



**Town of Clayton
Town of Clayton Planning Board Agenda
Monday, November 28, 2022 @ 6:00 PM
Town Council Chambers**

<https://www.youtube.com/TownofClaytonNC>

1. CALL TO ORDER

2. PLEDGE OF ALLEGIANCE

3. ADJUSTMENT OF THE AGENDA

4. APPROVAL OF MINUTES

- a. [October 24-Planning Board Minutes Draft](#)

5. PUBLIC COMMENT SESSION

- a. 2022-166-RZ Clayton Dental
Presenter: Bruce Venable
[1 2022-166-RZ Clayton Dental Staff Report](#)
[2 2022-166-RZ Application Clayton Dental Office](#)
[3 2022-166-RZ Neighborhood Meeting Material](#)
[4 2022-166-RZ Survey Clayton Dental Office](#)
[5 2022-166-RZ Clayton Dental Staff Report Map](#)
- b. 2022-109-CZM The Townes at Little Creek Conditional Zoning District
Presenter: Ben Howell, Planning Director
[2022-109-CZM The Townes at Little Creek Conditional Zoning District - Planning Zoning - Pdf](#)

6. NEW BUSINESS

7. PLANNING DIRECTOR REPORT

8. INFORMAL DISCUSSION AND PUBLIC COMMENT

9. ADJOURN



**Town of Clayton
Clayton Planning Board Minutes
Monday, October 24, 2022 at 6:00 PM
Town Council Chambers**

Board Members Present:

Jodie Dupree
James Moore
Stephen Powers
James Lipscomb
Kevin Lee

Board Members Absent:

Jeffery Spence
Ron Williams
Lisa Begley
Ethan Bennett

Staff Present:

Ben Howell, Planning Director
Bruce Venable, Planner I Trainee
Love Ott, Land Development Specialist

1 CALL TO ORDER

- a) Chair Moore called the meeting to order at 6:01pm

2 PLEDGE OF ALLEGIANCE

3 ADJUSTMENT OF THE AGENDA

4 APPROVAL OF MINUTES

- a) **Motion:** Board Member Dupree
Second: Board Member Powers
Result: Approved, Unanimous

5 PUBLIC HEARINGS

6 NEW BUSINESS WITH PUBLIC COMMENT

- a) Clayton Pedestrian Plan
Presenter: Planning Director, Ben Howell

Planning Director Ben Howell provided the board an overview of the plan and asked the board to make a recommendation to adopt the plan to the Town Council.

A presentation was given that illustrated the draft of the plan, structure, and some of the recommendations.

The plan has been in the works for the last year and a half. The Steering Committee for the plan met roughly four times in the year and a half.

The plan is partially funded by a grant from NCDOT. Alta Planning was the consultant for this plan.

Motion to Recommend Approval to Town Council

Motion: Board Member Powers

Second: Board Member Lee

Result: Approved, Unanimous

b) Pawville Rezoning

Presenter: Planner I Trainee, Bruce Venable

Rezone from Highway Business Special Use District (B-3 SUD) to Highway Business (B-3)

1.14 acre parcel that is vacant, near Tew Court and Gateway Drive

Current zoning around the property is B-3 and Office Institutional (O-I).

The 2045 Comprehensive Plan and Future Land Use Plan has the area slated for an employment center, which makes the rezoning to B-3 consistent and compatible with both plans.

Staff recommends approval of the proposed rezoning request.

- Applicant Comments

Will Huyler the Civil Engineer for Pawville Real Estate Holdings stated that this is not the first building the applicant has handled.

Motion to Approve

Motion: Board Member Lipscomb

Second: Board Member Dupree

Result: Approved Unanimous

c) Short Johnson Road Conditional Zoning District

Presenter: Planning Director, Ben Howell

Rezoning of properties from Residential-Estate (R-E) to Conditional Zoning-Residential District

Up to 98 units of single family homes and townhomes, 3-5 units per acre of a 22 acre property.

It is located off Short Johnson Road, south of the Walnut Creek subdivision. There are three access points of Short Johnson Road.

The water, sewer, and electrical provider for this development would be the Town of Clayton.

The property is surrounded by vacant, farmland, and scattered single family units, however the property is close to Amelia Crossing which is mixed development.

Staff encourages the Board to consider negotiating condition to improve Short Johnson Road.

Public sewer is available in Walnut Creek and development will conduct study to determine public sewer improvements.

The development is consistent with the 2045 Growth Plan which identifies the area as medium density residential.

The project can improve the balance of uses or meet specific demand in town by providing a mix of housing and density transition.

The development is to be served by West Clayton Elementary, Clayton Middle, and Clayton High. West Clayton Elementary and Clayton High are on the 2022-2023 capped school list for Johnston County.

The development would be accessed by Short Johnson Road and Trailwood Drive. It will follow the Town Stormwater ordinance and is subject to the Town's Wastewater Allocation Policy.

There is no adverse effect on the adjoining property owners with the 20 foot landscaped buffer with a 6 feet tall opaque privacy fence.

Staff believes the applicant has met criteria through Master Plan, Master Plan Narrative, and Proposed Conditions. Staff also recommends approval, subject to the 15 recommended conditions of approval.

- Board Comments

Board Member Powers asked where would the students go to elementary and high school if they are already capped?

Planning Director Howell stated the cap school list has a potential of changing every year.

Board Member Powers asked if this question should be answered before the development is approved?

Planning Director Howell stated that the school system is looking to have voters vote on a bond to try to get additional money for construction of new schools. Due to schools being governed by the County there is very little the Town can do around schools other than provide information.

Board Member Lipscomb asked if there could be more explanation of how the Town and DOT would work together?

Planning Director Howell stated that based on experience if the developer is willing to improve a state roadway, then DOT is generally open to that improvement.

Board Member Lipscomb asked if the district Engineer's Office made any comments on this plan?

Planning Director Howell stated no, because of the 98 residential units it did not trigger a Transportation Impact Analysis (TIA).

Board Member Dupree asked how far paved is Short Johnson Road?

Planning Director Howell stated that the road is paved a little bit beyond this property.

Chair Moore asked to go to Condition 13 and asked if there was an option to have one of part A and one of part B with high efficiency products?

Planning Director Howell stated that is something the Board can request by the applicant.

Board Member Dupree suggested having a minimum of three or four of the options.

Board Member Lipscomb stated that looking at the building code most builders are doing more than two of the options anyway and does not see why the applicant would be opposed to doing more than two.

Board Member Dupree stated that Condition 13 is more fluff, so how much authority does this condition have?

Planning Director Howell stated the Wastewater Allocation Policy allows applicants to take points for sustainable high efficiency appliances and products there is no guidance on what that means.

- Applicant Comments

Richard Brown, Landscape Architect with Kimly, Horn Associates for 21 Fayetteville Street, Raleigh NC representing Craig Davis Properties and Davis Park Leasing who is the owner and applicant.

The neighborhood meeting was conducted in September. The development meets all the federal, state, and local requirements to preserve the buffer and minimizing the impact to the buffer to one road or street crossing to be able to access the Southeast portion of the property.

The applicant is dedicating 12.5% of the Southwest portion of the property to open space. The interconnectivity requirements is met by an access point in the north portion to Walnut Creek Subdivision.

The options stated in Condition 13 are considered beyond the requirements by the current NC building code. There was a vetting process to ensure the applicant was not offering anything that was already technically required.

- Public Comments

McKenna Parish, 377 Short Johnson Road an 80 acre property that surrounds the proposed development which is being used as a cattle farm. There are concerns with having a neighborhood that would be surrounded by a cattle farm such as safety, traffic, dumping of trash, overflow parking, a pump station that runs under the proposed development and if the medium density development fits the agricultural area. There are also concerns with runoff from the proposal since there is already runoff issue from other new developments.

Another resident has concerns about Short Johnson Road being a dead-end road and possible water erosion that could come with the new development.

- Board Comments

Board Member Dupree asked if the residents at the proposed development would be notified that there would be a cattle farm next to them?

Planning Director Howell stated yes, a notification is required on the plat, deeds, and covenants.

Chair Moore asked if the developer in the marking material has the information of the cattle farm?

Planning Director Howell stated that the Board can request the applicant add to conditions, however that is harder for staff to verify.

Board Member Dupree asked in the September neighborhood meeting what were the public comments?

Mr. Brown stated that there were concerns on the traffic and connectivity. However, the split of the property on the North and South side only half of the residents would be on the North side of Short Johnson Road. Another topic was the positive remarks on the perimeter buffer.

Board Member Dupree asked what recourse does the Town have with the current runoff from Sheets and other developments?

Planning Director Howell stated that the older developments were managed by Johnston County when the County was managing the storm water for the Town and County. At the time the ordinance was not as protective as the new one. There are performance metrics that staff monitors and this development will have better monitoring. There will be some recourse for the new development in terms of runoff.

Chair Moore stated with the amount of units on 22 acres it seems pretty tight.

Planning Director Howell stated that 98 homes is the maximum, it does not mean the applicant would actually get that number of homes.

Board Member Lipscomb asked the applicant to explain the privacy fence better.

Mr. Brown stated that where there is an adjoining residential property the buffer will apply with an opaque wood fence. The existing vegetation can be used as a buffer requirement.

Board Member Lipscomb asked there would not be any fencing even agricultural type?

Mr. Brown stated right.

Board Member Lipscomb stated there is a struggle with NCDOT and is not sure how the district operates in the Town's ETJ, but normally if there is a road that has over X number of vehicles per and more than 20 lots NCDOT may require a turn lane. Does not believe NCDOT would reject any improvements because there were improvements on Country Lane and turning lanes on Barber Mill Road.

Planning Director Howell stated that both roads had a TIA and turn lanes were recommended.

Board Member Dupree stated that Short Johnson Road is not in good enough condition for the increase in cars a day.

Motion to Recommend Approval to Town Council

Motion: Board Member Lipscomb with compliance with the requirements of the driveway permit and finds the rezoning action to be consistent with the future land use map and adopted 2045 Comprehensive Growth Plan

Second: Board Member Dupree

Result: Approved, Unanimous

- d) Corbett Road Assemblage Conditional Zoning District
Presenter: Planning Director, Ben Howell

Rezoning properties from R-E to Conditional Zoning-Residential.

The development would be up to 750 units that includes single-family homes, townhomes, and multifamily at ten units an acre.

The property size is 86.39 acres located off Corbett Road, Southwest of Amelia Church Road. The sewer would be served by the Copper District.

There are four access points on Corbett Road with connectivity to the Copper District with water and sewer provider being the Town. The electric provider would be Duke.

There would be 365 multifamily homes, 385 single-family homes and townhomes that would be surrounded by vacant or single-family residential land.

The proposal was required to complete a TIA and applicant proposed to construct three full-movement and one right-in/right-out access points on Corbett Road.

The TIA recommends improvements at Amelia Church Road/Corbett Road intersection and Springbrook Avenue/NC 42 intersection.

Applicant was not willing to agree to those conditions for improvements at the time, however they are willing to discuss conditions. Staff recommends negotiating additional transportation improvements as a condition.

This proposal would include a 20 foot wide type C landscaping buffer and a 20 foot wide street yard buffer along Corbett Road frontage.

It is consistent with the 2045 Growth Plan and it will provide a mix of housing and density transition near the Hospital and the Copper District development.

The development would be served by West Clayton Elementary, Clayton Middle, and Clayton High. West Clayton Elementary and Clayton High are on the 2022-2023 capped school list for Johnston County.

Wastewater treatment for the proposal would be served by extension of sewer connecting into Copper District pump station.

There would be no adverse effect on adjoining property owners, staff believes applicant has met criteria through Master Plan, Master Plan Narrative, and Proposed Conditions.

Staff recommends approval subject to the 16 recommended conditions of approval.

Chair Moore asked if the opaque fencing was the applicants recommendation or staff's?

Planning Director Howell stated that the code requires type C buffers for this type of development and type C requires an opaque screening.

Chair Moore stated the privacy fence should be looked into in terms of the material in order for the fence to last longer.

- Applicant Comments

Richard Brown with Kimly Horn Associates, 421 Fayetteville Street, Raleigh NC representing applicant contract purchaser for the ownership assemblage for the Corbett Road assemblage.

Instead of ten units per acre it would be roughly 8.6 units per acre because of the hard cap. The applicant is limited to residential only with minor considerations for neighborhood shops or other commercial opportunities within the development.

The high density would be at the Northern corner along Corbett Road to multi-family. The privacy fence does not preclude the opportunity to preserve the natural areas as part of the buffer.

To the North of the property is a large vacant property, but mostly adjacent to the Copper District to the West and the property between is to hold an elevated storage tank, pump station that will serve both water and sewer for the development.

Travis Fluitt with Kimly Horn Associates stated that NCDOT recommended turn land improvements in the TIA that are still being negotiated.

Board Member Lipscomb stated that with the recommendation from staff be given the ability to negotiate with a developer for additional improvements. How does the board keep from being inconsistent?

Planning Director Howell stated that the staff recommendation was based on the TIA.

Board Member Lipscomb asked if NCDOT was not requiring but recommending the two improvements at the Corbett Road/Amelia Church intersection and the Springbrook Drive/NC 42?

Planning Director stated that NCDOT includes recommended improvements based on the TIA, but NCDOT cannot require off-site improvements and the Town cannot require them. Staff is open to allowing the applicant to make improvements in phases.

Board Member Lipscomb asked before the proposal gets to Council there will be a time line of improvements?

Planning Director Howell stated that is one way or using similar language in the transportation condition.

Board Member Lipscomb stated the support of the phasing process, however wants exact standards for everyone to follow.

Chair Moore stated that the NCDOT recommendations should be in place at the start of the development.

Board Member Lipscomb stated that as the lots are being platted the applicant is able to produce lot sales and able to create income to do the improvements

Mr. Brown stated the plan will have above the minimum street intersection in terms of code design. Open space would include 13 acres, which is 15% of site which is above requirement.

- Public Comments

William Royal, 1104 Deer Run is concerned with the increase in traffic the new development would bring since the traffic on Corbett Road is already congested and the lack of traffic planning.

Michael Shruitt, lives on Corbett Road is concerned that the high density development would change the small town characteristic of Clayton, the increase in traffic, the natural habitats would be disturbed, and storm water runoff the new development could bring.

Pat Stockdale, 2101 Lee St is concerned with the increase in traffic and believes the plan needs further review.

- Board Consideration

Chair Moore stated that some language about the TIA should be included in the recommendation the Board makes to the Council.

Board Member Lipscomb stated the biggest concern is the timing of the traffic improvements.

Board Member Dupree asked if there is currently a stop light at the end of Amelia Church Road?

Planning Director Howell stated no

Board Member Dupree stated that the Town does not control where stop lights go, NCDOT does. Board Member Dupree does believe that the applicant has met all requirements.

Board Member Powers asked if the board can request more work to be done on the transportation aspect from NCDOT?

Planning Director Howell stated the board could include that in the conditions.

Board Member Dupree stated that the board does not have any control in terms of traffic problems.

Chair Moore asked if there can be alleviation of fear in terms of storm water runoff?

Planning Director Howell stated to his understanding the storm water ordinance is structured to use best management practices to keep storm water on the site that generates it as long as possible and release the storm water to an off-site area.

Motion to Recommend Approval to Town Council

Motion: Board Member Lipscomb with additional requirement that the developer and staff come to an agreement on improvements on the TIA that the improvements will be installed before or after occupancy

Second: Board Member Powers

Result: Approval, Unanimous

7 STAFF REPORTS

- a) Aaron Prichard last day was October 14, 2022. The planning department is currently down a staff member.

Both small area plans and planning staff will be at the Harvest Fest on Saturday. Material on the UDO rewrite and Codify Clayton project would be included.

8 OTHER BUSINESS

- a) Informal Discussion & Public Comment
- b) Planning Board Comments

9 ADJOURN

- a) Motion to Adjourn: Board Member Powers
Second: Board Member Lee
Result: Approved, Unanimous

Meeting adjourned at 8:38pm



Town of Clayton
Planning Department
111 E. Second Street, Clayton, NC 27520
P.O. Box 879, Clayton, NC 27528
Phone: 919-553-1545

Planning Board, 11/28/2022

STAFF REPORT

Application Number: 2022-166-RZ
Project Name: Clayton Dental - Rezoning

TAG #(s): 16I02008A
Town Limits/ETJ: Town Limits
Applicant: WMG Acquisitions, LLC
Owner: Zogreo, LLC/ Wilder Investors LLS
Location: 2165 Pritchard Rd, Clayton, NC, 27520
Project Planner: Bruce Venable, Planner I Trainee

Public Noticing Dates:

- **Neighborhood Meeting:** October 10, 2022
- **Sign posted:** November 16, 2022
- **PB Adjacent Property Letters Mailed:** November 16, 2022

REQUEST: Rezoning from Planned Development-Mixed Use (PD-MU) to Highway-Business (B-3)

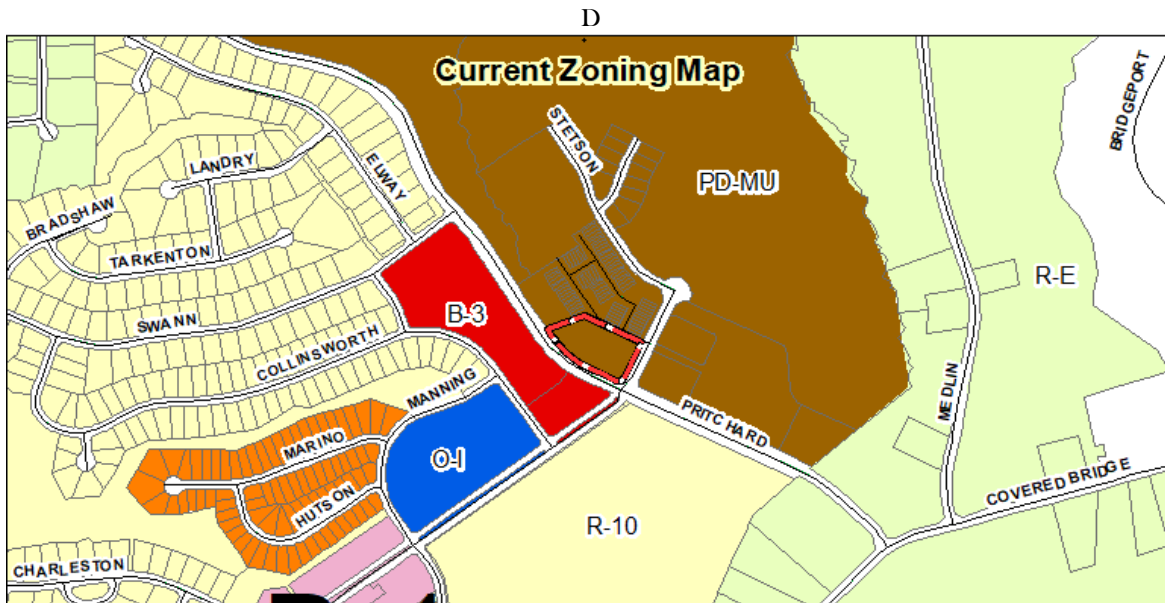


SITE DATA:

Acreage: +/- 2.145 acres
Existing Use: Vacant

ADJACENT ZONING AND LAND USES:

Direction	Zoning	Existing Use
North	PD-MU (Planned Development-Mixed Use)	Residential
South	B-3 (Highway-Business)	Vacant
East	PD-MU (Planned Development-Mixed Use)	Retail
West	PD-MU (Planned Development-Mixed Use)	Vacant

**STAFF ANALYSIS AND COMMENTARY:****Overview**

The site is within the Clayton Town limits. The site is located at 2165 Pritchard Rd, Clayton, NC, 27520. The applicant is requesting to re-zone the property from the Planned Development Mixed Use District to Highway-Business (B-3). The property is currently Vacant.

REZONING APPROVAL CRITERIA

In connection with its legislative decision on a rezoning request, the Town Council may consider factors including, but not limited to, the following:

(1) Consistency with the adopted plans and policies of the Town;

Applicant's Response: The subject request is consistent with the adopted plans of the Town of Clayton. Any future development occurring on the subject site shall be consistent with the intent and standards of the Town's Comprehensive Plan and Unified Development Ordinance.

Staff Commentary: Staff believe that the current zoning and the proposed zoning changes are consistent with currently adopted plans for this project

(2) Suitability of the subject property for uses permitted by the current versus the proposed district;

Applicant's Response: The current PD-MU zoning of the area allows for a mix of residential and commercial uses. The proposed zoning of B-3 will allow for similar uses, and by definition District B-3 "provides opportunities for offices, service uses, and businesses retailing durable and convenience goods for the community as a whole" (Sec. 155.200 (B)(2)(c)). Any future development shall meet the intent of the B-3 District and shall adhere to the standards of the UDO as it relates to suitability of uses and development standards.

Staff Commentary: Staff believes that this request is appropriate and achieves the best use and practice for this site and agree with the reasons listed by the applicant on suitability of the subject property. The rezoning and the "Neighborhood Mixed-use Overlay" allow for this land use and are in line with the intent of the ordinance.

(3) Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town;

Applicant's Response: The proposed change enhances the balances of uses and meets the demand in the Town by providing opportunities for office, service, and retailing of goods at the community scale.

Staff Commentary: Staff believes that this will address the need for commercial space near and around emerging communities in the Town.

(4) The capacity of adequate public facilities and services including schools, transportation infrastructure, recreation facilities, wastewater treatment, water supply facilities, and stormwater drainage facilities for the proposed use;

Applicant's Response: All public facilities including water, sewer, and roads are accessible at this property.

Staff Commentary: The rezoning should not affect the Town's compacity of public facilities, services nor will it negatively affect the current infrastructure.

(5) It has been determined that the legal purposes for which zoning exists are not contravened;

Applicant's Response: The legal purposes for which zoning exists—namely, to protect the health, safety, morals, and general welfare of the public—shall not be violated by the requested action.

Staff Commentary: Staff believe that this request is not contravened and is aligned with the comprehensive future land use plan of 2045 and will serve the community under its zoning district.

(6) It has been determined that there will be no adverse effect upon adjoining property owners unless such effect can be justified by the overwhelming public good or welfare;

Applicant's Response: Rezoning the property to B-3 is compatible with the neighboring properties and general area and supports the businesses operating on the adjacent parcels. The requested rezone will allow for the development of neighborhood-support services to residents of the adjacent neighborhoods, as well as the entire community.

Staff Commentary: There should be no adverse effect upon any of the adjoining property owners.

- (7) It has been determined that no one property owner or small group of property owners will benefit materially from the change to the detriment of the general public.

Applicant's Response: No property owner shall materially benefit to the detriment of the public as a result of an approved rezoning.

Staff Commentary: No one property owner or small group will benefit materially from this change.

Consistency with the Comprehensive Growth Plan 2045

The Future Land Use Map identifies this area as within the "Neighborhood Mixed-Use" overlay. (see map below). Page 30 of the Comprehensive Growth Plan provides guidance that the Town should "Promote location and intensity of development that mitigates impacts to the transportation network and leads to reduced vehicle trips and/or shorter trip lengths...". The "Neighborhood Mixed-Use" overlay which allows for mixed-use and commercial developments in neighborhood centers is in line with the adopted policy stated above and makes this rezoning request to B-3 consistent with the Future Land Use Map.

Comprehensive Growth Plan Goals supporting the rezoning request include:

Goal LU 1: Preserve Clayton's character while allowing for growth and development in appropriate areas.

Policy LU 1.1: Manage future growth and encourage quality development through the implementation of the Comprehensive Plan, the Unified Development Code (UDC), and other plans and regulations adopted by the Town Council.

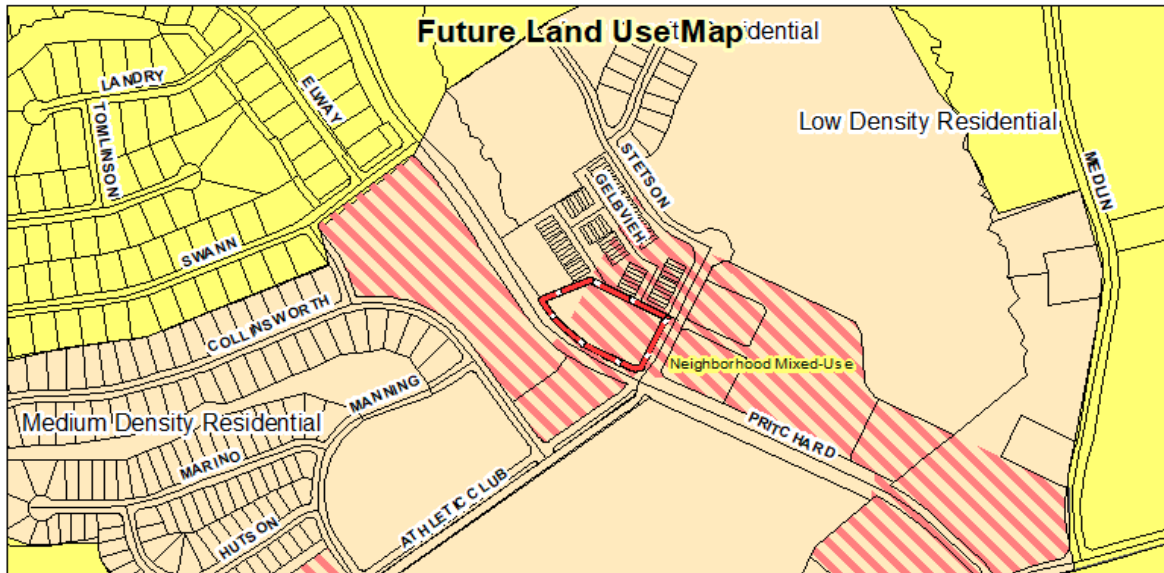
Strategy LU 1.1.1: Review development proposals for consistency with the Future Land Use Map.

Policy LU 1.3: Encourage non-land uses in areas consistent with the Future Land Use Map.

Strategy LU 1.3.1: Encourage smaller-scale mixed-use development and commercial uses in Neighborhood Centers and the Downtown Support areas.

Policy LU 1.6: Promote location and intensity of development that mitigates impacts to the transportation network and leads to reduced vehicle trips and/or shorter trip lengths, enhanced circulation, and increased public safety.

Strategy LU 1.6.1: Focus growth in and near Community Centers, Neighborhood Centers and Downtown.



CONSIDERATIONS:

- ◆ Approval of the rezoning would allow any permitted use within the B-3 Zoning District to be constructed on the site. Planning Board should consider all potential uses of the site when giving their recommendation for this rezoning.

STAFF RECOMMENDATION:

- ◆ Staff recommends **APPROVAL** of the proposed rezoning request.

ATTACHMENTS:

- 1) Staff Report
- 2) Application/Owner's Consent Form
- 3) Neighborhood Meeting Materials
- 4) Survey
- 5) Staff Report Maps



TOWN OF CLAYTON
Planning Department
111 E. Second St., P.O. Box 879
Clayton, NC 27528
Phone: 919-553-5002
Fax: 919-553-1720

REZONING APPLICATION

☒ Rezoning Fee: \$750 + \$10 per acre

SITE INFORMATION

Name of Project: Clayton Dental Office
Acreage of Property: 2.145 acres **Zoning District:** PD-MU
County Tag #: 16I02008A **NC Pin #:** 177000-18-6465
Address/Location: 2165 Pritchard Rd, Clayton, NC 27520
Existing Zoning District: PD-MU **Proposed Zoning District:** B-3

APPLICANT INFORMATION

Applicant: WMG Acquisitions, LLC
Mailing Address: PO Box 768, Effingham, IL 62401
Phone Number: 317-678-7517 **Fax:** _____
Contact Person: Jamie Linenberg
Email Address: jamie@tarr-group.com

PROPERTY OWNER INFORMATION

Name: Zogreo, LLC / Wilder Investors LLS
Mailing Address: 1201 Edwards Mill Rd, Suite 300, Raleigh, NC 27607
Phone Number: _____ **Fax:** _____
Email Address: janthony@aacre.com

OFFICE USE ONLY

Date Received: _____ Amount Paid: _____ File Number: _____

EXPLANATION OF PROJECT

Please provide detailed information concerning all requests. Attach additional sheets if necessary.

The proposed project is a 4,200 square foot dental office with associated infrastructure. The current zoning of the property is PD-MU which is no longer recognized by the Town. In order to develop the property, a re-zone is required. The Neighborhood Mixed-Use overlay on the parcel would justify the property being rezoned to B-3 for the dental office use. Please see associated plan set and supporting material.

APPROVAL CRITERIA

All applications for a Rezoning must address the following findings:

1. Consistency with the adopted plans of the Town.

The subject request is consistent with the adopted plans of the Town of Clayton. Any future development occurring on the subject site shall be consistent with the intent and standards of the Town's Comprehensive Plan and Unified Development Ordinance.

2. Suitability of the subject property for uses permitted by the current vs. the proposed district.

The current PD-MU zoning of the area allows for a mix of residential and commercial uses. The proposed zoning of B-3 will allow for similar uses, and by definition District B-3 "provides opportunities for offices, service uses, and businesses retailing durable and convenience goods for the community as a whole." (Sec. 155.200(B)(2)(e)).

Any future development shall meet the intent of the B-3 District, and shall adhere to the standards of the UDO as it relates to suitability of uses and development standards.

3. Whether the proposed change tends to improve the balance of uses, or meets specific demand in the Town.

The proposed change enhances the balances of uses and meets the demand in the Town by providing opportunities for office, service, and retailing of goods at the community scale.

4. The capacity of adequate public facilities and services including schools, roads, recreation facilities, wastewater treatment, potable water supply and stormwater drainage facilities is available for the proposed use.

All public facilities including water, sewer, stormwater, and roads are accessible at this property.

5. It has been determined that the legal purposes for which zoning exists are not violated.

The legal purposes for which zoning exists--namely, to protect the health, safety, morals, and general welfare of the public--shall not be violated by the requested action.

6. It has been determined that there will be no adverse effect upon adjoining property owners unless such effect can be justified by the overwhelming public good or welfare.

Rezoning the property to B-3 is compatible with the neighboring properties and general area, and supports the businesses operating on the adjacent parcels. The requested rezone will allow for the development of neighborhood-support services to residents of the adjacent neighborhoods, as well as the entire community.

7. It has been determined that no one property owner or small group of property owners will benefit materially from the change to the detriment of the general public.

No property owner shall materially benefit to the detriment of the public as a result of an approved rezoning.

APPLICANT AFFIDAVIT

I/We, the undersigned, do hereby make application and petition to the Town Council of the Town of Clayton to amend the Zoning Ordinance and change the Official Zoning Map of the Town of Clayton as requested.. I hereby certify that I have full legal right to request such action and that the statements or information made in any paper or plans submitted herewith are true and correct to the best of my knowledge. I understand this application, related material and all attachments become official records of the Planning Department of the Town of Clayton, North Carolina, and will not be returned.

Ally Justmann

Print Name


Signature of Applicant

9.22.2022

Date



TOWN OF CLAYTON
Planning Department
111 E. Second St., P.O. Box 879
Clayton, NC 27528
Phone: 919-553-5002
Fax: 919-553-1720

REZONING APPLICATION COVER SHEET

Name of Project: Clayton Dental Office **Date:** 9/22/2022
Applicant Name: WMG Acquisitions, LLC

The following checklist to be completed by applicant:

- [☒] Pre-Application Meeting on: 8/2/22
- [☒] Review Fee \$780
- [☐] Advertisement Fee
- [☒] Completed Application
- [☒] Owner's Consent Form
- [☒] Adjacent Property Owner's List
- [☒] Neighborhood Meeting Notice Letter (1 copy)
- [☒] 2 Sets of stamped, addressed, empty envelopes for adjacent property owner notification
- [☒] Signed & Sealed Boundary Survey
- [☒] Copy of signed & sealed boundary survey in PDF on USB

Reviewed by: _____

ADJACENT PROPERTY OWNERS LIST

Project Name: Clayton Dental Office

The following are all the persons, firms, or corporations owning property within 100 feet and immediately adjacent to the property (including across street rights of way) subject to this request. Where the subject property immediately adjoins a public or private right-of-way, landscape or riparian buffer, commonly-owned private area, public property, or homeowners' association property, then letters of notification shall be sent to adjoining property owners as if they directly abut the subject property. Please use a separate sheet if necessary

It is the responsibility of the applicant to correctly identify the current owner, based upon records in the Johnston County GIS Office, for all property owners of land within the required public notice radius.

PARCEL NUMBER	NAME	ADDRESS
16I02053P	RIVERWOOD RANCH TOWNHOMES, LLC	1375 E 9th Street, STE 2400, Cleveland, OH 44114
16I02047V	SAMPSON - BLADEN OIL COMPANY, INC.	PO Box 469, Clinton, NC 28329
16I02047T	GANDHI AT RIVERWOOD	9201 Leesville Rd, STE 201, Raleigh, NC 27613
16I02046B	ZOGREO, LLC / WILDER INVESTMENTS LLS	1201 Edwards Mill Rd, Suite 300, Raleigh, NC 27607
16I02047U	RIVERWOOD LAND COMPANY LLC	PO Box 31827, Raleigh, NC 27622
16I02008H	RIVERWOOD COMPANY LLC	PO Box 31827, Raleigh, NC 27622
16I02008Z	COUNTY OF JOHNSTON	PO Box 1049, Smithfield, NC 27577

NEIGHBORHOOD MEETING SUMMARY FORM

FILL OUT THE FOLLOWING:

Application: Clayton Dental office
Date of Mailing: 9/26/22
Date of Meeting: 10/10/22 Time of Meeting: 6pm
Location of Meeting: Clayton Public Library
I hereby attest that letters were mailed to the addresses listed on the Adjacent Property Owners List (attached) ten days prior to the Neighborhood Meeting, and that all required information was presented at the Meeting:
Printed Name: Dylan Tarr Signature: [Signature]

Meeting Summary/Minutes: *provide a summary of the discussion held at the meeting, including issues raised and any resolution discussed, and any changes made to the application as a result of the meeting.*

Nobody showed up to discuss the project

Please write clearly (or submit a typed summary). Use additional sheets if necessary.

NEIGHBORHOOD MEETING ATTENDANCE ROSTER

Project: Clayton Dental office

Application: Re zoning

Location/Date: Clayton Public Library 10/10/22

	NAME	ADDRESS
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September 26, 2022

Dear Clayton Area Property Owner:

The purpose of this letter is to notify you of an application filed with the Town of Clayton for a land use change or development proposal involving property adjacent to, or in close proximity to, property shown in your ownership by Johnston County tax records. Per Town of Clayton regulations, a Neighborhood Meeting will be held to provide information to area residents about the proposal. A representative of the applicant will be present to explain their application, answer questions, and solicit comments.

Meeting Date: Monday, October 10
Meeting Time: 6:00pm – 6:45pm
Meeting Location: Town of Clayton Public Library

Type of Application: Rezoning
Project/proposal property address: 2165 Pritchard Rd, Clayton, NC 27520
Description of project/proposal: Rezoning from PDMU to B-3 to support the development of a 4,200 square foot professional dental office

Upcoming public meetings for this application:

- Planning Board - October 24, 2022
- Town Council - November 7, 2022

At a minimum, the following will be available for your inspection at the Neighborhood Meeting:

1. A copy of the project application
2. A schedule of all upcoming public meetings for the application
3. A map at a scale that is appropriate to the project and shows neighboring properties and roads.
4. A map, drawing, or other depiction of the proposed land use change or development proposal.

A map is enclosed with this letter showing the location of the property that is subject to this application for land use change and/or development proposal.

If you have any questions prior to or after this meeting, you may contact us at 317-678-7517. You may also contact the Town of Clayton Planning Department at 919-553-5002.

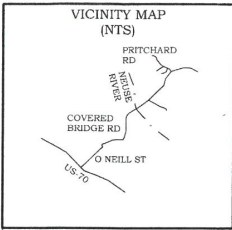
Sincerely,

A handwritten signature in blue ink, appearing to read 'Dylan Tarr', is written over a horizontal line.

Dylan Tarr, P.E.
Tarr Group, LLC

CC: Town of Clayton Planning Department





RIVERWOOD RANCH TOWNHOMES
BK 5268, PG 262
PID 16102053P



GENERAL NOTES:

- THIS PLAT IS THE RESULT OF AN ACTUAL ON THE GROUND SURVEY PERFORMED BY ENCOMPASS SERVICES, LLC IN JUNE 2022, IN ACCORDANCE WITH A COMMITMENT OF TITLE INSURANCE BY CHICAGO TITLE INSURANCE COMPANY DATED JULY 21ST, 2022 AT 8:00 AM.
- CONTOURS SHOWN HEREON ARE A RESULT OF A LIDAR SURVEY PERFORMED BY ENCOMPASS SERVICES, LLC ON 7-18-2022 AND USED AS A BASE FOR THE OVERALL SURFACE. ACTUAL GROUND SURVEY WAS SUPPLEMENTED WHERE APPLICABLE. CONTOUR INTERVAL IS 1 FOOT.
- SUBJECT PROPERTY IS PARCEL ID 16102008A & NC PIN 177000-18-7405 OF JOHNSTON COUNTY, NORTH CAROLINA.
- MEASURED BEARINGS AND DISTANCES SHOWN HEREON ARE REFERENCED TO NORTH CAROLINA PLANE COORDINATE SYSTEM, NAD83 (2011). UNITS SHOWN ARE GRID DISTANCES AND AREA IN FEET. COORDINATES WERE ESTABLISHED WITH OPUS GPS OBSERVATIONS.
- ADJOINER INFORMATION BASED ON JOHNSTON COUNTY GIS AT THE TIME OF THIS SURVEY.
- UPON SETTING REBAR MARKING CORNERS WHERE NO EXISTING MONUMENTATION WAS FOUND, ENCOMPASS SERVICES, LLC RESERVES THE RIGHT TO REVISE THIS PLAT TO DEPICT ADDITIONAL EVIDENCE THAT MAY BE FOUND.
- SUBJECT LOT IS LOCATED IN FLOOD ZONE AREAS "X" (MINIMAL FLOOD HAZARD) IN FIRM PANEL 3720177000K EFFECTIVE 8/18/2016, PER FEMA GIS.
- TOTAL LAND AREA = 93,456 SQ. FT. OR 2.145 ACRES.
- SUBJECT LOT IS ZONED "PD-MU" PER THE JOHNSTON COUNTY ZONING AND LAND DEVELOPMENT REGULATIONS ORDINANCE.
- A ZONING REPORT WAS NOT PROVIDED TO THE SURVEYOR THAT DESCRIBED ZONING SETBACK REQUIREMENTS SPECIFIC TO THE SURVEYED PROPERTY.
- NO EVIDENCE OF RECENT EARTHWORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS WERE OBSERVED ON THE PROPERTY AT THE TIME OF THE SURVEY.
- SUBJECT LOT AT THE TIME OF THIS SURVEY IS UNDEVELOPED AND DO NOT CONTAIN ANY PRIVATE PARKING SPACES AT THIS TIME.
- THERE ARE NO BUILDINGS ON SUBJECT LOT AT THE TIME OF THIS SURVEY.

LEGAL DESCRIPTION

LYING AND BEING SITUATE IN JOHNSTON COUNTY, NC, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:
BEING ALL OF THAT 2.14 ACRES TRACT AS SHOWN ON A MAP ENTITLED "RECOMBINATION PLAT FOR ZOGREO, LLC AND RIVERWOOD ON THE NEUSE, LLC" ACCORDING TO THE PLAT THEREOF RECORDED IN PLAT BOOK 83, PAGE 159 IN THE OFFICE OF THE REGISTER OF DEEDS OF JOHNSTON COUNTY, NORTH CAROLINA.

SCHEDULE B, PART II

- EXCEPTIONS:
- ANY DEFECT, LIEN, ENCUMBRANCE, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLIC RECORDS OR IS CREATED, ATTACHED, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE SCHEDULE B, PART II - REQUIREMENTS ARE MET - NOT A SURVEY MATTER.
 - TAKES OR ASSESSMENTS FOR THE YEAR 2023, AND SUBSEQUENT YEARS, NOT YET DUE OR PAYABLE - NOT A SURVEY MATTER.
 - ANY DISCREPANCY, CONFLICT, MATTERS REGARDING ACCESS, SHORTAGE IN AREA OR BOUNDARY LINES, ENCROACHMENT, ENCUMBRANCE, VIOLATION, OVERLAP, SETBACK, EASEMENT OR CLAIMS OF EASEMENT, RIPARIAN RIGHT, AND TITLE TO LAND WITHIN ROADS, WAYS, RAILROADS, WATERCOURSES, BURNED GROUNDS, MARSHES, DREDGED OR FILLED AREAS OR LAND BELOW THE MEAN HIGHWATER MARK OR WITHIN THE BOUNDS OF ANY ADJOINING BODY OF WATER, OR OTHER ADVERSE CIRCUMSTANCE AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY A CURRENT INSPECTION AND ACCURATE AND COMPLETE LAND SURVEY OF THE LAND - NOT A SURVEY MATTER.
 - THE CORRECTNESS OF THE SQUARE FOOTAGE/ACREAGE COMPUTATION CONTAINED IN THE DESCRIPTION OF THE LAND IS NOT INSURED.
 - ANY RIGHT, EASEMENT, SETBACK, INTEREST, CLAIM, ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATIONS OR OTHER ADVERSE CIRCUMSTANCE AFFECTING THE TITLE DISCLOSED BY PLAT(S) RECORDED IN PLAT BOOK 35, PAGE 381; PLAT BOOK 48, PAGE 359; PLAT BOOK 73, PAGE 372; PLAT BOOK 74, PAGE 126; PLAT BOOK 80, PAGE 46; PLAT BOOK 83, PAGE 159; PLAT BOOK 84, PAGES 63 AND 64; AND PLAT BOOK 84, PAGES 118 AND 119 - DOES APPLY AS SHOWN.
 - AN ORDINANCE TO EXTEND THE CORPORATE LIMITS OF THE TOWN OF CLAYTON, NORTH CAROLINA RECORDED IN BOOK 3545, PAGE 616 - DOES APPLY AS SHOWN.
 - ORDINANCES FOR PLANNED DEVELOPMENT DISTRICT - MIXED USE GRANTED RECORDED IN BOOK 3635, PAGE 949; BOOK 4109, PAGE 782; AND BOOK 4326, PAGE 530 - DOES APPLY AS SHOWN.
 - UTILITY EASEMENT AND AGREEMENT RECORDED IN BOOK 3777, PAGE 471 - DOES APPLY AS SHOWN.
 - DECLARATION OF RESTRICTIVE COVENANTS RECORDED IN BOOK 3988, PAGE 128; AND AS AFFECTED BY RELEASE FROM DECLARATION OF RESTRICTIVE COVENANTS RECORDED IN BOOK 5268, PAGE 286 - UNABLE TO PLOT.
 - PRIVATE STREET EASEMENT AGREEMENT RECORDED IN BOOK 5268, PAGE 273 - DOES APPLY AS SHOWN.
 - EASEMENTS TO DUKE ENERGY PROJECT RECORDED IN BOOK 4527, PAGE 612; AND BOOK 5536, PAGE 516 - UNABLE TO PLOT. NO UNDERGROUND UTILITIES WERE MARKED AND NO OVERHEAD UTILITIES WERE LOCATED ON SUBJECT PROPERTY AT THE TIME OF THIS SURVEY. EASEMENTS ARE BLANKET IN NATURE.
 - EASEMENTS TO CAROLINA POWER & LIGHT COMPANY RECORDED IN BOOK 737, PAGE 108; BOOK 878, PAGE 601; AND BOOK 1064, PAGE 777 - UNABLE TO PLOT. NO UNDERGROUND UTILITIES WERE MARKED AND NO OVERHEAD UTILITIES WERE LOCATED ON SUBJECT PROPERTY AT THE TIME OF THIS SURVEY. EASEMENTS ARE BLANKET IN NATURE.
 - RIGHT OF WAY GRANT TO CAROLINA POWER & LIGHT COMPANY RECORDED IN BOOK 1200, PAGE 504 - UNABLE TO PLOT.
 - RIGHT OF WAY AGREEMENTS TO THE DEPARTMENT OF TRANSPORTATION RECORDED IN BOOK 1450, PAGE 126; BOOK 1450, PAGE 127; BOOK 1450, PAGE 128; AND BOOK 1450, PAGE 129 - DOES APPLY AS SHOWN.

LEGEND:

SUBJECT PROPERTY LINE	●	IRON ROD FOUND	SPC	STATE PLANE COORDINATES
ADJOINER PROPERTY LINE	●	5/8" REBAR WITH CAP SET	⊕	ELECTRIC PEDESTAL
EASEMENT LINE	○	IRON PIPE FOUND	⊙	FIBER OPTIC PEDESTAL
ROAD RIGHT OF WAY	—	PK NAIL OR MAG NAIL FOUND	—	TELECOMMUNICATIONS PEDESTAL
EDGE OF ROAD	—	CONC	—	UTILITY POLE
S	—	CONCRETE	•	SPOT ELEVATIONS
D	—	REINFORCED CONCRETE PIPE	⚡	FIRE HYDRANT
OWH	—	INVERT	⚡	WATER VALVE
TREE LINE	—	STREET SIGN	⚡	WATER METER
	—	TRAFFIC POLE	⚡	CURB INLET

LINE #	DIRECTION	LENGTH
L1	N34°12'26"W	16.81'
L2	N00°41'07"E	20.82'
L3	N14°20'29"W	24.92'
L4	N52°17'16"W	57.63'

CURVE #	LENGTH	RADIUS	DELTA	CHORD	CHORD LENGTH
C1	48.45'	30.00'	086°43'13"	S70°03'42"W	41.95'
C2	173.82'	548.32'	018°09'48"	N55°37'01"W	173.10'
C3	123.58'	519.52'	013°33'38"	N40°18'27"W	123.27'

PRITCHARD ROAD - N.C.S.R. 1714
(80' WIDE - PUBLIC R/W)
PER PB 83 PG 159

RIVERWOOD RANCH BOULEVARD
(80' WIDE - PUBLIC R/W)
PER PB 83 PG 159

ALTA/NSPS LAND TITLE SURVEY
OF PROPERTY OWNED BY
WILDER INVESTORS LLS & ZOGREO, LLC
LOCATED AT
PRITCHARD ROAD
WILDERS TOWNSHIP, JOHNSTON COUNTY, NORTH CAROLINA

TO: CHICAGO TITLE INSURANCE COMPANY
THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 5, 6, 7(b)(1), 8, 9, 10, 11(a) 13, 14, 16, AND 17 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON AUGUST 2ND, 2022. DATE OF PLAT OR MAP: AUGUST 9TH, 2022.

"I HEREBY STATE THAT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF, THE SURVEY SHOWN HEREIN WAS MADE IN ACCORDANCE WITH THE REQUIREMENTS OF THE STANDARDS OF PRACTICE MANUAL FOR SURVEYING IN NORTH CAROLINA, AND MEETS OR EXCEEDS THE REQUIREMENTS FOR A CLASS A SURVEY AS SPECIFIED THEREIN."

TECH. J. WARE, SCPLS 31199



REVISIONS:	NO.	DATE	DESCRIPTION
	1	08/09/2022	SUBMITTED FOR REVIEW

DRAWN BY: JAC DATE: 07/27/22 PROJECT NO: 64013
CHECKED BY: KKK DATE: 08/07/22 SCALE: 1" = 20'
FIELD WORK COMPLETED: 08/02/2022 SHEET 1 OF 1



Request:
2022-166-RZ, to Rezone a parcel from
Planned Development-Mixed Use (PD-MU) to Highway Business (B-3).

Applicant: VMG Acquisitions, LLC
Property Owners: Zogno, LLC/Wider Investors, LLC
Trg #: 1600008A

Legend
Parcel's selection



Staff Report Map
Prepared by: TOC Planning Department
November 7, 2022

Disclaimer: Town of Clayton assumes no legal responsibility
for the quality of the data represented here.

Document Path: C:\713\W\W\T\Z\2022\166-RZ\Clayton\Clayton\Reporting



Clayton Planning Board Agenda Cover Sheet

Meeting Date

November 28, 2022

Agenda Location

PUBLIC COMMENT SESSION

Item Title

2022-109-CZM The Townes at Little Creek Conditional Zoning District

Presenter(s)

Ben Howell, Planning Director

Suggested Action

Other - Recommend Approval with Conditions

Strategic Priorities Alignment



☐
Think Clayton
(Administrative)



☐
Think Arts &
Culture



☐
Think
Downtown



☐
Think
Economic
Development



☒
Think Land
Use &
Housing



☐
Think
Mobility



☐
Think Parks,
Recreation
& Natural
Resources



☐
Think Public
Services &
Infrastructure

Public Hearing: Yes - Legislative

If Approved, Will Document Require Recordation? No

Does This Item Require a Communication Plan?

- ☒ Public Hearing (Required by GS)
- ☒ Newspaper Notice (Required by GS)
- ☒ Public Forum/Input Session
- ☐ E-News Distribution
- ☐ Social Media
- ☒ Special Mailing

- ☐ Public Hearing (Not Required by GS)
- ☐ Newspaper Notice (Not Required by GS)
- ☐ Press Release
- ☐ Website
- ☐ Survey
- ☐ None Required

Other/Special Instructions: Property Posting

Updates Since Previous Presentation

N/A

Summary

Request to rezone approximately 53.83 acres located adjacent to and behind the Clayton Town Center commercial development, accessed from Financial Drive and Town Centre Boulevard, from Single-Family Residential 10 (R-10) and Highway Business Special Use (B-3 SUD) Zoning Districts to a Conditional Zoning - Residential (CZ-R) District. The Conditional Zoning District would allow for up to 169 townhome units and is accompanied by a Master Plan and Master Plan Narrative.

Background/History

N/A

Recommendation

Staff recommends approval of the request subject to the 16 conditions contained in the Staff Report.

Funding Source

N/A

Cost

N/A

Corresponding Documentation

- [1 2022-109-CZM Townes at Little Creek Staff Report](#)
- [2 2022-109-CZM Townes at Little Creek Application](#)
- [3 2022-109-CZM Towns At Little Creek Master Plan Narrative](#)
- [4 2022-109-CZM Townes at Little Creek Master Plan](#)
- [5 2022-109-CZM Townes at Little Creek Boundary Survey](#)
- [6 2022-109-CZM Townes at Little Creek Neighborhood Meeting Information](#)
- [7 2022-109-CZM Townes at Little Creek TIA](#)
- [8 2022-109-CZM Towns at Little Creek NCDOT TIA Review](#)
- [9 2022-109-CZM Townes at Little Creek Wastewater Allocation Request](#)
- [10 2022-109-CZM Townes at Little Creek Recommended Conditions - Applicant Signed](#)
- [11 2022-109-CZM Towns at Little Creek Staff Report Maps](#)

Meeting Timeline

Planning Board Public Comment Session - November 28, 2022

Submitted By: Ben Howell, Planning + Zoning

Reviewed By:

Ben Howell, Planning Director
Love Ott, Land Development
Specialist

Approved - Nov 23 2022
Approved - Nov 23 2022



Town of Clayton
Planning Department
111 E. Second Street, Clayton, NC 27520
P.O. Box 879, Clayton, NC 27528
Phone: 919-553-5002
Fax: 919-553-1720

Planning Board November 28, 2022

STAFF REPORT

Application Number: 2022-109-CZM

Project Name: Townes at Little Creek

Tag #: 05G02001A

Location: Town Centre Boulevard and Financial Drive

Existing Zoning District: R-10, B-3 SUD

Proposed Zoning District: CZ-R

Applicant: Bass, Nixon and Kennedy, Inc. – Consulting Engineers

Owner(s): Douglas and Cynthia Stephens, Irrevocable Trust

Public Noticing:

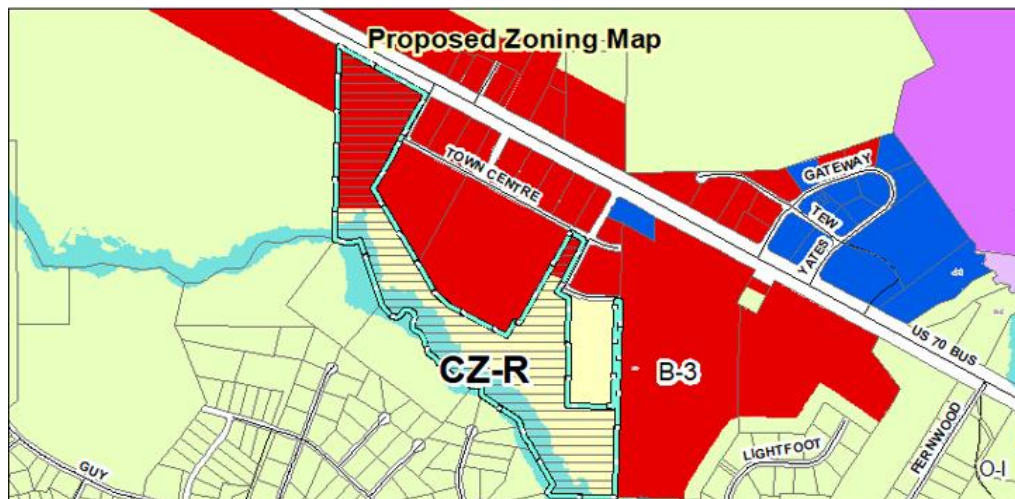
- Neighborhood meeting: September 13, 2022
- Sign posted: November 16, 2022
- Letters mailed: November 16, 2022

REQUEST: Rezone the property referenced above, located on either side of and behind the Clayton Town Center Shopping Center (accessed from Town Centre Boulevard and Financial Drive), from the Single Family Residential-10 (R-10) and Highway Business Special Use District (B-3 SUD) to a Conditional Zoning – Residential District (CZ-R). The Conditional Zoning District would allow for the development of 53.83 acres in accordance with the master plan to develop up to 169 townhome units, or a density of 3.14 units/acre. The Conditional Zoning District is accompanied by a Master Plan and Master Plan Narrative.

SITE DATA:**Acreage:** 53.83 acres**Existing Use:** Vacant

ADJACENT ZONING AND LAND USES:

Direction	Zoning	Existing Use(s)
North	Highway Business (B-3)	Existing Commercial/Retail
South	Residential-Estate (R-E)	Existing Single-Family Residential
East	Residential-Estate (R-E) and Highway Business (B-3)	Vacant
West	Highway Business (B-3)	Vacant



DEVELOPMENT DATA:

Proposed Uses:	Single-Family Residential Attached
Proposed Density:	Overall up to 169 units are proposed at an overall proposed residential density of 3.14 units/acre for the development
Fire Protection:	Town of Clayton
Access/Streets:	Access from Financial Drive and Town Centre Boulevard
Water/Sewer Provider:	Town of Clayton
Electric Provider:	Duke Energy

OVERVIEW:

The applicant is requesting a Conditional Zoning District with an associated Master Plan to allow for 169 townhome units on 53.83 acres, as shown on the Master Plan. The development has requested the following minimum lot dimensional standards:

Building Setbacks: Front-load Townhomes

Front (Street or Sidewalk):	23' (modification requested)
Side:	3' minimum/10' aggregate
Rear:	20'
Building Separation:	0'/20'

Building Setbacks: Rear-load Townhomes

Front (Street or Sidewalk):	10'
Side:	3' minimum/10' aggregate
Rear:	20' from alley
Building Separation:	0'/20'

Transportation Improvements:

The development will be accessed from Town Centre Boulevard on the west and Financial Drive on the east, and will consist of internal streets built to Town standards with sidewalks, curb and gutter. Ramey Kemp performed a Transportation Impact Analysis, which included an estimate of the trip generation from the development. The proposed trip generation is summarized below in Table ES-1:

Table E-1: Site Trip Generation

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Density Shown on Site Plan						
Multifamily Housing (Low-Rise) (220)	169 DU	1159	18	57	59	34
Density Analyzed in TIA						
Multifamily Housing (Low-Rise) (220)	203 DU	1377	21	65	68	40
Difference (+/-)		218	3	8	9	6

A Transportation Impact Analysis was conducted and reviewed by the Town and NCDOT. The proposed condition 6 includes improvements recommended in the Analysis that the developer has currently agreed to construct. The Analysis also included a recommendation to conduct a traffic signal warrant analysis during build-out of the development, and the proposed condition 7 includes this requirement, including a requirement for the developer to pay a pro-rata share of the cost of a signal if it is warranted.

Stormwater, Water, Sewer and Electricity

Stormwater

The project area is currently vacant, and drains to Little Creek, located along the rear of the site. The proposed development will require storm water management measures for quality and quantity treatment in accordance with the Town of Clayton Stormwater Design Manual. A network of subsurface reinforced concrete pipes will convey storm water flows from impervious areas to proposed Stormwater Control Measures (SCMs). Locations for the SCMs are generally identified on the Master Plan. Exact locations and sizes will be determined at subdivision/site plan. All stormwater management will be required to meet all North Carolina Department of Environmental Quality (NCDEQ) and Town of Clayton design requirements at time of Subdivision infrastructure or Site plan submittal.

Water Service

Public water is located in the Financial Drive and Town Centre Boulevard Rights-of-Way, and connect to a water main on the north side of US Highway 70. Public water will be extended to serve the development from these lines, and will be designed to meet all Town of Clayton Standards and Specifications.

Sanitary Sewer Service

In accordance with the Town's requirements, the development will be served by public utility infrastructure. The site is currently served by an existing Town Pump Station located behind the shopping center. The Town is currently working to study this area and the Pump Station for future improvements. The developer will work with the Town to ensure the development can be served by public sewer – the proposed condition 12 addresses the public sewer service for the development.

Electricity

The development is proposed to be served by Duke Energy, and will provide street lighting meeting the Town's and Duke Energy's requirements.

Open Space/Amenities

The proposed development is proposing to provide recreational/open space totaling 2.09 acres, with amenities including a Neighborhood dog park, playgrounds and dedication of a new public greenway easement on the north side of Little Creek. The proposed public greenway easement area totals approximately 1.71 acres. The developer is proposing to pay a fee-in-lieu of open space in accordance with the Town Unified Development Ordinance for the remaining public open space requirement.

Landscaping, Buffering and Screening:

The proposed development will provide a 15-foot-wide Type C Landscape Buffer with opaque screening, as required by the Unified Development Code, along the project boundaries. Pursuant to the Code, existing vegetation that meets or exceeds the buffer requirement will be used to satisfy the buffer requirement. The development will also provide street yard trees and off-street parking screening and landscaping in accordance with the UDC. The development will provide additional street tree plantings along the west side of Financial Drive from the intersection of Town Centre Boulevard to the intersection with proposed Public Street D, supplementing the required street trees with deciduous understory trees planted at a rate of one tree for every 40 linear feet of right-of-way.

Architectural Standards

The applicant has proposed the following architectural standards, which are also included in proposed Conditions 14 and 15:

1. All units will be two-story with a variety of elevations. Units of the same elevation shall not be side by side. Exterior color schemes will not be repeated side by side.
2. All homes will have a combination of two or more of the following materials on the front façade: stone, brick, lap siding, fiber cement siding, shakes or board and batten. The exterior siding material on the side and rear facades will be fiber cement with colors to match the front elevations. Vinyl may be used for soffits, fascia, and corner boards.
3. Stone/masonry accents will be provided on a minimum of 25% of all front building facades.
4. Each townhome shall have a covered porch element.
5. Two vehicular parking spaces to be provided for each home (1 car garage and driveway).
6. Side roof eaves to be 10" overhang except between interior townhome units.
7. Architectural style shingles to be used.
8. Rear concrete pad/patio for outdoor living will be provided on all units with a front-facing garage.

CONDITIONAL ZONING AND MASTER PLAN APPROVAL CRITERIA

Conditional Zoning District Approval Criteria

See Master Plan Narrative for Applicant Responses

In connection with its legislative decision on a conditional zoning district request, the Town Council may consider factors including, but not limited to, the following:

1. Consistency with the adopted plans and policies of the Town.

Staff Commentary: The 2045 Growth Plan identifies this area as "High Density Residential," with a Community Center Overlay. The High Density Residential land use category allows for up to 10 units per acre with a mix of single family detached homes, townhomes and apartments, while the Community Center Overlay allows for up to 12 units per acre with a mix of "High Density single family detached homes, townhomes, apartments, mixed use buildings with live/work units." The High Density Residential category "provides for housing near major transportation corridors, existing commercial areas, and Downtown," while the Community Center Overlay encourages apartments and townhomes to be located in close proximity to shopping and services, with the development accessible by "both a convenient road network and a system of sidewalks or greenways. Staff believes that this proposed development is consistent with the 2045 Growth Plan.

2. Suitability of the subject property for uses permitted by the current versus the proposed conditional district.

Staff Commentary: The property is currently zoned a mix of R-10 and B-3 SUD (the SUD designation is no longer used), and is located adjacent to existing commercial services as well as near existing residential uses. The property is also limited by environmental constraints, including Little Creek, which runs through a significant portion of the property. Staff believes the subject property is suitable for the proposed uses and development.

3. Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town

Staff Commentary: The surrounding area is a mix of commercial, institutional and residential uses, and the proposed use is residential. The proposed conditional zoning district will allow for additional suburban-style residential development.

4. The capacity of adequate public facilities and services including schools, roads, recreation facilities, wastewater

treatment and water supply facilities and stormwater drainage facilities for the proposed conditional district.

Staff Commentary: The proposed development would be served by Johnston County schools (West Clayton Elementary, Clayton Middle, Clayton High), and West Clayton Elementary and Clayton High School are on the County's "capped" list for 2021-2022. Access to the development will be provided Town Centre Boulevard and Financial Drive, with improvements recommended by the TIA included in Conditions 6 and 7. The development will have approximately 2.09 acres of recreation/open space area, with approximately 1.71 acres dedicated to the Town as a greenway easement along Little Creek. The development will be required to meet the requirements in the Town's Stormwater Ordinance. The property has access to public water along Town Centre Boulevard and Financial Drive, and will install sanitary sewer throughout the development, which will connect to an existing Town Pump Station behind the Wal-Mart – proposed Condition 12 further addresses provision of sewer service to the development. Staff believes that there is adequate capacity of public services and facilities to serve the proposed development.

5. It has been determined that the legal purposes for which zoning exists are not contravened.

Staff Commentary: Staff does not believe that legal purposes for which zoning exists will be contravened by the approval of the conditional zoning district.

6. It has been determined that there will be no adverse effect upon adjoining property owners unless such effect can be justified by the overwhelming public good or welfare.

Staff Commentary: The proposed development will consist of a townhomes, providing a transition from the commercial uses along US 70 to the residential uses on the south side of Little Creek. Improvements to the existing public road network and public utilities will mitigate impacts from the development on adjoining properties.

7. It has been determined that no one property owner or small group of property owners will benefit materially from the change to the detriment of the general public.

Staff Commentary: While the owners/developers may benefit from the development, staff believes that with the proposed conditions there will be no detriment to the general public.

Master Plan Approval Criteria

The master plan shall include, and the applicant shall be responsible for successfully addressing the following:

- Compliance with § 155.203(L) and all other applicable requirements of this chapter, or analysis and justification if it deviates from the requirements of this chapter;
- Consistency with the Clayton General Design Guidelines;
- Conformance of the proposal with the stated purpose of the requested conditional zoning district;
- Compatibility of the proposed development with the adjacent community;
- The quality of design intended for each component of the project and the ability of the overall development plan to ensure a unified, cohesive environment at full build-out;
- Compatible relationships between each component of the overall project;
- Self-sufficiency of each phase of the overall project;
- The fiscal impact of the proposal and the proposed financing of required improvements;
- The success of the proposal in providing adequate pedestrian and bicycle links within the development and with the adjacent community; and
- The effectiveness with which the proposal protects and preserves the ecologically sensitive areas within the development.

Staff Commentary: The applicant has provided a Master Plan Narrative providing details of the proposal. Through the

Master Plan, Narrative and proposed conditions, staff believes that the applicant has successfully met the criteria.

CONSIDERATIONS:

- The Planning Board shall make a recommendation on the application to the Town Council. The Planning Board's recommendation shall include a written statement to the Town Council describing whether its recommendation is consistent with the adopted plans and policies of the Town. If the Planning Board fails to make a recommendation, the Town Council may process the request without a recommendation.
- If approved, the conditional zoning district, master plan and narrative will be recorded with Johnston County and shall guide future development for this land. The conditional zoning district, master plan, and narrative shall not expire, and will run with the land.
- The Planning Board may recommend conditions be added or removed. The developer must agree to any imposed conditions.

RECOMMENDED CONDITIONS OF APPROVAL:

If approved, staff is recommending the following conditions of approval be placed upon the application. The applicant has reviewed the proposed conditions and is in agreement with the conditions proposed by staff.

1. Following Town Council approval, an electronic copy of the Master Plan and Narrative including the Conditions of Approval shall be submitted to the Planning Department for final approval.
2. The Development shall meet all adopted Town of Clayton Unified Development Code (UDC) requirements, Town of Clayton Engineering and Stormwater design standards, and the North Carolina Fire Code and NFPA Fire standards, except where specifically modified by the approved master plan.
3. The Development shall be constructed in substantial conformance with the Master Plan and Master Plan Narrative as approved by the Clayton Town Council.
4. Permitted uses shall be limited to single-family detached residential and townhomes and any allowed accessory uses within the Town of Clayton UDC for residential development.
5. The following standards will apply to the development:
 - Maximum number of Units: 169 dwelling units
 - Maximum Density: 3.14 DUA
 - Minimum Lot Size: 1,600 square feet
 - Minimum Dimensional Standards as specified in Master Plan
6. The following transportation improvements will be constructed and accepted by NCDOT (where necessary) prior to issuance of the first Certificate of Occupancy:
 - Construct an eastbound approach with one egress lane (shared left and through-lane) and one ingress lane at Town Centre Blvd and proposed Public Street A in the western portion of the development.
 - Construct site access along the northbound approach at Financial Drive and Scholar Drive.
7. A signal warrant analysis for the intersection of Financial Drive and US 70, meeting NCDOT requirements, shall be performed after 84 Certificates of Occupancy are issued for the development. If the signal warrant analysis determines that a signal is warranted at this intersection, the developer will contribute a pro-rata fee in lieu to the

Town of Clayton to mitigate the proposed 2.5% increase in traffic to be generated from the development. The pro-rata fee shall not exceed 15% of the cost of the traffic signal, based on a cost estimate approved by the Town Engineering Department, and shall be paid to the Town prior to the issuance of the final certificate of occupancy.

8. After a certificate of occupancy has been issued for 50% of the lots (84 units), perform a signal warrant analysis at the intersection of Financial Drive and US 70 Business.
9. The development will include the following active amenity areas:
 - Two Tot Lots
 - Fenced Dog Park
 - Concrete or asphalt connections to the greenway easement
10. The development shall dedicate a 20' Town of Clayton Greenway Easement along the southern boundary of the site, following Little Creek. The final location of the easement shall be based on coordination with Town staff.
11. The Development shall have a minimum of 1.71 acres of public recreational open space.
12. Public sewer is proposed to be provided to the site by an extension of a gravity sewer main through a future proposed Town of Clayton CIP project. The site currently is served by an existing Town of Clayton Public Pump Station and is nearing capacity. The existing downstream gravity main and Walmart pump station will be analyzed for capacity. The Town of Clayton has engaged an engineering consultant to design a gravity sewer extension in order to abandon the existing pump station. Once the sewer extension project is complete, the proposed townhome project will connect to the new gravity sewer line. The developer will work with the Town of Clayton throughout the CIP project as the project moves to design/construction and the developer will contribute a pro-rata fee to the Town of Clayton to mitigate the proposed flow from the development.
13. Energy efficient features will include a minimum of three of the following: Insulation rated to at least RESNET-defined Grade II; Air barrier encloses insulation on all six sides when installed in vertical exterior walls; Blocking and air sealing at edge of horizontally installed insulation to separate conditioned space from unconditioned space; Penetrations, chases, and openings to unconditioned space fully sealed with solid blocking or sealant; Insulation to extend over top plates and wind baffles installed at all eaves; All doors adjacent to unconditioned space to have weatherstrip and rough openings around windows and doors are air sealed to framing; minimum of one Energy Star appliance installed; 90% efficient lighting (CFLs, LEDS, or Energy Star fixtures); Ducts insulated to R-8 in unconditioned space; Minimum 6 mil poly vapor barrier installed.
14. All units will be two-story with a variety of elevations. Units of the same elevation shall not be side by side. Exterior color schemes will not be repeated side by side.
15. The following architectural standards shall be met:
 - All homes will have a combination of two or more of the following materials on the front façade: stone, brick, lap siding, fiber cement siding, shakes or board and batten. The exterior siding material on the side and rear facades will be fiber cement with colors to match the front elevations. Vinyl may be used for soffits, fascia, and corner boards.
 - Stone/masonry accents will be provided on a minimum of 25% of all front building facades.
 - Each townhome shall have a covered porch element.
 - Two vehicular parking spaces to be provided for each home (1 car garage and driveway).
 - Side roof eaves to be 10" overhang except between interior townhome units.
 - Architectural style shingles to be used.

- Rear concrete pad/patio for outdoor living will be provided on all units with a front-facing garage.

16. To the extent of any conflict between the Master Plan, Master Plan Narrative and these conditions, these conditions shall control.

ATTACHMENTS:

- 1) Application
- 2) Master Plan Narrative
- 3) Master Plan
- 4) Boundary Survey
- 5) Neighborhood Meeting Materials
- 6) Transportation Impact Analysis (TIA)
- 7) NCDOT Review of TIA
- 8) Wastewater Allocation Scoring Sheet
- 9) Recommended Conditions of Approval - Signed
- 10) Staff Report Map



TOWN OF CLAYTON
Planning Department
111 E. Second St., P.O. Box 879
Clayton, NC 27528
Phone: 919-553-5002
Fax: 919-553-1720

Conditional Zoning w/Master Plan Coversheet

Name of Project: The Townes at Little Creek Subdivision **Date:** 7-1-22
Applicant Name: Bass, Nixon and Kennedy, Inc. - Consulting Engineers

The following checklist to be completed by applicant:

- ☒ Pre-Application Meeting on: 2/17/22 and 5/10/22
- ☐ Review Fee (Fee will be delivered to Town of Clayton.)
- ☒ Completed Application
- ☒ Owner's Consent Form
- ☒ Adjacent Property Owner's List
- ☐ Neighborhood Meeting Letter (one copy) (Will submit when meeting date finalized.)
- ☒ 2 sets of stamped, addressed, empty envelopes for adjacent property owner notification (To be delivered to Town of Clayton)
- ☒ Signed & sealed boundary survey
- ☒ Copy of signed & sealed boundary survey in PDF on USB
- ☒ Master Plan Set to include the following:
- Cover Sheet
 - Survey
 - Bubble Plan Outlining:
 - a. Where and which uses or groups of uses will occur
 - b. The proposed intensity/density of those uses
 - c. General location of internal and external network of public right-of-way and public infrastructure
 - d. All required elements for establishment of a zoning district including but not limited to dimensional standards, open space network, natural resource preservation, and landscaping or buffering

Reviewed by: _____



TOWN OF CLAYTON
Planning Department
111 E. Second St., P.O. Box 879
Clayton, NC 27528
Phone: 919-553-5002
Fax: 919-553-1720

Conditional Zoning w/Master Plan Application

Conditional Rezoning w/Associated Site Plan Fee: \$1000 + \$5.00 per acre
Advertising Fee: \$200.00

SITE INFORMATION

Name of Project: The Townes at Little Creek Subdivision
Acreage of Property: 53.83 Zoning District: R-10, B-3 SUD
County Tag #: 05G02001A NC Pin #: 164900-95-2419
Address/Location: Town Centre Blvd. and Financial Drive
Existing Zoning District: R-10, B-3 SUD Proposed Zoning District: CZ

APPLICANT INFORMATION

Applicant: Bass, Nixon and Kennedy, Inc. - Consulting Engineers
Mailing Address: 6310 Chapel Hill Road, Ste. 250, Raleigh, NC 27607
Phone Number: 919-851-4422 Fax: 919-851-8968
Contact Person: Marty D. Bizzell, PE, CPESC
Email Address: marty.bizzell@bnkinc.com

PROPERTY OWNER INFORMATION

Name: Douglas and Cynthia Stephens, Irrevocable Trust
Mailing Address: 319 Chapanoke Road, Ste. 102, Raleigh, NC 27603
Phone Number: N/A Fax: N/A
Email Address: N/A

OFFICE USE ONLY

Date Received: _____ Amount Paid: _____ File Number: _____

January 2021

EXPLANATION OF PROJECT

Please provide detailed information concerning all requests. Attach additional sheets if necessary.

The purpose of this request is to rezone the above referenced properties from R-10 & B3 SUD to Conditional Zoning - Residential (CZ-R). The request is accompanied by a master plan which indicates a proposed density of approximately 3.14 units per acre of residential development. The master plan proposes residential townhomes with a typical lot dimension of 70' x 20'. The neighborhood would be served by a combination of private and public streets with rear private alleys. The development will provide stormwater management, adequate water and sewer facilities and open space to serve the neighborhood. Any TIA identified road improvements will be made as well as necessary sewer improvements that may be identified to serve the development.

APPROVAL CRITERIA – REZONING

All applications for a Conditional Rezoning must address the following Approval Criteria:

1. Consistency with the adopted plans of the Town.

See attached.

2. Suitability of the subject property for uses permitted by the current vs. the proposed conditional district.

The existing zoning includes the B3-SUD legacy district which must be rezoned.

3. Whether the proposed change tends to improve the balance of uses, or meets specific demand in the Town.

The proposed change would add a complementary new element (townhomes) to the existing land use fabric of retail, institution (charter school), NC State Agricultural Research Facility/Farm, and single-family residential. This change will encourage the development of a residential community adjacent to a retail center and school promoting walkability and reduced vehicle trips.

4. The capacity of adequate public facilities and services including schools, roads, recreation facilities, wastewater treatment, water supply facilities and stormwater drainage facilities is available for the proposed conditional district.

See Attached.

5. It has been determined that the legal purposes for which zoning exists are not violated.

All Town of Clayton rezoning procedures and approvals will be followed and adhered to and will not be violated.

6. It has been determined that there will be no adverse effect upon adjoining property owners unless such effect can be justified by the overwhelming public good or welfare.

The proposed development should have no adverse effect upon adjoining property owners. Increased traffic, stormwater and sewer will be analyzed and mitigated.

January 2021

-
7. It has been determined that no one property owner or small group of property owners will benefit materially from the change to the detriment of the general public.

It is not the intent of the developer that one property owner or small group of property owners will benefit materially from the change to the detriment of the general public.

APPROVAL CRITERIA- MASTER PLAN

All associated Master Plans must address the following Approval Criteria:

1. Compliance with code section 155.203(L) and all other applicable requirements of this chapter, or analysis and justification if it deviates from the requirements of this chapter.

The proposed master plan is in accordance with UDC sections 155.203 (L) and 155.705.

The site is larger than 5 acres in size; proposes an appropriate residential use and density; exceeds the amount of required open space; provides appropriate buffers; and contains a comprehensive stormwater management system with multiple SCMs.

2. Consistency with the Clayton General Design guidelines.

The proposed master plan is consistent with the Town's adopted General Design guidelines. The plan has been thoughtfully designed to minimize impacts to existing environmental resources, provides vehicular and pedestrian connections to the adjacent retail center and charter school, provides required off-street parking spaces, provides alley-loaded townhomes along Financial Drive to alleviate conflicts during school carpool ques, provides multiple elevations and committed architectural standards as a zoning condition.

3. Conformance of the proposal with the stated purpose of the requested conditional zoning district.

The proposal is for a townhome development. The current zoning is B-3 and R-10 which allows for commercial development and low-density single-family development.

The proposed development is more in line with the 2045 Growth Plan and will provide the necessary infrastructure to support the higher density townhome development, while leaving a large portion of site undeveloped.

4. Compatibility of the proposed development with the adjacent community.

The proposed development is both complimentary to and compatible with the adjacent community. The addition of a residential component surrounding the existing retail center provides the ability for homeowners to walk to restaurants, shopping, and to the adjacent charter school; thus, reducing vehicular traffic and trips.

5. The quality of design intended for each component of the project and the ability of the overall development plan to ensure a unified, cohesive environment at full build-out.

The proposed development will consist of townhomes that will provide a logical and cohesive transition from the commercial center at Clayton Town Center into the more low density development to the south. The property will consist of a single development type, with unified streets, dwelling types and architectural styles and finishes.

6. Compatible relationships between each component of the overall project.

The proposed development has been thoughtfully designed and lots sited to minimize impacts and avoid sensitive natural features leaving nearly 75 percent of the property undeveloped.

7. Self-sufficiency of each phase of the overall project.

Each phase of the project will be designed to adhere to Town of Clayton UDC requirements.

8. Documentation that the proposed infrastructure improvements accommodate the additional impacts caused by the development, or documentation to assure that the development, as proposed, will not overtax the existing public infrastructure systems.

The capacity of adequate public facilities and services including schools, roads, recreation facilities, wastewater treatment, water supply facilities and stormwater drainage facilities

facilities is available for the proposed conditional district: A traffic impact analysis (TIA) has been performed to determine if there are adequate roads/streets to serve the proposed development.

9. The fiscal impact of the proposal and the proposed financing of required improvements.

The development will install all necessary infrastructure and pay required System Development Fees and Recreation Fees.

10. The success of the proposal in providing adequate pedestrian and bicycle links within the development and with the adjacent community.

Sidewalks are being provided on both sides of internal public streets. Crosswalks, in accordance with Town of Clayton standards,

will be provided at the Financial Drive/Scholar Drive intersection and from the western portion of the site into the retail center.

In coordination with the adjacent charter school, the development will provide a mulch surfaced connection to the proposed Town of Clayton greenway.

11. The effectiveness with which the proposal protects and preserves the ecologically sensitive areas within the development.

The development has been thoughtfully designed and density has been limited to minimize impacts and avoid existing streams and wetland areas.

Of the 53.83 acres, 40.28 acres or nearly 75 percent of the overall site will be open space.

APPLICANT AFFIDAVIT

I/We, the undersigned, do hereby make application and petition to the Town Council of the Town of Clayton to amend the Zoning Ordinance and change the Official Zoning Map of the Town of Clayton as requested.. I hereby certify that I have full legal right to request such action and that the statements or information made in any paper or plans submitted herewith are true and correct to the best of my knowledge. I understand this application, related material and all attachments become official records of the Planning Department of the Town of Clayton, North Carolina, and will not be returned.

Marty D. Bizzell, PE

Print Name

Marty D. Bizzell

Signature of Applicant

Digitally signed by Marty D. Bizzell
DN: cn=Marty D. Bizzell, o=Town of Clayton, ou=Planning Department, email=Marty.D.Bizzell@townofclayton.com, c=US

6/29/22

Date

January 2021

Conditional Zoning District Approval Criteria

1. Consistency with the adopted plans of the Town.

The Future Land Use Map designates this property as Community Center (CC) which allows for high density (up to 12 units per acre) residential uses including single family detached homes, townhomes, and apartments. The proposed townhome development is to be located within close proximity/walking distance to the adjoining retail center meeting the intent of the FLUM designation.

The proposed conditional zoning meets, at a minimum, the following 2045 Comprehensive Plan goals, policies, and strategies:

- Goal LU-1: Preserve Clayton's character while allowing for growth and development in appropriate areas.
- Goal LU-3: Encourage a range of housing types and lot sizes that will meet the needs of various income levels, family sizes, and ages.
- Policy LU 1.2: Encourage developments which incorporate high-quality design and enhance the quality of life for existing and future residents of the Town.
- Policy LU 1.6: Promote location and intensity of development that mitigates impacts to the transportation network and leads to reduced vehicle trips and/or shorter trip lengths, enhanced circulation, and increased public safety.
- Strategy LU 1.6.1: Focus growth in and near Community Centers, Neighborhood Centers and Downtown.

4. The capacity of adequate public facilities and services including schools, roads, recreation facilities, wastewater treatment, water supply facilities and stormwater drainage facilities is available for the proposed conditional district.

A traffic impact analysis (TIA) is being performed to determine if there are adequate roads/streets to serve the proposed development. The developer will construct any required road improvements recommended by the TIA. The site currently is served by an existing Town of Clayton Public Pump Station. The pump station is nearing capacity and the Town of Clayton has a capital improvement project (CIP) to analyze

the pump station capacity and provide a gravity sewer extension to an existing gravity sewer outfall. At this time, a consultant has been engaged to provide alternatives to the pump station. Once the sewer extension project is complete, the proposed townhome project will connect to the new gravity sewer line. The developer will work with the Town of Clayton throughout the CIP project as the project moves to design and construction.

Conditional Zoning District Approval Criteria

8. Documentation that the proposed infrastructure improvements accommodate the additional impacts caused by the development, or documentation to assure that the development, as proposed, will not overtax the existing public infrastructure systems.

The capacity of adequate public facilities and services including schools, recreation facilities, water supply facilities and stormwater drainage facilities is available for the proposed conditional district: A traffic impact analysis (TIA) has been performed to determine if there are adequate roads/streets to serve the proposed development. The developer will construct any required road improvements recommended by the TIA. The site currently is served by an existing Town of Clayton Public Pump Station. The pump station is nearing capacity and the Town of Clayton has a capital improvement project (CIP) to analyze the pump station capacity and provide a gravity sewer extension to an existing gravity sewer outfall. At this time, a consultant has been engaged to provide alternatives to the pump station. Once the sewer extension project is complete, the proposed townhome project will connect to the new gravity sewer line. The developer will work with the Town of Clayton throughout the CIP project as the project moves to design and construction.



TOWN OF CLAYTON
Planning Department
111 E. Second St., P.O. Box 879
Clayton, NC 27528
Phone: 919-553-5002
Fax: 919-553-1720

OWNER'S CONSENT FORM

Consent is required from the property owner(s) if an agent will act on their behalf. A separate form is required from each owner. Consent is valid for one year from date of notary, unless otherwise specified. All fields must be completed.

Project Name: Townes at Little Creek **Address or PIN #:** 164900-95-2419

AGENT/APPLICANT INFORMATION:

Marty D. Bizzell
(Name - type, print clearly)

6310 Chapel Hill Road, Ste. 250
(Address)
Raleigh, NC 27607
(City, State, Zip)

I hereby give **CONSENT** to the above referenced agent/applicant to act on my behalf, to submit applications and all required materials and documents, and to attend and represent me at all meetings and public hearings pertaining to the following processes (*list applicable requests*):

Rezoning
Construction Drawings

Preliminary Site Plan
Platting

Furthermore, I hereby give consent to the party designated above to agree to all terms and conditions which may arise as part of the approval of this application.

I hereby certify that I have authority to execute this consent form as/on behalf of the property owner. I understand that any false, inaccurate or incomplete information provided by me or my agent will result in the denial, revocation or administrative withdrawal of this application, request, approval or permits. I further agree to all terms and conditions which may be imposed as part of the approval of this application.

OWNER AUTHORIZATION:

Central Carolina Realty, Inc.
(Name - type, print clearly)
[Signature]
(Owner's Signature)

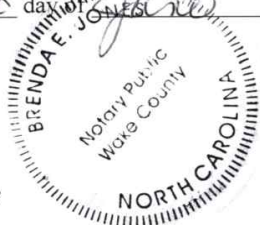
319 Chapanoke Rd., Ste. 102
(Address)
Raleigh, NC 27603-0000
(City, State, Zip)

STATE OF North Carolina
COUNTY OF Wake

Sworn and subscribed before me Brenda E. Jones, a Notary Public for the above State and County, this the 30th day of June, 2022.

SEAL

July 2018



Brenda E. Jones
Notary Public

My Commission Expires:

6/25/25
June 25, 2025



The Townes at Little Creek Conditional Zoning Master Plan

Town of Clayton Project 2022-109-CZM, 2022-35-WWA

July 1, 2022

Revised: August 30, 2022, October 24, 2022

November 17, 2022

Prepared For:



Prepared By:



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Project Overview and General Information

The proposed Townes at Little Creek neighborhood will be constructed by DRB Homes and consists of 169 townhome units on a 53.83-acre vacant parcel adjacent to the Clayton Town Center (retail/restaurant/service center) and adjacent to the Johnston Charter Academy. This neighborhood is envisioned as one where homeowners can leave their cars in the garage and walk to the adjacent retail center to visit local shops, restaurants, and service establishments.

To provide variety within the neighborhood both traditional front-facing garage and alley-loaded units are proposed. The design of the townhomes will include multiple elevations and color palettes with architectural accents and high-quality materials. Each home will have a one-car garage and a covered front porch. Homes with front-facing garages will have a patio in the back for outdoor enjoyment.

The Townes at Little Creek has been thoughtfully designed to minimize impacts to the natural environment and reserves 16.48 acres of Resource Conservation Area. Active open space includes two tot lots and a dog park. In addition, the developer will dedicate nearly 1.7 acres of land to the Town of Clayton to facilitate a future greenway and provide paved pedestrian connections to the greenway easement.

To provide access for residents and to accommodate visitors, on-street parking will be provided along the new public streets within the development. Typical street sections are included within this document and will require approval at the Construction Drawing phase by the Engineering/Public Works Department and NCDOT. There are approximately 67 guest parking spaces proposed for the development. These spaces will be provided on street and at other convenient locations within the development.

Existing Conditions

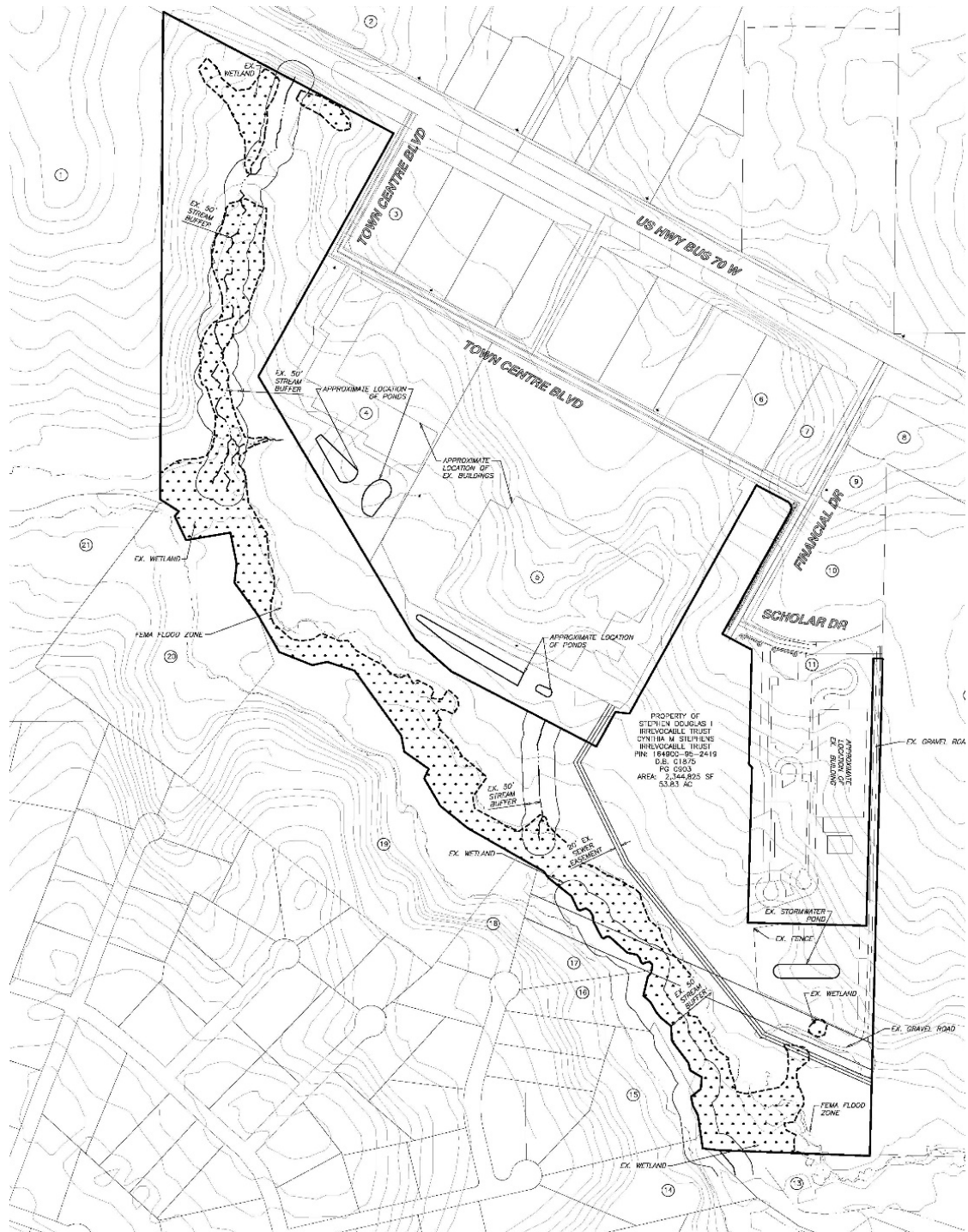
The Townes at Little Creek development is located on a parcel fronting on south side US Highway 70 approximately 0.82 miles southeast of the Johnston/Wake County line. The total project area is 53.83 acres. The property does not have a current street address because it is undeveloped. The site is geographically located on the east, south and west sides of the Clayton Town Centre shopping center. The Johnston County PIN for the site is 164900-95-2419. Access to the site is provided from Town Centre Blvd. on the northwest side of the shopping center and from Financial Drive on the southeast side of the shopping center. Both public streets gain access from US Highway 70.

The site is predominantly wooded with a stand of healthy mature evergreen and deciduous trees. Little Creek bisects the western portion of the site and follows the southwest boundary of the property. The creek is protected by a 50' wide stream buffer along each bank and contains a significant amount of FEMA floodplain and wetlands. An aerial map of the site and surrounding features is provided in this document.

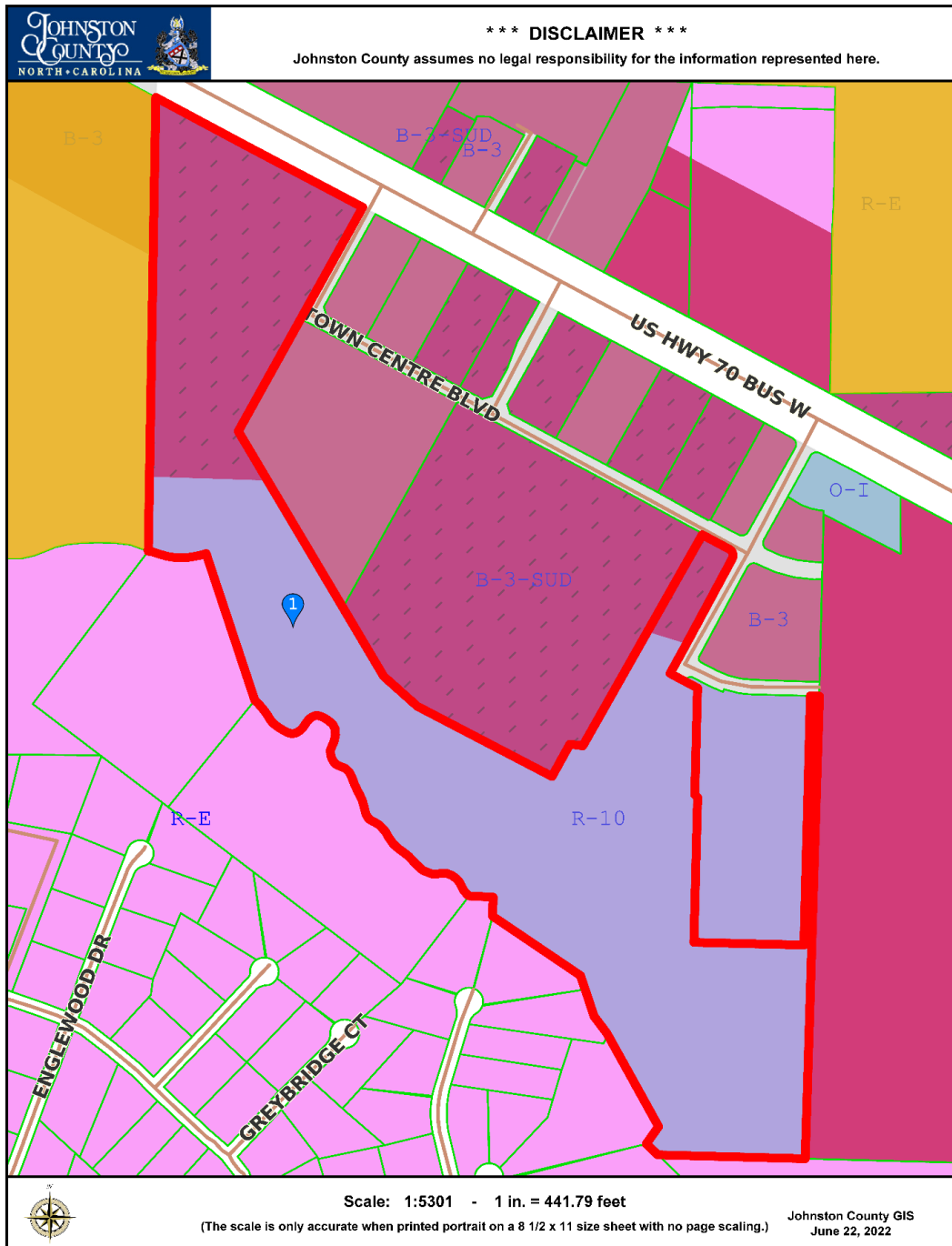
There is a 70' wide CP&L utility easement that runs northwest to southeast through the southern portion of the property.

The existing zoning districts within the development boundary are R-10 and B-3-SUD. The proposed zoning is CZ-R (Conditional Zoning-Residential)

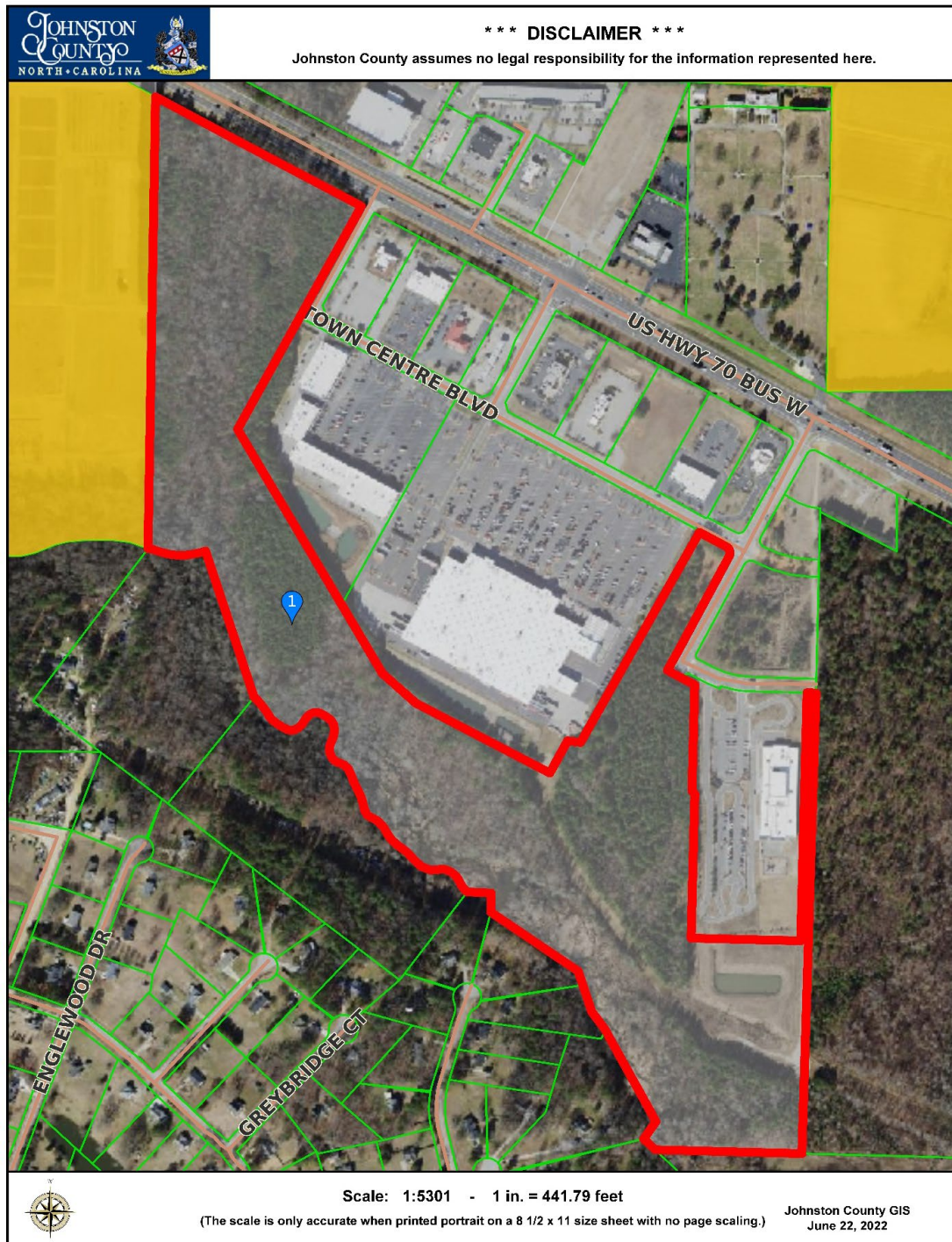
Survey and Maps – Existing Conditions Plan



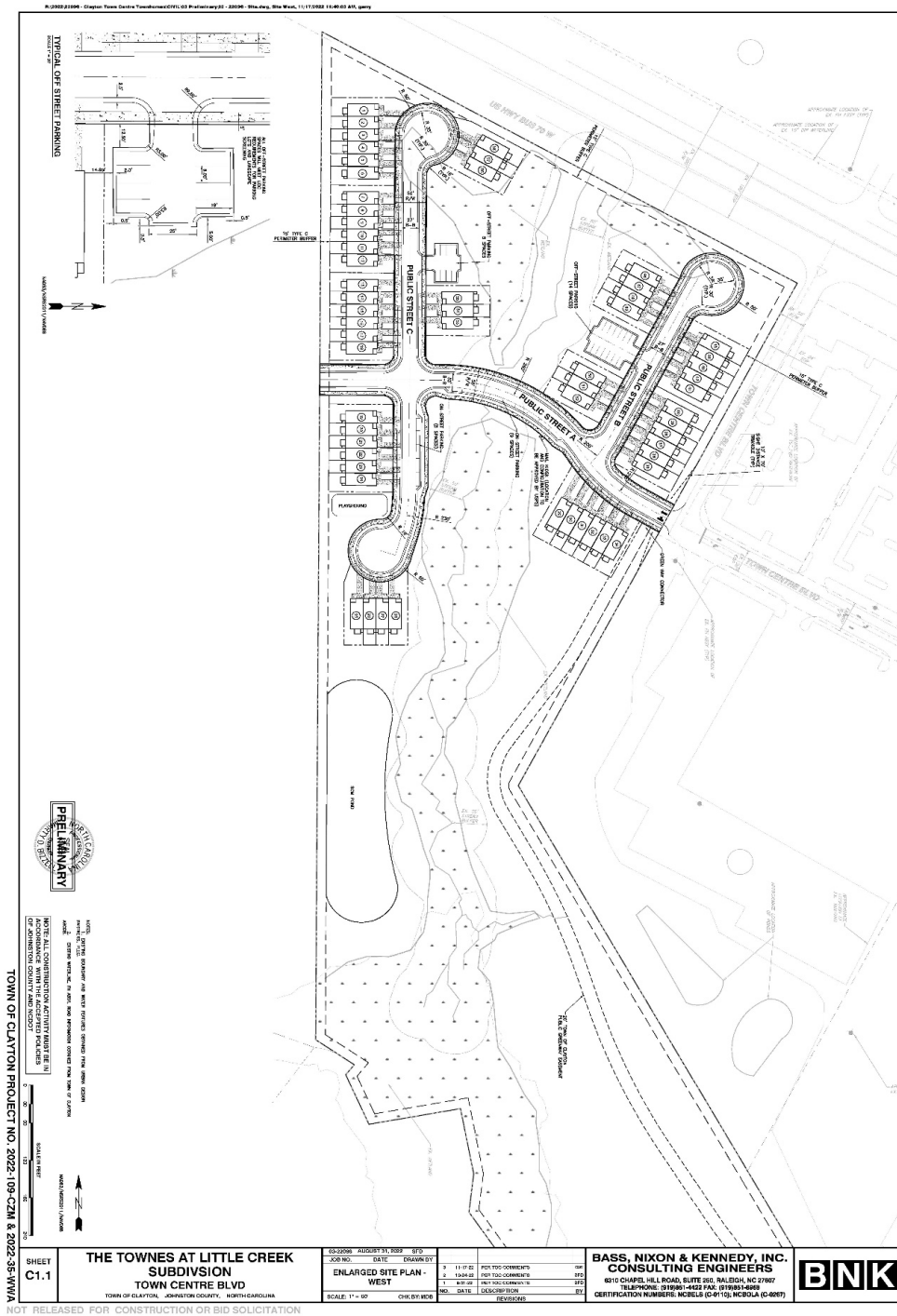
Survey and Maps – Zoning Map



Surveys and Maps – Aerial Photo



The Townes at Little Creek Master Plan - West



THE TOWNES AT LITTLE CREEK SUBDIVISION
TOWN CENTRE BLVD
 JOHNSTON COUNTY, NORTH CAROLINA

ENLARGED SITE PLAN - EAST

PRELIMINARY

SHEET C1.2

BASS, NIXON & KENNEDY, INC.
 CONSULTING ENGINEERS
 6319 CHAPEL HILL ROAD, SUITE 550, RALEIGH, NC 27607
 TELEPHONE: (919) 551-4422 FAX: (919) 551-0554
 CERTIFICATION NUMBER: NC-11195 VICTORIA (C-0287)

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

Townhome Building Elevations – Litchfield (Front)

(All elevations are for illustrative purposes only)



Townhome Building Elevations – Litchfield (Rear)

(All elevations are for illustrative purposes only)



Townhome Building Elevations – Winchester (Front)



Townhome Building Elevations – Winchester (Rear)



Development Details

Site Data/Dimensional Standards

1. Project Name:	The Townes at Little Creek
2. Pin:	164900-95-2419
3. Address:	Town Centre Blvd. Clayton, North Carolina
4. Existing Zoning:	R-10 & B-3 SUD
5. Proposed Zoning:	CZ (Special Use Permit)
6. Use: Existing:	Vacant
Proposed:	Townhomes
7. Site Area:	53.83 AC (2,344,825 SF)
8. Proposed Density:	3.14 Dwelling Units/Acre
Total Townhomes:	Maximum of 169 Dwelling Units
Westside Townhomes:	58 Dwelling Units
Eastside Townhomes:	111 Dwelling Units
9. Building Setbacks: Front-load Townhomes	
Front (Street or Sidewalk):	23' (modification requested)
Side:	3' minimum/10' aggregate
Rear:	20'
Building Separation:	0'/20'
10. Building Setbacks: Rear-load Townhomes	
Front (Street or Sidewalk):	10'
Side:	3' minimum/10' aggregate
Rear:	20' from alley
Building Separation:	0'/20'
11. Parking:	
Required: 2 spaces/unit	338
12. Guest Parking:	
Total Provided:	67 Spaces
Westside Provided:	36 Spaces
Eastside Provided:	31 Spaces
13. Roadway Length:	4,507 FT
14. Roadway Area:	2.71 AC (118,011 SF)

15. Right of Way Area:	4.48 AC (195,051 SF)
16. Resource Conservation Area:	16.48 AC (1,754,489 SF)
17. Recreational Open Space Calculations:	
Dog Park:	0.22 AC (9,720 SF)
Westside Playground:	0.07 AC (2,931 SF)
Eastside Playground:	0.09 AC (4,086 SF)
18. Public Open Space Calculations:	
Town of Clayton Greenway Easement:	1.71 AC (74,579 SF)

The public amenities described above total approximately 1.71 acres. A fee-in-lieu will be paid for the remaining 3.12 acres per Town of Clayton development code section 155.203(i)(2)(a) as set forth in the Town's comprehensive list of fees.

Modifications to minimum development standards

The Townes at Little Creek Subdivision is designed to meet the requirements of the Town of Clayton UDC where practical and applicable.

The applicant is seeking the following modifications to provisions of the UDC as part of this rezoning. The requested modifications are listed below.

UDC Section 155.203 Table 2-2 Conventional Subdivision Regulations

Min. lot area:	Min. lot width	Front setback	Side	Side Street	Rear
Townhouse:					
1,600	20	*10/23	0/3	10	20

The minimum side setback will be 3' with a minimum building separation of 10'

*The minimum front setback without a driveway is 10'. The minimum setback from the back of sidewalk to the garage door on front loaded units is 23'.

NCDOT Subdivision Roads Minimum Construction Standards

Minimum Design Criteria K(2) Residential Collector Roads

Reduce the minimum horizontal centerline radius from 230' to 200' on Public Street D and Public Street B. Both streets will have very low traffic volumes, as they are a loop street and cul-de-sac, respectively.

Unit Type and Mix

Townhome Data

The townhomes in the development will be a mix of two- and three-bedroom units. The current anticipated mix of units is as follows (this unit mix is subject to change based on future market conditions)

1. Front loaded garage townhome units:	138 dwelling units
2. Rear loaded garage townhome units:	31 dwelling units
Total townhome units:	169 dwelling units

The unit mix between front loaded and rear loaded units may vary by a maximum of 10 percent. Any change in unit types greater than 10 percent will require an Administrative Amendment approved by the Town of Clayton.

Open Space and Amenities

The Townes at Little Creek will have a varied assortment of amenities that will benefit the people who live in the development as well as surrounding neighborhoods. The total provided recreational open space is 2.09 acres. The amenities provided will include the following:

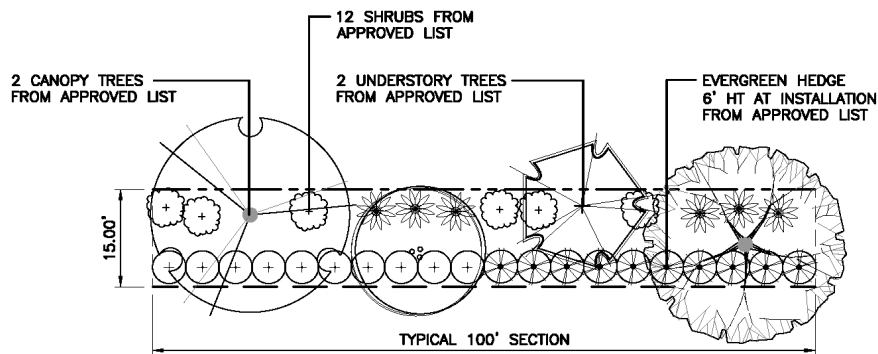
- Neighborhood dog park
 - Approximately 9,720 square feet of fenced area for an off-leash dog park.
 - User amenities such as dog play stations, waste collection stations, benches and watering stations
- Neighborhood playgrounds
 - This will include two neighborhood style playground areas with play structures, picnic tables and trash receptacles. These areas will be designed to provide a mix of sun and shade areas. They will also be fenced for safety. The two play areas will provide a total of approximately 0.16 acres of active open space.

- Public greenway
 - A 20' public greenway easement will be dedicated along the north side of Little Creek. The greenway will be constructed by the Town of Clayton at a later date. A trail connection will also be provided to Johnston Charter Academy at a location to be determined through coordination with the school. The total area in the greenway easement is approximately 1.71 acres.

The public amenities described above total approximately 1.71 acres. A fee-in-lieu will be paid for the remaining 3.12 acres per Town of Clayton development code section 155.203(i)(2)(a) as set forth in the Town's comprehensive list of fees.

Landscaping

A 15' wide Type C landscape buffer will be provided along all project boundaries of the development per Town of Clayton UDC standards. There will be a planted buffer in areas where there is no existing vegetation or where existing vegetation is removed or damaged during construction adjacent to existing development. All landscaping will be per UDC requirements in place at the time of final Site Plan approval.



15' TYPE C LANDSCAPE BUFFER

Street tree plantings will be provided based on the Town of Clayton UDC section 155.402(3).

Off-street parking areas will be screened per Town of Clayton UDC section 155.402(1)(2).

Along Financial Drive, proposed street tree plantings will be supplemented with deciduous understory trees planted at a rate of one tree for every 40 linear feet of right of way, extending from the intersection of Town Centre Blvd. to the intersection with proposed Public Street D along the west side of the street.

Lighting

Electric power for the development will be provided by Duke Energy. A street/site lighting plan will be provided to meet all municipal lighting standards at the construction drawing phase. The lighting plan will be provided either by a private lighting design engineer or Duke Energy.

Energy Efficient Commitments

Energy efficient features will include a minimum of three of the following: Insulation rated to at least RESNET-defined Grade II; Air barrier encloses insulation on all six sides when installed in vertical exterior walls; Blocking and air sealing at edge of horizontally installed insulation to separate conditioned space from unconditioned space; Penetrations, chases, and openings to unconditioned space fully sealed with solid blocking or sealant; Insulation to extend over top plates and wind baffles installed at all eaves; All doors adjacent to unconditioned space to have weatherstrip and rough openings around windows and doors are air sealed to framing; minimum of one Energy Star appliance installed; 90% efficient lighting (CFLs, LEDS, or Energy Star fixtures); Ducts insulated to R-8 in unconditioned space; Minimum 6 mil poly vapor barrier installed

Natural Resource Preservation

The site is predominantly wooded with a stand of healthy mature evergreen and deciduous trees. Little Creek bisects the western portion of the site and follows the southwest boundary of the property. The creek is protected by a 50' wide stream buffer along each bank and contains a significant amount of FEMA floodplain and wetlands. An aerial map of the site and surrounding features is provided in this document.

One permitted crossing of Little Creek is proposed along the northern end of the buffer to provide vehicular access to the northernmost portion of the site. The crossing will be reviewed and permitted by the appropriate state and federal agencies. When the Town of Clayton constructs the future greenway, it is likely that an aerial pedestrian crossing over a branch of Little Creek will be required.

Any disturbance proposed in either the wetlands or Neuse Riparian Buffers will be fully permitted by the USACOE and/or NCDEQ.

Public Facilities

Transportation Impact Analysis

A traffic impact analysis has been performed by Ramey Kemp Associates and a copy of the findings of that study have been provided as Appendix I.

Streets and Roadways

New public streets

The Townes at Little Creek will feature a new, pedestrian-friendly public street network. The new streets will meet the standards required by the Town of Clayton and/or NCDOT except as indicated within this document and/or on the Master Plan drawings. The public street section will provide on-street parking on one side only for guest and resident parking. On-street parking locations are shown on the attached Master Plan. A typical cross-section is provided with this document.

New private drives

The Townes at Little Creek will also feature a new, pedestrian-friendly private alley within the development. The new street will meet the standard required by the Town of Clayton except as indicated within this document. All private drives shall be maintained by the development homeowner's association.

Improvements to existing streets

In addition to new public and private streets described above, the following transportation improvements will be constructed and accepted by NCDOT (where necessary) prior to issuance of the first Certificate of Occupancy:

- Construct an eastbound approach with one egress lane (shared left and through-lane) and one ingress lane at Town Centre Blvd and proposed Public Street A in the western portion of the development.
- Construct site access along the northbound approach at Financial Drive and Scholar Drive.
- After a certificate of occupancy has been issued for 50% of the lots (84 units), perform a signal warrant analysis at the intersection of Financial Drive and US 70 Business.

Refuse Collection/Recycling

Trash collection within the development will be provided by municipal waste collection. All trash collection will be at the garage/driveway for each unit and trash/recycling bins will be stored within garages. Alleys and private drives have been designed to accommodate minimum turning movement of trash collection trucks used by the Town of Clayton. The townhome garages are sized appropriately to accommodate one car as well as two trash/recycling containers. The storage location requirement for trash and recycling containers will be incorporated in the development homeowner's association documents and will be enforced by the property management company.

Fire Protection

The public and private street network for the development is designed to accommodate the Town of Clayton fire apparatus vehicles. All units will be accessible from either a public or private street or private drive with adequate maneuverability.

Stormwater Management

The Townes at Little Creek is located within the Neuse River basin. Most of the site is wooded and currently drains to Little Creek, along the rear of the site. The proposed development will require stormwater management measures for quality and quantity treatment in accordance with the Town of Clayton Stormwater Design Manual. A network of underground piping will convey storm drainage from impervious areas to the proposed Stormwater Control Measures (SCMs). One new

stormwater device is proposed, and the existing stormwater device on site that currently serves the school site will be modified to accommodate the additional stormwater from the proposed development. Location and adequate sizing for these devices will be verified during final site design. All stormwater management will be required to meet North Carolina Department of Environmental Quality and Town of Clayton design requirements at the time of site construction drawing submittal.

Domestic Water and Sewer

All water and sewer within The Townes at Little Creek subdivision will be designed to meet all Town of Clayton Standards and Specifications. Public water is available to the site via a 10" public water main within the Town Centre Blvd right of way and a 12" public water main in the Financial Drive right of way. Both water mains connect to the existing 16" water main on the north side of U.S. Highway 70. All existing water mains are currently controlled and managed by the Town of Clayton and the Johnston County Public Utilities Dept.

The site currently is served by an existing Town of Clayton Public Pump Station. The pump station is nearing capacity and the Town of Clayton has engaged an engineering consultant to design a gravity sewer extension in order to abandon the existing pump station. Once the sewer extension project is complete, the proposed townhome project will connect to the new gravity sewer line. The developer will work with the Town of Clayton throughout the CIP project as the project moves to design and construction.

The projected buildout is 50 units per year. The actual build-out year will depend on sewer availability.

Conditional Zoning District Approval Criteria

1. Consistency with the adopted plans of the Town.

The Future Land Use Map designates this property as High-Density Residential with a Community Center Overlay which allows for high density (up to 10 units per acre) residential uses including single family detached homes, townhomes, and apartments. The proposed townhome development is to be located within close proximity/walking distance to the adjoining retail center meeting the intent of the FLUM designation.

The proposed conditional zoning meets, at a minimum, the following 2045 Comprehensive Plan goals, policies, and strategies:

- Goal LU-1: Preserve Clayton's character while allowing for growth and development in appropriate areas.
- Goal LU-3: Encourage a range of housing types and lot sizes that will meet the needs of various income levels, family sizes, and ages.
- Policy LU 1.2: Encourage developments which incorporate high-quality design and enhance the quality of life for existing and future residents of the Town.
- Policy LU 1.6: Promote location and intensity of development that mitigates impacts to the transportation network and leads to reduced vehicle trips and/or shorter trip lengths, enhanced circulation, and increased public safety.
- Strategy LU 1.6.1: Focus growth in and near Community Centers, Neighborhood Centers and Downtown.

2. Suitability of the subject property for uses permitted by the current vs. the proposed conditional district.

The existing zoning includes the B3-SUD legacy district which must be rezoned.

3. Whether the proposed change tends to improve the balance of uses or meets specific demand in the Town.

The proposed change would add a complementary new element (townhomes) to the existing land use fabric of retail, institution (charter school), NC State Agricultural Research Facility/Farm, and single-family residential. This change

will encourage the development of a residential community adjacent to a retail center and school promoting walkability and reduced vehicle trips.

4. The capacity of adequate public facilities and services including schools, roads, recreation facilities, wastewater treatment, water supply facilities and stormwater drainage facilities is available for the proposed conditional district.

Schools – According to Johnston County GIS, the following schools are districted to serve the proposed neighborhood: West Clayton Elementary School, Clayton Middle School and Clayton High School. West Clayton Elementary School and Clayton High School are on the 2022-2023 JCPS Capped Schools list.

Roads – A Traffic Impact Analysis was prepared by Ramey Kemp & Associates and submitted to NCDOT and the Town of Clayton for review. No additional driveway cuts will be allowed on US 70.

The western portion of the site will be accessed by Town Centre Boulevard and a stub will be provided for future connectivity to the adjacent western parcel. The eastern portion of the site is accessed from Financial Drive. The internal street network will consist of public streets in accord with the Town of Clayton typical street cross section. Typical road sections have been modified to provide on-street parking on one side only, and a private road section has been created with an inverted crown and concrete banding along the edge of pavement. Both modified cross-sections are provided on the Master Plan drawings.

Recreation Facilities – The development will provide two tot lots, a dog park, and land dedication of approximately 1.71 acres to facilitate the Town's construction of a future greenway along Little Creek. The total recreational open space will be approximately 2.09 acres

Water/Wastewater – Per discussions with staff, the Town has adequate capacity to provide water to the development. A wastewater allocation request has been filed in conjunction with the Conditional Zoning/Master Plan submittal and shows 60 points. It is understood that the Town of Clayton is under contract with a consultant to determine the feasibility of the existing Walmart Pump Station. Any additional improvements necessary to accommodate the development's proposed sewer flow will be mitigated by the developer by either: (1) making the required improvements to the existing gravity main (2)

paying a pro-rata share fee to the Town of Clayton to contribute toward the proposed gravity sewer upgrade project, subject to the approval of the Engineering Director.

Stormwater – The proposed development will require stormwater management measures for quality and quantity treatment in accordance with the Town of Clayton Stormwater Design Manual. A network of underground piping will convey storm drainage from impervious areas to the proposed Stormwater Control Measures (SCMs). Location and adequate sizing for these devices will be confirmed during final site design and approved by both the Town of Clayton and the North Carolina Department of Environmental Quality.

5. It has been determined that the legal purposes for which the zoning exists are not violated.

The legal purposes for which zoning exists have not been violated. This application for proposed zoning change is in compliance with the Town's conditional zoning regulations as noted in the UDC.

6. It has been determined that there will be no adverse effect upon adjoining property owners unless such can be justified by the overwhelming public good or welfare.

As the proposed rezoning and resultant development must meet Town of Clayton requirements for approval (traffic, infrastructure, UDC, etc.) there should be no adverse impact to adjoining property owners.

7. It has been determined that no one property owner or small group of property owners will benefit materially from the change to the detriment of the general public.

No one property owner or small group of property owners will benefit materially from the zoning change or development of the property.

Master Plan Approval Criteria

1. Compliance with code section 155.203(L) and all other applicable requirements of this chapter, or analysis and justification if it deviates from the requirements of this chapter.

The proposed master plan is in accord with UDC sections 155.203 (L) and 155.705. The site is larger than 5 acres in size; proposes an appropriate residential use and density; exceeds the amount of required open space; provides appropriate buffers; and contains a comprehensive stormwater management system with multiple SCMs.

2. Consistency with the Clayton General Design guidelines.

The proposed master plan is consistent with the Town's adopted General Design guidelines. The plan has been thoughtfully designed to minimize impacts to existing environmental resources, provides vehicular and pedestrian connections to the adjacent retail center and charter school, provides required off-street parking spaces, provides alley-loaded townhomes along Financial Drive to alleviate conflicts during school carpool ques, provides multiple elevations and committed architectural standards as a zoning condition.

3. Conformance of the proposal with the stated purpose of the requested conditional zoning district.

The proposal is for a townhome development. The current zoning is B-3 and R-10 which allows for commercial development and low-density single-family development. The proposed development is more in line with the 2045 Growth Plan and will provide the necessary infrastructure to support the higher density townhome development, while leaving a large portion of site undeveloped.

4. Compatibility of the proposed development with the adjacent community.

The proposed development is both complimentary to and compatible with the adjacent community. The addition of a residential component surrounding the existing retail center provides the ability for homeowners to walk to

restaurants, shopping, and to the adjacent charter school; thus, reducing vehicular traffic and trips.

5. The quality of design intended for each component of the project and the ability of the overall development plan to ensure a unified, cohesive environment at full build-out.

The proposed development will consist of townhomes that will provide a logical and cohesive transition from the commercial center at Clayton Town Center into the more low-density development to the south and the school to the east. The property will consist of a single development type, with unified streets, dwelling types and architectural styles and finishes.

6. Compatible relationships between each component of the overall project.

The proposed development has been thoughtfully designed and lots sited to minimize impacts and avoid sensitive natural features leaving nearly 75 percent of the property undeveloped.

7. Self-sufficiency of each phase of the overall project.

Each phase of the project will be designed to adhere to Town of Clayton UDC requirements.

8. Documentation that the proposed infrastructure improvements accommodate the additional impacts caused by the development, or documentation to assure that the development, as proposed, will not overtax the existing public infrastructure systems.

The capacity of adequate public facilities and services including schools, recreation facilities, water supply facilities and stormwater drainage facilities is available for the proposed conditional district: A traffic impact analysis (TIA) has been performed to determine if there are adequate roads/streets to serve the proposed development. The developer will construct any required road improvements recommended by the TIA. The site currently is served by an existing Town of Clayton Public Pump Station. The pump station is nearing

capacity and the Town of Clayton has a capital improvement project (CIP) to analyze the pump station capacity and provide a gravity sewer extension to an existing gravity sewer outfall. At this time, a consultant has been engaged to provide alternatives to the pump station. Once the sewer extension project is complete, the proposed townhome project will connect to the new gravity sewer line. The developer will work with the Town of Clayton throughout the CIP project as the project moves to design and construction.

9. The fiscal impact of the proposal and the proposed financing of required improvements.

The development will install all necessary infrastructure and pay required System Development Fees and Recreation Fees.

10. The success of the proposal in providing adequate pedestrian and bicycle links within the development and with the adjacent community.

Sidewalks are being provided on both sides of internal public streets. Crosswalks, in accordance with Town of Clayton standards, will be provided at the Financial Drive/Scholar Drive intersection and from the western portion of the site into the retail center. In coordination with the adjacent charter school, the development will provide a concrete or asphalt connection to the future proposed Town of Clayton greenway easement:-

11. The effectiveness with which the proposal protects and preserves the ecologically sensitive areas within the development.

The development has been thoughtfully designed and density has been limited to minimize impacts and avoid existing streams and wetland areas. Of the 53.83 acres, 40.28 acres or nearly 75 percent of the overall site will be open space.

Zoning Conditions

General Zoning Conditions

1. Following Town Council approval, an electronic copy of the Master Plan and Narrative including the Conditions of Approval shall be submitted to the Planning Department for final approval.
2. The Development shall meet all adopted Town of Clayton Unified Development Code (UDC) requirements, Town of Clayton Engineering and Stormwater design standards, and the North Carolina Fire Code and NFPA Fire standards, except where specifically modified by the approved Master Plan.
3. Permitted uses shall be limited to single-family detached residential and townhomes and any allowed accessory uses within the Town of Clayton UDC for residential development.
4. The following standards will apply to the development:
 - Maximum number of Units: 169 dwelling units
 - Maximum Density: 3.14 DUA
 - Minimum Lot Size: 1,600 square feet
 - Minimum Dimensional Standards as specified in Master Plan
5. The following transportation improvements will be constructed and accepted by NCDOT (where necessary) prior to issuance of the first Certificate of Occupancy:
 - Construct an eastbound approach with one egress lane (shared left and through-lane) and one ingress lane at Town Centre Blvd and proposed Public Street A in the western portion of the development.
 - Construct site access along the northbound approach at Financial Drive and Scholar Drive.
 - After a certificate of occupancy has been issued for 50% of the lots (84 units), perform a signal warrant analysis at the intersection of Financial Drive and US 70 Business.
6. The development will include the following active amenity areas:
 - Two Tot Lots
 - Fenced Dog Park
 - Concrete or asphalt connections to the greenway easement

7. The development shall dedicate a 20' Town of Clayton Greenway Easement along the southern boundary of the site, following Little Creek. The final coordination of the easement shall be based on coordination with Town staff.
8. The Development shall have a minimum of 1.71 acres of public recreational open space.
9. Public sewer is proposed to be provided to the site by an extension of a gravity sewer main through a future proposed Town of Clayton CIP project. The site currently is served by an existing Town of Clayton Public Pump Station and is nearing capacity. The existing downstream gravity main and Walmart pump station will be analyzed for capacity. The Town of Clayton has engaged an engineering consultant to design a gravity sewer extension in order to abandon the existing pump station. Once the sewer extension project is complete, the proposed townhome project will connect to the new gravity sewer line. The developer will work with the Town of Clayton throughout the CIP project as the project moves to design/construction and the developer will contribute a pro-rata fee to the Town of Clayton to mitigate the proposed flow from the development.
10. Energy efficient features will include a minimum of three of the following: Insulation rated to at least RESNET-defined Grade II; Air barrier encloses insulation on all six sides when installed in vertical exterior walls; Blocking and air sealing at edge of horizontally installed insulation to separate conditioned space from unconditioned space; Penetrations, chases, and openings to unconditioned space fully sealed with solid blocking or sealant; Insulation to extend over top plates and wind baffles installed at all eaves; All doors adjacent to unconditioned space to have weatherstrip and rough openings around windows and doors are air sealed to framing; minimum of one Energy Star appliance installed; 90% efficient lighting (CFLs, LEDS, or Energy Star fixtures); Ducts insulated to R-8 in unconditioned space; Minimum 6 mil poly vapor barrier installed.

Architectural Standards

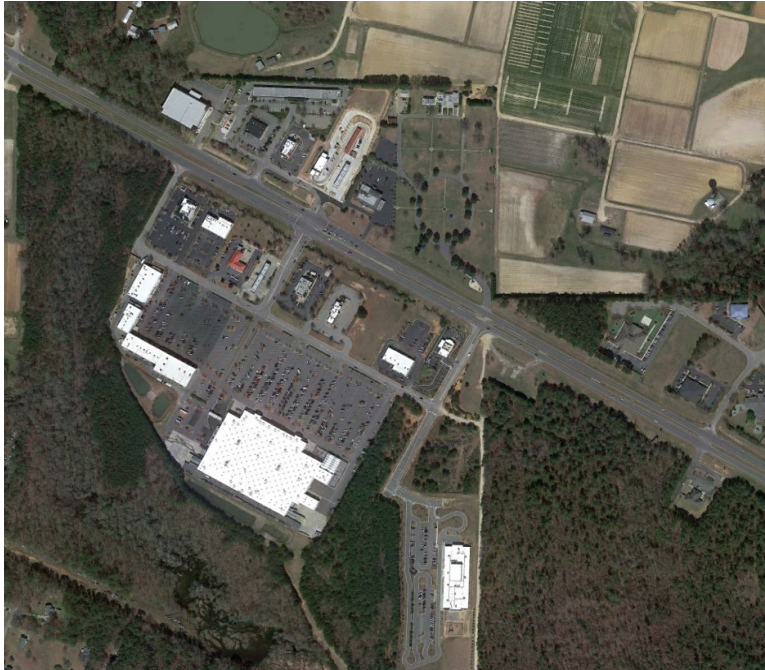
1. All units will be two-story with a variety of elevations. Units of the same elevation shall not be side by side. Exterior color schemes will not be repeated side by side.

2. All homes will have a combination of two or more of the following materials on the front façade: stone, brick, lap siding, fiber cement siding, shakes or board and batten. The exterior siding material on the side and rear facades will be fiber cement with colors to match the front elevations. Vinyl may be used for soffits, fascia, and corner boards.
3. Stone/masonry accents will be provided on a minimum of 25% of all front building facades.
4. Each townhome shall have a covered porch element.
5. Two vehicular parking spaces to be provided for each home (1 car garage and driveway).
6. Side roof eaves to be 10" overhang except between interior townhome units.
7. Architectural style shingles to be used.
8. Rear concrete pad/patio for outdoor living will be provided on all units with a front-facing garage.

Appendix I. Traffic Impact Analysis

RAMEY KEMP ASSOCIATES

TOGETHER WE ARE LIMITLESS



The Townes at Little Creek **Traffic Impact Analysis** **Clayton, North Carolina**



**TRAFFIC IMPACT
ANALYSIS**

FOR

THE TOWNES AT LITTLE CREEK

LOCATED

IN

CLAYTON, NC

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JUNE 2022

RKA Project No. 22209



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**TRAFFIC IMPACT ANALYSIS
THE TOWNES AT LITTLE CREEK
CLAYTON, NORTH CAROLINA**

EXECUTIVE SUMMARY

1. Development Overview

A Traffic Impact Analysis (TIA) was conducted for the proposed The Townes at Little Creek development in accordance with the Clayton (Town) Unified Development Code (UDC) and North Carolina Department of Transportation (NCDOT) capacity analysis guidelines. The proposed development is to be located along both sides of the existing Clayton Town Center, to the south of US 70 Business in Clayton, North Carolina. The proposed development is expected to be a maximum of 169 townhomes and estimated to be built out in 2028. Site access to the western portion of the site is proposed via one full movement connection to the existing Town Centre Boulevard.

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- 2022 Existing Traffic Conditions
- 2028 No-Build Traffic Conditions
- 2028 Build Traffic Conditions

2. Existing Traffic Conditions

The study area for the TIA was determined through coordination with the Town and NCDOT and consists of the following existing intersections:

- US 70 Business and Town Center Boulevard (Western Driveway)
- US 70 Business and Town Center Boulevard (Middle Driveway)
- US 70 Business and Financial Drive
- US 70 Business and Town Centre Boulevard
- Financial Drive and Town Centre Boulevard
- Financial Drive and Scholar Drive

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections listed below, in May of 2022 by RKA and Quality Counts, LLC. during a typical weekday AM (7:00 AM – 9:00 AM) and PM (2:00 PM – 6:00 PM) peak periods while schools were in session:

- US 70 Business and Town Center Boulevard (Western Driveway)
- US 70 Business and Town Center Boulevard (Middle Driveway)
- US 70 Business and Financial Drive
- US 70 Business and Town Centre Boulevard
- Financial Drive and Town Centre Boulevard
- Financial Drive and Scholar Drive

Due to the proximity to the nearby school, 5-minute internals were utilized for the above traffic counts. It should be noted that the PM peak hour fell outside of the typical adjacent street peak hour.

3. Site Trip Generation

The proposed development is assumed to consist of a maximum of 169 townhomes. It should be noted that the density assumed in this study is that of 203 townhomes. Though the land uses are expected to differ, the trip generation considered in this TIA is expected to be higher than what is shown on the preliminary site plan and therefore provides a conservative analysis. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE Trip Generation Manual, 10th Edition. Table E-1 provides a summary of the trip generation potential for the site.

Table E-1: Site Trip Generation

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Density Shown on Site Plan						
Multifamily Housing (Low-Rise) (220)	169 DU	1159	18	57	59	34
Density Analyzed in TIA						
Multifamily Housing (Low-Rise) (220)	203 DU	1377	21	65	68	40
Difference (+/-)		218	3	8	9	6

4. Future Traffic Conditions

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 2% would be used to generate 2028 projected weekday AM and PM peak hour traffic volumes. The following adjacent development was identified to be considered under future conditions:

- Ramblewood Residential

5. Capacity Analysis Summary

The analysis considered weekday AM and PM peak hour traffic for 2022 existing, 2028 no-build, and 2028 build conditions. Refer to Section 7 of the TIA for the capacity analysis summary performed at each study intersection.

6. Recommendations

Based on the findings of this study, specific geometric and traffic control improvements have been identified at study intersections. The improvements are summarized below and are illustrated in Figure E-1.

Recommended No-Build Improvements for Consideration

Financial Drive and US 70 Business

- Install traffic signal on the Financial Drive portion of the intersection when warranted.

Recommended Improvements by Developer

Financial Drive and Town Centre Boulevard

- Construct an eastbound approach with one egress lane (shared left and through-lane) and one ingress lane.
- Provide stop control for the eastbound approach.

Financial Drive and Scholar Drive

- Construct site access along the northbound approach.

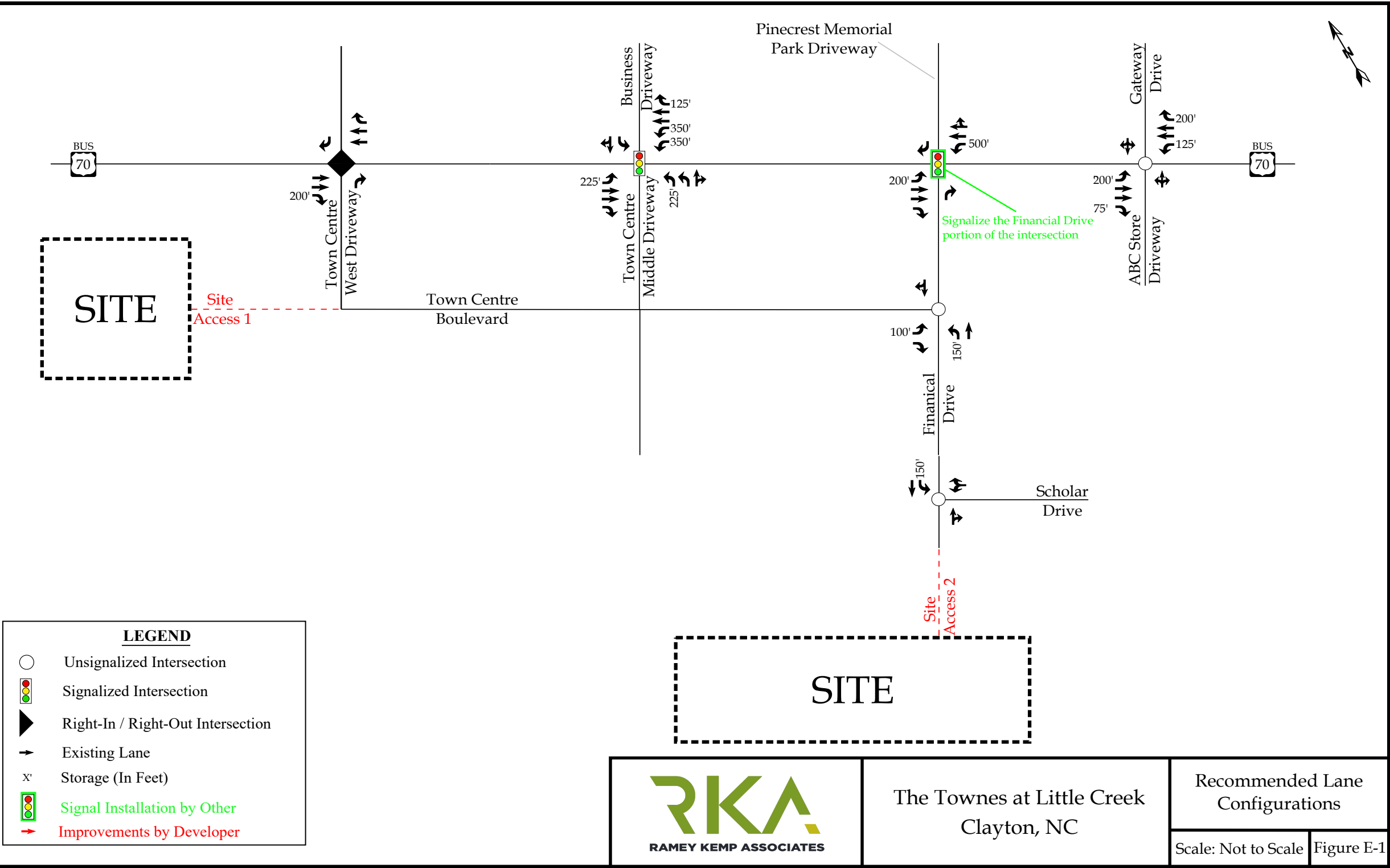


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Appendix C:	Signal Plans
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Appendix J:	Capacity Calculations – Financial Drive and Scholar Drive

**TRAFFIC IMPACT ANALYSIS
THE TOWNES AT LITTLE CREEK
CLAYTON, NORTH CAROLINA**

1. INTRODUCTION

The contents of this report present the findings of the Traffic Impact Analysis (TIA) conducted for the proposed The Townes at Little Creek development to be located along both sides of the existing Clayton Town Center, to the south of US 70 Business in Clayton, North Carolina. The purpose of this study is to determine the potential impacts to the surrounding transportation system created by traffic generated by the proposed development, as well as recommend improvements to mitigate the impacts.

The proposed development, anticipated to be completed in 2028, is assumed to consist of 169 townhomes.

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- 2022 Existing Traffic Conditions
- 2028 No-Build Traffic Conditions
- 2028 Build Traffic Conditions

1.1. Site Location and Study Area

The development is proposed to be located along both sides of the existing Clayton Town Center to the south of US 70 Business in Clayton, North Carolina. Refer to Figure 1 for the site location map.

The study area for the TIA was determined through coordination with the North Carolina Department of Transportation (NCDOT) and the Town of Clayton (Town) and consists of the following existing intersections:

- US 70 Business and Town Center Boulevard (Western Driveway)
- US 70 Business and Town Center Boulevard (Middle Driveway)

- US 70 Business and Financial Drive
- US 70 Business and Town Centre Boulevard
- Financial Drive and Town Centre Boulevard
- Financial Drive and Scholar Drive

Refer to Appendix A for the approved scoping documentation.

1.2. Proposed Land Use and Site Access

The eastern portion of site is expected to be located at the southern end of Financial Drive. The western portion of the site is expected to be south of US 70 Business, east of Town Center Boulevard (Western Driveway). The proposed development, anticipated to be completed in 2028, is assumed to consist of 169 townhomes.

These land uses are assumed at this time. Site access to the eastern portion of the site is proposed via a connection to the existing Financial Drive. Site access to the western portion of the site is proposed via one full movement connection to the existing Town Centre Boulevard. Refer to Figure 2 for a copy of the preliminary site plan.

1.3. Adjacent Land Uses

The proposed development is located in an area consisting primarily of retail, undeveloped land, and residential development. A school is located along Financial Drive.

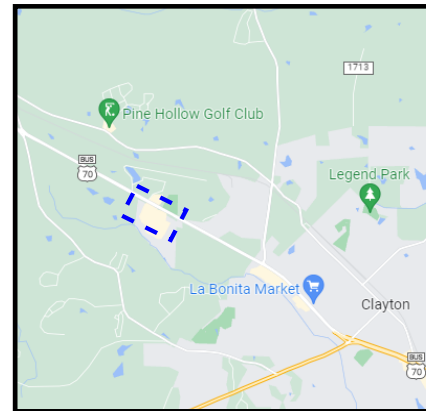
1.4. Existing Roadways

Existing lane configurations (number of traffic lanes on each intersection approach), storage capacities, and other intersection and roadway information within the study area are shown in Figure 3. Table 1 provides a summary of this information, as well.

Table 1: Existing Roadway Inventory

Road Name	Route Number	Typical Cross Section	Speed Limit	Maintained By	2019 AADT (vpd)
US 70 Business		4-lane divided	45 mph	NCDOT	37,500
Town Centre Boulevard	N/A	2-lane undivided	Not Posted	Town	3,270*
Financial Drive	N/A	2-lane undivided	Not Posted	Town	8,550*
Scholar Drive	N/A	2-lane undivided	Not Posted	Town	8,550*
Gateway Drive	N/A	2-lane undivided	Not Posted	Town	1,300*

*ADT based on the traffic counts from 2022 and assuming the weekday PM peak hour volume is 10% of the average daily traffic.



LEGEND	
	Proposed Site Location
	Study Intersection
	Study Area



The Townes at Little Creek
Clayton, NC

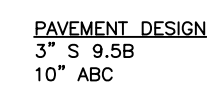
Site Location Map

Scale: Not to Scale

Figure 1



NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF JOHNSTON COUNTY AND NCDOT

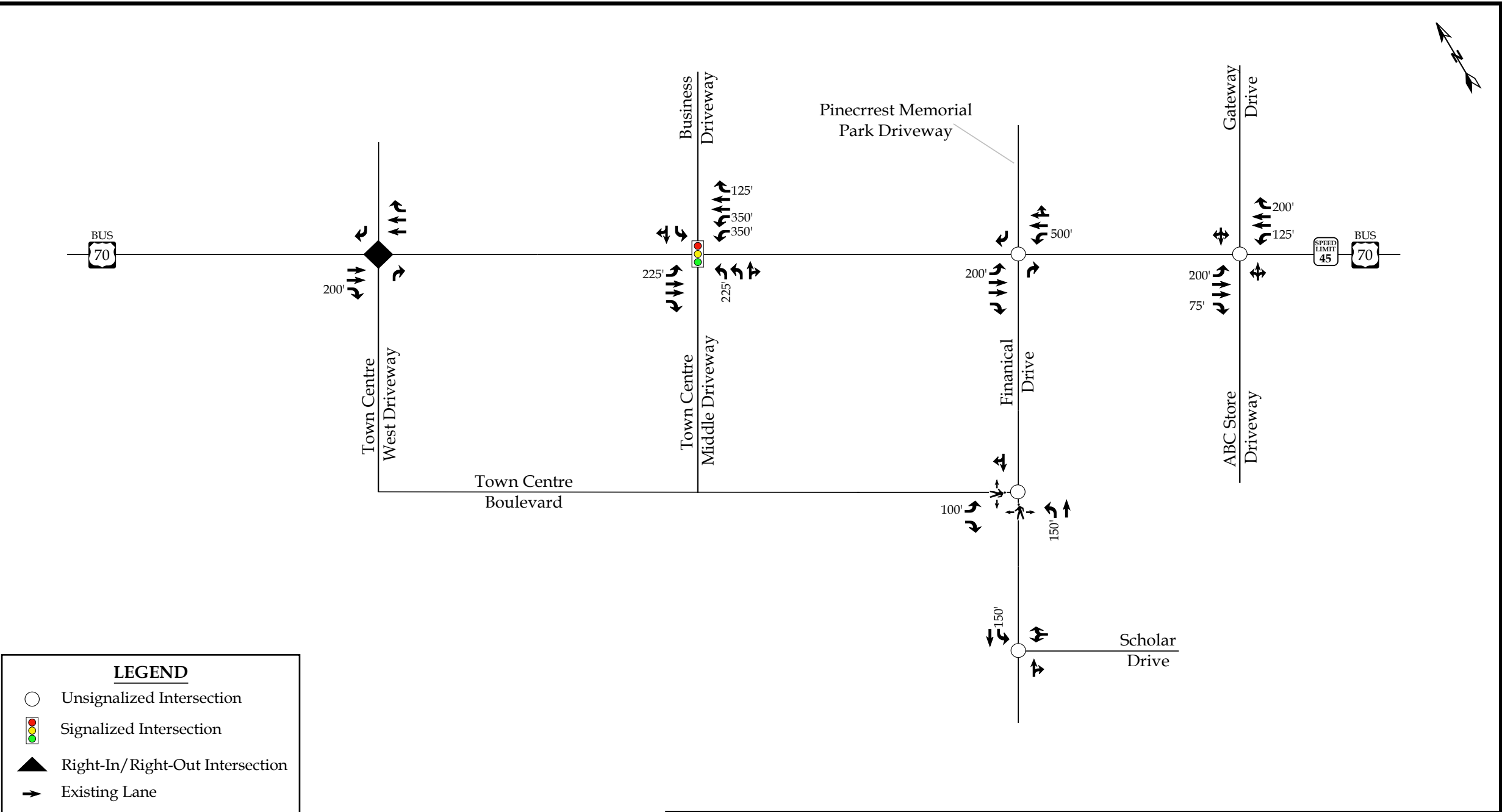


PAVEMENT DESIGN
3" S 9.5B
10" ABC

50' RIGHT OF WAY
27' ROADWAY SECTION
NOT TO SCALE

SHEET
C1.0

BNK



LEGEND

Unsignalized Intersection

Signalized Intersection

Right-In/Right-Out Intersection

Existing Lane

Storage (In Feet)

Pedestrian Crosswalk

Posted Speed Limit

RAMEY KEMP ASSOCIATES

The Townes at Little Creek

Clayton, NC

2022 Existing Lane Configurations

Scale: Not to Scale

Figure 3

2. 2022 EXISTING PEAK HOUR CONDITIONS

2.1. 2022 Existing Peak Hour Traffic Volumes

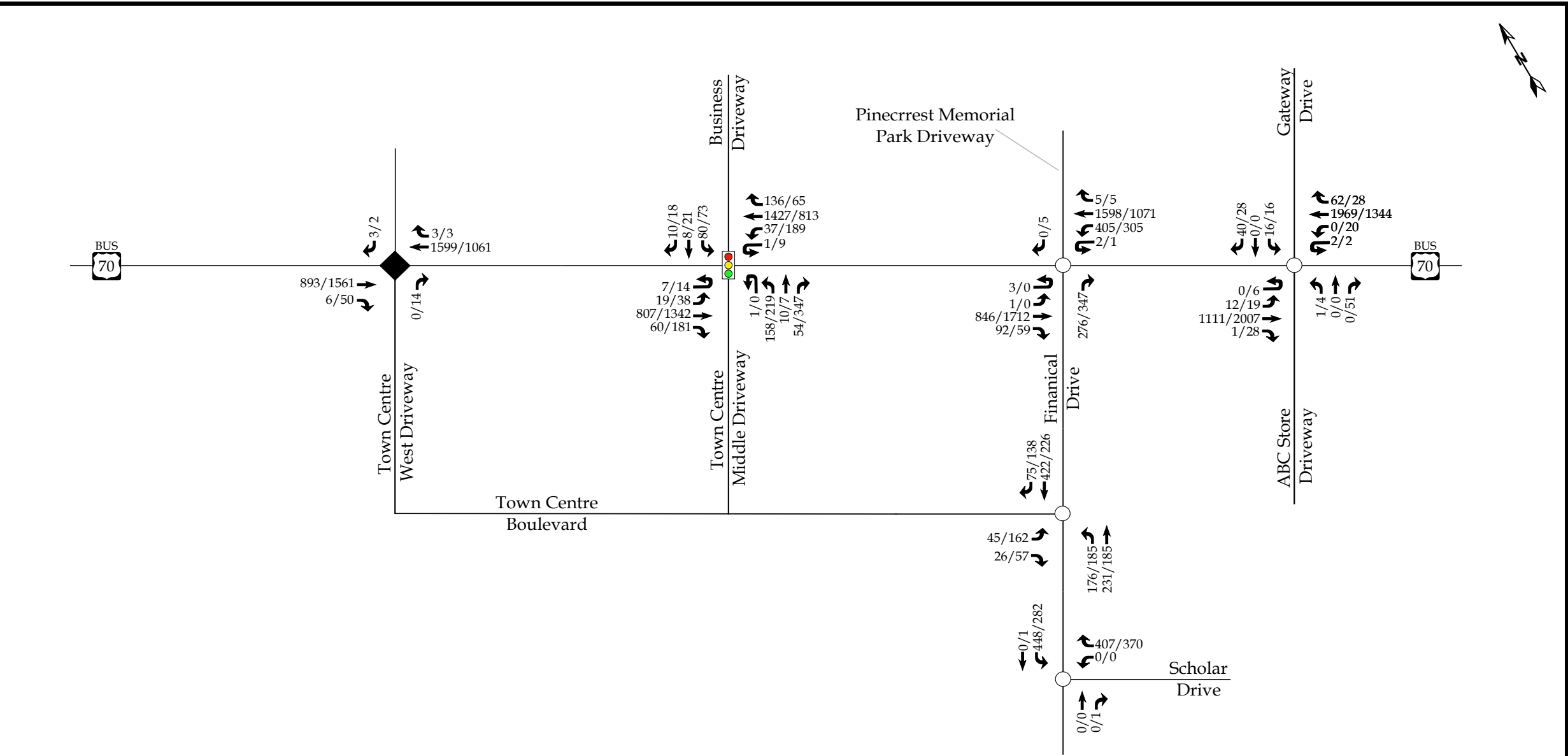
Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections listed below, in May of 2022 by RKA and Quality Counts, LLC. during a typical weekday AM (7:00 AM – 9:00 AM) and PM (2:00 PM – 6:00 PM) peak periods while schools were in session:

- US 70 Business and Town Center Boulevard (Western Driveway)
- US 70 Business and Town Center Boulevard (Middle Driveway)
- US 70 Business and Financial Drive
- US 70 Business and Town Centre Boulevard
- Financial Drive and Town Centre Boulevard
- Financial Drive and Scholar Drive

Due to the proximity to the nearby school, 5-minute internals were utilized for the above traffic counts. It should be noted that the PM peak hour fell outside of the typical adjacent street peak hour. Weekday AM and PM traffic volumes were balanced between study intersections, where appropriate. Refer to Figure 4 for 2022 existing weekday AM and PM peak hour traffic volumes. A copy of the count data is located in Appendix B of this report.

2.2. Analysis of 2022 Existing Peak Hour Traffic Conditions

The 2022 existing weekday AM and PM peak hour traffic volumes were analyzed to determine the current levels of service at the study intersections under existing roadway conditions. Signal information was obtained from NCDOT and is included in Appendix C. The results of the analysis are presented in Section 7 of this report.



The Townes at Little Creek
Clayton, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 4

3. 2028 NO-BUILD PEAK HOUR CONDITIONS

In order to account for growth of traffic and subsequent traffic conditions at a future year, no-build traffic projections are needed. No-build traffic is the component of traffic due to the growth of the community and surrounding area that is anticipated to occur regardless of whether or not the proposed development is constructed. No-build traffic is comprised of existing traffic growth within the study area and additional traffic created as a result of adjacent approved developments.

3.1. Ambient Traffic Growth

Through coordination with NCDOT and the Town, it was determined that an annual growth rate of 2% would be used to generate 2028 projected weekday AM and PM peak hour traffic volumes. Refer to Figure 5 for 2028 projected peak hour traffic.

3.2. Adjacent Development Traffic

Through coordination with NCDOT and the Town, the following adjacent development was identified to be included as an approved adjacent development in this study:

- Ramblewood Residential

Table 2, on the following page, provides a summary of the adjacent development.

Table 2: Adjacent Development Information

Development Name	Location	Build-Out Year	Land Use / Intensity	TIA Performed
Ramblewood Residential	North of US 70 Business and east of Ramblewood Drive	2025	180 single family homes	December 2021 by RKA

The Ramblewood Residential development is expected to consist of 180 single family homes with access to the site being via one full movement connection to Ramblewood Drive and one full movement connection to US 70 Business. It should be noted that the adjacent developments were approved, during scoping, by NCDOT and the Town. Adjacent development trips are shown in Figure 6. Adjacent development information can be found in Appendix D.

3.3. Future Roadway Improvements

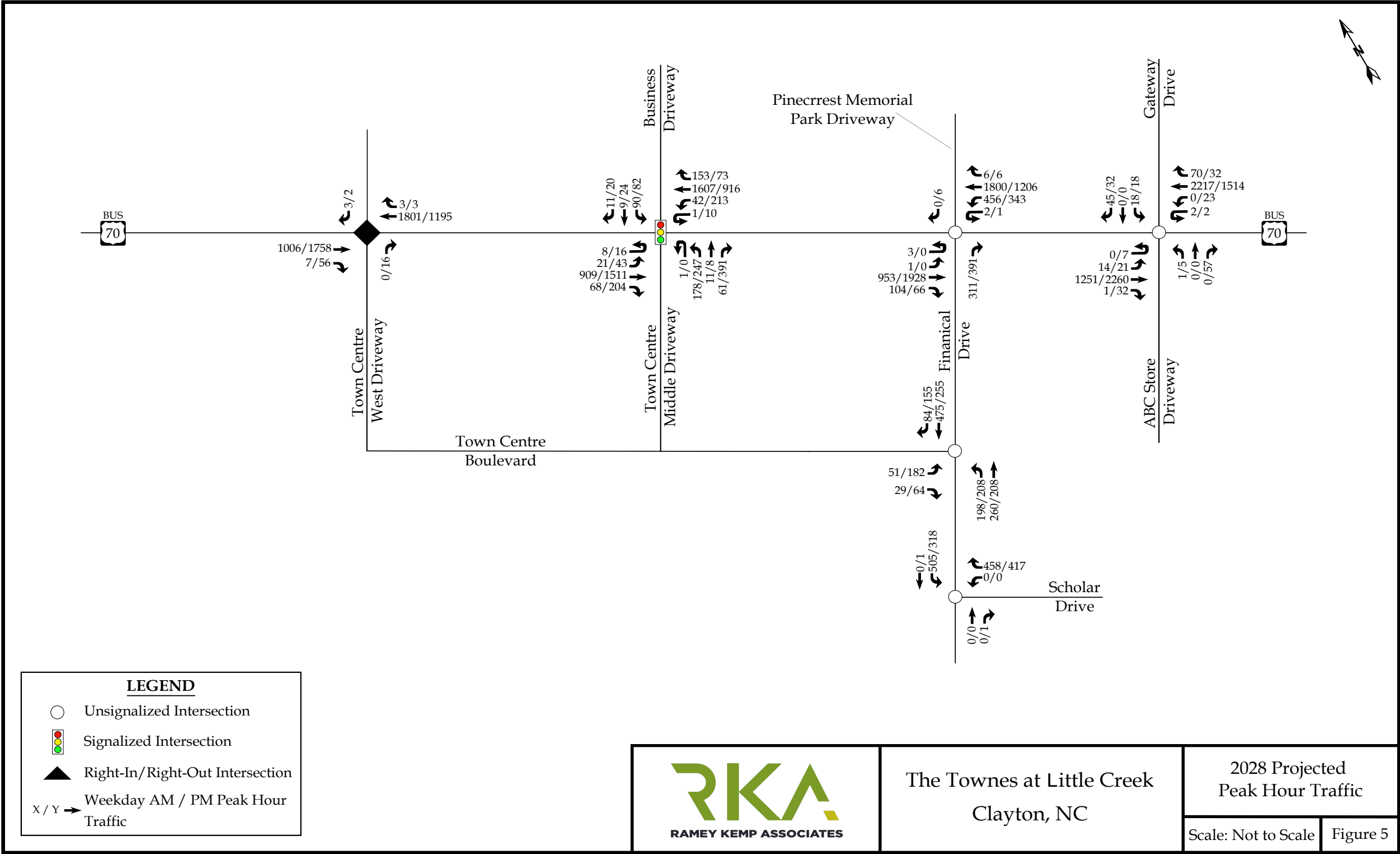
Based on coordination with NCDOT and the Town, it was determined there were no future roadway improvements to consider with this study.

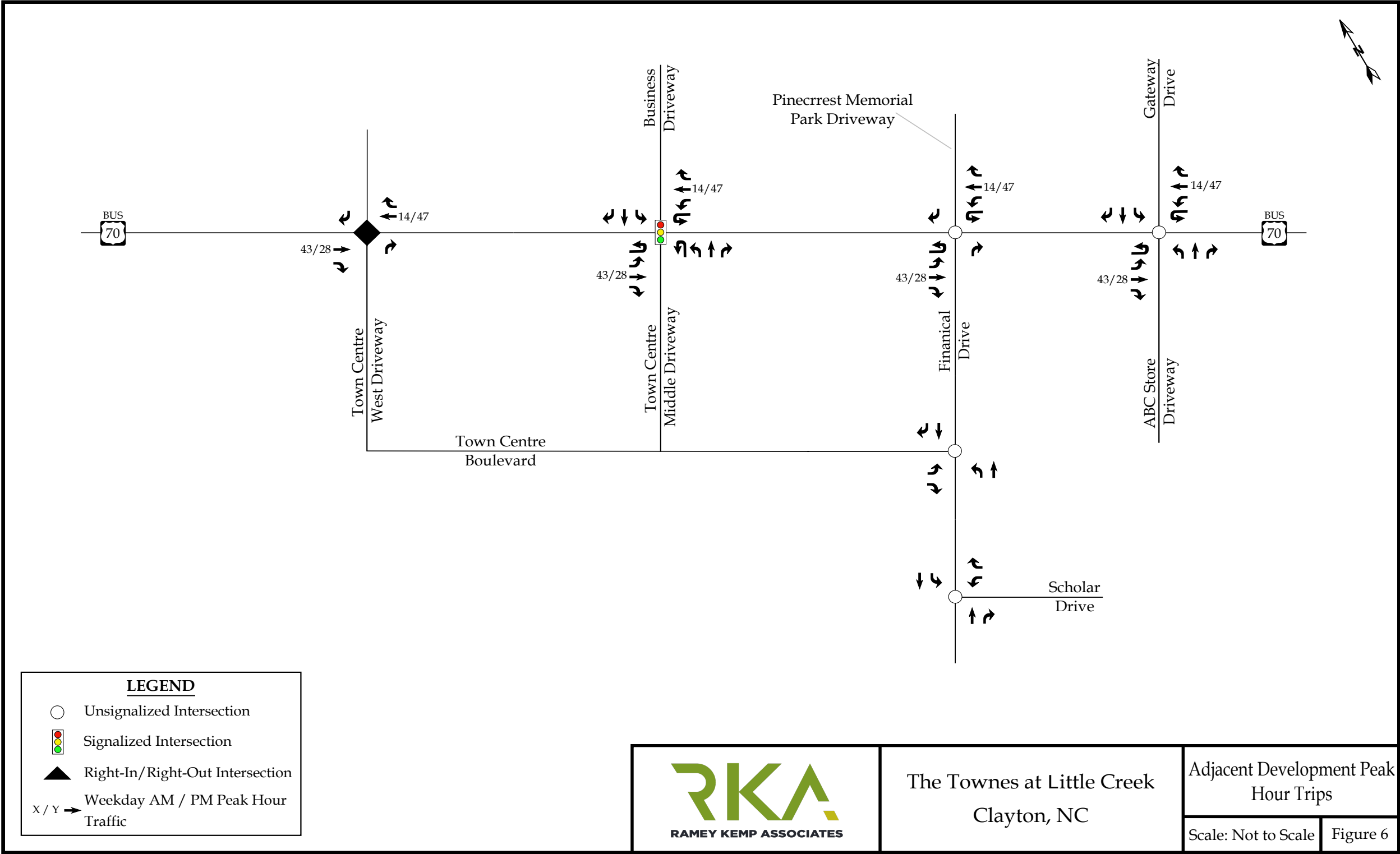
3.4. 2028 No-Build Peak Hour Traffic Volumes

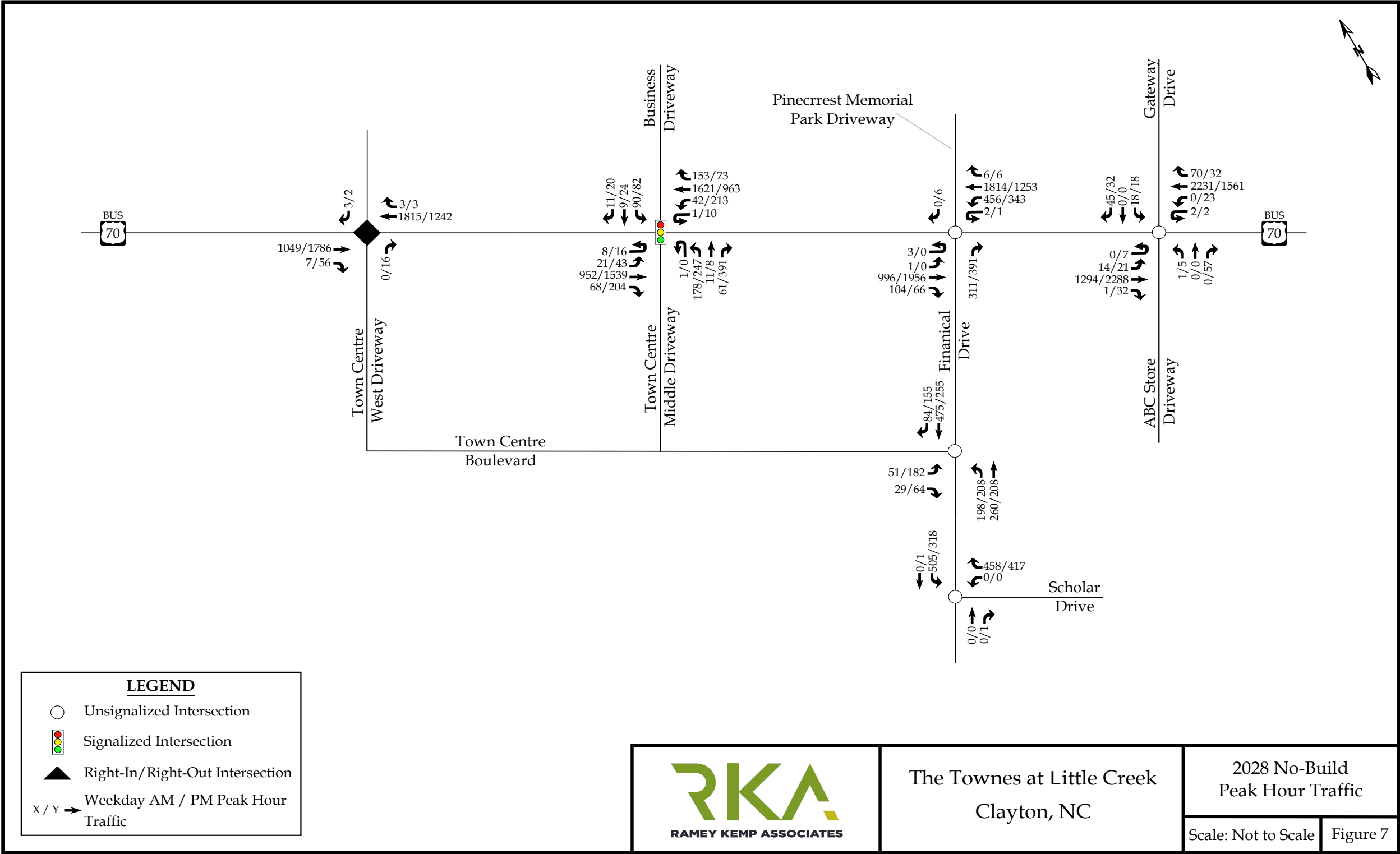
The 2028 no-build traffic volumes were determined by projecting the 2022 existing peak hour traffic to the year 2028, and adding the adjacent development trips. Refer to Figure 7 for an illustration of the 2028 no-build peak hour traffic volumes at the study intersections.

3.5. Analysis of 2028 No-Build Peak Hour Traffic Conditions

The 2028 no-build AM and PM peak hour traffic volumes at the study intersections were analyzed with future geometric roadway conditions and traffic control. The analysis results are presented in Section 7 of this report.







4. SITE TRIP GENERATION AND DISTRIBUTION

4.1. Trip Generation

The proposed development is assumed to consist of 169 townhomes. It should be noted that the density assumed in this study is that of 203 townhomes. Though the land uses are expected to differ, the trip generation considered in this TIA is expected to be higher than what is shown on the preliminary site plan and therefore provides a conservative analysis. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the *ITE Trip Generation Manual*, 11th Edition. Table 3 provides a summary of the trip generation potential for the site.

Table 3: Trip Generation Summary

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Density Shown on Site Plan						
Multifamily Housing (Low-Rise) (220)	169 DU	1159	18	57	59	34
Density Analyzed in TIA						
Multifamily Housing (Low-Rise) (220)	203 DU	1377	21	65	68	40
Difference (+/-)		218	3	8	9	6

It is estimated that the proposed development will generate approximately 1,377 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 86 trips (21 entering and 65 exiting) will occur during the weekday AM peak hour and 108 (68 entering and 40 exiting) will occur during the weekday PM peak hour.

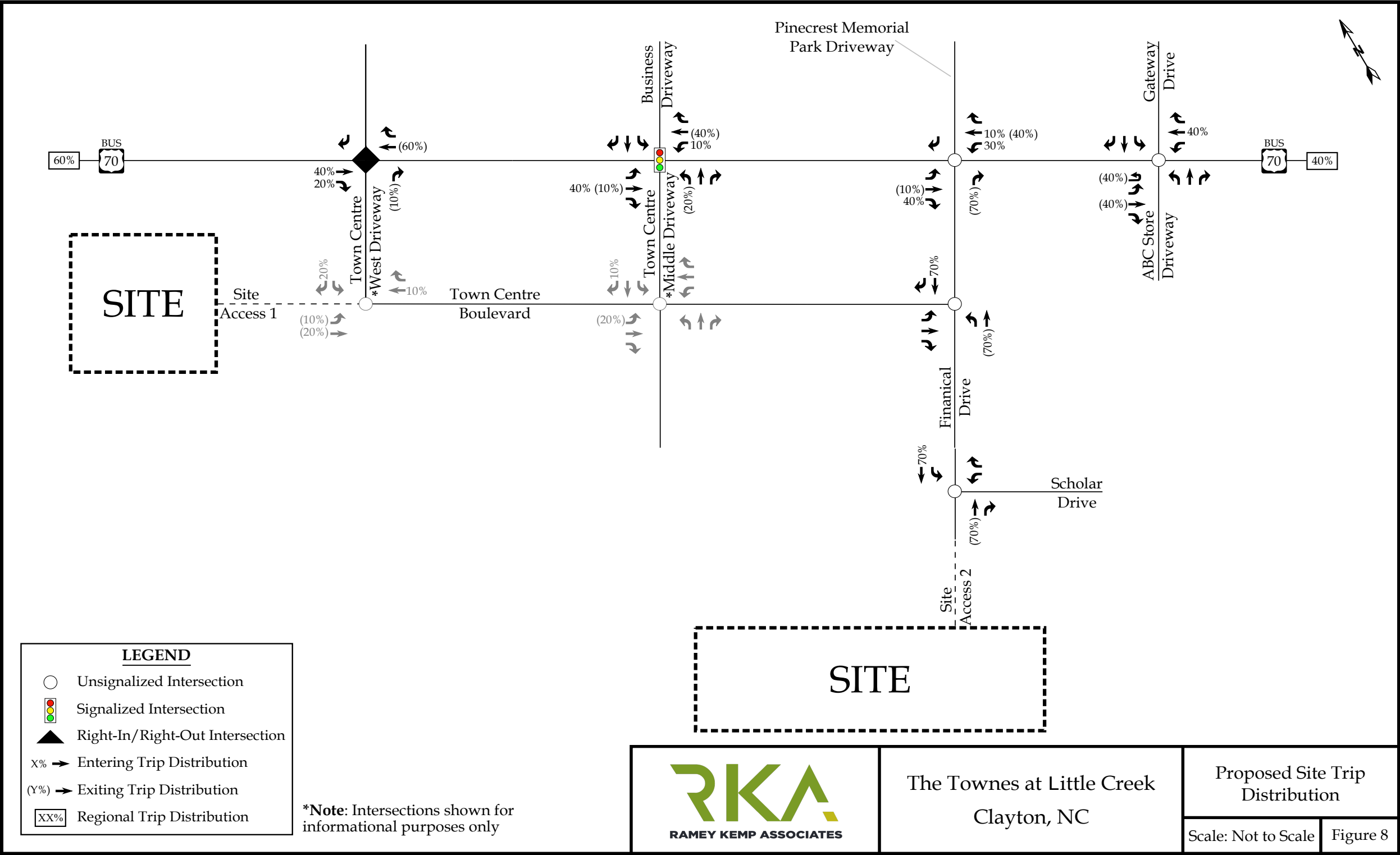
4.2. Site Trip Distribution and Assignment

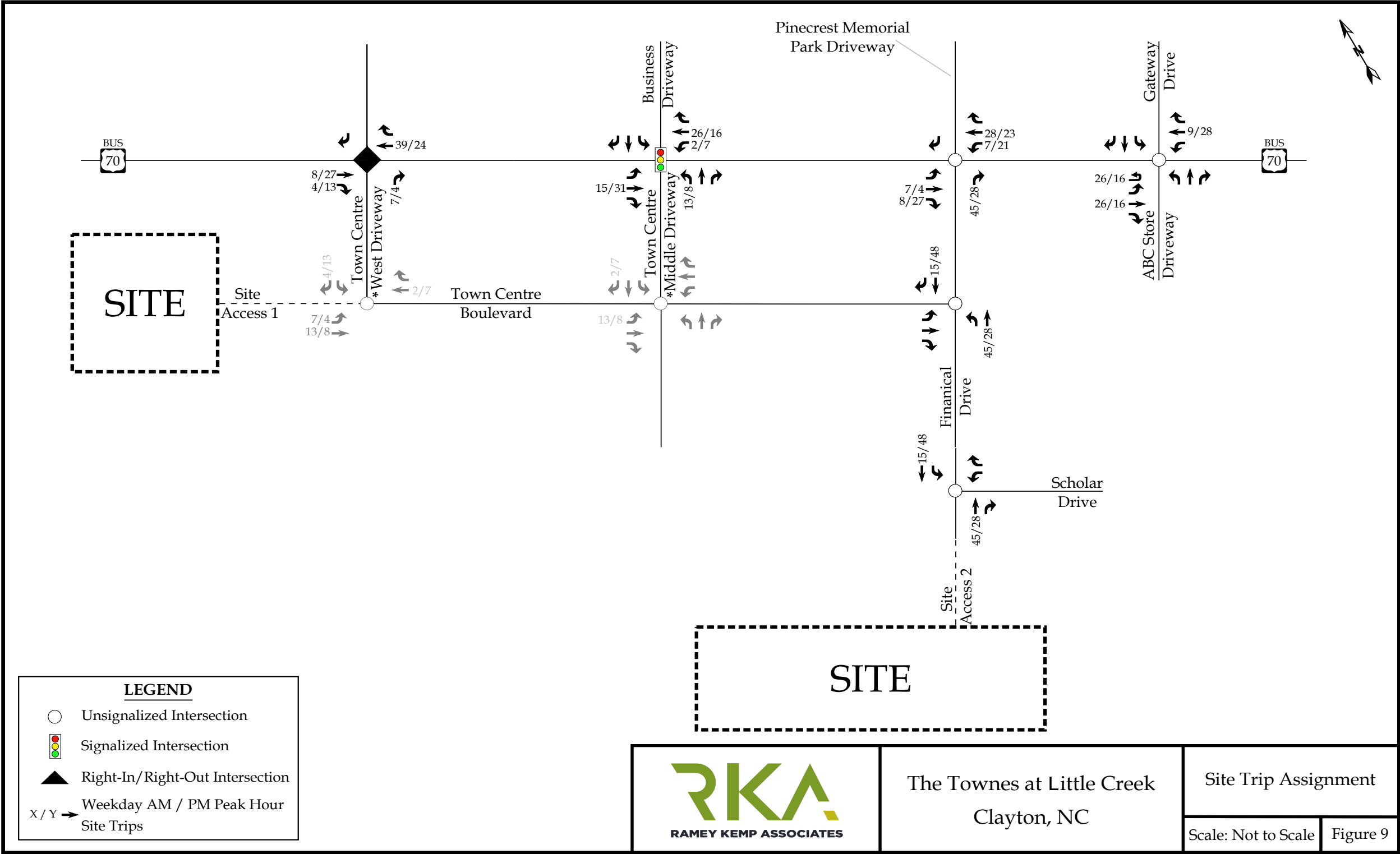
Trip distribution percentages used in assigning site traffic for this development were estimated based on a combination of existing traffic patterns, population centers adjacent to the study area, and engineering judgment.

It is estimated that the proposed site trips will be regionally distributed as follows:

- 60% to/from the west via US 70 Business
- 40% to/from the east via US 70 Business

The proposed site trip distribution is shown in Figure 8. Refer to Figure 9 for the proposed site trip assignment.





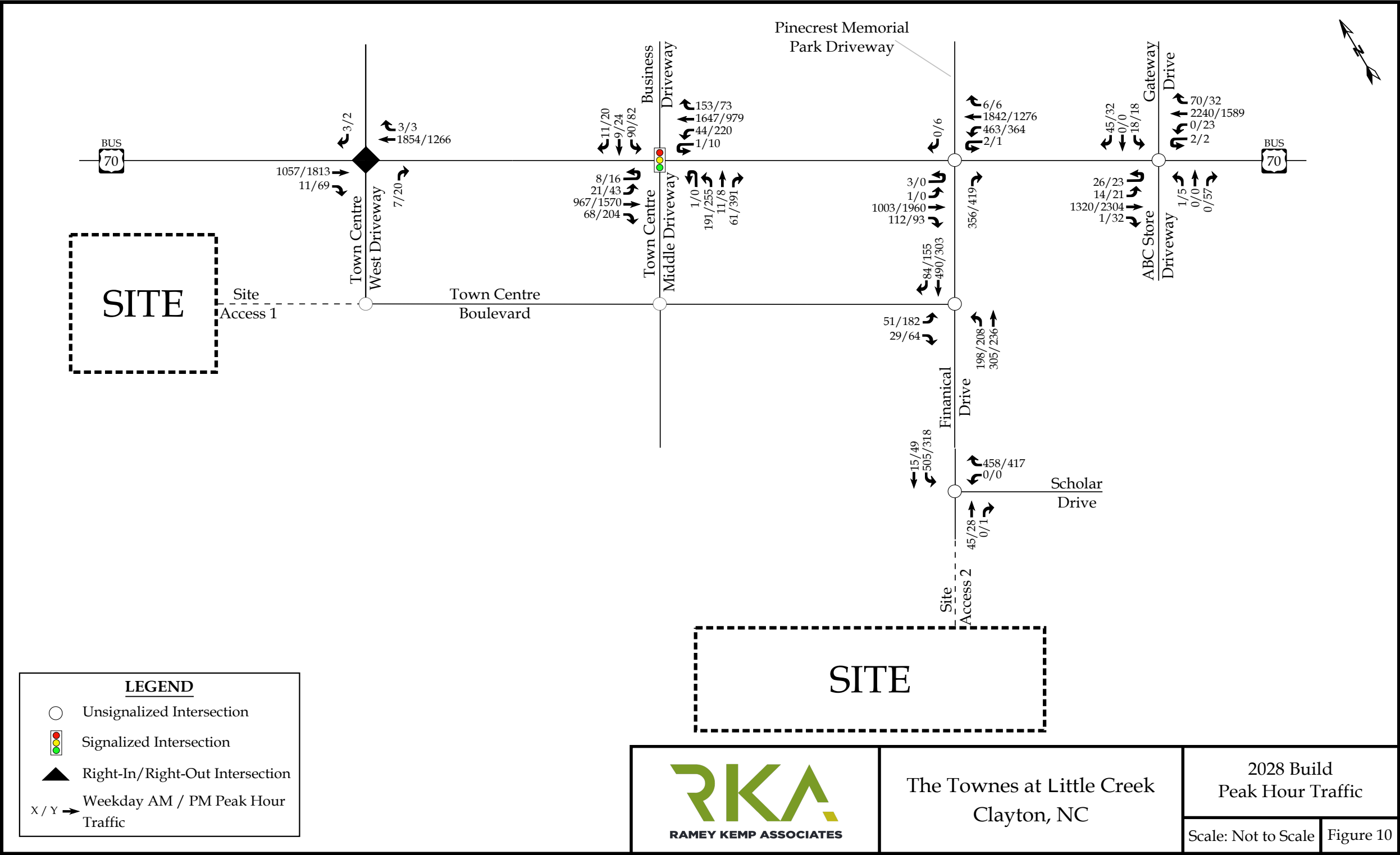
5. 2028 BUILD TRAFFIC CONDITIONS

5.1. 2028 Build Peak Hour Traffic Volumes

To estimate traffic conditions with the site fully built-out, the total site trips were added to the 2028 no-build traffic volumes to determine the 2028 build traffic volumes. Refer to Figure 10 for an illustration of the 2028 build peak hour traffic volumes with the proposed site fully developed.

5.2. Analysis of 2028 Build Peak Hour Traffic Conditions

Study intersections were analyzed with the 2028 build traffic volumes using the same methodology previously discussed for existing and no-build traffic conditions. Intersections were analyzed with improvements necessary to accommodate future traffic volumes. The results of the capacity analysis for each intersection are presented in Section 7 of this report.



6. TRAFFIC ANALYSIS PROCEDURE

Study intersections were analyzed using the methodology outlined in the *Highway Capacity Manual* (HCM), 6th Edition published by the Transportation Research Board. Capacity and level of service are the design criteria for this traffic study. A computer software package, Synchro (Version 10.3), was used to complete the analyses for most of the study area intersections. Please note that the unsignalized capacity analysis does not provide an overall level of service for an intersection; only delay for an approach with a conflicting movement.

The HCM defines capacity as “the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions.” Level of service (LOS) is a term used to represent different driving conditions, and is defined as a “qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers.” Level of service varies from Level “A” representing free flow, to Level “F” where breakdown conditions are evident. Refer to Table 4 for HCM levels of service and related average control delay per vehicle for both signalized and unsignalized intersections. Control delay as defined by the HCM includes “initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay”. An average control delay of 50 seconds at a signalized intersection results in LOS “D” operation at the intersection.

Table 4: Highway Capacity Manual – Levels-of-Service and Delay

UNSIGNALIZED INTERSECTION		SIGNALIZED INTERSECTION	
LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)
A	0-10	A	0-10
B	10-15	B	10-20
C	15-25	C	20-35
D	25-35	D	35-55
E	35-50	E	55-80
F	>50	F	>80

6.1. Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to the NCDOT Congestion Management Guidelines.

7. CAPACITY ANALYSIS

7.1. Town Centre Boulevard (Western Driveway) [NB-SB] and US 70 Business [EB-WB]

The existing unsignalized intersection of Town Centre Boulevard (Western Driveway) and US 70 Business was analyzed under 2022 existing, 2028 no-build, and 2028 build traffic conditions with lane configurations and traffic control shown in Table 5. Refer to Table 5 for a summary of the analysis results. Refer to Appendix E for the Synchro capacity analysis reports.

Table 5: Analysis Summary of Town Centre Boulevard (Western Driveway) and US 70 Business

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2022 Existing	EB WB NB SB	2 TH, 1 TH-RT 2 TH, 1 RT 1 RT 1 RT	-- -- B ¹ C ¹	N/A	-- -- C ¹ B ¹	N/A
2028 No-Build	EB WB NB SB	2 TH, 1 TH-RT 2 TH, 1 RT 1 RT 1 RT	-- -- B ¹ C ¹	N/A	-- -- C ¹ B ¹	N/A
2028 Build	EB WB NB SB	2 TH, 1 TH-RT 2 TH, 1 RT 1 RT 1 RT	-- -- B ¹ C ¹	N/A	-- -- D ¹ B ¹	N/A

1. Level of service for minor-street approach.

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the minor-street approaches are expected to operate at LOS D or better under all analysis scenarios during both weekdays AM and PM peak hours. The northbound approach is expected to degrade from LOS C under 2028 no-build PM conditions to LOS D under 2028 build conditions. Although the approach is expected to degrade under 2028 no-build, the delay is at the threshold between LOS C and LOS D. Under 2028 build conditions, the

approach is only expected to increase by less than two seconds of delay. Based on SimTraffic, no significant queuing is expected at this intersection.

7.2. Town Centre Boulevard (Middle Driveway) [NB-SB] and US 70 Business [EB-WB]

The existing signalized intersection of Town Centre Boulevard (Middle Driveway) and US 70 Business was analyzed under 2022 existing, 2028 no-build, and 2028 build traffic conditions with existing lane configurations and traffic control. Refer to Table 6 for a summary of the analysis results. Refer to Appendix F for the Synchro capacity analysis reports.

Table 6: Analysis Summary of Town Centre Boulevard (Middle Driveway) and US 70 Business

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2022 Existing	EB WB NB SB	1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT 2 LT, 1 TH-RT 1 LT, 1 TH-RT	B B F F	C (29)	C C F F	F (262)
2028 No-Build	EB WB NB SB	1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT 2 LT, 1 TH-RT 1 LT, 1 TH-RT	B B F F	C (30)	C C F F	F (308)
2028 Build	EB WB NB SB	1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT 2 LT, 1 TH-RT 1 LT, 1 TH-RT	B C F F	C (32)	C C F F	F (305)
2028 Build - Typical Residential PM Peak Hour	EB WB NB SB	1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT 2 LT, 1 TH-RT 1 LT, 1 TH-RT	B C F F	C (32)	C C F F	D (51)

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the intersection of Town Centre Boulevard and US 70 Business is expected to operate at LOS C during the weekday AM peak hour and LOS F during the PM peak hour. Significant queuing is expected along the northbound approach. These queues were observed under all existing and no-build traffic conditions and are not caused by the development. The

westbound approach is expected to degrade from LOS B under 2028 no-build AM to LOS C during the PM peak hour.

The overall intersection is expected to operate at LOS F during the PM peak hour under all scenarios. It should be noted that peak hour analyzed was from 3:20 – 4:20 PM. This time would capture trips associated with the adjacent school. It was observed that the trips during this time significantly impacted the operation of the intersection. Typically, the weekday PM peak hours for residential developments are calculated between the hours of 4:00 PM to 6:00 PM. If the typical residential peak hour is used, the functionality of the intersection is expected to significantly improve. It should also be noted that if the residents from the proposed development have children at the adjacent school, the residents would not likely contribute to the northbound approach traffic, as they would have another connection through the Clayton Town Centre development / Financial Drive to access the school / the proposed development. Due to the improved functionality during the typical residential PM peak (which is the time that the proposed development would be expected to contribute the majority of its traffic to at this intersection), no improvements to the intersection are recommended.

7.3. Financial Drive [NB-SB] and US 70 Business [EB-WB]

The existing unsignalized intersection of Financial Drive and US 70 Business was analyzed under 2022 existing, 2028 no-build, and 2028 build traffic conditions with the lane configurations and traffic control shown in Table 7. Refer to Table 7 for a summary of the analysis results. Refer to Appendix G for the Synchro capacity analysis reports.

Table 7: Analysis Summary of Financial Drive and US 70 Business

ANALYSIS SCENARIO	Node	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
				Approach	Overall (seconds)	Approach	Overall (seconds)
2022 Existing	3	EB NB SB	2 TH, 1 RT 1 RT 1 LT-TH	-- C ¹ F ¹	N/A	-- F ¹ --	N/A
	33	WB NB SB	1 TH, 1 TH-RT 1 LT-TH 1 RT	-- E ¹ C ¹	N/A	-- C ¹ B ¹	N/A
2028 No-Build	3	EB NB SB	2 TH, 1 RT 1 RT 1 LT-TH	-- D ¹ F ¹	N/A	-- F ¹ --	N/A
	33	WB NB SB	1 TH, 1 TH-RT 1 LT-TH 1 RT	-- F ¹ C ¹	N/A	-- C ¹ B ¹	N/A
2028 Build	3	EB NB SB	2 TH, 1 RT 1 RT 1 LT-TH	-- E ¹ F ¹	N/A	-- F ¹ --	N/A
	33	WB NB SB	1 TH, 1 TH-RT 1 LT-TH 1 RT	-- F ¹ C ¹	N/A	-- D ¹ B ¹	N/A
2028 Build – Signal Installation	3	EB NB SB	2 TH, 1 RT 1 RT 1 LT-TH	C D D	C (33)	D F D	D (45)
	33	WB NB SB	1 TH, 1 TH-RT 1 LT-TH 1 RT	-- F ¹ C ¹	N/A	-- D ¹ B ¹	N/A

1. Level of service for minor-street approach.

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the minor-street movement and major-street left-turn movement is expected to operate at LOS E or F. Significant queues are expected on the northbound approach as well as the westbound

left turn lane. These queues were observed under existing conditions. A large portion of the queues are likely related to the school located along Financial Drive, south of the intersection of Financial Drive and US 70 Business.

Under 2028 build with improvement conditions, the eastbound side of the intersection of Financial Drive and US 70 Business was signalized. This signal was assumed to be coordinated with the signal at the intersection of Town Centre Boulevard (Middle Driveway) and US 70 Business. With the installation of a traffic signal, queue lengths are expected to significantly decrease, and the minor-street delay and major-street left-turn delay are expected to significantly improve. The northbound approach is expected to operate at LOS F during the weekday PM peak hour. The weekday PM peak hour utilized the school peak hour which is expected to provide a conservative analysis. The typical residential PM peak hour (4:00-6:00 PM) is expected to experience improved operations. Queues are expected to significantly improve on both minor street approaches. Based on the significant improvement in queues, a signal is recommended; however, due to the poor conditions under existing and no-build conditions this signal is needed under existing conditions and is not recommended as a developer improvement.

7.4. Gateway Drive [NB-SB] and US 70 Business [EB-WB]

The existing unsignalized intersections of Gateway Drive and US 70 Business were analyzed under 2022 existing, 2028 no-build, and 2028 build traffic conditions with the lane configurations and traffic control shown in Table 8. Refer to Table 8 for a summary of the analysis results. Refer to Appendix H for the Synchro capacity analysis reports.

Table 8: Analysis Summary of Gateway Drive and US 70 Business

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2022 Existing	EB WB NB SB	1 LT, 2 TH, 1 RT 1 LT, 2 TH, 1 RT 1 LT-TH-RT 1 LT-TH-RT	C ¹ C ¹ F ² F ²	N/A	C ¹ E ¹ F* F*	N/A
2028 No-Build	EB WB NB SB	1 LT, 2 TH, 1 RT 1 LT, 2 TH, 1 RT 1 LT-TH-RT 1 LT-TH-RT	D ¹ C ¹ F* F*	N/A	C ¹ F ¹ F* F*	N/A
2028 Build	EB WB NB SB	1 LT, 2 TH, 1 RT 1 LT, 2 TH, 1 RT 1 LT-TH-RT 1 LT-TH-RT	F ¹ C ¹ F* F*	N/A	E ¹ F ¹ F ² F ²	N/A

*Due to the limitations of Synchro the computation was not defined. LOS F was assumed based on the other scenarios.

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the minor-street approaches are expected to operate at LOS F during both peak hours. Significant queues are expected on the minor-streets while minimal queues are expected on the major-street. The eastbound left-turn movement is expected to degrade from LOS D under 2028 no-build AM conditions to LOS F under 2028 build AM conditions. Similarly, the eastbound approach is expected to degrade from LOS C to LOS E when comparing the 2028 no-build and 2028 build conditions. While a degradation in LOS is expected on the eastbound approach, the queues are expected to be minimal.

The proposed site is expected to account for less than 2% of the build peak hour trips. The majority of the trip added to the intersection are expected to be through trips with the remaining trips being added to the eastbound U-turn movement. Additionally, once improvements are installed at the adjacent intersection, additional gaps would be expected along the primary road. This would likely result in shorter queues along the side streets. Based on congestion management guidelines, movements are required to use a minimum peak hour volume of 4. This would cause through volumes on the side streets that were not observed in the field to be in the analysis. This would impact queue lengths, which would be expected to be less in the field. It should also be noted that it is not uncommon for a minor-street to operate at LOS F at an unsignalized intersection and these issues are present under existing conditions. No improvements by the developer are recommended.

7.5. Financial Drive [NB-SB] and Town Centre Boulevard [EB-WB]

The existing unsignalized intersection of Financial Drive and Town Centre Boulevard was analyzed under 2022 existing, 2028 no-build, and 2028 build traffic conditions with existing lane configurations and traffic control. Refer to Table 9 for a summary of the analysis results. Refer to Appendix I for the Synchro capacity analysis reports.

Table 9: Analysis Summary of Financial Drive and Town Centre Boulevard

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2022 Existing	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH-RT	D ² A ¹ --	N/A	E ² A ¹ --	N/A
2028 No-Build	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH-RT	E ² A ¹ --	N/A	F ² A ¹ --	N/A
2028 Build	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH-RT	E ² A ¹ --	N/A	F ² A ¹ --	N/A

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the major-street left-turn movement is expected to operate at LOS A during the weekday AM and PM peak hours. The minor street approach is expected to operate at LOS E during the AM peak hour under all conditions and to operate at LOS F during the PM peak hour under future conditions. Significant queues are expected on the northbound and westbound approach during the PM peak hour.

The observed queues expected along the northbound and eastbound approaches are caused by the poor functionality of the adjacent intersection of US 70 Business and Financial Drive. With the installation of improvements at the adjacent intersection, queues are expected to significantly improve. High delays are still expected along the side street; however, this is not uncommon at unsignalized intersections. It should be the weekday PM peak hour utilized the

school peak hour which is expected to provide a conservative analysis. The typical residential PM peak hour (4:00-6:00 PM) is expected to experience improved operations. No improvements by the development are recommended.

7.6. Financial Drive [NB-SB] and Scholar Drive [WB]

The existing unsignalized intersection of Financial Drive and Scholar Drive was analyzed under 2022 existing, 2028 no-build, and 2028 build traffic conditions with existing lane configurations and traffic control. Refer to Table 10 for a summary of the analysis results. Refer to Appendix J for the Synchro capacity analysis reports.

Table 10: Analysis Summary of Financial Drive and Scholar Drive

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2022 Existing	WB NB SB	1 LT-RT 1 TH-RT 1 LT, 1 TH	B ² -- A ¹	N/A	B ² -- A ¹	N/A
2028 No-Build	WB NB SB	1 LT-RT 1 TH-RT 1 LT, 1 TH	B ² -- A ¹	N/A	B ² -- A ¹	N/A
2028 Build	WB NB SB	1 LT-RT 1 TH-RT 1 LT, 1 TH	B ² -- A ¹	N/A	B ² -- A ¹	N/A

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the minor-street approaches are expected to operate at LOS B or better under all analysis scenarios during the weekday AM and PM peak hours. The southbound approach is expected to operate at LOS A during the weekday AM and PM peak hours. No significant queuing is expected.

8. CONCLUSIONS

This Traffic Impact Analysis was conducted to determine the potential traffic impacts of the proposed The Townes at Little Creek development to be located along both sides of the existing Clayton Town Center and to the south of US 70 Business in Clayton, North Carolina. The proposed development is expected to be a residential development and be built out in 2028. Site access to the eastern portion of the site is proposed via a connection to the existing Financial Drive. Site access to the western portion of the site is proposed via one full movement connection to the existing Town Centre Boulevard.

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- 2022 Existing Traffic Conditions
- 2028 No-Build Traffic Conditions
- 2028 Build Traffic Conditions

Trip Generation

It is estimated that the proposed development will generate approximately 86 primary trips (21 entering and 65 exiting) during the weekday AM peak hour and 108 primary trips (68 entering and 40 exiting) during the weekday PM peak hour.

Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to NCDOT Congestion Management Guidelines. Refer to section 6.1 of this report for a detailed description of any adjustments to these guidelines made throughout the analysis.

Intersection Capacity Analysis Summary

All the study area intersections (including the proposed site driveways) are expected to operate at acceptable levels-of-service under existing and future year conditions with the exception of the intersections listed below. A summary of the study area intersection that is expected to need improvements are as follows:

Financial Drive and US 70 Business

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the minor-street movement and major-street left-turn movement is expected to operate at LOS E or F. Significant queues are expected on the northbound approach as well as the westbound left turn lane. These queues were observed under existing conditions. A large portion of the queues are likely related to the school located along Financial Drive, south of the intersection of Financial Drive and US 70 Business. Under 2028 build with improvement conditions, the eastbound side of the intersection of Financial Drive and US 70 Business was signalized. This signal was assumed to be coordinated with the signal at the intersection of Town Centre Boulevard (Middle Driveway) and US 70 Business. With the installation of a traffic signal, queue lengths are expected to significantly decrease, and the minor-street delay and major-street left-turn delay are expected to significantly improve. The northbound approach is expected to operate at LOS F during the weekday PM peak hour. The weekday PM peak hour utilized the school peak hour which is expected to provide a conservative analysis. The typical residential PM peak hour (4:00-6:00 PM) is expected to experience improved operations. Queues are expected to significantly improve on both minor street approaches. Based on the significant improvement in queues, a signal is recommended; however, due to the poor conditions under existing and no-build conditions this signal is needed under existing conditions and is not recommended as a developer improvement.

9. RECOMMENDATIONS

Based on the findings of this study, specific geometric improvements have been identified and are recommended to accommodate future traffic conditions. See a more detailed description of the recommended improvements below. Refer to Figure 11 for an illustration of the recommended lane configuration for the proposed development.

Recommended No-Build Improvements for Consideration

Financial Drive and US 70 Business

- Install traffic signal on the Financial Drive portion of the intersection when warranted.

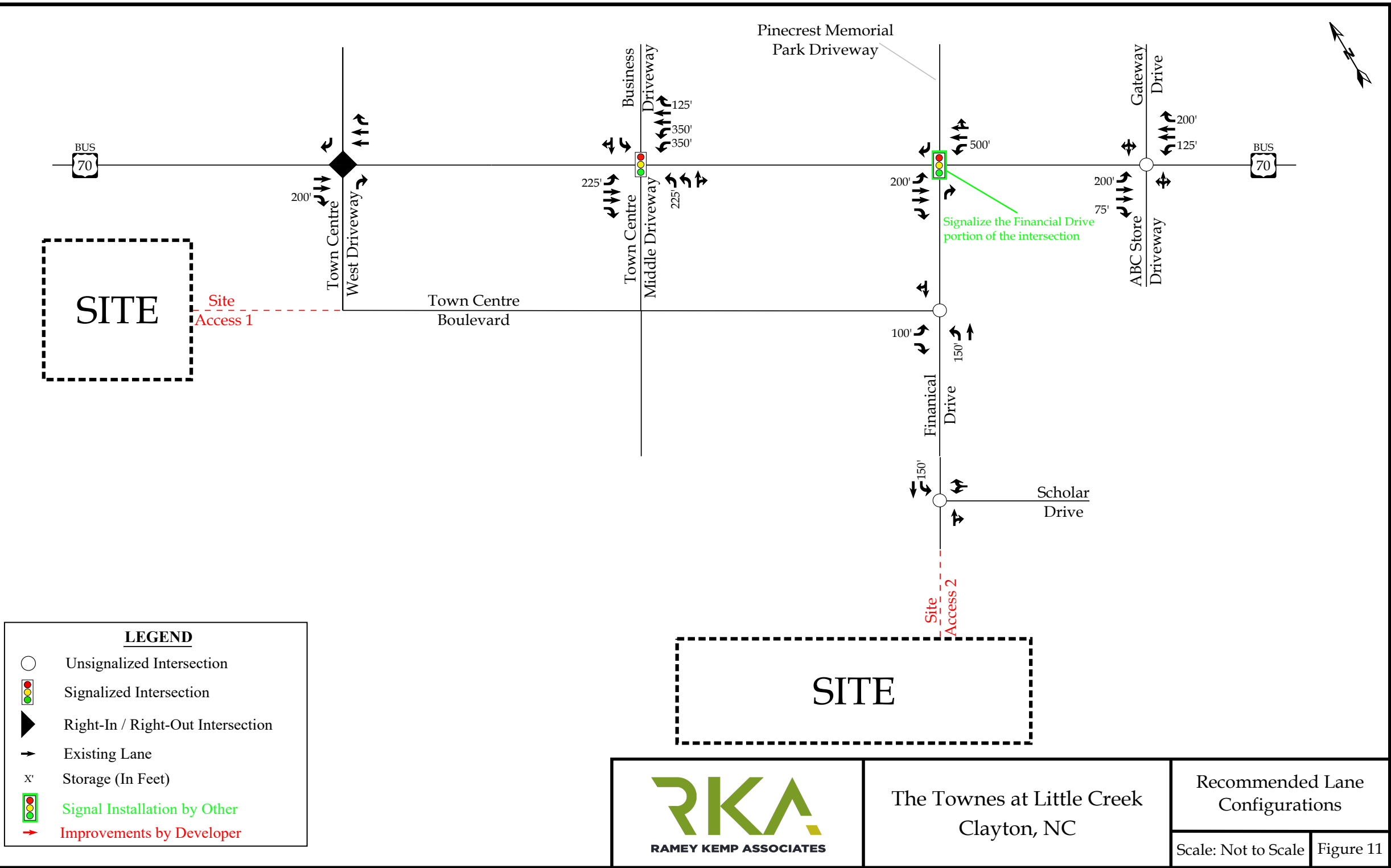
Recommended Improvements by Developer

Financial Drive and Town Centre Boulevard

- Construct an eastbound approach with one egress lane (shared left and through-lane) and one ingress lane.
- Provide stop control for the eastbound approach.

Financial Drive and Scholar Drive

- Construct site access along the northbound approach.



Appendix II. ecoSelect Checklist Guide

Checklist Requirements

Section 1: ENERGY			
1.1	Advanced framing, rim, insulate headers, corners, and interior/exterior wall intersections (i.e. Labeled "Y") OR Insulation rated to R-15/NL Labeled Green II or better	PASS	FAIL
1.2	Insulation rated to R-15/NL Labeled Green II or better	PASS	FAIL
1.3	All frame exterior insulation on all six sides when installed in vertical exterior walls	PASS	FAIL
1.4	Grounding and bonding edge of exteriorly installed insulation to separate conditioned space from unconditioned space (insulation to be bonded)	PASS	FAIL
1.5	Penetrations, chases, and openings to conditioned space fully sealed with solid blocking or sealant	PASS	FAIL
1.6	Insulation extends over top plates and under Lathes installed at all eaves	PASS	FAIL
1.7	All eaves bottom plate / sill to subfloor, slab or masonry wall	PASS	FAIL
1.8	All doors adjacent to unconditioned space have weatherstripping and rough openings around windows and doors	PASS	FAIL
1.9	Vertical cavity air sealed to top plate when adjacent to unconditioned space (using caulk, gasket, or foam)	PASS	FAIL
1.10	All seal all HVAC ducts, bath exhaust fan housings, gas lights and penetrations to the crawl and/or subfloor	PASS	FAIL
1.11	All attic access panel(s) down stairs are gasketed and equipped with a crawl insulation	PASS	FAIL
1.12	Doors/Windows measure at max 5% total leakage or 4% Leakage to Outside (LTO)	PASS	FAIL
1.13	Whole House Leakage measure at 5 ACH50 or less	PASS	FAIL
1.14	Appliances: minimum 1 ENERGY STAR® appliance installed	PASS	FAIL
1.15	90% efficient lighting: CFLs, LEDs, or ENERGY STAR® fixtures	PASS	FAIL
1.16	Programmable Thermostat(s)	PASS	FAIL
1.17	Low-E Windows Requirements	PASS	FAIL
1.17a	Climate Zone 1 - 4: U-factor 0.35 / SHGC 0.30	PASS	FAIL
1.17b	Climate Zone 5+ : U-factor 0.35 / SHGC Any	PASS	FAIL
1.18	Ducts Insulated to R-8 in unconditioned space	PASS	FAIL
1.19	Manual J Load Calculation completed	PASS	FAIL
1.20	Solar potential evaluation for each home	PASS	FAIL
Section 2: INDOOR AIR QUALITY			
2.1	Exhaust fans	PASS	FAIL
2.1a	Grade around foundation has 6 inches or fall over 10 feet or properly install perimeter drain	PASS	FAIL
2.1b	Crawl Space: 100% gaseous coverage with 6 mil poly secured to ground and lapped 6 to 12 inches	PASS	FAIL
2.1c	Subs/Basements: Recycled and a minimum 6 mil poly vapor barrier with 100% coverage installed	PASS	FAIL
2.2	Whole House fresh air ventilation with filter	PASS	FAIL
2.3	MERV 6 filters installed for all HVAC systems	PASS	FAIL
2.4	For bedrooms with a hot and/or shower: install a minimum 100 cfm rated exhaust fan	PASS	FAIL
2.5	All solid fuel burning appliances must have gasketed doors. Non-vented or vent free appliances are not allowed	PASS	FAIL
2.6	Carbon monoxide detector installed on every floor with sleeping areas OR combustion appliances	PASS	FAIL
2.7	OPTIONAL: 100% fresh air ventilation with a minimum return flow rate of 100 CFM	PASS	FAIL
Section 3: WATER EFFICIENCY			
3.1	Low WaterSense labeled laundry faucets installed (for 100% installed)	PASS	FAIL
3.2	EPA WaterSense labeled toilets installed (for 100% installed)	PASS	FAIL
3.3	Moisture or rain sensor installed with any on site irrigation system(s)	PASS	FAIL

Build Your Business. Build ecoSelect.

Introducing the ecoSelect® Program: a residential energy efficiency certification program designed by home energy raters for home builders.

ecoSelect® provides builders with a highly marketable, easy-to-implement home building standard that enables them to affordably construct high-efficiency homes. ecoSelect® homes meet the demands of today's homebuyer: lower cost of ownership, improved indoor air quality, and reduced impact on the environment.

Combining the HERS index with common sense energy efficiency, indoor air quality, and water efficiency standards, ecoSelect® is a simple, affordable, and impactful home certification program that resonates with today's homebuyers.

Most importantly, the ecoSelect® Program was created with simplicity in mind: straightforward standards designed to measurably improve energy efficiency supported by clear consumer marketing to maximize builder value. Our builder portal provides online access to all your projects and certifications when you need it. While third-party verification ensures quality and consumer confidence.

The ecoSelect® Program is designed to meet the market demand for a practical, performance-based platform with powerful marketing tools that clearly communicate the value and benefits of a high-performance home to homebuyers. With ecoSelect®, builders can build high-performance AND sell more homes. It's a classic win-win.

Join us today, and start building your business with ecoSelect®.



Appendix III. Sewer Allocation Checklist



WATER & WASTEWATER ALLOCATION CRITERIA				
TOTAL POINTS = 60 MINIMUM 50 POINTS REQUIRED				
	Category	Points	Calc.	Notes
DEVELOPMENT TYPE ¹ (Choose 1 from this category)	Government/Public Admin./Public Safety	50		
	Non-residential (Commercial) - Retail & Restaurant	30		
	Non-residential (Commercial) - Office	20		
	Non-residential (Commercial) - Warehouse	15		
	Non-residential (Commercial) - Medical	25		
	Non-residential (Commercial) - Hotel/Motel	35		
	Industrial/Manufacturing	30		
	Institutional	15		
	Residential Existing Lot- Single Family Detached	40		Individual Existing Lot construction
	Residential Subdivision - Single Family Detached (> 0.25 Acre Lots)	20		Single Family Homes on Individual Lots greater than 0.25 acres
	Residential Subdivision - Single Family Detached (< 0.25 Acre Lots)	15		Single Family Homes on Individual Lots less than 0.25 Acres
	Residential Subd.- Single Family Attached (> 1,500 SF Heated Space)	10	10	Townhomes with heated square-footage greater than 1,500 SF
	Residential Subd.- Single Family Attached (< 1,500 SF Heated Space)	5		Townhomes with heated square-footage less than 1,500 SF
	Residential - Multifamily (Apartments)	10		
	Mixed-Residential	25		Mix of various lot sizes of Single-family, Townhomes, and Apartments
	Mixed-Use Commercial & Residential	30		Mix of Residential and Non-residential (Commercial) uses
	Downtown Redevelopment	30		
	Infill Development	25		Utilities already exist within 300 Feet of property
FUTURE TAX STATUS ² (Choose 1 from this category)	Exempt	0		
	Residential	5	5	
	Non-residential	10		
	Industrial	10		
COMMUNITY BENEFIT BONUS POINTS ³ (Choose All that apply from this category)	Cultural Arts/Entertainment for Public	10		
	Sports/Recreation for Public	10		
	Town Electric Customer	20		
	Expansion of existing non-residential use	10		
	Re-development of an existing property	5		Must result in increased property value
	Residential Subdivision - Additional amenities included	5 - 15	15	Pool, Clubhouse, sports courts, etc. - 5 pts per, max 15 pts
	Job Creation - 10 to 25 new jobs	5		
	Job Creation - 26 to 100 new jobs	10		
	Job Creation - 100+ new jobs	15		
	Job creation - Jobs created will have salaries at or above median income	5		Must be greater than 50% of jobs added with documentation to confirm
	Residential - Multiple-Car Garages provided	5		
	Residential - Overflow Parking provided	5	5	Subject to Planning and Engineering support
	Masonry Elements included in Building Construction	10	10	
	Sustainable/High Efficiency Products and appliances used	5 - 15	15	5 pts per, max 15 pts
COMMUNITY/INFRASTRUCTURE DEDUCT POINTS ⁴ (Choose All that apply from this category)	Private trail connection to Public Greenway	10		
	Pump Station Improvements required ⁵	-10		Subject to Town policy and standards
	New Pump Station Required ⁶	-20		Subject to Town policy and standards
	Out-of Town Status (After construction)	-10		
	Outside Fire District	-5		
	Inconsistent with Comp Plan	-5		
CLARIFICATIONS	1. Any Development Type Category not listed is subject to Town Council discretion with staff recommendation.			
	2. The Town Engineer may waive these deductions if the improvements are consistent with Future utility service plans, replace/offset an aging station, or are in the best interest of the Town.			

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF CLAYTON & NCDOT STANDARDS AND SPECIFICATIONS

THE TOWNES AT LITTLE CREEK MASTER PLAN TOWN CENTRE BLVD.

TOWN OF CLAYTON, JOHNSTON COUNTY, NORTH CAROLINA

TOWN OF CLAYTON PROJECT NO. 2022-109-CZM & 2022-35-WWA

ZONING CONDITIONS

GENERAL ZONING CONDITIONS

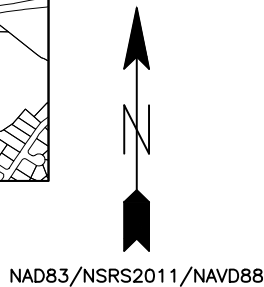
- 1.FOLLOWING TOWN COUNCIL APPROVAL, AN ELECTRONIC COPY OF THE MASTER PLAN AND NARRATIVE INCLUDING THE CONDITIONS OF APPROVAL SHALL BE SUBMITTED TO THE PLANNING DEPARTMENT FOR FINAL APPROVAL.
- 2.THE DEVELOPMENT SHALL MEET ALL ADOPTED TOWN OF CLAYTON UNIFIED DEVELOPMENT CODE (UDC) REQUIREMENTS, TOWN OF CLAYTON ENGINEERING AND STORMWATER DESIGN STANDARDS, AND THE NORTH CAROLINA FIRE CODE AND NFPA FIRE STANDARDS, EXCEPT WHERE SPECIFICALLY MODIFIED BY THE APPROVED MASTER PLAN.
- 3.PERMITTED USES SHALL BE LIMITED TO SINGLE-FAMILY DETACHED RESIDENTIAL AND TOWNHOMES AND ANY ALLOWED ACCESSORY USES WITHIN THE TOWN OF CLAYTON UDC FOR RESIDENTIAL DEVELOPMENT.
- 4.THE FOLLOWING STANDARDS WILL APPLY TO THE DEVELOPMENT:
 - MAXIMUM NUMBER OF UNITS: 169 DWELLING UNITS
 - MAXIMUM DENSITY: 3.14 DUA
 - MINIMUM LOT SIZE: 1,600 SQUARE FEET
 - MINIMUM DIMENSIONAL STANDARDS AS SPECIFIED IN MASTER PLAN
- 5.THE FOLLOWING TRANSPORTATION IMPROVEMENTS WILL BE CONSTRUCTED AND ACCEPTED BY NCDOT (WHERE NECESSARY) PRIOR TO ISSUANCE OF THE FIRST CERTIFICATE OF OCCUPANCY:
 - CONSTRUCT AN EASTBOUND APPROACH WITH ONE EGRESS LANE (SHARED LEFT AND THROUGH-LANE) AND ONE INGRESS LANE AT TOWN CENTRE BLVD AND PROPOSED PUBLIC STREET A IN THE WESTERN PORTION OF THE DEVELOPMENT.
 - CONSTRUCT SITE ACCESS ALONG THE NORTHBOUND APPROACH AT FINANCIAL DRIVE AND SCHOLAR DRIVE.
 - AFTER A CERTIFICATE OF OCCUPANCY HAS BEEN ISSUED FOR 50% OF THE LOTS (84 UNITS), PERFORM A SIGNAL WARRANT ANALYSIS AT THE INTERSECTION OF FINANCIAL DRIVE AND US 70 BUSINESS.
- 6.THE DEVELOPMENT WILL INCLUDE THE FOLLOWING ACTIVE AMENITY AREAS:
 - TWO TOT LOTS
 - FENCED DOG PARK
 - CONCRETE OR ASPHALT CONNECTIONS TO THE GREENWAY EASEMENT
- 7.THE DEVELOPMENT SHALL DEDICATE A 20' TOWN OF CLAYTON GREENWAY EASEMENT ALONG THE SOUTHERN BOUNDARY OF THE SITE, FOLLOWING LITTLE CREEK. THE FINAL COORDINATION OF THE EASEMENT SHALL BE BASED ON COORDINATION WITH TOWN STAFF.
- 8.THE DEVELOPMENT SHALL HAVE A MINIMUM OF 1.71 ACRES OF PUBLIC RECREATIONAL OPEN SPACE.
- 9.PUBLIC SEWER IS PROPOSED TO BE PROVIDED TO THE SITE BY AN EXTENSION OF A GRAVITY SEWER MAIN THROUGH A FUTURE PROPOSED TOWN OF CLAYTON CIP PROJECT. THE SITE CURRENTLY IS SERVED BY AN EXISTING TOWN OF CLAYTON PUBLIC PUMP STATION AND IS NEARING CAPACITY. THE EXISTING DOWNSTREAM GRAVITY MAIN AND WALMART PUMP STATION WILL BE ANALYZED FOR CAPACITY. THE TOWN OF CLAYTON HAS ENGAGED AN ENGINEERING CONSULTANT TO DESIGN A GRAVITY SEWER EXTENSION IN ORDER TO ABANDON THE EXISTING PUMP STATION. ONCE THE SEWER EXTENSION PROJECT IS COMPLETE, THE PROPOSED TOWNHOME PROJECT WILL CONNECT TO THE NEW GRAVITY SEWER LINE. THE DEVELOPER WILL WORK WITH THE TOWN OF CLAYTON THROUGHOUT THE CIP PROJECT AS THE PROJECT MOVES TO DESIGN/CONSTRUCTION AND THE DEVELOPER WILL CONTRIBUTE A PRO-RATA FEE TO THE TOWN OF CLAYTON TO MITIGATE THE PROPOSED FLOW FROM THE DEVELOPMENT.
- 10.ENERGY EFFICIENT FEATURES WILL INCLUDE A MINIMUM OF THREE OF THE FOLLOWING: INSULATION RATED TO AT LEAST RESNET-DEFINED GRADE II; AIR BARRIER ENCLOSES INSULATION ON ALL SIX SIDES WHEN INSTALLED IN VERTICAL EXTERIOR WALLS; BLOCKING AND AIR SEALING AT EDGE OF HORIZONTALLY INSTALLED INSULATION TO SEPARATE CONDITIONED SPACE FROM UNCONDITIONED SPACE; PENETRATIONS, CHASES, AND OPENINGS TO UNCONDITIONED SPACE FULLY SEALED WITH SOLID BLOCKING OR SEALANT; INSULATION TO EXTEND OVER TOP PLATES AND WIND BAFFLES INSTALLED AT ALL EAVES; ALL DOORS ADJACENT TO UNCONDITIONED SPACE TO HAVE WEATHERSTRIP AND ROUGH OPENINGS AROUND WINDOWS AND DOORS ARE AIR SEALED TO FRAMING; MINIMUM OF ONE ENERGY STAR APPLIANCE INSTALLED; 90% EFFICIENT LIGHTING (CFLS, LEDS, OR ENERGY STAR FIXTURES); DUCTS INSULATED TO R-8 IN UNCONDITIONED SPACE; MINIMUM 6 MIL POLY VAPOR BARRIER INSTALLED.

ARCHITECTURAL STANDARDS

- 1.ALL UNITS WILL BE TWO-STORY WITH A VARIETY OF ELEVATIONS. UNITS OF THE SAME ELEVATION SHALL NOT BE SIDE BY SIDE. EXTERIOR COLOR SCHEMES WILL NOT BE REPEATED SIDE BY SIDE.
- 2.ALL HOMES WILL HAVE A COMBINATION OF TWO OR MORE OF THE FOLLOWING MATERIALS ON THE FRONT FAÇADE: STONE, BRICK, LAP SIDING, FIBER CEMENT SIDING, SHAKES OR BOARD AND BATTEN. THE EXTERIOR SIDING MATERIAL ON THE SIDE AND REAR FAÇADES WILL BE FIBER CEMENT WITH COLORS TO MATCH THE FRONT ELEVATIONS. VINYL MAY BE USED FOR SOFFITS, FASCIA, AND CORNER BOARDS.
- 3.STONE/MASONRY ACCENTS WILL BE PROVIDED ON A MINIMUM OF 25% OF ALL FRONT BUILDING FAÇADES.
- 4.EACH TOWNHOME SHALL HAVE A COVERED PORCH ELEMENT.
- 5.TWO VEHICULAR PARKING SPACES TO BE PROVIDED FOR EACH HOME (1 CAR GARAGE AND DRIVEWAY).
- 6.SIDE ROOF EAVES TO BE 10" OVERHANG EXCEPT BETWEEN INTERIOR TOWNHOME UNITS.
- 7.ARCHITECTURAL STYLE SHINGLES TO BE USED.
- 8.REAR CONCRETE PAD/PATIO FOR OUTDOOR LIVING WILL BE PROVIDED ON ALL UNITS WITH A FRONT-FACING GARAGE.



VICINITY MAP
N.T.S.



OWNER:

DOUGLAS I. STEPHENS AND CYNTHIA
M. STEVENS IRREVOCABLE TRUST
319 CHAPANOKE RD STE 102
RALEIGH, NC 27603-0000

DEVELOPER:

DRB GROUP
3000 RDU CENTER DRIVE, STE 202
MORRISVILLE, NC 27560

CONTACT: CINDY SZWARCOP, AICP
PHONE: 919-244-5899
EMAIL: CSZWARCOP@DRBGROUP.COM

ENGINEER:



BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250
RALEIGH, NORTH CAROLINA 27607
TELEPHONE: (919) 851-4422
FAX: (919) 851-8968

CERTIFICATION NUMBERS: NCBELS (C-0110)
NCBOLA (C-0267)

CONTACT: MARTY D. BIZZELL, PE
EMAIL: Marty.Bizzell@BNKinc.com

SHEET INDEX

COVER	
C0.0	EXISTING CONDITIONS PLAN
C1.0	OVERALL SITE PLAN
C1.1	ENLARGED SITE PLAN - WEST
C1.2	ENLARGED SITE PLAN - EAST

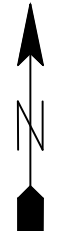
SITE DATA

PROJECT NAME:	THE TOWNES AT LITTLE CREEK
PIN:	164900-95-2419
ADDRESS:	TOWN CENTRE BLVD CLAYTON, NORTH CAROLINA R-10 & B-3 SUB CZ-R
EXISTING ZONING:	
PROPOSED ZONING:	
USE:	
EXISTING:	VACANT
PROPOSED:	TOWNHOMES
SITE AREA:	53.83 AC (2,344,825 SF)
PROPOSED DENSITY:	3.14 DWELLING UNITS/ACRE
TOTAL TOWNHOMES:	169 DWELLING UNITS
WESTSIDE TOWNHOMES:	98 DWELLING UNITS
EASTSIDE TOWNHOMES:	111 DWELLING UNITS
BUILDING SETBACKS (FRONT LOADED):	
FRONT (STREET OR SIDEWALK):	25' (MODIFICATION REQUESTED)
SIDE:	3' / 10' AGGREGATE
SIDE CORNER:	10'
BUILDING SEPARATION:	0' / 10'
BUILDING SETBACKS (REAR LOADED):	
FRONT (STREET OR SIDEWALK):	10'
SIDE:	3' MIN / 10' AGGREGATE
SIDE CORNER:	10'
BUILDING SEPARATION:	0' / 10'
REAR FROM ALLEY:	20'
PARKING:	
REQUIRED: 2 SPACES PER UNIT	338
GUEST PARKING:	
TOTAL PROVIDED:	67 SPACES
WESTSIDE PROVIDED:	36 SPACES
EASTSIDE PROVIDED:	31 SPACES
ROADWAY LENGTH:	4,530 FT
ROADWAY AREA:	2.71 AC (118,062 SF)
ROW AREA:	4.53 AC (197,520 SF)
RESOURCE CONSERVATION AREA (RCA):	16.48 AC (717,877 SF)
REQUIRED OPEN SPACE CALCULATIONS:	1,245 S.F. PER UNIT
169 UNITS x 1,245 S.F. PER UNIT:	4.83 AC (210,405 SF)
DOG PARK:	0.22 AC (9,720 SF)
WESTSIDE PLAYGROUND:	0.07 AC (2,831 SF)
EASTSIDE PLAYGROUND:	0.09 AC (4,086 SF)
PUBLIC OPEN SPACE CALCULATIONS:	
TOWN OF CLAYTON GREENWAY EASEMENT	1.71 AC (74,579 SF)
TOTAL OPEN SPACE PROVIDED:	2.09 AC (91,316 SF)
THE PUBLIC AMENITIES DESCRIBED ABOVE TOTAL APPROXIMATELY 1.71 ACRES. A FEE-IN-LIEU WILL BE PAID FOR THE REMAINING 3.12 ACRES PER TOWN OF CLAYTON DEVELOPMENT CODE SECTION 155.203(1)(2)(g) AS SET FORTH IN THE TOWN'S COMPREHENSIVE LIST OF FEES AND CHARGES.	
UTILITY PROVIDERS	DUKE ENERGY
ELECTRIC:	TOWN OF CLAYTON
WATER:	
169 2" RESIDENTIAL WATER METERS WILL BE REQUIRED TO SERVE THE DEVELOPMENT	
SANITARY SEWER:	TOWN OF CLAYTON
169 SANITARY SEWER SERVICES WILL BE REQUIRED TO SERVE THE DEVELOPMENT	

NO.	DATE	DESCRIPTION	BY
3	11-17-22	PER TOC COMMENTS	SFD
2	10-24-22	PER TOC COMMENTS	SFD
1	8-31-2022	PER TOC COMMENTS	SFD
REVISIONS			



NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF JOHNSTON COUNTY AND NCDOT



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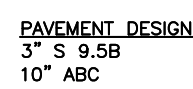
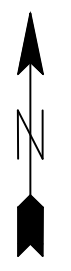
JOB NO.	DATE	DRAWN BY
03-22096	AUGUST 31, 2022	SFD

SCALE: 1" = 200'	EXISTING CONDITIONS PLAN	CHK BY: MDB
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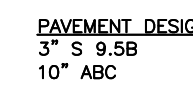
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NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF JOHNSTON COUNTY AND NCDOT



55' RIGHT OF WAY
33' ROADWAY SECTION
NOT TO SCALE



50' RIGHT OF WAY
27' ROADWAY SECTION
NOT TO SCALE



PAVEMENT DESIGN
2.5" S 9.5B
8" ABC

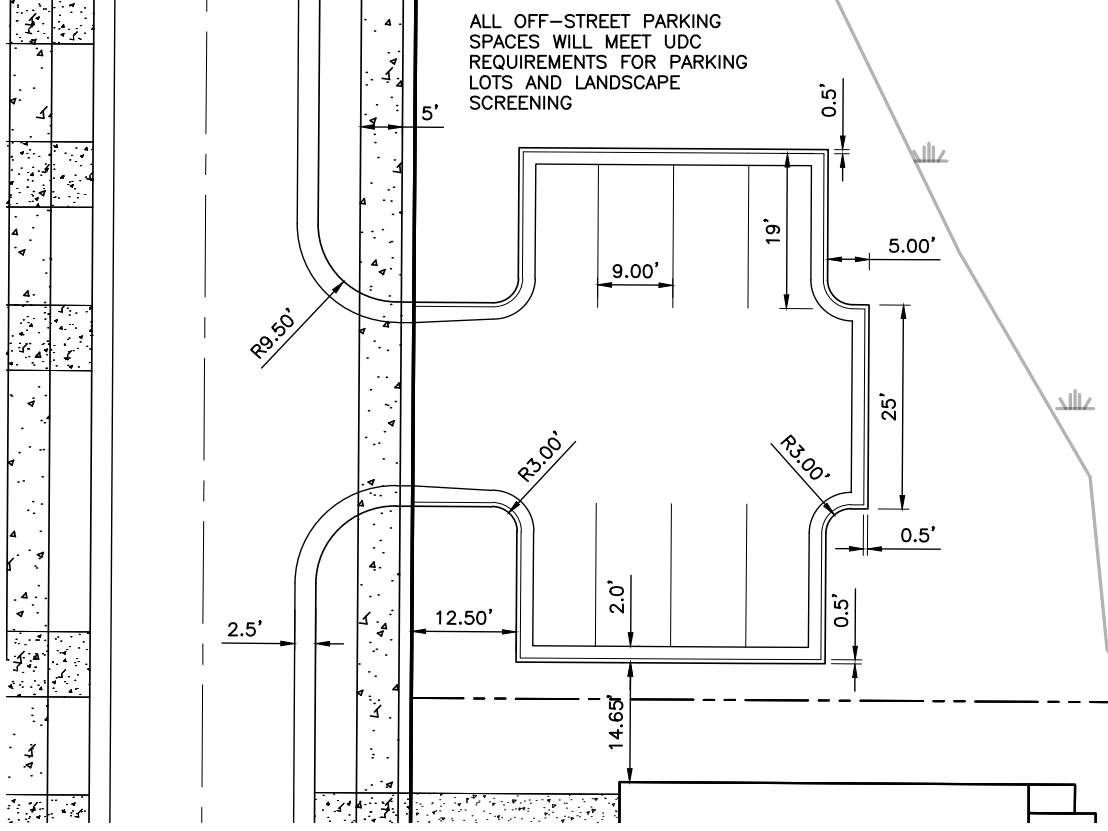
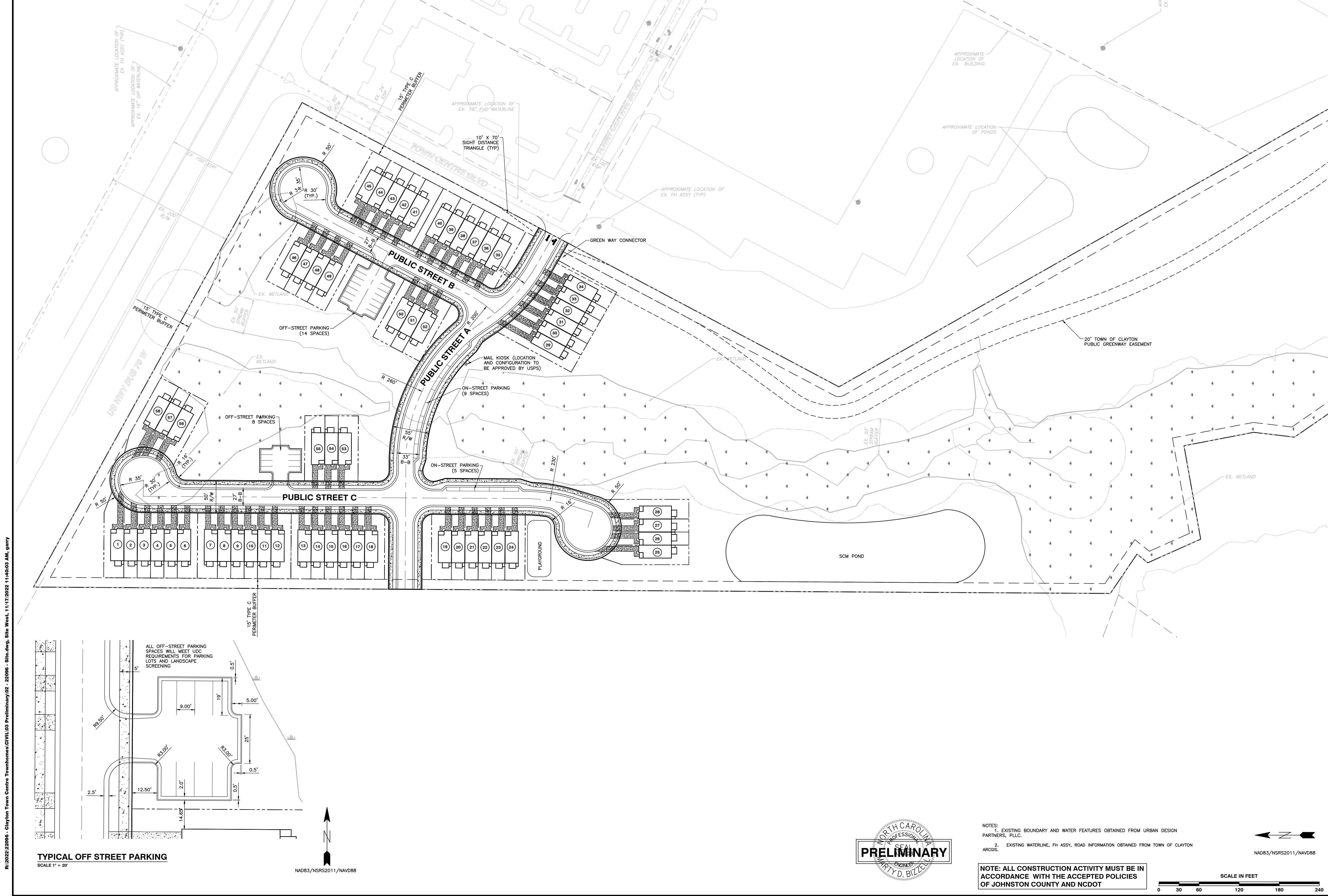
BASS, NIXON & KENNEDY, INC.
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6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

**THE TOWNES AT LITTLE CREEK
SUBDIVISION
TOWN CENTRE BLVD
TOWN OF CLAYTON, JOHNSTON COUNTY, NORTH CAROLINA**

TOWN OF CLAYTON, JOHNSTON COUNTY, NORTH CAROLINA

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

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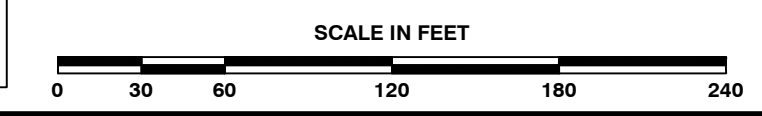


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- NOTES:
1. EXISTING BOUNDARY AND WATER FEATURES OBTAINED FROM URBAN DESIGN PARTNERS, PLLC.
 2. EXISTING WATERLINE, FH ASSY, ROAD INFORMATION OBTAINED FROM TOWN OF CLAYTON
- ARCCS:

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF JOHNSTON COUNTY AND NCDOT

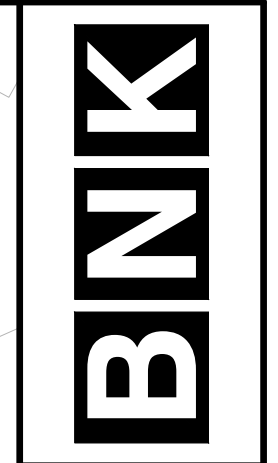


THE TOWNES AT LITTLE CREEK
SUBDIVISION
TOWN CENTRE BLVD
TOWN OF CLAYTON, JOHNSTON COUNTY, NORTH CAROLINA

SHEET C1.1

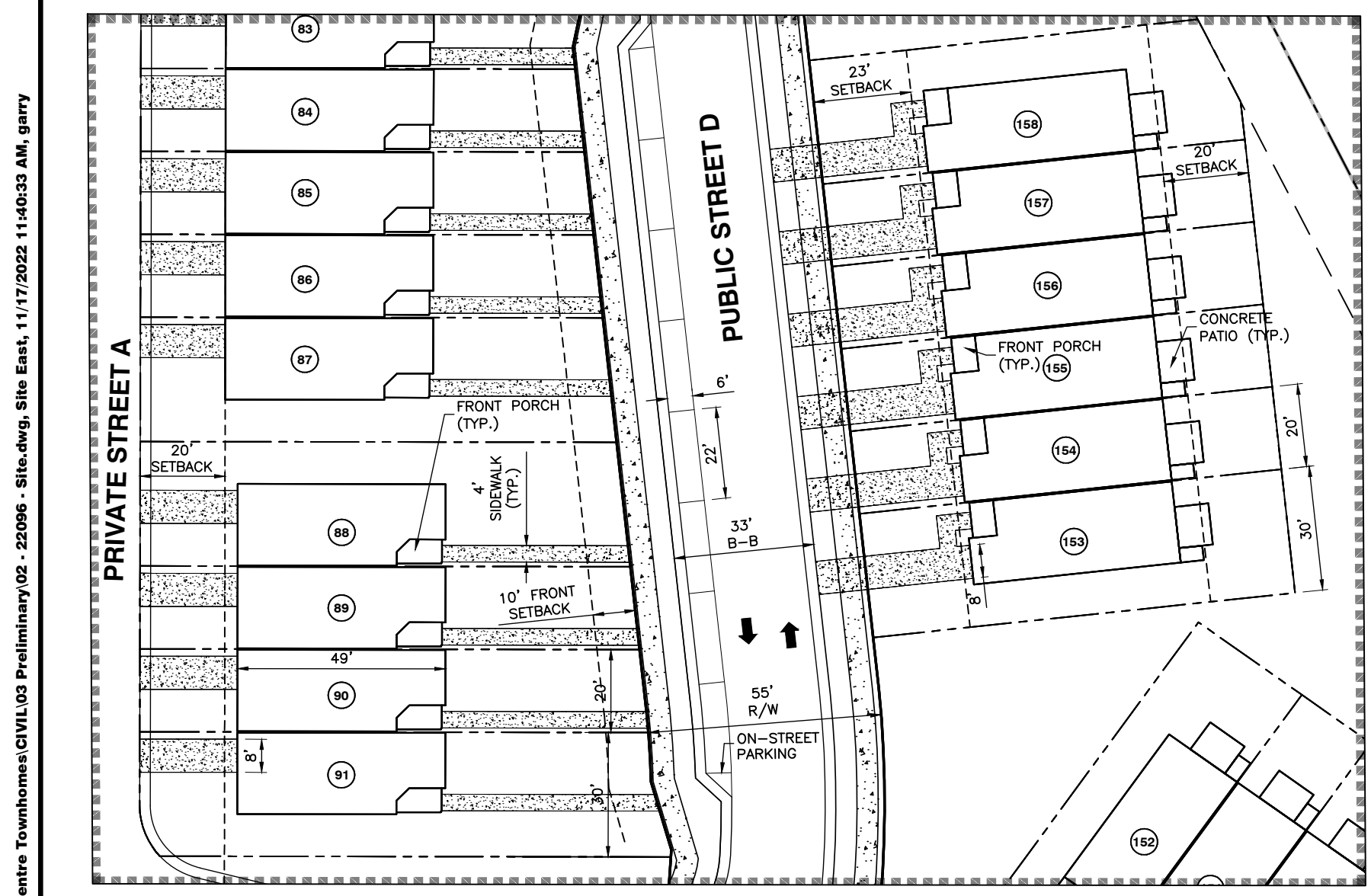
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TELEPHONE: (919)851-4422 FAX: (919)851-9868
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	REVISIONS
3	11-17-22	PER TOC COMMENTS	GW
2	10-24-22	PER TOC COMMENTS	SPD
1	03-12-22	PER TOC COMMENTS	BT



NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

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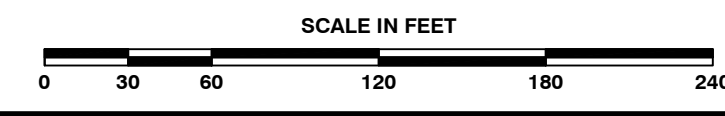


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NOTES:
1. EXISTING BOUNDARY AND WATER FEATURES OBTAINED FROM URBAN DESIGN PARTNERS, PLLC.
2. EXISTING WATERLINE, FH ASSY, ROAD INFORMATION OBTAINED FROM TOWN OF CLAYTON
ARCSIS:

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF JOHNSTON COUNTY AND NCDOT



THE TOWNES AT LITTLE CREEK
SUBDIVISION
TOWN CENTRE BLVD
TOWN OF CLAYTON, JOHNSTON COUNTY, NORTH CAROLINA

SHEET
C1.2

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-9898
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY	REVISIONS
3	11-17-22	PER TCC COMMENTS	GW	
2	10-24-22	PER TCC COMMENTS	SPD	
1	03-12-22	PER TCC COMMENTS	SPD	

03-22098 AUGUST 31, 2022 SPD

ENLARGED SITE PLAN - EAST

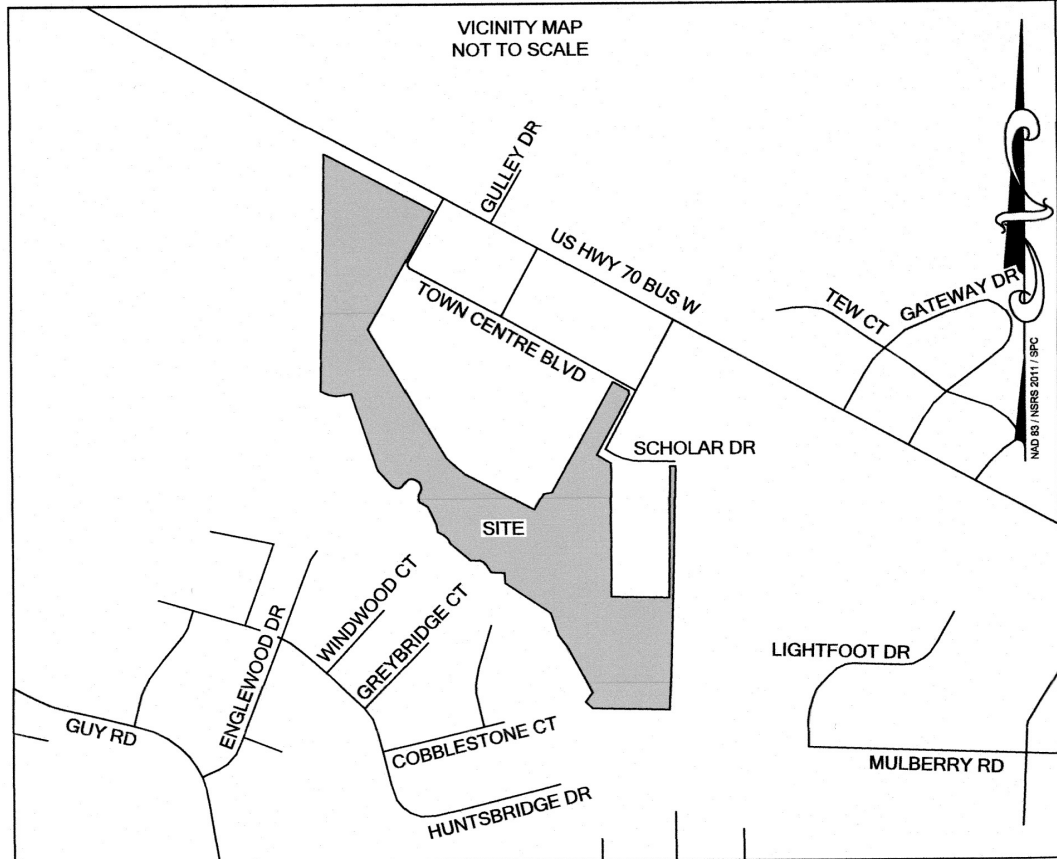
DATE DRAWN BY

NO. DATE DESCRIPTION BY

SCALE: 1" = 60' CHK BY: MDR

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

TOWN OF CLAYTON PROJECT NO. 2022-109-CZM & 2022-35-WWA



LEGEND

●	EXISTING BOUNDARY CORNER FOUND
○	BOUNDARY CORNER SET (3/4" IPS UNLESS OTHERWISE NOTED)
⊙	COMPUTED POINT
⊠	CONCRETE MONUMENT FOUND
⊡	CLEAN OUT
⊢	TRANSFORMER / ELECTRIC BOX
⊕	LIGHT POLE
⊖	UTILITY POLE
⊗	WATER METER
⊘	FIRE HYDRANT
⊙	UTILITY VALVE
⊚	TELEPHONE PEDESTAL
⊛	CABLE PEDESTAL
⊜	CATCH BASIN
⊝	DROP INLET
⊞	UTILITY MANHOLE
⊟	UTILITY HAND HOLE
⊠	AIR CONDITIONING UNIT
⊡	SIGN
---	UNDERGROUND FIBER
---	UNDERGROUND TELEPHONE
---	UNDERGROUND GAS
---	UNDERGROUND ELECTRIC
---	STORM DRAIN
---	OVERHEAD UTILITY
---	GUY WIRE
⊕	BURIED UTILITY MARKER
⊖	EXISTING IRON PIPE
⊗	EXISTING IRON REBAR
⊘	IRON PIPE SET
⊙	PK NAIL SET
⊚	PK NAIL FOUND
⊛	SANITARY SEWER MANHOLE
N	NORTH
E	EAST
S	SOUTH
W	WEST
NE	NORTHEAST
SE	SOUTHEAST
SW	SOUTHWEST
NW	NORTHWEST
DB	DEED BOOK
PG	PAGE
BM	BOOK OF MAPS
RAW	RIGHT OF WAY
POB	POINT OF BEGINNING
(T)	TOTAL

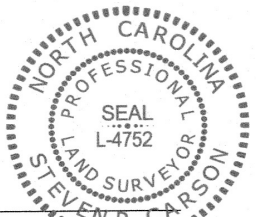
NOTES:

1. THE PROPERTY LIES IN ZONES "X" AND "AE" PER NATIONAL FLOOD INSURANCE RATE MAP COMMUNITY NUMBERS 3720164900J DATED NOVEMBER 02, 2005 & 3720165900K DATED JUNE 20, 2018.
2. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES AND ALL BEARINGS ARE BASED ON GPS OBSERVATIONS, NAD 83 / NSRS 2011, NORTH CAROLINA STATE PLANE UNLESS OTHERWISE SHOWN.
3. SITE ZONED "P-4" AND "P-3-S-B" PER JOHNSTON COUNTY GIS.
4. AREAS COMPUTED ARE BY COORDINATE METHOD.
5. THIS SURVEY WAS PREPARED BY BATEMAN CIVIL SURVEY COMPANY, UNDER THE SUPERVISION OF STEVEN P. CARSON, P.L.S.
6. THIS MAP HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS.
7. NO BUILDINGS AND STRUCTURES WERE OBSERVED ON THE SUBJECT PARCEL AS A RESULT OF THIS SURVEY.
8. NO CEMETERIES OR GRAVES WERE OBSERVED AS A RESULT OF THIS SURVEY.
9. STREAM BUFFERS SHOWN PER DRAWING TITLED "WETLAND SKETCH MAP CLAYTON TOWN CENTER" BY SOIL AND ENVIRONMENTAL CONSULTANTS, P.A., DATED 12/20/2021.

THIS MAP IS CONSIDERED PRELIMINARY, NOT FOR RECORDATION, CONVEYANCE OR SALES UNLESS SIGNED AND SEALED BY THE LICENSED SURVEYOR.

I, STEVEN P. CARSON, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION (DEED DESCRIPTION RECORDED IN BOOK 1875 PAGE 903), THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AS SHOWN HERE ON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000 ±; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED; WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL, THIS 22ND DAY OF JUNE, A.D., 2022.

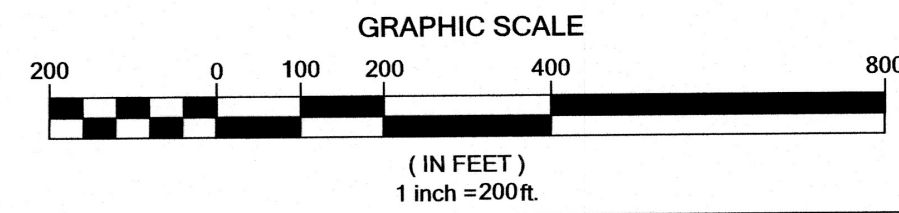
I, FURTHER THAT IN ACCORDANCE WITH G.S. 47-30-F-11-C-1, CERTIFY THAT THE SURVEY IS OF AN EXISTING PARCEL OR PARCELS OF LAND OR ONE OR MORE EXISTING EASEMENTS AND DOES NOT CREATE A NEW STREET OR CHANGE AN EXISTING STREET. FOR THE PURPOSES OF THIS SUBSECTION, AN "EXISTING PARCEL" OR "EXISTING EASEMENT" IS AN AREA OF LAND DESCRIBED IN A SINGLE LEGAL DESCRIPTION OR LEGALLY RECORDED SUBDIVISION THAT HAS BEEN OR MAY BE LEGALLY CONVEYED TO A NEW OWNER BY DEED IN ITS EXISTING CONFIGURATION.



STEVEN P. CARSON, P.L.S.
NC LICENSE NO. 4752

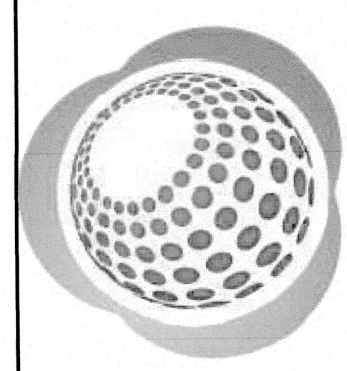
LINE TABLE			LINE TABLE		
LINE#	DIRECTION	LENGTH	LINE#	DIRECTION	LENGTH
L1	N83° 38' 28"W	54.71'	L29	N27° 03' 04"W	57.57'
L2	N08° 14' 28"W	110.81'	L30	N05° 32' 12"W	19.31'
L3	N26° 33' 10"W	35.88'	L31	N30° 32' 24"W	19.80'
L4	N11° 30' 42"W	29.87'	L32	N60° 12' 57"W	14.84'
L5	N51° 19' 20"E	40.20'	L33	S70° 25' 27"W	20.70'
L6	N04° 31' 28"E	39.61'	L34	N53° 35' 23"W	8.68'
L7	N59° 29' 59"W	43.07'	L35	N24° 28' 36"W	46.96'
L8	N12° 10' 39"W	24.55'	L36	N50° 57' 40"W	95.54'
L9	N35° 59' 24"W	90.67'	L37	N35° 29' 42"W	26.52'
L10	N03° 57' 52"W	48.47'	L38	N69° 40' 20"W	284.00'
L11	N50° 08' 53"W	41.55'	L39	N69° 10' 20"W	115.23'
L12	N38° 38' 57"W	25.51'	L40	N29° 27' 26"W	103.80'
L13	N29° 38' 45"W	39.38'	L41	N25° 03' 20"E	34.30'
L14	N47° 24' 00"W	29.50'	L42	N54° 18' 30"W	97.22'
L15	N13° 01' 32"E	63.68'	L43	N10° 09' 11"W	53.86'
L16	N37° 35' 20"E	18.50'	L44	N35° 00' 12"W	262.43'
L17	N07° 00' 56"E	25.42'	L45	N71° 54' 59"W	93.25'
L18	N41° 07' 33"W	13.47'	L46	S77° 05' 01"W	48.43'
L19	S77° 11' 25"W	12.59'	L47	N68° 01' 49"W	115.50'
L20	S64° 59' 28"W	9.17'	L48	N29° 13' 27"W	141.19'
L21	N57° 10' 03"W	8.49'	L49	N35° 12' 45"W	129.90'
L22	N17° 02' 44"W	14.93'	L50	N06° 55' 40"E	61.43'
L23	N39° 50' 58"W	14.37'	L51	N11° 09' 55"W	106.27'
L24	N78° 50' 59"W	30.66'	L52	S80° 06' 18"W	145.09'
L25	N47° 13' 58"W	79.84'	L53	N24° 37' 39"W	86.94'
L26	S85° 36' 57"W	9.68'	L54	N39° 31' 34"E	20.95'
L27	S50° 16' 40"W	10.46'	L55	N56° 29' 27"W	72.34'
L28	N54° 45' 48"W	8.52'			

CURVE TABLE			
CURVE#	LENGTH	RADIUS	BEARING
C1	38.49'	25.00'	S16° 55' 02"E



CLASS OF SURVEY: B
POSITIONAL ACCURACY: 0.07
TYPE OF GPS FIELD PROCEDURE: NC RTK NETWORK
DATES OF SURVEY: FEBRUARY & MARCH 2022
DATUM/EPOCH: NAD83/NSRS2011/NAVD08
GEOID MODEL: 18
COMBINED GRID FACTOR(S): 0.999886435
UNITS: US SURVEY FEET

BATEMAN CIVIL SURVEY COMPANY
ENGINEERS • SURVEYORS • PLANNERS
2524 RELIANCE AVENUE, APEX, NC 27539
PHONE: (919) 577-1080 FAX: (919) 577-1081
INFO@BATEMANCIVILSURVEY.COM
NCBELS FIRM# C-2378



**BOUNDARY SURVEY
EXCLUSIVELY FOR: DRB GROUP**
PID: 05G02001A, NC PIN: 164900-95-2419
AS RECORDED IN DEED BOOK 1875 PAGE 903
CLAYTON TOWNSHIP,
JOHNSTON COUNTY, NORTH CAROLINA

REVISIONS

1.	REMOVED PRELIMINARY TITLE REPORT (6/29/2022)
2.	
3.	
4.	
5.	

DESIGNED BY: N/A
DRAWN BY: ELS
CHECKED BY: SPC
SCALE: 1" = 200'
DATE: 03/28/2022
JOB NUMBER: 220169

SHEET 1



BASS, NIXON & KENNEDY, INC. CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
PHONE 919/851-4422 ■ FAX 919/851-8968 ■ www.BNKinc.com

September 1, 2022

Dear Clayton Area Property Owner,

The purpose of this letter is to notify you of an application filed with the Town of Clayton for a land use change or development proposal involving property adjacent to, or in close proximity to, property shown in your ownership by Johnston County tax records. Per Town of Clayton regulations, a Neighborhood Meeting will be held to provide information to area residents about the proposal. A representative of the applicant will be present to explain their application, answer questions and solicit comments.

The meeting date is September 13, 2022 at 6:30 PM. This meeting will be a Virtual Zoom Meeting: <https://us02web.zoom.us/j/86287559239> or by telephone (301) 715-8592.

The project/proposal address is: The Townes at Little Creek – Near the intersection of Town Centre Blvd. and Financial Drive, Clayton, NC adjacent to the Clayton Town Centre Shopping Center.

PIN: 164900-95-2419

At the meeting, we will present and discuss the request to rezone the property to conditional zoning (CZ) district in order to accommodate a residential townhome neighborhood. At a minimum, the following will be available for your inspection at the Neighborhood Meeting:

1. A copy of the project application.
2. A schedule of all upcoming public meetings for the application.
3. A map at a scale that is appropriate to the project and shows neighboring properties and roads.
4. A map, drawing, or other depiction of the proposed land use change or development proposal.

A map is enclosed with this letter showing the location of the property that is subject to this application for land use change and/or development proposal. The upcoming public meetings for this application: Planning Board is October 24, 2022; (Tentative).

If you have any questions prior to or after this meeting, you may contact me at 919-851-4422. You may also contact the Town of Clayton Planning Department at 919-553-5002.

Sincerely,

Marty D. Bizzell, PE, CPESC
Senior Principal Engineer
Bass, Nixon and Kennedy, Inc. – Consulting Engineers

Cc: Town of Clayton Planning Department

ADJACENT PROPERTY OWNERS LIST

Project Name: The Townes at Little Creek Subdivision

The following are all the persons, firms, or corporations owning property within 100 feet and immediately adjacent to the property (including across street rights of way) subject to this request. Where the subject property immediately adjoins a public or private right-of-way, landscape or riparian buffer, commonly-owned private area, public property, or homeowners' association property, then letters of notification shall be sent to adjoining property owners as if they directly abut the subject property. Please use a separate sheet if necessary

It is the responsibility of the applicant to correctly identify the current owner, based upon records in the Johnston County GIS Office, for all property owners of land within the required public notice radius.

PARCEL NUMBER	NAME	ADDRESS
164900-57-5937	Central Crop Research Station	13223 US Highway 70, Clayton, NC 27520-0000
164900-88-7093	Clayton Self Storage Group, LLC	5540 Yates Mill Pond Rd, Raleigh, NC 27606
164900-87-7344	Macias Enterprise, LLC	320 E. Cornelius Harnett Blvd., Lillington, NC 27546-8285
164900-86-6735	Clayton Plaza, LLC	PO Box 90792, Raleigh, NC 27675-0792
164900-96-3247	Walmart Real Estate Business Trust	PO Box 8050, MS 0555, Bentonville, AR 72712-8050
165909-06-0707	Clayton Plaza, LLC	PO Box 90792, Raleigh, NC 27675-0792
165909-06-2590	Stephen Douglas and Cynthia M. Stephens Irrevocable Trust	319 Chapanoke Rd, Ste. 102, Raleigh, NC 27603
165909-06-2106	Stephen Douglas and Cynthia M. Stephens Irrevocable Trust	319 Chapanoke Rd, Ste. 102, Raleigh, NC 27603
165909-05-1530	Charter Development Company, LLC	3850 Broadmoor Ave. SE, Ste. 201, Grand Rapids, MI 49512-3975
165909-05-8421	Heavner Properties 1997 Limited Partnership	PO Box 2346, Smithfield, NC 27577-2346
165903-04-6160	Ferez, Nicholas J. & Ferez, Kimberly D.	780 Lightfoot Drive, Clayton, NC 27520
164900-94-5141	Lee, Judy	208 Cobblestone Ct., Clayton, NC 27520
164900-94-5318	Capps, Dennis H. Jr.	209 Cobblestone Ct., Clayton, NC 27520
164900-94-3732	Ray, Hazel M.	2216 Cedarwood Ct., Clayton, NC 27520
164900-94-2867	Johnson, John F. & Johnson Kathleen H.	2220 Cedarwood Ct., Clayton, NC 27520
164900-94-0957	Herrera, Nancy Y. & Blakeslee, Mark K.	2221 Cedarwood Ct., Clayton, NC 27520

January 2021

ADJACENT PROPERTY OWNERS LIST

Project Name: The Townes at Little Creek Subdivision

The following are all the persons, firms, or corporations owning property within 100 feet and immediately adjacent to the property (including across street rights of way) subject to this request. Where the subject property immediately adjoins a public or private right-of-way, landscape or riparian buffer, commonly-owned private area, public property, or homeowners' association property, then letters of notification shall be sent to adjoining property owners as if they directly abut the subject property. Please use a separate sheet if necessary

It is the responsibility of the applicant to correctly identify the current owner, based upon records in the Johnston County GIS Office, for all property owners of land within the required public notice radius.

[illegible]

January 2021

NEIGHBORHOOD MEETING SUMMARY FORM

FILL OUT THE FOLLOWING:

Application: The Townes at Little Creek

Date of Mailing: September 1, 2022

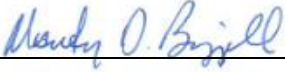
Date of Meeting: September 13, 2022

Time of Meeting: 6:30 p.m.

Location of Meeting: Virtual Meeting - Zoom

I hereby attest that letters were mailed to the addresses listed on the Adjacent Property Owners List (attached) ten days prior to the Neighborhood Meeting, and that all required information was presented at the Meeting:

Printed Name: Marty D. Bizzell, PE

Signature: 

Meeting Summary/Minutes: *provide a summary of the discussion held at the meeting, including issues raised and any resolution discussed, and any changes made to the application as a result of the meeting.*

Please see attached minutes.

Please write clearly (or submit a typed summary). Use additional sheets if necessary.



BASS, NIXON & KENNEDY, INC., CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
919/851-4422 FAX 919/851-8968 www.bnkinc.com

September 13, 2022

Clayton Town Centre Townhomes (Towns at Little Creek)

Neighborhood Meeting

Attendees:

Marty Bizzell, PE, CPESC (BNK)

Garry Walston, RLA, ASLA, LEED AP (BNK)

Cindy Szwarczkop, AICP (DRB Group)

Jay Colvin (DRB Group)

Caroline Cheeves, PE (Ramey Kemp & Associates)

Property Owners:

Judy Lee, 208 Cobblestone Court, Clayton, NC

Nancy Herrera, 2221 Cedarwood Court, Clayton, NC

Kathleen Johnson, 2220 Cedarwood Court, Clayton, NC

Marty Bizzell opened the meeting by presenting the agenda and an overview of the project. He also explained the rezoning request BNK has made to rezone from B3 and R10 to conditional zoning for Towns at Little Creek.

This parcel wraps around sides and rear of the shopping center. Adjacent to the property is Johnston Academy Charter School.

Currently, split zone B3 and R10. We are required to rezone to conditional zoning which is a new zoning district for Town of Clayton. We need the rezoning with the master plan. If that is approved by the Town we are required to develop according to that master plan.

2 new areas of property to residential townhomes.

Question: How many townhomes are you proposing to develop?

G. Walston: This site is cut in half by the shopping center. There are 169 total units proposed. The east side will have 111 with 33 front loaded and 78 rear loaded. Each townhome gets 2 parking spaces. We are adding an additional 33 on street and off-street guest parking spaces. The total number of units equals 3.14 units/acre. We are expanding

the existing pond with 18 acres to remain in wetlands and flood plain. We are providing a plan for a public greenway that runs entire east west boundary along the creek. 1.78 acres public urban space. Front and rear loaded unit illustrations shown.

To the bottom of the plan is the agriculture research farm and top is the shopping center. We are connecting to Town Center Blvd. we will provide a stub street. This is smaller with 58 units and all front loaded with 31 extra parking spaces. Small playground and an SCM (stormwater control management) pond are built into the plans.

Question: What are the sizes and costs of the new townhomes?

Jay: They are all 3 bed 2 ½ bath at 1600 sf and approximately \$300,000 each.

Caroline: Overview of the TIA: the access to the development through the existing shopping center. Coming to and from 70 business through existing road. We are not adding driveway to 70 Business as that driveway have turning lanes already. There is the school Johnston Academy Charter School. A Traffic Impact Assessment is trying to predict future and determine impact site will have on traffic. We try to anticipate growth rate of traffic for future use. Same peak hour as school in morning but evening peak hours will be different for school: 2-3pm and business is 4-7pm. No significant increase in the area at any of the intersection since we are a smaller development. Some concerns with financial drive and 70 Bus. Recommend to NCDOT to install traffic signal there.

Comment: This is a very busy intersection and no traffic signal. Traffic is horrific and speeders make it dangerous intersection. Adding more people will be high risk.

Caroline: We did note that. We recommend that it should be signalized. Traffic backing up at school at pick up. And drop off.

Comment: Traffic is very busy especially around all the holidays. That area becomes highly congested and will impact people living in the area.

Comment: I have serious concerns about this development. The plans for the townhomes have eased them somewhat, but not all. For a start, the land you are proposing to build on is a very environmentally sensitive area. This is part of the Neuse River System. My land would be directly looking at your development.

The Neuse River system highly sensitive protected ecological system. Part of Neuse riparian buffer. I'm glad to see you are keeping that area protected. But, I don't have any guarantees as to how well protected it will be in future. Greenway plans make me a little nervous to have so many people walking back of my property. Also, part of 50- and 100-year flood zone, Power, telephone easement. Don't hear any of that being addressed. Please address wetlands in comprehensive way.

Cindy: The greenway is on the town's greenway master plan. We aren't building it with this project.

Question: What are you doing to mitigate greenhouse effect kinds of issues, i.e., plantings, decrease asphalt, etc.?

Garry: As part of the development, the Town of Clayton requires us to plant shade trees along parking lot perimeters. This is a low-density development. This is 150 ft from your property. We aren't proposing touching any of the wetlands. There will be 3 levels of environmental buffer.

Marty: This developer has left a large amount of land in its current state.

Cindy: The development will have less than 1/3 of allowable density. We chose not to go the mitigation route but chose a reasonable density for this area.

Kathleen: I'm also concerned about increased runoff. When the Walmart was built they had to revisit the runoff situation. Little Creek can't handle all the extra water. We are also concerned about losing privacy of our cul de sac with the new development.

Judy Lee: I have some of same concerns as Nancy. A lot of water flows into the wetlands from our subdivision. Will the new subdivision be on city water or septic?

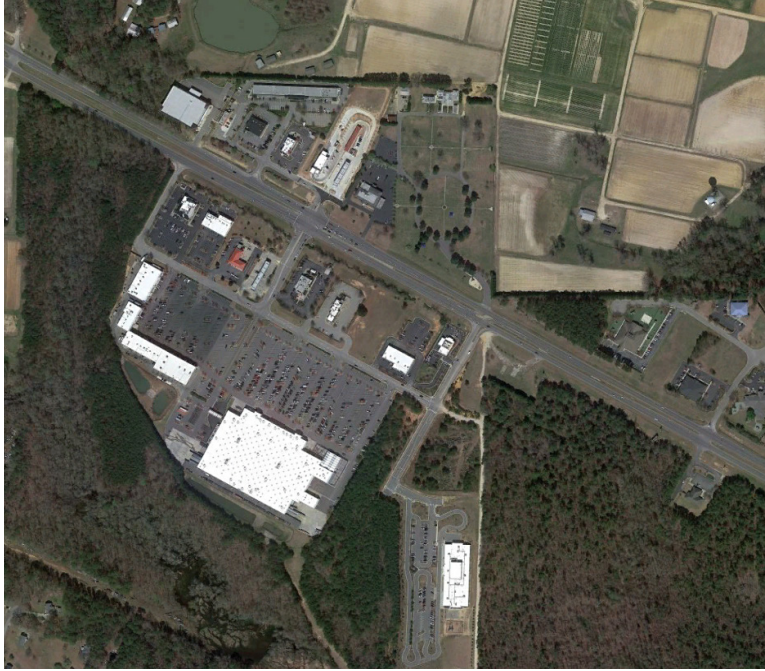
Marty: It will be Town of Clayton water. As for the flood plain, we have included the most current flood information in our plans for the wetlands.

Marty: We have received first submittal comments and are on our second submittal review. Hopefully in next few weeks we will have approval.
We are anticipating Oct 24 planning board. If not, I assume we will be on November

agenda. The anticipated Town Council meeting is Nov. 21. It's up to the Town of Clayton. This is all published on town's website. You will get a notification from town concerning meeting dates.

Please reach out with any other questions.

RAMEY KEMP ASSOCIATES
TOGETHER WE ARE LIMITLESS



The Townes at Little Creek
Traffic Impact Analysis
Clayton, North Carolina



**TRAFFIC IMPACT
ANALYSIS**

FOR

THE TOWNES AT LITTLE CREEK

LOCATED

IN

CLAYTON, NC

Prepared For:
DRB Group North Carolina, LLC
3000 RDU Center Drive, Suite 202
Morrisville, NC 27560

Prepared By:
Ramey Kemp & Associates, Inc.
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
License #C-0910

JUNE 2022

RKA Project No. 22209



Caroline Cheeves

Prepared By: CC

Reviewed By: TP

**TRAFFIC IMPACT ANALYSIS
THE TOWNES AT LITTLE CREEK
CLAYTON, NORTH CAROLINA**

EXECUTIVE SUMMARY

1. Development Overview

A Traffic Impact Analysis (TIA) was conducted for the proposed The Townes at Little Creek development in accordance with the Clayton (Town) Unified Development Code (UDC) and North Carolina Department of Transportation (NCDOT) capacity analysis guidelines. The proposed development is to be located along both sides of the existing Clayton Town Center, to the south of US 70 Business in Clayton, North Carolina. The proposed development is expected to be a maximum of 169 townhomes and estimated to be built out in 2028. Site access to the western portion of the site is proposed via one full movement connection to the existing Town Centre Boulevard.

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- 2022 Existing Traffic Conditions
- 2028 No-Build Traffic Conditions
- 2028 Build Traffic Conditions

2. Existing Traffic Conditions

The study area for the TIA was determined through coordination with the Town and NCDOT and consists of the following existing intersections:

- US 70 Business and Town Center Boulevard (Western Driveway)
- US 70 Business and Town Center Boulevard (Middle Driveway)
- US 70 Business and Financial Drive
- US 70 Business and Town Centre Boulevard
- Financial Drive and Town Centre Boulevard
- Financial Drive and Scholar Drive

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections listed below, in May of 2022 by RKA and Quality Counts, LLC. during a typical weekday AM (7:00 AM – 9:00 AM) and PM (2:00 PM – 6:00 PM) peak periods while schools were in session:

- US 70 Business and Town Center Boulevard (Western Driveway)
- US 70 Business and Town Center Boulevard (Middle Driveway)
- US 70 Business and Financial Drive
- US 70 Business and Town Centre Boulevard
- Financial Drive and Town Centre Boulevard
- Financial Drive and Scholar Drive

Due to the proximity to the nearby school, 5-minute intervals were utilized for the above traffic counts. It should be noted that the PM peak hour fell outside of the typical adjacent street peak hour.

3. Site Trip Generation

The proposed development is assumed to consist of a maximum of 169 townhomes. It should be noted that the density assumed in this study is that of 203 townhomes. Though the land uses are expected to differ, the trip generation considered in this TIA is expected to be higher than what is shown on the preliminary site plan and therefore provides a conservative analysis. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE Trip Generation Manual, 10th Edition. Table E-1 provides a summary of the trip generation potential for the site.

Table E-1: Site Trip Generation

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Density Shown on Site Plan						
Multifamily Housing (Low-Rise) (220)	169 DU	1159	18	57	59	34
Density Analyzed in TIA						
Multifamily Housing (Low-Rise) (220)	203 DU	1377	21	65	68	40
Difference (+/-)		218	3	8	9	6

4. Future Traffic Conditions

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 2% would be used to generate 2028 projected weekday AM and PM peak hour traffic volumes. The following adjacent development was identified to be considered under future conditions:

- Ramblewood Residential

5. Capacity Analysis Summary

The analysis considered weekday AM and PM peak hour traffic for 2022 existing, 2028 no-build, and 2028 build conditions. Refer to Section 7 of the TIA for the capacity analysis summary performed at each study intersection.

6. Recommendations

Based on the findings of this study, specific geometric and traffic control improvements have been identified at study intersections. The improvements are summarized below and are illustrated in Figure E-1.

Recommended No-Build Improvements for Consideration

Financial Drive and US 70 Business

- Install traffic signal on the Financial Drive portion of the intersection when warranted.

Recommended Improvements by Developer

Financial Drive and Town Centre Boulevard

- Construct an eastbound approach with one egress lane (shared left and through-lane) and one ingress lane.
- Provide stop control for the eastbound approach.

Financial Drive and Scholar Drive

- Construct site access along the northbound approach.

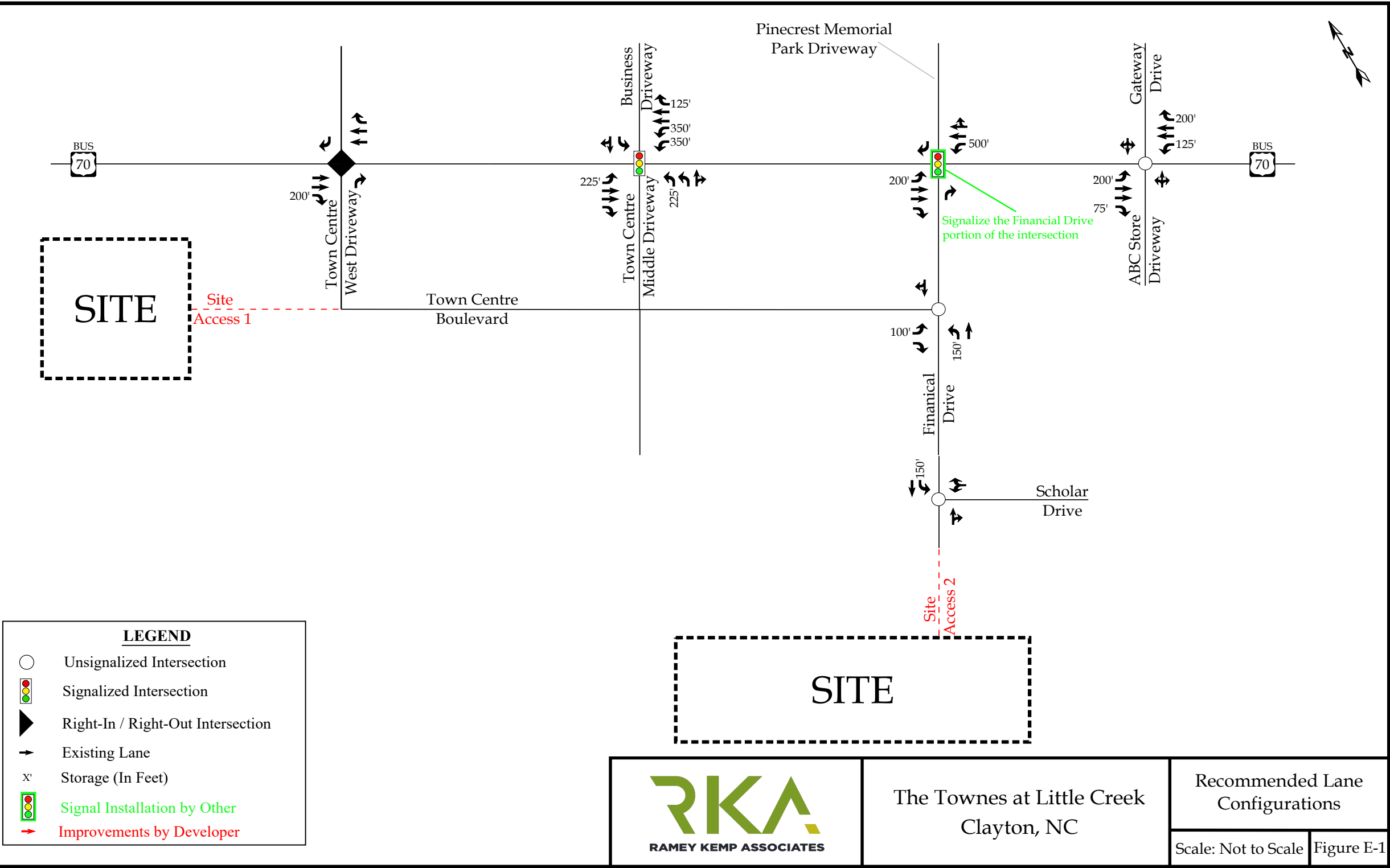


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Appendix C:	Signal Plans
Appendix D:	Adjacent Development Information
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**TRAFFIC IMPACT ANALYSIS
THE TOWNES AT LITTLE CREEK
CLAYTON, NORTH CAROLINA**

1. INTRODUCTION

The contents of this report present the findings of the Traffic Impact Analysis (TIA) conducted for the proposed The Townes at Little Creek development to be located along both sides of the existing Clayton Town Center, to the south of US 70 Business in Clayton, North Carolina. The purpose of this study is to determine the potential impacts to the surrounding transportation system created by traffic generated by the proposed development, as well as recommend improvements to mitigate the impacts.

The proposed development, anticipated to be completed in 2028, is assumed to consist of 169 townhomes.

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- 2022 Existing Traffic Conditions
- 2028 No-Build Traffic Conditions
- 2028 Build Traffic Conditions

1.1. Site Location and Study Area

The development is proposed to be located along both sides of the existing Clayton Town Center to the south of US 70 Business in Clayton, North Carolina. Refer to Figure 1 for the site location map.

The study area for the TIA was determined through coordination with the North Carolina Department of Transportation (NCDOT) and the Town of Clayton (Town) and consists of the following existing intersections:

- US 70 Business and Town Center Boulevard (Western Driveway)
- US 70 Business and Town Center Boulevard (Middle Driveway)

- US 70 Business and Financial Drive
- US 70 Business and Town Centre Boulevard
- Financial Drive and Town Centre Boulevard
- Financial Drive and Scholar Drive

Refer to Appendix A for the approved scoping documentation.

1.2. Proposed Land Use and Site Access

The eastern portion of site is expected to be located at the southern end of Financial Drive. The western portion of the site is expected to be south of US 70 Business, east of Town Center Boulevard (Western Driveway). The proposed development, anticipated to be completed in 2028, is assumed to consist of 169 townhomes.

These land uses are assumed at this time. Site access to the eastern portion of the site is proposed via a connection to the existing Financial Drive. Site access to the western portion of the site is proposed via one full movement connection to the existing Town Centre Boulevard. Refer to Figure 2 for a copy of the preliminary site plan.

1.3. Adjacent Land Uses

The proposed development is located in an area consisting primarily of retail, undeveloped land, and residential development. A school is located along Financial Drive.

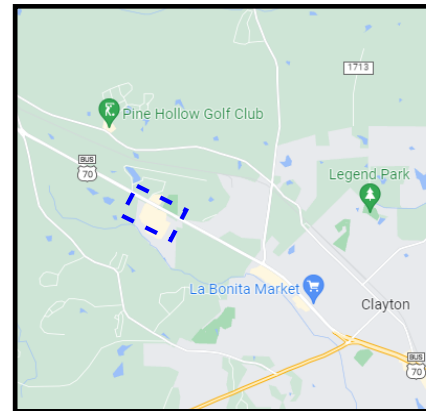
1.4. Existing Roadways

Existing lane configurations (number of traffic lanes on each intersection approach), storage capacities, and other intersection and roadway information within the study area are shown in Figure 3. Table 1 provides a summary of this information, as well.

Table 1: Existing Roadway Inventory

Road Name	Route Number	Typical Cross Section	Speed Limit	Maintained By	2019 AADT (vpd)
US 70 Business		4-lane divided	45 mph	NCDOT	37,500
Town Centre Boulevard	N/A	2-lane undivided	Not Posted	Town	3,270*
Financial Drive	N/A	2-lane undivided	Not Posted	Town	8,550*
Scholar Drive	N/A	2-lane undivided	Not Posted	Town	8,550*
Gateway Drive	N/A	2-lane undivided	Not Posted	Town	1,300*

*ADT based on the traffic counts from 2022 and assuming the weekday PM peak hour volume is 10% of the average daily traffic.



LEGEND	
	Proposed Site Location
	Study Intersection
	Study Area



The Townes at Little Creek
Clayton, NC

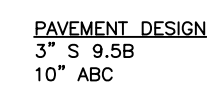
Site Location Map

Scale: Not to Scale

Figure 1



NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF JOHNSTON COUNTY AND NCDOT



PAVEMENT DESIGN
3" S 9.5B
10" ABC

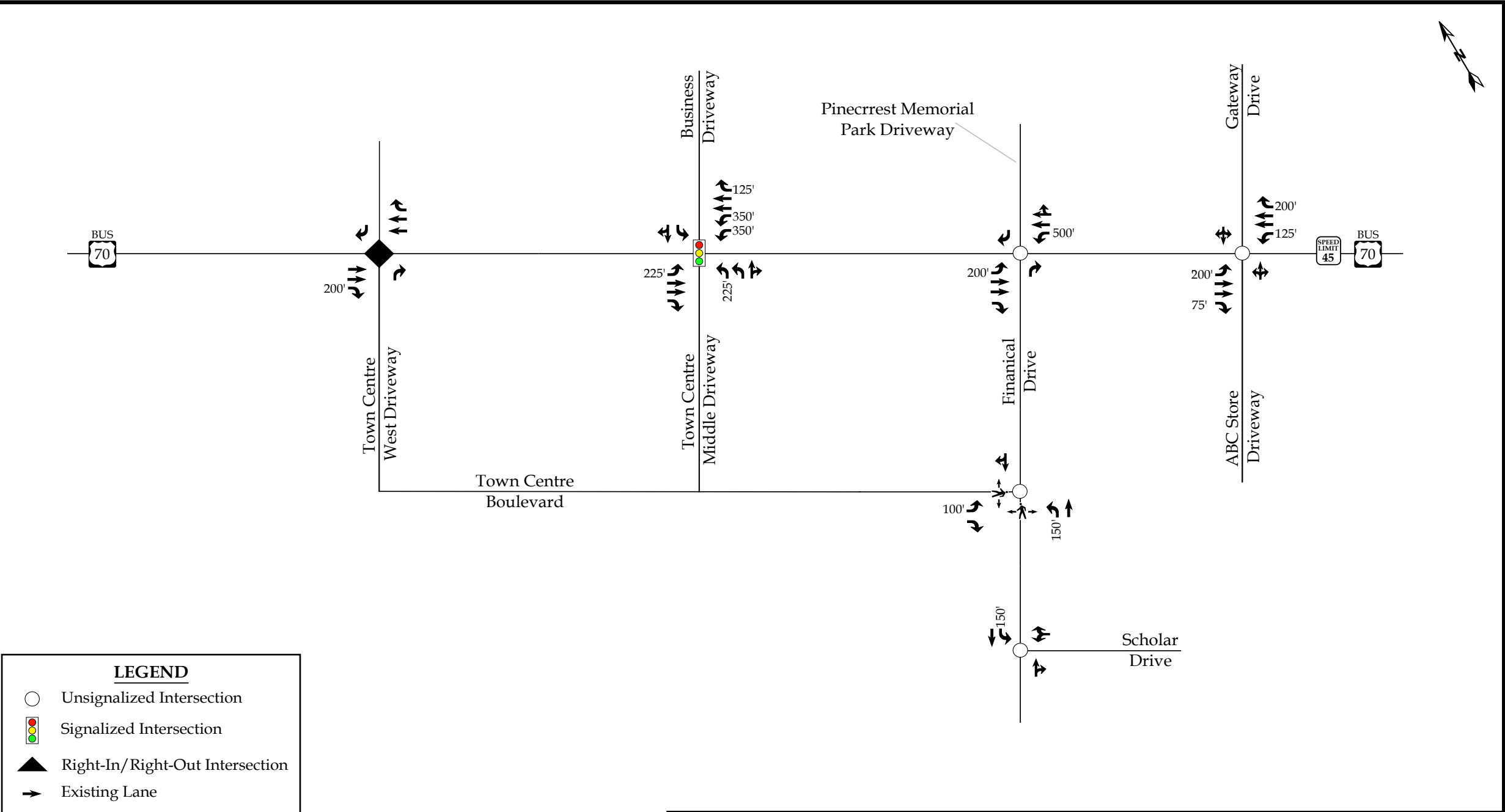
50' RIGHT OF WAY
27' ROADWAY SECTION
NOT TO SCALE

DOG PARK: 0.35 AC (15,037 SF)
WESTSIDE PLAYGROUND: 0.07 AC (2,931 SF)
EASTSIDE PLAYGROUND: 0.09 AC (4,086 SF)

03-22052	PROGRESS	SFD
JOB NO.	DATE	DRAWN BY
SITE PLAN - OVERALL		
SCALE: 1" = 200'		CHK BY: MDB

SHEET
C1.0

BNK



LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ▲ Right-In/Right-Out Intersection
- ➡ Existing Lane
- x' Storage (In Feet)
- 🚶 Pedestrian Crosswalk
- 🚧 Posted Speed Limit

 RAMEY KEMP ASSOCIATES	The Townes at Little Creek Clayton, NC	2022 Existing Lane Configurations	
		Scale: Not to Scale	Figure 3

2. 2022 EXISTING PEAK HOUR CONDITIONS

2.1. 2022 Existing Peak Hour Traffic Volumes

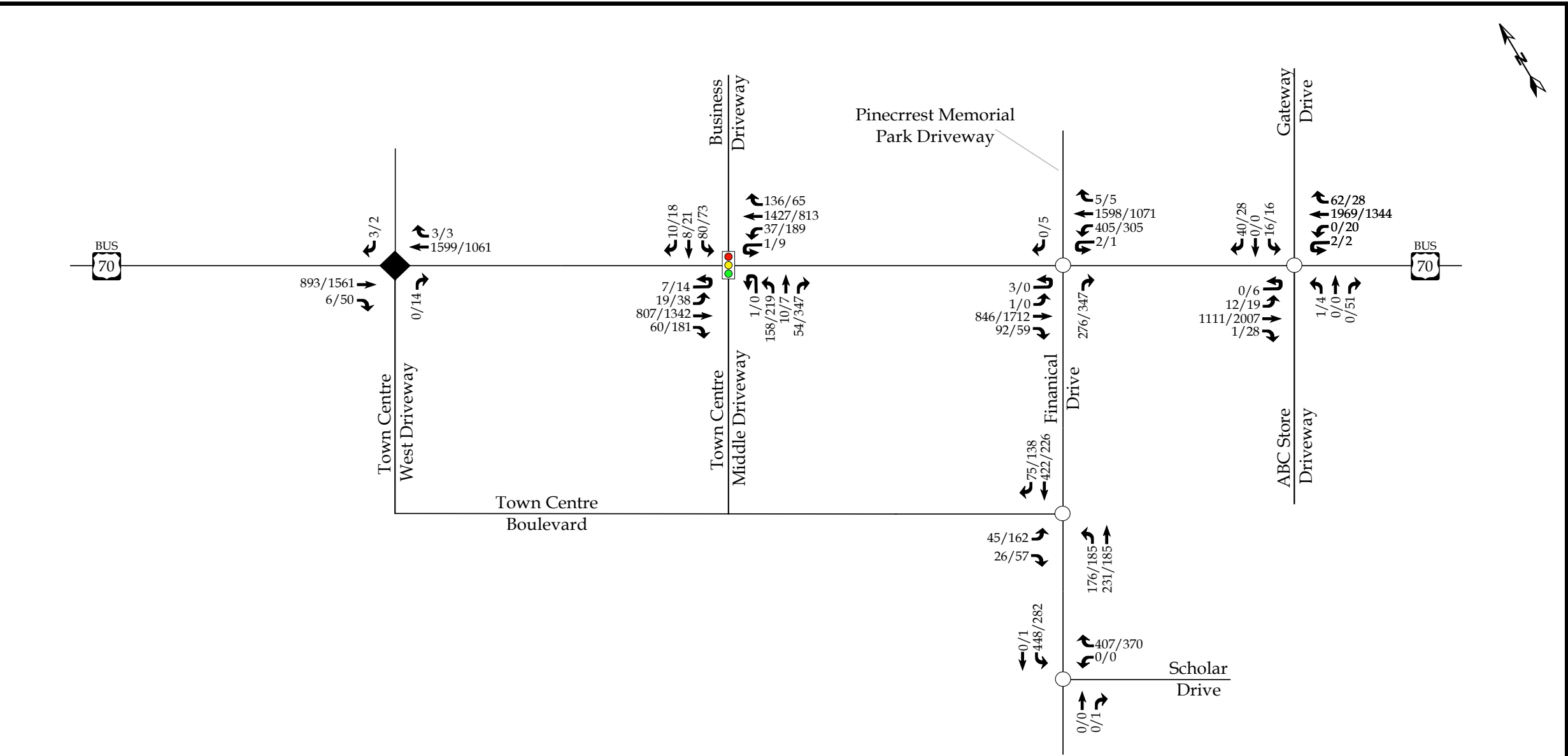
Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections listed below, in May of 2022 by RKA and Quality Counts, LLC. during a typical weekday AM (7:00 AM – 9:00 AM) and PM (2:00 PM – 6:00 PM) peak periods while schools were in session:

- US 70 Business and Town Center Boulevard (Western Driveway)
- US 70 Business and Town Center Boulevard (Middle Driveway)
- US 70 Business and Financial Drive
- US 70 Business and Town Centre Boulevard
- Financial Drive and Town Centre Boulevard
- Financial Drive and Scholar Drive

Due to the proximity to the nearby school, 5-minute internals were utilized for the above traffic counts. It should be noted that the PM peak hour fell outside of the typical adjacent street peak hour. Weekday AM and PM traffic volumes were balanced between study intersections, where appropriate. Refer to Figure 4 for 2022 existing weekday AM and PM peak hour traffic volumes. A copy of the count data is located in Appendix B of this report.

2.2. Analysis of 2022 Existing Peak Hour Traffic Conditions

The 2022 existing weekday AM and PM peak hour traffic volumes were analyzed to determine the current levels of service at the study intersections under existing roadway conditions. Signal information was obtained from NCDOT and is included in Appendix C. The results of the analysis are presented in Section 7 of this report.



The Townes at Little Creek
Clayton, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 4

3. 2028 NO-BUILD PEAK HOUR CONDITIONS

In order to account for growth of traffic and subsequent traffic conditions at a future year, no-build traffic projections are needed. No-build traffic is the component of traffic due to the growth of the community and surrounding area that is anticipated to occur regardless of whether or not the proposed development is constructed. No-build traffic is comprised of existing traffic growth within the study area and additional traffic created as a result of adjacent approved developments.

3.1. Ambient Traffic Growth

Through coordination with NCDOT and the Town, it was determined that an annual growth rate of 2% would be used to generate 2028 projected weekday AM and PM peak hour traffic volumes. Refer to Figure 5 for 2028 projected peak hour traffic.

3.2. Adjacent Development Traffic

Through coordination with NCDOT and the Town, the following adjacent development was identified to be included as an approved adjacent development in this study:

- Ramblewood Residential

Table 2, on the following page, provides a summary of the adjacent development.

Table 2: Adjacent Development Information

Development Name	Location	Build-Out Year	Land Use / Intensity	TIA Performed
Ramblewood Residential	North of US 70 Business and east of Ramblewood Drive	2025	180 single family homes	December 2021 by RKA

The Ramblewood Residential development is expected to consist of 180 single family homes with access to the site being via one full movement connection to Ramblewood Drive and one full movement connection to US 70 Business. It should be noted that the adjacent developments were approved, during scoping, by NCDOT and the Town. Adjacent development trips are shown in Figure 6. Adjacent development information can be found in Appendix D.

3.3. Future Roadway Improvements

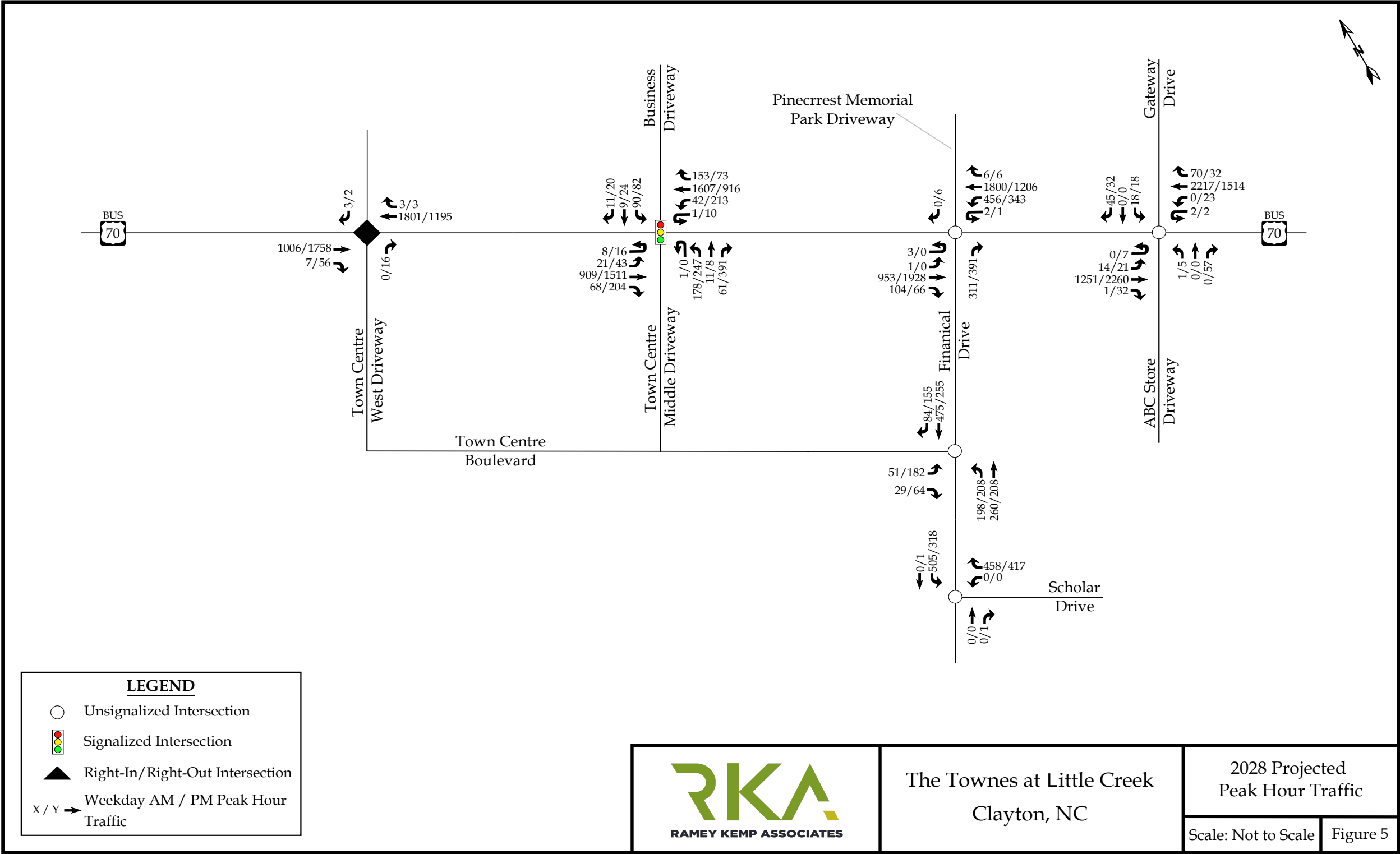
Based on coordination with NCDOT and the Town, it was determined there were no future roadway improvements to consider with this study.

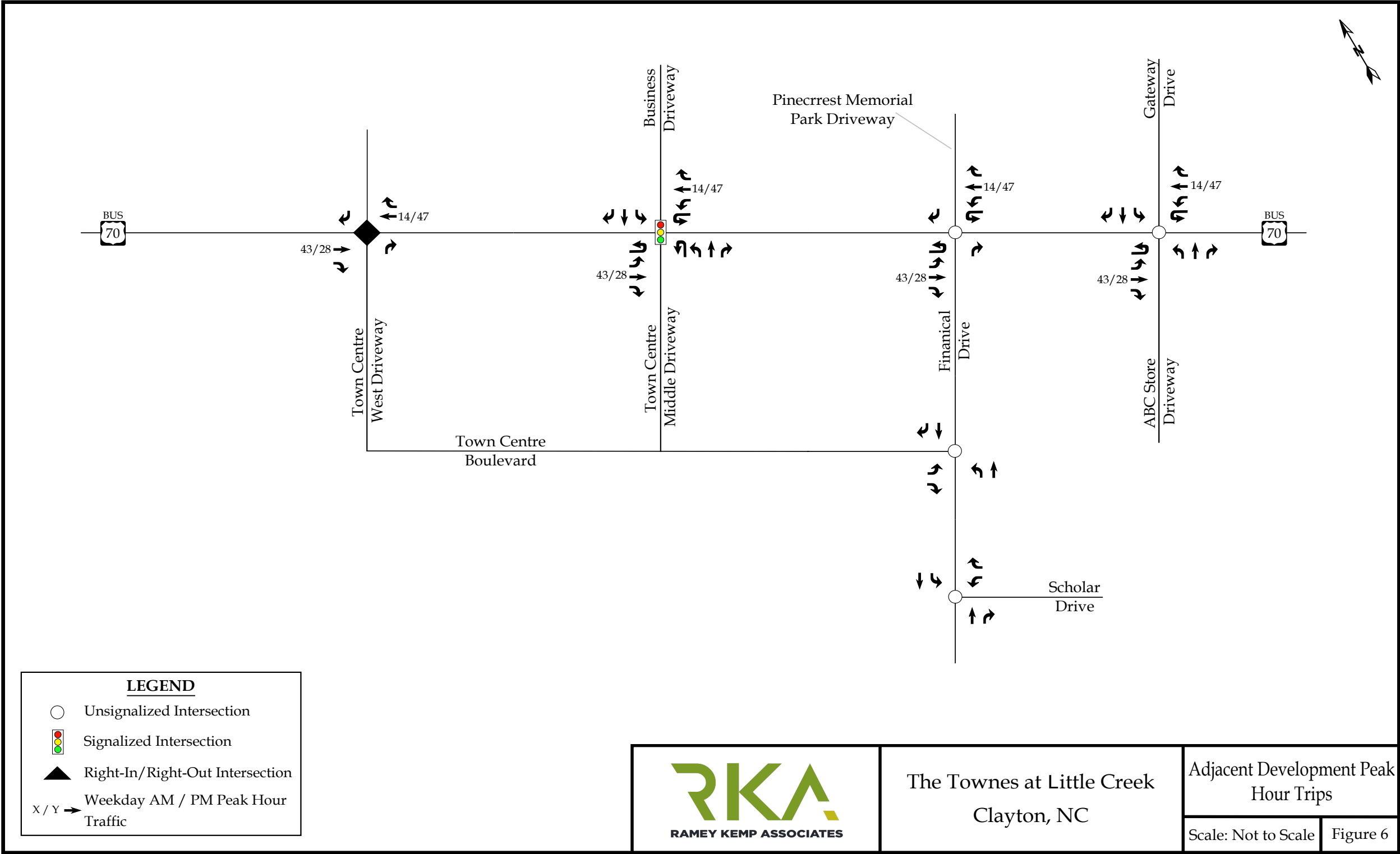
3.4. 2028 No-Build Peak Hour Traffic Volumes

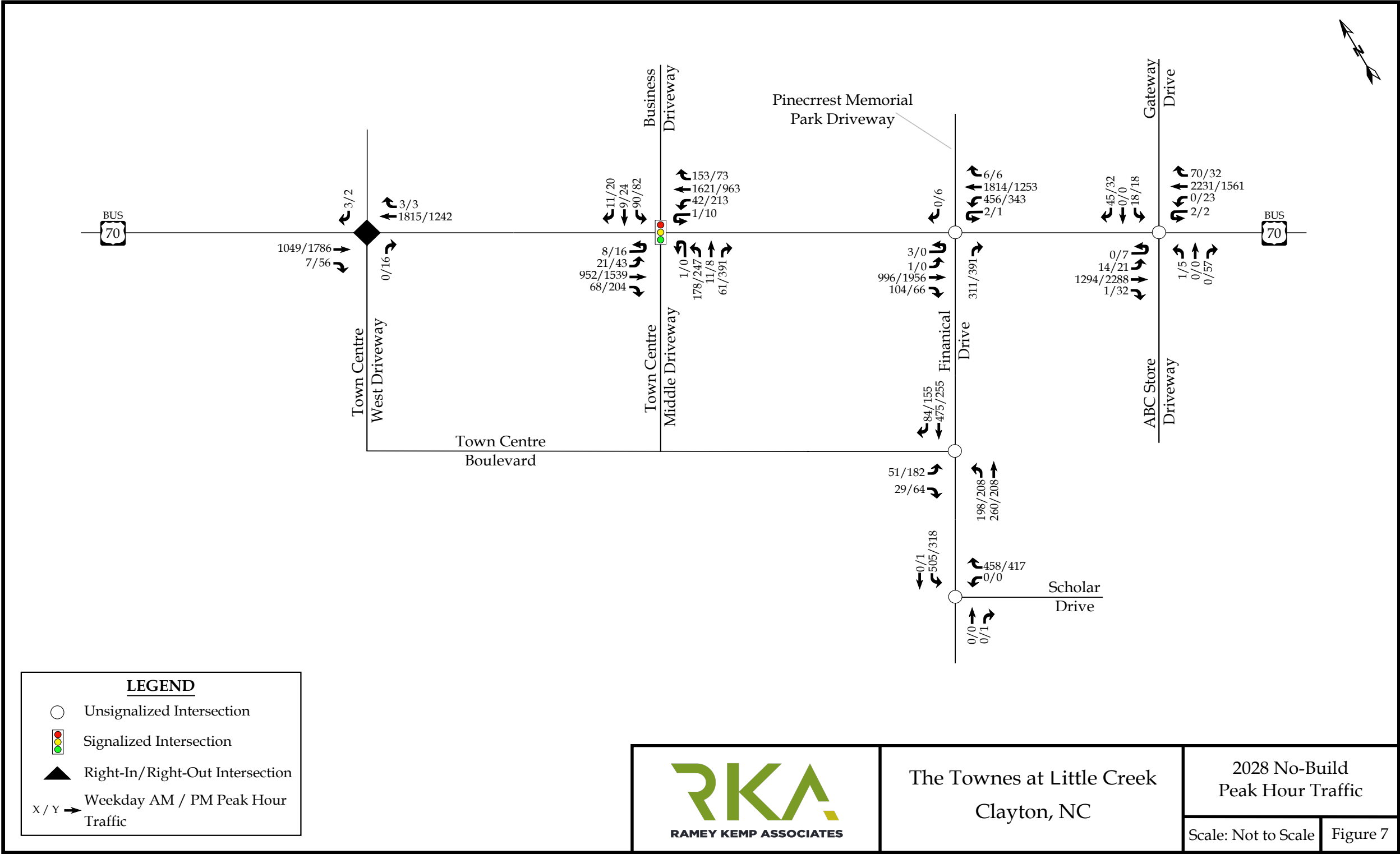
The 2028 no-build traffic volumes were determined by projecting the 2022 existing peak hour traffic to the year 2028, and adding the adjacent development trips. Refer to Figure 7 for an illustration of the 2028 no-build peak hour traffic volumes at the study intersections.

3.5. Analysis of 2028 No-Build Peak Hour Traffic Conditions

The 2028 no-build AM and PM peak hour traffic volumes at the study intersections were analyzed with future geometric roadway conditions and traffic control. The analysis results are presented in Section 7 of this report.







4. SITE TRIP GENERATION AND DISTRIBUTION

4.1. Trip Generation

The proposed development is assumed to consist of 169 townhomes. It should be noted that the density assumed in this study is that of 203 townhomes. Though the land uses are expected to differ, the trip generation considered in this TIA is expected to be higher than what is shown on the preliminary site plan and therefore provides a conservative analysis. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the *ITE Trip Generation Manual*, 11th Edition. Table 3 provides a summary of the trip generation potential for the site.

Table 3: Trip Generation Summary

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Density Shown on Site Plan						
Multifamily Housing (Low-Rise) (220)	169 DU	1159	18	57	59	34
Density Analyzed in TIA						
Multifamily Housing (Low-Rise) (220)	203 DU	1377	21	65	68	40
Difference (+/-)		218	3	8	9	6

It is estimated that the proposed development will generate approximately 1,377 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 86 trips (21 entering and 65 exiting) will occur during the weekday AM peak hour and 108 (68 entering and 40 exiting) will occur during the weekday PM peak hour.

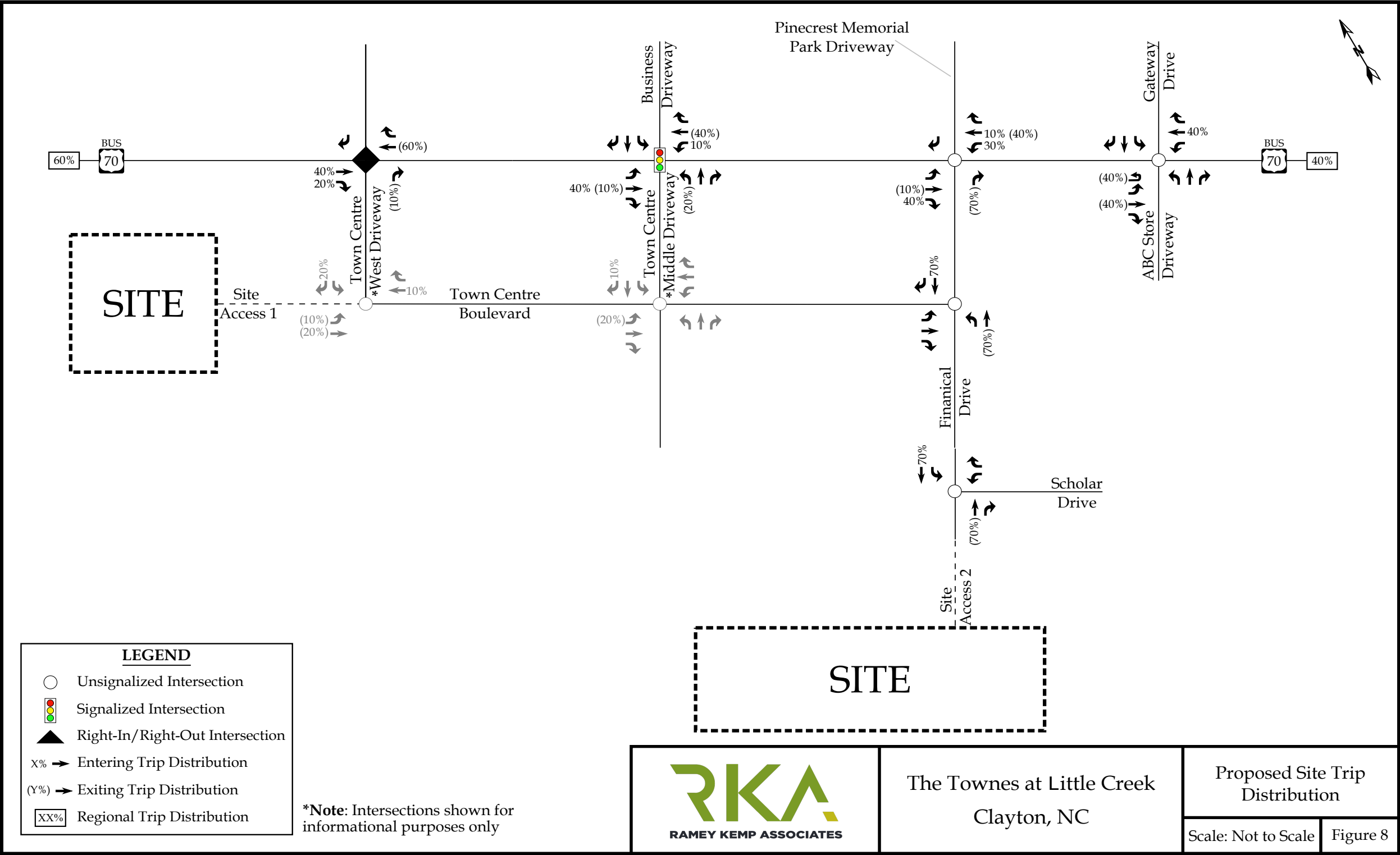
4.2. Site Trip Distribution and Assignment

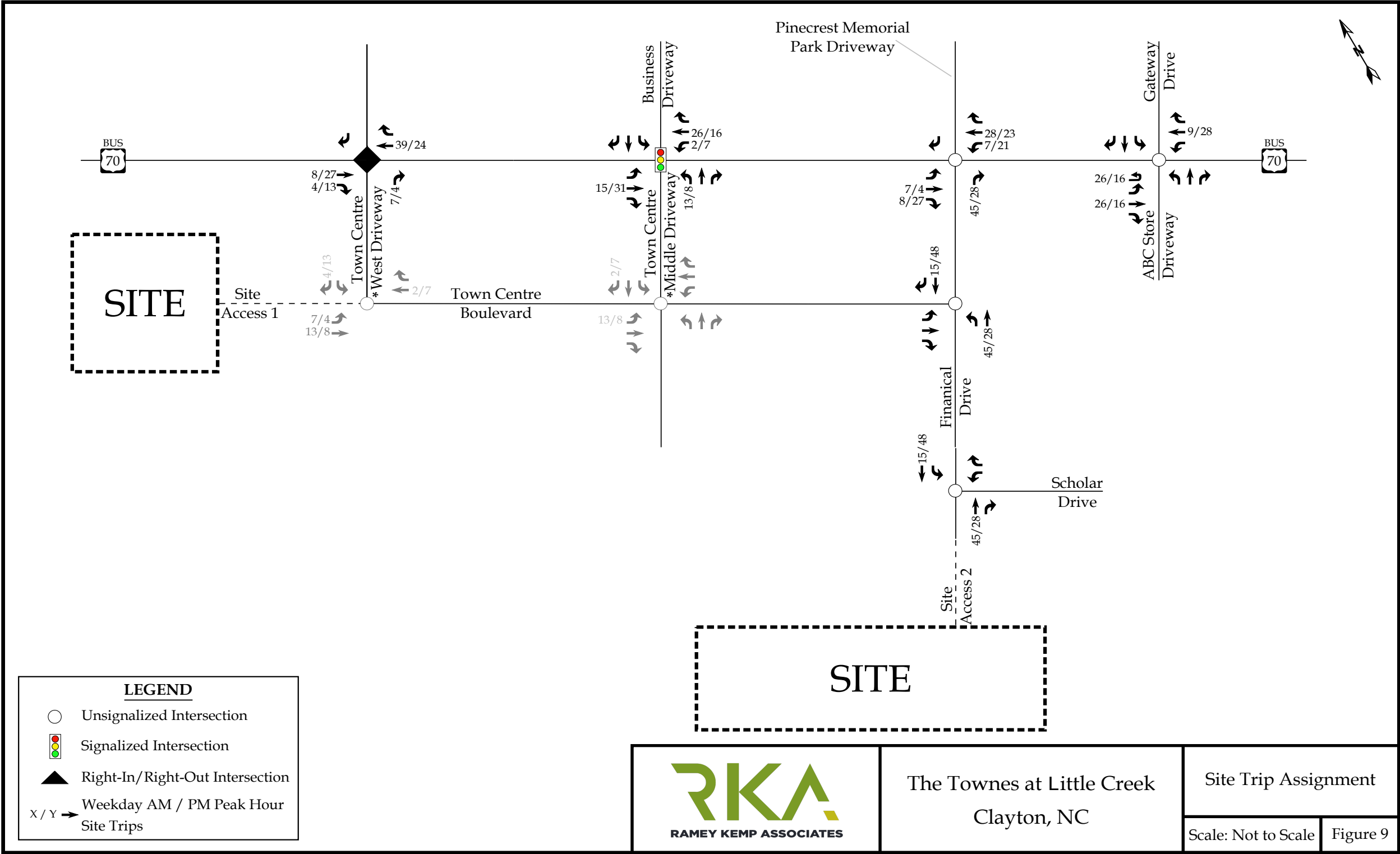
Trip distribution percentages used in assigning site traffic for this development were estimated based on a combination of existing traffic patterns, population centers adjacent to the study area, and engineering judgment.

It is estimated that the proposed site trips will be regionally distributed as follows:

- 60% to/from the west via US 70 Business
- 40% to/from the east via US 70 Business

The proposed site trip distribution is shown in Figure 8. Refer to Figure 9 for the proposed site trip assignment.





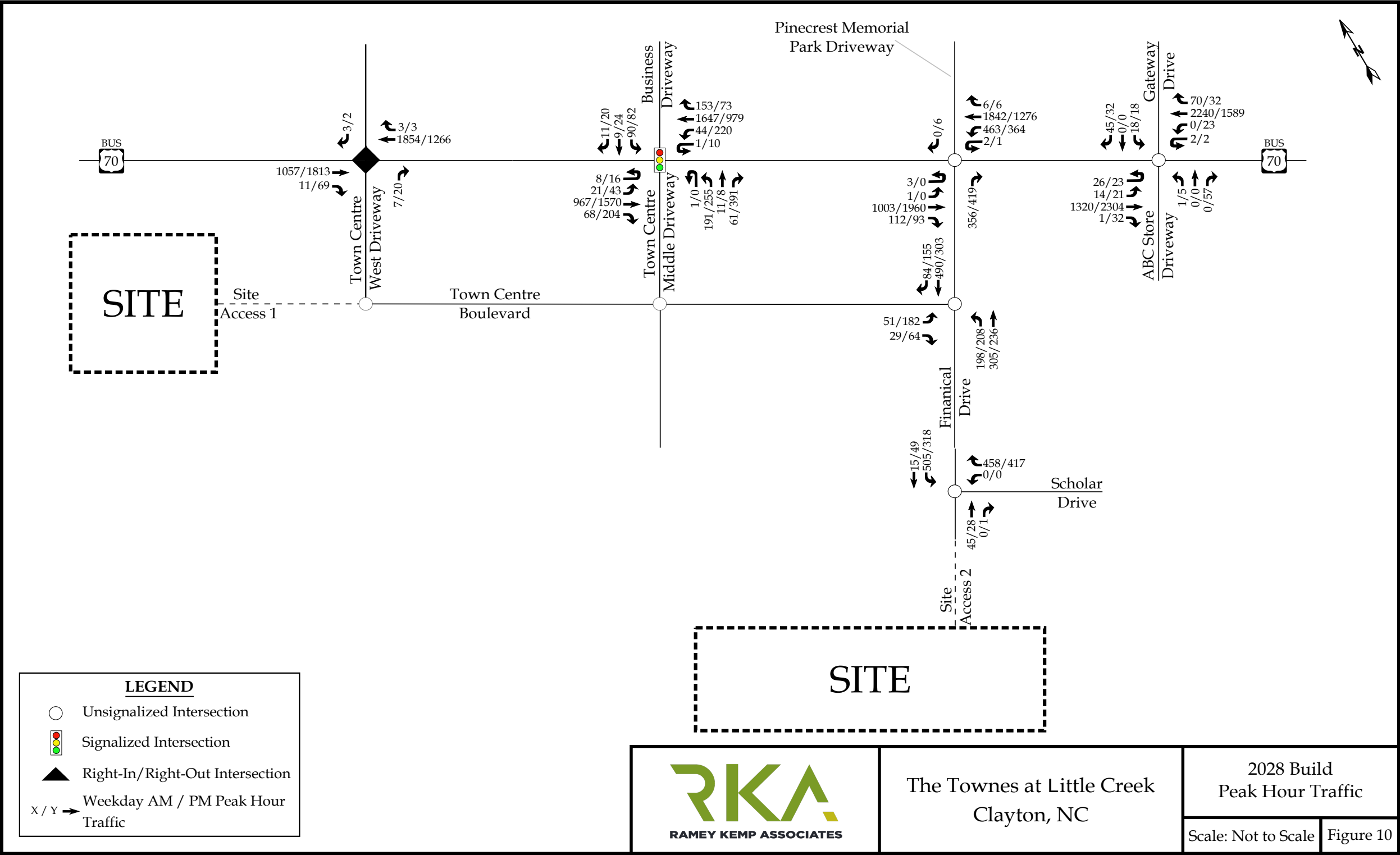
5. 2028 BUILD TRAFFIC CONDITIONS

5.1. 2028 Build Peak Hour Traffic Volumes

To estimate traffic conditions with the site fully built-out, the total site trips were added to the 2028 no-build traffic volumes to determine the 2028 build traffic volumes. Refer to Figure 10 for an illustration of the 2028 build peak hour traffic volumes with the proposed site fully developed.

5.2. Analysis of 2028 Build Peak Hour Traffic Conditions

Study intersections were analyzed with the 2028 build traffic volumes using the same methodology previously discussed for existing and no-build traffic conditions. Intersections were analyzed with improvements necessary to accommodate future traffic volumes. The results of the capacity analysis for each intersection are presented in Section 7 of this report.



6. TRAFFIC ANALYSIS PROCEDURE

Study intersections were analyzed using the methodology outlined in the *Highway Capacity Manual* (HCM), 6th Edition published by the Transportation Research Board. Capacity and level of service are the design criteria for this traffic study. A computer software package, Synchro (Version 10.3), was used to complete the analyses for most of the study area intersections. Please note that the unsignalized capacity analysis does not provide an overall level of service for an intersection; only delay for an approach with a conflicting movement.

The HCM defines capacity as “the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions.” Level of service (LOS) is a term used to represent different driving conditions, and is defined as a “qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers.” Level of service varies from Level “A” representing free flow, to Level “F” where breakdown conditions are evident. Refer to Table 4 for HCM levels of service and related average control delay per vehicle for both signalized and unsignalized intersections. Control delay as defined by the HCM includes “initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay”. An average control delay of 50 seconds at a signalized intersection results in LOS “D” operation at the intersection.

Table 4: Highway Capacity Manual – Levels-of-Service and Delay

UNSIGNALIZED INTERSECTION		SIGNALIZED INTERSECTION	
LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)
A	0-10	A	0-10
B	10-15	B	10-20
C	15-25	C	20-35
D	25-35	D	35-55
E	35-50	E	55-80
F	>50	F	>80

6.1. Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to the NCDOT Congestion Management Guidelines.

7. CAPACITY ANALYSIS

7.1. Town Centre Boulevard (Western Driveway) [NB-SB] and US 70 Business [EB-WB]

The existing unsignalized intersection of Town Centre Boulevard (Western Driveway) and US 70 Business was analyzed under 2022 existing, 2028 no-build, and 2028 build traffic conditions with lane configurations and traffic control shown in Table 5. Refer to Table 5 for a summary of the analysis results. Refer to Appendix E for the Synchro capacity analysis reports.

Table 5: Analysis Summary of Town Centre Boulevard (Western Driveway) and US 70 Business

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2022 Existing	EB WB NB SB	2 TH, 1 TH-RT 2 TH, 1 RT 1 RT 1 RT	-- -- B ¹ C ¹	N/A	-- -- C ¹ B ¹	N/A
2028 No-Build	EB WB NB SB	2 TH, 1 TH-RT 2 TH, 1 RT 1 RT 1 RT	-- -- B ¹ C ¹	N/A	-- -- C ¹ B ¹	N/A
2028 Build	EB WB NB SB	2 TH, 1 TH-RT 2 TH, 1 RT 1 RT 1 RT	-- -- B ¹ C ¹	N/A	-- -- D ¹ B ¹	N/A

1. Level of service for minor-street approach.

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the minor-street approaches are expected to operate at LOS D or better under all analysis scenarios during both weekdays AM and PM peak hours. The northbound approach is expected to degrade from LOS C under 2028 no-build PM conditions to LOS D under 2028 build conditions. Although the approach is expected to degrade under 2028 no-build, the delay is at the threshold between LOS C and LOS D. Under 2028 build conditions, the

approach is only expected to increase by less than two seconds of delay. Based on SimTraffic, no significant queuing is expected at this intersection.

7.2. Town Centre Boulevard (Middle Driveway) [NB-SB] and US 70 Business [EB-WB]

The existing signalized intersection of Town Centre Boulevard (Middle Driveway) and US 70 Business was analyzed under 2022 existing, 2028 no-build, and 2028 build traffic conditions with existing lane configurations and traffic control. Refer to Table 6 for a summary of the analysis results. Refer to Appendix F for the Synchro capacity analysis reports.

Table 6: Analysis Summary of Town Centre Boulevard (Middle Driveway) and US 70 Business

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2022 Existing	EB WB NB SB	1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT 2 LT, 1 TH-RT 1 LT, 1 TH-RT	B B F F	C (29)	C C F F	F (262)
2028 No-Build	EB WB NB SB	1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT 2 LT, 1 TH-RT 1 LT, 1 TH-RT	B B F F	C (30)	C C F F	F (308)
2028 Build	EB WB NB SB	1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT 2 LT, 1 TH-RT 1 LT, 1 TH-RT	B C F F	C (32)	C C F F	F (305)
2028 Build - Typical Residential PM Peak Hour	EB WB NB SB	1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT 2 LT, 1 TH-RT 1 LT, 1 TH-RT	B C F F	C (32)	C C F F	D (51)

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the intersection of Town Centre Boulevard and US 70 Business is expected to operate at LOS C during the weekday AM peak hour and LOS F during the PM peak hour. Significant queuing is expected along the northbound approach. These queues were observed under all existing and no-build traffic conditions and are not caused by the development. The

westbound approach is expected to degrade from LOS B under 2028 no-build AM to LOS C during the PM peak hour.

The overall intersection is expected to operate at LOS F during the PM peak hour under all scenarios. It should be noted that peak hour analyzed was from 3:20 – 4:20 PM. This time would capture trips associated with the adjacent school. It was observed that the trips during this time significantly impacted the operation of the intersection. Typically, the weekday PM peak hours for residential developments are calculated between the hours of 4:00 PM to 6:00 PM. If the typical residential peak hour is used, the functionality of the intersection is expected to significantly improve. It should also be noted that if the residents from the proposed development have children at the adjacent school, the residents would not likely contribute to the northbound approach traffic, as they would have another connection through the Clayton Town Centre development / Financial Drive to access the school / the proposed development. Due to the improved functionality during the typical residential PM peak (which is the time that the proposed development would be expected to contribute the majority of its traffic to at this intersection), no improvements to the intersection are recommended.

7.3. Financial Drive [NB-SB] and US 70 Business [EB-WB]

The existing unsignalized intersection of Financial Drive and US 70 Business was analyzed under 2022 existing, 2028 no-build, and 2028 build traffic conditions with the lane configurations and traffic control shown in Table 7. Refer to Table 7 for a summary of the analysis results. Refer to Appendix G for the Synchro capacity analysis reports.

Table 7: Analysis Summary of Financial Drive and US 70 Business

ANALYSIS SCENARIO	Node	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
				Approach	Overall (seconds)	Approach	Overall (seconds)
2022 Existing	3	EB NB SB	2 TH, 1 RT 1 RT 1 LT-TH	-- C ¹ F ¹	N/A	-- F ¹ --	N/A
	33	WB NB SB	1 TH, 1 TH-RT 1 LT-TH 1 RT	-- E ¹ C ¹	N/A	-- C ¹ B ¹	N/A
2028 No-Build	3	EB NB SB	2 TH, 1 RT 1 RT 1 LT-TH	-- D ¹ F ¹	N/A	-- F ¹ --	N/A
	33	WB NB SB	1 TH, 1 TH-RT 1 LT-TH 1 RT	-- F ¹ C ¹	N/A	-- C ¹ B ¹	N/A
2028 Build	3	EB NB SB	2 TH, 1 RT 1 RT 1 LT-TH	-- E ¹ F ¹	N/A	-- F ¹ --	N/A
	33	WB NB SB	1 TH, 1 TH-RT 1 LT-TH 1 RT	-- F ¹ C ¹	N/A	-- D ¹ B ¹	N/A
2028 Build – Signal Installation	3	EB NB SB	2 TH, 1 RT 1 RT 1 LT-TH	C D D	C (33)	D F D	D (45)
	33	WB NB SB	1 TH, 1 TH-RT 1 LT-TH 1 RT	-- F ¹ C ¹	N/A	-- D ¹ B ¹	N/A

1. Level of service for minor-street approach.

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the minor-street movement and major-street left-turn movement is expected to operate at LOS E or F. Significant queues are expected on the northbound approach as well as the westbound

left turn lane. These queues were observed under existing conditions. A large portion of the queues are likely related to the school located along Financial Drive, south of the intersection of Financial Drive and US 70 Business.

Under 2028 build with improvement conditions, the eastbound side of the intersection of Financial Drive and US 70 Business was signalized. This signal was assumed to be coordinated with the signal at the intersection of Town Centre Boulevard (Middle Driveway) and US 70 Business. With the installation of a traffic signal, queue lengths are expected to significantly decrease, and the minor-street delay and major-street left-turn delay are expected to significantly improve. The northbound approach is expected to operate at LOS F during the weekday PM peak hour. The weekday PM peak hour utilized the school peak hour which is expected to provide a conservative analysis. The typical residential PM peak hour (4:00-6:00 PM) is expected to experience improved operations. Queues are expected to significantly improve on both minor street approaches. Based on the significant improvement in queues, a signal is recommended; however, due to the poor conditions under existing and no-build conditions this signal is needed under existing conditions and is not recommended as a developer improvement.

7.4. Gateway Drive [NB-SB] and US 70 Business [EB-WB]

The existing unsignalized intersections of Gateway Drive and US 70 Business were analyzed under 2022 existing, 2028 no-build, and 2028 build traffic conditions with the lane configurations and traffic control shown in Table 8. Refer to Table 8 for a summary of the analysis results. Refer to Appendix H for the Synchro capacity analysis reports.

Table 8: Analysis Summary of Gateway Drive and US 70 Business

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2022 Existing	EB	1 LT, 2 TH, 1 RT	C ¹	N/A	C ¹	N/A
	WB	1 LT, 2 TH, 1 RT	C ¹		E ¹	
	NB	1 LT-TH-RT	F ²		F*	
	SB	1 LT-TH-RT	F ²		F*	
2028 No-Build	EB	1 LT, 2 TH, 1 RT	D ¹	N/A	C ¹	N/A
	WB	1 LT, 2 TH, 1 RT	C ¹		F ¹	
	NB	1 LT-TH-RT	F*		F*	
	SB	1 LT-TH-RT	F*		F*	
2028 Build	EB	1 LT, 2 TH, 1 RT	F ¹	N/A	E ¹	N/A
	WB	1 LT, 2 TH, 1 RT	C ¹		F ¹	
	NB	1 LT-TH-RT	F*		F ²	
	SB	1 LT-TH-RT	F*		F ²	

*Due to the limitations of Synchro the computation was not defined. LOS F was assumed based on the other scenarios.

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the minor-street approaches are expected to operate at LOS F during both peak hours. Significant queues are expected on the minor-streets while minimal queues are expected on the major-street. The eastbound left-turn movement is expected to degrade from LOS D under 2028 no-build AM conditions to LOS F under 2028 build AM conditions. Similarly, the eastbound approach is expected to degrade from LOS C to LOS E when comparing the 2028 no-build and 2028 build conditions. While a degradation in LOS is expected on the eastbound approach, the queues are expected to be minimal.

The proposed site is expected to account for less than 2% of the build peak hour trips. The majority of the trip added to the intersection are expected to be through trips with the remaining trips being added to the eastbound U-turn movement. Additionally, once improvements are installed at the adjacent intersection, additional gaps would be expected along the primary road. This would likely result in shorter queues along the side streets. Based on congestion management guidelines, movements are required to use a minimum peak hour volume of 4. This would cause through volumes on the side streets that were not observed in the field to be in the analysis. This would impact queue lengths, which would be expected to be less in the field. It should also be noted that it is not uncommon for a minor-street to operate at LOS F at an unsignalized intersection and these issues are present under existing conditions. No improvements by the developer are recommended.

7.5. Financial Drive [NB-SB] and Town Centre Boulevard [EB-WB]

The existing unsignalized intersection of Financial Drive and Town Centre Boulevard was analyzed under 2022 existing, 2028 no-build, and 2028 build traffic conditions with existing lane configurations and traffic control. Refer to Table 9 for a summary of the analysis results. Refer to Appendix I for the Synchro capacity analysis reports.

Table 9: Analysis Summary of Financial Drive and Town Centre Boulevard

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2022 Existing	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH-RT	D ² A ¹ --	N/A	E ² A ¹ --	N/A
2028 No-Build	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH-RT	E ² A ¹ --	N/A	F ² A ¹ --	N/A
2028 Build	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH-RT	E ² A ¹ --	N/A	F ² A ¹ --	N/A

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the major-street left-turn movement is expected to operate at LOS A during the weekday AM and PM peak hours. The minor street approach is expected to operate at LOS E during the AM peak hour under all conditions and to operate at LOS F during the PM peak hour under future conditions. Significant queues are expected on the northbound and westbound approach during the PM peak hour.

The observed queues expected along the northbound and eastbound approaches are caused by the poor functionality of the adjacent intersection of US 70 Business and Financial Drive. With the installation of improvements at the adjacent intersection, queues are expected to significantly improve. High delays are still expected along the side street; however, this is not uncommon at unsignalized intersections. It should be the weekday PM peak hour utilized the

school peak hour which is expected to provide a conservative analysis. The typical residential PM peak hour (4:00-6:00 PM) is expected to experience improved operations. No improvements by the development are recommended.

7.6. Financial Drive [NB-SB] and Scholar Drive [WB]

The existing unsignalized intersection of Financial Drive and Scholar Drive was analyzed under 2022 existing, 2028 no-build, and 2028 build traffic conditions with existing lane configurations and traffic control. Refer to Table 10 for a summary of the analysis results. Refer to Appendix J for the Synchro capacity analysis reports.

Table 10: Analysis Summary of Financial Drive and Scholar Drive

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2022 Existing	WB NB SB	1 LT-RT 1 TH-RT 1 LT, 1 TH	B ² -- A ¹	N/A	B ² -- A ¹	N/A
2028 No-Build	WB NB SB	1 LT-RT 1 TH-RT 1 LT, 1 TH	B ² -- A ¹	N/A	B ² -- A ¹	N/A
2028 Build	WB NB SB	1 LT-RT 1 TH-RT 1 LT, 1 TH	B ² -- A ¹	N/A	B ² -- A ¹	N/A

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the minor-street approaches are expected to operate at LOS B or better under all analysis scenarios during the weekday AM and PM peak hours. The southbound approach is expected to operate at LOS A during the weekday AM and PM peak hours. No significant queuing is expected.

8. CONCLUSIONS

This Traffic Impact Analysis was conducted to determine the potential traffic impacts of the proposed The Townes at Little Creek development to be located along both sides of the existing Clayton Town Center and to the south of US 70 Business in Clayton, North Carolina. The proposed development is expected to be a residential development and be built out in 2028. Site access to the eastern portion of the site is proposed via a connection to the existing Financial Drive. Site access to the western portion of the site is proposed via one full movement connection to the existing Town Centre Boulevard.

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- 2022 Existing Traffic Conditions
- 2028 No-Build Traffic Conditions
- 2028 Build Traffic Conditions

Trip Generation

It is estimated that the proposed development will generate approximately 86 primary trips (21 entering and 65 exiting) during the weekday AM peak hour and 108 primary trips (68 entering and 40 exiting) during the weekday PM peak hour.

Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to NCDOT Congestion Management Guidelines. Refer to section 6.1 of this report for a detailed description of any adjustments to these guidelines made throughout the analysis.

Intersection Capacity Analysis Summary

All the study area intersections (including the proposed site driveways) are expected to operate at acceptable levels-of-service under existing and future year conditions with the exception of the intersections listed below. A summary of the study area intersection that is expected to need improvements are as follows:

Financial Drive and US 70 Business

Capacity analysis of 2022 existing, 2028 no-build, and 2028 build traffic conditions indicates the minor-street movement and major-street left-turn movement is expected to operate at LOS E or F. Significant queues are expected on the northbound approach as well as the westbound left turn lane. These queues were observed under existing conditions. A large portion of the queues are likely related to the school located along Financial Drive, south of the intersection of Financial Drive and US 70 Business. Under 2028 build with improvement conditions, the eastbound side of the intersection of Financial Drive and US 70 Business was signalized. This signal was assumed to be coordinated with the signal at the intersection of Town Centre Boulevard (Middle Driveway) and US 70 Business. With the installation of a traffic signal, queue lengths are expected to significantly decrease, and the minor-street delay and major-street left-turn delay are expected to significantly improve. The northbound approach is expected to operate at LOS F during the weekday PM peak hour. The weekday PM peak hour utilized the school peak hour which is expected to provide a conservative analysis. The typical residential PM peak hour (4:00-6:00 PM) is expected to experience improved operations. Queues are expected to significantly improve on both minor street approaches. Based on the significant improvement in queues, a signal is recommended; however, due to the poor conditions under existing and no-build conditions this signal is needed under existing conditions and is not recommended as a developer improvement.

9. RECOMMENDATIONS

Based on the findings of this study, specific geometric improvements have been identified and are recommended to accommodate future traffic conditions. See a more detailed description of the recommended improvements below. Refer to Figure 11 for an illustration of the recommended lane configuration for the proposed development.

Recommended No-Build Improvements for Consideration

Financial Drive and US 70 Business

- Install traffic signal on the Financial Drive portion of the intersection when warranted.

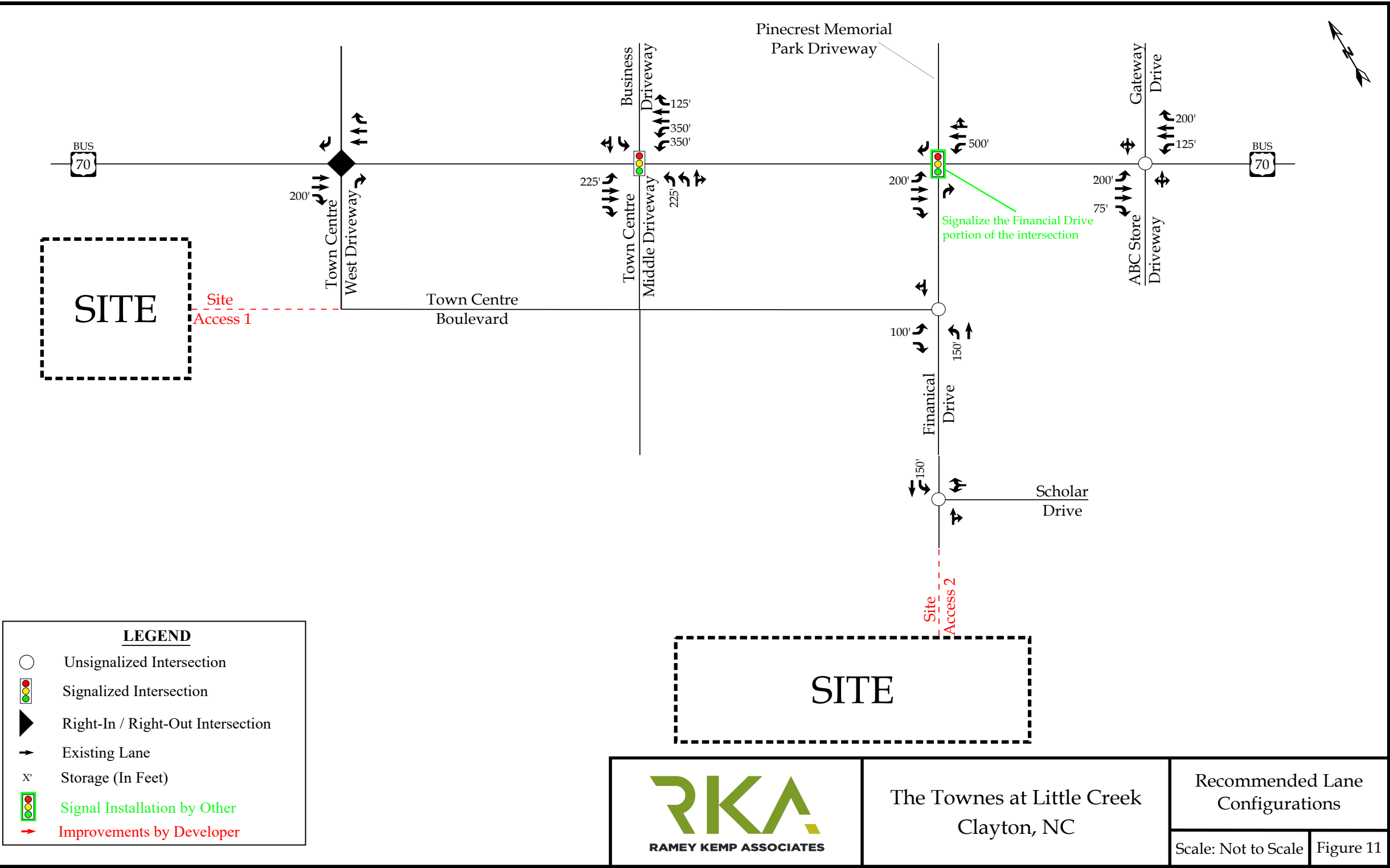
Recommended Improvements by Developer

Financial Drive and Town Centre Boulevard

- Construct an eastbound approach with one egress lane (shared left and through-lane) and one ingress lane.
- Provide stop control for the eastbound approach.

Financial Drive and Scholar Drive

- Construct site access along the northbound approach.



TECHNICAL APPENDIX

APPENDIX A

SCOPING DOCUMENTATION



NCDOT Traffic Impact Analysis Need Screening / Scoping Request

TIA Need
Screening



TIA
Scoping



TIA
Submittal



A Traffic Impact Analysis (TIA) may be required for developments based on the site trip generation estimates, site context, or at the discretion of the NCDOT District Engineer. The Applicant or the TIA Consultant shall submit this form along with the site plan to the District Engineer to determine the TIA need and, if a TIA is required, initiate the TIA scoping process. Without an approved scope, the TIA is incomplete and will be rejected until the study is revised to conform to NCDOT's TIA requirements.

Project Name: Clayton Town Centre **Previous Name:** If Applicable _____
Location: S of Financial Dr and W of Town Centre Blvd **County:** Johnson **Municipality:** Clayton
Project Description: Residential Development consisting of 203 townhomes

Project Contact:	Applicant	TIA Consultant
Company Name	DRB Group	Ramey Kemp Associates
Contact Person	Cindy Szwarczkop, AICP	Caroline Cheeves, PE
Phone Number	919-244-5899	919-872-5115
Email	cszwarczkop@drbgroup.com	ccheeves@rameykemp.com
Mailing Address	3000 RDU Center Drive, Suite 202 Morrisville, NC 27560	5808 Faringdon Place Raleigh, NC 27609

Site Plan Prepared By: Urban Design Partners **Site Plan Date:** 1/31/2022
 See site plan/vicinity map requirements on page 2.
Parcel Size: 55.38 Acre(s) **Anticipated Build-Out Year:** 2028

Weekday Site Trip Generation - Do NOT adjust for mode split, pass-by, internal capture, or diverted trips.

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
220	Townhomes	203	Units	1377	Adj. Street	21	65	86	68	40	108	ITE Equation
Total				1377		21	65	86	68	40	108	X

Refer to the current [NCDOT Congestion Management Capacity Analysis Guidelines](#) for acceptable trip calculation methods and data sources.

**Explain local or other data sources, if used: ITE 11th Edition

- ☐ The estimated site trips meet NCDOT's TIA trip threshold of 3,000 daily trips.
- ☒ The estimated site trips meet the municipal TIA trip threshold of 1,000 daily / 100 peak hour site trips
- ☐ This project is located in a known [STIP](#) and/ or local CIP project # _____
- ☐ This project includes a rezoning request.
- ☐ The proposed site access is located within 1,000 feet of an interchange.
- ☐ The Applicant requests for a new or modified control-of-access break.
- ☐ The Applicant requests for a new or modified median break.

_____ Applicant's Signature	_____ Caroline Cheeves, PE Print Name	_____ 4/25/2022 Date
Effective Date: 10/01/2017 (Version 17-721)		Page 1 of 2



NCDOT Traffic Impact Analysis Need Screening / Scoping Request

TIA Need
Screening



TIA
Scoping



TIA
Submittal



Site Plan/Vicinity Map Requirement for TIA Need Screening: While the site plan may not be finalized during the TIA scoping stage, the graphic representation of the proposed development shall provide adequate details on the development scope and context. More specifically, the site plan/map shall clearly show the location and type of each access point, spacing to adjacent and opposing driveways or intersections, internal street network, proposed buildings/parcels with their anticipated uses and sizes at full build-out and, if applicable, any nearby interstate, US, NC or Secondary Roads (SR).

Project Name: Clayton Town Centre **Project Reference Number:** _____

☒ **A TIA is Required by the Local Government.** In addition, the study area is expected to include NCDOT maintained transportation facilities.

☐ **A TIA is Required by NCDOT,** per the [Policy on Street and Driveway Access to North Carolina Highways](#).

If either or both of the boxes above are checked, the Applicant/TIA Consultant is hereby requested to fill out as much as possible of the following TIA scoping checklist, and return it along with the supporting documents to NCDOT prior to the scoping meeting.

☐ **A TIA is NOT required.** This decision is based on the development information presented above. Changes in the development plan will require re-evaluation of the TIA need, and may necessitate a TIA. The Applicant should inform the District Engineer of any significant changes in a timely fashion to avoid delays or rejections of the driveway permit / encroachment agreement applications.

Additional Comments:

The TIA need decision is made by the NCDOT Division _____ District _____ on _____.

NCDOT District Representative's Signature
Email concurrence may be used in lieu of the signature.

Print Name

Effective Date: 10/01/2017 (Version 17-721)

Page 2 of 2



NCDOT TIA Scoping Checklist



Project Name: Clayton Town Centre

TIA Scoping Date: 4/25/2022

☒ **TIA Need Screening Forms are Attached.** Project Reference #: _____ Decision Date: _____

☒ **Site Plan and Access**

☒ Provide a site plan illustrating site access, internal and external roadways, buildings and land uses.

Refer to NCDOT's [Policy on Street and Driveway Access to North Carolina Highways](#) pages 14 and 15 for site plan requirements.

☒ Identify site access.

New Access	On Road	Access Type		Driveway Spacing		
	Road Name	Permitted Movements	Traffic Control	Distance (ft)	Direction	Nearest Intersection / Access
Access A	Town Centre Blvd	Conventional Full-Mvmt	2-Way Stop	475	South	US 70 BUS
Access B	Financial Drive	Conventional Full-Mvmt	2-Way Stop			Scholar Drive
Access C						
Access D						
Access E						
Access F						
Access G						
Access H						

Existing Access	Existing Intersection of		Access Modification	Proposed Interconnectivity (If Applicable)		
	Road A	Road B		Connector #	Road Connected	Adjacent Development
Access 1				Connector 1		
Access 2				Connector 2		
Access 3				Connector 3		
Access 4				Connector 4		

☒ Additional access clarifications and provisions (e.g., proposed control-of-access or median breaks, modifications of existing access, loading/unloading area access, bike/pedestrian accommodation).

Site Access 1 is proposed to connect as the 3rd leg of the existing intersection of Town Centre Boulevard & the western driveway for the Town Centre Development.

Site Access 2 is proposed to connect to the stub of Financial Drive as the third leg of the intersection of Financial Drive & Scholar Drive.

☐ **Proposed K-12 School Site**

☐ NCDOT [MSTA School Traffic Calculator](#) for _____ shall be used.

☐ Peak Hour Factors (PHFs) shall be adjusted/weighted for new school trips (0.5 PHF by default).

☐ Internal school circulation analysis is required, and should be submitted in advance or concurrent with the TIA submittal.

☐ Clarify traffic operation plans (e.g. traffic circulation pattern, pedestrian access, drop-off/pick-up zone location and configuration, queue storage area and, if applicable, staggered start times).



NCDOT TIA Scoping Checklist



☒ Trip Distribution

- ☒ Trip distribution diagrams are submitted concurrently with this document (attach separate sheets).
- ☐ Trip distribution diagrams will be submitted separately, along with supporting information, to the District Engineer for review and approval prior to capacity analysis. The trip distribution shall be based on the current and anticipated traffic patterns, as well as instructions noted below.

If required by the District Engineer, the following additional diagrams shall also be submitted:

- ☐ Mixed-Use Developments (separate diagrams for residential, commercial, and office trips)
- ☐ Inter-Development Trips (if "internal" trips cross public streets)
- ☐ Pass-By Trips
- ☐ Diverted Trips
- ☐ Each Analysis Period

☐ Mode Split

- ☐ Provide Data Source and Justification

Mode Period	Auto		
AM Peak	%	%	%
PM Peak	%	%	%
Daily	%	%	%
	%	%	%

- ☐ Identify proper infrastructure and accommodation for other modes of travel.

☒ Analysis Peak Periods:

- ☒ Weekday AM Peak 7:00 AM - 9:00 AM
- ☒ Weekday PM Peak 4:00 PM - 6:00 PM
- ☐ Weekday Midday Peak _____
- ☐ Weekday PM School Peak _____
- ☐ Weekend _____ Peak _____
- ☐ Other _____



NCDOT TIA Scoping Checklist

TIA Need
Screening



TIA
Scoping



TIA
Submittal



☒ Study Area Intersections and Data Collection

The study area shall include the site access intersections (both new and existing) identified under “Site Plan and Access” on page 1, as well as the following external and, if applicable, internal intersections.

External Intersection	Intersection of		Traffic Control	Intersection Turning Movement Counts			Notes
	Road A	Road B		New / Existing	Date of Counts	Growth Adjustment	
#1	US 70 Business	West Driveway	2-Way Stop	Require New Counts			RIRO
#2	US 70 Business	Middle Driveway	Signal	Require New Counts			
#3	US 70 Business	Financial Drive	2-Way Stop	Require New Counts			Left-Overs
#4	US 70 Business	Gateway Drive	2-Way Stop	Require New Counts			
#5	Financial Drive	Town Centre Blvd	2-Way Stop	Require New Counts			
#6	Financial Drive	Scholar Drive	2-Way Stop	Require New Counts			
#7							
#8							
#9							
#10							
#11							
#12							

Internal Intersection	Intersection of		Access Type		Intersection Spacing		
	Road A	Road B	Traffic Control	Permitted Movements	Distance (ft)	Direction	Nearest Intersection
#101							
#102							
#103							
#104							
#105							

The following data will be collected:

- ☒ New traffic turning movement counts in ☒ 15-min intervals ☐ 5-min intervals (near schools)
 Unless otherwise noted above, new traffic counts shall be collected at the existing study intersections during the analysis periods. Weekday counts shall avoid Mondays, Fridays, holidays, school breaks, road closures, and major weather events.

- ☐ To account for the impact of existing and/or proposed school traffic, PHFs will be adjusted for:

intersections numbered: _____

and access points numbered: _____

- ☐ Traffic Forecast Data for TIP: _____

- ☒ Roadway/Intersection Configuration & Traffic Control

- ☒ Traffic Signal Phasing & Timing Data

- ☐ Crash Data: _____ Period: _____

- ☐ Other: _____



NCDOT TIA Scoping Checklist

TIA Need
Screening



TIA
Scoping



TIA
Submittal



☒ Future Year Conditions

☒ Project Build-Out Year: 2028

☐ Future Analysis Year(s): _____

☐ Identify below any funded/committed future transportation improvements, as well as any approved but incomplete developments near the site.

Funded STIP / Local CIP Project	Project Description		Year Complete
Nearby Approved Development	Location	Future Land Use (exclude any completed phases)	Committed Improvements
Ramblewood	East of Ramblewood Drive	210	N/A

☒ Annual Growth Factor: 2 %

Justification/Data Source: Based on historical AADT data

☐ Local Comprehensive Transportation Plan Compliance

☐ Identify Applicable Local Transportation Planning Documents

☐ Identify Applicable Roadways inside the Study Area

Road Name	Classification	Speed Limit	Proposed Cross-Section	Proposed Right-of-Way	Compliance Requirements	Affect Study Intersection #



NCDOT TIA Scoping Checklist



☒ Study Method

The traffic analysis shall follow the current [NCDOT Congestion Management Capacity Analysis Guidelines](#), [Policy on Street and Driveway Access to North Carolina Highways](#), and use the current approved version of analysis software (e.g. Synchro/SimTraffic, HCS, Sidra Intersection, TransModeler).

The study shall include the following analysis scenarios for each analysis period.

1. Existing Conditions
2. Future No-Build Conditions (existing + background growth + approved developments + committed or funded improvements)
3. Future Build Conditions (future no-build + site trips)
4. Future Build with Improvements Conditions (future build traffic with improvements to mitigate the proposed development's impacts) and, if applicable:
- ☐ 5. TIP Design Year Analysis _____
- ☐ 6. Alternative Access Scenario (without proposed control-of-access or median break / modification)

The following additional analysis/outputs should be provided as warranted:

- ☐ Signal Warrant Analysis for accesses/intersections _____
- ☐ Multi-Modal Level of Service Analysis
- ☐ School Loading Zone Traffic Simulation
- ☐ Phasing Analysis (scope separately as needed)
- ☐ Safety/Crash Analysis
- ☐ Control-of-Access Modification Justification
- ☐ Median Break / Modification Justification
- ☐ Other _____

☒ Submittals

In addition to the hardcopies required below, the TIA Consultant shall provide the District Engineer and, if required, the local government an electronic copy of the study documents, including the latest site plan, figures and appendices, in searchable PDF files and the original traffic analysis files (e.g., Synchro, HCS). To expedite review, the NCDOT electronic submittals shall also be delivered concurrently to:

☐ Div. Traffic Engr ☐ Regional Traffic Engr ☐ Congestion Management ☐ Other _____

Submittals	NCDOT		Local Government	
	Electronic	Hardcopy	Electronic	Hardcopy
Trip Generation & Distribution	Required			
Draft TIA Report	Required			
Final Sealed TIA Report	Required			

☐ **Additional Comments** (municipal TIA requirements, approved variations from NCDOT guidelines)



NCDOT TIA Scoping Checklist



Agreement by All Parties

The undersigned agree to the contents and methodology described above for completing the required traffic impact analysis for the proposed development identified herein. Any changes to the above methodology contemplated by the Applicant or the TIA Consultant must be submitted to the District Engineer in writing. If approved by NCDOT, then such changes may be accepted for the TIA report. Subsequent revisions to the development plan (e.g. land use, density, site access, or schedule) may require additional scoping and analysis, and may modify the TIA requirements.

This agreement shall become effective on the date approved by NCDOT, and shall expire ____ months after the effective date or upon significant changes to the roadway network and/or development assumptions, whichever occurs first. Once expired, renewal or re-scoping will be required for subsequent TIA submittals.

APPLICANT

_____ Signature	_____ Print Name	_____ Date
--------------------	---------------------	---------------

TIA CONSULTANT

_____ Signature	Caroline Cheeves, PE _____ Print Name	4/25/2022 _____ Date
--------------------	---	----------------------------

LOCAL GOVERNMENT REPRESENTATIVE (If Applicable)

_____ Signature	_____ Print Name	_____ Date
--------------------	---------------------	---------------

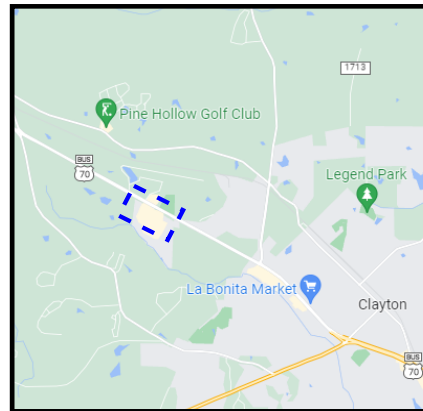
Email concurrence may be used in lieu of the signature.

NCDOT DISTRICT REPRESENTATIVE

Reviewed and approved by the NCDOT Division ____ District ____ on ____.

_____ Signature	_____ Print Name
--------------------	---------------------

Email concurrence may be used in lieu of the signature.



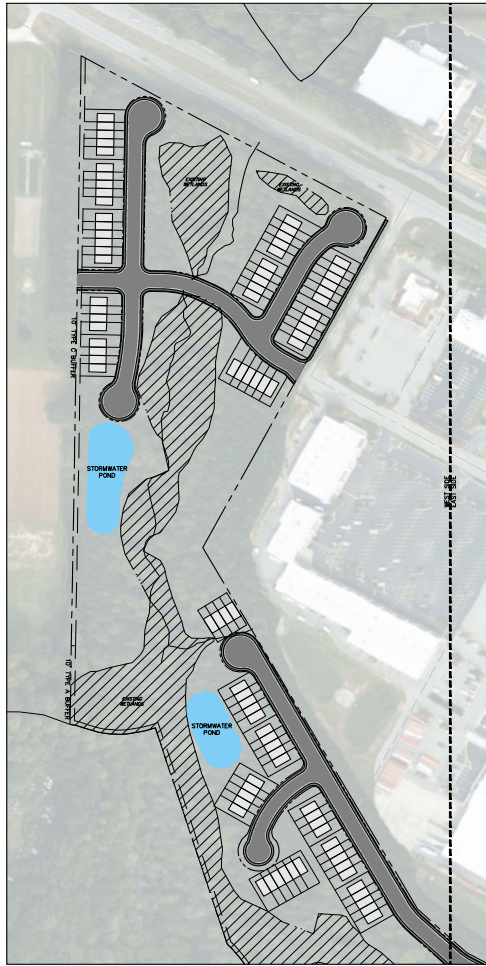
LEGEND	
	Proposed Site Location
	Study Intersection
	Study Area



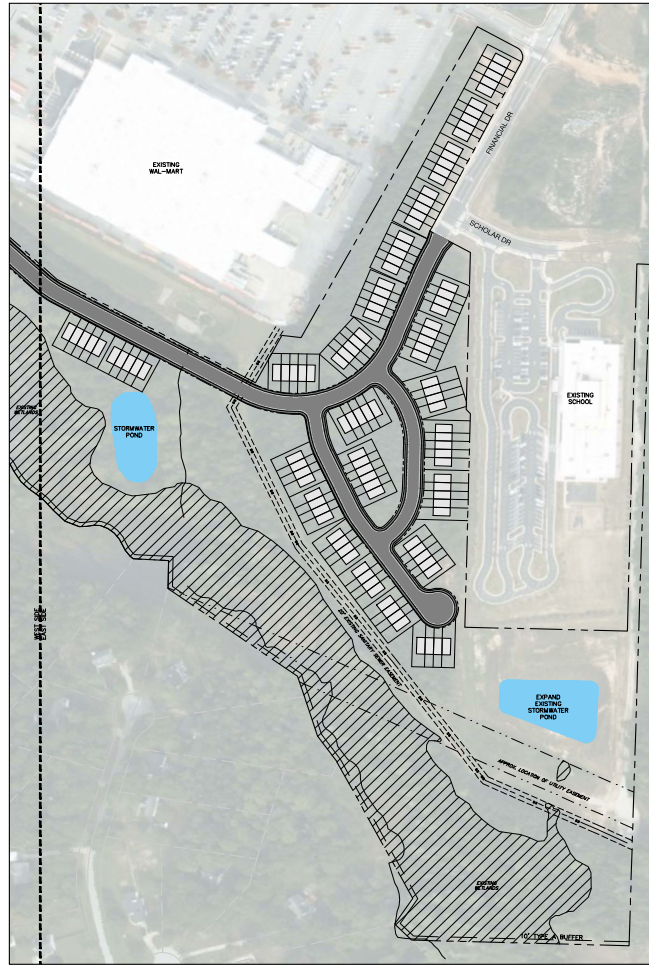
Clayton Town Centre
Clayton, NC

Site Location Map

Scale: Not to Scale



West Side Scale 1" = 120'



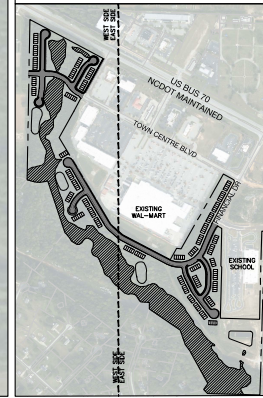
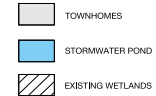
East Side Scale 1" = 120'

SITE DATA

TAX PARCEL ID #: 164900-05-2419
 TOTAL SITE AREA: ± 55.38 AC
 EXISTING ZONING: R-10 & B-3
 PROPOSED ZONING: R-10 & B-3 (SPECIAL USE PERMIT)

DEVELOPMENT SUMMARY

PROPOSED USE: TOWNHOMES
 NUMBER OF UNITS:
 EAST SIDE: ±113 UNITS
 WEST SIDE: ±90 UNITS
 TOTAL: ±203 UNITS
 DENSITY: ±3.67 UNITS/ACRE
 LOT SIZE: SET BY SPECIAL USE PERMIT
 INTERIOR LOTS: 20' X 90' MIN.
 EXTERIOR LOTS: 30' X 90' MIN.
 REQUIRED OPEN SPACE: ±12.5% (±6.92 AC)
 PROPOSED OPEN SPACE: ±29.7% (±16.45 AC)
 *OPEN SPACE INCLUDES WETLANDS



Overall Property Boundary Scale 1" = 500'

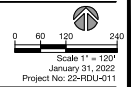
NOTES

1. THIS PLAN IS CONCEPTUAL IN NATURE AND IS SUBJECT TO CHANGE.
2. THIS EXHIBIT WAS PREPARED USING AVAILABLE RECORD INFORMATION, GIS MAPS, RECORD PLANS, AERIAL IMAGERY, AND LAND RECORDS.
3. THIS PLAN WILL BE SUBJECT TO REVIEW AND APPROVAL BY LOCAL AND STATE PLANNING AND ENGINEERING REVIEW AGENCIES.
4. THE WORK OF THIS PRODUCT IS THE PROPERTY OF URBAN DESIGN PARTNERS, PLLC. NO USE OR REPRODUCTION OF THIS PLAN IS PERMITTED WITHOUT WRITTEN AUTHORIZATION FROM URBAN DESIGN PARTNERS, PLLC.

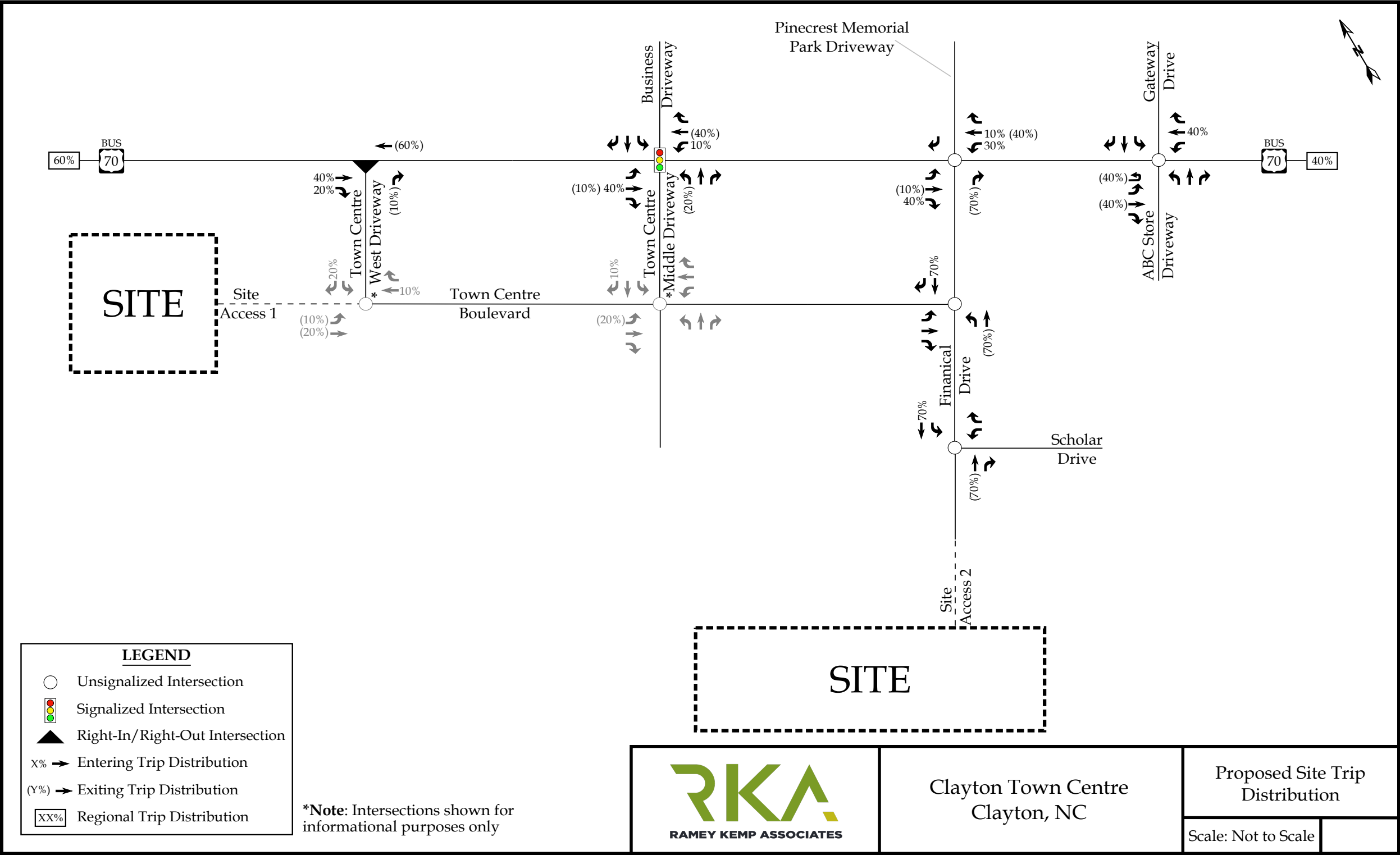


Clayton Town Centre

CONCEPT PLAN



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Location ID	0510000679	
Route	US 70 BUS	
Location	West of SR 1553	
Year	AADT	+/- %
2012	34000	
2013	37000	8.8%
2015	39000	2.7%
2017	38000	-1.3%
2019	37500	-0.7%
AVERAGE		2.4%
OVERALL		1.4%

Location ID	0510000221	
Route	US 70 BUS	
Location	West of SR 1552	
Year	AADT	+/- %
2011	33000	
2012	34000	3.0%
2014	33000	-1.5%
2017	36000	2.9%
2019	38500	3.4%
AVERAGE		2.0%
OVERALL		1.9%

Location ID	0920000138	
Route	US 70 BUS	
Location	East of SR 2558	
Year	AADT	+/- %
2009	25000	
2011	24000	-2.0%
2015	29000	4.8%
2017	30000	1.7%
2019	30500	0.8%
AVERAGE		1.3%
OVERALL		2.0%

Ty Parham

From: Lawhorn, Samuel C <sclawhorn@ncdot.gov>
Sent: Friday, April 29, 2022 8:36 AM
To: Caroline Cheeves; Jonathan Jacobs; Ty Parham
Cc: Ben Howell; Joshua Baird; Sorrell, Charles V
Subject: RE: [External] Clayton Town Centre

For NCDOT's standpoint the intersection at US 70/Financial Dr intersection having the 5 min counts in the AM and from 2-4 in the PM would be sufficient. I agree this development would not be responsible for any improvements needed for the existing and school traffic, but I just want to make sure additional traffic will not cause a problem along US 70 Bus. I am more concerned about the AM peak at this intersection.

As for the internal street that would be up to the Town. I recommended it as I felt it would be beneficial for the Town and the developer to both know what impact the existing school traffic may have on their development. If it was a NCDOT roadway I would want this studied, that way if the school traffic could create an issue with blocking the main access to this development it would have been known to everyone up front.

Sam Lawhorn, P.E.
District 3 Engineer
Highway Division 4
North Carolina Department of Transportation

919-739-5300
sclawhorn@ncdot.gov

2671 US 70 West
Goldsboro, NC 27530



Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Caroline Cheeves <ccheeves@rameykemp.com>
Sent: Thursday, April 28, 2022 5:47 PM
To: Jonathan Jacobs <jjacobs@townofclaytonnc.org>; Lawhorn, Samuel C <sclawhorn@ncdot.gov>; Ty Parham <tparham@rameykemp.com>
Cc: Ben Howell <bhowell@townofclaytonnc.org>; Joshua Baird <jbaird@townofclaytonnc.org>; Sorrell, Charles V <csorrell@ncdot.gov>
Subject: RE: [External] Clayton Town Centre

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Thanks Sam / Jonathan,

No objections to the 5 minute intervals and I understand the concerns with the access. The school operates from 8 AM – 3:15/3:30. So the typical AM peak hour of 7 AM – 9 AM should capture the school traffic. Our traffic and the school traffic will overlap during the AM peak hour.

The residential development will not generate a significant amount of trips during the school PM peak hour and if the queues are as bad as you are saying, then that's an existing issue that we would argue are not the responsibility of this development to fix. Additionally, a typical residential TIA simulation may not accurately represent the queues. With school TIAs we typically look at a 30 minute timeframe with lower PHFs that would have all of the traffic arriving in that 30 minute timeframe rather than a 60 minute timeframe.

So I think my questions are:

- How many PM peak hours should we study? Do you want us to study 2 separate PM peak hours – the school peak hour (2-4) and the residential peak hour (4-6)? Or take the residential site peak hour trip generation and apply it to the school peak hour to have a worst-case scenario?
- If we are studying that school PM traffic, do you want us to analyze it with the typical school PHF and shorter simulation times?
- If the site was able to have an emergency access connecting to the other side of the Walmart, would that mitigate concerns with this being the signal access point?

I'm happy to study that worst case scenario and identify what it would take to mitigate the queues, but again, it sounds like this is an existing issue and I don't want to step on any MSTA toes if we do end up analyzing this like a school study and make a recommendation that is to mitigate the school traffic.

Also happy to hop on a call to hash this out and discuss. If you are okay with the intersections, I am going to schedule the counts to be 7-9 AM and from 2-6 PM to include the school peak hours with 5 minute intervals, but I think we need to fine tune exactly how we analyze this to make sure we are accounting for the issues you're seeing.

Thanks!

Caroline Cheeves (Bojarski), PE
Traffic Engineering Project Manager
D 919 987 1281 | T 919 872 5115 | C 814 323 0552



From: Jonathan Jacobs <jjacobs@townofclaytonnc.org>
Sent: Thursday, April 28, 2022 1:57 PM
To: Lawhorn, Samuel C <sclawhorn@ncdot.gov>; Caroline Cheeves <ccheeves@rameykemp.com>; Ty Parham <tparham@rameykemp.com>
Cc: Ben Howell <bhowell@townofclaytonnc.org>; Joshua Baird <jbaird@townofclaytonnc.org>; Sorrell, Charles V <csorrell@ncdot.gov>
Subject: Re: [External] Clayton Town Centre

Some people who received this message don't often get email from jjacobs@townofclaytonnc.org. [Learn why this is important](#)

Caroline - I will mirror what Sam has requested including the request related to the school. Specifically for the units on the eastern side, I have similar concerns about the backup/stacking related to the school and ability to reach those homes since there is not a second point of ingress and egress.

Thanks,

Jonathan K. Jacobs, PE

Town of Clayton
Assistant Town Engineer
111 E. Second Street
Clayton, NC 27520
(919) 359-1297
ClaytonNC.org

Sent from my iPad

From: Lawhorn, Samuel C <sclawhorn@ncdot.gov>

Sent: Thursday, April 28, 2022 8:12:44 AM

To: Caroline Cheeves <ccheeves@rameykemp.com>; Ty Parham <tparham@rameykemp.com>; Jonathan Jacobs <jjacobs@townofclaytonnc.org>

Cc: Ben Howell <bhowell@townofclaytonnc.org>; Joshua Baird <jbaird@townofclaytonnc.org>; Sorrell, Charles V <csorrell@ncdot.gov>

Subject: RE: [External] Clayton Town Centre

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Caroline,

For NCDOT's standpoint I would like to see at least the 5min counts in the AM at the US 70/Financial Dr intersection an hour before and after school admission. I have received multiple complaints from parents trying to get into and I am sure they will complain even more once they hear about homes being built in this busy development. My thought is study would verify if additional improvements are needed or not.

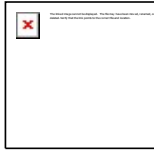
As for the PM school hours I am concerned they may be a backup into Financial Dr due to school traffic so that would be the area I thought may need to be studied. Since this is a Town road I will leave it up to the Town if this is required or not.

Sam Lawhorn, P.E.

District 3 Engineer
Highway Division 4
North Carolina Department of Transportation

919-739-5300
sclawhorn@ncdot.gov

2671 US 70 West
Goldsboro, NC 27530



Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Caroline Cheeves <ccheeves@rameykemp.com>
Sent: Wednesday, April 27, 2022 11:16 AM
To: Lawhorn, Samuel C <sclawhorn@ncdot.gov>; Ty Parham <tparham@rameykemp.com>; jjacobs@townofclaytonnc.org
Cc: bhowell@townofclaytonnc.org; jbaird@townofclaytonnc.org; Sorrell, Charles V <csorrell@ncdot.gov>
Subject: RE: [External] Clayton Town Centre

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Sam,

Are you suggesting that we study 3 peak hours or just extend the PM data collection to 3-6 instead of the typical 4-6? The residential development will not have a high trip generator on the school PM peak hour, but if we apply the development's peak hour trips to the school PM peak hour, we may be overestimating the traffic on the network – as the residential development will not have the same peak hour as the school.

We're happy to collect the extra analysis period, but want some clarity on how we should handle the analysis itself in the TIA without being over conservative.

Caroline Cheeves (Bojarski), PE
Traffic Engineering Project Manager

D 919 987 1281 | T 919 872 5115 | C 814 323 0552



From: Lawhorn, Samuel C <sclawhorn@ncdot.gov>
Sent: Wednesday, April 27, 2022 10:13 AM
To: Ty Parham <tparham@rameykemp.com>; jjacobs@townofclaytonnc.org
Cc: Caroline Cheeves <ccheeves@rameykemp.com>; bhowell@townofclaytonnc.org; jbaird@townofclaytonnc.org; Sorrell, Charles V <csorrell@ncdot.gov>
Subject: RE: [External] Clayton Town Centre

Please see the following comments:

- Would recommend including the PM school Peak hours to verify backup does not prevent access to these homes in emergency situations.
- Would recommend 5 min counts during the AM and PM peak hours during school hours.

Sam Lawhorn, P.E.
District 3 Engineer
Highway Division 4
North Carolina Department of Transportation

919-739-5300
sclawhorn@ncdot.gov

2671 US 70 West
Goldsboro, NC 27530



Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Ty Parham <tparham@rameykemp.com>
Sent: Tuesday, April 26, 2022 4:53 PM
To: jjacobs@townofclaytonnc.org; Lawhorn, Samuel C <sclawhorn@ncdot.gov>
Cc: Caroline Cheeves <ccheeves@rameykemp.com>; bhowell@townofclaytonnc.org; jbaird@townofclaytonnc.org; Sorrell, Charles V <csorrell@ncdot.gov>
Subject: [External] Clayton Town Centre

CAUTION: External email. Do not click links or open attachments unless you verify. Send all suspicious email as an attachment to [Report Spam](#).

Good Afternoon,

I hope you have had a great week so far. Please see the attached scope for the Clayton Town Centre development in Clayton. Please let me know if you have any questions or comments.

Thanks,

Ty Parham, EI
Traffic Engineering Associate
O 919 872 5115 Ext. 1032 | D 919 872 8399



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Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

APPENDIX B

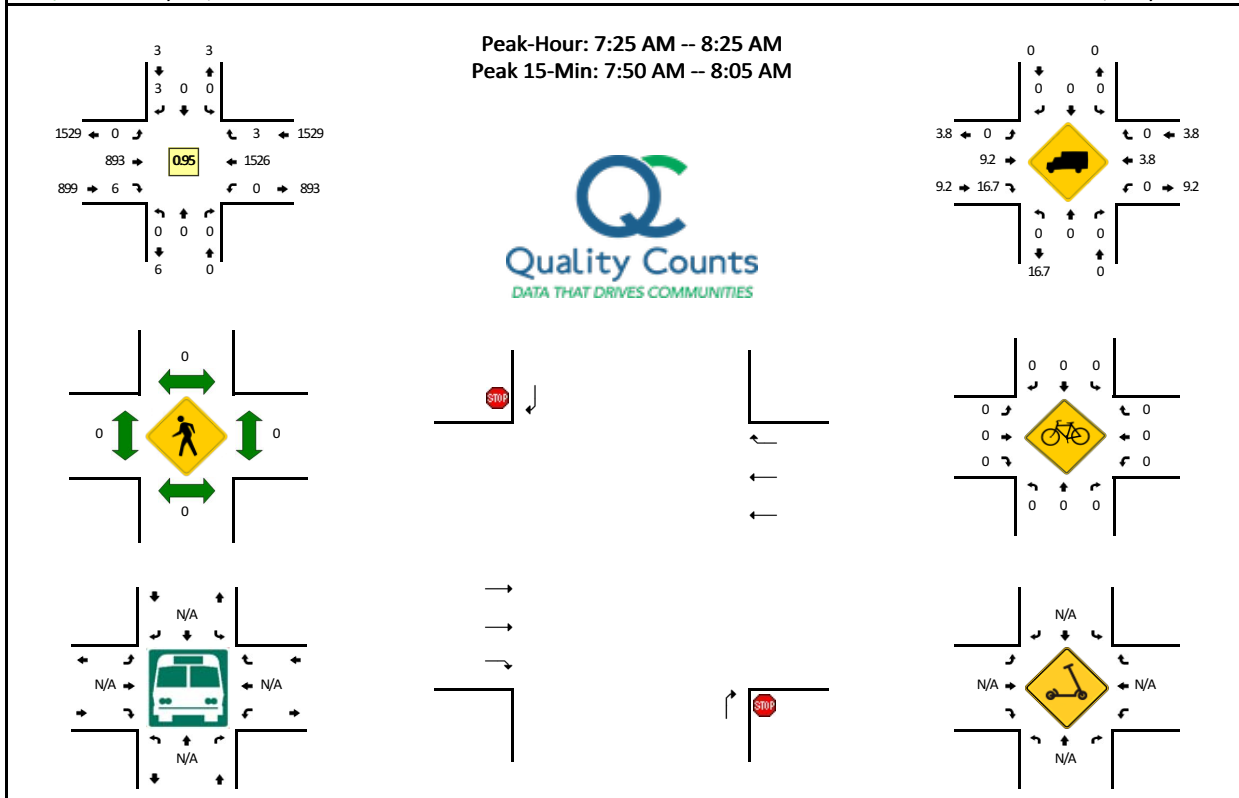
TRAFFIC COUNTS

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: West Dwy -- US 70
CITY/STATE: Clayton, NC

QC JOB #: 15803805
DATE: Tue, May 10 2022



5-Min Count Period Beginning At	West Dwy (Northbound)				West Dwy (Southbound)				US 70 (Eastbound)				US 70 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	46	0	0	0	141	0	0	187	
7:05 AM	0	0	0	0	0	0	0	0	0	77	1	0	0	103	0	0	181	
7:10 AM	0	0	0	0	0	0	0	0	0	49	1	0	0	150	0	0	200	
7:15 AM	0	0	0	0	0	0	0	0	0	70	0	0	0	127	0	0	197	
7:20 AM	0	0	0	0	0	0	0	0	0	48	0	0	0	90	1	0	139	
7:25 AM	0	0	0	0	0	0	0	0	0	74	0	0	0	157	0	0	231	
7:30 AM	0	0	0	0	0	0	0	0	0	90	0	0	0	119	0	0	209	
7:35 AM	0	0	0	0	0	0	1	0	0	65	1	0	0	120	0	0	187	
7:40 AM	0	0	0	0	0	0	0	0	0	89	0	0	0	120	0	0	209	
7:45 AM	0	0	0	0	0	0	0	0	0	79	1	0	0	106	0	0	186	
7:50 AM	0	0	0	0	0	0	0	0	0	62	2	0	0	96	0	0	160	
7:55 AM	0	0	0	0	0	0	1	0	0	101	0	0	0	161	1	0	264	2350
8:00 AM	0	0	0	0	0	0	0	0	0	71	0	0	0	142	0	0	213	2376
8:05 AM	0	0	0	0	0	0	0	0	0	56	0	0	0	94	0	0	150	2345
8:10 AM	0	0	0	0	0	0	1	0	0	77	0	0	0	148	2	0	228	2373
8:15 AM	0	0	0	0	0	0	0	0	0	41	1	0	0	137	0	0	179	2355
8:20 AM	0	0	0	0	0	0	0	0	0	88	1	0	0	126	0	0	215	2431
8:25 AM	0	0	0	0	0	0	0	0	0	52	4	0	0	119	1	0	176	2376
8:30 AM	0	0	0	0	0	0	0	0	0	65	1	0	0	113	0	0	179	2346
8:35 AM	0	0	0	0	0	0	0	0	0	52	1	0	0	87	0	0	140	2299
8:40 AM	0	0	0	0	0	0	1	0	0	62	2	0	0	126	0	0	191	2281
8:45 AM	0	0	0	0	0	0	0	0	0	45	2	0	0	116	1	0	164	2259
8:50 AM	0	0	1	0	0	0	1	0	0	52	0	0	0	80	0	0	134	2233
8:55 AM	0	0	0	0	0	0	0	0	0	79	0	0	0	108	0	0	187	2156
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	0	0	4	0	0	936	8	0	0	1596	4	0	2548	
Heavy Trucks	0	0	0	0	0	0	0	0	0	92	0	0	0	44	0	0	136	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters																		

Comments:

Report generated on 5/12/2022 12:35 PM

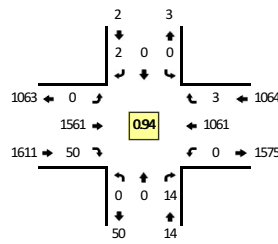
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

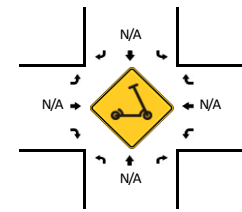
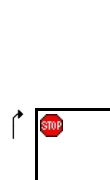
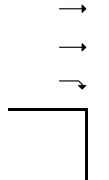
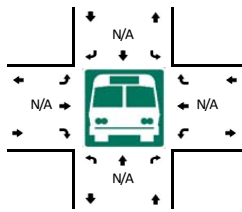
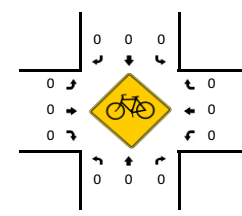
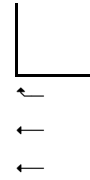
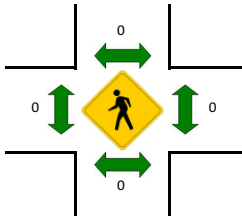
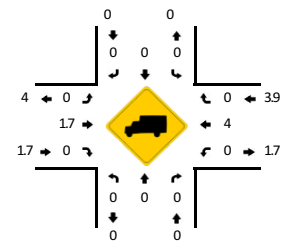
Method for determining peak hour: Total Entering Volume

LOCATION: West Dwy -- US 70
CITY/STATE: Clayton, NC

QC JOB #: 15803806
DATE: Tue, May 10 2022



Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:20 PM -- 5:35 PM



5-Min Count Period Beginning At	West Dwy (Northbound)				West Dwy (Southbound)				US 70 (Eastbound)				US 70 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	0	0	0	0	0	70	4	0	0	68	0	0	142	
2:05 PM	0	0	2	0	0	0	0	0	0	100	3	0	0	61	0	0	166	
2:10 PM	0	0	1	0	0	0	0	0	0	67	0	0	0	89	0	0	157	
2:15 PM	0	0	1	0	0	0	0	0	0	107	4	0	0	70	0	0	182	
2:20 PM	0	0	0	0	0	0	2	0	0	87	1	0	0	60	1	0	151	
2:25 PM	0	0	1	0	0	0	0	0	0	105	4	0	0	91	0	0	201	
2:30 PM	0	0	1	0	0	0	0	0	0	98	1	0	0	80	1	0	181	
2:35 PM	0	0	1	0	0	0	1	0	0	94	5	0	0	74	0	0	175	
2:40 PM	0	0	1	0	0	0	0	0	0	107	2	0	0	83	0	0	193	
2:45 PM	0	0	0	0	0	0	0	0	0	103	1	0	0	78	0	0	182	
2:50 PM	0	0	1	0	0	0	0	0	0	112	3	0	0	87	1	0	204	
2:55 PM	0	0	0	0	0	0	0	0	0	124	0	0	0	53	1	0	178	2112
3:00 PM	0	0	1	0	0	0	0	0	0	114	6	0	0	95	0	0	216	2186
3:05 PM	0	0	2	0	0	0	1	0	0	117	3	0	0	68	0	0	191	2211
3:10 PM	0	0	0	0	0	0	0	0	0	131	4	0	0	66	0	0	201	2255
3:15 PM	0	0	1	0	0	0	0	0	0	133	3	0	0	69	0	0	206	2279
3:20 PM	0	0	1	0	0	0	0	0	0	114	0	0	0	81	0	0	196	2324
3:25 PM	0	0	3	0	0	0	0	0	0	140	4	0	0	90	0	0	237	2360
3:30 PM	0	0	6	0	0	0	0	0	0	111	5	0	0	96	0	0	218	2397
3:35 PM	0	0	4	0	0	0	0	0	0	107	6	0	0	86	0	0	203	2425
3:40 PM	0	0	4	0	0	0	0	0	0	138	4	0	0	89	1	0	236	2468
3:45 PM	0	0	2	0	0	0	0	0	0	93	5	0	0	95	2	0	197	2483
3:50 PM	0	0	8	0	0	0	0	0	0	90	4	0	0	79	0	0	181	2460
3:55 PM	0	0	2	0	0	0	0	0	0	146	1	0	0	91	0	0	240	2522
4:00 PM	0	0	1	0	0	0	1	0	0	112	4	0	0	72	0	0	190	2496
4:05 PM	0	0	3	0	0	0	1	0	0	51	1	0	0	90	1	0	147	2452
4:10 PM	0	0	3	0	0	0	0	0	0	113	7	0	0	73	1	0	197	2448
4:15 PM	0	0	1	0	0	0	0	0	0	110	2	0	0	106	1	0	220	2462
4:20 PM	0	0	1	0	0	0	0	0	0	88	1	0	0	74	0	0	164	2430
4:25 PM	0	0	0	0	0	0	0	0	0	123	4	0	0	74	2	0	203	2396
4:30 PM	0	0	2	0	0	0	1	0	0	130	3	0	0	122	1	0	259	2437
4:35 PM	0	0	2	0	0	0	0	0	0	110	2	0	0	65	1	0	180	2414
4:40 PM	0	0	0	0	0	0	0	0	0	154	11	0	0	62	0	0	227	2405
4:45 PM	0	0	2	0	0	0	0	0	0	117	4	0	0	112	1	0	236	2444
4:50 PM	0	0	2	0	0	0	1	0	0	147	3	0	0	74	0	0	227	2490
4:55 PM	0	0	0	0	0	0	0	0	0	106	4	0	0	51	0	0	161	2411
5:00 PM	0	0	0	0	0	0	1	0	0	139	2	0	0	117	0	0	259	2480
5:05 PM	0	0	2	0	0	0	0	0	0	121	4	0	0	103	0	0	230	2563

5-Min Count Period Beginning At	West Dwy (Northbound)				West Dwy (Southbound)				US 70 (Eastbound)				US 70 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
5:10 PM	0	0	1	0	0	0	0	0	0	118	2	0	0	66	1	0	188	2554
5:15 PM	0	0	2	0	0	0	0	0	0	127	5	0	0	84	0	0	218	2552
5:20 PM	0	0	0	0	0	0	0	0	0	149	4	0	0	111	0	0	264	2652
5:25 PM	0	0	3	0	0	0	0	0	0	134	2	0	0	94	0	0	233	2682
5:30 PM	0	0	1	0	0	0	0	0	0	135	5	0	0	79	1	0	221	2644
5:35 PM	0	0	1	0	0	0	0	0	0	114	4	0	0	108	0	0	227	2691
5:40 PM	0	0	2	0	0	0	0	0	0	130	4	0	0	77	0	0	213	2677
5:45 PM	0	0	0	0	0	0	0	0	0	123	3	0	0	81	1	0	208	2649
5:50 PM	0	0	1	0	0	0	0	0	0	127	6	0	0	98	2	0	234	2656
5:55 PM	0	0	0	0	0	0	0	0	0	105	5	0	0	71	0	0	181	2676
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	16	0	0	0	0	0	0	1672	44	0	0	1136	4	0	2872	
Heavy Trucks	0	0	0		0	0	0		0	36	0		0	52	0		88	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		
Comments:																		

Report generated on 5/12/2022 12:35 PM

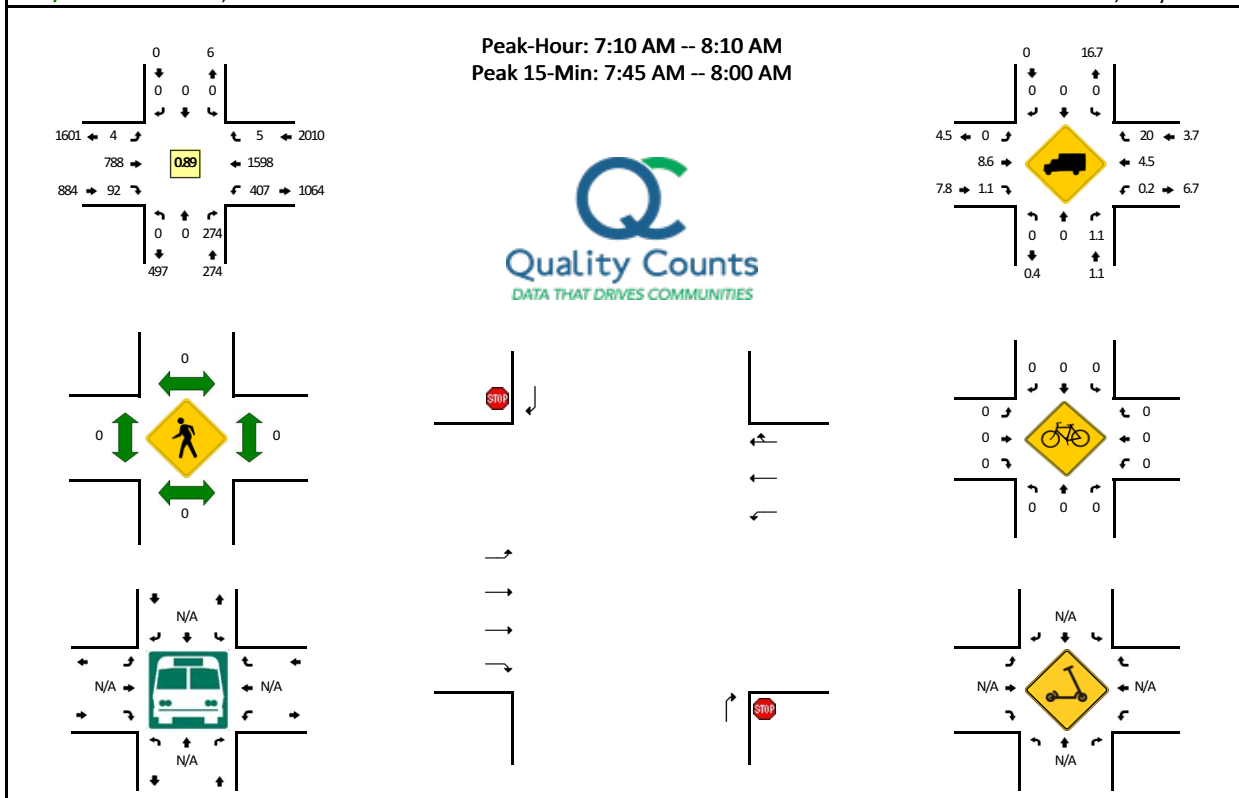
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: East Dwy -- US 70
CITY/STATE: Johnston, NC

QC JOB #: 15803807
DATE: Wed, May 4 2022



5-Min Count Period Beginning At	East Dwy (Northbound)				East Dwy (Southbound)				US 70 (Eastbound)				US 70 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	7	0	0	0	0	0	0	45	1	0	16	155	0	1	225	
7:05 AM	0	0	7	0	0	0	0	0	0	62	2	1	12	125	0	0	209	
7:10 AM	0	0	5	0	0	0	0	0	0	39	1	1	15	168	0	0	229	
7:15 AM	0	0	10	0	0	0	0	0	0	70	6	1	22	147	0	0	256	
7:20 AM	0	0	1	0	0	0	0	0	0	60	4	1	25	143	0	0	234	
7:25 AM	0	0	1	0	0	0	0	0	0	71	8	0	34	152	0	0	266	
7:30 AM	0	0	5	0	0	0	0	0	0	56	9	0	40	140	1	0	251	
7:35 AM	0	0	24	0	0	0	0	0	0	59	9	0	34	115	1	0	242	
7:40 AM	0	0	43	0	0	0	0	0	0	60	12	0	44	132	0	0	291	
7:45 AM	0	0	46	0	0	0	0	0	0	64	11	0	53	106	0	1	281	
7:50 AM	0	0	30	0	0	0	0	0	0	98	12	0	45	99	0	0	284	
7:55 AM	0	0	45	0	0	0	0	0	0	56	13	0	62	145	0	0	321	3089
8:00 AM	0	0	39	0	0	0	0	0	1	70	5	0	16	137	2	1	271	3135
8:05 AM	0	0	25	0	0	0	0	0	0	85	2	0	15	114	1	0	242	3168
8:10 AM	0	0	8	0	0	0	0	0	0	62	3	0	9	128	1	0	211	3150
8:15 AM	0	0	6	0	0	0	0	0	0	38	1	0	9	147	0	0	201	3095
8:20 AM	0	0	7	0	0	0	0	0	0	69	0	0	10	132	0	0	218	3079
8:25 AM	0	0	5	0	0	0	0	0	0	77	1	0	4	135	0	0	222	3035
8:30 AM	0	0	11	0	0	0	0	0	0	59	1	0	8	107	1	1	188	2972
8:35 AM	0	0	4	0	0	0	0	0	0	65	2	0	14	88	1	0	174	2904
8:40 AM	0	0	8	0	0	0	0	0	0	64	1	0	19	121	0	0	213	2826
8:45 AM	0	0	9	0	0	0	0	0	0	75	0	0	16	113	0	0	213	2758
8:50 AM	0	0	7	0	0	0	0	0	0	52	0	0	19	93	0	0	171	2645
8:55 AM	0	0	4	0	0	0	0	0	0	64	1	0	18	117	1	0	205	2529
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	484	0	0	0	0	0	0	872	144	0	640	1400	0	4	3544	
Heavy Trucks	0	0	8	0	0	0	0	0	0	72	4	0	4	104	0	0	192	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments:

Report generated on 5/12/2022 12:35 PM

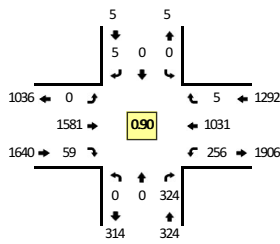
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

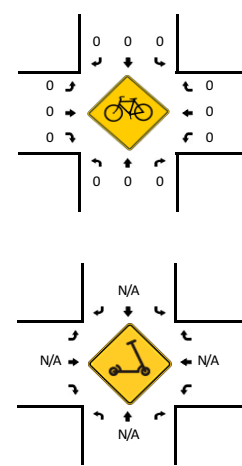
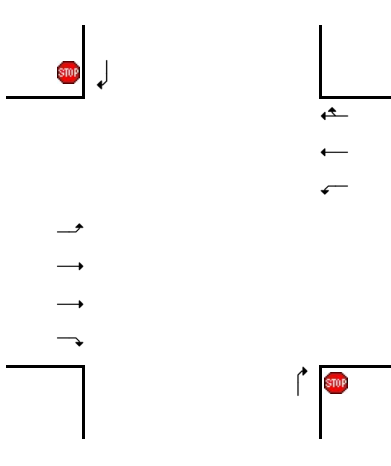
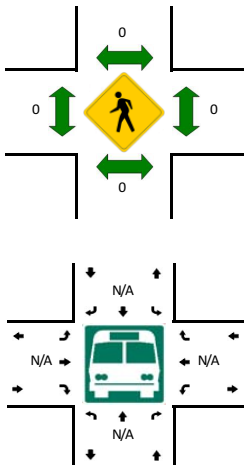
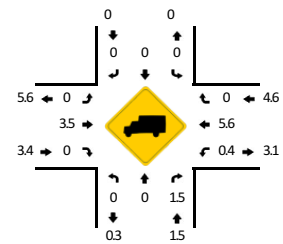
Method for determining peak hour: Total Entering Volume

LOCATION: East Dwy -- US 70
CITY/STATE: Johnston, NC

QC JOB #: 15803808
DATE: Wed, May 4 2022



Peak-Hour: 3:15 PM -- 4:15 PM
Peak 15-Min: 3:25 PM -- 3:40 PM



5-Min Count Period Beginning At	East Dwy (Northbound)				East Dwy (Southbound)				US 70 (Eastbound)				US 70 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	21	0	0	0	0	0	0	92	4	0	19	67	0	0	203	
2:05 PM	0	0	22	0	0	0	0	0	0	105	1	0	14	68	0	0	210	
2:10 PM	0	0	14	0	0	0	0	0	0	104	2	0	25	85	0	0	230	
2:15 PM	0	0	31	0	0	0	0	0	0	98	0	1	23	80	0	0	233	
2:20 PM	0	0	16	0	0	0	0	0	0	98	2	1	20	93	0	0	230	
2:25 PM	0	0	26	0	0	0	0	0	0	108	5	0	16	103	0	1	259	
2:30 PM	0	0	29	0	0	0	0	0	0	80	4	0	18	70	1	0	202	
2:35 PM	0	0	18	0	0	0	0	0	0	103	9	0	23	73	0	0	226	
2:40 PM	0	0	18	0	0	0	0	0	0	73	3	0	18	62	0	0	174	
2:45 PM	0	0	19	0	0	0	1	0	0	114	2	0	30	96	0	1	263	
2:50 PM	0	0	18	0	0	0	2	0	0	113	7	0	24	78	1	0	243	
2:55 PM	0	0	23	0	0	0	0	0	0	111	6	1	23	71	0	0	235	2708
3:00 PM	0	0	19	0	0	0	2	0	0	103	5	1	22	68	0	0	220	2725
3:05 PM	0	0	22	0	0	0	1	0	0	142	6	0	22	82	0	0	275	2790
3:10 PM	0	0	21	0	0	0	0	0	0	111	6	0	30	62	1	0	231	2791
3:15 PM	0	0	22	0	0	0	3	0	0	130	8	0	27	72	0	0	262	2820
3:20 PM	0	0	45	0	0	0	1	0	0	86	11	0	40	81	1	0	265	2855
3:25 PM	0	0	25	0	0	0	0	0	0	146	5	0	22	111	0	0	309	2905
3:30 PM	0	0	32	0	0	0	0	0	0	133	8	0	23	84	1	1	282	2985
3:35 PM	0	0	19	0	0	0	1	0	0	168	8	0	19	97	1	0	313	3072
3:40 PM	0	0	23	0	0	0	0	0	0	126	1	0	21	78	0	0	249	3147
3:45 PM	0	0	26	0	0	0	0	0	0	173	5	0	17	96	0	0	317	3201
3:50 PM	0	0	30	0	0	0	0	0	0	111	2	0	21	75	0	0	239	3197
3:55 PM	0	0	21	0	0	0	0	0	0	144	3	0	14	107	1	0	290	3252
4:00 PM	0	0	23	0	0	0	0	0	0	122	2	0	17	57	0	0	221	3253
4:05 PM	0	0	27	0	0	0	0	0	0	117	4	0	19	83	1	0	251	3229
4:10 PM	0	0	31	0	0	0	0	0	0	125	2	0	15	90	0	0	263	3261
4:15 PM	0	0	23	0	0	0	0	0	0	114	2	0	17	94	0	0	250	3249
4:20 PM	0	0	12	0	0	0	0	0	0	127	1	0	15	64	0	1	220	3204
4:25 PM	0	0	24	0	0	0	0	0	0	83	2	0	16	83	0	0	208	3103
4:30 PM	0	0	25	0	0	0	0	0	0	116	0	0	16	71	0	0	228	3049
4:35 PM	0	0	13	0	0	0	0	0	0	137	1	0	13	86	0	0	250	2986
4:40 PM	0	0	14	0	0	0	0	0	0	138	3	0	10	65	1	0	231	2968
4:45 PM	0	0	26	0	0	0	0	0	0	93	2	0	23	97	1	1	243	2894
4:50 PM	0	0	19	0	0	0	0	0	0	155	3	0	13	89	0	0	279	2934
4:55 PM	0	0	29	0	0	0	0	0	0	126	1	1	16	83	0	0	256	2900
5:00 PM	0	0	16	0	0	0	0	0	0	108	1	0	17	87	0	0	229	2908
5:05 PM	0	0	17	0	0	0	0	0	0	144	3	0	15	102	0	0	281	2938

5-Min Count Period Beginning At	East Dwy (Northbound)				East Dwy (Southbound)				US 70 (Eastbound)				US 70 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
5:10 PM	0	0	17	0	0	0	0	0	0	150	1	0	16	82	0	0	266	2941
5:15 PM	0	0	26	0	0	0	0	0	0	115	2	0	14	105	1	1	264	2955
5:20 PM	0	0	31	0	0	0	0	0	0	129	3	0	16	79	0	1	259	2994
5:25 PM	0	0	18	0	0	0	0	0	1	144	5	0	18	84	0	0	270	3056
5:30 PM	0	0	16	0	0	0	0	0	0	116	2	0	9	94	0	2	239	3067
5:35 PM	0	0	24	0	0	0	0	0	0	133	0	0	19	108	0	0	284	3101
5:40 PM	0	0	18	0	0	0	0	0	0	161	1	0	14	76	0	1	271	3141
5:45 PM	0	0	20	0	0	0	0	0	0	115	2	0	11	87	0	0	235	3133
5:50 PM	0	0	21	0	0	0	0	0	0	110	3	0	23	115	0	0	272	3126
5:55 PM	0	0	22	0	0	0	0	0	0	137	1	1	21	84	0	0	266	3136
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	304	0	0	0	4	0	0	1788	84	0	256	1168	8	4	3616	
Heavy Trucks	0	0	0		0	0	0		0	68	0		0	60	0		128	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		
<i>Comments:</i>																		

Report generated on 5/12/2022 12:35 PM

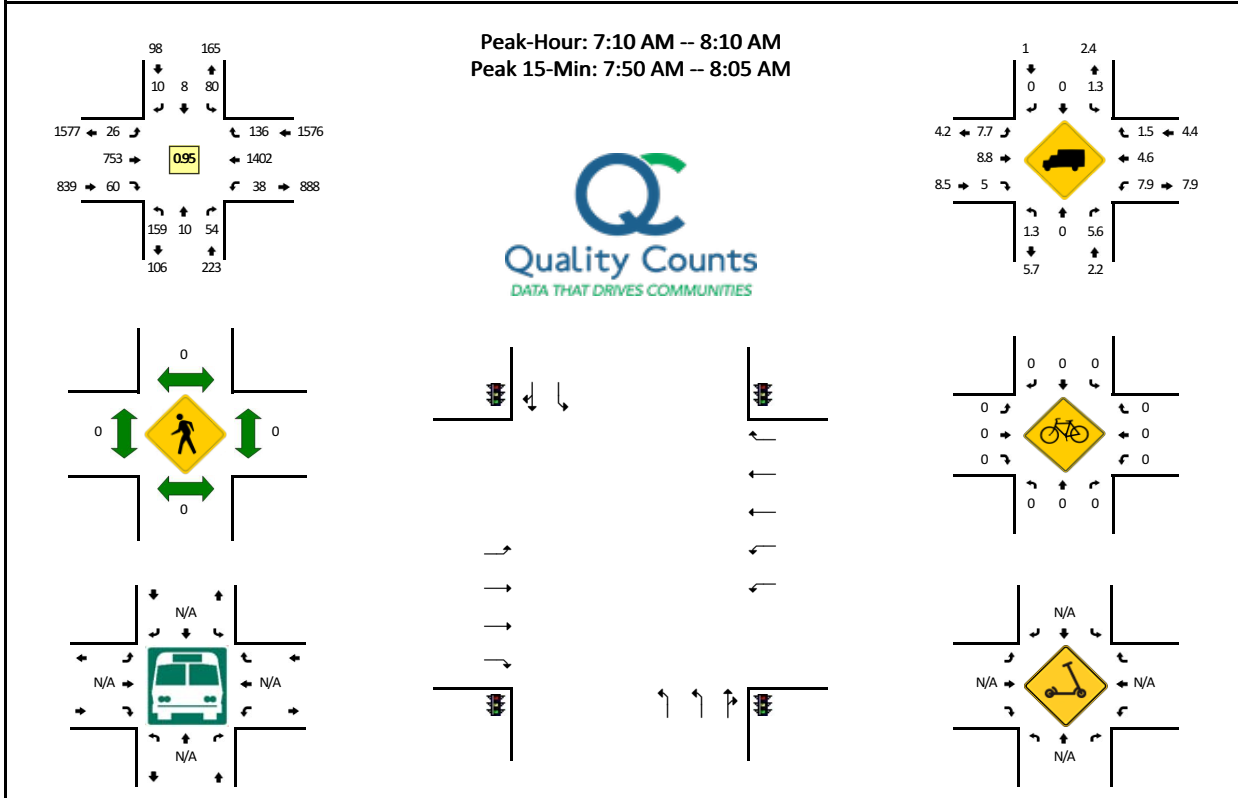
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Middle Dwy -- US 70
CITY/STATE: Johnston, NC

QC JOB #: 15803811
DATE: Wed, May 4 2022



5-Min Count Period Beginning At	Middle Dwy (Northbound)				Middle Dwy (Southbound)				US 70 (Eastbound)				US 70 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	4	1	3	0	11	0	4	0	0	33	2	1	2	125	12	0	198	
7:05 AM	6	0	5	0	5	0	0	0	1	56	3	0	4	131	5	0	216	
7:10 AM	3	0	2	0	3	0	2	0	2	44	0	0	0	148	18	0	222	
7:15 AM	2	0	4	0	8	0	2	0	1	57	1	0	3	119	14	0	211	
7:20 AM	8	1	0	0	5	0	1	0	0	58	3	0	0	136	15	0	227	
7:25 AM	0	0	4	0	2	0	1	0	0	74	7	0	1	145	8	0	242	
7:30 AM	6	0	3	0	6	0	0	0	1	54	7	1	6	121	7	0	212	
7:35 AM	13	0	3	0	10	3	1	0	3	58	10	2	1	103	5	0	212	
7:40 AM	18	0	4	0	4	0	0	0	1	76	4	0	5	120	11	0	243	
7:45 AM	31	3	1	0	6	1	0	0	4	72	3	0	3	85	6	0	215	
7:50 AM	30	2	12	0	9	3	0	0	3	76	10	1	3	82	11	0	242	
7:55 AM	9	1	6	1	4	0	1	0	2	55	4	2	7	140	6	1	239	2679
8:00 AM	23	1	13	0	13	0	0	0	0	51	8	0	6	100	22	0	237	2718
8:05 AM	15	2	2	0	10	1	2	0	2	78	3	1	2	103	13	0	234	2736
8:10 AM	6	1	4	0	4	1	3	0	2	56	3	1	4	115	12	0	212	2726
8:15 AM	10	1	2	0	5	1	3	0	4	34	7	1	4	119	11	0	202	2717
8:20 AM	13	0	5	0	6	2	0	0	7	60	7	2	5	118	13	0	238	2728
8:25 AM	5	0	5	0	7	0	4	0	1	71	6	0	1	128	12	0	240	2726
8:30 AM	5	0	3	0	11	0	4	0	3	45	6	3	5	81	16	0	182	2696
8:35 AM	9	0	4	0	7	1	4	0	1	52	3	1	1	78	5	0	166	2650
8:40 AM	2	0	2	0	6	0	0	0	1	58	8	0	3	112	8	0	200	2607
8:45 AM	3	0	3	0	9	1	5	0	5	69	4	1	8	81	14	0	203	2595
8:50 AM	4	0	3	0	7	1	2	0	3	38	5	0	8	92	9	0	172	2525
8:55 AM	3	0	4	0	6	0	0	0	2	56	8	0	5	95	10	0	189	2475
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	248	16	124	4	104	12	4	0	20	728	88	12	64	1288	156	4	2872	
Heavy Trucks	4	0	0		0	0	0		0	80	4		4	88	4		184	
Buses																		
Pedestrians	0	0			0				0				0				0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

Report generated on 5/12/2022 12:35 PM

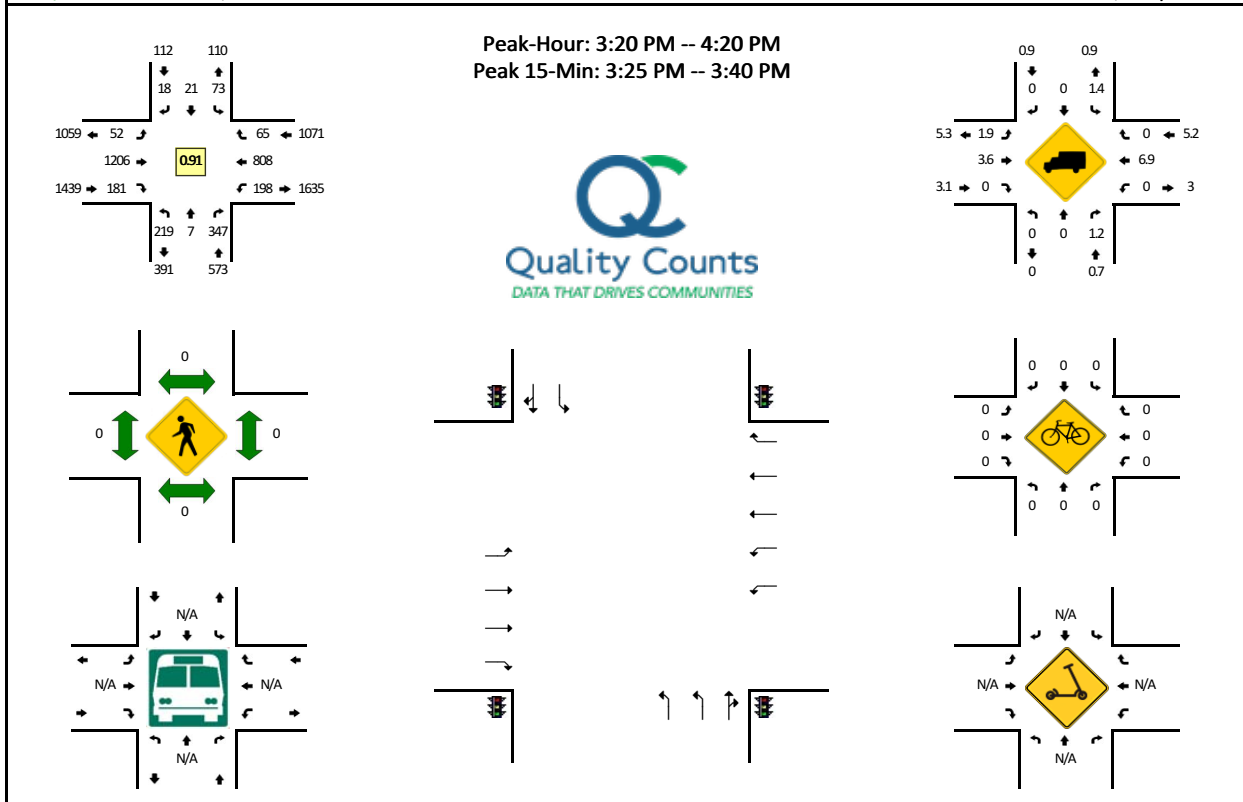
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Middle Dwy -- US 70
CITY/STATE: Johnston, NC

QC JOB #: 15803812
DATE: Wed, May 4 2022



5-Min Count Period Beginning At	Middle Dwy (Northbound)				Middle Dwy (Southbound)				US 70 (Eastbound)				US 70 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	9	2	20	0	12	0	0	0	2	67	13	0	10	58	4	0	197	
2:05 PM	14	1	19	0	9	1	0	0	4	73	16	0	4	53	3	0	197	
2:10 PM	7	1	16	0	6	2	1	0	4	81	11	0	11	77	10	0	227	
2:15 PM	12	0	19	0	12	3	1	0	5	74	10	1	12	69	7	1	226	
2:20 PM	10	2	11	0	8	2	2	0	4	77	14	0	12	66	4	0	212	
2:25 PM	4	4	16	0	6	0	3	0	2	91	19	0	11	88	11	0	255	
2:30 PM	10	1	20	0	10	4	3	0	6	59	12	0	12	52	5	0	194	
2:35 PM	10	1	9	0	5	2	0	0	2	91	15	1	2	57	9	0	204	
2:40 PM	13	3	14	0	17	2	3	0	1	58	11	1	14	49	5	1	192	
2:45 PM	6	0	5	0	8	0	0	0	5	88	17	0	9	77	12	0	227	
2:50 PM	15	2	16	0	16	2	0	0	6	90	9	2	14	56	6	0	234	
2:55 PM	5	0	8	0	5	2	3	0	2	98	13	0	6	65	5	0	212	2577
3:00 PM	13	2	21	0	14	1	3	0	5	88	18	0	9	55	3	0	232	2612
3:05 PM	9	1	15	0	8	2	2	0	1	118	16	0	4	83	3	1	263	2678
3:10 PM	14	1	25	0	7	3	0	0	7	92	14	2	16	43	2	1	227	2678
3:15 PM	5	1	15	0	3	1	3	0	0	106	10	1	9	64	1	0	219	2671
3:20 PM	34	1	26	0	9	1	6	0	6	77	19	0	19	61	5	1	265	2724
3:25 PM	14	2	26	0	6	2	3	0	2	116	16	0	11	86	8	0	292	2761
3:30 PM	23	0	45	0	6	3	1	0	6	93	19	1	23	56	2	1	279	2846
3:35 PM	19	0	35	0	1	0	1	0	1	131	13	0	16	83	5	0	305	2947
3:40 PM	31	0	45	0	10	1	0	0	4	79	8	0	18	56	4	3	259	3014
3:45 PM	11	2	30	0	1	1	1	0	3	142	13	2	10	72	10	1	299	3086
3:50 PM	20	0	31	0	6	3	2	0	1	85	18	6	21	59	2	1	255	3107
3:55 PM	8	1	18	0	8	1	1	0	4	110	16	0	12	78	5	1	263	3158
4:00 PM	9	1	20	0	4	2	1	0	3	107	21	1	19	48	4	1	241	3167
4:05 PM	16	0	23	0	3	0	0	0	2	94	13	0	9	61	8	0	229	3133
4:10 PM	25	0	29	0	13	4	1	0	5	77	11	1	18	53	3	0	240	3146
4:15 PM	9	0	19	0	6	3	1	0	1	95	14	3	13	95	9	0	268	3195
4:20 PM	4	0	23	0	3	0	0	0	1	104	19	1	7	50	4	0	216	3146
4:25 PM	14	4	16	0	5	4	0	0	1	62	12	1	8	51	7	0	185	3039
4:30 PM	9	0	17	0	2	1	1	0	0	108	13	0	13	76	2	1	243	3003
4:35 PM	9	1	20	0	2	0	2	0	2	105	21	0	12	69	5	0	248	2946
4:40 PM	14	1	26	0	8	0	2	0	3	108	13	2	7	60	3	0	247	2934
4:45 PM	9	3	19	0	2	0	1	0	1	83	8	0	11	79	5	0	221	2856
4:50 PM	9	1	20	0	5	0	4	0	2	119	10	0	7	78	4	0	259	2860
4:55 PM	8	1	12	0	7	2	0	0	4	108	26	1	11	67	6	0	253	2850
5:00 PM	17	1	26	0	10	2	1	0	4	75	16	0	12	71	2	1	238	2847
5:05 PM	9	2	11	0	6	0	2	0	1	140	17	0	11	88	8	1	296	2914

5-Min Count Period Beginning At	Middle Dwy (Northbound)				Middle Dwy (Southbound)				US 70 (Eastbound)				US 70 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
5:10 PM	4	0	23	0	5	0	2	0	4	118	9	0	5	68	4	0	242	2916
5:15 PM	14	1	26	0	8	2	0	0	5	79	20	0	12	82	5	0	254	2902
5:20 PM	9	0	15	0	3	1	0	0	5	121	10	0	10	73	8	0	255	2941
5:25 PM	8	0	11	0	4	0	1	0	1	125	13	1	1	70	6	2	243	2999
5:30 PM	18	1	11	0	15	0	3	0	6	96	20	1	13	68	8	0	260	3016
5:35 PM	6	0	12	0	5	5	3	0	1	135	11	0	14	97	5	2	296	3064
5:40 PM	9	0	20	0	7	0	0	0	1	125	15	0	4	62	9	0	252	3069
5:45 PM	17	2	12	0	4	4	0	0	5	95	18	1	6	66	6	0	236	3084
5:50 PM	5	2	27	0	6	1	3	0	1	80	14	0	28	90	5	1	263	3088
5:55 PM	3	0	18	0	2	1	1	0	1	122	28	0	9	66	10	0	261	3096
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	224	8	424	0	52	20	20	0	36	1360	192	4	200	900	60	4	3504	
Heavy Trucks	0	0	4		0	0	0		0	44	0		0	68	0		116	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

Report generated on 5/12/2022 12:35 PM

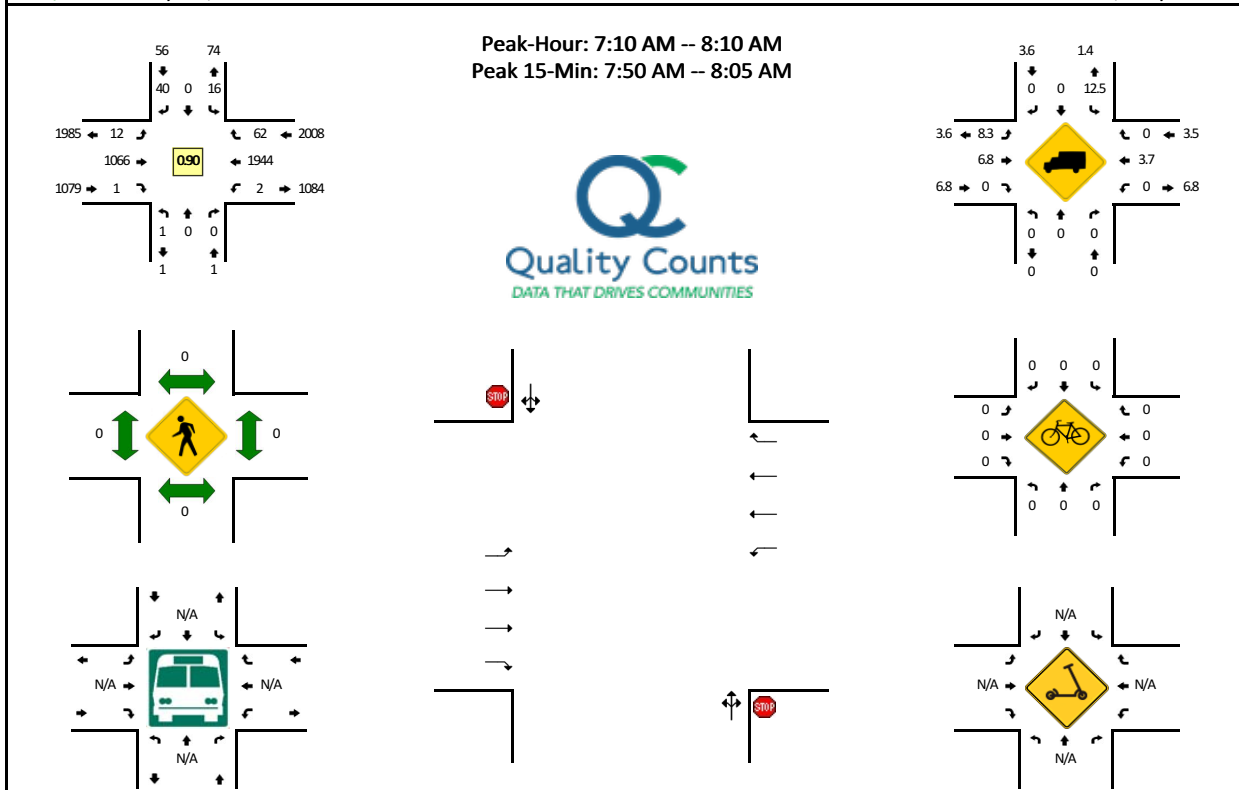
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Gateway Dr -- US 70
CITY/STATE: Clayton, NC

QC JOB #: 15803809
DATE: Wed, May 4 2022



5-Min Count Period Beginning At	Gateway Dr (Northbound)				Gateway Dr (Southbound)				US 70 (Eastbound)				US 70 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	2	0	1	0	1	55	0	0	0	184	6	0	249	
7:05 AM	0	0	0	0	1	0	5	0	1	64	0	0	0	128	5	0	204	
7:10 AM	0	0	0	0	1	0	2	0	1	43	0	0	0	167	4	0	218	
7:15 AM	0	0	0	0	1	0	1	0	0	85	0	0	0	186	3	0	276	
7:20 AM	0	0	0	0	0	0	2	0	0	61	0	0	0	153	13	0	229	
7:25 AM	0	0	0	0	2	0	8	0	0	70	0	0	0	166	5	0	251	
7:30 AM	0	0	0	0	1	0	3	0	0	59	1	0	0	194	7	0	265	
7:35 AM	1	0	0	0	2	0	3	0	1	83	0	0	0	137	3	1	231	
7:40 AM	0	0	0	0	1	0	1	0	0	102	0	0	0	164	6	0	274	
7:45 AM	0	0	0	0	2	0	3	0	1	98	0	0	0	170	7	0	281	
7:50 AM	0	0	0	0	0	0	9	0	4	134	0	0	0	142	5	0	294	
7:55 AM	0	0	0	0	2	0	4	0	2	111	0	0	0	172	0	0	291	3063
8:00 AM	0	0	0	0	0	0	2	0	2	106	0	0	0	170	4	1	285	3099
8:05 AM	0	0	0	0	4	0	2	0	1	114	0	0	0	123	5	0	249	3144
8:10 AM	0	0	0	0	2	0	2	0	5	66	0	0	0	123	6	0	204	3130
8:15 AM	0	0	0	0	1	0	1	0	0	42	0	1	0	180	8	0	233	3087
8:20 AM	0	0	0	0	7	0	5	0	3	76	0	0	0	123	10	0	224	3082
8:25 AM	0	0	0	0	7	0	0	0	1	75	0	0	0	133	5	0	221	3052
8:30 AM	0	0	0	0	0	0	1	0	4	75	0	0	0	121	2	0	203	2990
8:35 AM	0	0	0	0	2	0	4	0	0	66	1	0	0	102	5	0	180	2939
8:40 AM	0	0	1	0	1	0	1	0	3	72	0	0	0	135	4	0	217	2882
8:45 AM	0	0	0	0	1	0	3	0	1	68	0	0	0	138	6	0	217	2818
8:50 AM	0	0	0	0	2	0	3	0	1	74	0	0	1	97	6	0	184	2708
8:55 AM	0	0	0	0	6	0	0	0	3	67	0	0	0	135	3	0	214	2631
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	8	0	60	0	32	1404	0	0	0	1936	36	4	3480	
Heavy Trucks	0	0	0	0	4	0	0	0	4	84	0	0	0	104	0	0	196	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scoters																		

Comments:

Report generated on 5/12/2022 12:35 PM

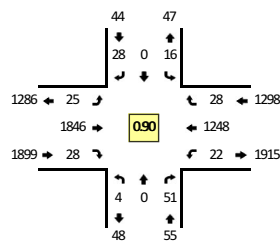
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

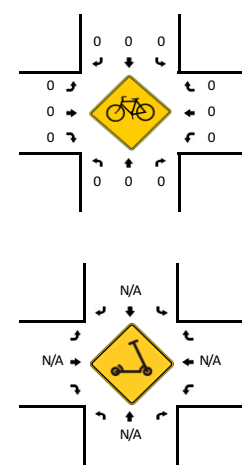
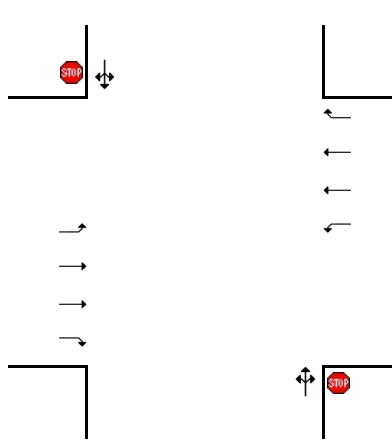
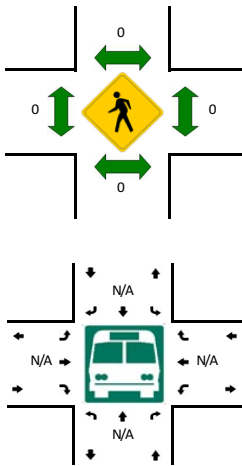
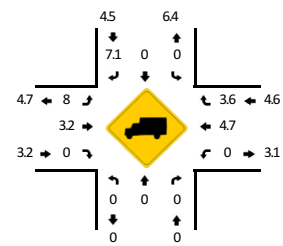
Method for determining peak hour: Total Entering Volume

LOCATION: Gateway Dr -- US 70
CITY/STATE: Clayton, NC

QC JOB #: 15803810
DATE: Wed, May 4 2022



Peak-Hour: 3:15 PM -- 4:15 PM
Peak 15-Min: 3:25 PM -- 3:40 PM



5-Min Count Period Beginning At	Gateway Dr (Northbound)				Gateway Dr (Southbound)				US 70 (Eastbound)				US 70 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	1	0	2	0	1	0	0	118	2	0	0	95	1	0	220	
2:05 PM	0	0	3	0	1	0	0	0	0	125	1	0	2	83	0	0	215	
2:10 PM	2	0	0	0	2	0	0	0	1	106	2	0	0	106	3	0	222	
2:15 PM	0	0	2	0	2	0	1	0	3	129	3	0	0	115	0	0	255	
2:20 PM	1	0	5	0	2	0	0	0	0	113	2	0	4	98	1	0	226	
2:25 PM	2	0	2	0	1	0	1	0	0	125	3	0	1	122	1	0	258	
2:30 PM	0	0	2	0	1	0	2	0	2	114	1	1	0	82	1	0	206	
2:35 PM	0	0	4	0	1	0	1	0	1	113	2	0	2	91	2	0	217	
2:40 PM	0	0	4	0	0	0	4	0	1	86	3	0	1	93	0	0	192	
2:45 PM	1	0	1	0	1	0	2	0	1	131	2	0	0	111	1	0	251	
2:50 PM	1	0	4	0	2	0	1	0	0	129	2	0	1	103	2	1	246	
2:55 PM	1	0	2	0	0	0	2	0	0	135	1	1	1	88	1	0	232	2740
3:00 PM	1	0	4	0	0	0	1	0	0	111	4	0	2	103	3	0	229	2749
3:05 PM	0	0	1	0	1	0	1	0	3	159	2	0	0	100	0	0	267	2801
3:10 PM	2	0	2	0	0	0	2	0	4	126	2	1	4	85	1	0	229	2808
3:15 PM	0	0	5	0	0	0	1	0	1	149	3	1	0	98	3	0	261	2814
3:20 PM	0	0	2	0	1	0	1	0	5	122	1	2	2	113	4	0	253	2841
3:25 PM	0	0	6	0	2	0	7	0	0	162	2	0	2	143	2	0	326	2909
3:30 PM	0	0	3	0	1	0	3	0	2	166	0	0	2	108	1	0	286	2989
3:35 PM	0	0	4	0	1	0	1	0	3	188	2	0	4	99	3	0	305	3077
3:40 PM	0	0	5	0	2	0	3	0	0	139	2	0	0	112	2	0	265	3150
3:45 PM	0	0	2	0	5	0	0	0	1	194	4	1	0	96	2	0	305	3204
3:50 PM	0	0	4	0	0	0	1	0	0	143	2	0	3	101	0	2	256	3214
3:55 PM	0	0	6	0	1	0	2	0	3	148	3	1	2	106	5	0	277	3259
4:00 PM	2	0	4	0	2	0	2	0	1	154	1	0	1	68	1	0	236	3266
4:05 PM	1	0	2	0	1	0	1	0	2	143	3	1	1	96	1	0	252	3251
4:10 PM	1	0	8	0	0	0	6	0	1	138	5	0	3	108	4	0	274	3296
4:15 PM	3	0	4	0	2	0	5	0	1	135	1	0	0	98	4	0	253	3288
4:20 PM	0	0	2	0	1	0	4	0	2	148	4	0	0	72	4	0	237	3272
4:25 PM	1	0	5	0	3	0	2	0	1	110	2	0	0	101	2	0	227	3173
4:30 PM	0	0	5	0	1	0	2	0	0	123	3	0	1	84	2	0	221	3108
4:35 PM	0	0	2	0	4	0	4	0	2	148	6	0	1	95	2	0	264	3067
4:40 PM	1	0	4	0	3	0	0	0	2	148	3	0	0	80	2	0	243	3045
4:45 PM	2	0	3	0	1	0	0	0	2	115	2	0	0	116	4	0	245	2985
4:50 PM	1	0	0	0	4	0	3	0	4	161	5	0	0	86	3	0	267	2996
4:55 PM	0	0	5	0	4	0	0	0	2	149	3	0	2	107	3	0	275	2994
5:00 PM	0	0	4	0	6	0	5	0	1	125	0	0	1	97	2	0	241	2999
5:05 PM	0	0	3	0	4	0	8	0	1	143	3	1	1	109	1	0	274	3021

5-Min Count Period Beginning At	Gateway Dr (Northbound)				Gateway Dr (Southbound)				US 70 (Eastbound)				US 70 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
5:10 PM	0	0	5	0	1	0	2	0	1	168	7	0	1	91	4	0	280	3027
5:15 PM	2	0	5	0	2	0	5	0	3	139	3	0	4	121	5	0	289	3063
5:20 PM	0	0	8	0	1	0	7	0	2	154	2	0	2	87	1	0	264	3090
5:25 PM	0	0	4	0	2	0	0	0	5	157	3	0	1	101	3	0	276	3139
5:30 PM	0	0	5	0	2	0	6	0	2	131	1	0	2	107	4	0	260	3178
5:35 PM	0	0	1	0	3	0	2	0	1	152	1	0	0	118	1	1	280	3194
5:40 PM	0	0	2	0	5	0	3	0	3	169	3	0	0	78	0	0	263	3214
5:45 PM	1	0	3	0	1	0	1	0	2	143	2	0	1	107	3	0	264	3233
5:50 PM	1	0	0	0	2	0	2	0	4	122	1	1	0	128	0	0	261	3227
5:55 PM	0	0	4	0	2	0	2	0	1	158	1	0	1	92	3	0	264	3216
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	52	0	16	0	44	0	20	2064	16	0	32	1400	24	0	3668	
Heavy Trucks	0	0	0		0	0	8		0	68	0		0	48	4		128	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

Report generated on 5/12/2022 12:35 PM

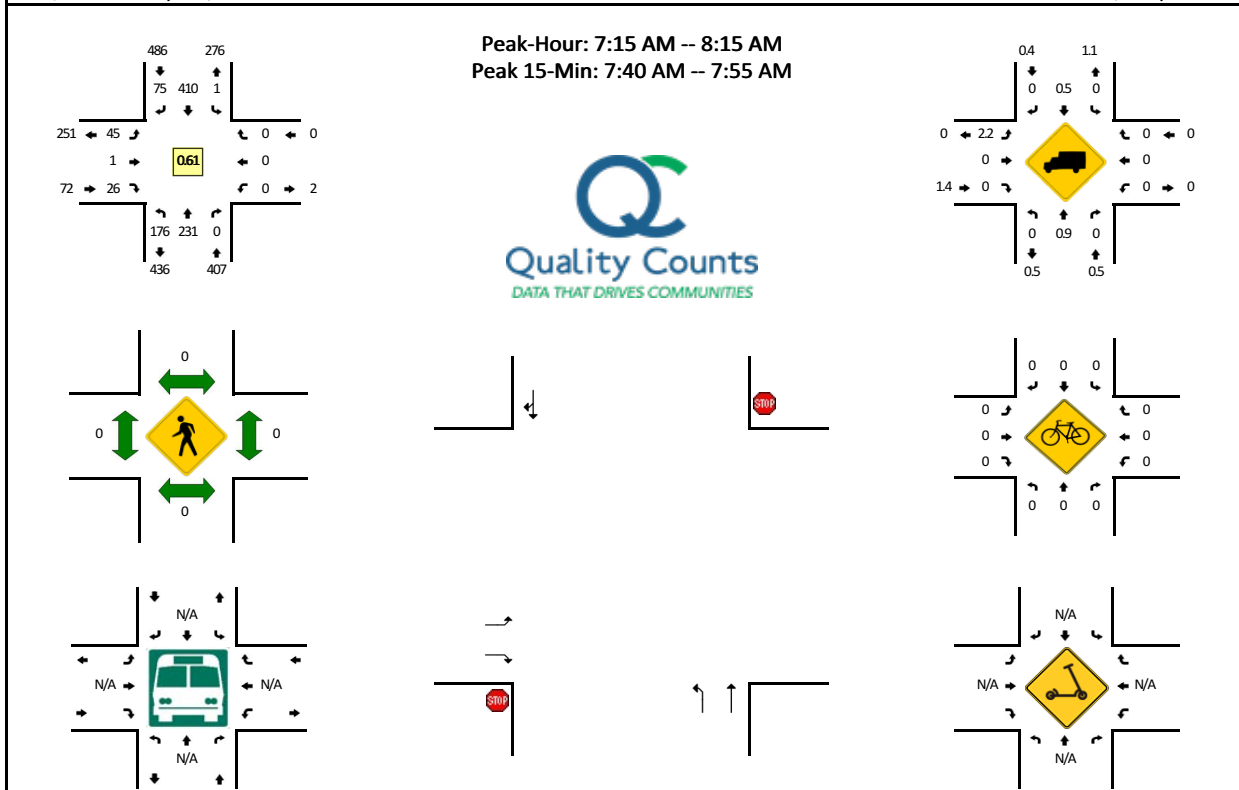
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Financial Dr -- Town Centre Blvd
CITY/STATE: Clayton, NC

QC JOB #: 15803803
DATE: Wed, May 4 2022



5-Min Count Period Beginning At	Financial Dr (Northbound)				Financial Dr (Southbound)				Town Centre Blvd (Eastbound)				Town Centre Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	2	0	0	2	7	9	0	5	0	0	0	0	0	0	0	25	
7:05 AM	1	3	0	0	1	7	5	0	6	0	3	0	0	0	0	0	26	
7:10 AM	0	1	0	0	0	9	8	0	4	0	0	0	0	0	0	0	22	
7:15 AM	2	1	0	0	0	23	2	0	7	0	1	0	0	0	0	0	36	
7:20 AM	1	0	0	0	0	19	10	0	1	0	2	0	0	0	0	0	33	
7:25 AM	1	1	0	0	0	38	5	0	1	0	1	0	0	0	0	0	47	
7:30 AM	6	1	0	0	0	37	8	0	4	0	0	0	0	0	0	0	56	
7:35 AM	24	23	0	0	0	40	3	0	4	0	1	0	0	0	0	0	95	
7:40 AM	29	44	0	0	0	49	10	0	4	0	6	0	0	0	0	0	142	
7:45 AM	26	40	0	0	0	57	8	0	0	0	1	0	0	0	0	0	132	
7:50 AM	25	35	0	0	0	51	4	0	3	1	5	0	0	0	0	0	124	
7:55 AM	20	36	0	0	1	66	4	0	5	0	6	0	0	0	0	0	138	876
8:00 AM	29	37	0	0	0	17	4	0	2	0	2	0	0	0	0	0	91	942
8:05 AM	9	11	0	0	0	8	10	0	8	0	0	0	0	0	0	0	46	962
8:10 AM	4	2	0	0	0	5	7	0	6	0	1	0	0	0	0	0	25	965
8:15 AM	4	4	0	0	0	3	8	0	2	0	1	0	0	0	0	0	22	951
8:20 AM	3	1	0	0	0	2	9	0	8	0	3	0	0	0	1	0	27	945
8:25 AM	2	1	0	0	0	0	5	0	3	0	2	0	0	1	0	0	14	912
8:30 AM	0	1	0	0	0	0	9	1	9	0	1	0	0	0	0	0	21	877
8:35 AM	0	2	0	0	0	2	15	0	3	0	0	0	0	0	0	0	22	804
8:40 AM	0	1	0	0	0	1	19	0	7	0	0	0	0	0	0	0	28	690
8:45 AM	0	0	0	0	0	1	15	0	8	0	0	0	0	0	0	0	24	582
8:50 AM	0	2	0	0	0	0	18	0	4	0	1	0	0	0	0	0	25	483
8:55 AM	0	0	0	0	0	0	18	0	5	1	0	0	0	0	0	0	24	369
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	320	476	0	0	0	628	88	0	28	4	48	0	0	0	0	0	1592	
Heavy Trucks	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	8	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

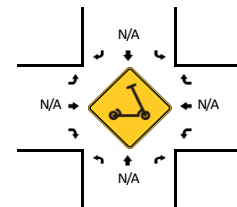
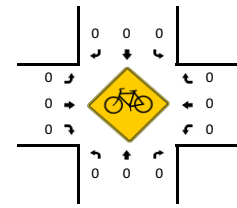
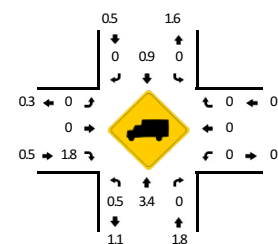
Comments:

Report generated on 5/12/2022 12:35 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Method for determining peak hour: Total Entering Volume

QC JOB #: 15803804
DATE: Wed, May 4 2022



5-Min Count Period Beginning At	Financial Dr (Northbound)				Financial Dr (Southbound)				Town Centre Blvd (Eastbound)				Town Centre Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	1	0	0	0	0	1	19	0	20	0	0	0	0	0	0	0	41	
2:05 PM	0	0	0	0	0	1	17	1	21	0	2	0	0	0	0	0	42	
2:10 PM	0	0	0	0	0	2	24	0	20	0	1	0	0	0	0	0	47	
2:15 PM	0	2	0	0	0	5	17	0	21	0	3	0	0	0	0	0	48	
2:20 PM	0	0	0	0	0	4	18	1	21	0	1	0	0	0	0	0	45	
2:25 PM	2	1	0	0	0	5	15	0	28	0	1	0	0	0	0	0	52	
2:30 PM	0	0	0	0	0	11	11	0	20	0	2	0	0	0	0	0	44	
2:35 PM	1	1	0	0	0	13	19	1	19	0	1	0	0	0	0	0	55	
2:40 PM	3	1	0	0	0	12	10	0	16	0	5	0	0	0	0	0	47	
2:45 PM	1	2	0	0	0	10	21	1	14	0	2	0	0	0	0	0	51	
2:50 PM	2	0	0	0	0	19	11	1	19	0	6	0	0	0	0	0	58	585
2:55 PM	0	0	0	0	0	16	11	0	23	0	5	0	0	0	0	0	55	
3:00 PM	4	3	0	0	0	18	12	1	16	0	3	0	0	0	0	0	57	
3:05 PM	2	0	0	0	0	16	12	0	22	0	4	0	0	0	0	0	56	
3:10 PM	0	1	0	0	0	20	15	0	18	0	1	0	0	0	0	0	55	
3:15 PM	10	21	0	0	0	19	16	0	16	0	2	0	0	0	0	0	84	
3:20 PM	19	35	0	0	0	39	14	0	6	0	2	0	0	0	0	0	115	729
3:25 PM	36	23	0	0	0	19	8	0	8	0	10	0	0	0	0	0	104	781
3:30 PM	36	21	0	0	0	21	10	0	9	0	10	0	0	0	0	0	107	844
3:35 PM	26	10	0	0	0	18	8	0	7	0	5	0	0	0	0	0	74	863
3:40 PM	34	13	0	0	0	12	12	0	9	0	3	0	0	0	0	0	83	899
3:45 PM	16	18	0	0	0	9	9	0	9	0	6	0	0	0	0	0	67	915
3:50 PM	6	12	0	0	1	8	17	0	11	0	2	1	0	0	0	0	58	915
3:55 PM	2	8	0	0	0	6	11	0	14	0	4	0	0	0	0	0	45	905
4:00 PM	15	10	0	0	0	3	16	0	14	0	2	0	0	0	0	0	60	908
4:05 PM	6	14	0	0	0	2	20	0	16	0	3	0	0	0	0	0	61	913
4:10 PM	2	2	0	0	0	2	14	1	20	0	2	0	0	0	0	0	43	901
4:15 PM	1	1	0	0	0	2	16	1	20	0	1	0	0	0	0	0	42	859
4:20 PM	0	0	0	0	0	1	13	0	12	0	1	0	0	0	0	0	27	771
4:25 PM	2	2	0	0	0	1	18	0	21	0	0	0	0	0	0	0	44	711
4:30 PM	1	8	0	0	0	2	15	0	17	0	2	0	0	0	0	0	45	649
4:35 PM	1	2	0	0	0	2	10	0	11	0	3	0	0	0	0	0	29	604
4:40 PM	0	0	0	0	0	1	14	0	21	0	1	0	0	0	0	0	37	558
4:45 PM	1	4	0	0	0	3	22	0	15	0	0	0	0	0	0	0	45	536
4:50 PM	1	2	0	0	0	3	10	0	18	0	0	0	0	0	0	0	34	512
4:55 PM	0	5	0	0	0	1	16	0	22	0	0	0	0	0	0	0	44	511
5:00 PM	0	2	0	0	0	0	19	0	19	0	0	0	0	0	0	0	40	491
5:05 PM	0	2	0	0	0	3	16	0	12	0	0	0	0	0	0	0	33	463

5-Min Count Period Beginning At	Financial Dr (Northbound)				Financial Dr (Southbound)				Town Centre Blvd (Eastbound)				Town Centre Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
5:10 PM	1	5	0	0	0	3	12	0	18	0	1	0	0	0	0	0	40	460
5:15 PM	1	3	0	0	0	3	12	0	20	0	0	0	0	0	0	0	39	457
5:20 PM	1	5	0	0	0	3	15	0	22	0	1	0	0	0	0	0	47	477
5:25 PM	1	4	0	0	0	3	19	0	13	0	0	0	0	0	0	0	40	473
5:30 PM	1	2	0	0	0	0	12	0	16	0	1	0	0	0	0	0	32	460
5:35 PM	1	2	0	0	0	2	18	0	23	0	0	0	0	0	0	0	46	477
5:40 PM	0	0	0	0	0	1	14	0	19	0	0	0	0	0	0	0	34	474
5:45 PM	0	1	0	0	0	1	13	0	14	0	1	0	0	0	0	0	30	459
5:50 PM	1	2	0	0	0	2	23	0	19	0	0	0	0	0	0	0	47	472
5:55 PM	1	3	0	0	0	1	20	0	24	0	0	0	0	0	0	0	49	477
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	364	316	0	0	0	316	128	0	92	0	88	0	0	0	0	0	1304	
Heavy Trucks	4	16	0		0	4	0		0	0	0		0	0	0		24	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		
<i>Comments:</i>																		

Report generated on 5/12/2022 12:35 PM

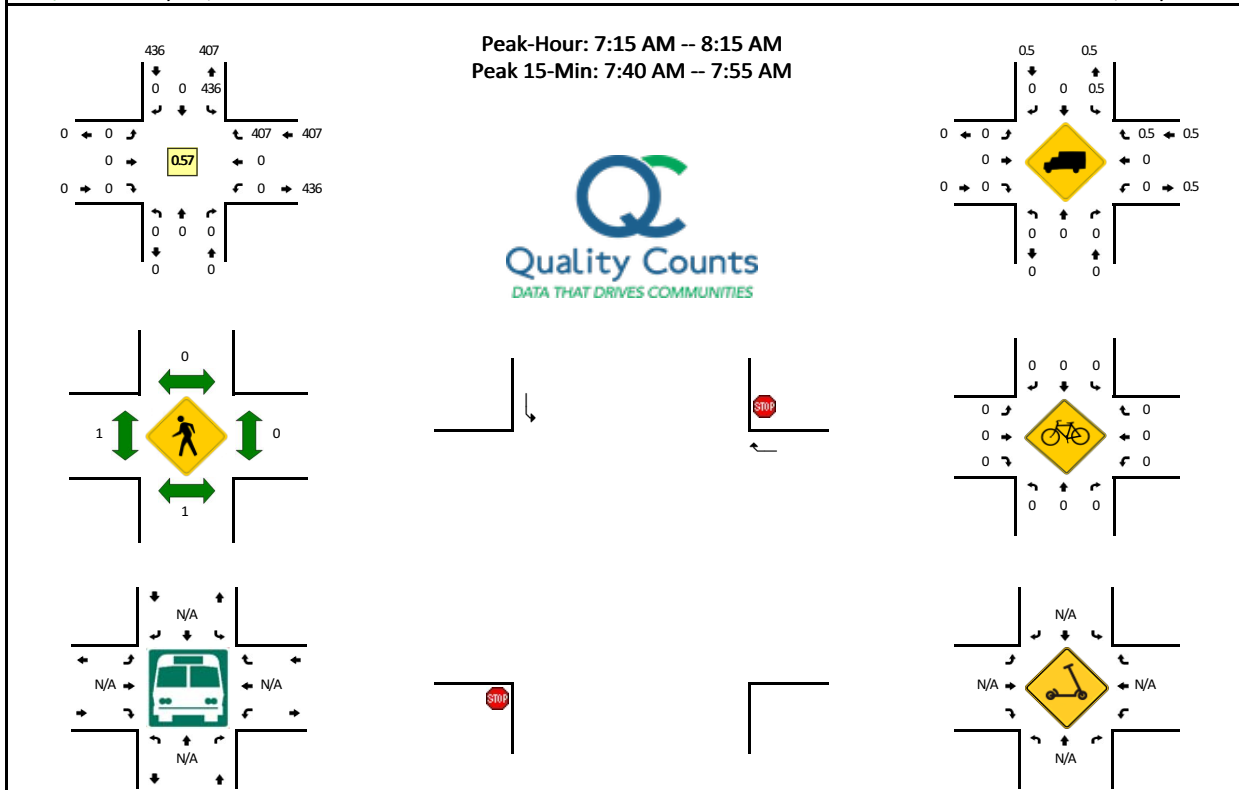
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Financial Dr -- Scholar Dr
CITY/STATE: Clayton, NC

QC JOB #: 15803801
DATE: Wed, May 4 2022



5-Min Count Period Beginning At	Financial Dr (Northbound)				Financial Dr (Southbound)				Scholar Dr (Eastbound)				Scholar Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	7	0	0	0	0	0	0	0	0	0	3	0	10	
7:05 AM	0	0	0	0	10	0	0	0	0	0	0	0	0	0	3	0	13	
7:10 AM	0	0	0	0	9	0	0	0	0	0	0	0	0	0	1	0	10	
7:15 AM	0	0	0	0	24	0	0	0	0	0	0	0	0	0	3	0	27	
7:20 AM	0	0	0	0	20	0	0	0	0	0	0	0	0	0	1	0	21	
7:25 AM	0	0	0	0	40	0	0	0	0	0	0	0	0	0	2	0	42	
7:30 AM	0	0	0	0	34	0	0	0	0	0	0	0	0	0	9	0	43	
7:35 AM	0	0	0	0	43	0	0	0	0	0	0	0	0	0	49	0	92	
7:40 AM	0	0	0	0	55	0	0	0	0	0	0	0	0	0	76	0	131	
7:45 AM	0	0	0	0	58	0	0	0	0	0	0	0	0	0	64	0	122	
7:50 AM	0	0	0	0	57	0	0	0	0	0	0	0	0	0	61	0	118	
7:55 AM	0	0	0	0	66	0	0	0	0	0	0	0	0	0	52	0	118	747
8:00 AM	0	0	0	0	25	0	0	0	0	0	0	0	0	0	66	0	91	828
8:05 AM	0	0	0	0	6	0	0	0	0	0	0	0	0	0	19	0	25	840
8:10 AM	0	0	0	0	8	0	0	0	0	0	0	0	0	0	5	0	13	843
8:15 AM	0	0	0	0	4	0	0	0	0	0	0	0	0	0	8	0	12	828
8:20 AM	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	0	8	815
8:25 AM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	6	779
8:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	738
8:35 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	4	650
8:40 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	521
8:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	400
8:50 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	2	284
8:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	166
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	680	0	0	0	0	0	0	0	0	0	804	0	1484	
Heavy Trucks	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	0	8	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters																		

Comments:

Report generated on 5/12/2022 12:35 PM

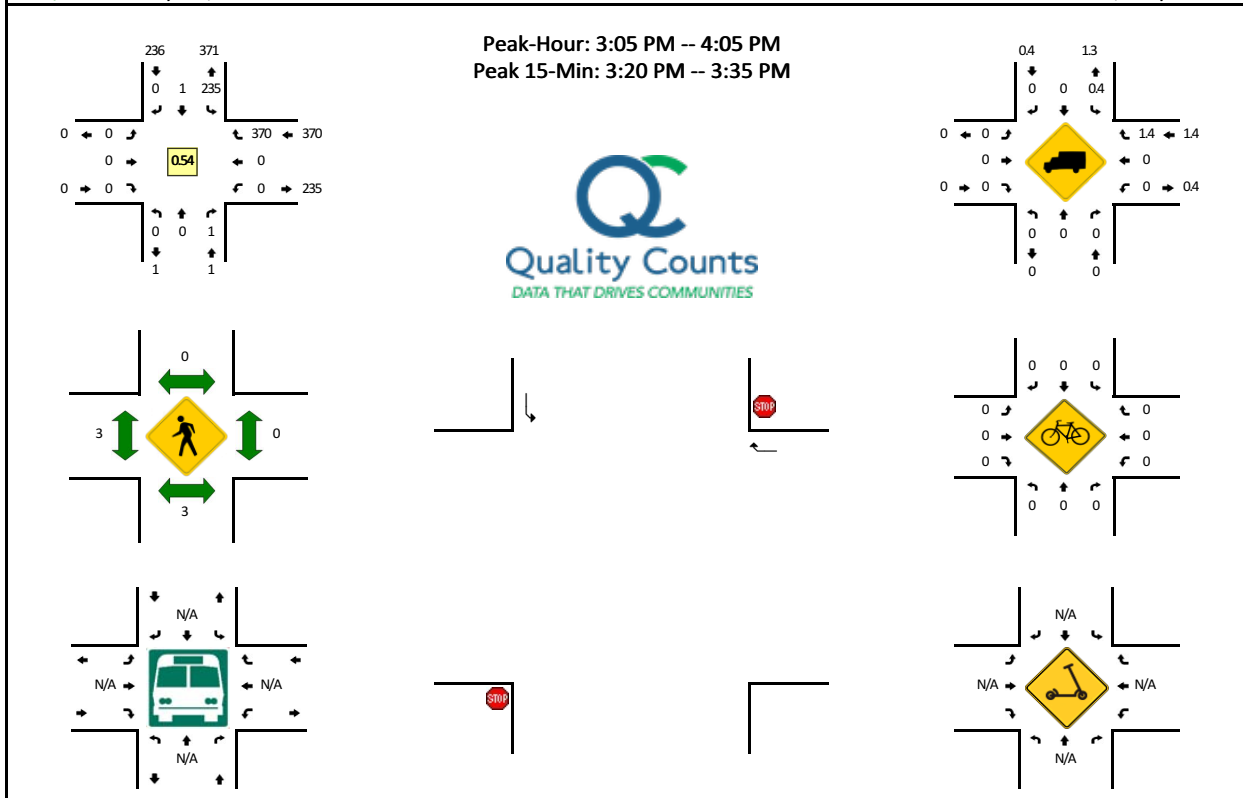
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Financial Dr -- Scholar Dr
CITY/STATE: Clayton, NC

QC JOB #: 15803802
DATE: Wed, May 4 2022



5-Min Count Period Beginning At	Financial Dr (Northbound)				Financial Dr (Southbound)				Scholar Dr (Eastbound)				Scholar Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	
2:05 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	
2:10 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	
2:15 PM	0	0	0	0	7	0	0	0	0	0	0	0	0	0	2	0	9	
2:20 PM	0	0	0	0	5	0	0	0	0	0	0	0	0	0	1	0	6	
2:25 PM	0	0	0	0	6	0	0	1	0	0	0	0	0	0	1	0	8	
2:30 PM	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	13	
2:35 PM	0	0	0	0	14	0	0	0	0	0	0	0	0	0	2	0	16	
2:40 PM	0	0	0	0	14	0	0	1	0	0	0	0	0	0	3	0	18	
2:45 PM	0	0	0	0	13	0	0	0	0	0	0	0	0	0	3	0	16	
2:50 PM	0	0	0	0	24	0	0	0	0	0	0	0	0	0	2	0	26	
2:55 PM	0	0	0	0	21	0	0	0	0	0	0	0	0	0	1	0	22	142
3:00 PM	0	0	0	0	20	0	0	0	0	0	0	0	0	0	7	0	27	167
3:05 PM	0	0	0	0	21	0	0	0	0	0	0	0	0	0	1	0	22	186
3:10 PM	0	0	0	0	20	0	0	0	0	0	0	0	0	0	1	0	21	204
3:15 PM	0	0	0	0	20	1	0	0	0	0	0	0	0	0	32	0	53	248
3:20 PM	0	0	0	0	39	0	0	0	0	0	0	0	0	0	64	0	103	345
3:25 PM	0	0	1	0	30	0	0	0	0	0	0	0	0	0	58	0	89	426
3:30 PM	0	0	0	0	31	0	0	0	0	0	0	0	0	0	56	0	87	500
3:35 PM	0	0	0	0	23	0	0	0	0	0	0	0	0	0	41	0	64	548
3:40 PM	0	0	0	0	14	0	0	0	0	0	0	0	0	0	41	0	55	585
3:45 PM	0	0	0	0	11	0	0	1	0	0	0	0	0	0	24	0	36	605
3:50 PM	0	0	0	0	10	0	0	0	0	0	0	0	0	0	13	0	23	602
3:55 PM	0	0	0	0	10	0	0	0	0	0	0	0	0	0	10	0	20	600
4:00 PM	0	0	0	0	5	0	0	0	0	0	0	0	0	0	29	0	34	607
4:05 PM	0	0	0	0	5	0	0	0	0	0	0	0	0	0	16	0	21	606
4:10 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	4	0	7	592
4:15 PM	0	0	0	0	4	0	0	0	0	0	0	0	0	0	2	0	6	545
4:20 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	443
4:25 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	4	0	6	360
4:30 PM	0	0	0	0	3	0	0	1	0	0	0	0	0	0	8	0	12	285
4:35 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	6	227
4:40 PM	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4	176
4:45 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	5	0	8	148
4:50 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	6	131
4:55 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5	0	6	117
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	85
5:05 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	2	0	5	69

5-Min Count Period Beginning At	Financial Dr (Northbound)				Financial Dr (Southbound)				Scholar Dr (Eastbound)				Scholar Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
5:10 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	6	0	9	71
5:15 PM	0	0	0	0	4	0	0	0	0	0	0	0	0	0	5	0	9	74
5:20 PM	0	0	0	0	4	0	0	0	0	0	0	0	0	0	5	0	9	82
5:25 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	5	0	8	84
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	4	76
5:35 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	4	74
5:40 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	71
5:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	3	66
5:50 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3	0	5	65
5:55 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3	0	4	63
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	4	0	400	0	0	0	0	0	0	0	0	0	712	0	1116	
Heavy Trucks	0	0	0	0	4	0	0	0	0	0	0	0	0	0	16	0	20	
Buses																		
Pedestrians		12				0				12				0			24	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		
<i>Comments:</i>																		

Report generated on 5/12/2022 12:35 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

APPENDIX C

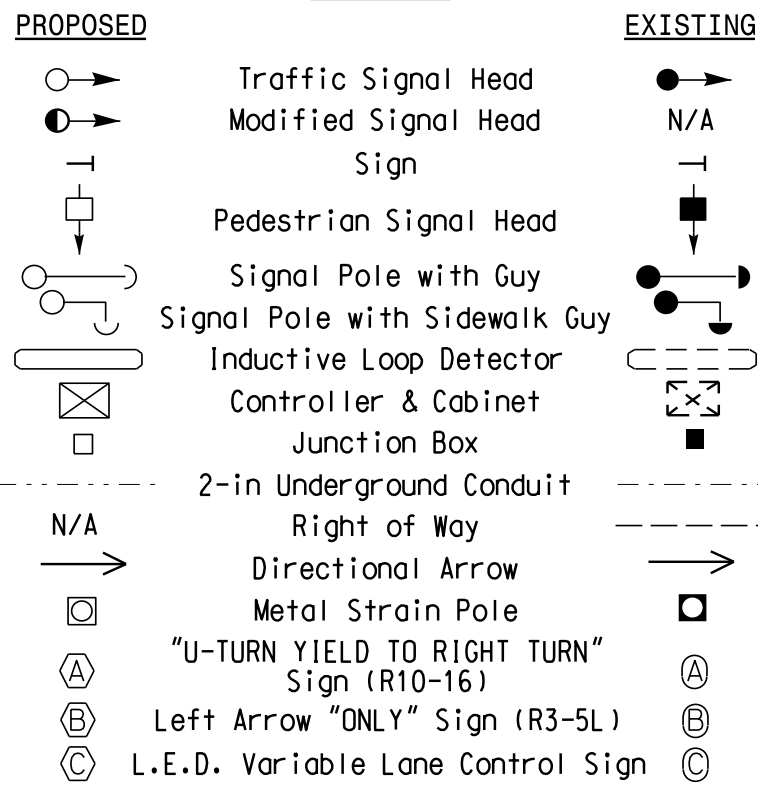
SIGNAL PLANS

8 Phase
Fully Actuated
US 70 Bus-NC 42 (Clayton) CLS

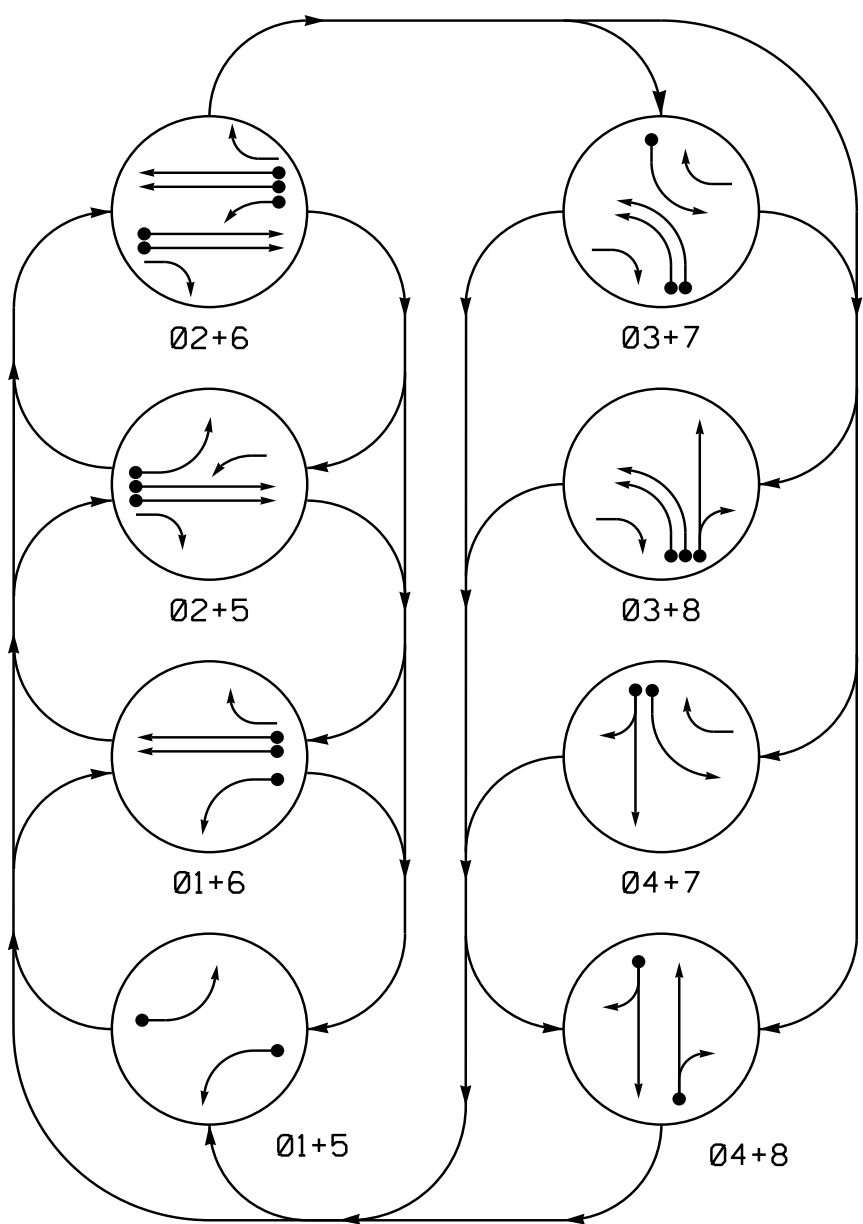
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Reposition existing signal head number 51.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Pavement markings are existing unless otherwise shown.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data:
Controller Asset #: 1292.
- The variable lane control sign (C) shall transition from a Left Arrow display to a Red "X" by first displaying a Yellow "X". The display time for the the Yellow "X" shall be equal to the Yellow Change time for Phase 1.

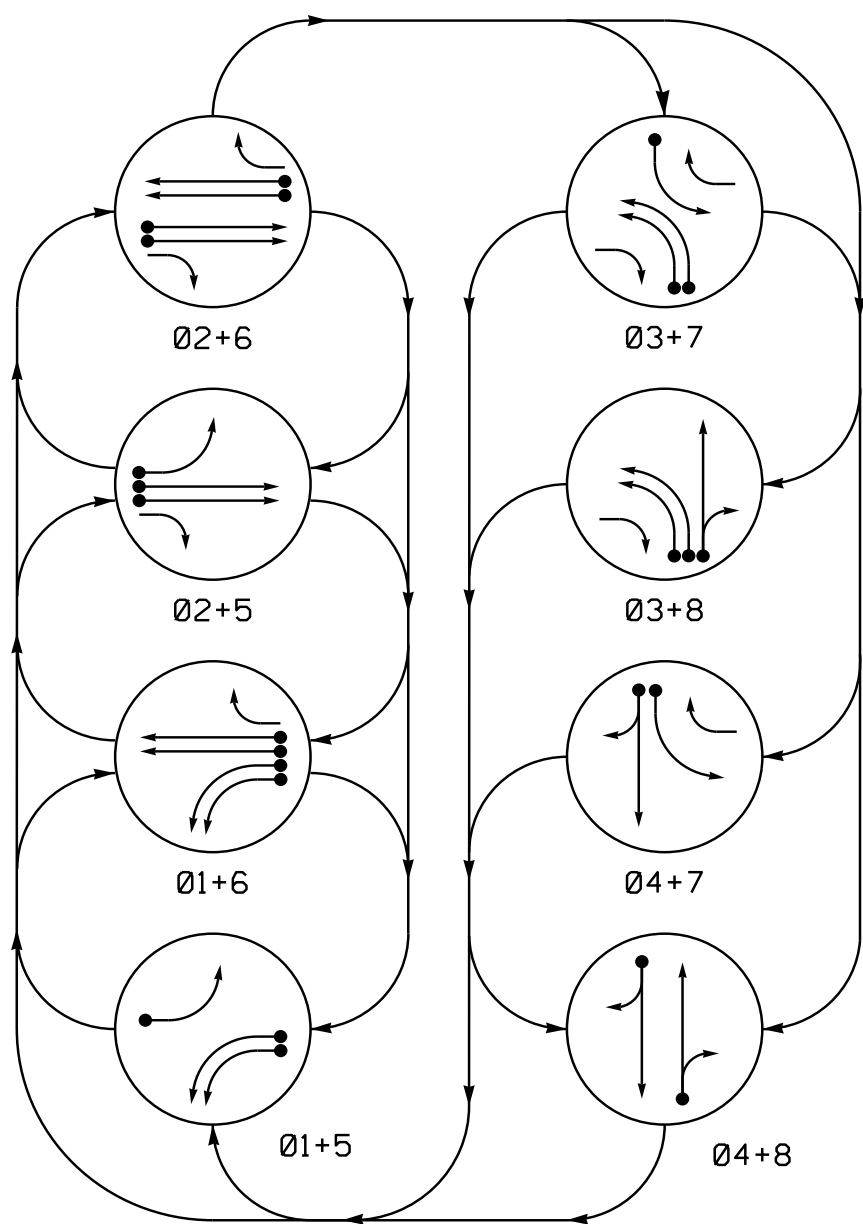
LEGEND



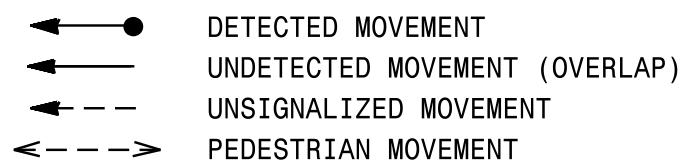
DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



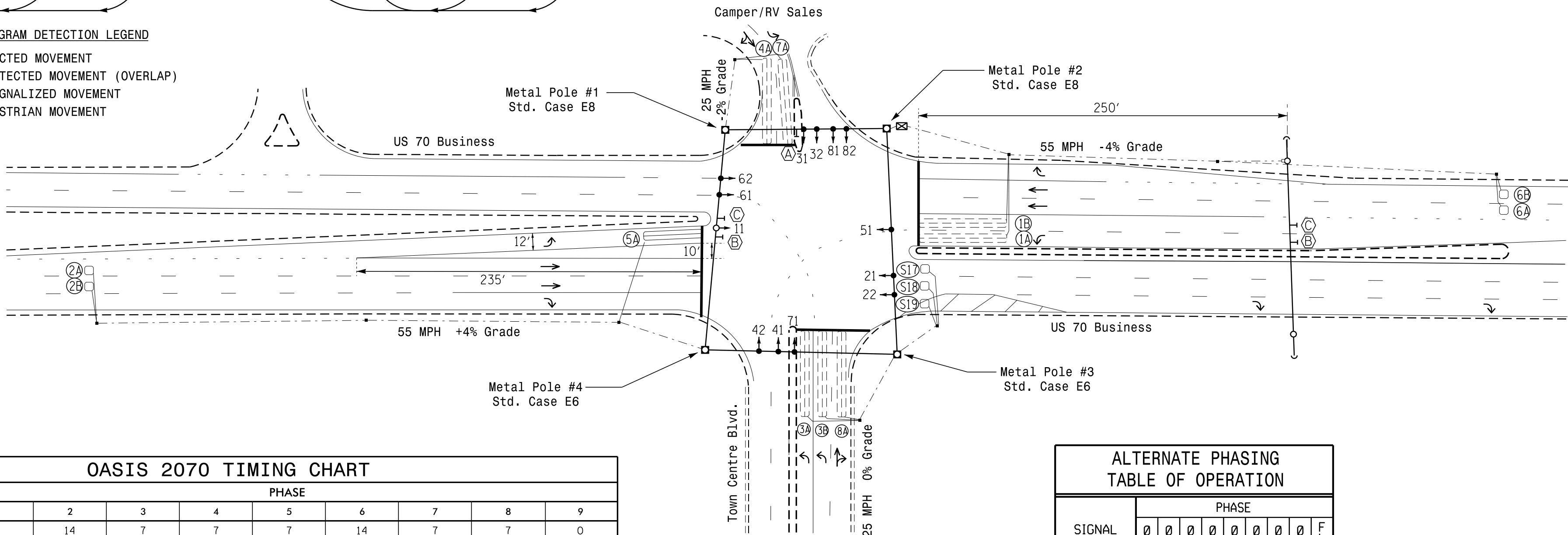
PHASING DIAGRAM DETECTION LEGEND



DEFAULT PHASING TABLE OF OPERATION												
SIGNAL FACE	PHASE								F	L	T	R
	01	02	03	04	05	06	07	08				
11	←	←	←	←	←	←	←	←	←	←	←	←
21	R	R	G	G	R	R	R	R	R	R	R	R
22	R	R	G	G	R	R	R	R	R	R	R	R
31, 32	←	←	←	←	←	←	←	←	←	←	←	←
41, 42	R	R	R	R	R	R	R	R	R	R	R	R
51	←	←	←	←	←	←	←	←	←	←	←	←
61	R	R	G	G	R	R	R	R	R	R	R	R
62	R	R	G	G	R	R	R	R	R	R	R	R
71	←	←	←	←	←	←	←	←	←	←	←	←
81, 82	R	R	R	R	R	R	R	R	R	R	R	R
Sign C	X	X	X	X	X	X	X	X	X	X	X	X

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD	
					FULL TIME DELAY							
1A	6X60	0	2-4-2	-	1	Y	Y	-	15 *	-	Y	
					6 *	Y	Y	-	3	-	Y	
1B	6X60	0	2-4-2	-	1 **	Y	Y	-	-	-	Y	
2A	6X6	420	6	-	2	Y	Y	-	-	-	Y	
2B	6X6	420	6	-	2	Y	Y	-	-	-	Y	
3A	6X60	0	2-4-2	-	3	Y	Y	-	-	-	Y	
3B	6X60	0	2-4-2	-	3	Y	Y	-	-	-	Y	
4A	6X60	0	2-4-2	-	4	Y	Y	-	10	-	Y	
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	Y	
6A	6X6	420	5	-	6	Y	Y	-	-	-	Y	
6B	6X6	420	5	-	6	Y	Y	-	-	-	Y	
7A	6X60	0	2-4-2	-	7	Y	Y	-	3	-	Y	
8A	6X60	0	2-4-2	-	8	Y	Y	-	10	-	Y	
S17	6X6	+150	4	-	-	-	-	-	-	-	Y Y	
S18	6X6	+150	4	-	-	-	-	-	-	-	Y Y	
S19	6X6	+150	4	-	-	-	-	-	-	-	Y	

* Disable Delay During Alternate Phasing Operation.
Disable Phase Call For Loop(s) During Alternate Phasing Operation.
Disable Phase Call For Loop(s) During Default Phasing Operation.



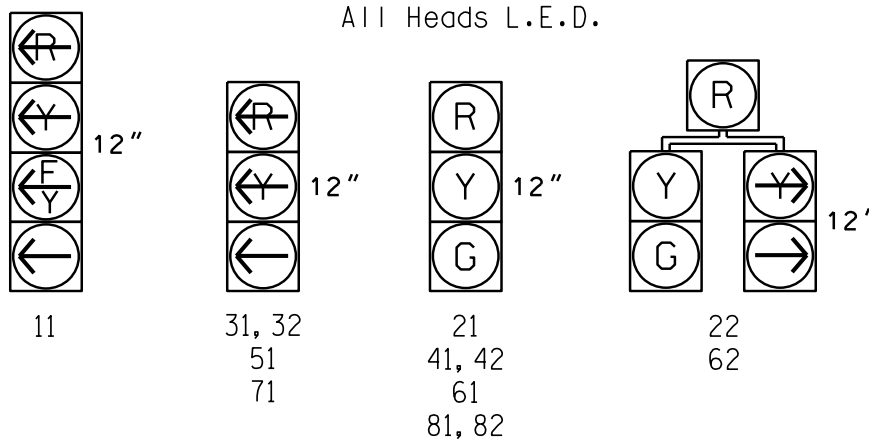
OASIS 2070 TIMING CHART

FEATURE	PHASE								
	1	2	3	4	5	6	7	8	9
Min Green 1 *	7	14	7	7	7	14	7	7	0
Extension 1 *	3.0	8.0	3.0	3.0	2.0	8.0	3.0	3.0	
Max Green 1 *	25	180	20	15	15	180	20	15	
Yellow Clearance	4.0	5.1	4.0	4.0	4.0	5.1	4.0	4.0	3.0
Red Clearance	3.3	2.0	3.7	3.0	2.5	2.0	2.5	3.0	0
Walk 1 *	-	-	-	-	-	-	-	-	
Don't Walk 1	-	-	-	-	-	-	-	-	
Seconds Per Actuation *	-	3.0	-	-	-	3.0	-	-	
Max Variable Initial *	-	46	-	-	-	46	-	-	
Time Before Reduction *	-	40	-	-	-	40	-	-	
Time To Reduce *	-	70	-	-	-	70	-	-	
Minimum Gap	-	3.0	-	-	-	3.0	-	-	
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-	
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-	
Dual Entry	-	-	-	-	-	-	-	-	
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

SIGNAL FACE I.D.

All Heads L.E.D.



ALTERNATE PHASING
TABLE OF OPERATION

SIGNAL FACE	PHASE								F	L	T	R
	01	02	03	04	05	06	07	08				
11	←	←	←	←	←	←	←	←	←	←	←	←
21	R	R	G	G	R	R	R	R	R	R	R	R
22	R	R	G	G	R	R	R	R	R	R	R	R
31, 32	←	←	←	←	←	←	←	←	←	←	←	←
41, 42	R	R	R	R	R	R	R	R	R	R	R	R
51	←	←	←	←	←	←	←	←	←	←	←	←
61	R	R	G	G	R	R	R	R	R	R	R	R
62	R	R	G	G	R	R	R	R	R	R	R	R
71	←	←	←	←	←	←	←	←	←	←	←	←
81, 82	R	R	R	R	R	R	R	R	R	R	R	R
Sign C	X	X	X	X	X	X	X	X	X	X	X	X

Signal Upgrade

US 70 Business at Town Centre Blvd.

Division 4 Johnston County Clayton

PLAN DATE: March 2019 REVIEWED BY: RJ Ziemba

PREPARED BY: JP Galloway REVIEWED BY:

REVISIONS

INIT. DATE

4/16/2019

SIG. INVENTORY NO. 04-1292

APPENDIX D

ADJACENT DEVELOPMENT INFORMATION

RAMEY KEMP ASSOCIATES
TOGETHER WE ARE LIMITLESS



Ramblewood Residential
Traffic Impact Analysis Update
Clayton, North Carolina



TRAFFIC IMPACT ANALYSIS UPDATE

FOR

RAMBLEWOOD RESIDENTIAL

LOCATED

IN

CLAYTON, NORTH CAROLINA

Prepared For:
BNK Engineers
6310 Chapel Hill Road, Suite 250
Raleigh, NC 27607

Prepared By:
Ramey Kemp & Associates, Inc.
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
License #C-0910

DECEMBER 2021



RKA Project No. 21572

Prepared By: TF

Reviewed By: NB

**TRAFFIC IMPACT ANALYSIS UPDATE
RAMBLEWOOD RESIDENTIAL
CLAYTON, NORTH CAROLINA**

EXECUTIVE SUMMARY

1. Development Overview

An updated Traffic Impact Analysis (TIA) was conducted for the proposed Ramblewood Residential development in accordance with the Town of Clayton (Town) Unified Development Ordinance (UDO) and North Carolina Department of Transportation (NCDOT) capacity analysis guidelines. This TIA update presents analysis for a revised site access plan compared to the original TIA (submitted in November 2021). The proposed development is to be located along US 70 Business, east of Ramblewood Drive in Clayton, North Carolina. The proposed development is expected to be a maximum of 180 single-family homes and is estimated to be built out in 2025. Site access is proposed via one (1) right-in/right-out (RIRO) driveway along US 70 Business and one (1) full-movement driveway along Ramblewood Drive.

2. Existing Traffic Conditions

The study area for the TIA was determined through coordination with the Town and NCDOT and consists of the following existing intersections:

- US 70 Business and Ramblewood Drive
- US 70 Business and White Pine Drive

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections below, in September 2021 during a typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods, while schools were in session for in-person learning:

- US 70 Business and Ramblewood Drive
- US 70 Business and White Pine Drive

Based on coordination with NCDOT and Town staff, a previously collected traffic count at the intersection of US 70 and Shotwell Road from October 2017 was grown to 2021 using a 2% annual growth rate and then compared to an April 2021 traffic count at the same intersection to



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forward.

determine an adjustment factor to be applied to new peak hour counts collected at the study intersections in order to account for the changes in traffic patterns due to COVID-19. An adjustment factor of 26% was applied to new count data collected during the weekday AM peak hour and 40% was applied to new count data collected during the weekday PM peak hour to determine 2021 existing volumes.

Traffic volumes were balanced between study intersections, where appropriate.

3. Site Trip Generation

The proposed development is assumed to consist of a maximum of 180 single-family homes. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE Trip Generation Manual, 10th Edition. Table E-1 provides a summary of the trip generation potential for the site.

Table E-1: Site Trip Generation

LAND USE (ITE Code)	INTENSITY	DAILY TRIPS (VPD)	WEEKDAY AM PEAK HOUR (VPH)		WEEKDAY PM PEAK HOUR (VPH)	
			Enter	Exit	Enter	Exit
Single Family Detached Housing (210)	180 dwellings	1,877	35	105	118	70

4. Future Traffic Conditions

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 3% would be used to generate 2025 projected weekday AM and PM peak hour traffic volumes. No adjacent developments were identified to be considered under future conditions.

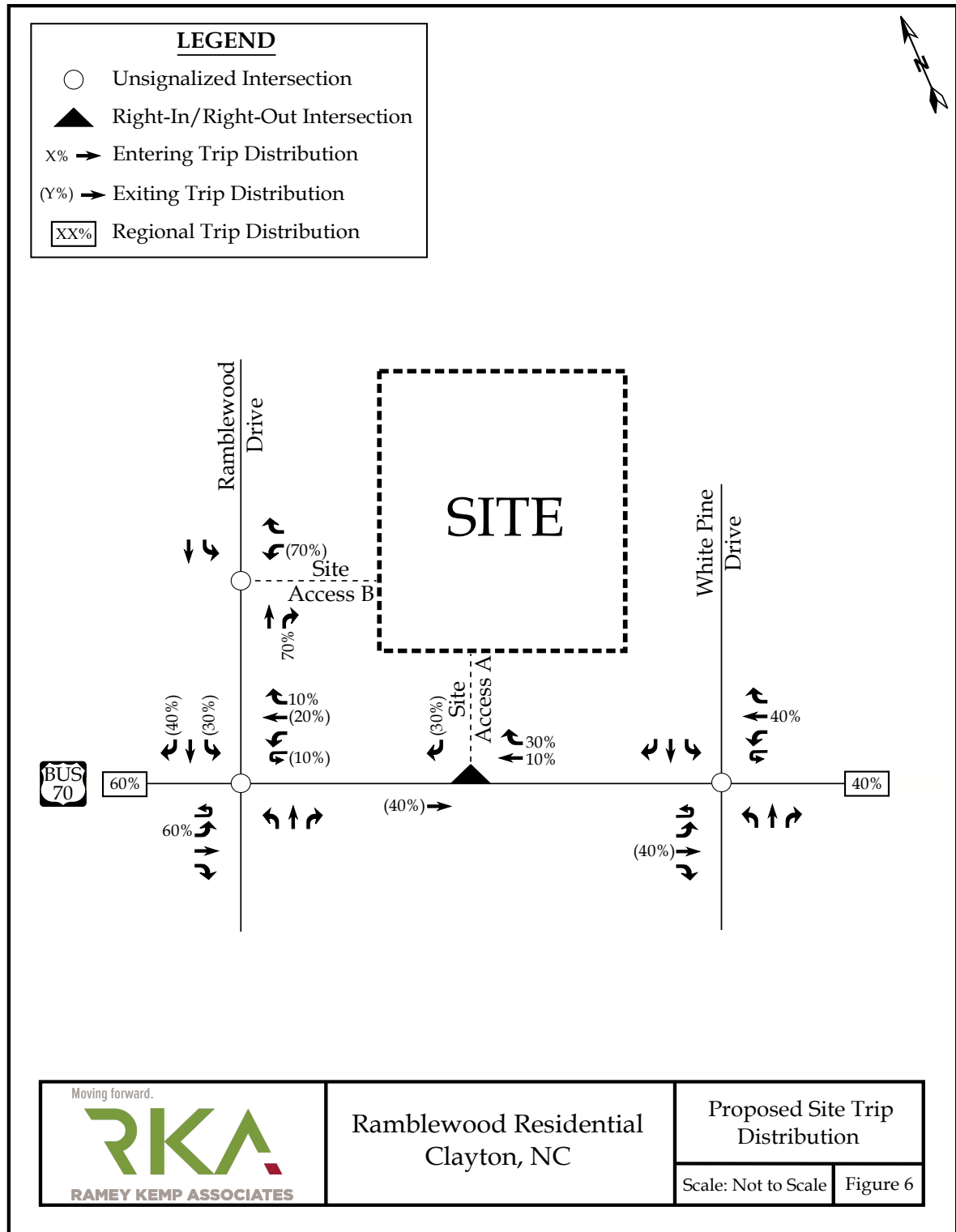
The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

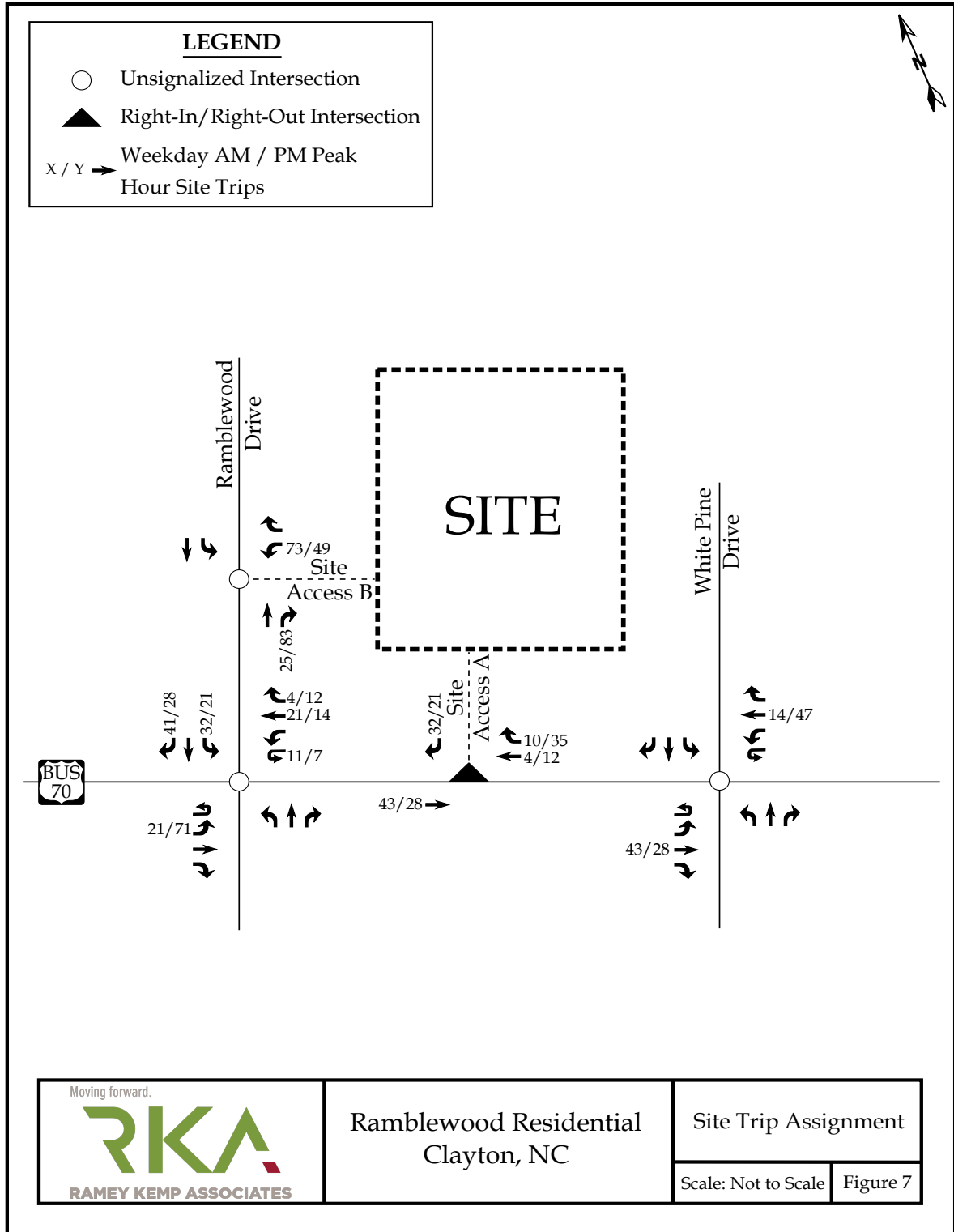
- 2021 Existing Traffic Conditions
- 2025 No-Build Traffic Conditions
- 2025 Build Traffic Conditions

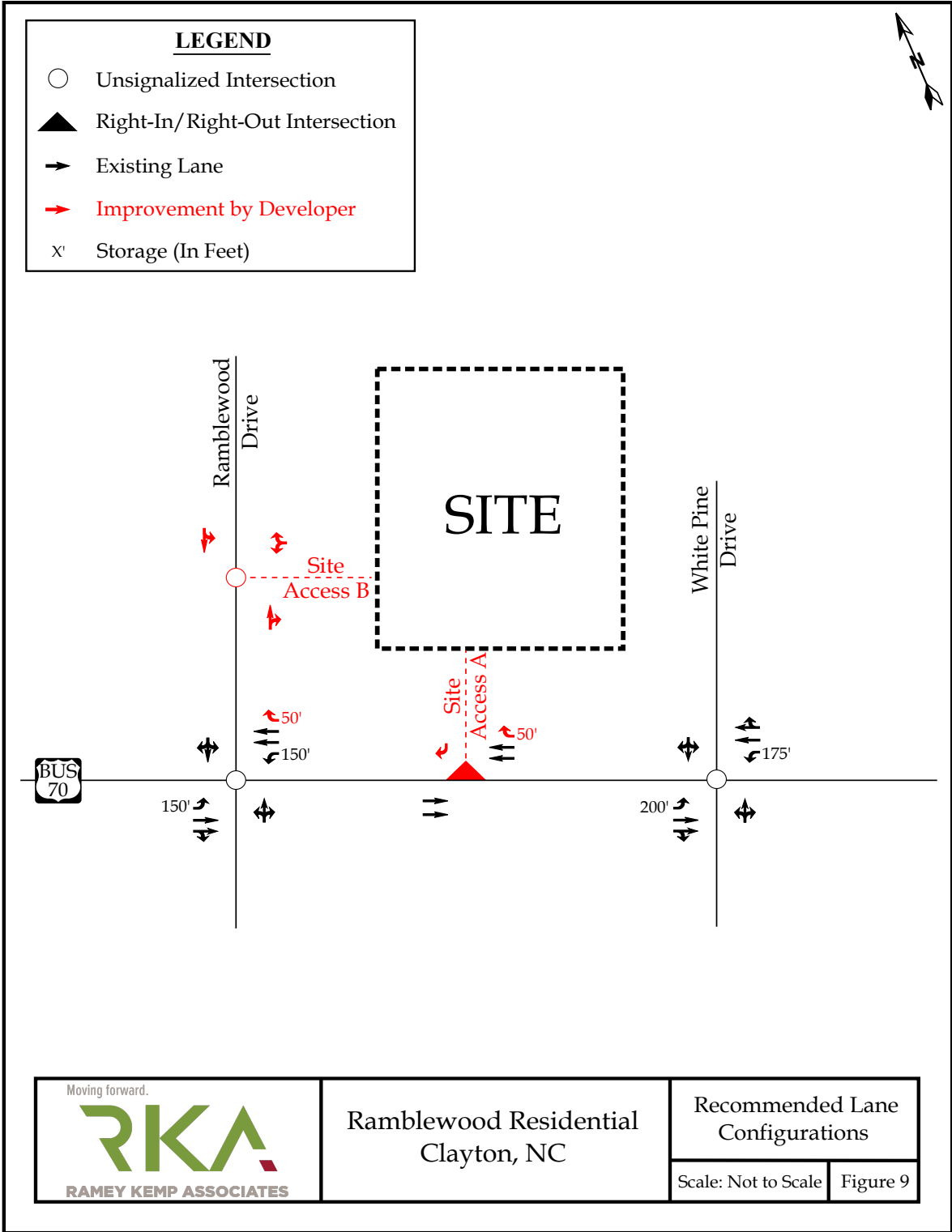


SHEET C1.2	RAMBLEWOOD DRIVE SUBDIVISION RAMBLEWOOD DRIVE TOWN OF CLAYTON, JOHNSON COUNTY, NORTH CAROLINA	03-17-00 PROGRESS GWP JOB NO. DATE DRAWN BY DATE DRAWN BY	BASS, NIXON & KENNEDY, INC. CONSULTING ENGINEERS 6310 CHAPEL HILL ROAD, SUITE 200, RALEIGH, NC 27607 TELEPHONE: (919)891-4422 FAX: (919)891-9668 CERTIFICATION NUMBERS: NCCELS (C010); NCCELS (C-0267)	BNK
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NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION







APPENDIX E

CAPACITY ANALYSIS CALCULATIONS TOWN CENTRE BOULEVARD (WESTERN DRIVEWAY) & US 70 BUSINESS

Clayton Town Centre - Clayton, NC
1: Town Centre Boulevard (Western Driveway) & US 70 Business

2022 Existing
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑			↗			↗		
Traffic Vol, veh/h	0	893	6	0	1599	4	0	0	4	0	0	4
Future Vol, veh/h	0	893	6	0	1599	4	0	0	4	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	992	7	0	1777	4	0	0	4	0	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	500	-	-	889
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	7.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.92	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	442	0	0	286
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	442	-	-	286
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			13.2			17.8		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	442	-	-	-	-	286						
HCM Lane V/C Ratio	0.01	-	-	-	-	0.016						
HCM Control Delay (s)	13.2	-	-	-	-	17.8						
HCM Lane LOS	B	-	-	-	-	C						
HCM 95th %tile Q(veh)	0	-	-	-	-	0						

Clayton Town Centre - Clayton, NC
1: Town Centre Boulevard (Western Driveway) & US 70 Business

2022 Existing
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑			↗			↗		
Traffic Vol, veh/h	0	1561	50	0	1061	4	0	0	14	0	0	4
Future Vol, veh/h	0	1561	50	0	1061	4	0	0	14	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1734	56	0	1179	4	0	0	16	0	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	895	-	-	590
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	7.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.92	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	244	0	0	451
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	244	-	-	451
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			20.8			13.1		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	244	-	-	-	-	451						
HCM Lane V/C Ratio	0.064	-	-	-	-	0.01						
HCM Control Delay (s)	20.8	-	-	-	-	13.1						
HCM Lane LOS	C	-	-	-	-	B						
HCM 95th %tile Q(veh)	0.2	-	-	-	-	0						

Clayton Town Centre - Clayton, NC
1: Town Centre Boulevard (Western Driveway) & US 70 Business

2028 No-Build
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑			↗			↗		
Traffic Vol, veh/h	0	1049	7	0	1815	4	0	0	4	0	0	4
Future Vol, veh/h	0	1049	7	0	1815	4	0	0	4	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1166	8	0	2017	4	0	0	4	0	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	587	-	-	1009
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	7.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.92	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	388	0	0	238
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	388	-	-	238
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			14.4			20.4		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	388	-	-	-	-	238						
HCM Lane V/C Ratio	0.011	-	-	-	-	0.019						
HCM Control Delay (s)	14.4	-	-	-	-	20.4						
HCM Lane LOS	B	-	-	-	-	C						
HCM 95th %tile Q(veh)	0	-	-	-	-	0.1						

Clayton Town Centre - Clayton, NC
1: Town Centre Boulevard (Western Driveway) & US 70 Business

2028 No-Build
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑			↗			↗		
Traffic Vol, veh/h	0	1786	56	0	1242	4	0	0	16	0	0	4
Future Vol, veh/h	0	1786	56	0	1242	4	0	0	16	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1984	62	0	1380	4	0	0	18	0	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	1023	-	-	690
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	7.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.92	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	200	0	0	388
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	200	-	-	388
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			24.7			14.4		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	200	-	-	-	-	388						
HCM Lane V/C Ratio	0.089	-	-	-	-	0.011						
HCM Control Delay (s)	24.7	-	-	-	-	14.4						
HCM Lane LOS	C	-	-	-	-	B						
HCM 95th %tile Q(veh)	0.3	-	-	-	-	0						

Clayton Town Centre - Clayton, NC
1: Town Centre Boulevard (Western Driveway) & US 70 Business

2028 Build
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑			↗			↗		
Traffic Vol, veh/h	0	1057	11	0	1854	4	0	0	7	0	0	4
Future Vol, veh/h	0	1057	11	0	1854	4	0	0	7	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1174	12	0	2060	4	0	0	8	0	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	593	-	-	1030
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	7.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.92	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	385	0	0	231
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	385	-	-	231
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			14.5			20.9		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	385	-	-	-	-	231						
HCM Lane V/C Ratio	0.02	-	-	-	-	0.019						
HCM Control Delay (s)	14.5	-	-	-	-	20.9						
HCM Lane LOS	B	-	-	-	-	C						
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.1						

Clayton Town Centre - Clayton, NC
1: Town Centre Boulevard (Western Driveway) & US 70 Business

2028 Build
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑			↗			↗		
Traffic Vol, veh/h	0	1813	69	0	1266	4	0	0	20	0	0	4
Future Vol, veh/h	0	1813	69	0	1266	4	0	0	20	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2014	77	0	1407	4	0	0	22	0	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	1046	-	-	704
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	7.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.92	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	193	0	0	379
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	193	-	-	379
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			26.1			14.6		
HCM LOS							D			B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	193	-	-	-	-	379						
HCM Lane V/C Ratio	0.115	-	-	-	-	0.012						
HCM Control Delay (s)	26.1	-	-	-	-	14.6						
HCM Lane LOS	D	-	-	-	-	B						
HCM 95th %tile Q(veh)	0.4	-	-	-	-	0						

APPENDIX F

CAPACITY ANALYSIS CALCULATIONS TOWN CENTRE BOULEVARD (MIDDLE DRIVEWAY) & US 70 BUSINESS

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	7	19	807	60	4	37	1427	136	4	158	10	54
Future Volume (vph)	7	19	807	60	4	37	1427	136	4	158	10	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		225		0		350		125		200		0
Storage Lanes		1		1		2		1		1		0
Taper Length (ft)		100				100				100		
Lane Util. Factor	0.95	1.00	0.95	1.00	0.95	0.97	0.95	1.00	1.00	0.97	1.00	1.00
Frt				0.850				0.850			0.873	
Flt Protected		0.950				0.950				0.950		
Satd. Flow (prot)	0	1770	3539	1583	0	3433	3539	1583	0	3433	1626	0
Flt Permitted		0.950				0.950				0.950		
Satd. Flow (perm)	0	1770	3539	1583	0	3433	3539	1583	0	3433	1626	0
Right Turn on Red				No				No				No
Satd. Flow (RTOR)												
Link Speed (mph)			45				45				25	
Link Distance (ft)			698				590				1200	
Travel Time (s)			10.6				8.9				32.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	8	21	897	67	4	41	1586	151	4	176	11	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	897	67	0	45	1586	151	0	180	71	0
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	pm+ov	Prot	Prot	NA	
Protected Phases	5	5	2		1	1	6	7	3	3	8	
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	7	3	3	8	
Switch Phase												
Minimum Initial (s)	7.0	7.0	14.0	14.0	7.0	7.0	14.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	14.0	14.0	21.1	21.1	14.3	14.3	21.1	14.0	14.7	14.7	14.0	
Total Split (s)	15.0	15.0	180.0	180.0	25.0	25.0	180.0	20.0	20.0	20.0	15.0	
Total Split (%)	6.3%	6.3%	75.0%	75.0%	10.4%	10.4%	75.0%	8.3%	8.3%	8.3%	6.3%	
Maximum Green (s)	8.5	8.5	172.9	172.9	17.7	17.7	172.9	13.5	12.3	12.3	8.0	
Yellow Time (s)	4.0	4.0	5.1	5.1	4.0	4.0	5.1	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.5	2.5	2.0	2.0	3.3	3.3	2.0	2.5	3.7	3.7	3.0	
Lost Time Adjust (s)		-1.5	-2.1	-2.1		-2.3	-2.1	-1.5		-2.7	-2.0	
Total Lost Time (s)		5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0	8.0	8.0	3.0	3.0	8.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	40.0	40.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	70.0	70.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	None	None	None	None	
Act Effect Green (s)		9.6	171.7	171.7		11.0	175.8	199.3		29.1	18.8	
Actuated g/C Ratio		0.04	0.72	0.72		0.05	0.73	0.83		0.12	0.08	
v/c Ratio		0.41	0.35	0.06		0.29	0.61	0.11		0.43	0.56	
Control Delay		129.4	13.6	10.5		115.0	17.4	4.2		103.6	117.2	
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	
Total Delay		129.4	13.6	10.5		115.0	17.4	4.2		103.6	117.2	

Lanes, Volumes, Timings
RKA

Synchro 10 Report
Page 1

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2022 Existing
Timing Plan: AM Peak Hour

			
Lane Group	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	80	8	10
Future Volume (vph)	80	8	10
Ideal Flow (vphpl)	1900	1900	1900
Storage Length (ft)	75		0
Storage Lanes	1		0
Taper Length (ft)	100		
Lane Util. Factor	1.00	1.00	1.00
Frt		0.917	
Flt Protected	0.950		
Satd. Flow (prot)	1770	1708	0
Flt Permitted	0.950		
Satd. Flow (perm)	1770	1708	0
Right Turn on Red			No
Satd. Flow (RTOR)			
Link Speed (mph)		25	
Link Distance (ft)		1065	
Travel Time (s)		29.0	
Peak Hour Factor	0.90	0.90	0.90
Adj. Flow (vph)	89	9	11
Shared Lane Traffic (%)			
Lane Group Flow (vph)	89	20	0
Turn Type	Prot	NA	
Protected Phases	7	4	
Permitted Phases			
Detector Phase	7	4	
Switch Phase			
Minimum Initial (s)	7.0	7.0	
Minimum Split (s)	14.0	14.0	
Total Split (s)	20.0	15.0	
Total Split (%)	8.3%	6.3%	
Maximum Green (s)	13.5	8.0	
Yellow Time (s)	4.0	4.0	
All-Red Time (s)	2.5	3.0	
Lost Time Adjust (s)	-1.5	-2.0	
Total Lost Time (s)	5.0	5.0	
Lead/Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	
Minimum Gap (s)	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	
Time To Reduce (s)	0.0	0.0	
Recall Mode	None	None	
Act Effct Green (s)	18.5	13.8	
Actuated g/C Ratio	0.08	0.06	
v/c Ratio	0.65	0.20	
Control Delay	129.3	112.1	
Queue Delay	0.0	0.0	
Total Delay	129.3	112.1	

Lanes, Volumes, Timings
RKA

Synchro 10 Report
Page 2

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
LOS		F	B	B		F	B	A		F	F	
Approach Delay			16.8				18.8				107.5	
Approach LOS			B				B				F	
Queue Length 50th (ft)		46	289	32		36	681	46		144	110	
Queue Length 95th (ft)		92	279	45		63	607	48		197	#259	
Internal Link Dist (ft)			618				510				1120	
Turn Bay Length (ft)		225				350		125		200		
Base Capacity (vph)		75	2593	1160		286	2745	1316		416	126	
Starvation Cap Reductn		0	0	0		0	0	0		0	0	
Spillback Cap Reductn		0	0	0		0	0	0		0	0	
Storage Cap Reductn		0	0	0		0	0	0		0	0	
Reduced v/c Ratio		0.39	0.35	0.06		0.16	0.58	0.11		0.43	0.56	

Intersection Summary

Area Type: Other

Cycle Length: 240

Actuated Cycle Length: 240

Offset: 54 (23%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 29.0

Intersection LOS: C

Intersection Capacity Utilization 59.1%

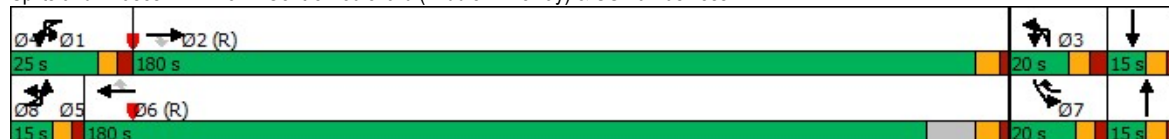
ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Town Centre Boulevard (Middle Driveway) & US 70 Business



Clayton Town Centre - Clayton, NC
 2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2022 Existing
 Timing Plan: AM Peak Hour



Lane Group	SBL	SBT	SBR
LOS	F	F	
Approach Delay		126.1	
Approach LOS		F	
Queue Length 50th (ft)	139	30	
Queue Length 95th (ft)	216	69	
Internal Link Dist (ft)		985	
Turn Bay Length (ft)	75		
Base Capacity (vph)	138	101	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.64	0.20	
Intersection Summary			

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	14	38	1342	181	9	189	813	65	219	7	347	73
Future Volume (vph)	14	38	1342	181	9	189	813	65	219	7	347	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		225		0		350		125	200		0	75
Storage Lanes		1		1		2		1	1		0	1
Taper Length (ft)		100				100			100			100
Lane Util. Factor	0.95	1.00	0.95	1.00	0.95	0.97	0.95	1.00	0.97	1.00	1.00	1.00
Frt				0.850				0.850		0.853		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1770	3539	1583	0	3433	3539	1583	3433	1589	0	1770
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1770	3539	1583	0	3433	3539	1583	3433	1589	0	1770
Right Turn on Red				No				No			No	
Satd. Flow (RTOR)												
Link Speed (mph)			45				45			25		
Link Distance (ft)			698				590			1200		
Travel Time (s)			10.6				8.9			32.7		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	42	1491	201	10	210	903	72	243	8	386	81
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	58	1491	201	0	220	903	72	243	394	0	81
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	pm+ov	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6	7	3	8		7
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	7	3	8		7
Switch Phase												
Minimum Initial (s)	7.0	7.0	14.0	14.0	7.0	7.0	14.0	7.0	7.0	7.0		7.0
Minimum Split (s)	14.0	14.0	21.1	21.1	14.3	14.3	21.1	14.0	14.7	14.0		14.0
Total Split (s)	15.0	15.0	180.0	180.0	25.0	25.0	180.0	20.0	20.0	15.0		20.0
Total Split (%)	6.3%	6.3%	75.0%	75.0%	10.4%	10.4%	75.0%	8.3%	8.3%	6.3%		8.3%
Maximum Green (s)	8.5	8.5	172.9	172.9	17.7	17.7	172.9	13.5	12.3	8.0		13.5
Yellow Time (s)	4.0	4.0	5.1	5.1	4.0	4.0	5.1	4.0	4.0	4.0		4.0
All-Red Time (s)	2.5	2.5	2.0	2.0	3.3	3.3	2.0	2.5	3.7	3.0		2.5
Lost Time Adjust (s)		-1.5	-2.1	-2.1		-2.3	-2.1	-1.5	-2.7	-2.0		-1.5
Total Lost Time (s)		5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0	8.0	8.0	3.0	3.0	8.0	3.0	3.0	3.0		3.0
Minimum Gap (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0
Time Before Reduce (s)	0.0	0.0	40.0	40.0	0.0	0.0	40.0	0.0	0.0	0.0		0.0
Time To Reduce (s)	0.0	0.0	70.0	70.0	0.0	0.0	70.0	0.0	0.0	0.0		0.0
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	None	None	None		None
Act Effect Green (s)		9.9	175.4	175.4		19.6	185.1	204.5	18.0	10.5		14.5
Actuated g/C Ratio		0.04	0.73	0.73		0.08	0.77	0.85	0.08	0.04		0.06
v/c Ratio		0.79	0.58	0.17		0.79	0.33	0.05	0.95	5.63		0.76
Control Delay		169.3	16.2	10.4		127.5	8.8	2.8	145.5	2140.7		149.1
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay		169.3	16.2	10.4		127.5	8.8	2.8	145.5	2140.7		149.1

Lanes, Volumes, Timings
RKA

Synchro 10 Report
Page 1

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2022 Existing
Timing Plan: PM Peak Hour

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	1	1
Traffic Volume (vph)	21	18
Future Volume (vph)	21	18
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.930	
Flt Protected		
Satd. Flow (prot)	1732	0
Flt Permitted		
Satd. Flow (perm)	1732	0
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	25	
Link Distance (ft)	1065	
Travel Time (s)	29.0	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	23	20
Shared Lane Traffic (%)		
Lane Group Flow (vph)	43	0
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	7.0	
Minimum Split (s)	14.0	
Total Split (s)	15.0	
Total Split (%)	6.3%	
Maximum Green (s)	8.0	
Yellow Time (s)	4.0	
All-Red Time (s)	3.0	
Lost Time Adjust (s)	-2.0	
Total Lost Time (s)	5.0	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Minimum Gap (s)	3.0	
Time Before Reduce (s)	0.0	
Time To Reduce (s)	0.0	
Recall Mode	None	
Act Effct Green (s)	9.8	
Actuated g/C Ratio	0.04	
v/c Ratio	0.61	
Control Delay	146.4	
Queue Delay	0.0	
Total Delay	146.4	

Lanes, Volumes, Timings
RKA

Synchro 10 Report
Page 2

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2022 Existing
Timing Plan: PM Peak Hour

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
LOS		F	B	B		F	A	A	F	F		F
Approach Delay			20.6				30.3			1379.6		
Approach LOS			C				C			F		
Queue Length 50th (ft)		93	555	94		179	217	15	~229	~1183		129
Queue Length 95th (ft)		#194	604	129		236	244	25	#339	#1426		#225
Internal Link Dist (ft)			618				510			1120		
Turn Bay Length (ft)		225				350		125	200			75
Base Capacity (vph)		73	2586	1157		286	2728	1352	257	70		110
Starvation Cap Reductn		0	0	0		0	0	0	0	0		0
Spillback Cap Reductn		0	0	0		0	0	0	0	0		0
Storage Cap Reductn		0	0	0		0	0	0	0	0		0
Reduced v/c Ratio		0.79	0.58	0.17		0.77	0.33	0.05	0.95	5.63		0.74

Intersection Summary

Area Type: Other

Cycle Length: 240

Actuated Cycle Length: 240

Offset: 54 (23%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 5.63

Intersection Signal Delay: 261.6

Intersection LOS: F

Intersection Capacity Utilization 87.3%

ICU Level of Service E

Analysis Period (min) 15

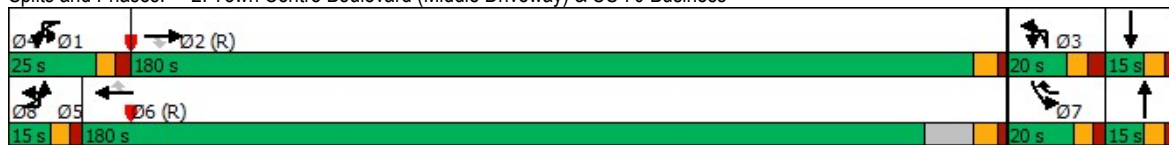
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Town Centre Boulevard (Middle Driveway) & US 70 Business



Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2022 Existing
Timing Plan: PM Peak Hour



Lane Group	SBT	SBR
LOS	F	
Approach Delay	148.1	
Approach LOS	F	
Queue Length 50th (ft)	69	
Queue Length 95th (ft)	#134	
Internal Link Dist (ft)	985	
Turn Bay Length (ft)		
Base Capacity (vph)	72	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.60	
Intersection Summary		

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 No-Build
Timing Plan: AM Peak Hour

												
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	8	21	952	68	4	42	1621	153	4	178	11	61
Future Volume (vph)	8	21	952	68	4	42	1621	153	4	178	11	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		225		0		350		125		200		0
Storage Lanes		1		1		2		1		1		0
Taper Length (ft)		100				100				100		
Lane Util. Factor	0.95	1.00	0.95	1.00	0.95	0.97	0.95	1.00	1.00	0.97	1.00	1.00
Frt				0.850				0.850			0.872	
Flt Protected		0.950				0.950				0.950		
Satd. Flow (prot)	0	1770	3539	1583	0	3433	3539	1583	0	3433	1624	0
Flt Permitted		0.950				0.950				0.950		
Satd. Flow (perm)	0	1770	3539	1583	0	3433	3539	1583	0	3433	1624	0
Right Turn on Red				No				No				No
Satd. Flow (RTOR)												
Link Speed (mph)			45				45				25	
Link Distance (ft)			698				590				1200	
Travel Time (s)			10.6				8.9				32.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	9	23	1058	76	4	47	1801	170	4	198	12	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	32	1058	76	0	51	1801	170	0	202	80	0
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	pm+ov	Prot	Prot	NA	
Protected Phases	5	5	2		1	1	6	7	3	3	8	
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	7	3	3	8	
Switch Phase												
Minimum Initial (s)	7.0	7.0	14.0	14.0	7.0	7.0	14.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	14.0	14.0	21.1	21.1	14.3	14.3	21.1	14.0	14.7	14.7	14.0	
Total Split (s)	15.0	15.0	180.0	180.0	25.0	25.0	180.0	20.0	20.0	20.0	15.0	
Total Split (%)	6.3%	6.3%	75.0%	75.0%	10.4%	10.4%	75.0%	8.3%	8.3%	8.3%	6.3%	
Maximum Green (s)	8.5	8.5	172.9	172.9	17.7	17.7	172.9	13.5	12.3	12.3	8.0	
Yellow Time (s)	4.0	4.0	5.1	5.1	4.0	4.0	5.1	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.5	2.5	2.0	2.0	3.3	3.3	2.0	2.5	3.7	3.7	3.0	
Lost Time Adjust (s)		-1.5	-2.1	-2.1		-2.3	-2.1	-1.5		-2.7	-2.0	
Total Lost Time (s)		5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0	8.0	8.0	3.0	3.0	8.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	40.0	40.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	70.0	70.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	None	None	None	None	
Act Effect Green (s)		9.4	174.1	174.1		11.4	178.7	202.1		25.2	16.2	
Actuated g/C Ratio		0.04	0.73	0.73		0.05	0.74	0.84		0.10	0.07	
v/c Ratio		0.46	0.41	0.07		0.31	0.68	0.13		0.56	0.73	
Control Delay		134.1	13.3	9.2		115.2	17.6	3.5		109.8	132.7	
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	
Total Delay		134.1	13.3	9.2		115.2	17.6	3.5		109.8	132.7	

Lanes, Volumes, Timings
RKA

Synchro 10 Report
Page 1

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 No-Build
Timing Plan: AM Peak Hour



Lane Group	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	90	9	11
Future Volume (vph)	90	9	11
Ideal Flow (vphpl)	1900	1900	1900
Storage Length (ft)	75		0
Storage Lanes	1		0
Taper Length (ft)	100		
Lane Util. Factor	1.00	1.00	1.00
Frt		0.918	
Flt Protected	0.950		
Satd. Flow (prot)	1770	1710	0
Flt Permitted	0.950		
Satd. Flow (perm)	1770	1710	0
Right Turn on Red			No
Satd. Flow (RTOR)			
Link Speed (mph)		25	
Link Distance (ft)		1065	
Travel Time (s)		29.0	
Peak Hour Factor	0.90	0.90	0.90
Adj. Flow (vph)	100	10	12
Shared Lane Traffic (%)			
Lane Group Flow (vph)	100	22	0
Turn Type	Prot	NA	
Protected Phases	7	4	
Permitted Phases			
Detector Phase	7	4	
Switch Phase			
Minimum Initial (s)	7.0	7.0	
Minimum Split (s)	14.0	14.0	
Total Split (s)	20.0	15.0	
Total Split (%)	8.3%	6.3%	
Maximum Green (s)	13.5	8.0	
Yellow Time (s)	4.0	4.0	
All-Red Time (s)	2.5	3.0	
Lost Time Adjust (s)	-1.5	-2.0	
Total Lost Time (s)	5.0	5.0	
Lead/Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	
Minimum Gap (s)	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	
Time To Reduce (s)	0.0	0.0	
Recall Mode	None	None	
Act Effct Green (s)	18.4	12.2	
Actuated g/C Ratio	0.08	0.05	
v/c Ratio	0.74	0.25	
Control Delay	136.6	118.1	
Queue Delay	0.0	0.0	
Total Delay	136.6	118.1	

Lanes, Volumes, Timings
RKA

Synchro 10 Report
Page 2

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 No-Build
Timing Plan: AM Peak Hour

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
LOS		F	B	A		F	B	A		F	F	
Approach Delay			16.4				18.8				116.3	
Approach LOS			B				B				F	
Queue Length 50th (ft)		51	301	30		41	715	38		164	~151	
Queue Length 95th (ft)		98	338	49		69	740	54		#236	#292	
Internal Link Dist (ft)			618				510				1120	
Turn Bay Length (ft)		225				350		125		200		
Base Capacity (vph)		73	2617	1170		286	2727	1333		359	109	
Starvation Cap Reductn		0	0	0		0	0	0		0	0	
Spillback Cap Reductn		0	0	0		0	0	0		0	0	
Storage Cap Reductn		0	0	0		0	0	0		0	0	
Reduced v/c Ratio		0.44	0.40	0.06		0.18	0.66	0.13		0.56	0.73	

Intersection Summary

Area Type: Other

Cycle Length: 240

Actuated Cycle Length: 240

Offset: 54 (23%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 29.6

Intersection LOS: C

Intersection Capacity Utilization 65.0%

ICU Level of Service C

Analysis Period (min) 15

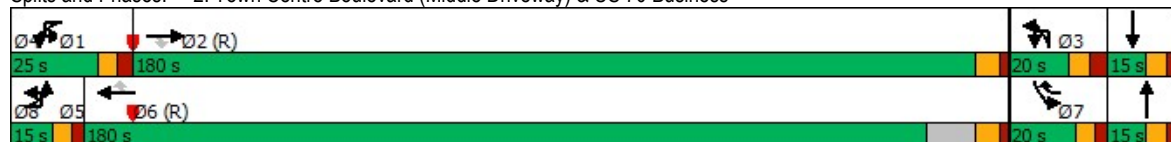
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Town Centre Boulevard (Middle Driveway) & US 70 Business



Clayton Town Centre - Clayton, NC
 2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 No-Build
 Timing Plan: AM Peak Hour



Lane Group	SBL	SBT	SBR
LOS	F	F	
Approach Delay		133.3	
Approach LOS		F	
Queue Length 50th (ft)	158	35	
Queue Length 95th (ft)	#275	75	
Internal Link Dist (ft)		985	
Turn Bay Length (ft)	75		
Base Capacity (vph)	135	88	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.74	0.25	
Intersection Summary			

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 No-Build
Timing Plan: PM Peak Hour

												
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	16	43	1539	204	10	213	963	73	247	8	391	82
Future Volume (vph)	16	43	1539	204	10	213	963	73	247	8	391	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		225		0		350		125	200		0	75
Storage Lanes		1		1		2		1	1		0	1
Taper Length (ft)		100				100			100			100
Lane Util. Factor	0.95	1.00	0.95	1.00	0.95	0.97	0.95	1.00	0.97	1.00	1.00	1.00
Frt				0.850				0.850		0.853		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1770	3539	1583	0	3433	3539	1583	3433	1589	0	1770
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1770	3539	1583	0	3433	3539	1583	3433	1589	0	1770
Right Turn on Red				No				No			No	
Satd. Flow (RTOR)												
Link Speed (mph)			45				45			25		
Link Distance (ft)			698				590			1200		
Travel Time (s)			10.6				8.9			32.7		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	18	48	1710	227	11	237	1070	81	274	9	434	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	66	1710	227	0	248	1070	81	274	443	0	91
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	pm+ov	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6	7	3	8		7
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	7	3	8		7
Switch Phase												
Minimum Initial (s)	7.0	7.0	14.0	14.0	7.0	7.0	14.0	7.0	7.0	7.0		7.0
Minimum Split (s)	14.0	14.0	21.1	21.1	14.3	14.3	21.1	14.0	14.7	14.0		14.0
Total Split (s)	15.0	15.0	180.0	180.0	25.0	25.0	180.0	20.0	20.0	15.0		20.0
Total Split (%)	6.3%	6.3%	75.0%	75.0%	10.4%	10.4%	75.0%	8.3%	8.3%	6.3%		8.3%
Maximum Green (s)	8.5	8.5	172.9	172.9	17.7	17.7	172.9	13.5	12.3	8.0		13.5
Yellow Time (s)	4.0	4.0	5.1	5.1	4.0	4.0	5.1	4.0	4.0	4.0		4.0
All-Red Time (s)	2.5	2.5	2.0	2.0	3.3	3.3	2.0	2.5	3.7	3.0		2.5
Lost Time Adjust (s)		-1.5	-2.1	-2.1		-2.3	-2.1	-1.5	-2.7	-2.0		-1.5
Total Lost Time (s)		5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0	8.0	8.0	3.0	3.0	8.0	3.0	3.0	3.0		3.0
Minimum Gap (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0
Time Before Reduce (s)	0.0	0.0	40.0	40.0	0.0	0.0	40.0	0.0	0.0	0.0		0.0
Time To Reduce (s)	0.0	0.0	70.0	70.0	0.0	0.0	70.0	0.0	0.0	0.0		0.0
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	None	None	None		None
Act Effect Green (s)		10.0	175.0	175.0		20.0	185.0	204.8	15.0	10.2		14.8
Actuated g/C Ratio		0.04	0.73	0.73		0.08	0.77	0.85	0.06	0.04		0.06
v/c Ratio		0.90	0.66	0.20		0.87	0.39	0.06	1.28	6.61		0.83
Control Delay		188.1	18.6	10.8		135.1	9.5	2.8	235.1	2558.1		158.8
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay		188.1	18.6	10.8		135.1	9.5	2.8	235.1	2558.1		158.8

Lanes, Volumes, Timings
RKA

Synchro 10 Report
Page 1

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 No-Build
Timing Plan: PM Peak Hour

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	↕	
Traffic Volume (vph)	24	20
Future Volume (vph)	24	20
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.933	
Flt Protected		
Satd. Flow (prot)	1738	0
Flt Permitted		
Satd. Flow (perm)	1738	0
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	25	
Link Distance (ft)	1065	
Travel Time (s)	29.0	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	27	22
Shared Lane Traffic (%)		
Lane Group Flow (vph)	49	0
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	7.0	
Minimum Split (s)	14.0	
Total Split (s)	15.0	
Total Split (%)	6.3%	
Maximum Green (s)	8.0	
Yellow Time (s)	4.0	
All-Red Time (s)	3.0	
Lost Time Adjust (s)	-2.0	
Total Lost Time (s)	5.0	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Minimum Gap (s)	3.0	
Time Before Reduce (s)	0.0	
Time To Reduce (s)	0.0	
Recall Mode	None	
Act Effct Green (s)	10.0	
Actuated g/C Ratio	0.04	
v/c Ratio	0.68	
Control Delay	152.6	
Queue Delay	0.0	
Total Delay	152.6	

Lanes, Volumes, Timings
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Page 2

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 No-Build
Timing Plan: PM Peak Hour

	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Group												
LOS		F	B	B		F	A	A	F	F		F
Approach Delay			23.3				31.4			1670.4		
Approach LOS			C				C			F		
Queue Length 50th (ft)		107	714	109		204	274	17	~281	~1344		146
Queue Length 95th (ft)		#227	768	146		#287	305	27	#394	#1593		#268
Internal Link Dist (ft)			618				510			1120		
Turn Bay Length (ft)		225				350		125	200			75
Base Capacity (vph)		73	2580	1154		286	2727	1352	214	67		110
Starvation Cap Reductn		0	0	0		0	0	0	0	0		0
Spillback Cap Reductn		0	0	0		0	0	0	0	0		0
Storage Cap Reductn		0	0	0		0	0	0	0	0		0
Reduced v/c Ratio		0.90	0.66	0.20		0.87	0.39	0.06	1.28	6.61		0.83

Intersection Summary

Area Type: Other

Cycle Length: 240

Actuated Cycle Length: 240

Offset: 54 (23%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 6.61

Intersection Signal Delay: 307.6

Intersection LOS: F

Intersection Capacity Utilization 96.0%

ICU Level of Service F

Analysis Period (min) 15

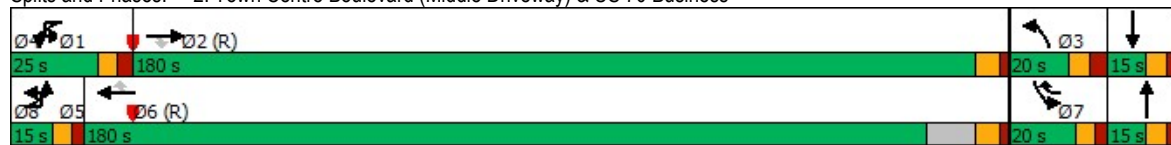
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Town Centre Boulevard (Middle Driveway) & US 70 Business



Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 No-Build
Timing Plan: PM Peak Hour



Lane Group	SBT	SBR
LOS	F	
Approach Delay	156.6	
Approach LOS	F	
Queue Length 50th (ft)	78	
Queue Length 95th (ft)	#160	
Internal Link Dist (ft)	985	
Turn Bay Length (ft)		
Base Capacity (vph)	72	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.68	
Intersection Summary		

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 Build
Timing Plan: AM Peak Hour

												
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	8	21	967	68	4	44	1647	153	4	191	11	61
Future Volume (vph)	8	21	967	68	4	44	1647	153	4	191	11	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		225		0		350		125		200		0
Storage Lanes		1		1		2		1		1		0
Taper Length (ft)		100				100				100		
Lane Util. Factor	0.95	1.00	0.95	1.00	0.95	0.97	0.95	1.00	1.00	0.97	1.00	1.00
Frt				0.850				0.850			0.872	
Flt Protected		0.950				0.950				0.950		
Satd. Flow (prot)	0	1770	3539	1583	0	3433	3539	1583	0	3433	1624	0
Flt Permitted		0.950				0.950				0.950		
Satd. Flow (perm)	0	1770	3539	1583	0	3433	3539	1583	0	3433	1624	0
Right Turn on Red				No				No				No
Satd. Flow (RTOR)												
Link Speed (mph)			45				45				25	
Link Distance (ft)			698				590				1200	
Travel Time (s)			10.6				8.9				32.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	9	23	1074	76	4	49	1830	170	4	212	12	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	32	1074	76	0	53	1830	170	0	216	80	0
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	pm+ov	Prot	Prot	NA	
Protected Phases	5	5	2		1	1	6	7	3	3	8	
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	7	3	3	8	
Switch Phase												
Minimum Initial (s)	7.0	7.0	14.0	14.0	7.0	7.0	14.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	14.0	14.0	21.1	21.1	14.3	14.3	21.1	14.0	14.7	14.7	14.0	
Total Split (s)	15.0	15.0	180.0	180.0	25.0	25.0	180.0	20.0	20.0	20.0	15.0	
Total Split (%)	6.3%	6.3%	75.0%	75.0%	10.4%	10.4%	75.0%	8.3%	8.3%	8.3%	6.3%	
Maximum Green (s)	8.5	8.5	172.9	172.9	17.7	17.7	172.9	13.5	12.3	12.3	8.0	
Yellow Time (s)	4.0	4.0	5.1	5.1	4.0	4.0	5.1	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.5	2.5	2.0	2.0	3.3	3.3	2.0	2.5	3.7	3.7	3.0	
Lost Time Adjust (s)		-1.5	-2.1	-2.1		-2.3	-2.1	-1.5		-2.7	-2.0	
Total Lost Time (s)		5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0	8.0	8.0	3.0	3.0	8.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	40.0	40.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	70.0	70.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	None	None	None	None	
Act Effect Green (s)		9.8	169.9	169.9		11.5	174.3	198.8		27.2	19.1	
Actuated g/C Ratio		0.04	0.71	0.71		0.05	0.73	0.83		0.11	0.08	
v/c Ratio		0.44	0.43	0.07		0.32	0.71	0.13		0.56	0.62	
Control Delay		131.6	15.4	10.8		115.3	21.1	4.3		106.6	119.0	
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	
Total Delay		131.6	15.4	10.8		115.3	21.1	4.3		106.6	119.0	

Lanes, Volumes, Timings
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Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 Build
Timing Plan: AM Peak Hour



Lane Group	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	90	9	11
Future Volume (vph)	90	9	11
Ideal Flow (vphpl)	1900	1900	1900
Storage Length (ft)	75		0
Storage Lanes	1		0
Taper Length (ft)	100		
Lane Util. Factor	1.00	1.00	1.00
Frt		0.918	
Flt Protected	0.950		
Satd. Flow (prot)	1770	1710	0
Flt Permitted	0.950		
Satd. Flow (perm)	1770	1710	0
Right Turn on Red			No
Satd. Flow (RTOR)			
Link Speed (mph)		25	
Link Distance (ft)		1065	
Travel Time (s)		29.0	
Peak Hour Factor	0.90	0.90	0.90
Adj. Flow (vph)	100	10	12
Shared Lane Traffic (%)			
Lane Group Flow (vph)	100	22	0
Turn Type	Prot	NA	
Protected Phases	7	4	
Permitted Phases			
Detector Phase	7	4	
Switch Phase			
Minimum Initial (s)	7.0	7.0	
Minimum Split (s)	14.0	14.0	
Total Split (s)	20.0	15.0	
Total Split (%)	8.3%	6.3%	
Maximum Green (s)	13.5	8.0	
Yellow Time (s)	4.0	4.0	
All-Red Time (s)	2.5	3.0	
Lost Time Adjust (s)	-1.5	-2.0	
Total Lost Time (s)	5.0	5.0	
Lead/Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	
Minimum Gap (s)	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	
Time To Reduce (s)	0.0	0.0	
Recall Mode	None	None	
Act Effect Green (s)	19.5	14.2	
Actuated g/C Ratio	0.08	0.06	
v/c Ratio	0.70	0.22	
Control Delay	129.9	112.9	
Queue Delay	0.0	0.0	
Total Delay	129.9	112.9	

Lanes, Volumes, Timings
RKA

Synchro 10 Report
Page 2

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 Build
Timing Plan: AM Peak Hour

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
LOS		F	B	B		F	C	A		F	F	
Approach Delay			18.2				22.1				110.0	
Approach LOS			B				C				F	
Queue Length 50th (ft)		51	303	30		42	725	38		177	~151	
Queue Length 95th (ft)		98	346	49		72	765	54		#261	#292	
Internal Link Dist (ft)			618				510				1120	
Turn Bay Length (ft)		225				350		125		200		
Base Capacity (vph)		76	2606	1166		286	2727	1311		388	129	
Starvation Cap Reductn		0	0	0		0	0	0		0	0	
Spillback Cap Reductn		0	0	0		0	0	0		0	0	
Storage Cap Reductn		0	0	0		0	0	0		0	0	
Reduced v/c Ratio		0.42	0.41	0.07		0.19	0.67	0.13		0.56	0.62	

Intersection Summary

Area Type: Other

Cycle Length: 240

Actuated Cycle Length: 240

Offset: 54 (23%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 31.5

Intersection LOS: C

Intersection Capacity Utilization 66.1%

ICU Level of Service C

Analysis Period (min) 15

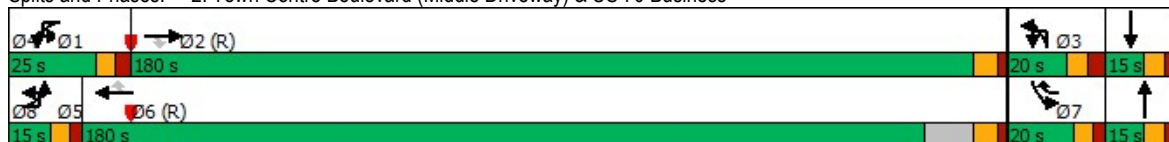
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Town Centre Boulevard (Middle Driveway) & US 70 Business



Clayton Town Centre - Clayton, NC
 2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 Build
 Timing Plan: AM Peak Hour



Lane Group	SBL	SBT	SBR
LOS	F	F	
Approach Delay		126.9	
Approach LOS		F	
Queue Length 50th (ft)	159	35	
Queue Length 95th (ft)	#275	75	
Internal Link Dist (ft)		985	
Turn Bay Length (ft)	75		
Base Capacity (vph)	143	102	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.70	0.22	
Intersection Summary			

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 Build
Timing Plan: PM Peak Hour

												
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	16	43	1570	204	10	220	979	73	255	8	391	82
Future Volume (vph)	16	43	1570	204	10	220	979	73	255	8	391	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		225		0		350		125	200		0	75
Storage Lanes		1		1		2		1	1		0	1
Taper Length (ft)		100				100			100			100
Lane Util. Factor	0.95	1.00	0.95	1.00	0.95	0.97	0.95	1.00	0.97	1.00	1.00	1.00
Frt				0.850				0.850		0.853		
Flt Protected		0.950				0.950			0.950			0.950
Satd. Flow (prot)	0	1770	3539	1583	0	3433	3539	1583	3433	1589	0	1770
Flt Permitted		0.950				0.950			0.950			0.950
Satd. Flow (perm)	0	1770	3539	1583	0	3433	3539	1583	3433	1589	0	1770
Right Turn on Red				No				No			No	
Satd. Flow (RTOR)												
Link Speed (mph)			45				45			25		
Link Distance (ft)			698				590			1200		
Travel Time (s)			10.6				8.9			32.7		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	18	48	1744	227	11	244	1088	81	283	9	434	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	66	1744	227	0	255	1088	81	283	443	0	91
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	pm+ov	Prot	NA		Prot
Protected Phases	5	5	2		1	1	6	7	3	8		7
Permitted Phases				2				6				
Detector Phase	5	5	2	2	1	1	6	7	3	8		7
Switch Phase												
Minimum Initial (s)	7.0	7.0	14.0	14.0	7.0	7.0	14.0	7.0	7.0	7.0		7.0
Minimum Split (s)	14.0	14.0	21.1	21.1	14.3	14.3	21.1	14.0	14.7	14.0		14.0
Total Split (s)	15.0	15.0	180.0	180.0	25.0	25.0	180.0	20.0	20.0	15.0		20.0
Total Split (%)	6.3%	6.3%	75.0%	75.0%	10.4%	10.4%	75.0%	8.3%	8.3%	6.3%		8.3%
Maximum Green (s)	8.5	8.5	172.9	172.9	17.7	17.7	172.9	13.5	12.3	8.0		13.5
Yellow Time (s)	4.0	4.0	5.1	5.1	4.0	4.0	5.1	4.0	4.0	4.0		4.0
All-Red Time (s)	2.5	2.5	2.0	2.0	3.3	3.3	2.0	2.5	3.7	3.0		2.5
Lost Time Adjust (s)		-1.5	-2.1	-2.1		-2.3	-2.1	-1.5	-2.7	-2.0		-1.5
Total Lost Time (s)		5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0	8.0	8.0	3.0	3.0	8.0	3.0	3.0	3.0		3.0
Minimum Gap (s)	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0
Time Before Reduce (s)	0.0	0.0	40.0	40.0	0.0	0.0	40.0	0.0	0.0	0.0		0.0
Time To Reduce (s)	0.0	0.0	70.0	70.0	0.0	0.0	70.0	0.0	0.0	0.0		0.0
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	None	None	None		None
Act Effect Green (s)		10.0	175.0	175.0		20.0	185.0	204.8	15.0	10.2		14.8
Actuated g/C Ratio		0.04	0.73	0.73		0.08	0.77	0.85	0.06	0.04		0.06
v/c Ratio		0.90	0.68	0.20		0.89	0.40	0.06	1.32	6.61		0.83
Control Delay		188.1	19.0	10.8		138.4	9.6	2.8	248.8	2558.1		158.8
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Total Delay		188.1	19.0	10.8		138.4	9.6	2.8	248.8	2558.1		158.8

Lanes, Volumes, Timings
RKA

Synchro 10 Report
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Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 Build
Timing Plan: PM Peak Hour

	↓	↙
Lane Group	SBT	SBR
Lane Configurations	1	1
Traffic Volume (vph)	24	20
Future Volume (vph)	24	20
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.933	
Flt Protected		
Satd. Flow (prot)	1738	0
Flt Permitted		
Satd. Flow (perm)	1738	0
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	25	
Link Distance (ft)	1065	
Travel Time (s)	29.0	
Peak Hour Factor	0.90	0.90
Adj. Flow (vph)	27	22
Shared Lane Traffic (%)		
Lane Group Flow (vph)	49	0
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	7.0	
Minimum Split (s)	14.0	
Total Split (s)	15.0	
Total Split (%)	6.3%	
Maximum Green (s)	8.0	
Yellow Time (s)	4.0	
All-Red Time (s)	3.0	
Lost Time Adjust (s)	-2.0	
Total Lost Time (s)	5.0	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	
Minimum Gap (s)	3.0	
Time Before Reduce (s)	0.0	
Time To Reduce (s)	0.0	
Recall Mode	None	
Act Effect Green (s)	10.0	
Actuated g/C Ratio	0.04	
v/c Ratio	0.68	
Control Delay	152.6	
Queue Delay	0.0	
Total Delay	152.6	

Lanes, Volumes, Timings
RKA

Synchro 10 Report
Page 2

Clayton Town Centre - Clayton, NC
2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 Build
Timing Plan: PM Peak Hour

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
LOS		F	B	B		F	A	A	F	F		F
Approach Delay			23.6				32.3			1657.9		
Approach LOS			C				C			F		
Queue Length 50th (ft)		107	741	109		210	281	17	~296	~1344		146
Queue Length 95th (ft)		#227	798	146		#300	312	27	#411	#1593		#268
Internal Link Dist (ft)			618				510			1120		
Turn Bay Length (ft)		225				350		125	200			75
Base Capacity (vph)		73	2580	1154		286	2727	1352	214	67		110
Starvation Cap Reductn		0	0	0		0	0	0	0	0		0
Spillback Cap Reductn		0	0	0		0	0	0	0	0		0
Storage Cap Reductn		0	0	0		0	0	0	0	0		0
Reduced v/c Ratio		0.90	0.68	0.20		0.89	0.40	0.06	1.32	6.61		0.83

Intersection Summary

Area Type: Other

Cycle Length: 240

Actuated Cycle Length: 240

Offset: 54 (23%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 6.61

Intersection Signal Delay: 305.0

Intersection LOS: F

Intersection Capacity Utilization 97.1%

ICU Level of Service F

Analysis Period (min) 15

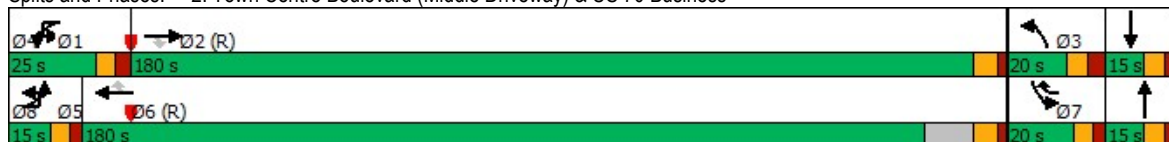
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Town Centre Boulevard (Middle Driveway) & US 70 Business



Clayton Town Centre - Clayton, NC
 2: Town Centre Boulevard (Middle Driveway) & US 70 Business

2028 Build
 Timing Plan: PM Peak Hour



Lane Group	SBT	SBR
LOS	F	
Approach Delay	156.6	
Approach LOS	F	
Queue Length 50th (ft)	78	
Queue Length 95th (ft)	#160	
Internal Link Dist (ft)	985	
Turn Bay Length (ft)		
Base Capacity (vph)	72	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.68	
Intersection Summary		

APPENDIX G

CAPACITY ANALYSIS CALCULATIONS FINANCIAL DRIVE & US 70 BUSINESS

Clayton Town Centre - Clayton, NC
3: Financial Drive & US 70 Business

2022 Existing
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	128.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	846	92	0	0	0	0	0	276	4	405	0
Future Vol, veh/h	0	846	92	0	0	0	0	0	276	4	405	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16983	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	940	102	0	0	0	0	0	307	4	450	0
Major/Minor	Major1			Minor1			Minor2					
Conflicting Flow All	-	0	0				-	-	470	470	1042	-
Stage 1	-	-	-				-	-	-	0	0	-
Stage 2	-	-	-				-	-	-	470	1042	-
Critical Hdwy	-	-	-				-	-	6.94	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-				-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-				-	-	-	6.54	5.54	-
Follow-up Hdwy	-	-	-				-	-	3.32	3.52	4.02	-
Pot Cap-1 Maneuver	0	-	-				0	0	540	477	~ 228	0
Stage 1	0	-	-				0	0	-	-	-	0
Stage 2	0	-	-				0	0	-	543	~ 305	0
Platoon blocked, %		-	-									
Mov Cap-1 Maneuver	-	-	-				-	-	540	206	~ 228	-
Mov Cap-2 Maneuver	-	-	-				-	-	-	206	~ 228	-
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	235	~ 305	-
Approach	EB			NB			SB					
HCM Control Delay, s	0			20.1			\$ 497.4					
HCM LOS				C			F					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1								
Capacity (veh/h)	540	-	-	228								
HCM Lane V/C Ratio	0.568	-	-	1.993								
HCM Control Delay (s)	20.1	-	-	\$ 497.4								
HCM Lane LOS	C	-	-	F								
HCM 95th %tile Q(veh)	3.5	-	-	33.4								
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 6th TWSC
RKA

Synchro 10 Report
Page 1

Clayton Town Centre - Clayton, NC
33: US 70 Business & White Pine Drive

2022 Existing
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑				↑
Traffic Vol, veh/h	0	0	0	0	1598	5	4	4	0	0	0	4
Future Vol, veh/h	0	0	0	0	1598	5	4	4	0	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1776	6	4	4	0	0	0	4
Major/Minor				Major2		Minor1		Minor2				
Conflicting Flow All				-	-	0	888	1782	-	-	-	891
Stage 1				-	-	-	0	0	-	-	-	-
Stage 2				-	-	-	888	1782	-	-	-	-
Critical Hdwy				-	-	-	7.54	6.54	-	-	-	6.94
Critical Hdwy Stg 1				-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2				-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy				-	-	-	3.52	4.02	-	-	-	3.32
Pot Cap-1 Maneuver				0	-	-	238	81	0	0	0	285
Stage 1				0	-	-	-	-	0	0	0	-
Stage 2				0	-	-	305	133	0	0	0	-
Platoon blocked, %				-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver				-	-	-	234	81	-	-	-	285
Mov Cap-2 Maneuver				-	-	-	234	81	-	-	-	-
Stage 1				-	-	-	-	-	-	-	-	-
Stage 2				-	-	-	300	133	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				0		37.4		17.8				
HCM LOS						E		C				
Minor Lane/Major Mvmt		NBLn1	WBT	WBR	SBLn1							
Capacity (veh/h)		120	-	-	285							
HCM Lane V/C Ratio		0.074	-	-	0.016							
HCM Control Delay (s)		37.4	-	-	17.8							
HCM Lane LOS		E	-	-	C							
HCM 95th %tile Q(veh)		0.2	-	-	0							

Clayton Town Centre - Clayton, NC
3: Financial Drive & US 70 Business

2022 Existing
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	39											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	1712	59	0	0	0	0	0	347	4	305	0
Future Vol, veh/h	0	1712	59	0	0	0	0	0	347	4	305	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16983	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1902	66	0	0	0	0	0	386	4	339	0
Major/Minor	Major1			Minor1			Minor2					
Conflicting Flow All	-	0	0				-	-	951	951	1968	-
Stage 1	-	-	-				-	-	-	0	0	-
Stage 2	-	-	-				-	-	-	951	1968	-
Critical Hdwy	-	-	-				-	-	6.94	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-				-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-				-	-	-	6.54	5.54	-
Follow-up Hdwy	-	-	-				-	-	3.32	3.52	4.02	-
Pot Cap-1 Maneuver	0	-	-				0	0 ~ 260	214	~ 62	0	
Stage 1	0	-	-				0	0	-	-	-	0
Stage 2	0	-	-				0	0	-	279	~ 107	0
Platoon blocked, %		-	-									
Mov Cap-1 Maneuver	-	-	-				-	- ~ 260	-	~ 62	-	
Mov Cap-2 Maneuver	-	-	-				-	-	-	~ 62	-	
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	- ~ 107	-	
Approach	EB			NB			SB					
HCM Control Delay, s	0			272.6								
HCM LOS				F			-					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR SBLn1									
Capacity (veh/h)	260	-	-									
HCM Lane V/C Ratio	1.483	-	-									
HCM Control Delay (s)	272.6	-	-									
HCM Lane LOS	F	-	-									
HCM 95th %tile Q(veh)	22.2	-	-									
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 6th TWSC
RKA

Synchro 10 Report
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Clayton Town Centre - Clayton, NC
33: US 70 Business & White Pine Drive

2022 Existing
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↕				↗
Traffic Vol, veh/h	0	0	0	0	1071	5	4	4	0	0	0	5
Future Vol, veh/h	0	0	0	0	1071	5	4	4	0	0	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1190	6	4	4	0	0	0	6
Major/Minor				Major2		Minor1		Minor2				
Conflicting Flow All				-	-	0	595	1196	-	-	-	598
Stage 1				-	-	-	0	0	-	-	-	-
Stage 2				-	-	-	595	1196	-	-	-	-
Critical Hdwy				-	-	-	7.54	6.54	-	-	-	6.94
Critical Hdwy Stg 1				-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2				-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy				-	-	-	3.52	4.02	-	-	-	3.32
Pot Cap-1 Maneuver				0	-	-	388	185	0	0	0	445
Stage 1				0	-	-	-	-	0	0	0	-
Stage 2				0	-	-	458	258	0	0	0	-
Platoon blocked, %				-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver				-	-	-	383	185	-	-	-	445
Mov Cap-2 Maneuver				-	-	-	383	185	-	-	-	-
Stage 1				-	-	-	-	-	-	-	-	-
Stage 2				-	-	-	452	258	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				0		20		13.2				
HCM LOS						C		B				
Minor Lane/Major Mvmt		NBLn1	WBT	WBR	SBLn1							
Capacity (veh/h)		249	-	-	445							
HCM Lane V/C Ratio		0.036	-	-	0.012							
HCM Control Delay (s)		20	-	-	13.2							
HCM Lane LOS		C	-	-	B							
HCM 95th %tile Q(veh)		0.1	-	-	0							

Clayton Town Centre - Clayton, NC
3: Financial Drive & US 70 Business

2028 No-Build
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh		227.5										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	996	104	0	0	0	0	0	311	4	456	0
Future Vol, veh/h	0	996	104	0	0	0	0	0	311	4	456	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16983	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1107	116	0	0	0	0	0	346	4	507	0
Major/Minor	Major1			Minor1			Minor2					
Conflicting Flow All	-	0	0				-	-	554	554	1223	-
Stage 1	-	-	-				-	-	-	0	0	-
Stage 2	-	-	-				-	-	-	554	1223	-
Critical Hdwy	-	-	-				-	-	6.94	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-				-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-				-	-	-	6.54	5.54	-
Follow-up Hdwy	-	-	-				-	-	3.32	3.52	4.02	-
Pot Cap-1 Maneuver	0	-	-				0	0	476	415	~ 178	0
Stage 1	0	-	-				0	0	-	-	-	0
Stage 2	0	-	-				0	0	-	484	~ 250	0
Platoon blocked, %		-	-									
Mov Cap-1 Maneuver	-	-	-				-	-	476	114	~ 178	-
Mov Cap-2 Maneuver	-	-	-				-	-	-	114	~ 178	-
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	133	~ 250	-
Approach	EB			NB			SB					
HCM Control Delay, s	0			30.1			\$ 904.8					
HCM LOS				D			F					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1								
Capacity (veh/h)	476	-	-	177								
HCM Lane V/C Ratio	0.726	-	-	2.888								
HCM Control Delay (s)	30.1	-	-	\$ 904.8								
HCM Lane LOS	D	-	-	F								
HCM 95th %tile Q(veh)	5.8	-	-	45.9								
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 6th TWSC
RKA

Synchro 10 Report
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Clayton Town Centre - Clayton, NC
33: US 70 Business & White Pine Drive

2028 No-Build
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑				↑
Traffic Vol, veh/h	0	0	0	0	1814	6	4	4	0	0	0	4
Future Vol, veh/h	0	0	0	0	1814	6	4	4	0	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	2016	7	4	4	0	0	0	4
Major/Minor				Major2		Minor1		Minor2				
Conflicting Flow All				-	-	0	1008	2023	-	-	-	1012
Stage 1				-	-	-	0	0	-	-	-	-
Stage 2				-	-	-	1008	2023	-	-	-	-
Critical Hdwy				-	-	-	7.54	6.54	-	-	-	6.94
Critical Hdwy Stg 1				-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2				-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy				-	-	-	3.52	4.02	-	-	-	3.32
Pot Cap-1 Maneuver				0	-	-	195	57	0	0	0	237
Stage 1				0	-	-	-	-	0	0	0	-
Stage 2				0	-	-	258	100	0	0	0	-
Platoon blocked, %				-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver				-	-	-	191	57	-	-	-	237
Mov Cap-2 Maneuver				-	-	-	191	57	-	-	-	-
Stage 1				-	-	-	-	-	-	-	-	-
Stage 2				-	-	-	253	100	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				0		50.5		20.5				
HCM LOS						F		C				
Minor Lane/Major Mvmt				NBLn1	WBT	WBR	SBLn1					
Capacity (veh/h)				88	-	-	237					
HCM Lane V/C Ratio				0.101	-	-	0.019					
HCM Control Delay (s)				50.5	-	-	20.5					
HCM Lane LOS				F	-	-	C					
HCM 95th %tile Q(veh)				0.3	-	-	0.1					

Clayton Town Centre - Clayton, NC
3: Financial Drive & US 70 Business

2028 No-Build
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	75											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	1956	66	0	0	0	0	0	391	4	343	0
Future Vol, veh/h	0	1956	66	0	0	0	0	0	391	4	343	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16983	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2173	73	0	0	0	0	0	434	4	381	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	1087	1087	2246	-
Stage 1	-	-	-	-	-	-	0	0	-
Stage 2	-	-	-	-	-	-	1087	2246	-
Critical Hdwy	-	-	-	-	-	6.94	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-
Follow-up Hdwy	-	-	-	-	-	3.32	3.52	4.02	-
Pot Cap-1 Maneuver	0	-	-	0	0	~ 211	170	~ 41	0
Stage 1	0	-	-	0	0	-	-	-	0
Stage 2	0	-	-	0	0	-	231	~ 77	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	~ 211	-	~ 41	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 41	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	~ 77	-

Approach	EB	NB	SB
HCM Control Delay, s	0	\$ 529.7	
HCM LOS		F	-

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1
Capacity (veh/h)	211	-	-	-
HCM Lane V/C Ratio	2.059	-	-	-
HCM Control Delay (s)	\$ 529.7	-	-	-
HCM Lane LOS	F	-	-	-
HCM 95th %tile Q(veh)	32.9	-	-	-

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

Clayton Town Centre - Clayton, NC
33: US 70 Business & White Pine Drive

2028 No-Build
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑				↑
Traffic Vol, veh/h	0	0	0	0	1253	6	4	4	0	0	0	6
Future Vol, veh/h	0	0	0	0	1253	6	4	4	0	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1392	7	4	4	0	0	0	7
Major/Minor				Major2		Minor1		Minor2				
Conflicting Flow All				-	-	0	696	1399	-	-	-	700
Stage 1				-	-	-	0	0	-	-	-	-
Stage 2				-	-	-	696	1399	-	-	-	-
Critical Hdwy				-	-	-	7.54	6.54	-	-	-	6.94
Critical Hdwy Stg 1				-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2				-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy				-	-	-	3.52	4.02	-	-	-	3.32
Pot Cap-1 Maneuver				0	-	-	328	139	0	0	0	382
Stage 1				0	-	-	-	-	0	0	0	-
Stage 2				0	-	-	398	206	0	0	0	-
Platoon blocked, %						-	-					
Mov Cap-1 Maneuver				-	-	-	322	139	-	-	-	382
Mov Cap-2 Maneuver				-	-	-	322	139	-	-	-	-
Stage 1				-	-	-	-	-	-	-	-	-
Stage 2				-	-	-	391	206	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				0		24.4		14.6				
HCM LOS						C		B				
Minor Lane/Major Mvmt		NBLn1	WBT	WBR	SBLn1							
Capacity (veh/h)		194	-	-	382							
HCM Lane V/C Ratio		0.046	-	-	0.017							
HCM Control Delay (s)		24.4	-	-	14.6							
HCM Lane LOS		C	-	-	B							
HCM 95th %tile Q(veh)		0.1	-	-	0.1							

Clayton Town Centre - Clayton, NC
3: Financial Drive & US 70 Business

2028 Build
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	239.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	1003	112	0	0	0	0	0	356	4	463	0
Future Vol, veh/h	0	1003	112	0	0	0	0	0	356	4	463	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16983	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1114	124	0	0	0	0	0	396	4	514	0
Major/Minor	Major1			Minor1			Minor2					
Conflicting Flow All	-	0	0				-	-	557	557	1238	-
Stage 1	-	-	-				-	-	-	0	0	-
Stage 2	-	-	-				-	-	-	557	1238	-
Critical Hdwy	-	-	-				-	-	6.94	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-				-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-				-	-	-	6.54	5.54	-
Follow-up Hdwy	-	-	-				-	-	3.32	3.52	4.02	-
Pot Cap-1 Maneuver	0	-	-				0	0	474	413	~ 174	0
Stage 1	0	-	-				0	0	-	-	-	0
Stage 2	0	-	-				0	0	-	482	~ 246	0
Platoon blocked, %		-	-									
Mov Cap-1 Maneuver	-	-	-				-	-	474	68	~ 174	-
Mov Cap-2 Maneuver	-	-	-				-	-	-	68	~ 174	-
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	80	~ 246	-
Approach	EB			NB			SB					
HCM Control Delay, s	0			40.5			\$ 963.8					
HCM LOS				E			F					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1								
Capacity (veh/h)	474	-	-	172								
HCM Lane V/C Ratio	0.835	-	-	3.017								
HCM Control Delay (s)	40.5	-	-	\$ 963.8								
HCM Lane LOS	E	-	-	F								
HCM 95th %tile Q(veh)	8.2	-	-	47.5								
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 6th TWSC
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Synchro 10 Report
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Clayton Town Centre - Clayton, NC
33: US 70 Business & White Pine Drive

2028 Build
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑				↑
Traffic Vol, veh/h	0	0	0	0	1842	6	4	4	0	0	0	4
Future Vol, veh/h	0	0	0	0	1842	6	4	4	0	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	2047	7	4	4	0	0	0	4
Major/Minor				Major2		Minor1		Minor2				
Conflicting Flow All				-	-	0	1024	2054	-	-	-	1027
Stage 1				-	-	-	0	0	-	-	-	-
Stage 2				-	-	-	1024	2054	-	-	-	-
Critical Hdwy				-	-	-	7.54	6.54	-	-	-	6.94
Critical Hdwy Stg 1				-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2				-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy				-	-	-	3.52	4.02	-	-	-	3.32
Pot Cap-1 Maneuver				0	-	-	190	55	0	0	0	232
Stage 1				0	-	-	-	-	0	0	0	-
Stage 2				0	-	-	252	97	0	0	0	-
Platoon blocked, %				-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver				-	-	-	186	55	-	-	-	232
Mov Cap-2 Maneuver				-	-	-	186	55	-	-	-	-
Stage 1				-	-	-	-	-	-	-	-	-
Stage 2				-	-	-	247	97	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				0		52.2		20.8				
HCM LOS						F		C				
Minor Lane/Major Mvmt				NBLn1	WBT	WBR	SBLn1					
Capacity (veh/h)				85	-	-	232					
HCM Lane V/C Ratio				0.105	-	-	0.019					
HCM Control Delay (s)				52.2	-	-	20.8					
HCM Lane LOS				F	-	-	C					
HCM 95th %tile Q(veh)				0.3	-	-	0.1					

Clayton Town Centre - Clayton, NC
3: Financial Drive & US 70 Business

2028 Build
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	87.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	1960	93	0	0	0	0	0	419	4	364	0
Future Vol, veh/h	0	1960	93	0	0	0	0	0	419	4	364	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16983	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2178	103	0	0	0	0	0	466	4	404	0
Major/Minor	Major1			Minor1			Minor2					
Conflicting Flow All	-	0	0				-	-	1089	1089	2281	-
Stage 1	-	-	-				-	-	-	0	0	-
Stage 2	-	-	-				-	-	-	1089	2281	-
Critical Hdwy	-	-	-				-	-	6.94	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-				-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-				-	-	-	6.54	5.54	-
Follow-up Hdwy	-	-	-				-	-	3.32	3.52	4.02	-
Pot Cap-1 Maneuver	0	-	-				0	0	~ 211	170	~ 39	0
Stage 1	0	-	-				0	0	-	-	-	0
Stage 2	0	-	-				0	0	-	230	~ 74	0
Platoon blocked, %		-	-									
Mov Cap-1 Maneuver	-	-	-				-	-	~ 211	-	~ 39	-
Mov Cap-2 Maneuver	-	-	-				-	-	-	-	~ 39	-
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	-	~ 74	-
Approach	EB			NB			SB					
HCM Control Delay, s	0			\$ 594.5								
HCM LOS				F			-					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR SBLn1									
Capacity (veh/h)	211	-	-									
HCM Lane V/C Ratio	2.206	-	-									
HCM Control Delay (s)	\$ 594.5	-	-									
HCM Lane LOS	F	-	-									
HCM 95th %tile Q(veh)	36.6	-	-									
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 6th TWSC
RKA

Synchro 10 Report
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Clayton Town Centre - Clayton, NC
33: US 70 Business & White Pine Drive

2028 Build
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↖				↗
Traffic Vol, veh/h	0	0	0	0	1276	6	4	4	0	0	0	6
Future Vol, veh/h	0	0	0	0	1276	6	4	4	0	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1418	7	4	4	0	0	0	7
Major/Minor				Major2		Minor1		Minor2				
Conflicting Flow All				-	-	0	709	1425	-	-	-	713
Stage 1				-	-	-	0	0	-	-	-	-
Stage 2				-	-	-	709	1425	-	-	-	-
Critical Hdwy				-	-	-	7.54	6.54	-	-	-	6.94
Critical Hdwy Stg 1				-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2				-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy				-	-	-	3.52	4.02	-	-	-	3.32
Pot Cap-1 Maneuver				0	-	-	321	134	0	0	0	374
Stage 1				0	-	-	-	-	0	0	0	-
Stage 2				0	-	-	391	200	0	0	0	-
Platoon blocked, %						-	-					
Mov Cap-1 Maneuver				-	-	-	315	134	-	-	-	374
Mov Cap-2 Maneuver				-	-	-	315	134	-	-	-	-
Stage 1				-	-	-	-	-	-	-	-	-
Stage 2				-	-	-	384	200	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				0		25.1		14.8				
HCM LOS						D		B				
Minor Lane/Major Mvmt		NBLn1	WBT	WBR	SBLn1							
Capacity (veh/h)		188	-	-	374							
HCM Lane V/C Ratio		0.047	-	-	0.018							
HCM Control Delay (s)		25.1	-	-	14.8							
HCM Lane LOS		D	-	-	B							
HCM 95th %tile Q(veh)		0.1	-	-	0.1							

Clayton Town Centre - Clayton, NC
3: Financial Drive & US 70 Business

2028 Build with Improvements
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1003	112	0	0	0	0	0	356	4	463	0
Future Volume (vph)	0	1003	112	0	0	0	0	0	356	4	463	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't			0.850						0.865			
Flt Protected												
Satd. Flow (prot)	0	3539	1583	0	0	0	0	0	1611	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	3539	1583	0	0	0	0	0	1611	0	1863	0
Right Turn on Red			No			No			No	No		No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			25			35	
Link Distance (ft)		173			747			463			150	
Travel Time (s)		2.6			11.3			12.6			2.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1114	124	0	0	0	0	0	396	4	514	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1114	124	0	0	0	0	0	396	0	518	0
Turn Type		NA	Perm						Prot	Perm	NA	
Protected Phases		2							8		4	
Permitted Phases			2							4		
Detector Phase		2	2						8	4	4	
Switch Phase												
Minimum Initial (s)		14.0	14.0						7.0	7.0	7.0	
Minimum Split (s)		21.0	21.0						20.0	20.0	20.0	
Total Split (s)		62.0	62.0						58.0	58.0	58.0	
Total Split (%)		51.7%	51.7%						48.3%	48.3%	48.3%	
Maximum Green (s)		55.0	55.0						51.0	51.0	51.0	
Yellow Time (s)		5.0	5.0						5.0	5.0	5.0	
All-Red Time (s)		2.0	2.0						2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0						-2.0		-2.0	
Total Lost Time (s)		5.0	5.0						5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0						3.0	3.0	3.0	
Recall Mode		C-Min	C-Min						None	None	None	
Act Effct Green (s)		68.1	68.1						41.9		41.9	
Actuated g/C Ratio		0.57	0.57						0.35		0.35	
v/c Ratio		0.55	0.14						0.70		0.80	
Control Delay		26.1	17.5						40.2		44.4	
Queue Delay		0.0	0.0						0.0		0.0	
Total Delay		26.1	17.5						40.2		44.4	
LOS		C	B						D		D	
Approach Delay		25.2						40.2			44.4	
Approach LOS		C						D			D	
Queue Length 50th (ft)		420	69						261		356	
Queue Length 95th (ft)		575	128						332		435	
Internal Link Dist (ft)		93			667			383			70	

Lanes, Volumes, Timings
RKA

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Clayton Town Centre - Clayton, NC
3: Financial Drive & US 70 Business

2028 Build with Improvements
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		2009	898						711		822	
Starvation Cap Reductn		0	0						0		0	
Spillback Cap Reductn		0	0						0		0	
Storage Cap Reductn		0	0						0		0	
Reduced v/c Ratio		0.55	0.14						0.56		0.63	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 32.6

Intersection LOS: C

Intersection Capacity Utilization 86.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Financial Drive & US 70 Business



Clayton Town Centre - Clayton, NC
33: US 70 Business & White Pine Drive

2028 Build with Improvements
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑				↑
Traffic Vol, veh/h	0	0	0	0	1842	6	4	4	0	0	0	4
Future Vol, veh/h	0	0	0	0	1842	6	4	4	0	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	2047	7	4	4	0	0	0	4
Major/Minor				Major2		Minor1		Minor2				
Conflicting Flow All				-	-	0	1024	2054	-	-	-	1027
Stage 1				-	-	-	0	0	-	-	-	-
Stage 2				-	-	-	1024	2054	-	-	-	-
Critical Hdwy				-	-	-	7.54	6.54	-	-	-	6.94
Critical Hdwy Stg 1				-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2				-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy				-	-	-	3.52	4.02	-	-	-	3.32
Pot Cap-1 Maneuver				0	-	-	190	55	0	0	0	232
Stage 1				0	-	-	-	-	0	0	0	-
Stage 2				0	-	-	252	97	0	0	0	-
Platoon blocked, %						-	-					
Mov Cap-1 Maneuver				-	-	-	186	55	-	-	-	232
Mov Cap-2 Maneuver				-	-	-	186	55	-	-	-	-
Stage 1				-	-	-	-	-	-	-	-	-
Stage 2				-	-	-	247	97	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				0		52.2		20.8				
HCM LOS						F		C				
Minor Lane/Major Mvmt		NBLn1	WBT	WBR	SBLn1							
Capacity (veh/h)		85	-	-	232							
HCM Lane V/C Ratio		0.105	-	-	0.019							
HCM Control Delay (s)		52.2	-	-	20.8							
HCM Lane LOS		F	-	-	C							
HCM 95th %tile Q(veh)		0.3	-	-	0.1							

Clayton Town Centre - Clayton, NC
3: Financial Drive & US 70 Business

2028 Build with Improvements
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1960	93	0	0	0	0	0	419	4	364	0
Future Volume (vph)	0	1960	93	0	0	0	0	0	419	4	364	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't			0.850						0.865			
Flt Protected												
Satd. Flow (prot)	0	3539	1583	0	0	0	0	0	1611	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	3539	1583	0	0	0	0	0	1611	0	1863	0
Right Turn on Red			No			No			No	No		No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			25			35	
Link Distance (ft)		173			747			463			150	
Travel Time (s)		2.6			11.3			12.6			2.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	2178	103	0	0	0	0	0	466	4	404	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2178	103	0	0	0	0	0	466	0	408	0
Turn Type		NA	Perm						Prot	Perm	NA	
Protected Phases		2							8		4	
Permitted Phases			2							4		
Detector Phase		2	2						8	4	4	
Switch Phase												
Minimum Initial (s)		14.0	14.0						7.0	7.0	7.0	
Minimum Split (s)		21.0	21.0						20.0	20.0	20.0	
Total Split (s)		80.0	80.0						40.0	40.0	40.0	
Total Split (%)		66.7%	66.7%						33.3%	33.3%	33.3%	
Maximum Green (s)		73.0	73.0						33.0	33.0	33.0	
Yellow Time (s)		5.0	5.0						5.0	5.0	5.0	
All-Red Time (s)		2.0	2.0						2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0						-2.0		-2.0	
Total Lost Time (s)		5.0	5.0						5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0						3.0	3.0	3.0	
Recall Mode		C-Min	C-Min						None	None	None	
Act Effct Green (s)		75.0	75.0						35.0		35.0	
Actuated g/C Ratio		0.62	0.62						0.29		0.29	
v/c Ratio		0.99	0.10						0.99		0.75	
Control Delay		37.4	10.7						82.9		48.0	
Queue Delay		0.0	0.0						0.0		0.0	
Total Delay		37.4	10.7						82.9		48.0	
LOS		D	B						F		D	
Approach Delay		36.2						82.9			48.0	
Approach LOS		D						F			D	
Queue Length 50th (ft)		1140	48						360		286	
Queue Length 95th (ft)		m877	m53						#579		m356	
Internal Link Dist (ft)		93			667			383			70	

Lanes, Volumes, Timings
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Clayton Town Centre - Clayton, NC
3: Financial Drive & US 70 Business

2028 Build with Improvements
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Turn Bay Length (ft)												
Base Capacity (vph)		2211	989						469		543	
Starvation Cap Reductn		0	0						0		0	
Spillback Cap Reductn		0	0						0		0	
Storage Cap Reductn		0	0						0		0	
Reduced v/c Ratio		0.99	0.10						0.99		0.75	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 44.6

Intersection LOS: D

Intersection Capacity Utilization 112.0%

ICU Level of Service H

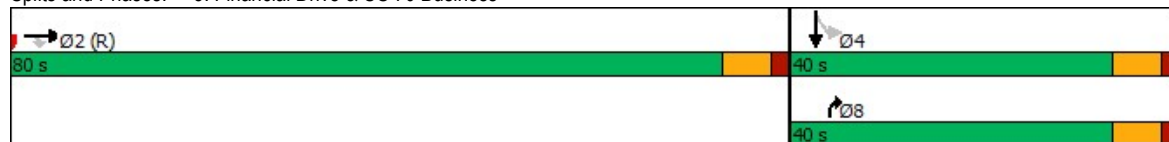
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Financial Drive & US 70 Business



Clayton Town Centre - Clayton, NC
33: US 70 Business & White Pine Drive

2028 Build with Improvements
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↖				↗
Traffic Vol, veh/h	0	0	0	0	1276	6	4	4	0	0	0	6
Future Vol, veh/h	0	0	0	0	1276	6	4	4	0	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1418	7	4	4	0	0	0	7
Major/Minor				Major2		Minor1		Minor2				
Conflicting Flow All				-	-	0	709	1425	-	-	-	713
Stage 1				-	-	-	0	0	-	-	-	-
Stage 2				-	-	-	709	1425	-	-	-	-
Critical Hdwy				-	-	-	7.54	6.54	-	-	-	6.94
Critical Hdwy Stg 1				-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2				-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy				-	-	-	3.52	4.02	-	-	-	3.32
Pot Cap-1 Maneuver				0	-	-	321	134	0	0	0	374
Stage 1				0	-	-	-	-	0	0	0	-
Stage 2				0	-	-	391	200	0	0	0	-
Platoon blocked, %				-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver				-	-	-	315	134	-	-	-	374
Mov Cap-2 Maneuver				-	-	-	315	134	-	-	-	-
Stage 1				-	-	-	-	-	-	-	-	-
Stage 2				-	-	-	384	200	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				0		25.1		14.8				
HCM LOS						D		B				
Minor Lane/Major Mvmt		NBLn1	WBT	WBR	SBLn1							
Capacity (veh/h)		188	-	-	374							
HCM Lane V/C Ratio		0.047	-	-	0.018							
HCM Control Delay (s)		25.1	-	-	14.8							
HCM Lane LOS		D	-	-	B							
HCM 95th %tile Q(veh)		0.1	-	-	0.1							

APPENDIX H

CAPACITY ANALYSIS CALCULATIONS GATEWAY DRIVE & US 70 BUSINESS

Clayton Town Centre - Clayton, NC
4: US 70 Business & Gateway Drive

2022 Existing
Timing Plan: AM Peak Hour

Intersection													
Int Delay, s/veh	65.5												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	12	1111	4	4	4	1969	62	4	4	4	16	4	40
Future Vol, veh/h	12	1111	4	4	4	1969	62	4	4	4	16	4	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	200	-	75	-	125	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	1234	4	4	4	2188	69	4	4	4	18	4	44
Major/Minor	Major1			Major2			Minor1			Minor2			
Conflicting Flow All	2257	0	0	1234	1238	0	0	2372	3533	617	2849	3468	1094
Stage 1	-	-	-	-	-	-	-	1260	1260	-	2204	2204	-
Stage 2	-	-	-	-	-	-	-	1112	2273	-	645	1264	-
Critical Hdwy	4.14	-	-	6.44	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.52	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	224	-	-	235	558	-	-	18	6	433	~ 8	7	209
Stage 1	-	-	-	-	-	-	-	180	240	-	45	81	-
Stage 2	-	-	-	-	-	-	-	223	75	-	427	239	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	224	-	-	329	329	-	-	5	6	433	~ 3	6	209
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	5	6	-	~ 3	6	-
Stage 1	-	-	-	-	-	-	-	170	226	-	42	79	-
Stage 2	-	-	-	-	-	-	-	161	73	-	390	225	-
Approach	EB			WB			NB			SB			
HCM Control Delay, s	0.2			0.1			\$ 1205			\$ 3284.9			
HCM LOS							F			F			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)	8	224	-	-	329	-	-	10					
HCM Lane V/C Ratio	1.667	0.06	-	-	0.027	-	-	6.667					
HCM Control Delay (s)	\$ 1205	22.1	-	-	16.3	-	-	\$ 3284.9					
HCM Lane LOS	F	C	-	-	C	-	-	F					
HCM 95th %tile Q(veh)	2.6	0.2	-	-	0.1	-	-	9.7					
Notes													
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon													

HCM 6th TWSC
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Clayton Town Centre - Clayton, NC
4: US 70 Business & Gateway Drive

2022 Existing
Timing Plan: PM Peak Hour

Intersection														
Int Delay, s/veh	0.4													
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	6	19	2007	28	4	20	1344	28	4	4	51	16	4	28
Future Vol, veh/h	6	19	2007	28	4	20	1344	28	4	4	51	16	4	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	200	-	75	-	125	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	21	2230	31	4	22	1493	31	4	4	57	18	4	31
Major/Minor	Major1				Major2				Minor1			Minor2		
Conflicting Flow All	1493	1524	0	0	2230	2261	0	0	3087	3862	1115	2718	3862	747
Stage 1	-	-	-	-	-	-	-	-	2286	2286	-	1545	1545	-
Stage 2	-	-	-	-	-	-	-	-	801	1576	-	1173	2317	-
Critical Hdwy	6.44	4.14	-	-	6.44	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.52	2.22	-	-	2.52	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	159	434	-	-	52	223	-	-	5	~4	202	~10	~4	355
Stage 1	-	-	-	-	-	-	-	-	40	74	-	120	174	-
Stage 2	-	-	-	-	-	-	-	-	344	168	-	204	71	-
Platoon blocked, %			-	-			-	-						
Mov Cap-1 Maneuver	295	295	-	-	125	125	-	-	-	~3	202	-	~3	355
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	~3	-	-	~3	-
Stage 1	-	-	-	-	-	-	-	-	36	67	-	109	136	-
Stage 2	-	-	-	-	-	-	-	-	238	132	-	124	64	-
Approach	EB				WB				NB			SB		
HCM Control Delay, s	0.2				0.7									
HCM LOS														
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1						
Capacity (veh/h)	-	295	-	-	125	-	-	-						
HCM Lane V/C Ratio	-	0.094	-	-	0.213	-	-	-						
HCM Control Delay (s)	-	18.5	-	-	41.5	-	-	-						
HCM Lane LOS	-	C	-	-	E	-	-	-						
HCM 95th %tile Q(veh)	-	0.3	-	-	0.8	-	-	-						
Notes														
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon														

HCM 6th TWSC
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Synchro 10 Report
Page 1

Clayton Town Centre - Clayton, NC
4: US 70 Business & Gateway Drive

2028 No-Build
Timing Plan: AM Peak Hour

Intersection													
Int Delay, s/veh	0.2												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	14	1294	4	4	4	2231	70	4	4	4	18	4	45
Future Vol, veh/h	14	1294	4	4	4	2231	70	4	4	4	18	4	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	200	-	75	-	125	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	1438	4	4	4	2479	78	4	4	4	20	4	50
Major/Minor	Major1			Major2			Minor1			Minor2			
Conflicting Flow All	2557	0	0	1438	1442	0	0	2728	4043	719	3248	3969	1240
Stage 1	-	-	-	-	-	-	-	1470	1470	-	2495	2495	-
Stage 2	-	-	-	-	-	-	-	1258	2573	-	753	1474	-
Critical Hdwy	4.14	-	-	6.44	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.52	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	170	-	-	173	466	-	-	10	~ 3	371	~ 4	~ 3	167
Stage 1	-	-	-	-	-	-	-	133	190	-	29	57	-
Stage 2	-	-	-	-	-	-	-	181	52	-	368	189	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	170	-	-	250	250	-	-	-	~ 3	371	-	~ 3	167
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	~ 3	-	-	~ 3	-
Stage 1	-	-	-	-	-	-	-	120	172	-	26	55	-
Stage 2	-	-	-	-	-	-	-	112	50	-	321	171	-
Approach	EB			WB			NB			SB			
HCM Control Delay, s	0.3			0.1									
HCM LOS													
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)	-	170	-	-	250	-	-	-					
HCM Lane V/C Ratio	-	0.092	-	-	0.036	-	-	-					
HCM Control Delay (s)	-	28.3	-	-	19.9	-	-	-					
HCM Lane LOS	-	D	-	-	C	-	-	-					
HCM 95th %tile Q(veh)	-	0.3	-	-	0.1	-	-	-					
Notes													
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon													

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Synchro 10 Report
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Clayton Town Centre - Clayton, NC
4: US 70 Business & Gateway Drive

2028 No-Build
Timing Plan: PM Peak Hour

Intersection														
Int Delay, s/veh	0.6													
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↘	↗	↗		↘	↗	↗		↕			↕	
Traffic Vol, veh/h	7	21	2288	32	4	23	1561	32	5	4	57	18	4	32
Future Vol, veh/h	7	21	2288	32	4	23	1561	32	5	4	57	18	4	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	200	-	75	-	125	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	23	2542	36	4	26	1734	36	6	4	63	20	4	36
Major/Minor	Major1			Major2				Minor1			Minor2			
Conflicting Flow All	1734	1770	0	0	2542	2578	0	0	3533	4434	1271	3129	4434	867
Stage 1	-	-	-	-	-	-	-	-	2604	2604	-	1794	1794	-
Stage 2	-	-	-	-	-	-	-	-	929	1830	-	1335	2640	-
Critical Hdwy	6.44	4.14	-	-	6.44	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.52	2.22	-	-	2.52	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	111	348	-	-	32	167	-	-	~ 2	~ 1	159	~ 5	~ 1	296
Stage 1	-	-	-	-	-	-	-	-	25	50	-	83	131	-
Stage 2	-	-	-	-	-	-	-	-	288	126	-	162	48	-
Platoon blocked, %			-	-			-	-						
Mov Cap-1 Maneuver	214	214	-	-	82	82	-	-	-	~ 1	159	-	~ 1	296
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	~ 1	-	-	~ 1	-
Stage 1	-	-	-	-	-	-	-	-	21	43	-	71	83	-
Stage 2	-	-	-	-	-	-	-	-	152	80	-	75	41	-
Approach	EB				WB				NB			SB		
HCM Control Delay, s	0.3				1.2									
HCM LOS									-			-		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1						
Capacity (veh/h)	-	214	-	-	82	-	-	-						
HCM Lane V/C Ratio	-	0.145	-	-	0.366	-	-	-						
HCM Control Delay (s)	-	24.7	-	-	72	-	-	-						
HCM Lane LOS	-	C	-	-	F	-	-	-						
HCM 95th %tile Q(veh)	-	0.5	-	-	1.4	-	-	-						
Notes														
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon														

HCM 6th TWSC
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Synchro 10 Report
Page 1

Clayton Town Centre - Clayton, NC
4: US 70 Business & Gateway Drive

2028 Build
Timing Plan: AM Peak Hour

Intersection														
Int Delay, s/veh	4.4													
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↵	↗↗	↵		↵	↗↗	↵		↕			↕	
Traffic Vol, veh/h	26	14	1320	4	4	4	2240	70	4	4	4	18	4	45
Future Vol, veh/h	26	14	1320	4	4	4	2240	70	4	4	4	18	4	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	200	-	75	-	125	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	16	1467	4	4	4	2489	78	4	4	4	20	4	50
Major/Minor	Major1				Major2				Minor1			Minor2		
Conflicting Flow All	2489	2567	0	0	1467	1471	0	0	2820	4140	734	3331	4066	1245
Stage 1	-	-	-	-	-	-	-	-	1557	1557	-	2505	2505	-
Stage 2	-	-	-	-	-	-	-	-	1263	2583	-	826	1561	-
Critical Hdwy	6.44	4.14	-	-	6.44	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.52	2.22	-	-	2.52	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	35	169	-	-	166	454	-	-	8	~2	363	~3	~3	165
Stage 1	-	-	-	-	-	-	-	-	118	172	-	29	56	-
Stage 2	-	-	-	-	-	-	-	-	180	51	-	332	171	-
Platoon blocked, %			-	-			-	-						
Mov Cap-1 Maneuver	36	36	-	-	241	241	-	-	-	0	363	-	0	165
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	0	-	-	0	-
Stage 1	-	-	-	-	-	-	-	-	118	0	-	29	54	-
Stage 2	-	-	-	-	-	-	-	-	111	49	-	-	0	-
Approach	EB				WB				NB			SB		
HCM Control Delay, s	11.9				0.1									
HCM LOS														
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1						
Capacity (veh/h)	-	36	-	-	241	-	-	-						
HCM Lane V/C Ratio	-	1.235	-	-	0.037	-	-	-						
HCM Control Delay (s)	-	\$ 406.4	-	-	20.5	-	-	-						
HCM Lane LOS	-	F	-	-	C	-	-	-						
HCM 95th %tile Q(veh)	-	4.6	-	-	0.1	-	-	-						
Notes														
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon														

HCM 6th TWSC
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Synchro 10 Report
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Clayton Town Centre - Clayton, NC
4: US 70 Business & Gateway Drive

2028 Build
Timing Plan: PM Peak Hour

Intersection														
Int Delay, s/veh	188.9													
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱	↕	↰		↱	↕	↰		↕			↕	
Traffic Vol, veh/h	23	21	2304	32	4	23	1589	32	5	4	57	18	4	32
Future Vol, veh/h	23	21	2304	32	4	23	1589	32	5	4	57	18	4	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	200	-	75	-	125	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	23	2560	36	4	26	1766	36	6	4	63	20	4	36

Major/Minor	Major1				Major2				Minor1				Minor2			
Conflicting Flow All	1766	1802	0	0	2560	2596	0	0	3603	4520	1280	3206	4520	883		
Stage 1	-	-	-	-	-	-	-	-	2658	2658	-	1826	1826	-		
Stage 2	-	-	-	-	-	-	-	-	945	1862	-	1380	2694	-		
Critical Hdwy	6.44	4.14	-	-	6.44	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94		
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-		
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-		
Follow-up Hdwy	2.52	2.22	-	-	2.52	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32		
Pot Cap-1 Maneuver	106	338	-	-	32	164	-	-	~2	~1	157	~4	~1	289		
Stage 1	-	-	-	-	-	-	-	-	23	47	-	80	126	-		
Stage 2	-	-	-	-	-	-	-	-	282	121	-	152	45	-		
Platoon blocked, %			-	-			-	-								
Mov Cap-1 Maneuver	143	143	-	-	79	79	-	-	~1	0	157	~1	0	289		
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	~1	0	-	~1	0	-		
Stage 1	-	-	-	-	-	-	-	-	15	31	-	53	78	-		
Stage 2	-	-	-	-	-	-	-	-	145	75	-	51	30	-		

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	1.2	\$ 2920.4	\$ 10872.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	12	143	-	-	79	-	-	3
HCM Lane V/C Ratio	6.111	0.342	-	-	0.38	-	-	20
HCM Control Delay (s)	\$ 2920.4	42.6	-	-	75.7	-	-	\$ 10872.2
HCM Lane LOS	F	E	-	-	F	-	-	F
HCM 95th %tile Q(veh)	10.3	1.4	-	-	1.5	-	-	9.5

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

APPENDIX I

CAPACITY ANALYSIS CALCULATIONS FINANCIAL DRIVE & TOWN CENTRE BOULEVARD

Clayton Town Centre - Clayton, NC
5: Financial Drive & Town Centre Boulevard

2022 Existing
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	45	26	176	231	422	75
Future Vol, veh/h	45	26	176	231	422	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	150	-	-	-
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	50	29	196	257	469	83
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1160	511	552	0	-	0
Stage 1	511	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	216	563	1018	-	-	-
Stage 1	602	-	-	-	-	-
Stage 2	520	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	174	563	1018	-	-	-
Mov Cap-2 Maneuver	174	-	-	-	-	-
Stage 1	486	-	-	-	-	-
Stage 2	520	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	25.7		4.1		0	
HCM LOS	D					
Minor Lane/Major Mvmt	NBL		NBT	EBLn1	EBLn2	SBT SBR
Capacity (veh/h)	1018		-	174	563	- -
HCM Lane V/C Ratio	0.192		-	0.287	0.051	- -
HCM Control Delay (s)	9.4		-	33.8	11.7	- -
HCM Lane LOS	A		-	D	B	- -
HCM 95th %tile Q(veh)	0.7		-	1.1	0.2	- -

Clayton Town Centre - Clayton, NC
5: Financial Drive & Town Centre Boulevard

2022 Existing
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	11.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	162	57	185	185	226	138
Future Vol, veh/h	162	57	185	185	226	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	150	-	-	-
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	180	63	206	206	251	153
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	946	328	404	0	-	0
Stage 1	328	-	-	-	-	-
Stage 2	618	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	290	713	1155	-	-	-
Stage 1	730	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	238	713	1155	-	-	-
Mov Cap-2 Maneuver	238	-	-	-	-	-
Stage 1	600	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	43.9	4.4		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1155	-	238	713	-	-
HCM Lane V/C Ratio	0.178	-	0.756	0.089	-	-
HCM Control Delay (s)	8.8	-	55.6	10.5	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.6	-	5.4	0.3	-	-

Clayton Town Centre - Clayton, NC
5: Financial Drive & Town Centre Boulevard

2028 No-Build
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	4.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	51	29	198	260	475	84
Future Vol, veh/h	51	29	198	260	475	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	150	-	-	-
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	57	32	220	289	528	93
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1304	575	621	0	-	0
Stage 1	575	-	-	-	-	-
Stage 2	729	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	177	518	960	-	-	-
Stage 1	563	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	136	518	960	-	-	-
Mov Cap-2 Maneuver	136	-	-	-	-	-
Stage 1	434	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	35.9	4.3		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	960	-	136	518	-	-
HCM Lane V/C Ratio	0.229	-	0.417	0.062	-	-
HCM Control Delay (s)	9.9	-	49.2	12.4	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0.9	-	1.8	0.2	-	-

Clayton Town Centre - Clayton, NC
5: Financial Drive & Town Centre Boulevard

2028 No-Build
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	23.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	182	64	208	208	255	155
Future Vol, veh/h	182	64	208	208	255	155
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	150	-	-	-
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	202	71	231	231	283	172
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1062	369	455	0	-	0
Stage 1	369	-	-	-	-	-
Stage 2	693	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	247	677	1106	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 195	677	1106	-	-	-
Mov Cap-2 Maneuver	~ 195	-	-	-	-	-
Stage 1	553	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	95.3	4.6		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1106	-	195	677	-	-
HCM Lane V/C Ratio	0.209	-	1.037	0.105	-	-
HCM Control Delay (s)	9.1	-	125	10.9	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.8	-	9.2	0.3	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Clayton Town Centre - Clayton, NC
5: Financial Drive & Town Centre Boulevard

2028 Build
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	4.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	51	29	198	305	490	84
Future Vol, veh/h	51	29	198	305	490	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	150	-	-	-
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	57	32	220	339	544	93
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1370	591	637	0	-	0
Stage 1	591	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	161	507	947	-	-	-
Stage 1	553	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	124	507	947	-	-	-
Mov Cap-2 Maneuver	124	-	-	-	-	-
Stage 1	425	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	40.5		3.9		0	
HCM LOS	E					
Minor Lane/Major Mvmt	NBL		NBT	EBLn1	EBLn2	SBT SBR
Capacity (veh/h)	947		-	124	507	- -
HCM Lane V/C Ratio	0.232		-	0.457	0.064	- -
HCM Control Delay (s)	9.9		-	56.4	12.6	- -
HCM Lane LOS	A		-	F	B	- -
HCM 95th %tile Q(veh)	0.9		-	2	0.2	- -

Clayton Town Centre - Clayton, NC
5: Financial Drive & Town Centre Boulevard

2028 Build
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	30.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	182	64	208	236	303	155
Future Vol, veh/h	182	64	208	236	303	155
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	150	-	-	-
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	202	71	231	262	337	172
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1147	423	509	0	-	0
Stage 1	423	-	-	-	-	-
Stage 2	724	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	220	631	1056	-	-	-
Stage 1	661	-	-	-	-	-
Stage 2	480	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 172	631	1056	-	-	-
Mov Cap-2 Maneuver	~ 172	-	-	-	-	-
Stage 1	516	-	-	-	-	-
Stage 2	480	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	134.6	4.4		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1056	-	172	631	-	-
HCM Lane V/C Ratio	0.219	-	1.176	0.113	-	-
HCM Control Delay (s)	9.4	-	177.9	11.4	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.8	-	10.8	0.4	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

APPENDIX J

CAPACITY ANALYSIS CALCULATIONS FINANCIAL DRIVE & SCHOLAR DRIVE

Clayton Town Centre - Clayton, NC
6: Scholar Drive & Financial Drive

2022 Existing
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	9.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	407	4	4	448	4
Future Vol, veh/h	4	407	4	4	448	4
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	-	-	-	150	-
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	4	452	4	4	498	4
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1006	6	0	0	8	0
Stage 1	6	-	-	-	-	-
Stage 2	1000	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	267	1077	-	-	1612	-
Stage 1	1017	-	-	-	-	-
Stage 2	356	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	184	1077	-	-	1612	-
Mov Cap-2 Maneuver	184	-	-	-	-	-
Stage 1	1017	-	-	-	-	-
Stage 2	246	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.3	0		8.2		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	1028	1612	-	
HCM Lane V/C Ratio	-	-	0.444	0.309	-	
HCM Control Delay (s)	-	-	11.3	8.2	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	2.3	1.3	-	

Clayton Town Centre - Clayton, NC
6: Scholar Drive & Financial Drive

2022 Existing
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	9.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	370	4	4	282	4
Future Vol, veh/h	4	370	4	4	282	4
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	-	-	-	150	-
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	4	411	4	4	313	4
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	636	6	0	0	8	0
Stage 1	6	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	442	1077	-	-	1612	-
Stage 1	1017	-	-	-	-	-
Stage 2	531	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	356	1077	-	-	1612	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	1017	-	-	-	-	-
Stage 2	428	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.6	0		7.7		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	1054	1612	-	
HCM Lane V/C Ratio	-	-	0.394	0.194	-	
HCM Control Delay (s)	-	-	10.6	7.8	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	1.9	0.7	-	

Clayton Town Centre - Clayton, NC
6: Scholar Drive & Financial Drive

2028 No-Build
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	10					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	458	4	4	505	4
Future Vol, veh/h	4	458	4	4	505	4
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	-	-	-	150	-
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	4	509	4	4	561	4

Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1132	6	0	0	8	0
Stage 1	6	-	-	-	-	-
Stage 2	1126	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	225	1077	-	-	1612	-
Stage 1	1017	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	147	1077	-	-	1612	-
Mov Cap-2 Maneuver	147	-	-	-	-	-
Stage 1	1017	-	-	-	-	-
Stage 2	202	-	-	-	-	-

Approach	WB	NB		SB		
HCM Control Delay, s	12	0		8.4		
HCM LOS	B					

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT	
Capacity (veh/h)	-	-	1021	1612	-
HCM Lane V/C Ratio	-	-	0.503	0.348	-
HCM Control Delay (s)	-	-	12	8.4	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	2.9	1.6	-

Clayton Town Centre - Clayton, NC
6: Scholar Drive & Financial Drive

2028 No-Build
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	9.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	417	4	4	318	4
Future Vol, veh/h	4	417	4	4	318	4
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	-	-	-	150	-
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	4	463	4	4	353	4
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	716	6	0	0	8	0
Stage 1	6	-	-	-	-	-
Stage 2	710	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	397	1077	-	-	1612	-
Stage 1	1017	-	-	-	-	-
Stage 2	487	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	310	1077	-	-	1612	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	1017	-	-	-	-	-
Stage 2	380	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.1	0		7.8		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	1052	1612	-	
HCM Lane V/C Ratio	-	-	0.445	0.219	-	
HCM Control Delay (s)	-	-	11.1	7.9	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	2.3	0.8	-	

Clayton Town Centre - Clayton, NC
6: Scholar Drive & Financial Drive

2028 Build
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	10.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	458	45	4	505	15
Future Vol, veh/h	4	458	45	4	505	15
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	-	-	-	150	-
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	4	509	50	4	561	17
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1191	52	0	0	54	0
Stage 1	52	-	-	-	-	-
Stage 2	1139	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	207	1016	-	-	1551	-
Stage 1	970	-	-	-	-	-
Stage 2	305	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	132	1016	-	-	1551	-
Mov Cap-2 Maneuver	132	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	195	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	13	0		8.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	960	1551	-	
HCM Lane V/C Ratio	-	-	0.535	0.362	-	
HCM Control Delay (s)	-	-	13	8.6	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	3.3	1.7	-	

Clayton Town Centre - Clayton, NC
6: Scholar Drive & Financial Drive

2028 Build
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	417	28	4	318	49
Future Vol, veh/h	4	417	28	4	318	49
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	-	-	-	150	-
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	4	463	31	4	353	54
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	793	33	0	0	35	0
Stage 1	33	-	-	-	-	-
Stage 2	760	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	358	1041	-	-	1576	-
Stage 1	989	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	278	1041	-	-	1576	-
Mov Cap-2 Maneuver	278	-	-	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	359	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.5	0		6.9		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	1015	1576	-	
HCM Lane V/C Ratio	-	-	0.461	0.224	-	
HCM Control Delay (s)	-	-	11.5	7.9	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	2.5	0.9	-	



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

DELIVERY VIA EMAIL

July 21, 2022

Jonathan K. Jacobs, PE
Assistant Town Engineer - Town of Clayton
111 E. Second Street
Clayton, NC 27528

COUNTY: Johnston

SUBJECT: **TIA Review of Proposed the Towns at Little Creek**

Dear Mr. Jacobs,

Highway Division Four (Division) has reviewed the Traffic Impact Analysis (TIA) for the subject development. Please accept this letter as concurrence with the TIA and the attached TIA Review Report performed by the Congestion Management Section of the Transportation Mobility and Safety Division of NCDOT. Any comments below are in addition to the requirements that are included in the actual TIA or Traffic Impact Analysis Review. All requirements or recommendations included herein are based off current Department and Division policies. This review should not be mistaken for approval of the driveway permit, design/construction plans, final plat, site plans, or access locations. A driveway permit must be obtained prior to construction and NCDOT will approve site plan and access locations during this review. All design aspects of any submitted plans shall comply with current NCDOT Standard Specifications for Roads and Structures and Policy on Street and Driveway Access to North Carolina Highways.

GENERAL COMMENTS

- Any roadway improvements and right-of-way dedication necessary to accommodate the road construction shall be the responsibility of the owner/developers. All required ROW shall be dedicated as public ROW in the final plat. Installation of right turn lanes will typically require at least 15' of dedication.
- Lane Closures for required improvement construction will only be permitted under restricted hours due to heavy traffic volumes in the vicinity of the proposed development. These restrictions will be determined during the driveway permitting application and approval.
- These conditions are based on current traffic volumes and projected growth for the study area. If the proposed build out year for this development, as stated in the TIA, varies more than one year an addendum or revised TIA may be required.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS | DIV. 4 DIST. 3
2671 US 70 WEST
GOLDSBORO, NC 27530

Telephone: (919) 739-5300
Fax: (919) 731-2017
Customer Service: 1-877-368-4968
Website: www.ncdot.gov

Location:
2671 US 70 WEST
GOLDSBORO, NC 26730

Additional Requirements

- One of the study intersections has a recommendation of a signal being monitored. The developer may have to provide a signal warrants study at this intersection if requested by NCDOT. The timing of the request will be based off the proposed phasing of this development. This signal warrants review will determine if the traffic meets MUTCD signal warrants at the intersection mentioned. No signal will be installed based on future trip generation by the proposed development. The proposed signal study and possibly installation requirement can be included at a later phase or bonded until completed.

Feel free to contact me if you have any additional questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Sam Lawhorn". The signature is fluid and cursive, with the first name "Sam" and last name "Lawhorn" clearly distinguishable.

Sam Lawhorn, PE
District Engineer

cc: Kevin Bowen, PE - Division Engineer
Paul Marak, PE - Division Traffic Engineer
Charles Sorrell- Congestion Management
Caroline Cheeves, PE – Ramey Kemp Engineering
Driveway Permit File



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

July 21, 2022

The Townes at Little Creek

Traffic Impact Analysis Review Report Congestion Management Section

TIA Project: SC-2022-230
Division: 4
County: Johnston



Doumit Y. Ishak, Regional Engineer
Clarence B. Bunting, IV, P.E. Project Engineer
Charles Sorrell, Project Design Engineer

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
TRANSPORTATION MOBILITY & SAFETY DIVISION
1561 MAIL SERVICE CENTER
RALEIGH, NC 27699-1561

Telephone: (919) 814-5000
Fax: (919) 771-2745
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
750 N. GREENFIELD PARKWAY
GARNER, NC 27529

The Townes at Little Creek

SC-2022-230

Clayton

Johnston County

Per your request, the Congestion Management Section (CMS) of the Transportation Mobility and Safety Division has completed a review of the subject site. The comments and recommendations contained in this review are based on data for background conditions presented in the Traffic Impact Analysis (TIA) and are subject to the approval of the local District Engineer's Office and appropriate local authorities.

Date Initially Received by CMS	7/6/22	Date of Site Plan	5/3/22
Date of Complete Information	7/6/22	Date of Sealed TIA	6/30/22

Proposed Development

The TIA assumes the development is to be completed by 2028 and consist of the following:

Land Use	Land Use Code	Size
Multifamily Housing (Low-Rise)	220	203 units

Trip Generation - Unadjusted Volumes During a Typical Weekday			
	IN	OUT	TOTAL
AM Peak Hour	21	65	86
PM Peak Hour	68	40	108
Daily Trips			1377

General Reference

For reference to various documents applicable to this review please reference the following link: <https://connect.ncdot.gov/resources/safety/Pages/Congestion-Management.aspx>

Once the driveway permit has been approved and issued, a copy of the final driveway permit requirements should be forwarded to this office. If we can provide further assistance, please contact the Congestion Management Section.

Signalization

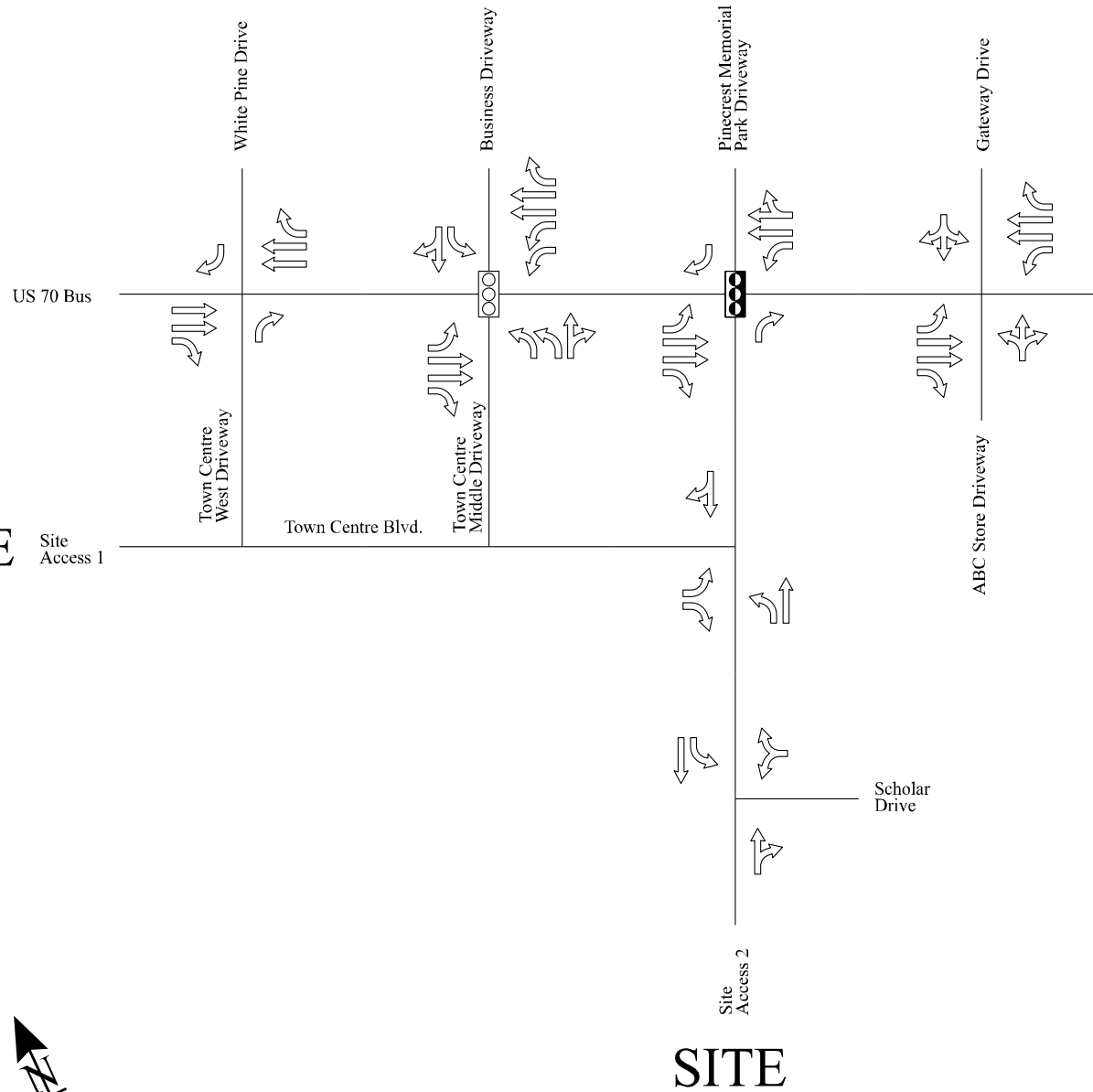
We defer to the District Engineer, the Division Traffic Engineer, and the Regional Traffic Engineer for final decisions regarding signalization.

SITE

Site Access 1

The Townes at Little Creek SC-2022-230

-  Existing Laneage
-  Recommended Laneage
-  Laneage Built By Others
-  NCDOT Recommendation
-  Existing Signal
-  Monitor for Signal
-  Developer Proposed Signal
- XXX Storage
- XXX NCDOT Recommended Storage
- <XXX> Distance Between Intersections
- IPS Internal Protected Stem
- All Distances in Feet
- Drawing Not to Scale



Charles Sorrell 7/8/22

	TOWN OF CLAYTON POLICY	
	Department: Public Services	Effective: January 21, 2020
Policy Title: Water & Wastewater Allocation Policy Version #02 (V.02)	Supersedes: TC Action 2010-026	
	Prepared By: Richard D. Cappola Jr., PE Public Services Director	
	Approved By: Town Council Date: January 21, 2020	

I. Purpose

The Town of Clayton has invested substantial capital in the infrastructure necessary to support a growing, prosperous, and healthy community. Water supply and wastewater treatment capacities are among the most important elements of this infrastructure. The intent of this policy is to provide for the judicious allocation of these resources in conformity with adopted goals and priorities in an effort to shape the community consistent with the articulated vision to become the "Premier Community for Active Families." This policy is intended to manage the remaining capacity available until additional capacity is developed through construction of a new Water Reclamation Facility, and should be reviewed periodically to ensure it is achieving the intended purpose.

II. Scope

The Town Council for the Town of Clayton has adopted the Comprehensive Plan 2040 which is a useful tool to successfully evaluate applications for allocation of public resources so that the character of the community shall be consistent with its vision, values, and plans. In accordance with the "Town of Clayton Strategic Growth Plan", utility allocation reservations should support and maximize the concept of increasing the Town's property tax based revenues by the expansion and improvement of higher valued land use development, emphasizing a balance of Residential, commercial, and industrial uses.

III. Policy

The Town of Clayton seeks to grant utility allocations such that the existing character of the Town's utility customer base does not become more residential than is practical to achieve the intent of the Strategic Growth Plan, and seeks to increase the diversity of the customer base by increasing the percentage of resources devoted to industrial, commercial, and mixed use development.

The total amount of available capacity and each incremental increase in capacity should generally be allocated based on the following parameters:

- No more than fifty percent (50%) of the total available capacity may be allocated to projects that include solely residential development.
- At least thirty percent (30%) of the total available capacity shall be reserved for allocation to commercial/industrial projects.
- Projects encompassing mixed use (residential and commercial) elements may be considered for allocation even if such an allocation will exceed the limit established above for residential use.
Note: These percentages may be reviewed and adjusted by the Town Council at their discretion.

Due to weather related factors, the regulatory environment, and the dynamic nature of wastewater flow and treatment, accounting of available utility capacity is, by its very nature, inexact. The Town of Clayton shall track allocation reservations granted and the amount of capacity available. Such reports do not constitute a policy statement, commitment or guarantee on the amount of capacity available for allocation.

The following hierarchy shall apply to evaluation of utility allocation requests:

- Commercial properties with quality development projects
- Development projects with a mixed-use element
- Industrial projects and other major employer entities
- Additional phases attached to residential projects with a proven record of quality product and economic success
- Residential projects that include tangible, high quality community amenities
- Residential projects that include diverse products and opportunities
- Residential projects not otherwise described above

Evaluation of projects will be based on the scoring rubric attached hereto as Exhibit A, which is incorporated in this Agreement by reference. A project must meet or exceed 50 points to receive an allocation. Proposed projects can gain BONUS POINTS by the applicant offering to provide items listed on the rubric as part of their development proposal. Examples of these items may include such things as additional amenities (fire pits, community gardens, etc.) or offering to provide “Minimum of 25% of building façades will be made of masonry materials.”

The Town of Clayton may allocate utility service capacity to competing projects based on a demonstrated intent and ability of the applicant to meet adopted Town goals and plans for character and quality of development. The Town of Clayton reserves the right to deny a utility allocation request if the applicant fails to adequately demonstrate that the project meets adopted Town goals or plans, or in the case that the project is deemed to be less supportive of Town goals or plans of a competing project.

IV. Procedure

The owner or developer of any project requiring water or wastewater utility service from the Town of Clayton shall submit a written application, in the application form provided by Town Staff, for an allocation reservation. The application shall include detailed information on the amount of capacity necessary to serve the project, the nature of the project, project schedule in relation to demand of utility capacity, and other supporting information demonstrating how the project serves the needs and interests of the Town of Clayton. In the case of Industrial flows, additional information associated with the constituents shall be required and may be subject to other ordinances or policies of the Town.

- The Town Council shall review for approval all allocations which require or may require a daily flow allocation of ten thousand gallons or more (> 10,000 GPD)
 - The Town Council shall incorporate the evaluation of utility allocation requests into the decision-making process associated with Subdivisions, Mixed-use Planned Developments, and Special Use Permits. The criteria contained herein for evaluation of utility allocation requests shall be included as elements within the review processes for the accompanying land use application with regard to conformity with Town of Clayton policies and ordinances, planning practices, and consistency with adopted long-range and strategic plans.
 - For allocations requiring Town Council approval, but which do not require other land use regulatory reviews or approvals, the applicant shall provide a full description of how their project supports the goals and priorities established within this and related policies and plans in their application for allocation reservation.

- The Town Manager or their designee shall review for approval all applications for utility capacity which require a daily flow allocation of less than ten thousand gallons (< 10,000 GPD).
 - In addition to the scoring rubric, the Town Manager or their designee shall consider the goals articulated by this and related Town policies when reviewing applications for utility allocations. If an application is denied, the Town Manager or their designee shall state in writing the reasons for denial of the request.

V. General Conditions

- This policy shall replace any previous policies on water and wastewater allocations adopted by the Town Council.
- An allocation will expire if a project has not progressed in construction plan approval, building permit approval, or on-site construction within 12 months of award of the allocation.
- Upon request by the applicant and at the discretion of the Town Engineer, an allocation may be extended for one twelve (12) month period.
- If a project is unsuccessful in obtaining any required Federal, State, or local government permit or approval the reservation shall be retracted. The Town of Clayton shall bear no liability for any costs incurred by the applicant, nor bare further responsibility in the matter.
- Granting of a utility allocation does not imply or confer approval of any other applications or reviews as may be required by Town Ordinance or policy and does not imply or create any vested right.
- Public water may be utilized for irrigation purposes so long as the Primary Use associated with the site has previously gained a water allocation through the Town.
- This policy shall be reviewed annually and, when appropriate, readjusted by the Town Council. The Town's overall progress on policy goals will be considered and the multipliers and/or point thresholds readjusted accordingly.

V. Appeals Process

- Appeal of any provision of this policy shall be made to the Town Council.
- Appeal of any decision on a utility allocation by the Town Manager or their designee shall be made to the Town Council for final decision. Any such appeal shall be placed on the agenda of a regularly scheduled Town Council meeting.



WATER & WASTEWATER ALLOCATION CRITERIA				
TOTAL POINTS = 70 MINIMUM 50 POINTS REQUIRED				
	Category	Points	Calc.	Notes
DEVELOPMENT TYPE ¹ (Choose 1 from this category)	Government/Public Admin./Public Safety	50		
	Non-residential (Commercial) - Retail & Restaurant	30		
	Non-residential (Commercial) - Office	20		
	Non-residential (Commercial) - Warehouse	15		
	Non-residential (Commercial) - Medical	25		
	Non-residential (Commercial) - Hotel/Motel	35		
	Industrial/Manufacturing	30		
	Institutional	15		
	Residential Existing Lot- Single Family Detached	40		Individual Existing Lot construction
	Residential Subdivision - Single Family Detached (> 0.25 Acre Lots)	20		Single Family Homes on Individual Lots greater than 0.25 acres
	Residential Subdivision - Single Family Detached (< 0.25 Acre Lots)	15		Single Family Homes on Individual Lots less than 0.25 Acres
	Residential Subd.- Single Family Attached (> 1,500 SF Heated Space)	10	10	Townhomes with heated square-footage greater than 1,500 SF
	Residential Subd.- Single Family Attached (< 1,500 SF Heated Space)	5		Townhomes with heated square-footage less than 1,500 SF
	Residential - Multifamily (Apartments)	10		
	Mixed-Residential	25		Mix of various lot sizes of Single-family, Townhomes, and Apartments
	Mixed-Use Commercial & Residential	30		Mix of Residential and Non-residential (Commercial) uses
	Downtown Redevelopment	30		
	Infill Development	25		Utilities already exist within 300 Feet of property
FUTURE TAX STATUS (Choose 1 from this category)	Exempt	0		
	Residential	5	5	
	Non-residential	10		
	Industrial	10		
COMMUNITY BENEFIT BONUS POINTS (Choose All that apply from this category)	Cultural Arts/Entertainment for Public	10		
	Sports/Recreation for Public	10		
	Town Electric Customer	20		
	Expansion of existing non-residential use	10		
	Re-development of an existing property	5		Must result in increased property value
	Residential Subdivision - Additional amenities included	5 - 15	15	Pool, Clubhouse, sports courts, etc. - 5 pts per, max 15 pts
	Job Creation - 10 to 25 new jobs	5		
	Job Creation - 26 to 100 new jobs	10		
	Job Creation - 100+ new jobs	15		
	Job creation - Jobs created will have salaries at or above median income	5		Must be greater than 50% of jobs added with documentation to confirm
	Residential - Multiple-Car Garages provided	5		
	Residential - Overflow Parking provided	5	5	Subject to Planning and Engineering support
	Masonry Elements included in Building Construction	10	10	
	Sustainable/High Efficiency Products and appliances used	5 - 15	15	5 pts per, max 15 pts
	Private trail connection to Public Greenway	10	10	
COMMUNITY IMPACT DEDUCT POINTS (Choose All that apply from this category)	Pump Station Improvements required ²	-10		Subject to Town policy and standards
	New Pump Station Required ²	-20		Subject to Town policy and standards
	Out-of Town Status (After construction)	-10		
	Outside Fire District	-5		
	Inconsistent with Comp Plan	-5		
CLARIFICATIONS	1	Any Development Type Category not listed is subject to Town Council discretion with staff recommendation.		
	2	The Town Engineer may waive these deductions if the improvements are consistent with Future utility service plans, replace/offline an aging station, or are in the best interest of the Town.		



TOWN OF CLAYTON
Engineering & Inspections Department
111 E. Second Street, Clayton, NC 27520
P.O. Box 879, Clayton, NC 27528
Phone: 919-553-5002
Fax: 919-553-1720

WASTEWATER ALLOCATION REQUEST

The Town of Clayton, in an effort to manage and maintain the sewer and water capacity for the Town, requires that this application be completed and submitted to the Town for consideration of a utility allocation. Review fee is due upon submittal of request.

Wastewater Allocation Request Review Fee: \$50

Application MUST be completed and sealed by a registered engineer unless otherwise approved by staff.

SITE INFORMATION

Name of Project: The Townes at Little Creek Subdivision **Acreeage of Property:** 53.83
County Tag Number: 05G02001A **NC PIN:** 164900-95-2419
Address/Location: Town Centre Blvd. and Financial Drive
Zoning District: Existing: B-3 and R-10 SUD - Proposed: CZ
Town Limits / ETJ: ☒ Town Limits ☐ ETJ (Extra-Territorial Jurisdiction)

APPLICANT INFORMATION – Applicant must be a registered engineer unless otherwise approved by Town Engineer

Applicant: Bass, Nixon and Kennedy, Inc. - Consulting Engineers
Mailing Address: 6310 Chapel Hill Road, Ste. 250, Raleigh, NC 27607
Phone Number: 919-851-4422 **Fax:** 919-851-8968
Contact Person: Marty D. Bizzell, PE, CPESC
Email Address: marty.bizzell@bnkinc.com

PROPERTY OWNER INFORMATION

Name: Douglas and Cynthia Stephens, Irrevocable Trust
Mailing Address: 319 Chapanoke Road, Ste. 102, Raleigh, NC 27603
Phone Number: N/A **Fax:** N/A
Email Address: N/A

FOR OFFICE USE ONLY

Date Received: _____ **File Number:** _____ **Associated Project Number:** _____

PROJECT INFORMATION

Use: ☒ New ☐ Expanded ☐ Change

Use Type: ☒ Residential ☐ Non-Residential

Proposed Use(s): Townhomes Existing Use(s): Vacant

Invoice shall be mailed to the following:

Developer Name: DRB Group

Mailing Address: 3000 RDI Center Drive, Ste. 202, Morrisville, NC 27560

Phone Number: 919-244-5899 Fax Number: N/A

Email Address: cszwarckop@drbgroup.com

ALLOCATION REQUEST

The following is required:

- For non-residential construction, submit a floor plan of proposed building.
- Use additional sheets if necessary.
- Provide any documentation supporting/justifying the request as an attachment (using a comparable use is recommended).
- If a phasing / take-down schedule is proposed, include as an attachment.

Residential:

Gross Acreage: _____

Single Family	# of Units	GPD per Unit	Total Requested GPD
1-2 Bedroom Units			
3 Bedroom Units			
>3 Bedroom Units			
Total		-----	42,250

Multi-Family	# of Units	GPD per Unit	Total Requested GPD
1-2 Bedroom Units			
3 Bedroom Units	169	250	42,250
>3 Bedroom Units			
Total		-----	42,250

Non-Residential: (Design Flow Guideline provided as Appendix A)*

**If design flow deviates from the flow rates presented in Appendix A, provide supporting documentation/justification as an attachment in the form of 12 months of water bills demonstrating gallons per day utilized.*

Gross Acreage: _____

Use	Measurement Unit	# of Units	GPD per Unit	Total Requested GPD
Total			-----	

TOTAL REQUESTED GALLONS PER DAY: _____

NOTE TO APPLICANT:

Invoicing:

Invoices are generated on the following schedule:

Non-Residential:

Generated with the application for a Zoning Compliance Permit.

Residential:

Multi-Family / Apartments:

Generated with the application for a Zoning Compliance Permit.

Subdivision / Subdivided Lots:

Generated at Final Plat submittal.

Fee Development:

Development Fees are calculated and invoiced based on the Town of Clayton adopted [Comprehensive List of Fees and Charges](#). Invoiced fees include acreage fees, capacity fees, nutrient offset fees, recreation fees, fees-in-lieu, and electric department lot deposit. Please speak with Town staff with questions.

Approval:

Requests over 10,000 GPD are approved by the Town Council, by resolution. All other requests are approved by the Town Manager.

APPLICANT AFFIDAVIT

I/We, the undersigned, do hereby make application and petition to the Town of Clayton to approve the subject Wastewater Allocation. I hereby certify that I have full legal right to request such action and that the statements or information made in any paper or plans submitted herewith are true and correct to the best of my knowledge. I understand this application, related material and all attachments become official records of the Planning Department of the Town of Clayton, North Carolina, and will not be returned.

Marty D. Bizzell

Print Name

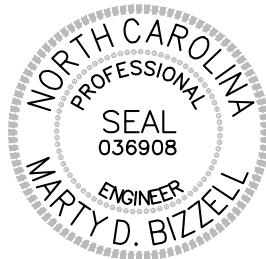
Marty D. Bizzell

Signature of Applicant

6/28/22

Date

Engineer Seal:



TOWN OF CLAYTON OFFICE USE ONLY:

Approved by: ☐ Town Manager

☐ Town Council (*requests of 10,000 GPD or more require Council approval by resolution*)

The **Town Manager / Town Council (circle one)** has authorized the allocation of _____

gallons per day for project # _____.

Date of Approval: _____

Signed:

Town Manager

If approved by Town Council:

Attach a copy of the resolution and any associated documentation.

APPENDIX A: DESIGN FLOW RATES

The following table from the North Carolina Administrative Code 02T.0114 shall be used to determine the minimum allowable design daily flow of wastewater facilities. Alternatively, the Town in its sole and absolute discretion may calculate the customer's initial average daily wastewater flow based on data from the customer's operations (or from similarly situated customers) with a comparable sanitary sewer system, where such data are available and reasonably current.

Establishment Type	Daily Flow Rate
Barber and Beauty Shops	
Barber Shops	50 gal/chair
Beauty Shops	125 gal/booth or bowl
Businesses, Offices and Factories	
General business and office facilities	25 gal/employee/shift
Factories, excluding industrial waste	25 gal/employee/shift
Factories or businesses with showers or food preparation	35 gal/employee/shift
Warehouse	100 gal/loading bay
Warehouse – self storage (not including caretaker residence)	1 gal/unit
Churches	
Churches without kitchens, day care or camps	3 gal/seat
Churches with kitchen	5 gal/seat
Churches providing day care or camps	25 gal/person (child & employee)
Fire, Rescue and Emergency Response	
Fire or rescue stations without on-site staff	25 gal/person
Fire or rescue stations with on-site staff	50 gal/person/shift
Food and Drink Facilities	
Banquet, dining hall	30 gal/seat
Bars, cocktail lounges	20 gal/seat
Caterers	50 gal/100 sq. ft. floor space
Restaurant, full Service	40 gal/seat
Restaurant, single service articles	20 gal/seat
Restaurant, drive-in	50 gal/car space
Restaurant, carry out only	50 gal/100 sq. ft. floor space
Institutions, dining halls	5 gal/meal
Deli	40 gal/100 sq. ft. floor space
Bakery	10 gal/100 sq. ft. floor space
Meat department, butcher shop or fish market	75 gal/100 sq. ft. floor space
Specialty food stand or kiosk	50 gal/100 sq. ft. floor space
Hotels and Motels	
Hotels, motels and bed & breakfast facilities, without in-room cooking facilities	120 gal/room
Hotels and motels, with in-room cooking facilities	175 gal/room
Resort hotels	200 gal/room
Cottages, cabins	200 gal/unit
Self-service laundry facilities	500 gal/machine
Medical, Dental and Veterinary Facilities	
Medical or dental offices	250 gal/practitioner/shift
Veterinary offices (not including boarding)	250 gal/practitioner/shift
Veterinary hospitals, kennels, animal boarding facilities	20 gal/pen, cage, kennel or stall
Hospitals, medical	300 gal/bed
Hospitals, mental	150 gal/bed
Convalescent, nursing, rest homes without laundry facilities	60 gal/bed
Convalescent, nursing, rest homes with laundry facilities	120 gal/bed
Residential care facilities	60 gal/person
Parks, Recreation, Camp Grounds, R-V Parks and other Outdoor Activity Facilities	
Campgrounds with comfort station, without water or sewer hookups	75 gal/campsite

Establishment Type	Daily Flow Rate
Campgrounds with water and sewer hookups	100 gal/campsite
Campground dump station facility	50 gal/space
Construction, hunting or work camps with flush toilets	60 gal/person
Construction, hunting or work camps with chemical or portable toilets	40 gal/person
Parks with restroom facilities	250 gal/plumbing fixture
Summer camps without food preparation or laundry facilities	30 gal/person
Summer camps with food preparation and laundry facilities	60 gal/person
Swimming pools, bathhouses and spas	10 gal/person
Public access restrooms	325 gal/plumbing fixture
Schools, Pre-school and Day Care	
Day care and preschool facilities	25 gal/person (child & employee)
Schools with cafeteria, gym and showers	15 gal/student
Schools with cafeteria	12 gal/student
Schools without cafeteria, gym or showers	10 gal/student
Boarding schools	60 gal/person (student & employee)
Service Stations and Car Wash Facilities	
Service stations, gas stations	250 gal/plumbing fixture
Car wash facilities	1200 gal/bay
Sports Centers	
Bowling center	50 gal/lane
Fitness, exercise, karate or dance center	50 gal/100 sq. ft.
Tennis, racquet ball	50 gal/court
Gymnasium	50 gal/100 sq. ft.
Golf course with only minimal food service	250 gal/plumbing fixture
Country clubs	60 gal/member or patron
Mini golf, putt-putt	250 gal/plumbing fixture
Go-kart, motocross	250 gal/plumbing fixture
Batting cages, driving ranges	250 gal/plumbing fixture
Marinas without bathhouse	10 gal/slip
Marinas with bathhouse	30 gal/slip
Video game arcades, pool halls	250 gal/plumbing fixture
Stadiums, auditoriums, theaters, community centers	5 gal/seat
Stores, Shopping Centers, Malls and Flea Markets	
Auto, boat, recreational vehicle dealerships/showrooms with restrooms	125 gal/plumbing fixture
Convenience stores, with food preparation	60 gal/100 sq. ft.
Convenience stores, without food preparation	250 gal/plumbing fixture
Flea markets	30 gal/stall
Shopping centers and malls with food service	130 gal/1000 sq. ft.
Stores and shopping centers without food service	100 gal/1000 sq. ft.
Transportation Terminals	
Air, bus, train, ferry, port and dock	5 gal/passenger

Source: North Carolina Administrative Code 02T.0114, January 1, 2007



Town of Clayton
Planning Department
111 E. Second Street, Clayton, NC 27520
P.O. Box 879, Clayton, NC 27528
Phone: 919-553-5002
Fax: 919-553-1720

November 22, 2022

Bass, Nixon and Kennedy, Inc. - Consulting Engineers
Attn: Marty D. Bizzell, PE, CPESC
6310 Chapel Hill Road, Suite 250
Raleigh, NC 27607

Re: 2022-109-CZM Townes at Little Creek Conditional Zoning District and Master Plan

To Whom It May Concern,

The Town of Clayton Planning staff is recommending to the Planning Board and Town Council that conditions of approval be placed upon the above referenced application, which proceeds to the Planning Board on November 28, 2022 and Town Council on December 19, 2022. These recommended conditions of approval are outlined on the back of this letter.

Please read through these potential conditions of approval, and sign below if you are in agreement with the conditions as proposed. If you are not in agreement please respond accordingly in writing. This will be included within the agenda packet for Planning Board and Town Council review.

Thank you.

Sincerely,

Ben Howell, AICP, CZO
Planning Director

Recommend Conditions of Approval (2022-109-CZM, Townes at Little Creek Conditional Zoning District and Master Plan):

1. Following Town Council approval, an electronic copy of the Master Plan and Narrative including the Conditions of Approval shall be submitted to the Planning Department for final approval.
2. The Development shall meet all adopted Town of Clayton Unified Development Code (UDC) requirements, Town of Clayton Engineering and Stormwater design standards, and the North Carolina Fire Code and NFPA Fire standards, except where specifically modified by the approved master plan.
3. The Development shall be constructed in substantial conformance with the Master Plan and Master Plan Narrative as approved by the Clayton Town Council.
4. Permitted uses shall be limited to single-family detached residential and townhomes and any allowed accessory uses within the Town of Clayton UDC for residential development.
5. The following standards will apply to the development:
 - Maximum number of Units: 169 dwelling units
 - Maximum Density: 3.14 DUA
 - Minimum Lot Size: 1,600 square feet
 - Minimum Dimensional Standards as specified in Master Plan
6. The following transportation improvements will be constructed and accepted by NCDOT (where necessary) prior to issuance of the first Certificate of Occupancy:
 - Construct an eastbound approach with one egress lane (shared left and through-lane) and one ingress lane at Town Centre Blvd and proposed Public Street A in the western portion of the development.
 - Construct site access along the northbound approach at Financial Drive and Scholar Drive.
7. A signal warrant analysis for the intersection of Financial Drive and US 70, meeting NCDOT requirements, shall be performed after 84 Certificates of Occupancy are issued for the development. If the signal warrant analysis determines that a signal is warranted at this intersection, the developer will contribute a pro-rata fee in lieu to the Town of Clayton to mitigate the proposed 2.5% increase in traffic to be generated from the development. The pro-rata fee shall not exceed 15% of the cost of the traffic signal, based on a cost estimate approved by the Town Engineering Department, and shall be paid to the Town prior to the issuance of the final certificate of occupancy.
8. After a certificate of occupancy has been issued for 50% of the lots (84 units), perform a signal warrant analysis at the intersection of Financial Drive and US 70 Business.
9. The development will include the following active amenity areas:
 - Two Tot Lots
 - Fenced Dog Park
 - Concrete or asphalt connections to the greenway easement

10. The development shall dedicate a 20' Town of Clayton Greenway Easement along the southern boundary of the site, following Little Creek. The final location of the easement shall be based on coordination with Town staff.
11. The Development shall have a minimum of 1.71 acres of public recreational open space.
12. Public sewer is proposed to be provided to the site by an extension of a gravity sewer main through a future proposed Town of Clayton CIP project. The site currently is served by an existing Town of Clayton Public Pump Station and is nearing capacity. The existing downstream gravity main and Walmart pump station will be analyzed for capacity. The Town of Clayton has engaged an engineering consultant to design a gravity sewer extension in order to abandon the existing pump station. Once the sewer extension project is complete, the proposed townhome project will connect to the new gravity sewer line. The developer will work with the Town of Clayton throughout the CIP project as the project moves to design/construction and the developer will contribute a pro-rata fee to the Town of Clayton to mitigate the proposed flow from the development.
13. Energy efficient features will include a minimum of three of the following: Insulation rated to at least RESNET-defined Grade II; Air barrier encloses insulation on all six sides when installed in vertical exterior walls; Blocking and air sealing at edge of horizontally installed insulation to separate conditioned space from unconditioned space; Penetrations, chases, and openings to unconditioned space fully sealed with solid blocking or sealant; Insulation to extend over top plates and wind baffles installed at all eaves; All doors adjacent to unconditioned space to have weatherstrip and rough openings around windows and doors are air sealed to framing; minimum of one Energy Star appliance installed; 90% efficient lighting (CFLs, LEDS, or Energy Star fixtures); Ducts insulated to R-8 in unconditioned space; Minimum 6 mil poly vapor barrier installed.
14. All units will be two-story with a variety of elevations. Units of the same elevation shall not be side by side. Exterior color schemes will not be repeated side by side.
15. The following architectural standards shall be met:
 - All homes will have a combination of two or more of the following materials on the front façade: stone, brick, lap siding, fiber cement siding, shakes or board and batten. The exterior siding material on the side and rear facades will be fiber cement with colors to match the front elevations. Vinyl may be used for soffits, fascia, and corner boards.
 - Stone/masonry accents will be provided on a minimum of 25% of all front building facades.
 - Each townhome shall have a covered porch element.
 - Two vehicular parking spaces to be provided for each home (1 car garage and driveway).
 - Side roof eaves to be 10" overhang except between interior townhome units.
 - Architectural style shingles to be used.
 - Rear concrete pad/patio for outdoor living will be provided on all units with a front-facing garage.
16. To the extent of any conflict between the Master Plan, Master Plan Narrative and these conditions, these conditions shall control.

APPLICANT AFFIDAVIT

I/We, the undersigned, do hereby certify that I have reviewed the recommended conditions of approval and am in agreement with the conditions as they are outlined within this letter.

MARTY D. BRZELL

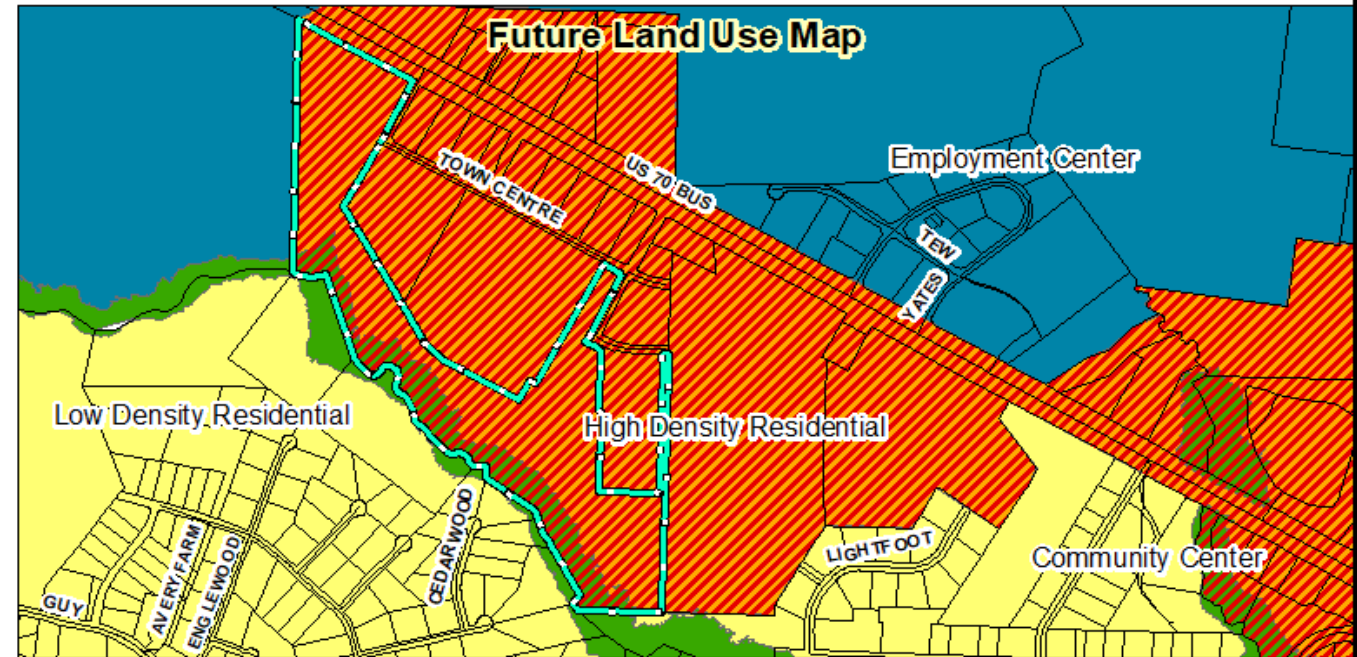
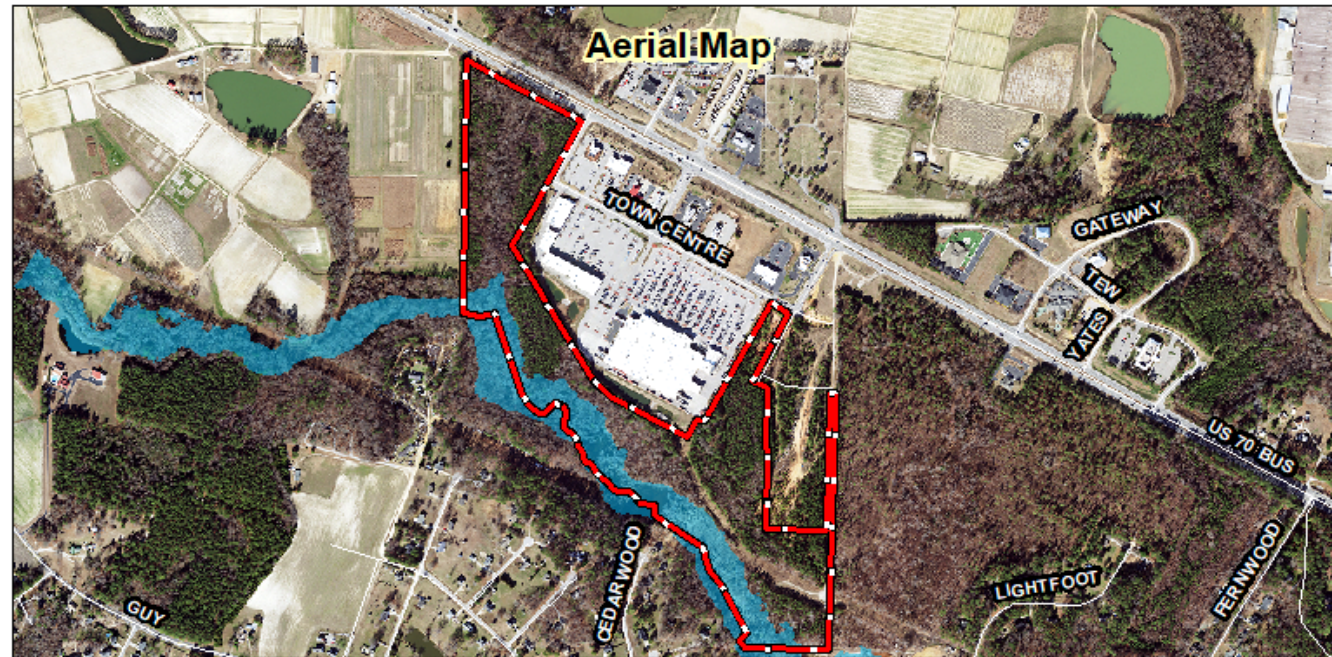
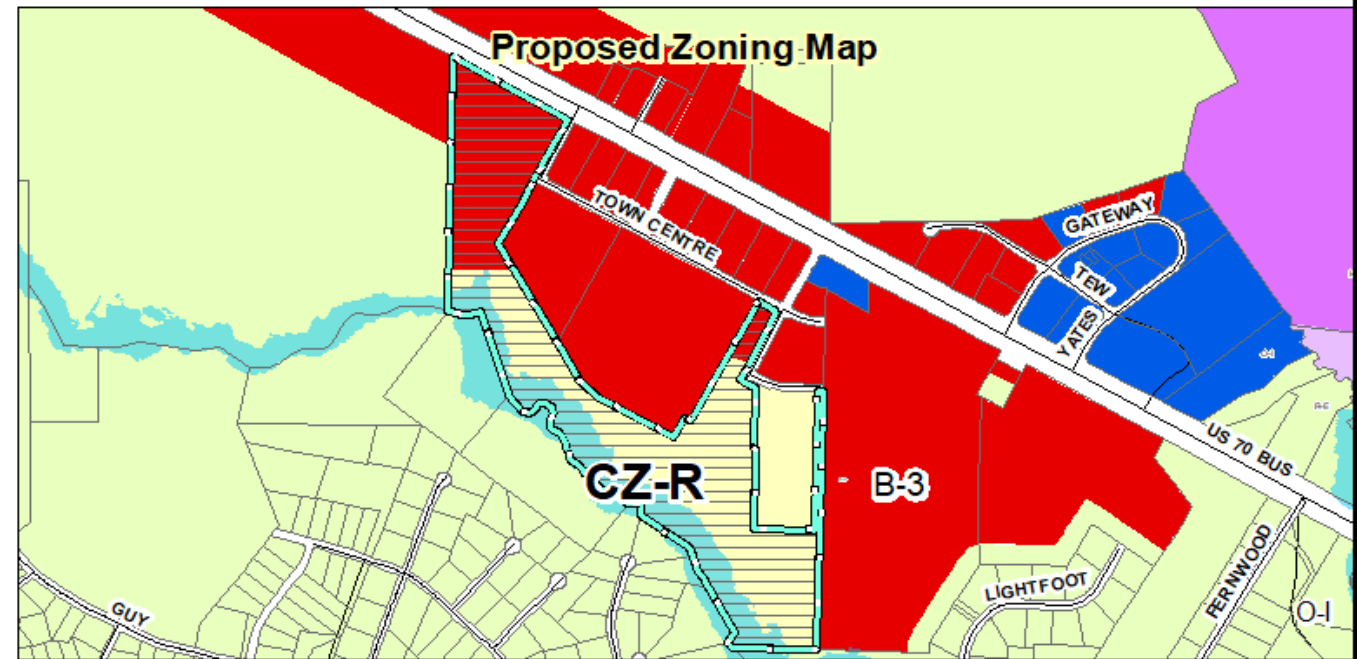
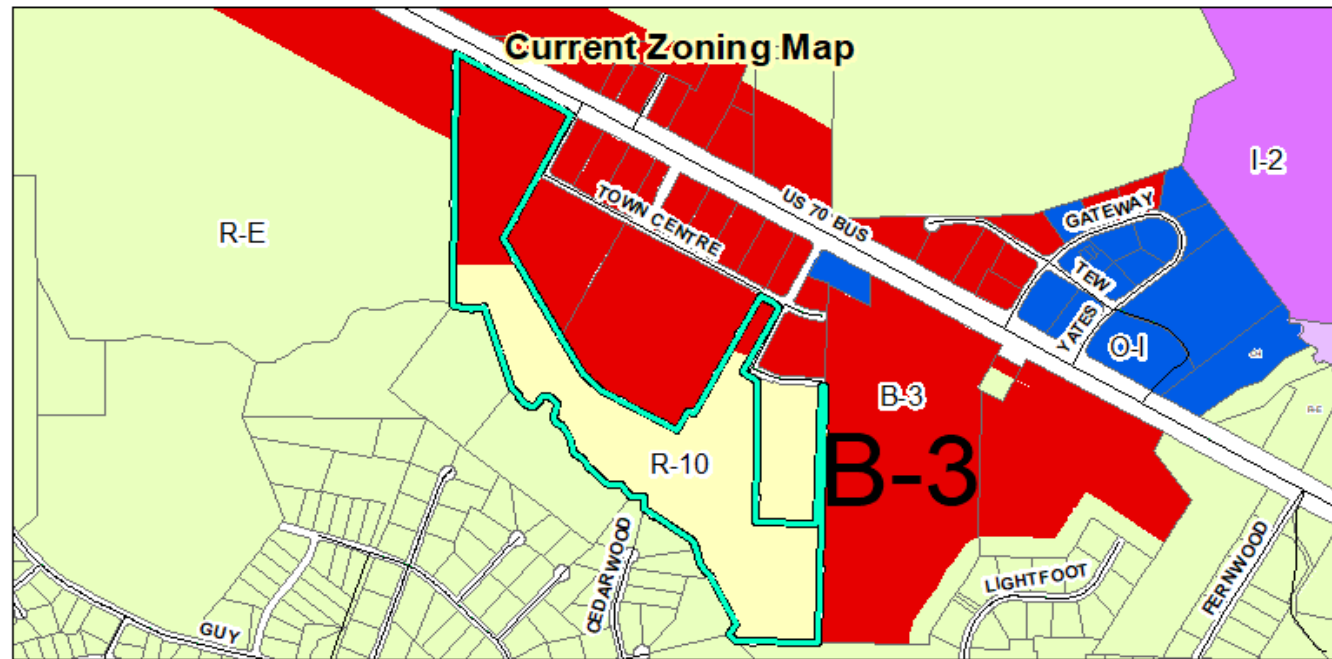
Print Name

Marty D. Brzell

Signature of Applicant

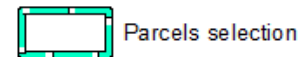
11-22-22

Date



Request: Rezoning from R-10 & B-3 SUD to CZ-R
Project Name: The Towns at Little Creek
Project Number: 2022-109-CZM

Applicant: Bass, Nixon and Kennedy, Inc. – Consulting Engineers
 Property Owner: Douglas and Cynthia Stephens, Irrevocable Trust
 Tag #: 05G02001A



0 0.4 0.8 Miles



Staff Report Map
 Prepared by: TOC Planning Department
 November 16, 2022

Disclaimer: Town of Clayton assumes no legal responsibility for the quality of the data represented here.

Document Path: O:\PLANNING\CONDITIONAL ZONING w_MASTER\2022-109-CZM The Towns at Little Creek Subdivision\Staff Report Map\Staff Report Maps - 2022-109-CZM The Towns at Little Creek .mxd