

## 1.0 Executive Summary

The purpose of this Traffic Impact Analysis (TIA) is to review vehicular traffic impacts as a result of the proposed Nisbet Development. The primary objectives of the study are:

- To estimate trip generation and distribution for the proposed development.
- To perform intersection capacity analyses for the identified study area.
- To determine the potential traffic impacts of the proposed development.
- To develop recommendations for needed roadway and operational improvements to accommodate the proposed development's traffic impacts.

The proposed site is located along both sides of Van Wyck Road south of Tree Tops in Lancaster County, South Carolina. As currently envisioned, the proposed development consists of 1,025 single family homes expected to be built-out in 2031. Based on the current site plan, access to the site is proposed via five full movement access points along Van Wyck Road.

Per the Lancaster County Unified Development Ordinance (UDO) Section 6.8, the impact of the development was analyzed for the year after the development is expected to be at full occupancy. Therefore, this TIA evaluates the traffic operations under 2022 existing conditions, 2032 background conditions (without the proposed development), and 2032 build-out conditions (with the proposed development) during the AM and PM peak hours. Through coordination with Lancaster County and South Carolina Department of Transportation (SCDOT) staff, the following study intersections are included:

1. US 521 and Van Wyck Road/Faith Presbyterian Church Driveway
2. Rock Hill Highway (SC 5) and Steel Hill Road
3. US 521 and Steel Hill Road
4. W Rebound Road and Van Wyck Road
5. Rock Hill Highway (SC 5) and Rebound Road/Riverside Road
6. US 521 and W Rebound Road/ E Rebound Road
7. Van Wyck Road and Steel Hill Road
8. Van Wyck Road and Ivy Place Farm's Vendor Entrance/Access 1
9. Van Wyck Road and Accesses 2/3
10. Van Wyck Road and Access 4
11. Van Wyck Road and Access 5

For purposes of this study, US 521, Rock Hill Highway, and Van Wyck Road are referenced as north/south with the exception of Van Wyck Road at its intersection with US 521; while all other roads are referenced as east/west.

Kimley-Horn was retained to determine the potential traffic impacts of this development (in accordance with the traffic study guidelines in the *SCDOT Access and Roadside Management Standards (ARMS) Manual* and the Lancaster County UDO Section 6.8), and to identify transportation improvements that may be required to accommodate these impacts. Based on the analyses contained herein, the following improvements are recommended as developer mitigation:

### US 521 and Van Wyck Road

- Construction of an additional northbound through lane with 725 feet of storage and additional northbound receiving lane along US 521. Based on SCDOT guidelines, the receiving lane must extend 1,000 feet north of the intersection prior to dropping or merging.
- Changing the northbound left-turn movement from protected to permissive phasing if allowable.

**Rock Hill Highway (SC 5) and Steel Hill Road**

Cost sharing with the planned Catawba Council of Governments (COG) project towards the following improvements:

- Reconfiguration of the Steel Hill Road (westbound) approach to consist of a free-flow right-turn lane along Steel Hill Road and a left-turn lane with 50 feet of storage. This requires a northbound acceleration lane of 900 feet as well.
- Construction of a southbound left-turn lane along SC 5 with 575 feet of storage.

**Rock Hill Highway (SC 5) and Riverside Road/W Rebound Road**

Cost sharing with the planned Catawba COG intersection and Riverchase Estates development projects towards the following improvements:

- Installation of a traffic signal if/when warrants are met upon or prior to full build-out of the development.
- Construction of a southbound left-turn lane along SC 5 with 150 feet of storage.

**US 521 and W Rebound Road/E Rebound Road**

- Construction of an eastbound right-turn lane along W Rebound Road with 125 feet of storage.

**Van Wyck Road and Steel Hill Road**

- Installation of all-way stop-control if/when warrants are met upon or prior to full build-out of the development.

**Van Wyck Road and Access 1**

- Construction of Access 1 to include a single ingress lane, a single egress lane, and a 60-foot internal protected stem (IPS) with stop control.
- Construction of a southbound left-turn lane with 150 feet of storage.

**Van Wyck Road and Access 2/Access 3**

- Construction of Access 2 to include a single ingress lane, a single egress lane, and an 85-foot IPS with stop control.
- Construction of Access 3 to include a single ingress lane, a single egress lane, and a 70-foot IPS with stop control.
- Construction of a southbound right-turn lane with 100 feet of storage.
- Construction of northbound and southbound left-turn lanes with 150 feet of storage.

**Van Wyck Road and Access 4**

- Construction of Access 4 to include a single ingress lane, a single egress lane, and a 60-foot IPS with stop control.
- Construction of a southbound left-turn lane with 150 feet of storage.

**Van Wyck Road and Access 5**

- Construction of Access 5 to include a single ingress lane, a single egress lane, and a 105-foot IPS with stop control.
- Construction of a southbound right-turn lane with 100 feet of storage.
- Construction of a northbound left-turn lane with 150 feet of storage.

The transportation improvements for the study intersections are subject to approval by SCDOT and Lancaster County. All additions and attachments to State and County roadway system shall be properly permitted, designed, and constructed in conformance to standards maintained by the agencies.