January 3, 2022

Mr. Tyler Morrow City of Hendersonville Community Development Department 100 N. King Street Hendersonville, NC 28712

RE: Tracy Grove Road Residential Development TIA Review

Dear Tyler,

At the request of the City of Hendersonville, Kimley-Horn has conducted a review of the traffic impact analysis (TIA) prepared for the Tracy Grove Road Residential Development, dated December 15, 2021 by J.M. Teague Engineering & Planning. The proposed site is located along Tracy Grove Road, just south of the intersection between Dana Road and Tracy Grove Road. Up to 161 single-family detached dwelling units and 300 multi-family units are proposed on the currently undeveloped parcel off Tracy Grove Road. Access to the site is proposed off Wilmont Drive and Tracy Grove Road. The access point off Tracy Grove Road is located 140 feet south of Wilmont Drive.

The analyses contained with the sealed TIA were reviewed for conformance with the traffic impact analysis guidelines presented within the NCDOT *Policy on Street and Driveway Access to North Carolina* Highways, NCDOT *Congestion Management Capacity Analysis Guidelines*, and City of Hendersonville *Zoning Ordinance*. This memo outlines our technical review of the TIA and corresponding recommendations.

TECHNICAL REVIEW COMMENTS

Based on a technical review of the TIA report as submitted, several elements of the analysis do not adhere to NCDOT and City of Hendersonville guidelines. The following observations are offered based on this review and should be addressed as appropriate:

- Page 4, third paragraph, notes that Henderson County reviewed and approved the TIA scope. This should be changed to the City of Hendersonville.
- Figure 6 provides the existing laneage and storage lengths for the study area intersections. The following was noted in review of the figure:
 - The intersection of 7th Avenue and Dana Road/Duncan Hill Road is missing the NB approach laneage.
 - The EB left-turn storage at US 64 and Dana Road is shown as 75 feet for both lanes. A review of available aerial mapping shows the outside left turn lane running the full length between the signals at US 64 and 7th Avenue. In addition, the storage is shown as 75 feet for the inside left-turn lane. 90 feet is currently present in the field.
 - The NB right turn lane at US 64 and Dana Road is shown with 250 feet of storage. A review of current aerials shows 150 feet present

- The WB left-turn lanes are shown with 125 feet of storage. 100 feet was measured in the field.
- The NB right turn at Dana Road and Tracy Grove Road is shown having 100 ft of storage while only 75 feet is currently present.
- A review of the site volumes presented in Figure 9, Trip Generation Am & PM Ingress and Egress, shows an imbalance of +1 vehicle in the PM peak hour between the intersections of US 64 and Tracy Grove Road along Dana Road. The imbalance is most likely due to rounding.
- The potential impact of COVID-19 on travel patterns is not addressed in the TIA. At a minimum, justification should be provided for using the collected traffic counts without adjustment.
- In Tables 6, 7, 8 and 9, the overall LOS for the signalized intersections was not provided. The TIA on page 22 indicates that the overall signalized intersection operations is one of the metrics to be evaluated in the review of potential mitigation requirements. The tables need to be updated to reflect the overall operations for signalized intersections.
- Page 20, the text "The capacity analysis (Synchro) reports for the existing conditions are in Appendix B" should be changed to reflect background conditions.
- Generic references to NCDOT traffic data are made in Table 3. Consider updating the text to specify the NCDOT AADT station ID referenced.
- The queue lengths referenced in Tables 6,7,8 and 9 are for the largest observed from the Sim Traffic output for the maximum queue observed. This should be denoted in the text. Furthermore, while this does depict potential queues for the approach, it does not give a good perspective of the queues that critical movements, such as the EB lefts or rights from Dana Road to 7th Avenue or US 64. Consideration should be given to reporting queues by movements rather than approaches to give contextual perspective over just the approach.
- A review of the sim traffic queuing reports within Appendix B indicates the following as a result of the proposed development:
 - The intersection of 7th Avenue and Dana Road/Duncan Hill Road the EB right-turn is projected to exceed the storage of 100 feet in the AM buildout scenario. Queuing analysis in the TIA indicates the AM background queue is 52 feet and grows to 168 with the addition of site traffic. The mitigated analysis scenario reduces the queue to within the storage length. However, for the PM peak hour, the background and build analysis shows a 200 ft maximum queue. The queue is showing a 100 ft deficit for the turn lane
 - The intersection of Dana Road and US 64 shows the WB left turn lanes exceeding the storage lengths of 125 feet by 75 or more for both the AM and PM peak hours in the background, buildout, and buildout mitigated scenarios
 - The intersection of Dana Road at Tracy Grove Road shows significant queuing in the background and buildout horizon years for all approaches. Under the current configuration the existing right turn lane on Tracy Grove Road is being starved due to the length of the left-turning queue. The maximum queue observed is consistent at 200 ft (100 ft more than available storage) through the background, buildout, and buildout mitigated scenarios.

- A review of the mitigation presented in the TIA and on Figure 11 offers the following observations:
 - The TIA recommends a NB left turn lane on Tracy Grove Road into the proposed access 1 with 150 feet of storage. This recommendation seems appropriate given the projected queues generated from the site.
 - The TIA recommends an EB right turn lane on Dana Road onto Tracy Grove Road with 100 feet of storage. A review of the queuing reports presented in the TIA indicates that a minimum of 150 feet is needed to accommodate the queue anticipated by the development.
- The City of Hendersonville *Zoning Ordinance* states that "all access points, regardless of the classification of the roadway facility the access points connect to, shall follow the North Carolina Department of Transportation's most current *Policy on Street and Driveway Access to NC Highways*".
 - Auxiliary turn lane warrants, intersection sight distance, and pedestrian/bicycle considerations were not addressed in the TIA. Justification for the exclusion of these key analysis elements should be provided within the report text.
 - Proposed access 1 is located 140 feet from existing Wilmont Drive. Considering the volume accessing the proposed access point, the access should be pushed to the southern property line to provide maximum separation between Wilmont Drive and the access point. If additional property can be acquired, the access should be located further than the current southern property line.

CONCLUSIONS

The TIA as presented provides a reasonable representation of the traffic impacts associated with the proposed development on the adjacent street network. It is important to note that some of the intersections, approaches, and movements do operate an unacceptable level of service under existing and background conditions without the proposed development. The proposed development will have a measurable impact on the subject intersections as well.

Based on a technical review of the TIA as submitted, it is my professional opinion in review of the TIA and according to NCDOT and City of Hendersonville guidelines the following mitigation is necessary to mitigate the impact of the proposed development:

- A left turn lane with 150 feet of storage and appropriate taper on Tracy Grove Road at Access 1.
- A right turn lane with 150 feet of storage and appropriate taper on Dana Road at the signal with Tracy Grove Road intersection.
- Extend the existing right turn on Tracy Grove Road from 100 feet to 200 feet with the appropriate taper.
- Relocate the proposed location of Access 1 to a point that creates further separation from Wilmont Drive.

Please contact me at (704) 488-3055 or jonathan.guy@kimley-horn.com should you have any questions regarding this analysis.

Sincerely,

Jonathan Guy, PE, AICP, PTOE Vice President