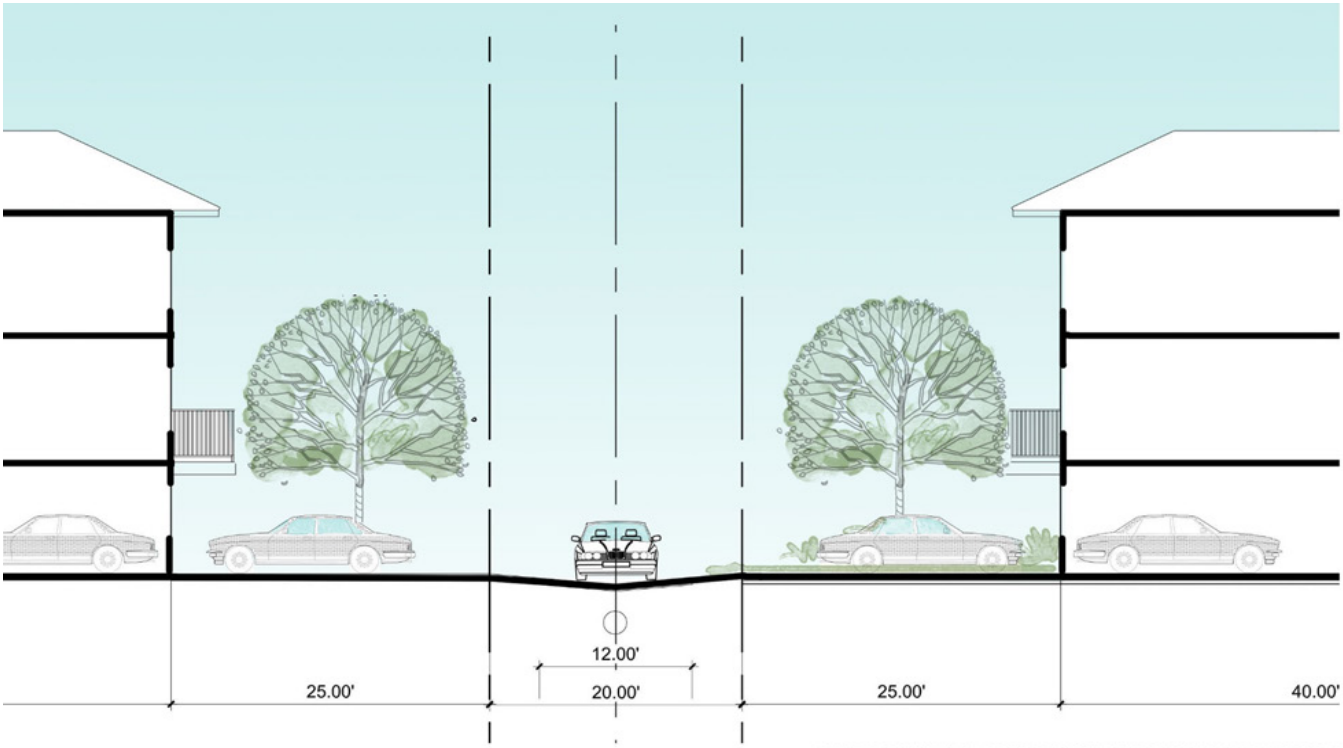
EXHIBIT K - TYPICAL 50’ RIGHT OF WAY SECTION



TYPICAL ROAD SECTION

THIS IS EXHIBIT IS CONCEPTUAL AND SUBJECT TO CHANGE

EXHIBIT K - TYPICAL 20’ ALLEY RIGHT OF WAY SECTION



TYPICAL ALLEY SECTION

THIS IS EXHIBIT IS CONCEPTUAL AND SUBJECT TO CHANGE

EXHIBIT L - WATER AVAILABILITY LETTER

THE CITY OF
GOOSE CREEK
BERKELEY CO. EST. 1961 SO. CAROLINA

Chuck Denson
DIRECTOR
DEPARTMENT OF PUBLIC WORKS

200 BUTTON HALL AVENUE
P.O DRAWER 1768
GOOSE CREEK, SC 29445-1768

TEL (843) 824-2200
FAX (843) 863-5218

February 2, 2022

Josh Lilly - P.E.
Stantec
4969 Centre Pointe Drive
Suite 200
North Charleston, SC 29418-6952

Re: TMS# 244-09-02-008

Dear Mr. Lilly:

The City of Goose Creek has the water system capacity and the ability to serve the subject project. The owner will be responsible for all engineering design, utility construction and regulatory permitting associated with extending the water distribution system infrastructure to this project, including the transfer of ownership to the City. The City of Goose Creek will assume the operation and maintenance of this system once construction is completed and SCDHEC approval is obtained.

Please contact me at 824-2200 ext. 4263 should you have questions or require additional information.

Sincerely,

C. E. Den

Chuck Denson, P.E.
Director of Public Works

cc: City Administrator
O&M Manager
Planning Department
Project File

EXHIBIT M - SEWER AVAILABILITY LETTER

BERKELEY COUNTY SC
WATER AND SANITATION

212 Oakley Plantation Dr.
Moncks Corner, SC 29461
bcws.berkeleycountysc.gov

February 22, 2022

Bryan Kizer
117 Red Bank Rd.
Goose Creek, SC 29445

Re: Application for Sewer Service, TMS # 244-09-02-008; 117 Red Bank Rd.

Dear Customer:

We have on hand your residential application for sewer service. At this time, sewer is available to the above location. However, the owner would need to have approved plans and fees paid before any connections would be approved.

If you have any questions, please contact our Engineering Department at (843) 719-2317 or you may email bcws.eng@berkeleycountysc.gov.

Sincerely,

Taps Department
BCWS Billing: Taps
T: 843-719-2644
taps@berkeleycountysc.gov
www.berkeleycountysc.gov
212 Oakley Plantation Dr Moncks Corner, SC 29461

BERKELEY COUNTY SOUTH CAROLINA

EXHIBIT N - SANTEE COOPER CORRESPONDENCE

From: Mahoney, Christopher
To: Lilly, Josh
Cc: Horne, Jenny; Tom Wallington
Subject: RE: Red Bank
Date: Thursday, May 26, 2022 3:35:23 PM
Attachments: image002.png
image003.png

Josh,

That is great news! Are we ready to start the formal review? If so please submit through our portal if you haven't already the link is in my signature "Utility Encroachment Management" and add the TEFIS numbers to the drawings. We will also need to see a sheet showing existing vs proposed grading, utility plan, landscape plan, lighting, etc.

Let me know if you have any questions.

Best Regards,

Chris Mahoney | Supervisor | Right Of Way Management – OC07 | ISA Certified Arborist:SO-10504A
Santee Cooper | 1 Riverwood Drive – P.O. Box 2946101, Moncks Corner, SC 29461
☎ 843.761.8000 ex.5918 | chris.mahoney@santeecooper.com
Utility Encroachment Management | Santee Cooper

EXHIBIT O - BERKELEY COUNTY SCHOOL DISTRICT CORRESPONDENCE

AVON TRACT

2022
February

Project No:
215616841

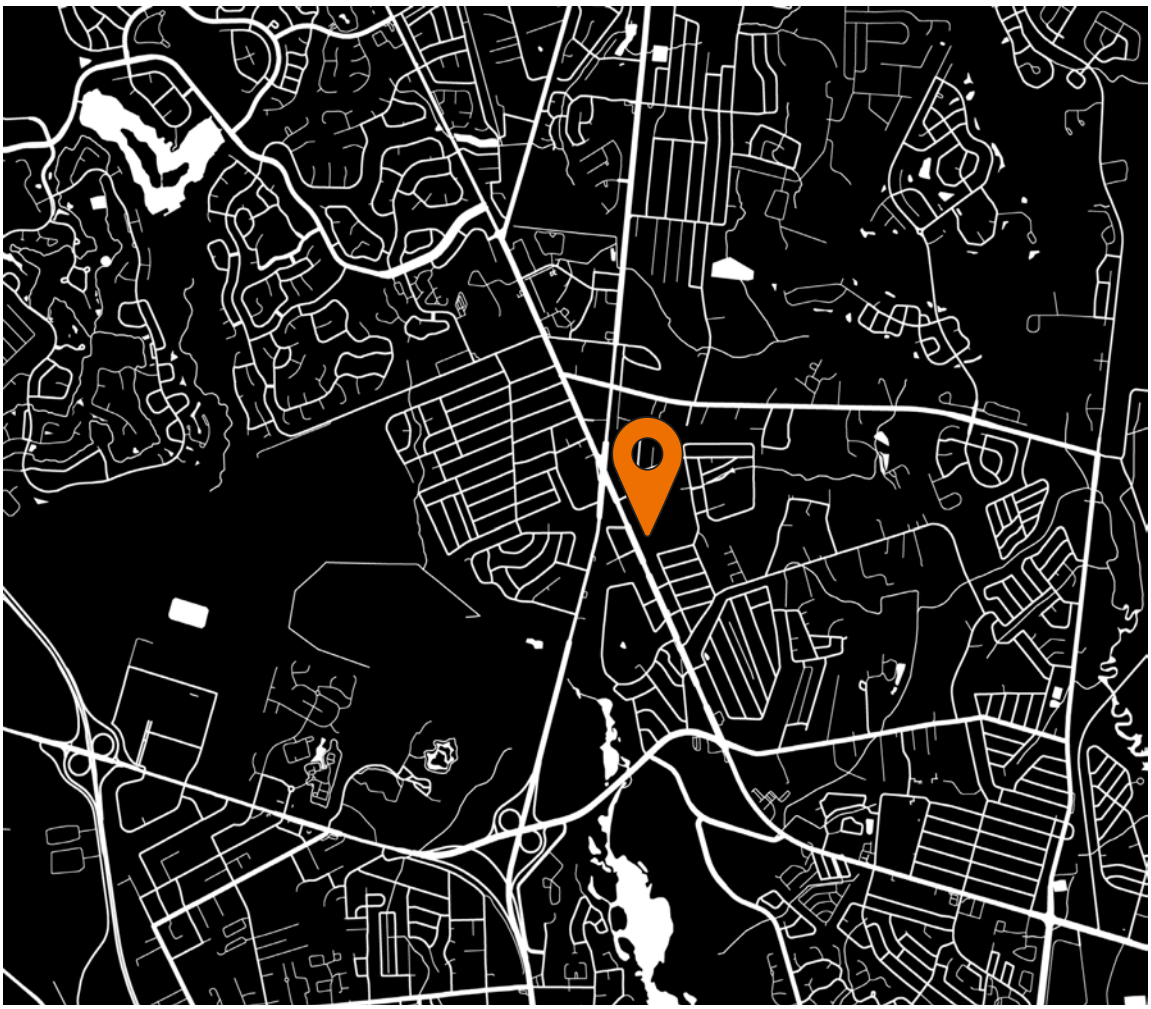
DRAFT

PREPARED FOR: BEAZER HOMES - CHARLESTON

4401 BELLE OAKS, SUITE 120 // N. CHARLESTON, SC, 29405

TRAFFIC IMPACT ANALYSIS

ALONG RED BANK ROAD
IN BERKELEY, SOUTH CAROLINA



PREPARED BY: STANTEC CONSULTING SERVICES INC. // N. CHARLESTON, SC

AVON TRACT

2022 February	Project No: **215616841**	DRAFT

PREPARED FOR: **BEAZER HOMES - CHARLESTON** 4401 BELLE OAKS, SUITE 120 // N. CHARLESTON, SC, 29405

TRAFFIC IMPACT ANALYSIS

ALONG RED BANK ROAD
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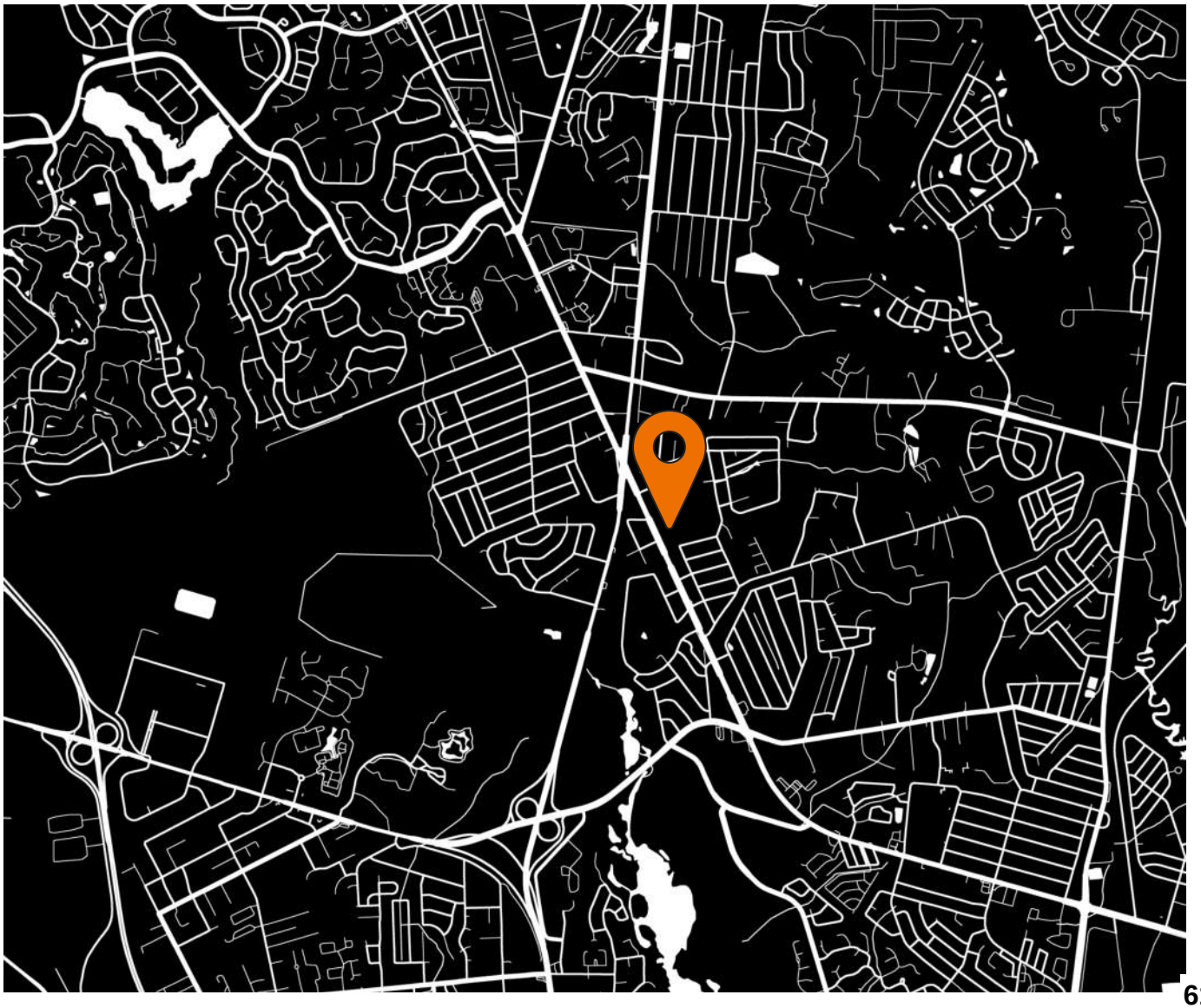

PREPARED BY: **STANTEC CONSULTING SERVICES INC.** // N. CHARLESTON, SC

AVON TRACT
TRAFFIC IMPACT ANALYSIS

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Prepared by: _____

Claudia Thompson

Reviewed by: _____

Josh Mitchell, PE

Approved by: _____

Stuart Day, PE, PTOE

February 2022

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EXECUTIVE SUMMARY

A traffic impact analysis was conducted for the Avon Tract development in accordance with SCDOT and City of Goose Creek guidelines.

The proposed Avon Tract development (which is anticipated to be constructed by 2025) is located along Red Bank Road and will consist of single-family detached housing units, single-family attached housing units, and a strip retail plaza.

Access to the development is proposed to be provided via one right-in/right-out driveway along Red Bank Road and one proposed full access driveway along Wisteria Road, all of which meet the SCDOT spacing requirements:

- Project Driveway #1 is proposed to be located along Red Bank Road; and
- Project Driveway #2 is proposed to be located along Wisteria Road.

Therefore, the extent of the roadway network analyzed consisted of the four intersections of:

1. Red Bank Road & Gary Road;
2. Red Bank Road & Wisteria Road;
3. Red Bank Road & Project Driveway #1; and
4. Wisteria Road & Project Driveway #2.

The operation of each of these intersections (in terms of average vehicular delay and level of service) was analyzed with and without the project traffic anticipated to be generated by the Avon Tract development.

The results of the analysis indicate that the study intersections currently operate and are expected to continue to operate at an acceptable level of service with the proposed Avon Tract development.

Based on the turn lane criteria in SCDOT's *Roadway Design Manual*, exclusive turn lanes along Red Bank Road and Wisteria Road are not recommended at Project Driveway #1 or Project Driveway #2.

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

The purpose of this report is to document the procedures and findings of a traffic impact analysis for the proposed Avon Tract development in accordance with SCDOT and City of Goose Creek guidelines. The proposed Avon Tract development is located along Red Bank Road, as shown in **Exhibit 1.1**, and will consist of the following land uses, with anticipated completion in 2025:

- 33 Single-Family Detached Housing Units;
- 125 Single-Family Attached Housing Units; and
- 8,900 Square Feet of Strip Retail Plaza.

Access to the development will be provided through one right-in/right-out access driveway along Red Bank Road and one full access driveway along Wisteria Road, as shown in the site plan in **Exhibit 1.2**.

The traffic impact analysis considers the weekday AM peak hour (between 7:00 AM and 9:00 AM) and the weekday PM peak hour (between 4:00 PM and 6:00 PM) as the study time frames. The extent of the existing roadway network to be studied consists of the four intersections of:

1. Red Bank Road & Gary Road;
2. Red Bank Road & Wisteria Road;
3. Red Bank Road & Project Driveway #1; and
4. Wisteria Road & Project Driveway #2.

1.2 EXISTING ROADWAY CONDITIONS

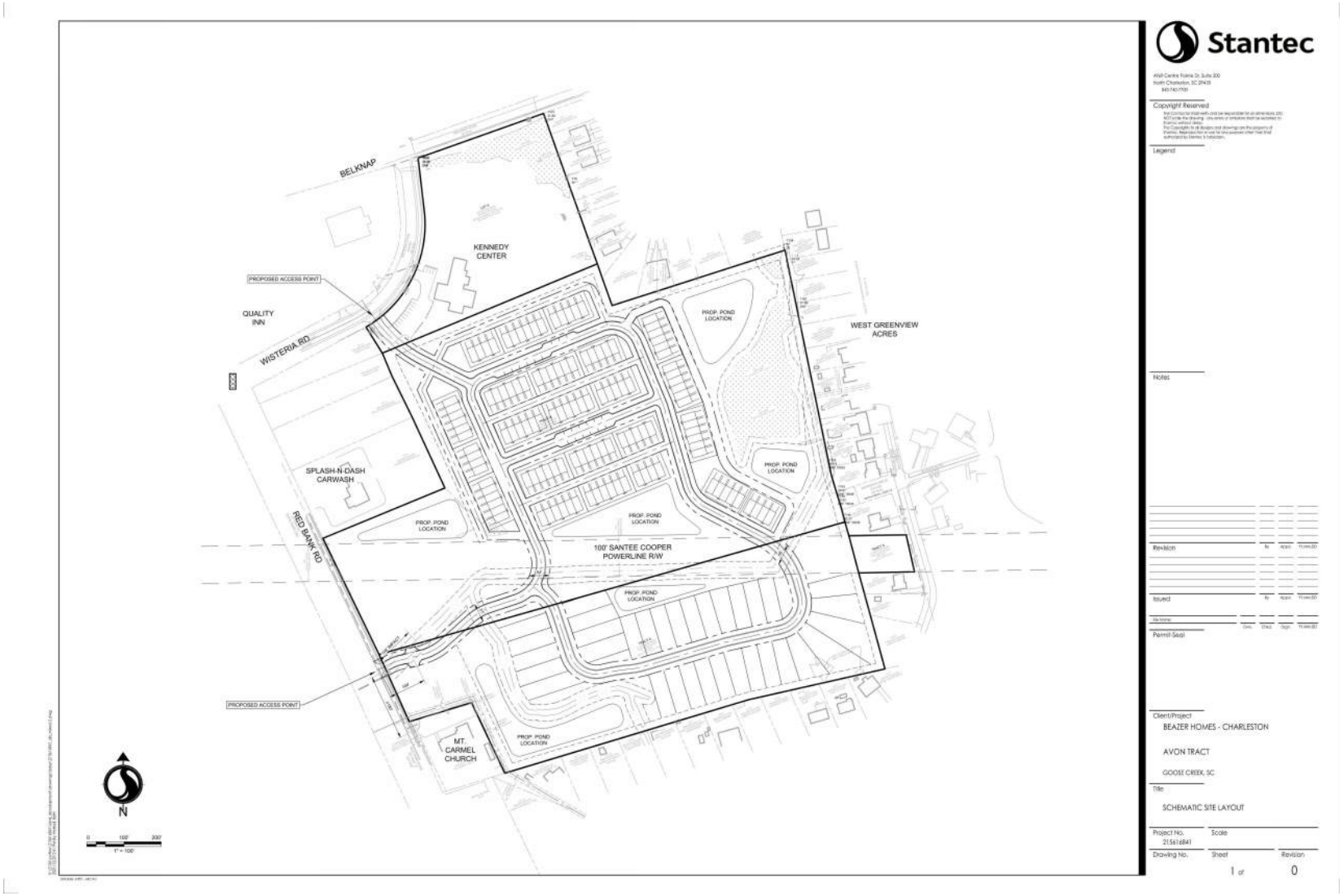
Red Bank Road is a five-lane arterial that primarily serves commercial and residential land uses. The posted speed limit is 45 mph and the average annual daily traffic (AADT) in 2020 was 20,800 vehicles/day. Based upon existing turning movement counts, the percentage of heavy vehicles along Red Bank Road is approximately 2%.

Wisteria Road is a two-lane local roadway that primarily serves commercial and residential land uses, and the posted speed limit is 30 mph. Based upon existing turning movement counts, the percentage of heavy vehicles along Wisteria Road is approximately 2%.

Gary Street is a two-lane local roadway that primarily serves residential land uses. Based upon existing turning movement counts, the percentage of heavy vehicles along Gary Street is less than 1%.

Exhibit 1.1 – Avon Tract Location Map

Exhibit 1.2 – Avon Tract Site Plan



2.0 DRIVEWAY SPACING REVIEW

Access to the development will be provided through one proposed right-in/right-out driveway along Red Bank Road and one proposed full access driveway along Wisteria Road.

Project Driveway #1 is proposed to be located along Red Bank Road and Project Driveway #2 is proposed to be located along Wisteria Road.

A review of the driveway spacing of the proposed driveways was completed based on information contained in SCDOT's *Access & Roadside Management Standards (ARMS)* manual (2008), shown in the adapted **Table 2.1**.

Table 2.1 – Minimum Driveway Spacing*

Posted Speed Limit (mph)	AADT ≥ 2000; *or* Driveways Generating > 50 Peak Hour Trips	AADT < 2000
30	160 ft	75 ft
35	220 ft	125 ft
40	275 ft	175 ft
45	325 ft	225 ft
≥ 50	400 ft	275 ft

**Figure 3-7 of Access & Roadside Management Standards, 2008, SCDOT*

Based upon the *ARMS* criteria, **a minimum of 150 feet** of spacing is required for right-in/right-out access along Red Bank Road. Based upon the 30-mph speed limit and the driveway spacing criteria of *ARMS*, **a minimum of 160 feet** is required for full access along Wisteria Road.

Project Driveway #1 is proposed to be located along Red Bank Road, approximately 230 feet south of the intersection of Red Bank Road & Gary Road, which meets the spacing criteria and approximately 300 feet north of the intersection of Red Bank Road & McClain Street, which meets the spacing criteria.

Project Driveway #2 is proposed to be located along Wisteria Road aligned with an existing driveway to the Kennedy Center.

3.0 PROJECT TRAFFIC

3.1 PROPOSED LAND USES

Project Traffic in this analysis is defined as the vehicle trips anticipated to be generated by the proposed Avon Tract development. These trips were distributed and assigned throughout the study roadway network.

The Avon Tract development is proposed to consist of the following land uses:

- 33 Single-Family Detached Housing Units;
- 125 Single-Family Attached Housing Units; and
- 8,900 Square Feet of Strip Retail Plaza.

3.2 TRIP GENERATION ESTIMATES

The trip generation potential for the development was estimated using information contained in ITE's *Trip Generation Manual*, 11th Edition (2021) reference. The estimates utilized the following land use codes:

- LUC 210 – Single-Family Detached Housing ;
- LUC 215 – Single-Family Attached Housing; and
- LUC 822 – Strip Retail Plaza (<40K).

Due to the nature of the proposed Avon Tract development, internal capture trips and pass-by trips were considered in the trip generation estimates.

Internal capture considers interaction between multiple uses in a development and was limited to 20%. Pass-by traffic is attracted from the existing traffic volumes on adjacent roadways and reduces the new trip impacts of a retail project site. Internal and pass-by capture traffic was estimated using information contained in ITE's *Trip Generation Manual*, 11th Edition (2021) reference.

Table 3.1 – Trip Generation Estimates

Land Use	ITE LUC	Scale	Daily	Weekday AM Peak Period		Weekday PM Peak Period	
				Enter	Exit	Enter	Exit
Single-Family Detached Housing	210	33 DU	364	7	20	22	13
Single-Family Attached Housing	215	125 DU	902	18	41	40	31
Strip Retail Plaza (<40K)	822	8.9 KSF	605	13	8	36	36
		Gross Trips:	1,871	38	69	98	80
		– Internal Capture Trips	-218	-3	-3	-13	-13
		– Pass-by Capture Trips	-199	-4	-3	-12	-12
		New, External Trips	**1,454**	**31**	**63**	**73**	**55**

3.3 TRIP DISTRIBUTION & ASSIGNMENT

3.3.1 New External Traffic

New external traffic expected to be generated by the Avon Tract development was distributed and assigned to the roadway network based upon existing travel patterns in the area. The general distribution of project trips was assumed to be:

- 50% to/from the north via Red Bank Road; and
- 50% to/from the south via Red Bank Road.

The assignment of new external project traffic anticipated to be generated by the Avon Tract development is illustrated in **Exhibit 3.1** and the AM and PM peak hour project traffic volumes are illustrated in **Exhibit 3.2** and **Exhibit 3.3**, respectively.

3.3.2 Pass-By Traffic

Pass-by traffic expected to be generated by the Avon Tract development was distributed and assigned to the roadway network based upon existing travel patterns in the area. The general distribution of pass-by project trips was assumed to be:

- 50% to/from the north via Red Bank Road; and
- 50% to/from the south via Red Bank Road.

The AM and PM peak hour pass-by traffic anticipated to be generated by the Avon Tract development is illustrated in **Exhibit 3.2** and **Exhibit 3.3**, respectively.

Exhibit 3.1 - Project Traffic Distribution and Assignment

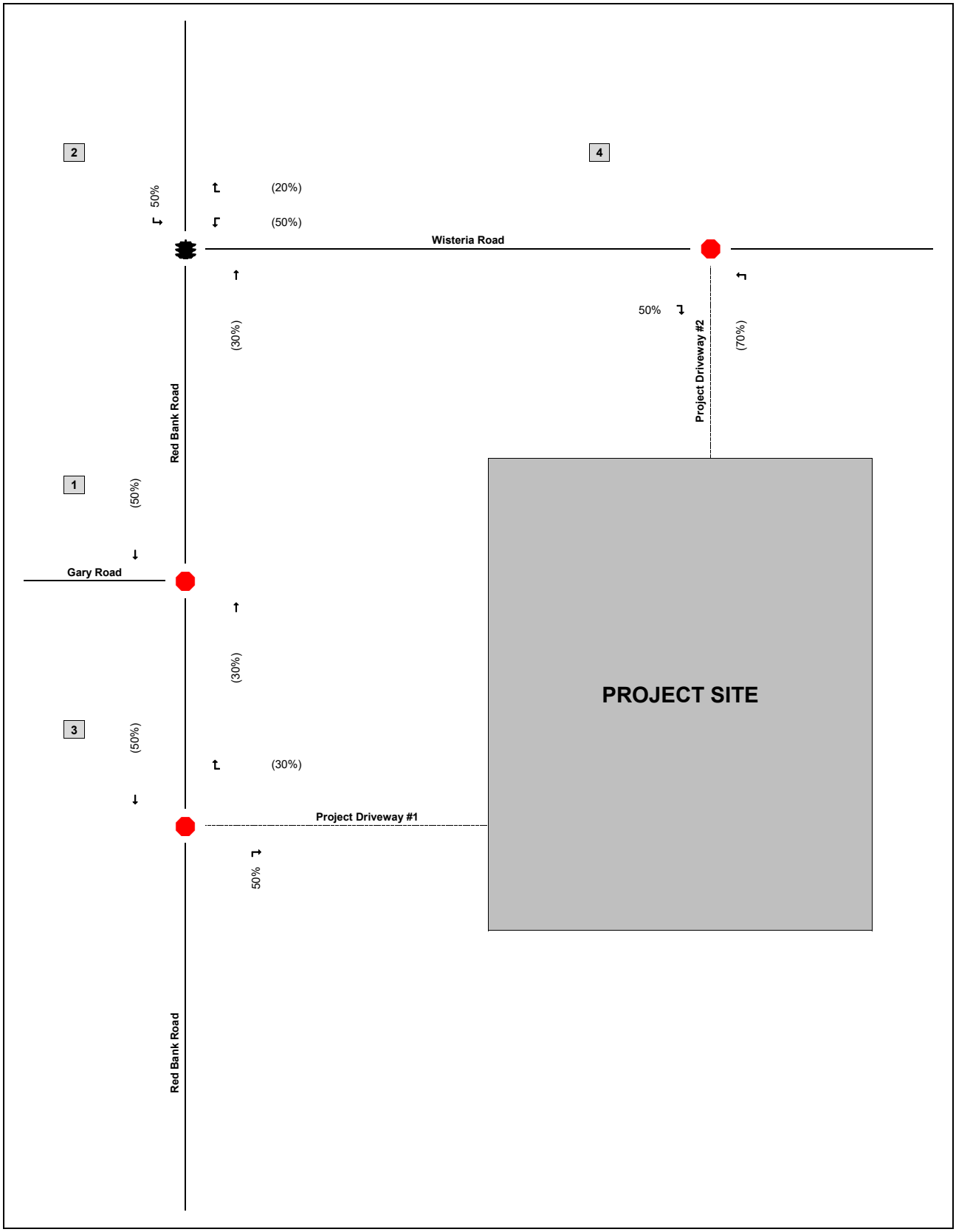


Exhibit 3.2 - AM Peak Hour Project Traffic Volumes

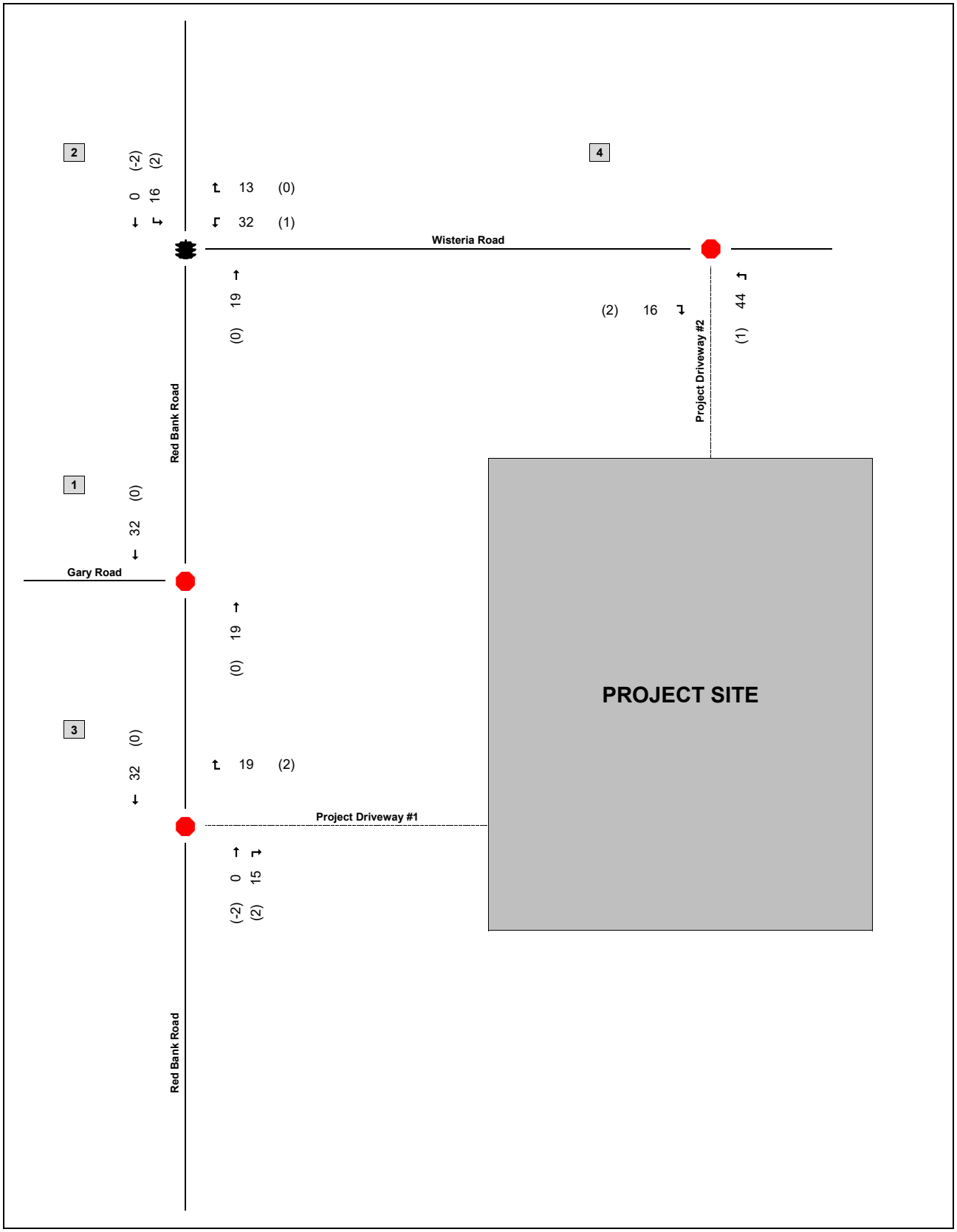
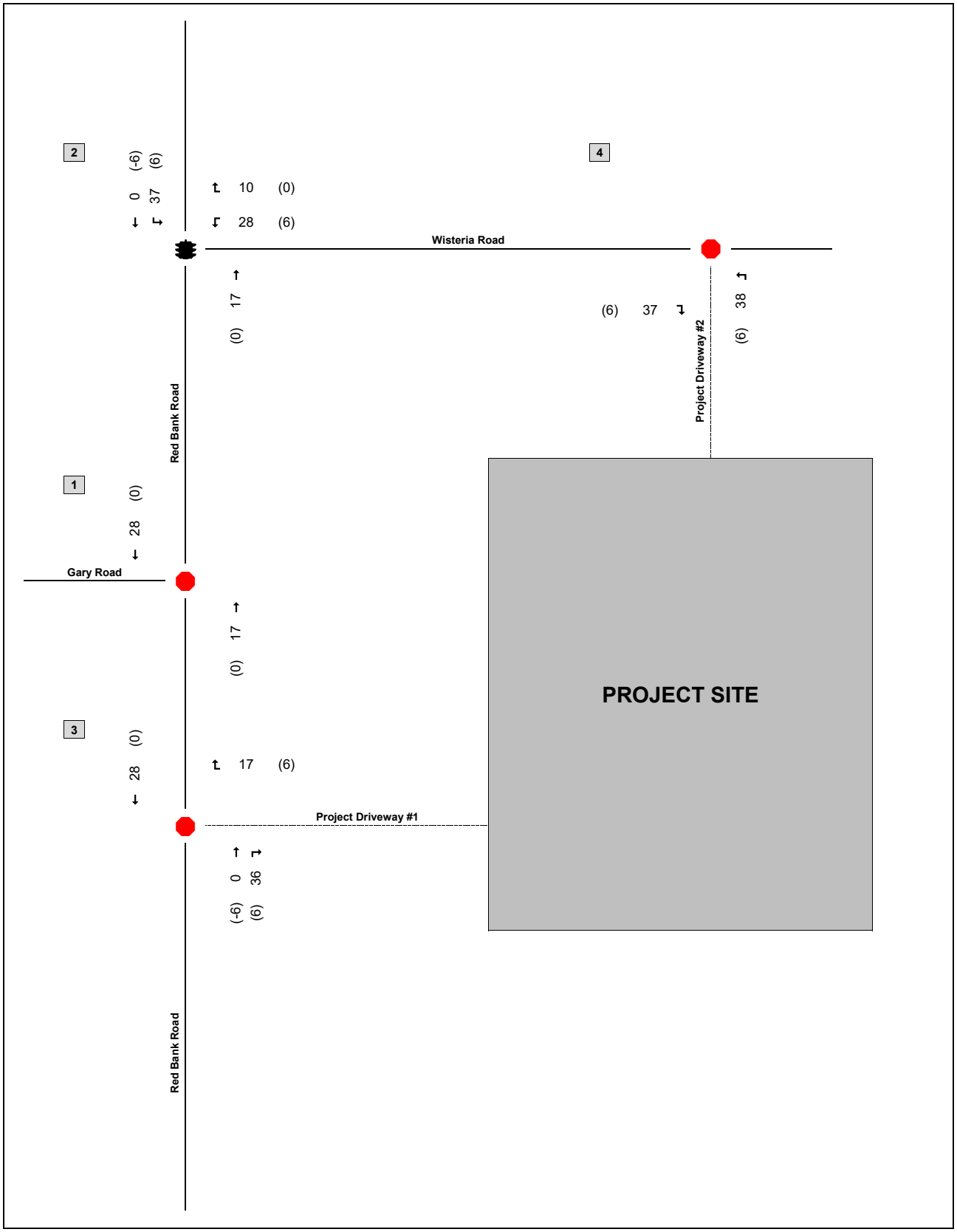


Exhibit 3.3 - PM Peak Hour Project Traffic Volumes



4.0 TRAFFIC VOLUME DEVELOPMENT

4.1 EXISTING TRAFFIC VOLUMES

The traffic impact analysis considers the weekday AM peak hour (between 7:00 AM and 9:00 AM) and the weekday PM peak hour (between 4:00 PM and 6:00 PM) as the study time frames. The extent of the existing roadway network to be studied consists of the four intersections of:

1. Red Bank Road & Gary Road;
2. Red Bank Road & Wisteria Road;
3. Red Bank Road & Project Driveway #1; and
4. Wisteria Road & Project Driveway #2.

Existing 2022 traffic volumes were collected at these study area intersections during the AM and PM peak periods listed above.

The raw traffic volume counts are provided in **Appendix B** and the 2022 existing AM and PM peak hour traffic volumes are illustrated in **Exhibit 4.1**.

4.2 FUTURE TRAFFIC PROJECTIONS

Future 2025 No Build traffic volumes were developed by adding *background traffic growth* to the collected existing study area peak hour volumes. *Background traffic growth* is growth anticipated to occur in the study area regardless of the proposed Avon Tract development.

To develop an annual background growth rate for use in the analysis, historical count data along Red Bank Road (SCDOT count stations #227 and #230) was reviewed over the past 10 years. It was determined that the roadways have experienced a collective annual growth of 0.6%. Therefore, in an effort to be conservative, a 1% annual growth rate was utilized to develop anticipated *background traffic growth* through the anticipated 2025 buildout year.

2025 No Build AM and PM peak hour traffic volumes, illustrated in **Exhibit 4.2**, were developed by adding the *background traffic growth* (assuming 1% annual growth of the existing traffic volumes) to the 2022 existing AM and PM peak hour traffic volumes.

2025 Build AM and PM peak hour traffic volumes, illustrated in **Exhibit 4.3,** were developed by adding the Avon Tract project traffic volumes (shown in **Exhibit 3.2** and **Exhibit 3.3)** to the 2025 No Build traffic volumes.

Volume development worksheets for each intersection are documented in **Appendix C**.

Exhibit 4.1 - 2022 Existing Peak Hour Traffic Volumes

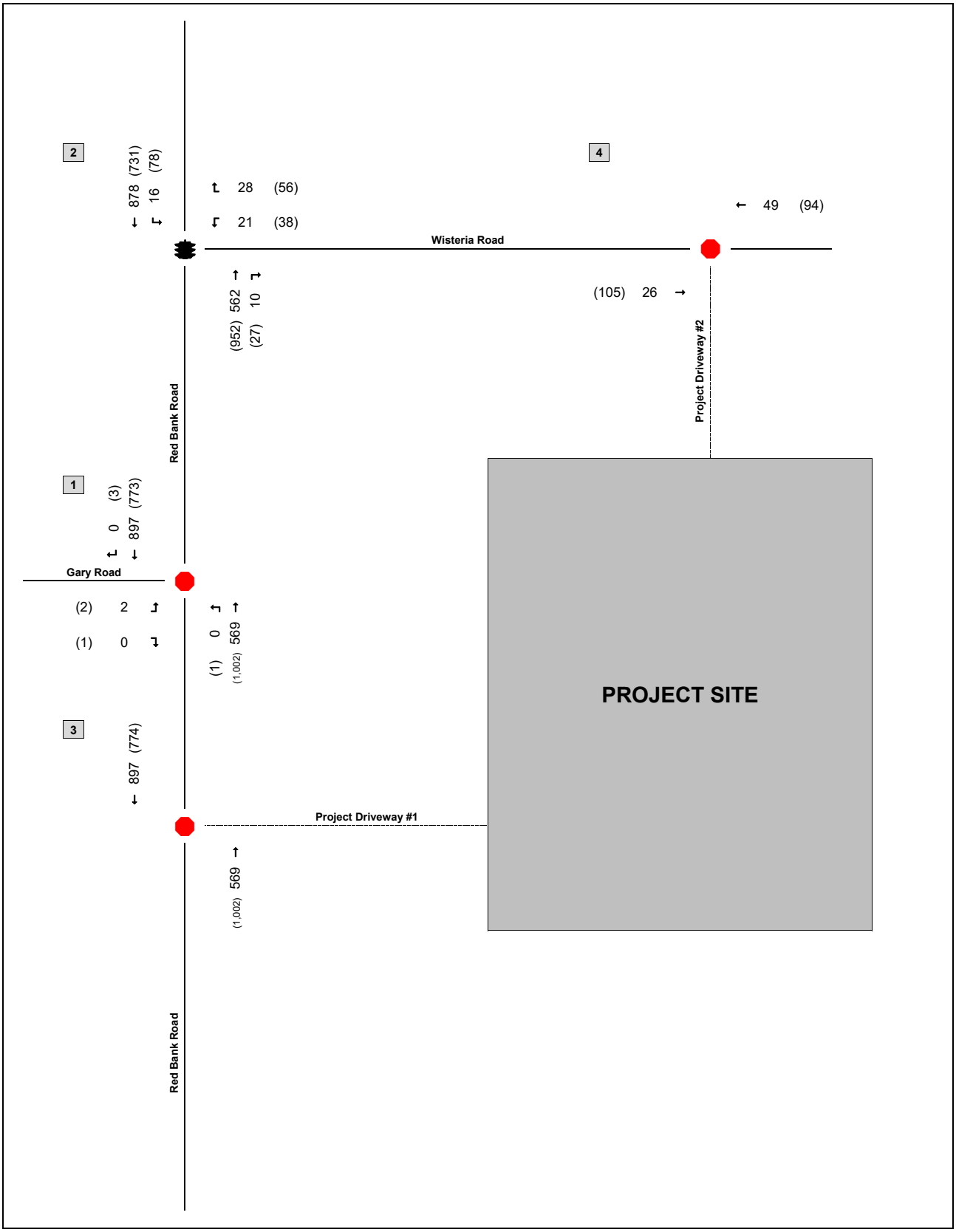


Exhibit 4.2 - 2025 No Build Peak Hour Traffic Volumes

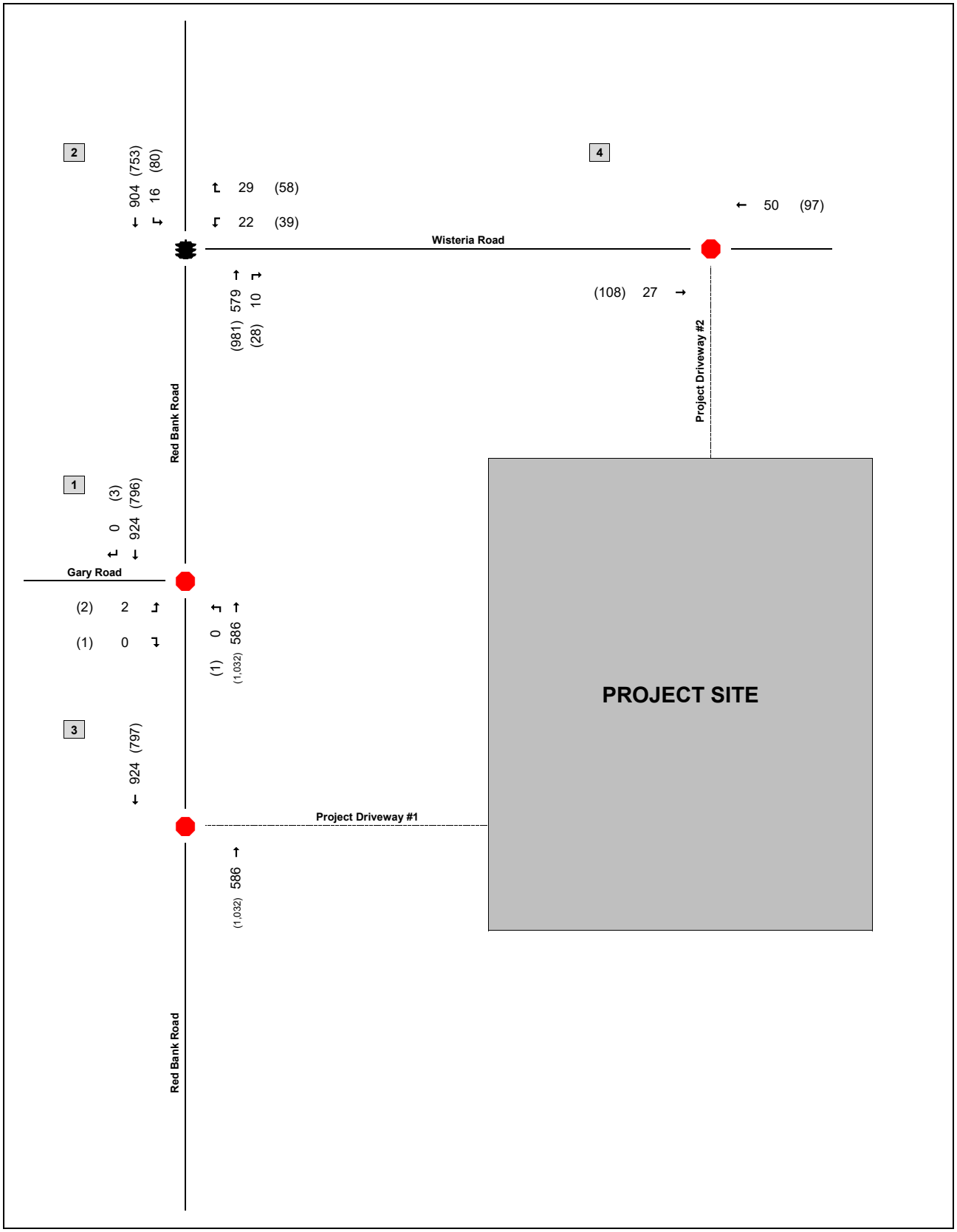
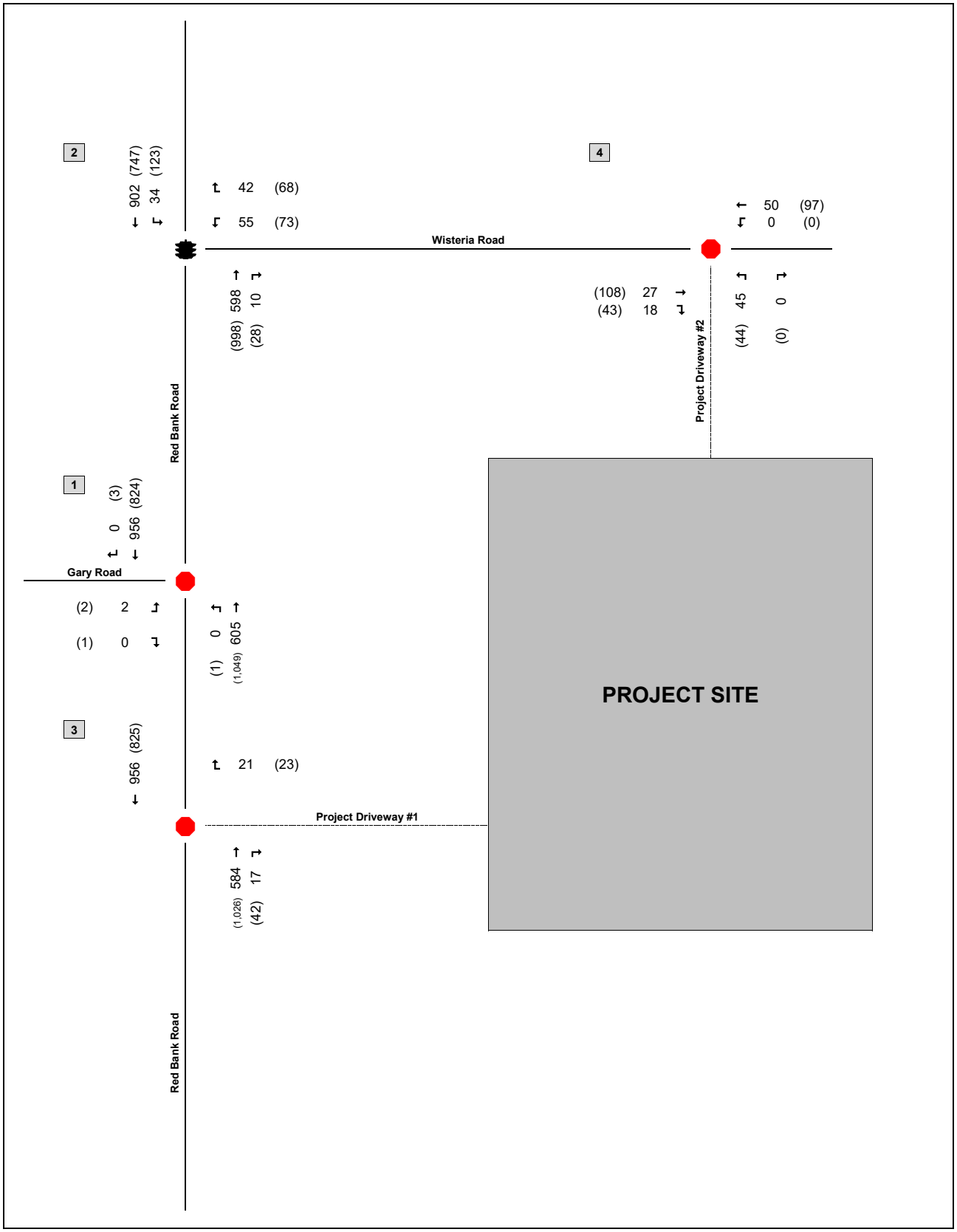


Exhibit 4.3 - 2025 Build Peak Hour Traffic Volumes



5.0 TRAFFIC IMPACT ANALYSIS

A traffic impact analysis was conducted for the Avon Tract development which analyzed the need for turn lanes at the project driveways as well as the operation of study area intersections according to *Highway Capacity Manual 6th Edition (HCM 6th Edition)* methodologies.

5.1 TURN LANE ANALYSIS

5.1.1 Right-Turn Lanes

The need for exclusive right-turn lanes is based upon the criteria documented in *Section 9.5.1.1* of SCDOT's *Roadway Design Manual* (2017), which consists of nine considerations, listed below:

1. *At a free-flowing leg of any unsignalized intersection on a two-lane urban or rural highway which satisfies the criteria in Figure 9.5-A;*
2. *at a free-flowing leg of any unsignalized intersection on a high-speed (50 mph or greater), four-lane urban or rural highway which satisfies the criteria in Figure 9.5-B;*
3. *at the free-flowing leg of any unsignalized intersection on a six-lane urban or rural highway;*
4. *at any intersection where a capacity analysis determines a right-turn lane is necessary to meet the overall level-of-service criteria;*
5. *as a general rule, at any signalized intersection where the projected right-turning volume is greater than 300 vehicles per hour and where there are greater than 300 vehicles per hour per lane on the mainline (A traffic analysis will be required if the turning volumes are greater than 300 vehicles per hour);*
6. *for uniformity of intersection design along the highway if other intersections have right-turn lanes;*
7. *at any intersection where the mainline is curved to the left and where the mainline curve requires superelevation;*
8. *at railroad crossings where the railroad is paralleled to the facility and is located close to the intersection and where a right-turn lane would be desirable to store queued vehicles avoiding interference with the movement of through traffic; or*
9. *at any intersection where the crash experience, existing traffic operations, sight distance restrictions (e.g., intersection beyond a crest vertical curve), or engineering judgement indicates a significant conflict related to right-turning vehicles;*

Table 5.1 below details whether the previously mentioned criteria for exclusive right-turn lanes are satisfied for each driveway. An "✗" indicates that the criteria is not met; a "✓" indicates that it is met; and "N/A" indicates that the criteria is not applicable.

Table 5.1 – Right-Turn Lane Criteria Warrants

Criteria	Project Driveway 1	Project Driveway 2	Reference/Note
1	N/A	✗	**Appendix G**
2	✗	N/A	**Appendix G**
3	✗	✗	Not 6-lane highway
4	✗	✗	**Table 5.4**
5	✗	✗	Not signalized
6	✗	✗	Not typically provided
7	✗	✗	Mainline not curved
8	✗	✗	No railroad crossing
9	✗	✗	Crash data not provided

Based on SCDOT's *Roadway Design Manual* considerations, exclusive right-turn lanes along Red Bank Road and Wisteria Road **are not recommended** at Project Driveways *#1 and #2.*

5.1.2 Left-Turn Lanes

The need for exclusive left-turn lanes is based upon the criteria documented in *Section 9.5.1.2* of SCDOT's *Roadway Design Manual* (2017), which consists of nine considerations, listed below:

1. *At any unsignalized intersection on principal, high-speed rural highways with other arterials or collectors;*
2. *at any unsignalized intersection on a two-lane urban or rural highway that satisfies the criteria in Figures 9.5-C, 9.5-D, 9.5-E, 9.5-F, or 9.5-G;*
3. *at any intersection where a capacity analysis determines a left-turn lane is necessary to meet the level of service criteria;*
4. *at any signalized intersection where the left-turn volume is 300 vehicles per hour or more, conduct a traffic review to determine if dual left-turn lanes are required;*
5. *as a general rule, at any intersection where the left-turning volume is 100 vehicles per hour (for a single turn lane) or 300 vehicles per hour (for a dual turn lane);*
6. *at all entrances to major residential, commercial, and industrial developments;*
7. *at all median crossovers;*
8. *for uniformity of intersection design along the highway if other intersections have left-turn lanes (i.e., to satisfy driver expectancy); or*
9. *at any intersection where the crash experience, existing traffic operations, sight distance restrictions (e.g., intersection beyond a crest vertical curve), or engineering judgement indicates a significant conflict related to left-turning vehicles;*

Table 5.2 below details whether the previously mentioned criteria for exclusive left-turn lanes are satisfied for each driveway. An "✖" indicates that the criteria is not met; a "✔" indicates that it is met; and "N/A" indicates that the criteria is not applicable.

Table 5.2 – Left-Turn Lane Criteria Warrants

Criteria	Project Driveway 1	Project Driveway 2	Reference/Note
1	N/A	✖	Not arterial or collector
2	N/A	N/A	N/A
3	N/A	✖	**Table 5.4**
4	N/A	✖	**Exhibit 4.3**
5	N/A	✖	**Exhibit 4.3**
6	N/A	✖	Not major development
7	N/A	✖	No median crossovers
8	N/A	✖	Not typically provided
9	N/A	✖	No crash data provided

Based on SCDOT's *Roadway Design Manual* considerations, exclusive left-turn lane along Wisteria Road **is not recommended** at *Project Driveway #2*.

5.2 INTERSECTION LOS ANALYSIS

Using the existing and projected peak hour traffic volumes previously discussed, intersection analysis was conducted for the study and project driveway intersections considering 2022 Existing Conditions, 2025 No Build Conditions, and 2025 Build Conditions. The analysis was conducted using the Transportation Research Board's *Highway Capacity Manual 6th Edition (HCM 6th Edition)* methodologies of the *Synchro*, Version 10 software for stop-controlled and signalized intersection analysis.

Intersection level of service (LOS) grades range from LOS A to LOS F, which are directly related to the level of control delay at the intersection and characterize the operational conditions of the intersection traffic flow. LOS A operations typically represent ideal, free-flow conditions where vehicles experience little to no delays, and LOS F operations typically represent poor, forced-flow (bumper-to-bumper) conditions with high vehicular delays, and are generally considered undesirable. **Table 5.3** summarizes the HCM 6th Edition control delay thresholds associated with each LOS grade for unsignalized and signalized intersections. Level of service A through D is considered to be acceptable LOS, while LOS E and F is considered to be undesirable.

Table 5.3 – HCM 6th Edition Intersection LOS Criteria

LOS	Control Delay per Vehicle (s)	
	Unsignalized*	Signalized
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

As part of the intersection analysis, SCDOT's default *Synchro* parameters were utilized. The existing 2022 traffic counts' peak hour factors (PHF) were utilized in the analysis of existing conditions. Future-year 2025 conditions were analyzed utilizing existing PHF, but with a minimum PHF of 0.90 and maximum PHF of 0.95 considered. The existing 2022 heavy vehicle percentages, as previously discussed, were utilized in the analysis, with a minimum percentage of 2% considered.

Existing lane geometry was utilized for the analysis of 2022 Existing Conditions and 2025 No Build Conditions. The 2025 Build Conditions were analyzed both with existing lane geometry and with any proposed improvements resulting from this impact analysis (including any proposed exclusive turn lanes per the results of **Section 5.1**) to illustrate their anticipated impact on traffic operations.

The results of the intersection analysis for existing and future-year conditions for the weekday AM and PM peak hour time periods are summarized in **Table 5.4.**

For signalized intersections and roundabouts, the overall intersection LOS and delay results are evaluated for acceptable operation, while for two-way stop-controlled (TWSC) intersections, the LOS and delay results are evaluated for the worst-case minor-street approaches only, per *HCM 6th Edition* methodologies for TWSC intersections.

As shown in **Table 5.4**, the results of the analysis indicate that the study intersections currently operate and are expected to continue to operate at an acceptable LOS with the proposed Avon Tract development.

Worksheets documenting the intersection analyses are provided in **Appendix D** for 2022 Existing Conditions, **Appendix E** for 2025 No Build Conditions, and **Appendix F** for 2025 Build Conditions.

Table 5.4 – Peak Hour Intersection Analysis Results

	Intersection	Control	LOS/Delay (seconds/vehicle)					
			AM Peak Hour			PM Peak Hour		
			2022 Existing	2025 No Build	2025 Build	2022 Existing	2025 No Build	2025 Build
1	Red Bank Road & Gary Road	TWSC	C/20.3 (EB)	C/19.8 (EB)	C/20.5 (EB)	C/15.9 (EB)	C/16.3 (EB)	C/16.6 (EB)
2	Red Bank Road & Wisteria Road	SIGNAL	A/5.7	A/5.7	A/7.1	A/9.2	A/9.9	B/12.0
3	Red Bank Road & Project Driveway #1	TWSC	-	-	B/10.6 (WB)	-	-	B/13.5 (WB)
4	Wisteria Road & Project Driveway #2	TWSC	-	-	A/9.2 (NB)	-	-	B/10.2 (NB)

6.0 SUMMARY OF FINDINGS AND RECOMMENDATIONS

A traffic impact analysis was conducted for the Avon Tract development in accordance with SCDOT and City of Goose Creek guidelines.

The proposed Avon Tract development (which is anticipated to be constructed by 2025) is located along Red Bank Road and will consist of single-family detached housing units, single-family attached housing units, and a strip retail plaza.

Access to the development is proposed to be provided via one right-in/right-out driveway along Red Bank Road and one proposed full access driveway along Wisteria Road, all of which meet the SCDOT spacing requirements:

- Project Driveway #1 is proposed to be located along Red Bank Road; and
- Project Driveway #2 is proposed to be located along Wisteria Road.

Therefore, the extent of the roadway network analyzed consisted of the four intersections of:

1. Red Bank Road & Gary Road;
2. Red Bank Road & Wisteria Road;
3. Red Bank Road & Project Driveway #1; and
4. Wisteria Road & Project Driveway #2.

The operation of each of these intersections (in terms of average vehicular delay and level of service) was analyzed with and without the project traffic anticipated to be generated by the Avon Tract development.

The results of the analysis indicate that the study intersections currently operate and are expected to continue to operate at an acceptable level of service with the proposed Avon Tract development.

Based on the turn lane criteria in SCDOT's *Roadway Design Manual*, exclusive turn lanes along Red Bank Road and Wisteria Road are not recommended at Project Driveway #1 or Project Driveway #2.

AVON TRACT
TRAFFIC IMPACT ANALYSIS
APPENDICES

Appendix A TRIP GENERATION WORKSHEETS

TRIP GENERATION ESTIMATES
Avon Tract Development

Weekday Daily

Trip Generation Characteristics						Directional Distribution		Gross Trips			Internal Capture Trips				Pass-By Capture Trips				New External Trips		
Land Use	Ed.	LUC	Scale	Unit	Equation/Rate	In	Out	In	Out	Total	%	In	Out	Trips	%	In	Out	Trips	In	Out	Total
Multifamily Housing (Low-Rise)	11th	220	216	Homes	T = 6.41(X) + 75.31	50%	50%	730	730	1,460	0%	0	0	0	0%	0	0	0	730	730	1,460
					Total:			**730**	**730**	**1,460**	**0%**	**0**	**0**	**0**	**0%**	**0**	**0**	**0**	**730**	**730**	**1,460**

Weekday AM Peak Hour

Trip Generation Characteristics						Directional Distribution		Gross Trips			Internal Capture Trips				Pass-By Capture Trips				New External Trips		
Land Use	Ed.	LUC	Scale	Unit	Equation/Rate	In	Out	In	Out	Total	%	In	Out	Trips	%	In	Out	Trips	In	Out	Total
Multifamily Housing (Low-Rise)	11th	220	216	Homes	T = 0.31(X) + 22.85	24%	76%	22	68	90	0%	0	0	0	0%	0	0	0	22	68	90
					Total:			**22**	**68**	**90**	**0%**	**0**	**0**	**0**	**0%**	**0**	**0**	**0**	**22**	**68**	**90**

Weekday PM Peak Hour

Trip Generation Characteristics						Directional Distribution		Gross Trips			Internal Capture Trips				Pass-By Capture Trips				New External Trips		
Land Use	Ed.	LUC	Scale	Unit	Equation/Rate	In	Out	In	Out	Total	%	In	Out	Trips	%	In	Out	Trips	In	Out	Total
Multifamily Housing (Low-Rise)	11th	220	216	Homes	T = 0.43(X) + 20.55	63%	37%	71	42	113	0%	0	0	0	0%	0	0	0	71	42	113
					Total:			**71**	**42**	**113**	**0%**	**0**	**0**	**0**	**0%**	**0**	**0**	**0**	**71**	**42**	**113**

Appendix B TRAFFIC VOLUME DATA

SHORT COUNTS, LLC

735 Maryland St
Columbia, SC 29201
We can't say we're the Best, but you Can!

File Name : Red Bank Rd @ S-8-384
Site Code :
Start Date : 01/19/2022
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles - Buses

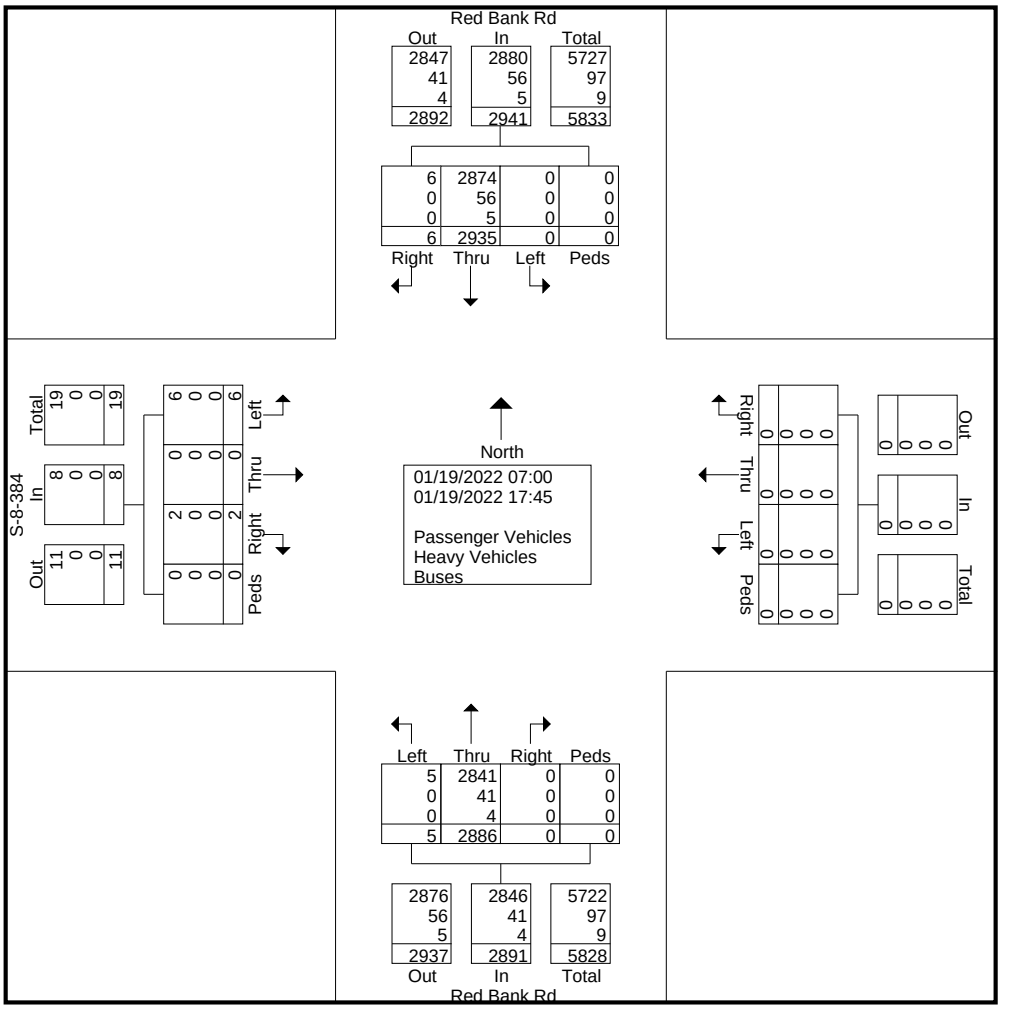
	Red Bank Rd Southbound				Westbound				Red Bank Rd Northbound				S-8-384 Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00	0	210	0	0	0	0	0	0	0	117	0	0	1	0	0	0	328
07:15	0	259	0	0	0	0	0	0	0	122	0	0	1	0	0	0	382
07:30	0	242	0	0	0	0	0	0	0	188	0	0	0	0	0	0	430
07:45	0	186	0	0	0	0	0	0	0	142	0	0	0	0	0	0	328
Total	0	897	0	0	0	0	0	0	0	569	0	0	2	0	0	0	1468
08:00	0	149	0	0	0	0	0	0	0	126	0	0	0	0	0	0	275
08:15	0	166	0	0	0	0	0	0	0	94	0	0	0	0	0	0	260
08:30	0	143	0	0	0	0	0	0	1	100	0	0	0	0	0	0	244
08:45	0	143	0	0	0	0	0	0	0	121	0	0	0	0	0	0	264
Total	0	601	0	0	0	0	0	0	1	441	0	0	0	0	0	0	1043
16:00	0	165	1	0	0	0	0	0	1	215	0	0	0	0	1	0	383
16:15	0	170	0	0	0	0	0	0	0	215	0	0	1	0	0	0	386
16:30	0	163	2	0	0	0	0	0	2	229	0	0	0	0	0	0	396
16:45	0	190	0	0	0	0	0	0	0	245	0	0	0	0	1	0	436
Total	0	688	3	0	0	0	0	0	3	904	0	0	1	0	2	0	1601
17:00	0	189	1	0	0	0	0	0	0	276	0	0	1	0	0	0	467
17:15	0	195	1	0	0	0	0	0	1	246	0	0	0	0	0	0	443
17:30	0	199	1	0	0	0	0	0	0	235	0	0	1	0	0	0	436
17:45	0	166	0	0	0	0	0	0	0	215	0	0	1	0	0	0	382
Total	0	749	3	0	0	0	0	0	1	972	0	0	3	0	0	0	1728
Grand Total	0	2935	6	0	0	0	0	0	5	2886	0	0	6	0	2	0	5840
Apprch %	0	99.8	0.2	0	0	0	0	0	0.2	99.8	0	0	75	0	25	0	
Total %	0	50.3	0.1	0	0	0	0	0	0.1	49.4	0	0	0.1	0	0	0	
Passenger Vehicles	0	2874	6	0	0	0	0	0	5	2841	0	0	6	0	2	0	5734
% Passenger Vehicles	0	97.9	100	0	0	0	0	0	100	98.4	0	0	100	0	100	0	98.2
Heavy Vehicles	0	56	0	0	0	0	0	0	0	41	0	0	0	0	0	0	97
% Heavy Vehicles	0	1.9	0	0	0	0	0	0	0	1.4	0	0	0	0	0	0	1.7
Buses	0	5	0	0	0	0	0	0	0	4	0	0	0	0	0	0	9
% Buses	0	0.2	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0.2

SHORT COUNTS, LLC

735 Maryland St
Columbia, SC 29201

We can't say we're the Best, but you Can!

File Name : Red Bank Rd @ S-8-384
Site Code :
Start Date : 01/19/2022
Page No : 2

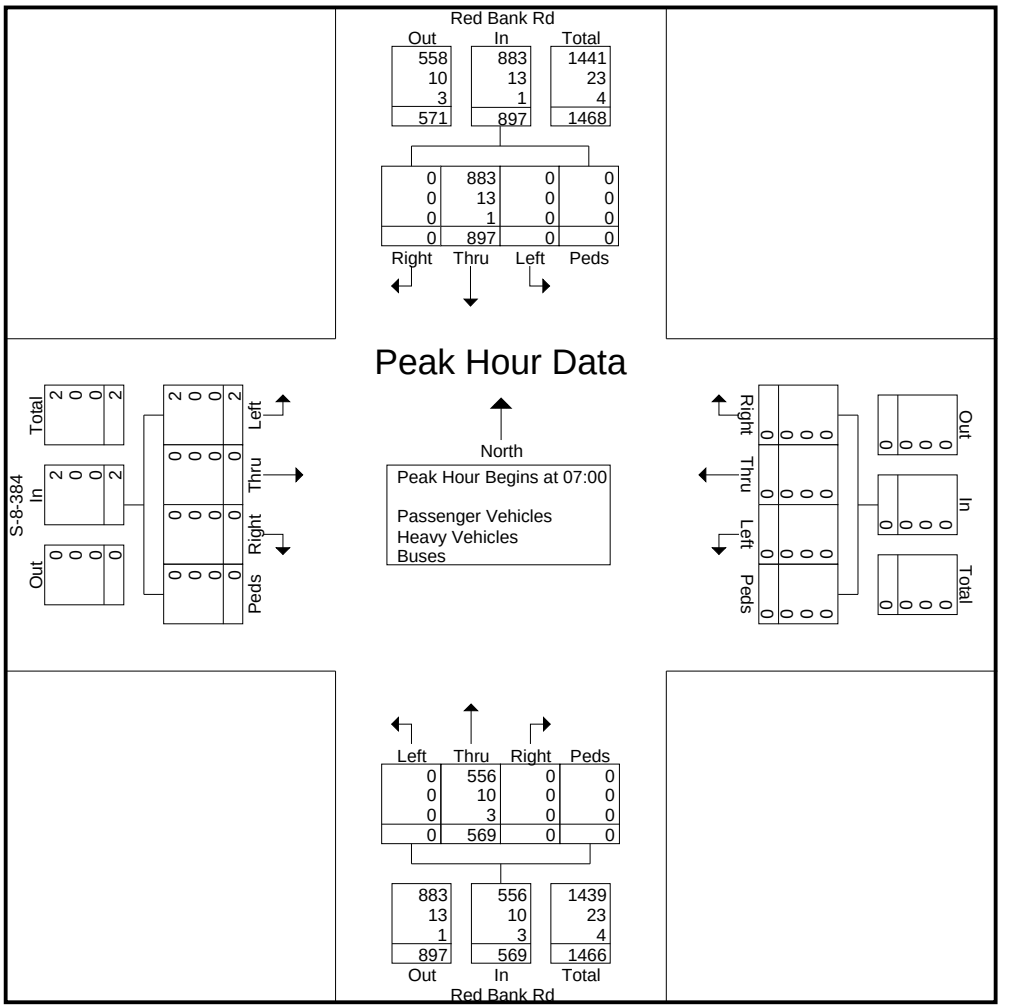


SHORT COUNTS, LLC

735 Maryland St
Columbia, SC 29201
We can't say we're the Best, but you Can!

File Name : Red Bank Rd @ S-8-384
Site Code :
Start Date : 01/19/2022
Page No : 3

	Red Bank Rd Southbound					Westbound					Red Bank Rd Northbound					S-8-384 Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	0	210	0	0	210	0	0	0	0	0	0	117	0	0	117	**1**	0	0	0	**1**	328
07:15	0	**259**	0	0	**259**	0	0	0	0	0	0	122	0	0	122	1	0	0	0	1	382
07:30	0	242	0	0	242	0	0	0	0	0	0	**188**	0	0	**188**	0	0	0	0	0	**430**
07:45	0	186	0	0	186	0	0	0	0	0	0	142	0	0	142	0	0	0	0	0	328
Total Volume	0	897	0	0	897	0	0	0	0	0	0	569	0	0	569	2	0	0	0	2	1468
% App. Total	0	100	0	0		0	0	0	0		0	100	0	0		100	0	0	0		
PHF	.000	.866	.000	.000	.866	.000	.000	.000	.000	.000	.000	.757	.000	.000	.757	.500	.000	.000	.000	.500	.853
Passenger Vehicles	0	883	0	0	883	0	0	0	0	0	0	556	0	0	556	2	0	0	0	2	1441
% Passenger Vehicles																					
Heavy Vehicles	0	13	0	0	13	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	23
% Heavy Vehicles	0	1.4	0	0	1.4	0	0	0	0	0	0	1.8	0	0	1.8	0	0	0	0	0	1.6
Buses	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
% Buses	0	0.1	0	0	0.1	0	0	0	0	0	0	0.5	0	0	0.5	0	0	0	0	0	0.3

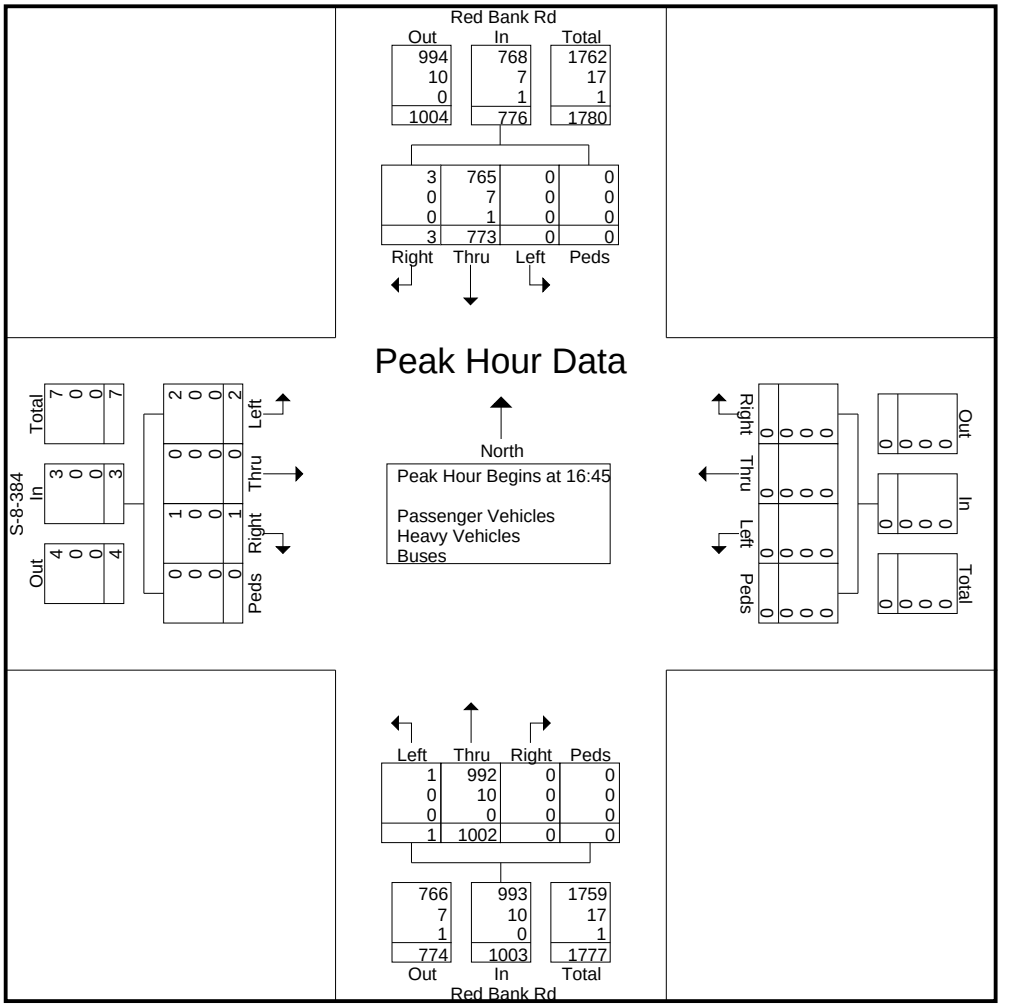


SHORT COUNTS, LLC

735 Maryland St
Columbia, SC 29201
We can't say we're the Best, but you Can!

File Name : Red Bank Rd @ S-8-384
Site Code :
Start Date : 01/19/2022
Page No : 4

	Red Bank Rd Southbound					Westbound					Red Bank Rd Northbound					S-8-384 Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	0	190	0	0	190	0	0	0	0	0	0	245	0	0	245	0	0	**1**	0	**1**	436
17:00	0	189	**1**	0	190	0	0	0	0	0	0	**276**	0	0	**276**	**1**	0	0	0	1	**467**
17:15	0	195	1	0	196	0	0	0	0	0	**1**	246	0	0	247	0	0	0	0	0	443
17:30	0	**199**	1	0	**200**	0	0	0	0	0	0	235	0	0	235	1	0	0	0	1	436
Total Volume	0	773	3	0	776	0	0	0	0	0	1	1002	0	0	1003	2	0	1	0	3	1782
% App. Total	0	99.6	0.4	0		0	0	0	0		0.1	99.9	0	0		66.7	0	33.3	0		
PHF	.000	.971	.750	.000	.970	.000	.000	.000	.000	.000	.250	.908	.000	.000	.909	.500	.000	.250	.000	.750	.954
Passenger Vehicles	0	765	3	0	768	0	0	0	0	0	1	992	0	0	993	2	0	1	0	3	1764
% Passenger Vehicles																					
Heavy Vehicles	0	7	0	0	7	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	17
% Heavy Vehicles	0	0.9	0	0	0.9	0	0	0	0	0	0	1.0	0	0	1.0	0	0	0	0	0	1.0
Buses	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Buses	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1



SHORT COUNTS, LLC

735 Maryland St
Columbia, SC 29201

We can't say we're the Best, but you Can!

File Name : Red Bank Rd @ Wisteria Rd
Site Code :
Start Date : 01/19/2022
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles - Buses

	Red Bank Rd Southbound				Wisteria Rd Westbound				Red Bank Rd Northbound				Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00	4	189	0	0	5	0	7	0	0	109	0	0	0	0	0	0	314
07:15	3	262	0	0	7	0	9	0	0	120	1	0	0	0	0	0	402
07:30	3	233	0	0	5	0	4	0	0	195	3	0	0	0	0	0	443
07:45	6	194	0	0	4	0	8	0	0	138	6	0	0	0	0	0	356
Total	16	878	0	0	21	0	28	0	0	562	10	0	0	0	0	0	1515
08:00	6	143	0	0	6	0	11	1	0	114	4	0	0	0	0	0	285
08:15	10	149	0	0	7	0	8	0	0	103	1	0	0	0	0	0	278
08:30	14	140	0	0	4	0	6	0	0	101	4	0	0	0	0	0	269
08:45	9	137	0	0	8	0	13	2	0	106	5	0	0	0	0	0	280
Total	39	569	0	0	25	0	38	3	0	424	14	0	0	0	0	0	1112
16:00	13	168	0	1	9	0	10	0	0	228	6	0	0	0	0	0	435
16:15	21	166	0	0	5	0	11	0	0	199	5	0	0	0	0	0	407
16:30	13	150	0	0	8	0	14	0	0	238	5	0	0	0	0	0	428
16:45	20	185	0	0	8	0	14	0	0	224	9	0	0	0	0	0	460
Total	67	669	0	1	30	0	49	0	0	889	25	0	0	0	0	0	1730
17:00	22	167	0	0	14	0	16	0	0	248	8	0	0	0	0	0	475
17:15	16	199	0	0	7	0	12	0	0	246	1	0	0	0	0	0	481
17:30	20	180	0	0	9	0	14	1	0	234	9	0	0	0	0	0	467
17:45	20	176	0	0	4	0	10	1	0	221	7	0	0	0	0	0	439
Total	78	722	0	0	34	0	52	2	0	949	25	0	0	0	0	0	1862
Grand Total	200	2838	0	1	110	0	167	5	0	2824	74	0	0	0	0	0	6219
Apprch %	6.6	93.4	0	0	39	0	59.2	1.8	0	97.4	2.6	0	0	0	0	0	
Total %	3.2	45.6	0	0	1.8	0	2.7	0.1	0	45.4	1.2	0	0	0	0	0	
Passenger Vehicles	195	2769	0	1	108	0	163	5	0	2778	69	0	0	0	0	0	6088
% Passenger Vehicles	97.5	97.6	0	100	98.2	0	97.6	100	0	98.4	93.2	0	0	0	0	0	97.9
Heavy Vehicles	5	64	0	0	2	0	4	0	0	42	4	0	0	0	0	0	121
% Heavy Vehicles	2.5	2.3	0	0	1.8	0	2.4	0	0	1.5	5.4	0	0	0	0	0	1.9
Buses	0	5	0	0	0	0	0	0	0	4	1	0	0	0	0	0	10
% Buses	0	0.2	0	0	0	0	0	0	0	0.1	1.4	0	0	0	0	0	0.2

SHORT COUNTS, LLC

735 Maryland St
Columbia, SC 29201
We can't say we're the Best, but you Can!

File Name : Red Bank Rd @ Wisteria Rd
Site Code :
Start Date : 01/19/2022
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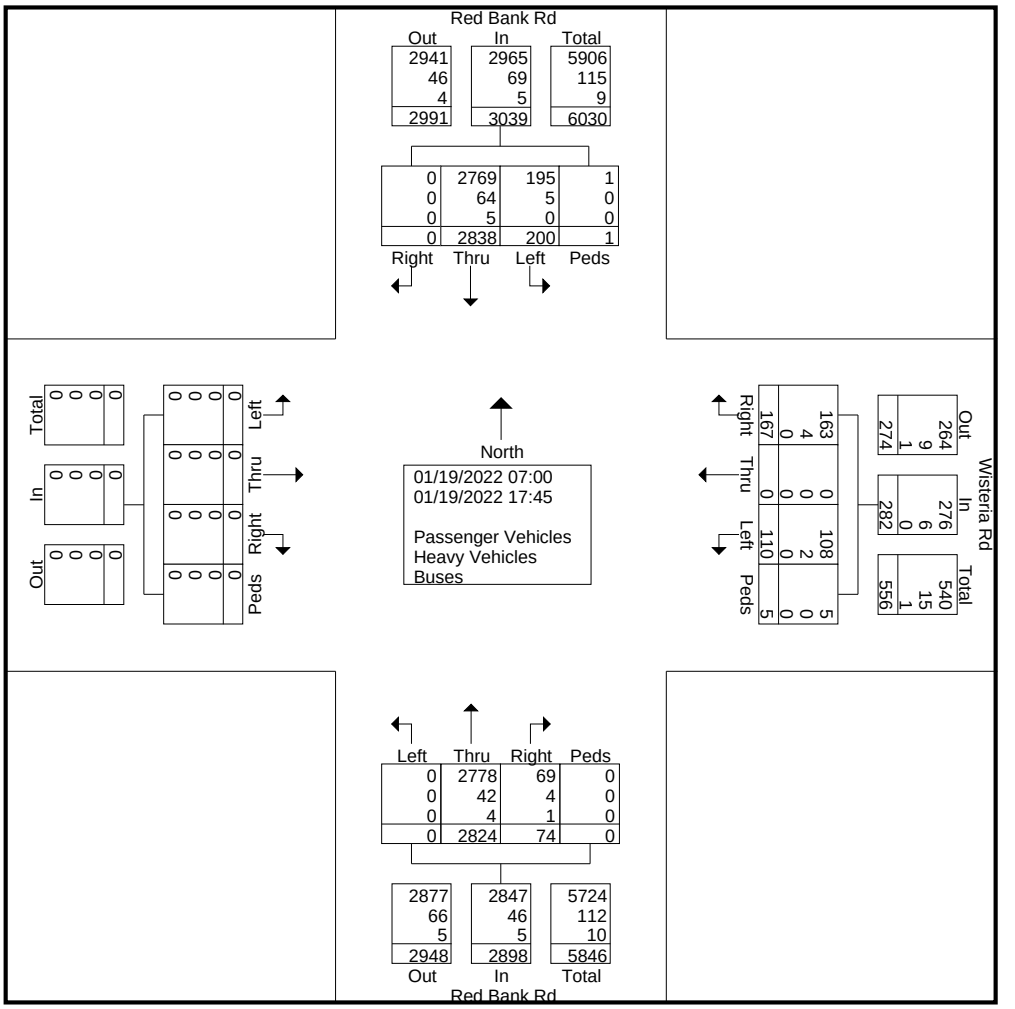

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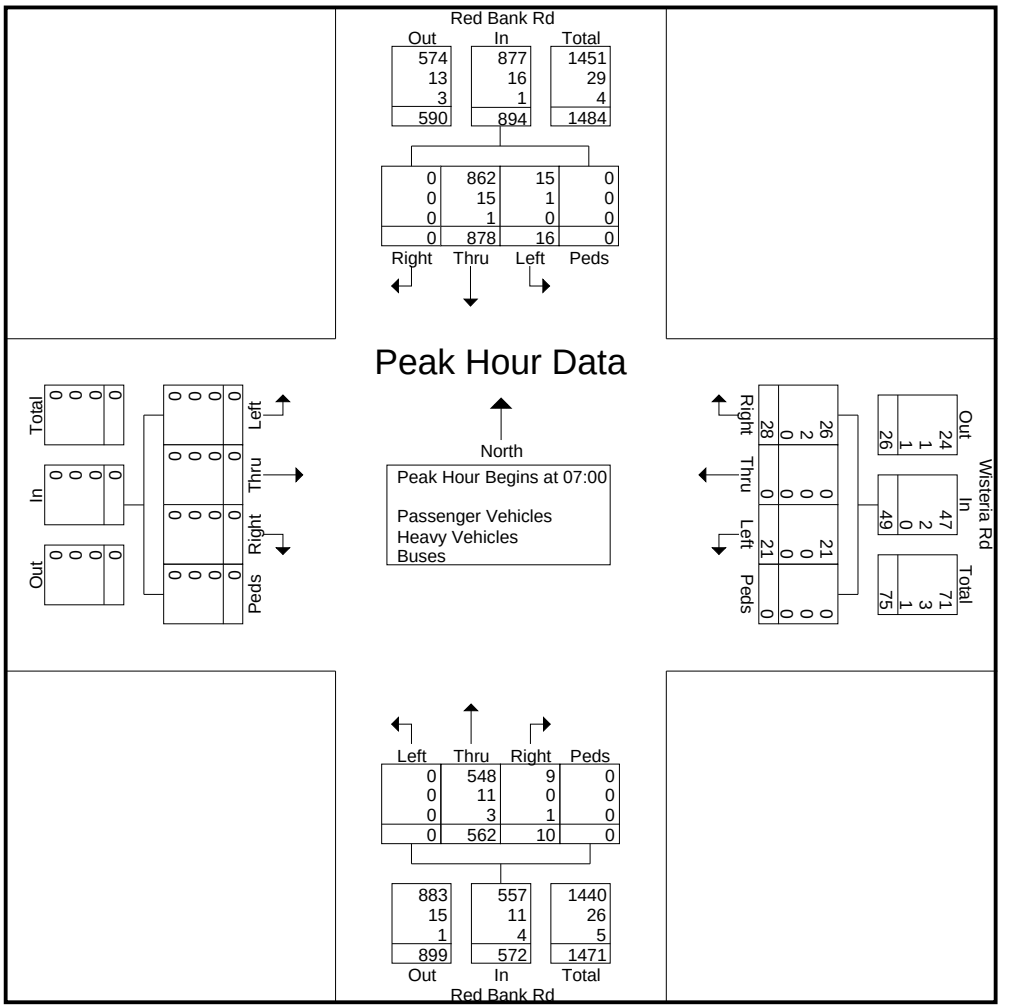
File Name : Red Bank Rd @ Wisteria Rd
Site Code :
Start Date : 01/19/2022
Page No : 3

	Red Bank Rd Southbound					Wisteria Rd Westbound					Red Bank Rd Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	4	189	0	0	193	5	0	7	0	12	0	109	0	0	109	0	0	0	0	0	314
07:15	3	**262**	0	0	**265**	**7**	0	**9**	0	**16**	0	120	1	0	121	0	0	0	0	0	402
07:30	3	233	0	0	236	5	0	4	0	9	0	**195**	3	0	**198**	0	0	0	0	0	**443**
07:45	**6**	194	0	0	200	4	0	8	0	12	0	138	**6**	0	144	0	0	0	0	0	356
Total Volume	16	878	0	0	894	21	0	28	0	49	0	562	10	0	572	0	0	0	0	0	1515
% App. Total	1.8	98.2	0	0		42.9	0	57.1	0		0	98.3	1.7	0		0	0	0	0		
PHF	.667	.838	.000	.000	.843	.750	.000	.778	.000	.766	.000	.721	.417	.000	.722	.000	.000	.000	.000	.000	.855
Passenger Vehicles	15	862	0	0	877	21	0	26	0	47	0	548	9	0	557	0	0	0	0	0	1481
% Passenger Vehicles																					
Heavy Vehicles	1	15	0	0	16	0	0	2	0	2	0	11	0	0	11	0	0	0	0	0	29
% Heavy Vehicles	6.3	1.7	0	0	1.8	0	0	7.1	0	4.1	0	2.0	0	0	1.9	0	0	0	0	0	1.9
Buses	0	1	0	0	1	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	5
% Buses	0	0.1	0	0	0.1	0	0	0	0	0	0	0.5	10.0	0	0.7	0	0	0	0	0	0.3



SHORT COUNTS, LLC

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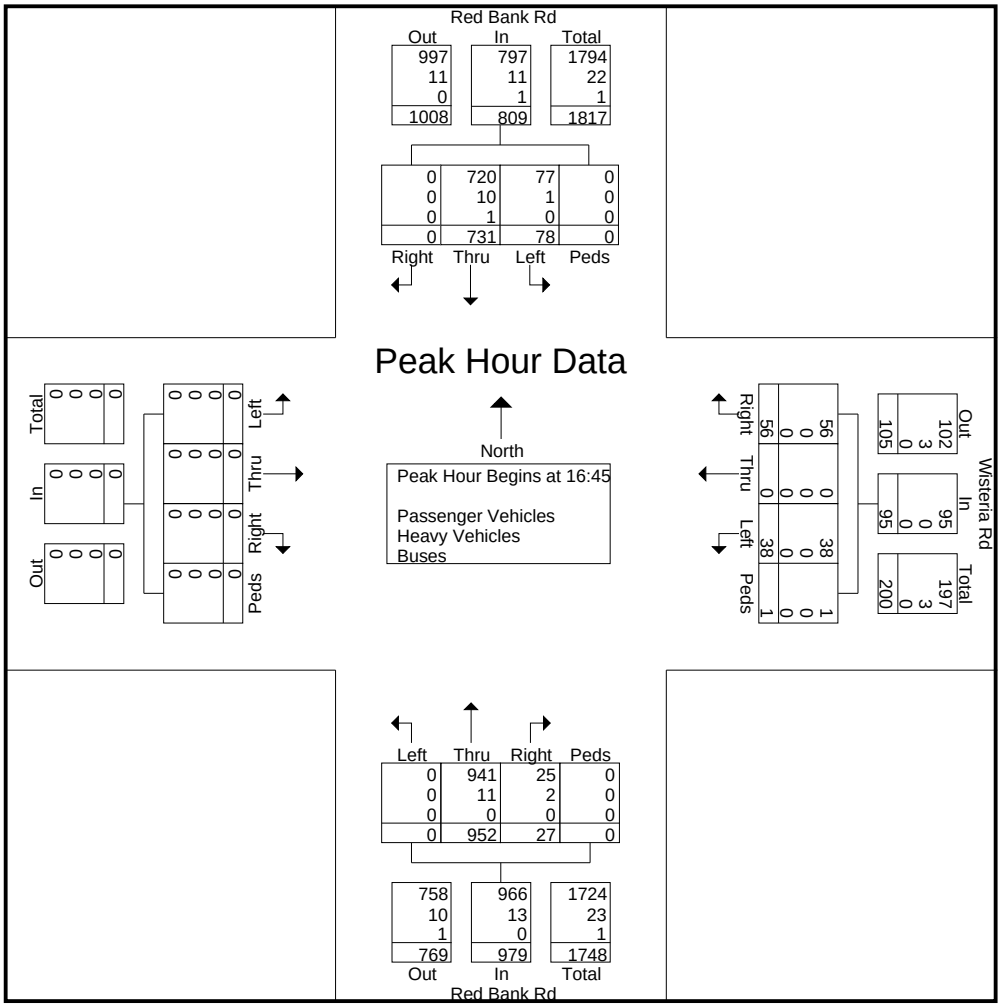
File Name : Red Bank Rd @ Wisteria Rd
Site Code :
Start Date : 01/19/2022
Page No : 4

	Red Bank Rd Southbound					Wisteria Rd Westbound					Red Bank Rd Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	20	185	0	0	205	8	0	14	0	22	0	224	**9**	0	233	0	0	0	0	0	460
17:00	**22**	167	0	0	189	**14**	0	**16**	0	**30**	0	**248**	8	0	**256**	0	0	0	0	0	475
17:15	16	**199**	0	0	**215**	7	0	12	0	19	0	246	1	0	247	0	0	0	0	0	**481**
17:30	20	180	0	0	200	9	0	14	**1**	24	0	234	9	0	243	0	0	0	0	0	467
Total Volume	78	731	0	0	809	38	0	56	1	95	0	952	27	0	979	0	0	0	0	0	1883
% App. Total	9.6	90.4	0	0		40	0	58.9	1.1		0	97.2	2.8	0		0	0	0	0		
PHF	.886	.918	.000	.000	.941	.679	.000	.875	.250	.792	.000	.960	.750	.000	.956	.000	.000	.000	.000	.000	.979
Passenger Vehicles	77	720	0	0	797	38	0	56	1	95	0	941	25	0	966	0	0	0	0	0	1858
% Passenger Vehicles																					
Heavy Vehicles	1	10	0	0	11	0	0	0	0	0	0	11	2	0	13	0	0	0	0	0	24
% Heavy Vehicles	1.3	1.4	0	0	1.4	0	0	0	0	0	0	1.2	7.4	0	1.3	0	0	0	0	0	1.3
Buses	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Buses	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1



Appendix C TRAFFIC VOLUME DEVELOPMENT WORKSHEETS

1 - Gary Street & Red Bank Road

Traffic Control: TWSC
Date Counted: 1/19/2022

TOTAL PROJECT TRAFFIC

	IN	OUT		IN	OUT
AM	**31**	**63**	PM	**73**	**55**

AM PEAK HOUR 7:00 AM - 8:00 AM	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
2022 Existing Traffic Volumes	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**569**	**0**	**0**	**897**	**0**
Years to Buildout	3	3	3	3	3	3	3	3	3	3	3	3
Yearly Growth Rate	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Background Traffic	0	0	0	0	0	0	0	17	0	0	27	0
Vested Traffic												
2025 No Build Traffic Volumes	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**586**	**0**	**0**	**924**	**0**
Inbound Project Traffic %												
Outbound Project Traffic %								30%			50%	
2025 Project Traffic	0	0	0	0	0	0	0	19	0	0	32	0
2025 Pass-By Traffic												
2025 Build Traffic Volumes	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**605**	**0**	**0**	**956**	**0**

PM PEAK HOUR 4:45 PM - 5:45 PM	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
2022 Existing Traffic Volumes	**2**	**0**	**1**	**0**	**0**	**0**	**1**	**1,002**	**0**	**0**	**773**	**3**
Years to Buildout	3	3	3	3	3	3	3	3	3	3	3	3
Yearly Growth Rate	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Background Traffic	0	0	0	0	0	0	0	30	0	0	23	0
Vested Traffic												
2025 No Build Traffic Volumes	**2**	**0**	**1**	**0**	**0**	**0**	**1**	**1,032**	**0**	**0**	**796**	**3**
Inbound Project Traffic %												
Outbound Project Traffic %								30%			50%	
2025 Project Traffic	0	0	0	0	0	0	0	17	0	0	28	0
2025 Pass-By Traffic												
2025 Build Traffic Volumes	**2**	**0**	**1**	**0**	**0**	**0**	**1**	**1,049**	**0**	**0**	**824**	**3**

2 - Wisteria Road & Red Bank Road

Traffic Control: Signal
Date Counted: 1/19/2022

TOTAL PROJECT TRAFFIC

	IN	OUT
AM	**31**	**63**
PM	**73**	**55**

AM PEAK HOUR 7:00 AM - 8:00 AM	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2022 Existing Traffic Volumes	**0**	**0**	**0**	**21**	**0**	**28**	**0**	**562**	**10**	**16**	**878**	**0**
Years to Buildout	3	3	3	3	3	3	3	3	3	3	3	3
Yearly Growth Rate	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Background Traffic	0	0	0	1	0	1	0	17	0	0	26	0
Vested Traffic												
2025 No Build Traffic Volumes	**0**	**0**	**0**	**22**	**0**	**29**	**0**	**579**	**10**	**16**	**904**	**0**
Inbound Project Traffic %										50%		
Outbound Project Traffic %				50%		20%		30%				
2025 Project Traffic	0	0	0	32	0	13	0	19	0	16	0	0
2025 Pass-By Traffic				1						2	-2	
2025 Build Traffic Volumes	**0**	**0**	**0**	**55**	**0**	**42**	**0**	**598**	**10**	**34**	**902**	**0**

PM PEAK HOUR 4:45 PM - 5:45 PM	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2022 Existing Traffic Volumes	**0**	**0**	**0**	**38**	**0**	**56**	**0**	**952**	**27**	**78**	**731**	**0**
Years to Buildout	3	3	3	3	3	3	3	3	3	3	3	3
Yearly Growth Rate	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Background Traffic	0	0	0	1	0	2	0	29	1	2	22	0
Vested Traffic												
2025 No Build Traffic Volumes	**0**	**0**	**0**	**39**	**0**	**58**	**0**	**981**	**28**	**80**	**753**	**0**
Inbound Project Traffic %										50%		
Outbound Project Traffic %				50%		20%		30%				
2025 Project Traffic	0	0	0	28	0	10	0	17	0	37	0	0
2025 Pass-By Traffic				6						6	-6	
2025 Build Traffic Volumes	**0**	**0**	**0**	**73**	**0**	**68**	**0**	**998**	**28**	**123**	**747**	**0**

3 - Project Driveway #1 & Red Bank Road												
					TOTAL PROJECT TRAFFIC							
Traffic Control: TWSC					IN	OUT		IN	OUT			
Date Counted: 1/0/1900				AM	**31**	**63**	PM	**73**	**55**			
AM PEAK HOUR 12:00 AM -	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
2022 Existing Traffic Volumes	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**569**	**0**	**0**	**897**	**0**
Years to Buildout	3	3	3	3	3	3	3	3	3	3	3	3
Yearly Growth Rate	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Background Traffic	0	0	0	0	0	0	0	17	0	0	27	0
Vested Traffic												
2025 No Build Traffic Volumes	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**586**	**0**	**0**	**924**	**0**
Inbound Project Traffic %									50%			
Outbound Project Traffic %						30%					50%	
2025 Project Traffic	0	0	0	0	0	19	0	0	15	0	32	0
2025 Pass-By Traffic						2		-2	2			
2025 Build Traffic Volumes	**0**	**0**	**0**	**0**	**0**	**21**	**0**	**584**	**17**	**0**	**956**	**0**

PM PEAK HOUR 12:00 AM -	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
2022 Existing Traffic Volumes	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,002**	**0**	**0**	**774**	**0**
Years to Buildout	3	3	3	3	3	3	3	3	3	3	3	3
Yearly Growth Rate	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Background Traffic	0	0	0	0	0	0	0	30	0	0	23	0
Vested Traffic												
2025 No Build Traffic Volumes	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,032**	**0**	**0**	**797**	**0**
Inbound Project Traffic %									50%			
Outbound Project Traffic %						30%					50%	
2025 Project Traffic	0	0	0	0	0	17	0	0	36	0	28	0
2025 Pass-By Traffic						6		-6	6			
2025 Build Traffic Volumes	**0**	**0**	**0**	**0**	**0**	**23**	**0**	**1,026**	**42**	**0**	**825**	**0**

4 - Wisteria Road & Project Driveway #2

Traffic Control: TWSC
Date Counted: 1/0/1900

TOTAL PROJECT TRAFFIC

	IN	OUT
AM	**31**	**63**
PM	**73**	**55**

AM PEAK HOUR 12:00 AM -	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2022 Existing Traffic Volumes	**0**	**26**	**0**	**0**	**49**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Years to Buildout	3	3	3	3	3	3	3	3	3	3	3	3
Yearly Growth Rate	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Background Traffic	0	1	0	0	1	0	0	0	0	0	0	0
Vested Traffic												
2025 No Build Traffic Volumes	**0**	**27**	**0**	**0**	**50**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Inbound Project Traffic %			50%									
Outbound Project Traffic %							70%					
2025 Project Traffic	0	0	16	0	0	0	44	0	0	0	0	0
2025 Pass-By Traffic			2				1					
2025 Build Traffic Volumes	**0**	**27**	**18**	**0**	**50**	**0**	**45**	**0**	**0**	**0**	**0**	**0**

PM PEAK HOUR 12:00 AM -	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2022 Existing Traffic Volumes	**0**	**105**	**0**	**0**	**94**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Years to Buildout	3	3	3	3	3	3	3	3	3	3	3	3
Yearly Growth Rate	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Background Traffic	0	3	0	0	3	0	0	0	0	0	0	0
Vested Traffic												
2025 No Build Traffic Volumes	**0**	**108**	**0**	**0**	**97**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Inbound Project Traffic %			50%									
Outbound Project Traffic %							70%					
2025 Project Traffic	0	0	37	0	0	0	38	0	0	0	0	0
2025 Pass-By Traffic			6				6					
2025 Build Traffic Volumes	**0**	**108**	**43**	**0**	**97**	**0**	**44**	**0**	**0**	**0**	**0**	**0**

Appendix D ANALYSIS WORKSHEETS: 2022 EXISTING CONDITIONS

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	0	0	569	897	0
Future Vol, veh/h	2	0	0	569	897	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	180	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	0	0	669	1055	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1390	528	1055	0	-	0
Stage 1	1055	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	133	495	656	-	-	-
Stage 1	296	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	133	495	656	-	-	-
Mov Cap-2 Maneuver	237	-	-	-	-	-
Stage 1	296	-	-	-	-	-
Stage 2	697	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	656	-	237	-	-
HCM Lane V/C Ratio	-	-	0.01	-	-
HCM Control Delay (s)	0	-	20.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	21	28	562	10	16	878
Future Volume (veh/h)	21	28	562	10	16	878
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1841	1841	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	33	653	12	19	1021
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	4	4	2	2	2	2
Cap, veh/h	32	44	1723	32	497	2317
Arrive On Green	0.05	0.05	0.48	0.48	0.02	0.65
Sat Flow, veh/h	678	933	3663	66	1781	3647
Grp Volume(v), veh/h	58	0	325	340	19	1021
Grp Sat Flow(s),veh/h/ln	1639	0	1777	1859	1781	1777
Q Serve(g_s), s	1.4	0.0	4.6	4.6	0.2	5.6
Cycle Q Clear(g_c), s	1.4	0.0	4.6	4.6	0.2	5.6
Prop In Lane	0.41	0.57		0.04	1.00	
Lane Grp Cap(c), veh/h	78	0	858	897	497	2317
V/C Ratio(X)	0.74	0.00	0.38	0.38	0.04	0.44
Avail Cap(c_a), veh/h	657	0	858	897	865	2848
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.8	0.0	6.5	6.5	4.6	3.4
Incr Delay (d2), s/veh	13.1	0.0	0.3	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.9	1.0	0.0	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	31.8	0.0	6.8	6.8	4.6	3.5
LnGrp LOS	C	A	A	A	A	A
Approach Vol, veh/h	58		665			1040
Approach Delay, s/veh	31.8		6.8			3.5
Approach LOS	C		A			A

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.0		7.9	6.8	25.3
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		32.0		16.0	9.0	17.0
Max Q Clear Time (g_c+I1), s		7.6		3.4	2.2	6.6
Green Ext Time (p_c), s		18.4		0.1	0.0	6.6

Intersection Summary	
HCM 6th Ctrl Delay	5.7
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	1	1	1002	773	3
Future Vol, veh/h	2	1	1	1002	773	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	180	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	1	1	1055	814	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1346	409	817	0	-	0
Stage 1	816	-	-	-	-	-
Stage 2	530	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	143	592	807	-	-	-
Stage 1	395	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	143	592	807	-	-	-
Mov Cap-2 Maneuver	273	-	-	-	-	-
Stage 1	395	-	-	-	-	-
Stage 2	555	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	807	-	333	-	-
HCM Lane V/C Ratio	0.001	-	0.009	-	-
HCM Control Delay (s)	9.5	-	15.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	38	56	952	27	78	731
Future Volume (veh/h)	38	56	952	27	78	731
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	57	971	28	80	746
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	49	72	1445	42	393	2208
Arrive On Green	0.07	0.07	0.41	0.41	0.06	0.62
Sat Flow, veh/h	668	976	3621	102	1781	3647
Grp Volume(v), veh/h	97	0	489	510	80	746
Grp Sat Flow(s),veh/h/ln	1661	0	1777	1852	1781	1777
Q Serve(g_s), s	2.3	0.0	8.8	8.8	0.9	4.0
Cycle Q Clear(g_c), s	2.3	0.0	8.8	8.8	0.9	4.0
Prop In Lane	0.40	0.59		0.05	1.00	
Lane Grp Cap(c), veh/h	123	0	728	759	393	2208
V/C Ratio(X)	0.79	0.00	0.67	0.67	0.20	0.34
Avail Cap(c_a), veh/h	675	0	767	800	695	2889
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	0.0	9.5	9.5	6.5	3.6
Incr Delay (d2), s/veh	10.8	0.0	2.2	2.1	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	2.4	2.5	0.2	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.7	0.0	11.6	11.5	6.7	3.7
LnGrp LOS	C	A	B	B	A	A
Approach Vol, veh/h	97		999			826
Approach Delay, s/veh	28.7		11.6			4.0
Approach LOS	C		B			A

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		30.5		8.9	8.3	22.1
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		32.0		16.0	9.0	17.0
Max Q Clear Time (g_c+I1), s		6.0		4.3	2.9	10.8
Green Ext Time (p_c), s		15.0		0.2	0.1	5.3

Intersection Summary	
HCM 6th Ctrl Delay	9.2
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Appendix E ANALYSIS WORKSHEETS: 2025 NO BUILD CONDITIONS

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	0	0	586	924	0
Future Vol, veh/h	2	0	0	586	924	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	180	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	0	0	651	1027	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1353	514	1027	0	-	0
Stage 1	1027	-	-	-	-	-
Stage 2	326	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	141	505	672	-	-	-
Stage 1	306	-	-	-	-	-
Stage 2	704	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	141	505	672	-	-	-
Mov Cap-2 Maneuver	245	-	-	-	-	-
Stage 1	306	-	-	-	-	-
Stage 2	704	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	672	-	245	-	-
HCM Lane V/C Ratio	-	-	0.009	-	-
HCM Control Delay (s)	0	-	19.8	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	22	29	579	10	16	904
Future Volume (veh/h)	22	29	579	10	16	904
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1841	1841	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	32	643	11	18	1004
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	4	4	2	2	2	2
Cap, veh/h	32	43	1718	29	499	2310
Arrive On Green	0.05	0.05	0.48	0.48	0.02	0.65
Sat Flow, veh/h	691	921	3669	61	1781	3647
Grp Volume(v), veh/h	57	0	319	335	18	1004
Grp Sat Flow(s),veh/h/ln	1640	0	1777	1859	1781	1777
Q Serve(g_s), s	1.4	0.0	4.5	4.5	0.2	5.5
Cycle Q Clear(g_c), s	1.4	0.0	4.5	4.5	0.2	5.5
Prop In Lane	0.42	0.56		0.03	1.00	
Lane Grp Cap(c), veh/h	77	0	854	893	499	2310
V/C Ratio(X)	0.74	0.00	0.37	0.37	0.04	0.43
Avail Cap(c_a), veh/h	662	0	854	893	872	2870
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	0.0	6.5	6.5	4.6	3.4
Incr Delay (d2), s/veh	12.8	0.0	0.3	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.9	0.9	0.0	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	31.5	0.0	6.8	6.8	4.6	3.5
LnGrp LOS	C	A	A	A	A	A
Approach Vol, veh/h	57		654			1022
Approach Delay, s/veh	31.5		6.8			3.5
Approach LOS	C		A			A

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		31.8		7.9	6.7	25.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		32.0		16.0	9.0	17.0
Max Q Clear Time (g_c+I1), s		7.5		3.4	2.2	6.5
Green Ext Time (p_c), s		18.3		0.1	0.0	6.6

Intersection Summary	
HCM 6th Ctrl Delay	5.7
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	1	1	1032	796	3
Future Vol, veh/h	2	1	1	1032	796	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	180	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	1	1	1086	838	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1385	421	841	0	-	0
Stage 1	840	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	134	581	790	-	-	-
Stage 1	384	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	134	581	790	-	-	-
Mov Cap-2 Maneuver	264	-	-	-	-	-
Stage 1	384	-	-	-	-	-
Stage 2	545	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	790	-	323	-	-
HCM Lane V/C Ratio	0.001	-	0.01	-	-
HCM Control Delay (s)	9.6	-	16.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	39	58	981	28	80	753
Future Volume (veh/h)	39	58	981	28	80	753
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	41	61	1033	29	84	793
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	52	78	1448	41	376	2207
Arrive On Green	0.08	0.08	0.41	0.41	0.06	0.62
Sat Flow, veh/h	661	983	3624	99	1781	3647
Grp Volume(v), veh/h	103	0	520	542	84	793
Grp Sat Flow(s),veh/h/ln	1660	0	1777	1853	1781	1777
Q Serve(g_s), s	2.4	0.0	9.8	9.8	0.9	4.4
Cycle Q Clear(g_c), s	2.4	0.0	9.8	9.8	0.9	4.4
Prop In Lane	0.40	0.59		0.05	1.00	
Lane Grp Cap(c), veh/h	131	0	729	760	376	2207
V/C Ratio(X)	0.79	0.00	0.71	0.71	0.22	0.36
Avail Cap(c_a), veh/h	664	0	755	788	669	2844
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	0.0	9.8	9.8	6.9	3.7
Incr Delay (d2), s/veh	9.9	0.0	3.1	2.9	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	2.8	2.9	0.2	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	27.9	0.0	12.9	12.8	7.2	3.8
LnGrp LOS	C	A	B	B	A	A
Approach Vol, veh/h	103		1062			877
Approach Delay, s/veh	27.9		12.8			4.1
Approach LOS	C		B			A

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		30.8		9.2	8.4	22.4
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		32.0		16.0	9.0	17.0
Max Q Clear Time (g_c+I1), s		6.4		4.4	2.9	11.8
Green Ext Time (p_c), s		15.6		0.2	0.1	4.6

Intersection Summary	
HCM 6th Ctrl Delay	9.9
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Appendix F ANALYSIS WORKSHEETS: 2025 BUILD CONDITIONS

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	0	0	605	956	0
Future Vol, veh/h	2	0	0	605	956	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	180	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	0	0	672	1062	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1398	531	1062	0	-	0
Stage 1	1062	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	132	493	652	-	-	-
Stage 1	294	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	132	493	652	-	-	-
Mov Cap-2 Maneuver	235	-	-	-	-	-
Stage 1	294	-	-	-	-	-
Stage 2	696	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	652	-	235	-	-
HCM Lane V/C Ratio	-	-	0.009	-	-
HCM Control Delay (s)	0	-	20.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	42	598	10	34	902
Future Volume (veh/h)	55	42	598	10	34	902
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1841	1841	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	47	664	11	38	1002
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	4	4	2	2	2	2
Cap, veh/h	78	60	1601	27	480	2227
Arrive On Green	0.08	0.08	0.45	0.45	0.03	0.63
Sat Flow, veh/h	932	718	3671	59	1781	3647
Grp Volume(v), veh/h	109	0	330	345	38	1002
Grp Sat Flow(s),veh/h/ln	1665	0	1777	1860	1781	1777
Q Serve(g_s), s	2.7	0.0	5.2	5.2	0.4	6.1
Cycle Q Clear(g_c), s	2.7	0.0	5.2	5.2	0.4	6.1
Prop In Lane	0.56	0.43		0.03	1.00	
Lane Grp Cap(c), veh/h	140	0	795	833	480	2227
V/C Ratio(X)	0.78	0.00	0.41	0.41	0.08	0.45
Avail Cap(c_a), veh/h	643	0	795	833	806	2743
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	0.0	7.8	7.8	5.3	4.0
Incr Delay (d2), s/veh	9.0	0.0	0.3	0.3	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	1.2	1.3	0.1	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	27.6	0.0	8.1	8.1	5.4	4.2
LnGrp LOS	C	A	A	A	A	A
Approach Vol, veh/h	109		675			1040
Approach Delay, s/veh	27.6		8.1			4.2
Approach LOS	C		A			A

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.0		9.5	7.4	24.6
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		32.0		16.0	9.0	17.0
Max Q Clear Time (g_c+I1), s		8.1		4.7	2.4	7.2
Green Ext Time (p_c), s		17.9		0.2	0.0	6.3

Intersection Summary	
HCM 6th Ctrl Delay	7.1
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	21	584	17	0	956
Future Vol, veh/h	0	21	584	17	0	956
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	649	19	0	1062

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	334	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	662	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	662	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	662	-
HCM Lane V/C Ratio	-	-	0.035	-
HCM Control Delay (s)	-	-	10.6	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-

Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	27	18	0	50	45	0
Future Vol, veh/h	27	18	0	50	45	0
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	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	20	0	56	50	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	50	0	96	40
Stage 1	-	-	-	-	40	-
Stage 2	-	-	-	-	56	-
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	-	-	1557	-	903	1031
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	967	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1557	-	903	1031
Mov Cap-2 Maneuver	-	-	-	-	903	-
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	967	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	903	-	-	1557	-
HCM Lane V/C Ratio	0.055	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	1	1	1049	824	3
Future Vol, veh/h	2	1	1	1049	824	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	180	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	1	1	1104	867	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1423	435	870	0	-	0
Stage 1	869	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	127	569	770	-	-	-
Stage 1	371	-	-	-	-	-
Stage 2	539	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	127	569	770	-	-	-
Mov Cap-2 Maneuver	256	-	-	-	-	-
Stage 1	371	-	-	-	-	-
Stage 2	539	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	770	-	313	-	-
HCM Lane V/C Ratio	0.001	-	0.01	-	-
HCM Control Delay (s)	9.7	-	16.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	73	68	998	28	123	747
Future Volume (veh/h)	73	68	998	28	123	747
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	77	72	1051	29	129	786
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	101	94	1373	38	367	2141
Arrive On Green	0.12	0.12	0.39	0.39	0.07	0.60
Sat Flow, veh/h	863	807	3626	97	1781	3647
Grp Volume(v), veh/h	150	0	529	551	129	786
Grp Sat Flow(s),veh/h/ln	1682	0	1777	1853	1781	1777
Q Serve(g_s), s	3.7	0.0	11.1	11.1	1.6	4.8
Cycle Q Clear(g_c), s	3.7	0.0	11.1	11.1	1.6	4.8
Prop In Lane	0.51	0.48		0.05	1.00	
Lane Grp Cap(c), veh/h	196	0	691	720	367	2141
V/C Ratio(X)	0.76	0.00	0.77	0.77	0.35	0.37
Avail Cap(c_a), veh/h	630	0	707	737	611	2661
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.3	0.0	11.4	11.4	8.2	4.3
Incr Delay (d2), s/veh	6.1	0.0	4.9	4.7	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	3.7	3.8	0.4	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.4	0.0	16.3	16.1	8.8	4.4
LnGrp LOS	C	A	B	B	A	A
Approach Vol, veh/h	150		1080			915
Approach Delay, s/veh	24.4		16.2			5.1
Approach LOS	C		B			A

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		31.7		11.0	9.1	22.6
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		32.0		16.0	9.0	17.0
Max Q Clear Time (g_c+I1), s		6.8		5.7	3.6	13.1
Green Ext Time (p_c), s		15.3		0.3	0.1	3.5

Intersection Summary	
HCM 6th Ctrl Delay	12.0
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	23	1026	42	0	825
Future Vol, veh/h	0	23	1026	42	0	825
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	26	1140	47	0	917

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	594	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	448	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	448	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	448	-
HCM Lane V/C Ratio	-	-	0.057	-
HCM Control Delay (s)	-	-	13.5	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	108	43	0	97	44	0
Future Vol, veh/h	108	43	0	97	44	0
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	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	120	48	0	108	49	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	168	0	252	144
Stage 1	-	-	-	-	144	-
Stage 2	-	-	-	-	108	-
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	-	-	1410	-	737	903
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1410	-	737	903
Mov Cap-2 Maneuver	-	-	-	-	737	-
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	916	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	737	-	-	1410	-
HCM Lane V/C Ratio	0.066	-	-	-	-
HCM Control Delay (s)	10.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Appendix G TURN LANE ANALYSIS WORKSHEETS

Stantec

Study Area Information

County:	Berkeley County	Date:	1/31/2022
SCDOT Engineering District:	District 6	Analyst:	Claudia Thompson
Analysis Year:	2025	Agency:	**Stantec Consulting Services Inc.**

Intersection:	Red Bank Road & Project Driveway #1
Left Turn Movement:	
Right Turn Movement:	Northbound Right-Turn Lane

Posted Speed Limit:	45 *mph*	Median:	Undivided
# of Approach Lanes:	2	Urban or Rural?	Urban

Volume Information & Calculations

Left Turn Lane Volume Calculations

Movement		Volume (vph) AM	Volume (vph) PM
Advancing	Left		
	Through	956	825
	Right		
Opposing	Left		
	Through	584	1,026
	Right	17	42

	AM	PM
Advancing Volume:	956	825
Opposing Volume:	601	1,068
Left Turn Volume:	0	0
% Left Turns in Advancing Volume:	0.0%	0.0%

Right Turn Lane Volume Calculations

Movement		Volume (vph) AM	Volume (vph) PM
Advancing	Left	0	0
	Through	584	1,026
	Right	17	42

Adjustment to Right Turn Volume[1]: Include? No

	AM	PM
Advancing Volume:	601	1,068
Right Turn Volume:	17	42

Turn Lane Warrant Met?

Left Turn Lane Warrant	
Applicable Warrant Chart:	**Fig 9.5-F**
Warrant Satisfied:	**#N/A**

Right Turn Lane Warrant	
Applicable Warrant Chart:	**N/A**
Warrant Satisfied:	**N/A**

Recommneded Turn Lane Length

Advancing Approach Truck%: 2%

Advancing Approach Truck%: 2%

Left Turn Lane		
Storage Length (ft):	**#N/A**	ft
Taper Length (ft):	**#N/A**	ft
Total Left Turn Lane (ft):	**#N/A**	ft

Right Turn Lane		
Storage Length:	**N/A**	ft
Taper Length:	**N/A**	ft
Total Left Turn Lane:	**N/A**	ft

Consider providing dual-turn lanes if the turning volumes are greater than 300 vehicles per hour. A traffic analysis will be required if the turning volumes are greater than 300 vehicles per hour.

The traffic designer should review the design to determine if longer turn lane lengths are required.

Right-turn lane guidelines are only applicable for right turn lanes at unsignalised intersections on either two lane highways or four lane highways with a design speed of 50 miles per hour or greater.

Source: SCDOT Roadway Design Manual (2021), SCDOT Access and Roadside Management Standards (2008), and TRB Highway Research Record 211, Volume Warrants for Left Turn Storage Lanes at Unsignalized Grade Intersections.

Stantec

Study Area Information

County:	Berkeley County	Date:	1/31/2022
SCDOT Engineering District:	District 6	Analyst:	Claudia Thompson
Analysis Year:	2025	Agency:	**Stantec Consulting Services Inc.**

Intersection:	Wisteria Road & Project Driveway #1
Left Turn Movement:	Westbound Left-Turn Lane
Right Turn Movement:	Eastbound Right-Turn Lane

Posted Speed Limit:	30 *mph*	Median:	Undivided
# of Approach Lanes:	1	Urban or Rural?	Urban

Volume Information & Calculations

Left Turn Lane Volume Calculations

Movement		Volume (vph) AM	Volume (vph) PM
Advancing	Left	0	0
	Through	50	97
	Right		
Opposing	Left		
	Through	27	108
	Right	18	43

	AM	PM
Advancing Volume:	50	97
Opposing Volume:	45	151
Left Turn Volume:	0	0
% Left Turns in Advancing Volume:	0.0%	0.0%

Right Turn Lane Volume Calculations

Movement		Volume (vph) AM	Volume (vph) PM
Advancing	Left	0	0
	Through	27	108
	Right	18	43

Adjustment to Right Turn Volume[1]: Include? No

	AM	PM
Advancing Volume:	45	151
Right Turn Volume:	18	43

Turn Lane Warrant Met?

Left Turn Lane Warrant	
Applicable Warrant Chart:	**N/A**
Warrant Satisfied:	**N/A**

Right Turn Lane Warrant	
Applicable Warrant Chart:	**Fig 9.5-A**
Warrant Satisfied:	**No**

Recommneded Turn Lane Length

Advancing Approach Truck%:	2%	Advancing Approach Truck%:	2%

Left Turn Lane			Right Turn Lane		
Storage Length (ft):	**N/A**	ft	Storage Length:	**N/A**	ft
Taper Length (ft):	**N/A**	ft	Taper Length:	**N/A**	ft
Total Left Turn Lane (ft):	**N/A**	ft	Total Left Turn Lane:	**N/A**	ft

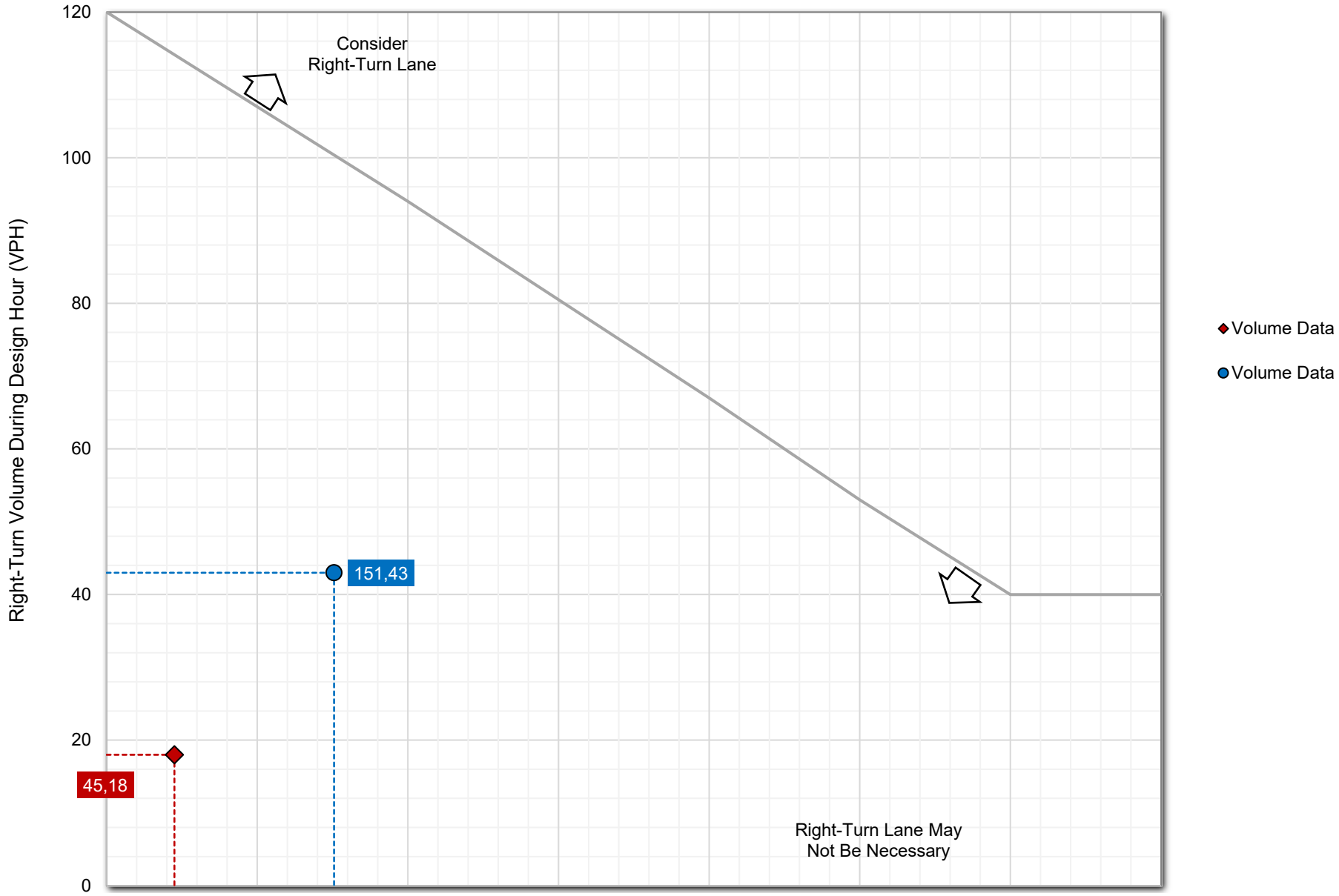
Consider providing dual-turn lanes if the turning volumes are greater than 300 vehicles per hour. A traffic analysis will be required if the turning volumes are greater than 300 vehicles per hour.

The traffic designer should review the design to determine if longer turn lane lengths are required.

1 For highways with a design speed below 50 miles per hour with a DHV < 300 and where right turns > 40, an adjustment should be used. To read the vertical axis of the chart, actual number of right turns was reduced by 20.

Source: SCDOT Roadway Design Manual (2021), SCDOT Access and Roadside Management Standards (2008), and TRB Highway Research Record 211, Volume Warrants for Left Turn Storage Lanes at Unsignalized Grade Intersections.

GUIDELINES FOR RIGHT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON TWO-LANE HIGHWAYS
Figure 9.5-A, (SCDOT ROADWAY DESIGN MANUAL 2021)



Request for Planning Commission Agenda Item

To: Planning Commission

From: Kendra Wise, Planning and Zoning Director

Please check one box

☐ Regular Meeting ☐ Special Meeting

☐ Work Session

Please check one box, if applicable

☐ Ordinance ☐ Resolution ☐ Proclamation ☐ Request to Purchase

Ordinance/Resolution Title

ZONING TEXT AMENDMENT - REQUEST TO AMEND THE TEXT OF THE ZONING ORDINANCE (CHAPTER 151) OF THE CITY OF GOOSE CREEK ENTITLED "AN ORDINANCE AMENDING THE ZONING ORDINANCE OF GOOSE CREEK, SOUTH CAROLINA TO REQUIRE A TRAFFIC IMPACT ANALYSIS UNDER CERTAIN CONDITIONS"

Background Summary

If enacted, the text amendments contained in the Ordinance will apply generally to the development of property within the City and will expressly apply to the development of property that is subject to that certain Carnes Crossroads Development Agreement, originally dated May 9, 2006, as subsequently amended, restated, and/or assigned.

Financial Impact

Impact if denied

Impact if approved

Department Head: City Administrator:

_____ _____

Signature & Date *Signature & Date*

(A) Traffic Impact Analysis Required.

(1) A Traffic Impact Analysis (a "TIA") shall be required for all "developments," which shall include the following:

(a) All subdivisions (25 or more lots and/or any subdivision of property requiring new streets or roads, or the extension of new water and/or sewer infrastructure). The numerical study thresholds apply to a new subdivision, an expansion of an existing subdivision, and the cumulative construction of a subdivision in multiple phases.

(b) More than 25,000 square feet of building coverage in existing and/or new buildings.

(c) Any active development wherein substantial changes have occurred in pertinent conditions existing at the time of approval of the development which would, if not addressed, would pose a threat to the public health, safety, or welfare.

(2) The City Engineer may waive the preparation of a TIA or require a traffic statement as opposed to a full TIA if the proposed development is a component of a larger development for which a TIA has recently been provided and the Planning Director is reasonably certain that the results of a subsequent TIA would duplicate prior findings. The City Engineer may require additional components of a TIA if necessitated by special circumstances. Other traffic analysis may be required for any project, if determined by the City Engineer that the project impacts vehicular, bicycle, pedestrian, transit, or other mode of transportation in any way.

(B) Consultant; Standards.

(1) A TIA must be prepared by an on-call consultant (the "TIA Consultant") hired by the City of Goose Creek (the "City") at the expense of the applicant. The TIA Consultant shall be an engineer registered in South Carolina that is experienced in the conduct of traffic analyses.

(2) The standards in the South Carolina Department of Transportation's Access and Roadside Management Standards Manual shall serve as a guide for the TIA. The City will rely upon the most current edition ITE trip generation manual or any alternative acceptable to the City, and available information on land use, travel patterns and traffic conditions.

(C) Traffic Impact Analysis Plan Preparation.

(1) Prior to beginning the TIA, the applicant shall supply the City with the following:

(a) A written narrative describing the proposed land use(s), size and projected opening date of the development, including the current phase and all subsequent phases for phased developments;

(b) A site location map showing surrounding development within a one-half mile of the property under development consideration; and

(c) A proposed site plan or preliminary subdivision plat illustrating access to public or private roads and connectivity to other contiguous developments.

(2) After consulting with the SCDOT and Berkeley County, if applicable, the City Engineer will supply to the TIA Consultant with the parameters to be followed in the TIA, including the directional split of driveway traffic, trip distribution, background traffic growth rate, previously approved but not completed projects, and the intersections to be analyzed along with any associated turning movement counts which are available or discussed and approved by the City. The final scope of services and an estimate of the cost of the TIA (the "Estimate") shall be submitted to the City for approval.

(3) The applicant shall pay an amount equal to the Estimate to the City Engineer, who will deposit the amount in an escrow or special account set up for this purpose. Any funds not used shall be returned to the applicant in a timely manner without interest. The applicant may be required to pay additional costs associated with the TIA if: (i) the applicant substantially amends the application; (ii) additional meetings involving the consultant are requested by the applicant; (iii) the consultant's appearance is requested at Planning Commission or City Council meetings beyond what was anticipated in the scope of services; or (iv) the TIA Consultant's 's attendance is required at meetings with regional, State, or federal agencies or boards which were not anticipated in the Estimate. The applicant must pay all such costs prior to the development plan or plat approval.

(4) All phases of a development are subject to review, and all traffic plans for the entire development shall be integrated with the overall TIA. A TIA for a specific phase of development shall be applicable to the phase of development under immediate review; however, each phase of development shall expand and provide detailed analysis at the development plan stage beyond the estimates provided for at the concept plan or master plan stage. For master-planned and phased developments, the City Engineer may require that a TIA take into account subsequent phases of development that are reasonably knowable. The relative share of the capacity improvements needed shall be broken down as follows: development share, other developments share, any existing over capacity, and capacity available for future growth.

(D) Plan Contents.

(1) The following elements shall be included in a TIA:

(a) *Study Area* – Description of the study area including surrounding land uses and expected development in the vicinity that would influence future traffic conditions, including (i) intersections immediately adjacent to the development and other significant intersections identified by the City Engineer. A study area site map showing the site location is required.

(b) *Proposed Land Use* – Description of the current and proposed land use including characteristics such as the number and type of dwelling units, gross and leasable floor area, and number of employees, accompanied by a complete project site plan (with buildings identified as to proposed use), and a schedule for construction of the development and proposed development stages.

(c) *Existing Conditions* – Description of existing traffic conditions, adjusted for daily and seasonal variations, including existing AM and PM peak¬ hour traffic volumes adjacent to the site and levels of service for intersections in the study area, and other peak periods as may be determined by the City Engineer. The City Engineer may require that pedestrian counts be taken into consideration. Existing counts may be used if taken within 12 months. In most cases, counts should be taken when school is in session unless otherwise determined by the City Engineer. Other

information that may be required may include, but not limited to, crash data, stopping sight distances, and 50th and 85th percentile speeds.

(d) *Future Background Growth* – Estimate of future background traffic growth based on local or statewide growth factors, and considering State, local, or private transportation improvement projects in the study area that will be underway in the build-out year and traffic that is generated by other proposed developments in the study area. If the planned completion date for the project or the last phase of the project is beyond one year of the study an estimate of background traffic growth for the adjacent street network shall be made and included in the analysis.

(e) *Estimate of Trip Generation* – The site forecasted trips should be based on the most recent edition of the ITE Trip Generation Manual. A table should be provided in the report outlining the categories and quantities of land uses, with the corresponding trip generation rates or equations, and the resulting number of trips. The reason for using the rate or equation should be documented. For large developments that will have multiple phases, the table should be divided based on the trip generation for each phase. Any reductions for any reason should be justified and documented. All trip generation and trip reduction calculations and supporting documentation shall be included in the TIA appendix.

(f) *Trip Distribution and Traffic Assignment* – The distribution (inbound versus outbound, left turn versus right turn) of the estimated trip generation to the adjacent street network and nearby intersections shall be included in the report and the basis should be explained. The distribution percentages with the corresponding volumes should be provided in a graphical format.

(g) *Analysis and Estimate of Impact* – A capacity analysis should be performed at each of the study area intersections and access intersection locations (signalized and unsignalized), including a level-of-service determination for all approaches and movements. Coordination analysis will be required for the signal systems or portion of the signal systems analyzed.

(h) *Access Management Standards* – The TIA shall include a map and description of the proposed access including any sight distance limitations, adjacent driveways and intersections, and a demonstration that the number of driveways proposed is the fewest necessary and that they provide safe and efficient traffic operations.

(i) *Traffic Signalization* – If a traffic signal is being proposed, a signal warrant analysis shall be included in the TIA. The approval of a traffic signal on projected volumes may be deferred until volumes meet warrants given in the MUTCD, in which the developer shall provide funds for the future signal(s) to the City to deposit in an escrow or special account set up for this purpose. The developer should make any laneage improvements during construction so that if in the horizon year a signal is warranted, one may be installed with little impact to the intersection.

(j) Mitigation and Alternatives – The average stop time delay in seconds per vehicle for each intersection determined to be critical to the TIA for the proposed development shall be compared to the City's adopted traffic service level goal of "D" for the average delay for all vehicles at any intersection and all movements and approaches to the intersection during peak hours. Improvements must ensure that the level of service at final buildout, meets or exceeds the level of service at time of approval of the TIA. The TIA should include proposed improvements or access management techniques that will mitigate any significant changes in the levels of service. The City

Engineer will be responsible for final determination of mitigation improvements required to be constructed by the applicant.

(E) Traffic Impact Analysis Plan Review. The City Engineer shall review all TIAs as part of the initial approval for the concept plan or master plan, and shall coordinate with Berkeley County, the South Carolina Department of Transportation, and other parties the City Engineer deems appropriate. Final TIAs shall be approved at the development plan phase. Following review of the required TIA, the City Engineer shall recommend action as follows:

(1) Approval of the TIA as submitted; or

(2) Approval of the TIA with conditions or modifications as part of the development review and approval process. An acceptable TIA with traffic mitigation measures may include the reduction of the density or intensity of the proposed development; phasing of the proposed development to coincide with State and/or City-programmed transportation improvements; applicant-provided transportation improvements; fees in lieu of construction, or any other reasonable measures to ensure that the adopted traffic level of service goals are met. If mitigation is required, it shall be required as a condition of any approval from the City.

(G) Timing, Cost of Implementation. If traffic mitigation improvements are part of an approved TIA, the improvements shall be completed prior to Final Plat approval for major subdivisions, or CO issuance for multi-family and non-residential projects. In the alternative, the City Engineer may approve a letter of credit, performance bond, or other means of securing the applicant's obligation to complete improvements. The City Engineer may use his/her best engineering judgement to determine the most effective solution. The costs of implementation of an approved mitigation program shall be the responsibility of the applicant. No certificates of zoning compliance or building permits shall be issued unless provisions of the TIA are met.

(H) Function and Safety Improvements. The City Engineer may require improvements to mitigate and improve the safety and function of multiple transportation modes the site traffic may impact. These improvements may not be identified in the TIA, but improvements to benefit the function and safety of the transportation system of the development site. These improvements may include but are not limited to center medians, sidewalks and/or bicycle accommodations, modifications to ingress and egress points, roadside shoulders, pavement markings, traffic calming and other traffic control devices.