



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**

800 BAY ROAD  
P.O. Box 778  
DOVER, DELAWARE 19903

May 19, 2010

CAROLANN WICKS, P.E.  
SECRETARY

Roy H. Lopata, Director  
City of Newark  
Planning & Development Department  
220 Elkton Road  
Newark, DE 19711

Dear Mr. Lopata:

DelDOT has completed its review of the traffic operational analysis (TOA) for the proposed **Newark Wawa** (SNR 7103), prepared by McMahon Associates, Inc. (MA), dated February 15, 2010. The TOA evaluates the impact of a proposed convenience store with twelve vehicle fueling positions, to be located on the southwest corner of the intersection of Delaware Route 273 and Marrows Road (New Castle Road 351) within the City of Newark in New Castle County. Three access points are proposed: one access via College Avenue, one rights-in only access on Marrows Road, and one access via a shared access service road that intersects Marrows Road south of the Kentucky Fried Chicken (KFC) restaurant. An existing rights-in only access on Delaware Route 273 would be eliminated. Interconnections to College Avenue and the service road would also grant access to the development through the College Square shopping center. Construction is expected to be complete by 2011.

Based on our review, we have the following comments and recommendations:

In 2011, with the proposed development, the intersection of the shared access service road and Marrows Road will exhibit level of service (LOS) deficiencies in the morning peak hour without the implementation of physical roadway and / or traffic control improvements. Please note that these deficiencies would be limited to the eastbound approach, which would operate at LOS F.

At this intersection, the minor side street (shared access service road) has relatively light traffic volumes (in this case, volumes under 65 vehicles) turning onto the major street (Marrows Road) during the morning peak hour. Due to heavy through volumes along the major street, vehicles will experience significant delay in turning from the minor street, thus resulting in poor LOS. However, the vehicles turning from the minor street will be distributed over the course of the peak hour, resulting in minimal traffic queues for these movements. Therefore, we do not recommend any improvements be made to this intersection.

Should the City choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan. All applicable agreements (i.e., letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for the proposed development.

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1. The developer should modify the intersection of Delaware Route 273 and College Square Avenue to prohibit the left-in movement and allow only right-in and right-out movements. To accomplish this, the developer should install a triangular island at the intersection and restripe a portion of Delaware Route 273 to eliminate the left-turn in arrow onto College Avenue. The developer should contact DelDOT's Subdivision and Traffic sections for specifics on the design and construction of the island as well as any necessary restriping of the roadways.
2. The developer should construct the right-in access to the site along Marrows Road in a manner acceptable to DelDOT's Subdivision and Traffic sections.
3. An 8' X 5' bus pad should be built along Marrows Road, beginning 150 feet from Delaware Route 273. This bus pad would serve DART Route 34, which travels along Marrows Road. The maximum slope for water drainage concerning the bus pad should be a two percent slope, or a 1:50 ratio.

Comments relating to bicycle and pedestrian improvements will be made during DelDOT's site plan review process.

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues may be further addressed through our subdivision review process.

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Additional details on our review of the TOA are attached. Please contact Mr. Troy Brestel at (302) 760-2167 if you have any questions concerning this review.

Sincerely,



T. William Brockenbrough, Jr.  
County Coordinator

TWB:tbm  
Enclosures  
cc with enclosures:

Nicole Kline, McMahon Associates, Inc.  
Colm DeAscanis, CDA Engineering, Inc.  
Tigist Zegeye, WILMAPCO  
John Janowski, New Castle County Department of Land Use  
Owen Robotino, New Castle County Department of Land Use  
Frederick H. Schranck, Deputy Attorney General  
Terry Gorlich, Acting Director, Public Relations  
Natalie Barnhart, Director, Transportation Solutions (DOTS)  
Ralph A. Reeb, Director, Division of Planning  
Drew Boyce, Assistant Director, Project Development North, DOTS  
Donald D. Weber, Chief Traffic Engineer, Traffic, DOTS  
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Mark Luszczyk, Assistant Chief Traffic Engineer, Traffic, DOTS  
Thomas E. Meyer, Traffic Studies Manager, Traffic, DOTS  
J. Marc Coté, Subdivision Engineer, Development Coordination  
Jennifer Pinkerton, Deputy Principal Assistant, Pavement Management, M&O  
Mark Alexander, Canal District Engineer, Canal District  
Brian Urbanek, Public Works Engineer, Canal District  
Mark Tudor, Project Manager, Project Development South, DOTS  
Wayne Henderson, Service Development Planner, Delaware Transit Corporation  
Ivan Mitchell, Service Development Planner, Delaware Transit Corporation  
Anthony Aglio, Bicycle Coordinator, Statewide & Regional Planning  
Peter Haag, Traffic Engineer, Traffic, DOTS  
Joshua Schwartz, Subdivision Manager, Development Coordination  
Troy Brestel, Project Engineer, Development Coordination  
Andrew J. Parker, McCormick Taylor



### **General Information**

**Report date:** February 9, 2010

**Prepared by:** McMahon Associates, Inc.

**Prepared for:** Fusco Enterprises, LP

**Tax Parcels:** 18-021.00-181

**Generally consistent with DelDOT's *Standards and Regulations for Subdivision Streets and State Highway Access*:** Yes

### **Project Description and Background**

**Description:** A convenience store with twelve vehicle fueling positions

**Location:** South side of Delaware Route 273, west of Marrows Road

**Amount of land to be developed:** approximately 1.996 acres

**Current zoning:** BB (Central Business)

**Proposed zoning:** BC (General Business)

**Land use approval(s) needed:** Subdivision approval, City of Newark Land Use approval

**Proposed completion date:** 2011

**Proposed access locations:** Delaware Route 273 (via College Avenue), Marrows Road (via a right-in access and the shared service road south of the Kentucky Fried Chicken restaurant)

### **Livable Delaware**

*(Source: Delaware Strategies for State Policies and Spending, July 2004)*

**Location with respect to the Strategies for State Policies and Spending Map of Delaware:** The proposed location of the Newark Wawa is located within Investment Level 1.

### **Description of Investment Level:**

#### *Investment Level 1*

Investment Level 1 Areas are often municipalities, census designated places, or urban/urbanizing places in counties. Density is generally higher than in the surrounding areas. In areas where population is concentrated, commerce is bustling, and a wide range of housing types already exist; state policies will encourage redevelopment and reinvestment.

**Proposed Development's Compatibility with Livable Delaware:** The Newark Wawa falls within Investment Level 1. As described, a redevelopment site within a municipality in Investment Level 1 areas will be supported by state policies. Therefore, it appears that this development proposal is consistent with the policies in the 2004 update of the Livable Delaware "Strategies for State Policies and Spending."

### Comprehensive Plan

The proposed development is located within the City of Newark in New Castle County.

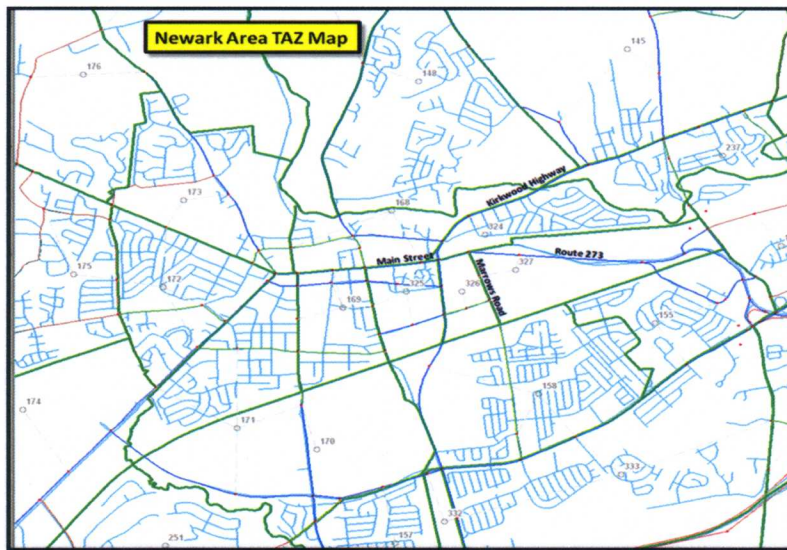
#### **City of Newark Comprehensive Plan: (Source: City of Newark Comprehensive Development Plan IV, 2008)**

The site is located in Planning Section J. In this section, auto-oriented commercial is among the recommended land uses listed for this section. The Plan describes auto-oriented commercial as “Shopping and commercial uses of all types, including retail facilities for buying and selling of goods and services, administrative and professional offices, personal service establishments, eating establishments, and shopping centers ordinarily included in general business districts with customers, to a large extent, relying on the automobile to patronize these businesses.”

**Proposed Development’s Compatibility with Comprehensive Plan:** Based on the above description of the planning section and land use, the proposed convenience store generally adheres to the City of Newark Comprehensive Development Plan.

### Regional Transportation Plan

**Transportation Analysis Zones (TAZ) where development would be located: 326**



**Current employment estimate for TAZ: 1089**

**Future employment estimate for TAZ: 1202**

**Current population estimate for TAZ: 0**

**Future population estimate for TAZ: 0**

**Current household estimate for TAZ: 0**

**Future household estimate for TAZ: 0**

**Relevant committed developments in the TAZ: Lands of Tudor Properties, Mitten Industrial Park**

**Would the addition of committed developments to current estimates exceed future projections: N/A**

**Would the addition of committed developments and the proposed development to current estimates exceed future projections: No**

**Relevant Projects in the DelDOT Capital Transportation Program (2010-2015)**

Currently, there are no DelDOT projects within the study area.

**Trip Generation**

Trip generation for the Newark Wawa was computed using comparable land uses and equations contained in the article "Trip Generation Characteristics for Convenience Stores" in the August, 2001 edition of the Institute of Transportation Engineers (ITE) Journal.

Land Use	Morning Peak Hour			Evening Peak Hour		
	In	Out	Total	In	Out	Total
<i>Convenience Store with 12 vehicle fueling positions</i>	109	110	219	99	100	199
<i>Pass-By Trips</i>	-83	-84	-167	-75	-76	-151
<i>Total Primary Trips</i>	26	26	52	24	24	48

**Overview of TIS**

**Intersections examined:**

- 1) Delaware Route 273 / Marrows Road (New Castle Road 351)
- 2) Delaware Route 273 / College Avenue
- 3) Marrows Road / Shared Access Service Road (south of KFC)

**Conditions examined:**

- 1) Existing (2009);
- 2) 2011 without proposed development;
- 3) 2011 with proposed development and:
  - a. With right-in access along Marrows Road
  - b. Without right-in access along Marrows Road.

**Peak hours evaluated:** all intersections were examined during the weekday morning and evening peak hours.

**Committed developments considered:** There are no relevant committed development within the area of study.



## **Intersection Descriptions**

### **1) Delaware Route 273 / Marrows Road:**

**Type of Control:** Signalized intersection

**Northbound approach:** (Marrows Road) one left-turn lane, one shared left-turn / through lane, one right-turn lane

**Southbound approach:** (84 Lumber Access) one shared left-turn / through / right-turn lane

**Eastbound approach:** (Delaware Route 273) one left-turn lane, two through lanes, one right-turn lane

**Westbound approach:** (Delaware Route 273) two left-turn lanes, one through lane, one shared through / right-turn lane

### **2) Delaware Route 273 / College Avenue:**

**Type of Control:** Two-way stop-controlled intersection (T-intersection)

**Northbound approach:** (College Avenue) one right-turn lane, stop-controlled

**Eastbound approach:** (Delaware Route 273) one through lane, one shared through / right-turn lane

**Westbound approach:** (Delaware Route 273) one left-turn lane, three through lanes

### **3) Marrows Road / Shared Access Service Road (south of KFC)**

**Type of Control:** Two-way stop-controlled intersection (T-intersection)

**Northbound approach:** (Marrows Road) one left-turn lane, one through lane

**Southbound approach:** (Bay Road) one through lane, one right-turn lane

**Eastbound approach:** (Lafferty Lane) one left-turn lane, one right-turn lane

## **Transit, Pedestrian, and Bicycle Facilities**

**Existing transit service:** Currently, local transit service is provided along Marrows Road by DART Route 34.

**Planned transit service:** A letter was sent from Ivan Mitchell on March 15, 2010, containing comments on the TOA. Based on that correspondence, the following recommendation was made:

- 1) An 8' X 5' bus pad should be built along Marrows Road, beginning 150 feet from Delaware Route 273. This bus pad would serve DART Route 34, which travels along Marrows Road. The maximum slope for water drainage concerning the bus pad should be a two percent slope, or a 1:50 ratio.

**Existing bicycle and pedestrian facilities:** The New Castle County Bicycle Map indicates that Delaware Route 273 is a regional bicycle route with a separate bikeway.

**Planned bicycle and pedestrian facilities:** A formal site plan was not contained in the TOA. Therefore, comments relating to bicycle and pedestrian improvements will be made during DeIDOT's site plan review process.

## **General SYNCHRO Analysis Comments**

*(see table footnotes on following pages for specific comments)*

There were no significant differences between the TOA and DeIDOT's review of it.

Table 1  
 PEAK HOUR LEVELS OF SERVICE (LOS)  
 Newark Wawa TOA  
 Prepared by McMahon Associates, Inc.

Signalized Intersection <sup>1</sup>	LOS per TIS		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 273 / Marrows Road				
2009 Existing	C (24.2)	B (17.0)	C (21.0)	B (14.5)
2011 without development	C (25.0)	B (17.2)	C (21.6)	B (15.1)
2011 with development	C (30.4)	C (20.1)	C (29.9)	C (20.1)
2011 with development and with rights-in / rights-out only at Delaware Route 273 / College Avenue	N/A	N/A	C (33.0)	C (21.9)

<sup>1</sup> For unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.



Table 2  
 PEAK HOUR LEVELS OF SERVICE (LOS)  
 Newark Wawa TOA  
 Prepared by McMahon Associates, Inc.

Unsignalized Intersection <sup>1</sup>	LOS per TIS		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 273 / College Avenue				
2009 Existing				
College Avenue Northbound	B (12.0)	B (13.7)	B (14.4)	C (15.3)
Delaware Route 273 Westbound Left-Turn	B (10.0)	B (10.7)	B (10.0)	B (10.7)
2011 without development				
College Avenue Northbound	B (12.1)	B (13.8)	B (14.6)	C (15.5)
Delaware Route 273 Westbound Left-Turn	B (10.1)	B (10.8)	B (10.1)	B (10.8)
2011 with development				
College Avenue Northbound	B (12.2)	B (13.6)	B (13.2)	B (14.6)
Delaware Route 273 Westbound Left-Turn	B (10.3)	B (11.0)	B (10.3)	B (11.0)
2011 without development and with rights-in / rights-out only				
College Avenue Northbound	N/A	N/A	B (12.6)	B (14.2)

<sup>1</sup> For unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

Table 3  
 PEAK HOUR LEVELS OF SERVICE (LOS)  
 Newark Wawa TOA  
 Prepared by McMahon Associates, Inc.

Unsignalized Intersection <sup>1</sup>	LOS per TIS		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Marrows Road / Shared Access Service Road				
2009 Existing				
Marrows Road Northbound Left-Turn	A (7.9)	A (8.6)	A (7.9)	A (8.6)
Shared Access Service Road Eastbound	C (16.8)	C (16.1)	C (16.8)	C (16.1)
2011 without development				
Marrows Road Northbound Left-Turn	A (8.0)	A (8.6)	A (8.0)	A (8.6)
Shared Access Service Road Eastbound	C (17.2)	C (16.4)	C (17.2)	C (16.4)
2011 with development				
Marrows Road Northbound Left-Turn	A (8.0)	A (8.7)	A (8.0)	A (8.7)
Shared Access Service Road Eastbound	F (51.4)	D (26.7)	F (51.4)	D (26.7)
2011 with development and with rights-in / rights-out only at Delaware Route 273 / College Avenue				
Marrows Road Northbound Left-Turn	N/A	N/A	A (8.2)	A (8.9)
Shared Access Service Road Eastbound	N/A	N/A	F (51.5)	D (26.7)

<sup>1</sup> For unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.