



15401 Weston Parkway
Suite 100
Cary, NC 27513
Main: 919 678 0035
www.wspgroup.com/usa

November 11, 2013

Mr. Jeff Hinkle
Shea Homes
8800 N Gainey Center Dr, Suite 370
Scottsdale, AZ, 85258

Re: Engineer's Opinion on Carolina Ridge Development Off-Site Improvements

Mr. Hinkle,

We have completed the draft Carolina Ridge TIA Update Memorandum following the methodology and relatively conservative assumptions in the current NCDOT Traffic Capacity Analysis Guidelines. This study identifies the roadway improvement needs for the 2021 build conditions, but noted that many of the recommended improvements are also needed in 2021 without the proposed development to provide acceptable traffic operational performance. We would like to make you aware that NCDOT will not accept improvement recommendations based on "unfunded or uncommitted improvements provided by others" under the current guidelines. That being said, we believe it would be unreasonable to hold Shea Homes responsible for all the off-site improvements to address existing and projected deficiencies unrelated to the proposed development.

While NCDOT and the County will ultimately determine the extent of improvements required, we offer the following opinions on reasonable expectations of the developer's share of improvements. The turn lane improvements listed below would also require appropriate transitions and bay tapers.

NC 73 and Little Egypt Road

- Extend the northbound right-turn lane by approximately 125' to provide 175' of storage.
- Extend the westbound left-turn lane by approximately 110' to provide 200' of storage.
- Extend the westbound right-turn lane by approximately 50' to provide 150' of storage.
- Extend the southbound left-turn lane by approximately 230' to Catawba Springs Road and provide 320' of storage.
- Coordinate this traffic signal with the NC 73 signal system if deemed appropriate and necessary by NCDOT.

NC 73 and School Bus Entrance / Site Entrance 1

- Construct two northbound exit lanes at the site entrance with 175' of storage and appropriate tapers.
- Restripe the westbound approach to provide a left-turn lane with 100' of storage and appropriate tapers.
- Install an actuated traffic signal at this intersection with appropriate signal heads, poles, loop detectors, junction boxes, etc. Signal warrant analysis shall be performed before the signal installation, and the signal installation must be approved by the local jurisdictions and NCDOT. This traffic signal should coordinate with the adjacent signal at the NC 73 and Little Egypt Road intersection.

Little Egypt Road and Site Entrance 2

- Construct an eastbound (southbound) right-turn lane on Little Egypt Road with 100' of storage and appropriate tapers.

The improvements listed above, although they may also be required in no build conditions, are in the immediate vicinity of the site. At these locations the traffic impacts from site generated trips are expected to be more intense and predictable, and therefore should be addressed by the developer.

As with any planning level traffic studies, development traffic impacts further away from the site depend on trip generation, distribution, and traffic growth assumptions which may differ from the reality in the future design year 2021. The study clearly reveals a long list of improvements needed today and in the build out year even if this new community were never developed so are clearly not needs that result from impacts from the proposed development. In addition, the improvement needs identified for the intersection of NC 73 and NC 16 Business and other locations to the east of the site are likely beyond the means of a single developer.. It is thus our opinion that limiting the developer's responsibilities to the improvements west of NC 16 Bypass in the vicinity of the site would be reasonable and fair to provide feasible and meaningful solutions to improve the traffic conditions brought on by the proposed development.

It is noted that improvement options discussed above are similar, yet more conservative than the previous improvements, as listed below, required by NCDOT in 2006 for the proposed *Carolina Ridge by Del Webb at Ingleside* development.

NC 73 and Little Egypt Road

- Extend westbound left-turn lane on NC 73 to a total of 250 feet storage.
- Construct a northbound right-turn lane on Little Egypt Road with 215 feet storage.

NC 73 and Site Entrance 1

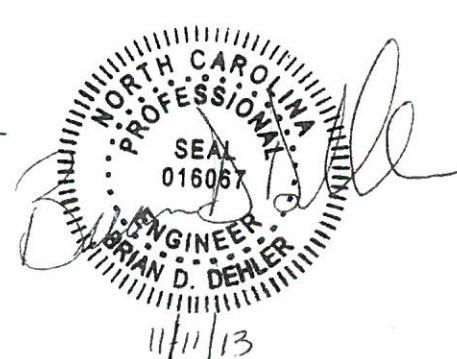
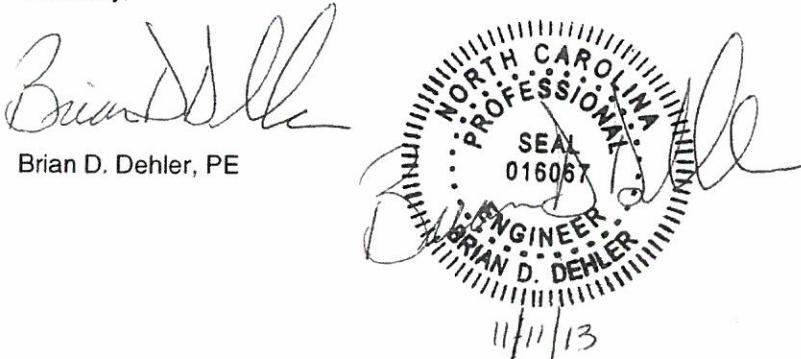
- This entrance must line up with the school entrance.
- A signal will not be placed here until real traffic counts show a signal is warranted.
- Construct a 175' left-turn lane on westbound NC 73.
- Construct a 75' right-turn lane on eastbound NC 73.

Little Egypt Road and Site Entrance 2

- Construct a 125 foot right-turn lane on Little Egypt Road

Please let me know if you have any questions.

Sincerely,



A handwritten signature of Brian D. Dehler, PE, is written over a circular professional seal. The seal is for the State of North Carolina and is a registered professional engineer. The text on the seal includes "NORTH CAROLINA", "PROFESSIONAL", "SEAL", "016067", "BRIAN D. DEHLER", and the date "11/11/13".

Brian D. Dehler, PE