TECHNICAL MEMORANDUM

Date: Wednesday, July 20, 2022

To: Dylan Bruchhaus, AICP
Town of Wake Forest
Planner II

From: Brittany Chase, P.E.
Traffic Engineer
Exult Engineering

Subject: Carroll Joyner Residential – TIA Addendum II
Trip Generation Comparison and Chilmark Avenue Capacity Letter

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BACKGROUND

Exult Engineering completed a Traffic Impact Analysis (TIA) for the proposed Carroll Joyner Residential Development in May 2021. At the time the TIA was prepared, the proposed development consisted of 168 single family dwelling units, 137 residential townhomes, and 90 senior adult detached residential units. Following the preparation of the TIA, the proposed site plan was revised and an addendum was submitted in August 2021 to summarize the trip generation comparison. The site plan has been revised further to consist of 208 single family dwelling units and 128 residential townhomes and is shown on Figure 1. This addendum includes a trip generation comparison for the revised land uses.

The proposed access remains as studied in the TIA. To remain conservative in preparing the analysis for the TIA, all site traffic was assigned to the study intersections on Capital Boulevard. The intersection of Jenkins Road at Chilmark Avenue was not a study intersection and therefore, traffic was not assigned to the intersection. Based on neighborhood concerns, this addendum considers the utilization of Chilmark Avenue for site traffic expected to access Jenkins Road.

TRIP GENERATION COMPARISON

The proposed development is to consist of 208 single family dwelling units and 128 residential townhomes. The trip generation was based on rates and equations published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. After the submittal of the May 2021 TIA, the Trip Generation Manual was updated in September 2021 to reflect the most recent nationwide data. Trip generation comparisons are presented below in Table 1 between the revised land uses and those presented in the May 2021 TIA. NCDOT Congestion Management Rates vs. Equations spreadsheet was used for guidance.

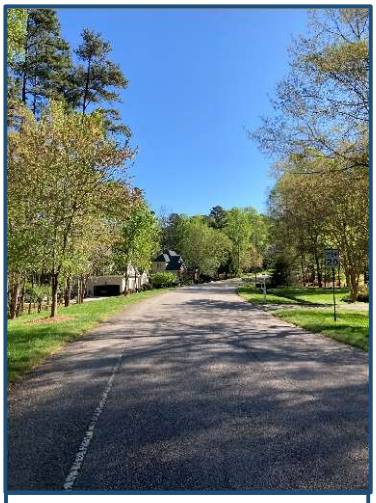
Table 1: Trip Generation Comparison

Land Use			Daily	AM Peak Hour			PM Peak Hour		
				Total	Enter	Exit	Total	Enter	Exit
210: Single Family Detached	208	d.u.	1,979	145	38	107	198	125	73
215: Single Family Attached	128	d.u.	925	61	19	42	73	42	31
Total			**2,904**	**206**	**57**	**149**	**271**	**167**	**104**
Trip Generation Analyzed in Previously Prepared May 2021 TIA (Submitted and Reviewed by NCDOT)			3,186	228	59	169	292	183	109
Change in Trip Generation			***-282***	***-22***	***-2***	***-20***	***-21***	***-16***	***-5***

As shown in Table 1, the proposed development is expected to generate 2,904 daily trips, 206 AM peak hour trips (57 entering, 149 exiting), and 271 PM peak hour trips (167 entering, 104 exiting). The proposed land use changes from result in a decrease in site trips compared to the site trips analyzed in the May 2021 TIA is negligible. Therefore, the overall results and recommendations presented in the May 2021 TIA will not be impacted and represent a conservative analysis for the revised site plan.

CHILMARK AVENUE CAPACITY

As described in the May 2021 TIA, due to the existing roadway connectivity of Country Club Drive and Chilmark Avenue, a connection is provided to Jenkins Road for the proposed development. The intersection of Jenkins Road and Chilmark Avenue was not a required study intersection for the May 2021 TIA. All of the proposed development traffic for the eastern portion of the site was assigned to the Capital Boulevard intersections (Club Villas Drive and Country Club Drive) to represent a conservative analysis for the study intersections even though a minimal amount of project traffic may utilize Chilmark Avenue to access Jenkins Road.



Chilmark Avenue

Based on the approved Site Traffic Distribution presented in the May 2021 TIA, approximately 5% of site trips are expected to utilize Jenkins Road. Because there is a potential for these site trips to use Chilmark Avenue instead of Capital Boulevard to access Jenkins Road, this 5% was reassigned to Chilmark Avenue to determine the impact on capacity.

Chilmark Avenue is currently a two-lane residential roadway with a posted speed limit of 20 miles per hour. The travel lanes are approximately 10 feet each with a striped shoulder on one side of the roadway. This cross section remains consistent from Country Club Drive to Jenkins Road. Based on the *Guidelines for NCDOT Project-Level Traffic Forecasting Procedures*, the capacity for two-lane suburban roadways with 10-foot lanes is approximately 10,500 vehicles per day (vpd). We can expect this capacity to be slightly decreased with the option for on-street parking.

There are approximately 70 existing single family homes that may use Chilmark Avenue to access Jenkins Road. Assuming traffic from all 70 homes use Chilmark Avenue at Jenkins Road instead of Country Club Drive at Capital Boulevard, this would result in an existing demand of approximately 727 vehicles per day.

Applying the 5% assignment onto Chilmark Avenue for the proposed development results in 146 vehicles per day. Adding the existing and proposed daily traffic demands results in less than 900 vehicles per day expected to utilize Chilmark Avenue at project buildout. Therefore, there is sufficient capacity along Chilmark Avenue to accommodate the proposed site traffic.

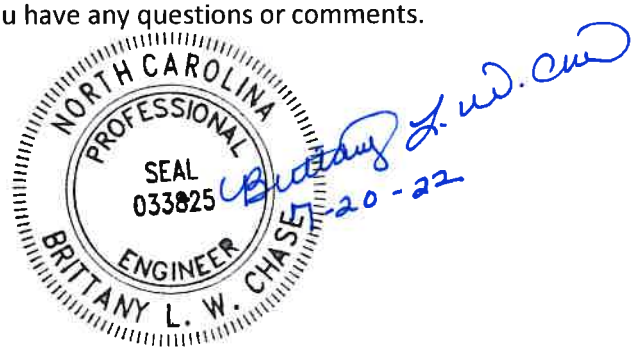
Furthermore, if the 5% assignment is applied to the peak hour demand (271 vehicles per hour), this results in 14 vehicles per hour, or 1 vehicle added to Chilmark Avenue every 4-5 minutes.

CONCLUSION

The trip generation analyzed in the May 2021 TIA provides for a conservative analysis given the reduction in site trips expected with the revised site plan. Based on the capacity and existing daily traffic demand, Chilmark Avenue is expected to accommodate the increased demand due to the development of the proposed site. An updated traffic impact analysis is not necessary to determine further impacts of the proposed site.

Please let me know if you have any questions or comments.

Sincerely,



Brittany Chase, P.E.
Exult Engineering

Attachments: Figure 1: Proposed Site Plan
Figure 2: Proposed Site Traffic Distribution

cc: Jeremy Warren, NCDOT, Division 5, District 1
Patrick Reidy, Town of Wake Forest
Juan Montes, McAdams Company

Carroll Joyner Residential TIA Addendum II: Trip Generation Comparison & Chilmark Avenue Capacity

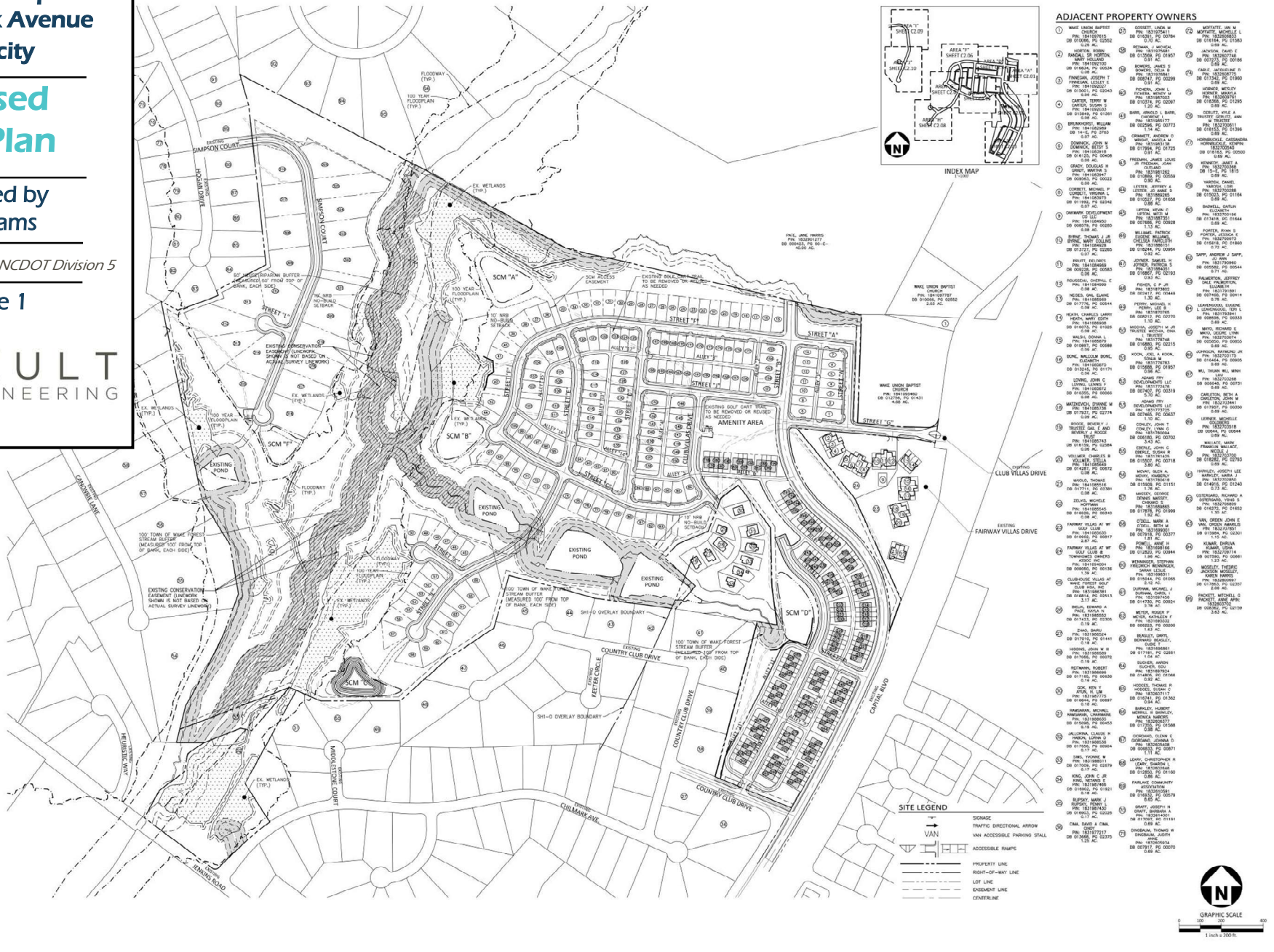
Revised Site Plan

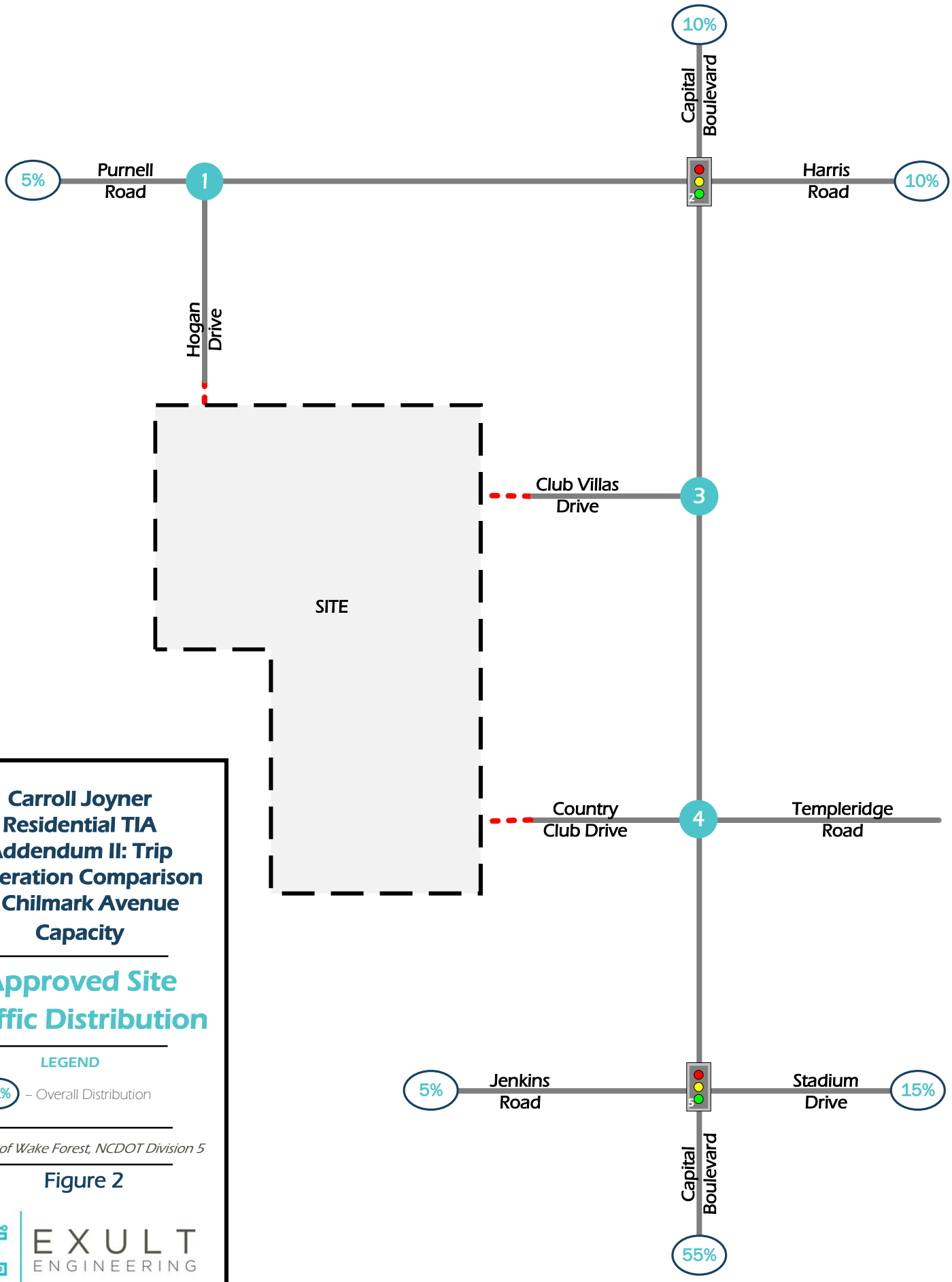
Prepared by McAdams

Town of Wake Forest, NCDOT Division 5

Figure 1

EXULT ENGINEERING





Carroll Joyner Residential TIA Addendum II: Trip Generation Comparison & Chilmark Avenue Capacity

Approved Site Traffic Distribution

LEGEND

XX% – Overall Distribution

Town of Wake Forest, NCDOT Division 5

Figure 2

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