




STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
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SHAILEN P. BHATT
SECRETARY

MEMORANDUM

TO: Sean McEvilly, Johnson, Mirmiran & Thompson, Inc.
FROM: Troy Brestel, Project Engineer 
DATE: September 28, 2012
SUBJECT: **Waste Industries - Smyrna
Results of Traffic Operational Analysis**

We have completed a traffic operational analysis (TOA) for the proposed Waste Industries facility in New Castle County. The analysis evaluates the traffic impacts of the development, proposed to be located on the west side of US Route 13, east of Delaware Route 1 and north of the North US Route 13 / Delaware Route 1 Grade-Separated Intersection. The proposed development would consist of a 30-truck, 100-employee staging / parking area. One rights-in / rights-out access point on US Route 13 is proposed for this project. Construction is expected to be complete by 2013.

For our review, three intersections were analyzed for capacity and level of service: the North US Route 13 / Delaware Route 1 Grade-Separated Intersection, US Route 13 / Savannah Entrance, and the proposed site entrance. Upon our review, we found that, for existing conditions, the eastbound ramp approach of the northbound ramp intersection at the North US Route 13 / Delaware Route 1 Grade-Separated Intersection would operate at level of service (LOS) E or worse during the a.m. peak hour. However, a traffic signal is currently planned for that intersection, with the intent of making the intersection safe and efficient.

For future conditions, with the signal mentioned above in place, we found that the intersections analyzed would operate at level of service (LOS) D or better during the a.m. and p.m. peak hours, and would meet the LOS criteria listed in both New Castle County's Unified Development Code (UDC) and our Standards and Regulations for Subdivision Streets and State Highway Access.

In our analysis of the aforesaid intersection, we identified a potential problem with the northbound left-turn queue when the intersection is signalized. While it is not attributable to the proposed Waste Industries facility, we mention it here to advise the Traffic Section of our findings.

Specifically, when the intersection is signalized, with projected 2013 traffic, the a.m. peak-hour queue would be 670 feet long, and would exceed the existing storage length of this turn lane. While room exists to lengthen the turn lane to its proper length, it still may not be enough to capture a potential further problem concerning the significant amount of trucks generated by the Wal-Mart distribution center making this left-turn movement during the peak hours. As the distribution center operates in shifts, there could be peak 15-minute intervals during the peak hours in which the queue for this movement would exceed all of the available space that could be used to lengthen the turn lane, resulting in spillback onto the US Route 13 northbound traveling lanes. If they have not done so already, we would recommend that our Project Development and Traffic Sections consider this situation as they develop the plans for this signal.

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 lefts-in, rights-in, rights-out entrance on US Route 13. The specific geometric design of this intersection should be further discussed with our Subdivision Section.
2. The developer should enter into a signal agreement with DeIDOT for the northbound ramp intersection at the North US Route 13 / Delaware Route 1 Grade-Separated Intersection. In entering the agreement, the developer should have the option to contribute to our Traffic Signal Revolving Fund now.

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.

TB:km

cc: Jeffrey Bross, Duffield Associates, Inc.
Mario Gangemi, Duffield Associates, Inc.
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Table 1
PEAK HOUR LEVELS OF SERVICE (LOS)
Waste Industries - Smyrna TOA

Unsignalized Intersection¹	LOS	
	Weekday AM	Weekday PM
US Route 13 / Site Entrance		
2013 with development		
Northbound US Route 13 Left-Turn	A (8.7)	B (11.8)
Eastbound Site Entrance	B (11.9)	C (15.1)

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

Table 2
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Waste Industries - Smyrna TOA

Unsignalized Intersection ¹	LOS per DeDOT	
	Weekday AM	Weekday PM
US Route 13 / Savannah Entrance		
2012 Existing		
Southbound US Route 13 Left-Turn	A (9.0)	A (9.2)
Westbound Site Entrance	B (14.3)	B (13.0)
2013 with development		
Southbound US Route 13 Left-Turn	A (9.4)	A (9.3)
Westbound Site Entrance	C (15.5)	C (15.3)

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

Tables 3 & 4
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Waste Industries - Smyrna TOA

Unsignalized Intersection¹	LOS	
US Route 13 / Delaware Route 1 – North Grade-Separated Intersection – Northbound Ramp Intersection	Weekday AM	Weekday PM
2012 Existing		
Northbound US Route 13 Left-Turn	B (12.7)	B (11.5)
Eastbound Delaware Route 1 Ramp	F (62.3)	D (33.5)
2013 with development		
Northbound US Route 13 Left-Turn	B (13.2)	B (12.5)
Eastbound Delaware Route 1 Ramp	F (74.3)	E (39.7)

Signalized Intersection¹	LOS	
US Route 13 / Delaware Route 1 – North Grade-Separated Intersection – Northbound Ramp Intersection	Weekday AM	Weekday PM
2013 with development	B (18.3)	B (17.0)

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