



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

November 3, 2023

D. Lance Hartland, P. E.
Senior Traffic Engineer
Gannett Fleming, Inc.
22 S. Pack Square Suite 800
Asheville NC 28801

Reference: Technical Memorandum For Etowah Residential

Dear Mr. Hartland,

The Technical Memorandum (TM) submitted to the North Carolina Department of Transportation (NCDOT) for the development titled as the Etowah Residential project has been reviewed and consideration given to the updated analysis for the Traffic Impact Analysis (TIA) accepted on October 4, 2023. The TM updated the accepted TIA to reflect two adjustments to the proposed development. They are the reduction in the proposed density and the addition of a second access point on US 64.

The total number of housing units has been reduced from 598 to 400 total units. Using the Institute of Traffic Engineers (ITE) Trip Generation Manual, 11th Edition, an unadjusted total of 2998 Daily Trips are expected to be generated by Land Use Code (LUC) 215. This also provides prediction of 202 (AM) and 236 (PM) Peak Hour trips.

Access #3 on US 64 has been converted from a gated emergency services entrance to a right-in/right-out, west of Access #1.

North Carolina General Statute (NCGS) 136-18(29) states in part (emphasis added):

“§ 136-18. Powers of Department of Transportation.

The Department of Transportation has the following powers:

- (29) To establish policies and adopt rules about the size, location, direction of traffic flow, and **the construction of driveway connections into any street or highway which is a part of the State Highway System.** The Department of Transportation **may require the construction and public dedication of acceleration and deceleration lanes, and traffic storage lanes and medians by others for the driveway connections into any United States route, or North Carolina route,** and on any secondary road route with an average daily traffic volume of 4,000 vehicles per day or more.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
DIVISION 14 / DISTRICT 1 FIELD OFFICE
4142 HAYWOOD ROAD
MILLS RIVER, NC 28759

Telephone: (828) 891-7911
Fax: (828) 891-5026
Customer Service: 1-877-368-4968

Location:
4142 HAYWOOD ROAD
MILLS RIVER, NC 28759

Website: www.ncdot.gov

D. Lance Hartland, P. E.
Technical Memorandum For Etowah Residential
November 3, 2023
Page 2

NCDOT Policy On Street And Driveway Access to North Carolina Highways (NCDOT Driveway Manual) states, in part “A TIS may also be required for proposed accesses within 1000 feet of an interchange, in the vicinity of a high accident location, **on a major arterial roadway... or at the discretion of the District Engineer.**” (emphasis added) With the primary access (updated to 85% of outbound traffic) accessing US 64. US 64 is a route identified by the French Broad River Metropolitan Planning Organization as a “Major Thoroughfare – Needs Improvement” in their current Comprehensive Transportation Plan.

The statement in the TM that “the proposed development traffic would not reach the NCDOT TIA trigger threshold of 3,000 trips per day” is fact on the one point (by a total of two trips). By leaving this statement as stand alone, it erroneously implies that NCDOT would not have required a TIA. Referencing NCGS 136-18(29) and the NCDOT Driveway Manual, a TIA would have been required by the NCDOT even if the 3000 daily trip threshold had not been met.

A TIA was also required by Henderson County Code 42-135 for exceeding the County’s thresholds of 1000 Daily Trips and 100 Peak Hour Trips.

Mitigation requirements were developed utilizing North Carolina General Statute (NCGS) 136-18(29); the NCDOT Driveway Manual, specifically Chapter 5, Sections (F), (J), and (H); and the NCDOT Roadway Design Manual, Revised 2022.

The Etowah Residential TIA mitigations provided in the acceptance letter by the NCDOT on October 4, 2023, are hereby amended with the following comments and required mitigations:

NCDOT Individual Intersection Mitigation Requirements

US 64 (Brevard Road) / SR 1424 (Brickyard Road)

Gannett Fleming recommends no changes to this intersection.

The TM shows a Level of Service (LOS) drop on the PM Peak hour for the SR 1424 SB approach from LOS B to LOS C.

The NCDOT Driveway Manual states that the applicant shall be required to identify mitigation improvements to the roadway network if **at least one** of the following conditions exists when comparing base network conditions to project conditions:

- the total average delay at an intersection or individual approach increases by 25% or greater, while maintaining the same level of service,
- the **Level of Service degrades by at least one level,**
- or Level of Service is “F.”

Per the NCDOT Driveway Manual - For turning lanes, mitigation improvements shall be identified when the analysis indicates that the 95th percentile queue exceeds the storage capacity of the existing lane. The District Engineer will be responsible for final determination of mitigation improvements required to be constructed by the applicant.

The TM shows an increase in queue length of more than 25% during the AM and PM peak hour for the US 64 WB approach. The 95th Percentile queue length exceeds the existing storage between SR 1424 and SR 1323 and extends beyond the future Ecusta Trail.

D. Lance Hartland, P. E.
Technical Memorandum For Etowah Residential
November 3, 2023
Page 3

NCDOT mitigation requirements:

US 64 WB – add a 12’ right turn lane with 50’ of storage, 150’ deceleration length and 100’ taper length.

US 64 EB – restripe the center turn lane for a dedicated left turn lane with 150’ of storage, 150’ deceleration lane and 100’ taper length.

SR 1424 SB – add an 11’ right turn lane with 50’ of storage and 75’ taper.

US 64 (Brevard Road) / SR 1488 (N Greenwood Forest Drive)

Gannett Fleming recommends no changes to this intersection.

With the updated analysis, NCDOT requires no mitigation at this intersection.

Queue lengths were noted to have increased more than 25%, but increase length was negligible at one car length or less.

SR 1323 (Brickyard Road) / SR 1325 (Turnpike Road)

Gannett Fleming recommends no changes to this intersection.

NCDOT required no mitigation at this intersection in the October 4, 2023, acceptance letter.

With the updated analysis, NCDOT requires no mitigation at this intersection.

Queue lengths were noted to have increased more than 25%, but increase length was negligible at one car length or less.

SR 1323 (Brickyard Road) / SR 1488 (N Greenwood Forest Drive)

Gannett Fleming recommends no changes to this intersection.

With the updated analysis, NCDOT requires no mitigation at this intersection.

SR 1323 (Brickyard Road) / SR 1322 (Holly Springs Road)

Gannett Fleming recommends no changes to this intersection.

With the updated analysis, NCDOT requires no mitigation at this intersection.

SR 1424 (Brickyard Road) / SR 1323 (Brickyard Road/McKinney Road)

Gannett Fleming recommends no changes to this intersection.

With the updated analysis, NCDOT requires no mitigation at this intersection.

US 64 (Brevard Road) / Access #1

Gannett Fleming recommends the proposed Site Drive be constructed as shown on the site plan with full access stop control and at least 100 feet of stem length as per NCDOT Guidelines. Gannett Fleming recommends a dedicated left turn lane with 100 feet of full storage be constructed on US 64 (Brevard Road) with an appropriate taper. Gannett Fleming recommends a dedicated right turn lane with 100 feet of full storage be constructed on US 64 (Brevard Road) with an appropriate taper.

The site plan contained within the TM has very poor resolution and is not legible.

NCDOT mitigation requirements:

An internal protected stem with a 100' minimum length is required. Access 1 at US 64 is to have one inbound lane and two outbound lanes (a left turn and a right turn). Each lane is to be a maximum of 12' wide, not including any curb and gutter proposed. A US 64 EB dedicated 12' left turn lane is required to include 100' of storage, 500' of deceleration length, and a 150' taper. Any widening needed is to be symmetrical. A US 64 WB dedicated 12' right turn lane is required to include 100' of storage, 500' of deceleration length, and a 150' taper.

The NCDOT Driveway Manual and NCDOT Roadway Design Guide varied on the Desirable Length of the Deceleration Lane. The lower of the two lengths were used.

SR 1323 (Brickyard Road) / Access #2

Gannett Fleming recommends the proposed Site Drive be constructed as shown on the site plan with full access stop control and at least 100 feet of stem length as per NCDOT Guidelines.

With the updated analysis, NCDOT requires no mitigation at this intersection.

US 64 (Brevard Road) / Access #3

Gannett Fleming recommends the proposed Site Drive be constructed as shown on the site plan with right-in/right-out access stop control and at least 100 feet of stem length as per NCDOT Guidelines. Gannett Fleming recommends a dedicated right turn lane with 100 feet of full storage be constructed on US 64 (Brevard Road) with an appropriate taper.

NCDOT mitigation requirements:

An internal protected stem with a 100' minimum length is required. Access 3 at US 64 is to have one inbound lane and one outbound lane (right-in/right-out). Each lane is to be a maximum of 12' wide, not including any curb and gutter proposed. A US 64 WB dedicated 12' right turn lane is required to include 100' of storage, 500' of deceleration length, and a 150' taper.

The NCDOT Driveway Manual and NCDOT Roadway Design Guide varied on the Desirable Length of the Deceleration Lane. The lower of the two lengths were used.

Overall Project Mitigation Requirements

A raised concrete center divider island is required on US 64 from Access 1 to a point beyond Access 3 and stop prior to the two existing private drives.

A raised concrete “pork chop” style island is required at Access #3. This island will be exaggerated to enforce the right-in/right-out.

All shoulder and/or pavement disturbance on US 64 will contain paved shoulders to match existing and 8’ grass shoulders.

Per the NCDOT Driveway Manual, US 64 is required to be resurfaced 100’ outside of the outer limits of disturbance. Resurface to milled headers with 1.5 inches of an approved Asphalt Surface Course to provide a consistent surface for effective striping, improved ride-ability and maintainability, and improved night and wet pavement lane visibility.

US 64 is required to be fully restriped, and all pavement markings reinstalled 500’ beyond the limits of resurfacing.

The traffic signals should be retimed and/or coordinated with the corridor. All signal work is to be coordinated with the NCDOT Division 14 Traffic Engineer.

Any guardrail work, within the NCDOT right of way, is to be performed by a NCDOT certified guardrail contractor. This includes removal, relocation, and/or installation. An effort should be made to eliminate guardrail warrants for any existing guardrail.

The NCDOT Driveway Manual states: “Boundaries for offsite improvements, including intersections and public roadways to be considered, will be identified in the TIS or determined by the District Engineer.” Utilizing the NCDOT Roadway Design Manual, with traffic volumes over 2000 vehicles per day, and a posted speed limit of 35 mph (design speed of 40 mph), the following applies: The portions of SR 1322 and 1323 that are within property owned by the developer or by WNC Resort Properties LLC (the current owner of record) must be upgraded to 11’ lanes, 2’ paved shoulders and 6’ grass shoulder.

Any proposed curb and gutter within NCDOT right of way is to be 2’6” wide and comply with NCDOT Standard 640.01.

All required improvements are to have NCDOT approved roadway plans.

All required driveway permits and/or encroachment agreements are to be approved prior to construction.

All improvements to the NCDOT system will be bonded prior to construction.


Any future development on WNC Resort Properties LLC property, or in the area of this proposed development, will be required to do a Traffic Impact Analysis to evaluate the cumulative effect of this project and any additional traffic to the NCDOT system. This complies with General Statute, NC Administrative Code, and NCDOT policy and procedures. Any mitigations previously required and amended here may be reinstated, or exceeded, with any future development onsite or in the area.

D. Lance Hartland, P. E.
Technical Memorandum For Etowah Residential
November 3, 2023
Page 6

It is the responsibility of the developer to verify the 60' right of way shown on Henderson County SR 1322, SR 1323, SR 1325, SR 1424, and SR 1488. It is the responsibility of the developer to verify the 150' right of way shown on Henderson County US 64. If it is determined that any additional right of way is required, it is the responsibility of the developer to acquire that right of way and dedicate it to NCDOT at no charge.

If you have any questions, please let me know by email at rh darnell@ncdot.gov or by phone at 828-891-7911.

Sincerely

DocuSigned by:

E3DD5A4810424B2...

R.H. Darnell
Assistant District Engineer

RHD/rhd

CC: Troy S. Wilson, PLS, NCDOT District Engineer
Wanda H. Payne, PE, CPM, NCDOT Division Engineer
Wesley T. Grindstaff, PE, NCDOT Deputy Division Engineer
Michael P. Reese, PE, CPM, NCDOT Congestion Management Regional Engineer
Autumn Radcliff, Henderson County Planning Director
Matt Champion, Henderson County Code Services Director and Zoning Administrator