



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
600 BAY ROAD
P.O. Box 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

September 9, 2016

Mr. Ted Williams
Landmark Science and Engineering, Inc.
100 West Commons Boulevard
New Castle, DE 19720

Dear Mr. Williams,

The Department has completed its review of the Traffic Impact Study (TIS) for the Our Lady of Grace (Tax Parcels 09-028.00-009, 11-003.30-049) residential development, prepared by your firm and dated May 2016. The report was prepared in a manner generally consistent with DelDOT's Development Coordination Manual.

The TIS evaluates the impacts of the proposed development, proposed to be located on the former Our Lady of Grace orphanage site on the south side of Delaware Route 4 and the east side of Gender Road in New Castle County.

The proposed development would consist of 60 apartments, 58 duplex houses, 112 townhouses, and 35 single-family detached houses on an approximately 181.50-acre assemblage of parcels. One access point is proposed on Delaware Route 4. Construction is anticipated to be complete by 2020.

The land is currently zoned as S (Suburban) in New Castle County, and the developer does not propose to rezone the land.

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

Seven intersections were identified by DelDOT and New Castle County as being required for study to satisfy the level of service (LOS) requirements for both the New Castle County Unified Development Code (UDC) and DelDOT's Development Coordination Manual. Those intersections were listed in the scope for this TIS.

Of those intersections, none exhibit any LOS deficiencies. All would meet the LOS requirements set forth in the UDC and the Development Coordination Manual.



In addition to the seven intersections mentioned above, six additional intersections were identified by DelDOT as being required for study to satisfy the LOS requirements of DelDOT's Development Coordination Manual. Those intersections were also listed in the scope for this TIS.

Of those intersections, the following exhibit deficiencies without the implementation of physical roadway and / or traffic control improvements:

Intersection	Situations for which deficiencies exist	Traffic Control
Delaware Route 4 / Library Avenue (Delaware Route 72) / South Chapel Street	2015 Existing: PM Peak Hour 2020 without development: PM Peak Hour 2020 with development: PM Peak Hour	Traffic Signal
Delaware Route 4 / Salem Church Road	2015 Existing: AM, PM Peak Hours 2020 without development: AM, PM Peak Hours 2020 with development: AM, PM Peak Hours	Traffic Signal

The intersection of Delaware Route 4 / Library Avenue / South Chapel Street exhibits failing LOS due to the high traffic volumes traveling through the intersection. Each approach of the intersection currently consists of two exclusive left-turn lanes, two exclusive through lanes, and one exclusive right-turn lane. Mitigation of the LOS deficiencies would require the addition of a third exclusive through lane to one or more of the approaches. While adding these lanes would mitigate the poor LOS and improve overall operation, the proximity of development on each corner of this intersection makes the construction of these lanes impossible without significant social, economic, and environmental impacts. For these reasons, we are not recommending any improvements be made to this intersection.

The intersection of Delaware Route 4 / Salem Church Road exhibits failing LOS due to the high traffic volumes traveling through the intersection. Mitigation of the LOS deficiencies would require the addition of a third exclusive through lane along each approach of Delaware Route 4. While adding these lanes would mitigate the poor LOS and improve overall operation, the proximity of development on the northwest and southeast corners of this intersection makes the construction of these lanes impossible without significant social, economic, and environmental impacts. For these reasons, we are not recommending any improvements be made to this intersection.

Section 3.5 of the Development Coordination Manual details DelDOT's regulations regarding the connection of proposed developments to the surrounding transportation network and the benefits for both the traveling public and the occupants of the proposed developments of having multiple connections. While the plan proposed shows only one connection, the access on Delaware Route 4 described above, the development is proposed on a larger parcel with the potential for seven other connections, six to subdivision streets that end at the property line and one to Gender Road through a strip of land that separates Breezewood from the campus of Holy Family Church. Of the six subdivision streets, four end at wetland area, such that a connection would have undesirable environmental consequences.

Of the remaining two subdivision streets, one is Lynch Farm Drive in the Todd Estates II development. The streets there are narrow, with parking on both sides, such that extension of Lynch Farm Drive into the proposed development as a street could pose safety concerns. We recommend that a bicycle and pedestrian connection be provided from the south end of Lynch Farm Drive into the subject development.

The other subdivision street where a connection is possible is Waverly Drive in Breezewood. A street connection here would afford residents of the subject development access to the traffic signal at the intersection of Delaware Route 4 and Gender Road while giving residents of Breezewood an alternative way out to Delaware Route 4. However, we recognize that there is substantial opposition to such a connection from some residents of Breezewood and that a street could be built in the strip of land just mentioned to connect the subject development to Gender Road. While we believe the street connection to Waverly Drive is environmentally superior in that it would preserve the wooded area and minimize the creation of additional pavement, we find construction of the street connection to Gender Road to be an acceptable alternative and recommend it in this letter. A bicycle and pedestrian connection to Waverly Drive is sufficient to link the subject development with Breezewood.

Should New Castle County choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan by note or illustration. 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.

1. The developer should construct the site entrance on Delaware Route 4 with a left-in / right-in / right-out configuration.

Approach	Current Configuration	Proposed Configuration
Northbound Site Entrance	One right-turn lane	One right-turn lane
Eastbound Delaware Route 4	Two through lanes, shoulder utilized as a right-turn lane	Two through lanes, one right- turn lane
Westbound Delaware Route 4	One left-turn lane, two through lanes	One left-turn lane, two through lanes

Per the Auxiliary Lane Worksheet, in accordance with Section 5.2.9 of the Development Coordination Manual, the required storage length of the right-turn lane on Delaware Route 4 is 400 feet, while the existing left-turn lane on Delaware Route 4 may be utilized as currently configured. The developer should work with DelDOT's Subdivision section on the details of the entrance design.

2. The developer should construct a subdivision street connecting to Gender Road with a full movement access. While the Auxiliary Lane Worksheet should be used to determine the requirement of turn lanes and their lengths at this intersection, the proximity of the entrance to Vince's Sports Center and Penfield Drive may dictate shorter lanes. The developer should work with DelDOT's Subdivision section to design an acceptable entrance along Gender Road.
3. The developer should provide a bituminous concrete overlay to Gender Road from Delaware Route 4 to the southern edge of the site frontage, at DelDOT's discretion. DelDOT should analyze the existing lanes' pavement section and recommend an overlay thickness to the developer's engineer, if necessary.
4. The following bicycle and pedestrian improvements should be included:
 - a. A right-turn yield to bikes sign (MUTCD R4-4) should be added at the start of the right-turn lane added to eastbound Delaware Route 4 at the site entrance.
 - b. Any bike lanes to be added to Delaware Route 4 should be five feet wide.
 - c. Appropriate bicycle symbols, directional arrows, striping (including stop bars), and signing should be included along bicycle facilities and right-turn lanes within the development limits.
 - d. Utility covers should be made flush with the pavement.
 - e. While sidewalk exists along the site frontage on Delaware Route 4, the developer will be required to reconstruct the sidewalk and curb where the existing facilities will be removed for entrance construction. The curb ramps and crosswalk at the entrance should be ADA compliant.
 - f. Internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative should be constructed within the property. These sidewalks should each be a minimum of five feet wide and should meet current AASHTO and ADA standards. These internal sidewalks should connect to the frontage sidewalks on Delaware Route 4.
 - g. A 15-foot permanent easement should be established across the site frontage on Delaware Route 4 and Gender Road. This easement should be located outside of the limits of the ultimate right-of-way.
 - h. Bicycle / pedestrian connections to Lynch Farm Drive in Todd Estates II and Waverly Drive in Breezewood should be constructed by the developer. The developer should work with DelDOT's Subdivision section to design and implement this connection.

Improvements in this TIS may be considered "significant" under DelDOT's *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DelDOT's website at http://www.deldot.gov/information/pubs_forms/manuals/de_mutcd/index.shtml. For any additional information regarding the work zone impact and mitigation procedures during construction please contact Mr. Adam Weiser of DelDOT's Traffic Section. Mr. Weiser can be reached at (302) 659-4073 or by email at Adam.Weiser@state.de.us.

Additional details on our review of this TIS are attached. If you have any questions concerning this review, please contact me at (302) 760-2167. My email is Troy.Brestel@state.de.us.

Sincerely,



Troy Brestel
Project Engineer

TEB:km
Enclosures

cc with enclosures: Mr. Larry Tarabicos, Tarabicos Grasso, L.L.P.
Ms. Tigist Zegeye, WILMAPCO
Mr. Daniel Blevins, WILMAPCO
Mr. George Haggerty, New Castle County Department of Land Use
Mr. Owen Robatino, New Castle County Department of Land Use
Mr. Marco Boyce, New Castle County Department of Land Use
Ms. Annie Cordo, Deputy Attorney General
Mr. Robert McCleary, Director, Transportation Solutions (DOTS)
Mr. Drew Boyce, Director, Planning
Mr. Mark Luszcz, Chief Traffic Engineer, Traffic, DOTS
Mr. Mark Tudor, Assistant Director, Project Development North,
DOTS
Mr. J. Marc Coté, Assistant Director, Development Coordination
Mr. T. William Brockenbrough, Jr., County Coordinator, Development
Coordination
Mr. Peter Haag, Traffic Studies Manager, Traffic, DOTS
Mr. Kevin Canning, Canal District Engineer, Canal District, DOTS
Mr. Matthew Lichtenstein, Canal District Public Works Engineer, Canal
District, DOTS
Mr. Adam Weiser, Safety Engineer, Traffic, DOTS
Mr. David Dooley, Service Development Planner, Delaware Transit
Corporation
Mr. Anthony Aglio, Planning Supervisor, Statewide & Regional Planning
Mr. Jeffrey Van Horn, New Castle County Subdivision Coordinator,
Development Coordination
Mr. Ahmed Abdelmoteleb, New Castle County Traffic Engineer, Traffic,
DOTS
Mr. Claudy Joinville, Project Engineer, Development Coordination
Mr. Andrew Parker, McCormick Taylor, Inc.
Mr. Mir Wahed, Johnson, Mirmiran & Thompson, Inc.
Mr. Kevin Hickman, Johnson, Mirmiran & Thompson, Inc.

General Information

Report date: May, 2016

Prepared by: Landmark Science and Engineering, Inc.

Prepared for: Cornell Ventures

Tax Parcels: 09-028.00-009, 11-003.30-049

Generally consistent with DelDOT's *Development Coordination Manual*: Yes

Project Description and Background

Description: 60 apartments, 58 duplex houses, 112 townhouses, and 35 single-family detached houses

Location: Former Our Lady of Grace orphanage site, on the south side of Delaware Route 4 and east side of Gender Road in New Castle County

Amount of land to be developed: approximately 181.50 acres

Current zoning: S (Suburban)

Proposed zoning: S (Suburban)

Land use approval(s) needed: County approval

Proposed completion date: 2020

Proposed access locations: One on Delaware Route 4, one on Gender Road

Livable Delaware

(Source: Delaware Strategies for State Policies and Spending, 2015 Update)

Location with respect to the Strategies for State Policies and Spending Map of Delaware:

The proposed location of the development is located within Investment Level 1.

Description of Investment Level:

Investment Level 1

Investment Level 1 areas are often municipalities, towns, or urban / urbanizing places in counties. Density is generally higher than in the surrounding areas. There are a variety of transportation opportunities available. Buildings may have mixed uses, such as a business on the first floor and apartments above.

In Investment Level 1 areas, State investments and policies should support and encourage a wide range of uses and densities, promote other transportation options, foster efficient use of existing public and private investments, and enhance community identity and integrity. Overall, it is the State's intent to use its spending and management tools to maintain and enhance community character, to promote well-designed and efficient new growth, and to facilitate redevelopment in Investment Level 1 Areas. These areas would be a prime location for designating "pre-permitted areas" to help steer development where the citizens are most prepared to accept it.

Concerning transportation, in Level 1 areas, the State's first priority will be for preserving existing facilities and making safety improvements. Level 1 areas will also be the highest priority for: context sensitive transportation system capacity enhancements; transit-system enhancements; ADA accessibility; and for closing gaps in the pedestrian system, including the Safe Routes to School projects. Additionally, Level 1 areas are a first priority for planning projects and studies, bicycle facilities, signal-system enhancements, the promotion of interconnectivity of neighborhoods and public facilities. Street design and access should also be compatible to the context of an area.

Proposed Development's Compatibility with Livable Delaware: Based on the above description, it appears that this development proposal is generally consistent with the 2015 update of the Livable Delaware "Strategies for State Policies and Spending."

Comprehensive Plans

The proposed development is located within New Castle County.

New Castle County Comprehensive Plan: (Source: New Castle County Comprehensive Plan Update, 2012)

The site is located in an area with a Future Land Use designated as a Low Density (1-3 units per acre) Residential Area.

Proposed Development's Compatibility with Comprehensive Plan: The unit per acre density of the proposed development is 1.46. Therefore, based on the above description, the proposed development generally adheres to the New Castle County Comprehensive Plan.

Trip Generation

Trip generation for the proposed development was computed based on rates and equations established in the Institute of Traffic Engineers (ITE) Trip Generation Manual (9th edition) and the ITE Trip Generation Handbook (2nd edition).

Table 1
 Trip Generation for the Our Lady of Grace proposed development

Land Use	Morning Peak Hour			Evening Peak Hour		
	In	Out	Total	In	Out	Total
<i>60 apartments</i>	7	26	33	33	18	51
<i>58 duplex units</i>	6	27	33	26	12	38
<i>112 townhouses</i>	10	46	56	44	22	66
<i>35 single-family detached houses</i>	9	25	34	26	15	41
<i>Total</i>	32	124	156	129	67	196

Overview of TIS

Intersections examined:

- 1) Delaware Route 4 / Site Entrance
- 2) Delaware Route 4 / Gender Road / Entrance to Chestnut Crossing
- 3) Delaware Route 4 / Malvern Drive
- 4) Delaware Route 4 / Entrance to Chestnut Hill Plaza / Martindale Drive
- 5) Delaware Route 4 / Signalized U-turn east of the proposed Site Entrance
- 6) Delaware Route 4 / Old Newark Road
- 7) Delaware Route 4 / Brennen Drive / Pearson Drive

The following intersections are included to satisfy the conditions set forth in Chapter 2 of the Development Coordination Manual. They are not needed to satisfy the conditions set forth in New Castle County's Unified Development Code.

- 8) Delaware Route 4 / Marrows Road
- 9) Delaware Route 4 / Kingston Drive
- 10) Delaware Route 4 / Library Avenue / South Chapel Street
- 11) Delaware Route 4 / Augusta Drive / Entrance to Augusta Square
- 12) Delaware Route 4 / Salem Church Road
- 13) Delaware Route 4 / Delaware Route 273

Conditions examined:

- 1) Existing (2015);
- 2) 2020 without proposed development;
- 3) 2020 with proposed development.

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

Committed developments considered:

1. Brookside Plaza (22,000 square feet of retail space)
2. CVS Pharmacy & Retail Center (addition of 1,500 square feet of retail space)
3. 659 East Chestnut Hill Road (19,028 square feet of medical office space)
4. Modi Professional Plaza (10,888 square feet of medical office space)

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: Currently, DART Routes 33, 39 and 59 operate along Delaware Route 4 through the study area.

Planned transit service: Currently, there is no future planned service other than maintaining the existing service.

Existing bicycle and pedestrian facilities: The New Castle County Bicycle Map indicates that Delaware Route 4 is considered a Regional Bicycle Route, and has a separate bikeway and off-road trails.

Planned bicycle and pedestrian facilities: Other than those made on page 4, item 4, of this document, minor comments relating to bicycle and pedestrian improvements may be made during DelDOT's site plan review process.

General HCS Analysis Comments

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

There are no general comments concerning the HCS analysis.

Table 2
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Our Lady of Grace TIS
 Prepared by Landmark Science and Engineering, Inc.

Unsignalized Intersection¹	LOS per TIS²		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 4 / Site Entrance				
2020 without development				
Westbound Delaware Route 4 Left-Turn	N/A	N/A	C (15.6)	C (15.2)
Northbound Site Entrance	N/A	N/A	C (21.2)	C (15.4)

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

² The TIS did not include an analysis of this intersection.

Table 3
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Our Lady of Grace - TIS
 Prepared by Landmark Science and Engineering, Inc.

Signalized Intersection¹	LOS per TIS		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 4 / Gender Road / Entrance to Chestnut Crossing				
2015 Existing	B (16.3)	B (17.0)	B (17.0)	B (13.9)
2020 without development	B (16.7)	B (18.7)	B (17.0)	B (14.7)
2020 with development	B (16.8)	B (18.9)	B (17.0)	B (14.6)

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)
 Our Lady of Grace - TIS
 Prepared by Landmark Science and Engineering, Inc.

Unsignalized Intersection ¹	LOS per TIS ^{2 3}		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2015 Existing				
Eastbound Delaware Route 4 Left-Turn	A	B	A (9.8)	C (16.6)
Westbound Delaware Route 4 Left-Turn	N/A	N/A	B (14.5)	B (12.1)
Northbound Complex Entrance	N/A	N/A	B (14.8)	B (13.0)
Southbound Malvern Drive	B	B	B (11.0)	C (16.2)
2020 without development				
Eastbound Delaware Route 4 Left-Turn	A	C	B (10.0)	C (18.1)
Westbound Delaware Route 4 Left-Turn	N/A	N/A	C (15.3)	B (12.7)
Northbound Complex Entrance	N/A	N/A	C (15.5)	B (13.4)
Southbound Malvern Drive	B	C	B (11.2)	C (17.3)
2020 with development				
Eastbound Delaware Route 4 Left-Turn	A	C	B (10.0)	C (18.6)
Westbound Delaware Route 4 Left-Turn	N/A	N/A	C (16.1)	B (14.8)
Northbound Complex Entrance	N/A	N/A	C (21.8)	C (15.1)
Southbound Malvern Drive	B	C	B (11.2)	C (17.6)

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

² The TIS did not analyze this intersection correctly. It did not include the entrance to the Our Lady of Peace & Newark Tabernacle church complex. DelDOT's review of the TIS did include this entrance.

³ For the reported values, the TIS did not include the seconds of delay.

Table 5
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Our Lady of Grace - TIS
 Prepared by Landmark Science and Engineering, Inc.

Unsignalized Intersection ¹	LOS per TIS ²		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2015 Existing				
Eastbound Delaware Route 4 Left-Turn	A	B	A (9.7)	B (13.2)
Westbound Delaware Route 4 Left-Turn	B	B	B (14.1)	B (14.8)
Northbound Chestnut Hill Plaza Entrance	B	B	B (14.3)	C (16.4)
Southbound Martindale Drive	B	B	B (11.2)	B (14.1)
2020 without development				
Eastbound Delaware Route 4 Left-Turn	A	B	A (9.9)	B (14.1)
Westbound Delaware Route 4 Left-Turn	B	B	C (15.0)	C (16.4)
Northbound Chestnut Hill Plaza Entrance	B	C	B (14.9)	C (17.5)
Southbound Martindale Drive	B	B	B (11.1)	B (14.9)
2020 with development				
Eastbound Delaware Route 4 Left-Turn	A	B	B (10.1)	B (14.3)
Westbound Delaware Route 4 Left-Turn	B	B	C (15.2)	C (17.3)
Northbound Chestnut Hill Plaza Entrance	B	C	C (15.1)	C (18.2)
Southbound Martindale Drive	B	B	B (11.6)	C (15.1)

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

² For the reported values, the TIS did not include the seconds of delay.

Table 6
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Our Lady of Grace - TIS
 Prepared by Landmark Science and Engineering, Inc.

Signalized Intersection ¹	LOS per TIS		LOS per DelDOT ²	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 4 / Marrows Road				
2015 Existing	C (22.7)	C (23.1)	C (23.0)	D (36.6)
2020 without development	C (23.2)	C (25.2)	C (23.3)	D (38.2)
2020 with development	C (23.5)	C (25.9)	C (23.3)	D (38.2)

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

² In the review of the TIS, DelDOT used updated traffic counts performed on December 15, 2015.

Table 7
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Our Lady of Grace - TIS
 Prepared by Landmark Science and Engineering, Inc.

Signalized Intersection ¹	LOS per TIS ²		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 4 / Kingston Road				
2015 Existing	N/A	N/A	A (4.8)	A (4.9)
2020 without development	N/A	N/A	A (4.8)	A (4.8)
2020 with development	N/A	N/A	A (4.7)	A (4.8)

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

² The TIS analyzed this intersection as an unsignalized intersection, where it is actually a signalized intersection.

Table 8
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Our Lady of Grace - TIS
 Prepared by Landmark Science and Engineering, Inc.

Signalized Intersection¹	LOS per TIS		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 4 / Library Avenue / South Chapel Street				
2015 Existing	D (48.4)	D (53.8)	D (50.4)	E (63.5)
2020 without development	D (49.0)	E (58.6)	D (49.7)	E (70.8)
2020 with development	D (49.2)	E (59.4)	D (50.6)	E (70.9)

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

Table 9
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Our Lady of Grace - TIS
 Prepared by Landmark Science and Engineering, Inc.

Signalized Intersection¹	LOS per TIS²		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 4 / Signalized U-turn east of the proposed site entrance				
2015 Existing	N/A	N/A	A (6.3)	A (2.9)
2020 without development	N/A	N/A	A (6.4)	A (3.0)
2020 with development	N/A	N/A	A (6.2)	A (2.9)

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

² The TIS analyzed this intersection as an unsignalized intersection, where it is actually a signalized intersection.

Table 10
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Our Lady of Grace - TIS
 Prepared by Landmark Science and Engineering, Inc.

Unsignalized Intersection ¹	LOS per TIS ²		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 4 / Old Newark Road				
2015 Existing				
Eastbound Delaware Route 4 Left-Turn	A	C	B (10.1)	C (20.2)
Southbound Old Newark Road	B	C	C (15.0)	C (22.3)
2020 without development				
Eastbound Delaware Route 4 Left-Turn	A	C	B (10.4)	C (23.0)
Southbound Old Newark Road	B	C	C (16.1)	D (25.5)
2020 with development				
Eastbound Delaware Route 4 Left-Turn	B	C	B (10.9)	D (28.7)
Southbound Old Newark Road	B	C	C (16.3)	D (27.6)

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

² For the reported values, the TIS did not include the seconds of delay.

Table 11
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Our Lady of Grace - TIS
 Prepared by Landmark Science and Engineering, Inc.

Signalized Intersection¹	LOS per TIS		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 4 / Brennan Drive / Pearson Drive				
2015 Existing	B (16.0)	B (14.2)	B (16.4)	A (9.4)
2020 without development	B (17.0)	B (15.6)	B (16.9)	B (10.1)
2020 with development	B (17.4)	B (16.5)	B (16.9)	B (10.4)

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

Table 12
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Our Lady of Grace - TIS
 Prepared by Landmark Science and Engineering, Inc.

Signalized Intersection¹	LOS per TIS		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 4 / Augusta Drive / Entrance to Augusta Square				
2015 Existing	B (14.7)	B (12.5)	B (11.5)	A (7.1)
2020 without development	B (15.5)	B (14.4)	B (11.9)	A (8.4)
2020 with development	B (15.8)	B (15.0)	B (11.8)	A (8.4)

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

Table 13
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Our Lady of Grace - TIS
 Prepared by Landmark Science and Engineering, Inc.

Signalized Intersection¹	LOS per TIS		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 4 / Salem Church Road				
2015 Existing	E (59.3)	D (52.0)	E (62.5)	E (55.9)
2020 without development	E (64.2)	E (60.0)	E (60.5)	E (63.5)
2020 with development	E (67.2)	E (67.8)	E (63.0)	E (68.1)

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

Table 14
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Our Lady of Grace - TIS
 Prepared by Landmark Science and Engineering, Inc.

Signalized Intersection¹	LOS per TIS		LOS per DelDOT	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 4 / Delaware Route 273				
2015 Existing	B (18.4)	C (31.6)	B (12.5)	B (18.5)
2020 without development	B (19.4)	C (34.1)	B (12.8)	B (19.9)
2020 with development	B (19.7)	D (36.6)	B (12.9)	C (21.1)

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