



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
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JENNIFER COHAN
SECRETARY

MEMORANDUM

TO: Wendy Polasko, Kent County Subdivision Coordinator
FROM: Troy Brestel, Project Engineer **TEB**
DATE: January 4, 2016
SUBJECT: **Hickory Ridge**
Results of Traffic Operational Analysis (TOA) Review

We have reviewed the traffic operational analysis (TOA) for the proposed residential development on Tax Parcel 1-00-037.02-01-49.00-000 in Kent County, prepared by The Traffic Group (TTG) dated October 14, 2015. The analysis evaluates the traffic impacts of the residential development, proposed to be located on the southwest corner of the intersection of US Route 13 and Hickory Ridge Road. The proposed development would consist of 112 apartments. Three access points are proposed for this project: one rights-in, rights-out access on Hickory Ridge Road and two rights-in, rights-out access points on US Route 13. Construction is expected to be complete by 2019.

Based on our review, we find that of the 5 intersections evaluated in the TOA, only the intersection of US Route 13 and North Messina Hill Road would operate at lower than level of service (LOS) D during the existing and future a.m. and p.m. mid-day peak hours, and would not meet the LOS criteria listed in Chapter 2 of the Development Coordination Manual.

The LOS deficiency at US Route 13 and North Messina Hill Road would be limited to the eastbound North Messina Hill Road approach. LOS for the northbound and southbound left-turn lanes on US Route 13 would operate at LOS C or better for all cases examined in the TOA. The poor LOS on the eastbound approach can be attributed to the higher volumes on US Route 13. In this case, although the LOS is below D, traffic queues on the eastbound approach would not exceed more than 75 feet for all cases examined. For this reason, we do not recommend that any improvements be made to this intersection for purposes of reviewing the traffic impact of this proposed development.

Should the developer choose to develop the property per the proposed land use listed above, we offer the following comments:

- 1) The developer should construct a rights-in, rights-out site entrance on Hickory Ridge Road. Because of the presence of an existing right-turn lane for the intersection of US Route 13 and Hickory Ridge Road, the limited site frontage on Hickory Ridge Road, and the presence of multiple residential driveways on Hickory Ridge Road, the developer should work with DelDOT's Subdivision and Traffic Sections to determine the optimal location for this entrance. If a right-turn lane for this entrance is deemed necessary by the Subdivision Section, the length of the turn lane should be based on DelDOT's *Auxiliary Lane Worksheet*.
- 2) Related to Item 1, the developer should construct a concrete median along Hickory Ridge Road from US Route 13 to a point west of the site entrance as to prevent left-turn movements at the site entrance. Details related to the construction of the median should be coordinated with DelDOT's Subdivision Section.
- 3) Along the Hickory Ridge Road site frontage, the developer should provide a bituminous concrete overlay to the existing travel lanes, at DelDOT's discretion. DelDOT should analyze the existing lanes' pavement section and recommend an overlay thickness to the developer's engineer if necessary. This overlay may extend beyond the site frontage as necessary to address changes in the roadway as a result of Item 2.
- 4) The developer should construct a single rights-in, rights-out site entrance on US Route 13. Because of the presence of a signal at the intersection of US Route 13 and Hickory Ridge Road, the developer should work with DelDOT's Subdivision and Traffic Sections to determine the optimal location for this entrance. If a right-turn lane is for this entrance is deemed necessary by the Subdivision Section, the length of the turn lane should be based on DelDOT's *Auxiliary Lane Worksheet*.
- 5) Along the US Route 13 site frontage, the developer should provide a bituminous concrete overlay to the shoulder at DelDOT's discretion. DelDOT should analyze the existing lanes' pavement section and recommend an overlay thickness to the developer's engineer if necessary.
- 6) The developer should extend the northbound left-turn lane at the intersection of US Route 13 and Hickory Ridge Road. The length of the lane extension should be determined by DelDOT's Traffic Section.

Please note that this analysis generally focuses on capacity and level of service issues. Level of Service tables for the existing and future cases are attached with this memorandum.

In addition, further comments related to the design of the site entrances, as well as comments relating to traffic, transit, and bicycle improvements, may be made during the site plan review process.

Ms. Wendy Polasko
January 4, 2016
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Please contact me at (302) 760-2167 if you have any questions.

TB:km

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Table 1
PEAK HOUR LEVELS OF SERVICE (LOS)
Hickory Ridge - TOA
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ¹	LOS per TOA		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
US Route 13 / Site Entrance ²				
2019 with development				
Eastbound Site Entrance	N/A	N/A	C (15.5)	B (15.0)

¹ The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

² The TOA included analysis for two separate entrances on US Route 13, but did not include analysis for a single entrance on US Route 13.

Table 2
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Hickory Ridge - TOA
 Prepared by The Traffic Group, Inc.

Unsignalized Intersection ¹	LOS per TOA		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Hickory Ridge Road / Site Entrance				
2019 with development ²				
Northbound Site Entrance	N/A	N/A	A (9.3)	A (8.9)

¹ The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

² The TOA reviewed this intersection with the entrance only consisting of a rights-out. DelDOT analyzed the intersection with a rights-in and a rights-out.

Table 3
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Hickory Ridge - TOA
 Prepared by The Traffic Group, Inc.

Signalized Intersection¹	LOS per TIS		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
US Route 13 / Hickory Ridge Road				
2015 Existing	A (6.2)	A (8.7)	B (17.0)	B (15.5)
2019 without development	B (12.9)	A (9.1)	B (17.6)	B (16.4)
2019 with development – with access on Hickory Ridge Road	B (14.4)	B (10.9)	B (18.1)	B (17.7)
2019 with development – without access on Hickory Ridge Road	B (13.3)	B (10.4)	B (17.8)	B (17.5)

¹ The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

Table 4
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Hickory Ridge - TOA
 Prepared by The Traffic Group, Inc.

Unsignalized Intersection ¹	LOS per TIS		LOS per DeDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
US Route 13 / North Messina Hill Road				
2015 Existing				
Eastbound Messina Hill Road ²	N/A	N/A	E (39.4)	E (39.4)
Northbound US Route 13 Left-Turn	B (12.1)	B (13.2)	B (12.3)	B (13.5)
Southbound US Route 13 Left-Turn	B (12.3)	D (28.8)	A (9.2)	B (13.4)
2019 without development				
Eastbound Messina Hill Road	N/A	N/A	F (51.7)	E (49.0)
Northbound US Route 13 Left-Turn	B (13.0)	B (14.5)	B (13.3)	B (14.8)
Southbound US Route 13 Left-Turn	B (13.2)	E (35.4)	A (9.5)	B (14.7)
2019 with development – with access on Hickory Ridge Road				
Eastbound Messina Hill Road	N/A	N/A	F (55.9)	F (50.6)
Northbound US Route 13 Left-Turn	B (13.3)	B (14.7)	B (13.5)	B (15.0)
Southbound US Route 13 Left-Turn	B (13.3)	E (37.2)	A (9.5)	B (15.0)
2019 with development – without access on Hickory Ridge Road				
Eastbound Messina Hill Road	N/A	N/A	F (61.0)	F (53.7)
Northbound US Route 13 Left-Turn	B (13.3)	B (14.7)	B (13.5)	B (15.0)
Southbound US Route 13 Left-Turn	B (13.6)	E (40.4)	A (9.6)	C (15.3)

¹ The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

² The TOA did not report the correct value.