



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

JENNIFER COHAN  
SECRETARY

July 29, 2016

Mr. Eric Ostimchuk  
Traffic Planning and Design, Inc.  
2500 East High Street  
Suite 650  
Pottstown, PA 19464

Dear Mr. Ostimchuk:

The enclosed Traffic Impact Study (TIS) review letter for the **Concord Plaza** (Tax Parcels 06-051.00-54 & 112, 06-052.00-002, 003, 267 & 268) development has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this review letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at (302) 760-2167.

Sincerely,

Troy Brestel  
Project Engineer

TEB:km

Enclosures

cc with enclosures: Mr. Larry Tarabicos, Tarabicos Grosso, L.L.P.  
Ms. Constance C. Holland, Office of State Planning Coordination  
Mr. George Haggerty, New Castle County Department of Land Use  
Mr. Owen Robotino, New Castle County Department of Land Use  
Mr. Marco Boyce, New Castle County Department of Land Use  
Mr. Andrew Parker, McCormick Taylor, Inc.  
DelDOT Distribution

## DelDOT Distribution

Annie Cordo, Deputy Attorney General  
Robert McCleary, Director, Transportation Solutions (DOTS)  
Drew Boyce, Director, Planning  
Mark Luszc, Chief Traffic Engineer, Traffic, DOTS  
Mark Tudor, Assistant Director, Project Development North, DOTS  
J. Marc Coté, Assistant Director, Development Coordination  
T. William Brockenbrough, Jr., County Coordinator, Development Coordination  
Peter Haag, Traffic Studies Manager, Traffic, DOTS  
Kevin Canning, Canal District Engineer, North District  
Matthew Lichtenstein, Canal District Public Works Engineer, Canal District  
David Dooley, Service Development Planner, Delaware Transit Corporation  
Jeffrey Van Horn, New Castle Subdivision Coordinator, Development Coordination  
Pao Lin, New Castle Subdivision Manager, Development Coordination  
Mark Galipo, Traffic Engineer, Traffic, DOTS  
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning  
Claudy Joinville, Project Engineer, Development Coordination



July 28, 2016

Mr. Troy E. Brestel  
Project Engineer  
DelDOT Division of Planning  
P.O. Box 778  
Dover, DE 19903

RE: Agreement No. 1655  
Traffic Impact Study Services  
**Task No. 1 Subtask 17A – Concord Plaza**

Dear Mr. Brestel:

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for the Concord Plaza mixed use development prepared by Traffic Planning and Design, Inc. (TPD), dated April 1, 2016. TPD prepared the report in a manner generally consistent with DelDOT's *Development Coordination Manual* [formerly *Standards and Regulations for Subdivision Streets*, incorporated by reference into the New Castle County Unified Development Code 40.11.130].

The TIS evaluates the impacts of the Concord Plaza mixed-use development project located on the north side of Silverside Road (New Castle Road 212) opposite Brookfield Lane (east of US Route 202), in New Castle County, Delaware. The proposal will redevelop the existing 553,440 square feet of office space and when complete, the development will be comprised of 38,735 square feet of specialty retail space, 341 apartment units, 317,266 square feet of office space, and a 105,750 square-foot medical office building. Three access points are proposed: one full access point along Silverside Road at the current signalized access location opposite Brookfield Lane, a right-in/right-out (RIRO) driveway approximately 600 feet west of the signalized access, and a signalized driveway to Silverside Road via interconnections with the existing Talleyville Shopping Center abutting Concord Plaza to the west. Construction is estimated to be complete by 2020.

The land is currently zoned OR (Office Regional) in New Castle County and the developer proposes to maintain the current zoning.

DelDOT currently has no projects within the study area.

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

The proposed development would meet the New Castle County Level of Service (LOS) Standards as stated in Section 40.11.210 of the Unified Development Code (UDC).

However, as shown in the table below, based on the criteria listed in Chapter 2 of DelDOT's *Development Coordination Manual*, the driveway serving Cadia Rehabilitation Silverside exhibits LOS deficiencies without the implementation of physical roadway and/or traffic control improvements. Because this intersection is controlled only by a stop sign on the minor



approach, the deficiencies pertain only to that minor approach and the intersection is not subject to New Castle County’s concurrency requirements.

<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Situations for which deficiencies occur</i>
Silverside Road & Assisted Living Driveway	Unsignalized	2016 Existing PM (Case 1); 2020 PM and Saturday without development (Case 2); 2020 PM and Saturday with development (Case 3)

At Silverside Road and Assisted Living Driveway, we do not recommend that any improvements be implemented by the developer at this intersection. Although the side street approach would operate at LOS F in the future PM and Saturday peak hours, this intersection is not defined as deficient by New Castle County standards and it is not included in DelDOT's list of intersections to be evaluated by the TIS for this development. Furthermore, the projected 95<sup>th</sup> percentile queue lengths on that approach are less than 75 feet during the PM peak hour and less than 25 feet during the Saturday peak hour.

Should the 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. Along the Silverside 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 striping associated with site entrances.
2. The developer should construct the proposed rights-in/rights-out site access on Silverside Road, approximately 600 feet west of the existing site entrance that is located opposite Brookfield Lane. The proposed configuration is shown in the table below.

<b>Approach</b>	<b>Current Configuration</b>	<b>Proposed Configuration</b>
Southbound Site Access	Approach does not exist	One right-turn only lane
Eastbound Silverside Road	Two through lanes, separated from westbound lanes by concrete median	Two through lanes, separated from westbound lanes by concrete median
Westbound Silverside Road	Two through lanes	Two through lanes and one right-turn lane

Initial recommended minimum turn-lane lengths (excluding tapers) of the separate turn lanes are listed below. The developer should coordinate with DelDOT’s Development



Coordination Section to determine final design details, including exact entrance location and final turn-lane lengths, during the site plan review process.

Approach	Left-Turn Lane	Right-Turn Lane
Southbound Site Access	N/A	N/A
Eastbound Silverside Road	N/A	N/A
Westbound Silverside Road	N/A	190 feet *

\* initial turn-lane length based on DelDOT's *Auxiliary Lane Worksheet*.

At the proposed rights-in/rights-out site access on Silverside Road, the developer should include a concrete channelization island on the site driveway to separate entering and exiting traffic.

- The developer should improve the intersection of Silverside Road and Brookfield Lane / Concord Plaza Site Driveway. The proposed configuration is shown in the table below.

Approach	Current Configuration	Proposed Configuration
Northbound Brookfield Lane	One shared left/through/right-turn lane	One shared left/through/right-turn lane
Southbound Concord Plaza Site Driveway	One shared through/left-turn lane and one right-turn lane	One shared through/left-turn lane and one right-turn lane
Eastbound Silverside Road	One left-turn lane, one through lane and one right-turn lane	One left-turn lane, one through lane and one right-turn lane
Westbound Silverside Road	One left-turn lane, one exclusive through lane and one shared through/right-turn lane	One left-turn lane, two through lanes and one right-turn lane

The initial recommended minimum turn-lane length (excluding taper) of the separate right-turn lane on the westbound Silverside Road approach is 340 feet. The developer should coordinate with DelDOT's Development Coordination Section to determine final design details, including final turn-lane lengths, during the site plan review process.

The Concord Plaza Site Driveway should have two entering lanes and two exiting lanes from Silverside Road back to the first internal intersection, which is shown as a roundabout in the Site Plan provided in the TIS.

- The developer should enter into a traffic signal agreement with DelDOT for the intersection of Silverside Road and Brookfield Lane / Concord Plaza Site Driveway. The



agreement will cover signal adjustments required by the physical improvements described in Item No. 3. The agreement should include pedestrian signals, crosswalks, interconnection, and ITS equipment such as CCTV cameras at DelDOT's discretion. The developer should coordinate with DelDOT on the design details and implementation of the traffic signal modifications.

5. The developer should coordinate with DelDOT regarding design of the interconnections to the existing Talleyville Shopping Center located immediately to the west. These interconnections should be designed to provide adequate turning radii and sight distance. The southernmost interconnection should be located far enough from Silverside Road to allow traffic leaving Concord Plaza via this interconnection to turn left onto the Talleyville Shopping Center driveway (heading toward Silverside Road) at a point beyond the back of queue from the signal at Silverside Road. This distance from Silverside Road is approximately 175 feet. The developer should coordinate with DelDOT's Development Coordination Section to determine locations and design details of these interconnections during the site plan review process.
6. The following bicycle, pedestrian, and transit 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 on westbound Silverside Road at the main Concord Plaza Site Driveway and at the start of the right-turn lane on westbound Silverside Road at the rights-in/rights-out site access.
  - b. Adjacent to the right-turn lanes along westbound Silverside Road at the main Concord Plaza Site Driveway and at the rights-in/rights-out site access, a minimum of a five foot bicycle lane should be dedicated and striped with appropriate markings for bicyclists through the turn lane in order to facilitate safe and unimpeded bicycle travel. If the westbound right-turn lane at the rights-in/rights-out site access is designed as a continuation of the acceleration lane along Silverside Road from the main Concord Plaza Site Driveway, the dedicated bicycle lane striped along westbound Silverside Road at the Concord Plaza Site Driveway should be carried through the signalized intersection and striped between the right travel lane and the acceleration lane/right-turn lane through the rights-in/rights-out site access.
  - c. Appropriate bicycle symbols, directional arrows, striping (including stop bars), and signing should be included along bicycle facilities and right-turn lanes within the project limits.
  - d. Utility covers should be made flush with the pavement.
  - e. Bike parking should be provided near the building entrances within this development. If the building architecture provides for an awning or other overhang, the bike parking should be covered.
  - f. Along Silverside Road in any locations where the existing sidewalk is being disturbed, a minimum of a five-foot wide sidewalk that meets current AASHTO and ADA standards should be constructed along the site frontage. The sidewalk should have a minimum of a five-foot buffer from the roadway where possible. At the limits



of new sidewalk construction, the sidewalk should connect to adjacent sections of existing sidewalk.

- g. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.
- h. In addition to the site frontage sidewalks described above, internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative should be constructed within the development. These sidewalks should meet current UDC, DeIDOT, AASHTO and ADA standards. These internal sidewalks should connect the building entrances to the frontage sidewalks and bus stop waiting pads/shelters along Silverside Road.
- i. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to eliminate vehicular overhang onto the sidewalk.
- j. The developer should coordinate with the DTC regarding transit facilities along Silverside Road, which could include modifications to existing bus stops and/or the addition of one or more new bus stops. The developer should coordinate with the DTC regarding the details and implementation of the transit-related improvements.

Improvements in this TIS may be considered “significant” under DeIDOT’s *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DeIDOT’s website at [http://www.deldot.gov/information/pubs\\_forms/manuals/de\\_mutcd/index.shtml](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 DeIDOT’s Traffic Section. Mr. Weiser can be reached at (302) 659-4073 or by email at [Adam.Weiser@state.de.us](mailto:Adam.Weiser@state.de.us).

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

Additional details on our review of this TIS are attached. Please contact me at (302) 738-0203 or through e-mail at [ajparker@mtmail.biz](mailto:ajparker@mtmail.biz) if you have any questions concerning this review.

Sincerely,

**McCormick Taylor, Inc.**

A handwritten signature in black ink, appearing to read "Andrew J. Parker".

Andrew J. Parker, P.E., PTOE  
Project Manager

Enclosure

**General Information**

**Report date:** April 1, 2016

**Prepared by:** Traffic Planning and Design, Inc. (TPD)

**Prepared for:** Buccini/Pollin Group

**Tax parcels:** 06-051.00-112, 06-052.00-267, 06-052.00-02, 06-051.00-054,  
06-052.00-268, 06-052.00-003

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

**Project Description and Background**

**Description:** The existing site consists of 553,440 square feet of office space. When complete, the redevelopment (mixture of existing and proposed space) will consist of 38,735 square feet of specialty retail space, 341 apartment units, 317,266 square feet of office space, and a 105,750 square-foot medical office building.

**Location:** The proposal for a redeveloped Concord Plaza is located on the north side of Silverside Road (New Castle Road 212) opposite Brookfield Lane (east of US Route 202), in New Castle County, Delaware. Site location maps are included on Pages 7 and 8.

**Amount of land to be developed:** approximately 41 acres

**Land use approval(s) needed:** Subdivision approval. The land is currently zoned OR (Office Regional) in New Castle County and the developer proposes to maintain the current zoning.

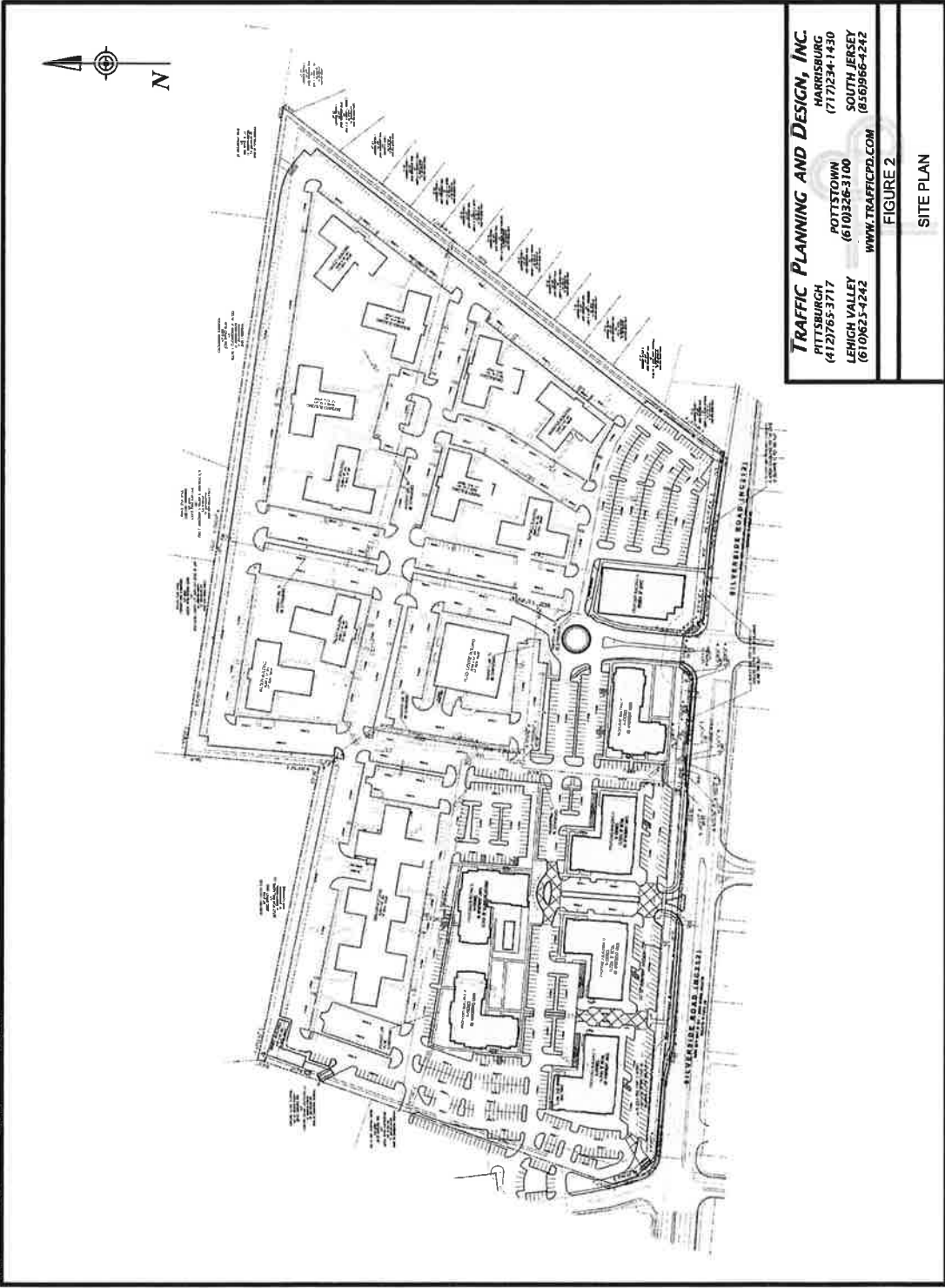
**Proposed completion date:** 2020

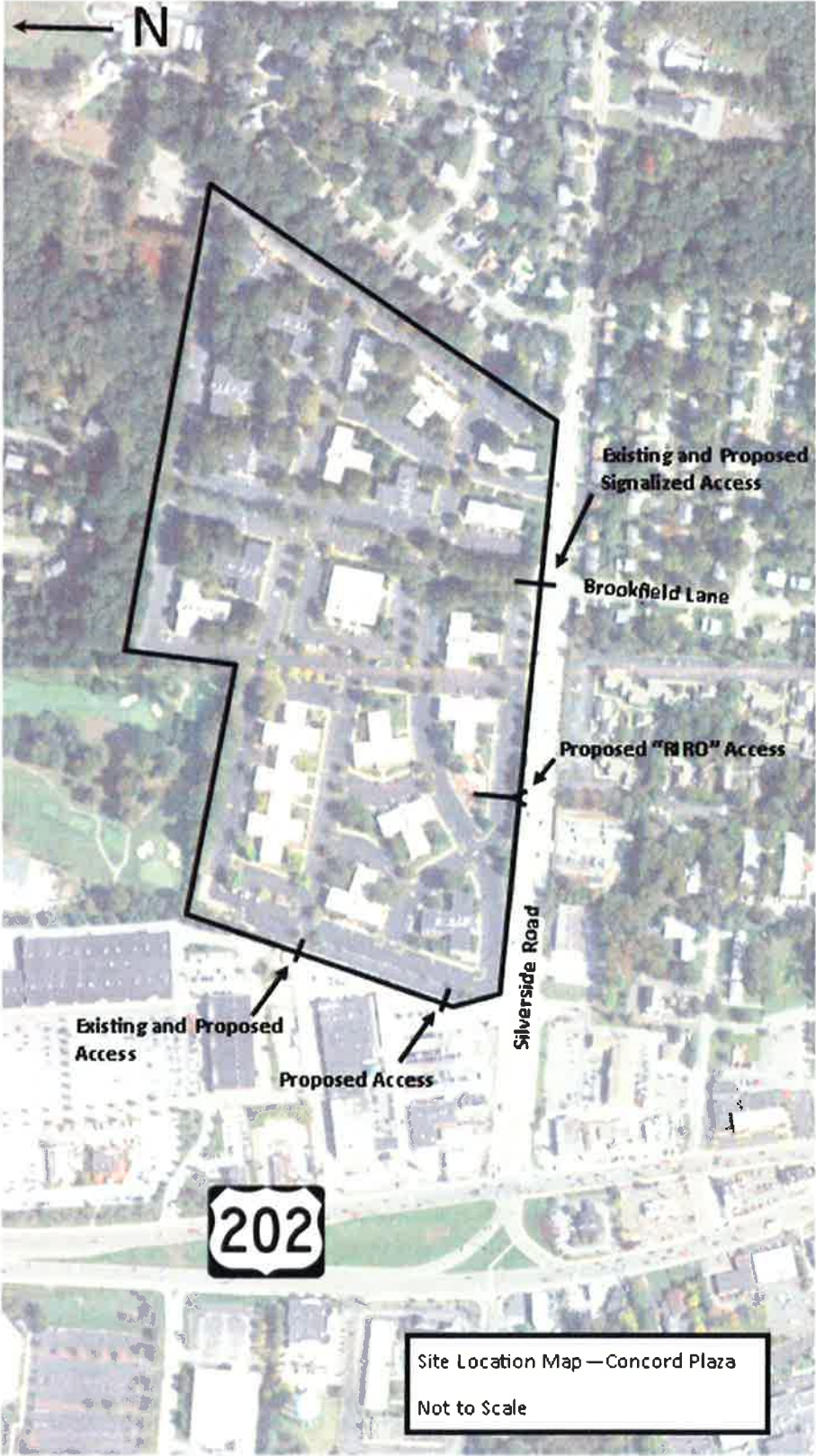
**Proposed access locations:** Three access points are proposed: one full access point along Silverside Road at the current signalized location opposite Brookfield Lane, a right-in/right-out (RIRO) driveway approximately 600 feet west of the signalized access, and a signalized driveway to Silverside Road via interconnections with the existing Talleyville Shopping Center abutting Concord Plaza to the west.

**Daily Traffic Volumes (per DelDOT Traffic Summary 2015):**

- 2015 Average Annual Daily Traffic on Silverside Road: 16,715 vpd







## **2015 Delaware Strategies for State Policies and Spending**

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

The proposed Concord Plaza commercial redevelopment is located within an Investment Level 1 area.

#### *Investment Level 1*

Investment Level 1 Areas are areas of the state that are most prepared for growth and where the state can make cost-effective infrastructure investments for schools, roads, and public safety. In these 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. Investment Level 1 Areas are often municipalities, towns, or urban/urbanizing places in counties. Density is generally higher than in the surrounding areas. 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.

### **Proposed Development's Compatibility with Strategies for State Policies and Spending:**

The proposed Concord Plaza commercial development is located within an Investment Level 1 area, and is to be redeveloped as 38,735 square feet of specialty retail space, 341 apartment units, 317,266 square feet of office space and a 105,750 square foot medical office building. This type of development is consistent with the character of Investment Level 1 areas. The *Strategies* document generally encourages infill development and redevelopment of underutilized tracts, making use of existing infrastructure. The land use in the surrounding area is predominately comprised of single family home neighborhoods and long established commercial uses along U.S. Route 202. The proposed mixed-use redevelopment is consistent with the redevelopment land uses that Investment Level 1 areas encourage. The proposed development appears to generally comply with the policies stated in the 2015 "Strategies for State Policies and Spending."

## **Comprehensive Plan**

### **New Castle County Comprehensive Plan:**

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

The New Castle County Comprehensive Plan Future Land Use Map indicates that the proposed Concord Plaza commercial development is located in an area with future land use designated as an Office/Commercial/Industrial Development Area (OCI).

The land is currently zoned OR (Office Regional) in New Castle County and the developer proposes to maintain the current zoning. According to Section 40.02.224 of the New Castle County Unified Development Code (UDC), characteristics of OR zoning are as follows:

- This district is intended to accommodate large regional employment centers that are primarily office employment together with support type uses.

- The character of this district is suburban transition with tall buildings and floor area ratios compatible with the concentration of jobs.
- Other land uses that support the office employment are permitted within the buildings and in larger developments as freestanding uses. Transit stop facilities shall be built into the development to reduce automobile traffic on surrounding roads. Mixed use structures are permitted for the same reason.
- This district is intended to work in general unison with the BP and I zoning districts to provide for a wide variety of uses by both location and general character to permit a consistency of employment related uses throughout the County.

**Proposed Development's Compatibility with Comprehensive Plan:** The proposed Concord Plaza is planned to be redeveloped as 38,735 square feet of specialty retail space, 341 apartment units, 317,266 square feet of office space and a 105,750 square foot medical office building. Given that the site's future land use designation and current zoning are office and commercial in nature, and the proposal contains these elements plus residential space, this development appears to be in general conformance with the New Castle County Comprehensive Plan. However, given that the OR zoning definition doesn't go into any detail about residential use, the proposed residential space may require additional discussion.

#### **Relevant Projects in the DelDOT Capital Transportation Program**

DelDOT currently has no active projects in the study area.

#### **Trip Generation**

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Ninth Edition, published by the Institute of Transportation Engineers (ITE). The following land uses were utilized to estimate the amount of new traffic generated for this development:

- Apartments (ITE Land Use Code 220)
- General Office (ITE Land Use Code 710)
- Medical Office Building (ITE Land Use Code 720)
- Specialty Retail Center (ITE Land Use Code 826)

Table 1  
CONCORD PLAZA PEAK HOUR TRIP GENERATION

Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour			SAT Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
341 Apartments	34	137	171	133	72	205	80	79	159
Internal Capture <sup>1</sup>	0	-2	-2	-8	-4	-12	-3	-2	-5
<b>Net Apartment Trips</b>	<b>34</b>	<b>135</b>	<b>169</b>	<b>125</b>	<b>68</b>	<b>193</b>	<b>77</b>	<b>77</b>	<b>154</b>
317,266 SF Office	424	58	482	73	361	434	73	63	136
Internal Capture	-4	-1	-5	-4	-22	-26	-2	-2	-4
<b>Net Office Trips</b>	<b>420</b>	<b>57</b>	<b>477</b>	<b>69</b>	<b>339</b>	<b>408</b>	<b>71</b>	<b>61</b>	<b>132</b>
105,750 SF Medical Office	200	53	253	105	273	378	219	165	384
Internal Capture	-2	-1	-3	-6	-17	-23	-7	-5	-12
<b>Net Medical Office Trips</b>	<b>198</b>	<b>52</b>	<b>250</b>	<b>99</b>	<b>256</b>	<b>355</b>	<b>212</b>	<b>160</b>	<b>372</b>
38,186 SF Specialty Retail	-	-	-	50	64	114	50	64	114
Internal Capture	-	-	-	-3	-4	-7	-1	-2	-3
<b>Net Specialty Retail Trips</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>47</b>	<b>60</b>	<b>107</b>	<b>49</b>	<b>62</b>	<b>111</b>
Total Trips	658	248	906	361	770	1131	422	371	793
Total Internal Capture Trips	-6	-4	-10	-21	-47	-68	-13	-11	-24
<b>TOTAL NEW TRIPS</b>	<b>652</b>	<b>244</b>	<b>896</b>	<b>340</b>	<b>723</b>	<b>1063</b>	<b>409</b>	<b>360</b>	<b>769</b>

<sup>1</sup> For All Land Uses: AM = 1% Interaction; PM = 6% Interaction, SAT = 5% Interaction  
Concord Plaza

Table 2  
CONCORD PLAZA DAILY TRIP GENERATION

Land Use	Weekday ADT		
	In	Out	Total
341 Apartments	1096	1096	2192
Internal Capture <sup>2</sup>	-11	-11	-22
<b>Net Apartment Trips</b>	<b>1085</b>	<b>1085</b>	<b>2170</b>
317,266 SF Office	1579	1579	3158
Internal Capture	-16	-16	-32
<b>Net Office Trips</b>	<b>1563</b>	<b>1563</b>	<b>3126</b>
105,750 SF Medical Office	1911	1911	3822
Internal Capture	-19	-19	-38
<b>Net Medical Office Trips</b>	<b>1892</b>	<b>1892</b>	<b>3784</b>
38,186 SF Specialty Retail	848	848	1696
Internal Capture	-8	-8	-16
<b>Net Specialty Retail Trips</b>	<b>840</b>	<b>839</b>	<b>1679</b>
Total Trips	5434	5434	10868
Total Internal Capture Trips	-54	-54	-108
<b>TOTAL NEW TRIPS</b>	<b>5380</b>	<b>5380</b>	<b>10760</b>

### Overview of TIS

#### Intersections examined:

- 1) SB US Route 202 & NB Crossover
- 2) SB US Route 202 & Garden of Eden Road / Silverside Road WB Left-Turn
- 3) NB US Route 202 & Brandywine Boulevard
- 4) NB US Route 202 & Silverside Road
- 5) Silverside Road & Talleyville Shopping Center / Talleyville Towne Shoppes
- 6) Silverside Road & Brookfield Lane / Concord Plaza Site Driveway
- 7) Silverside Road & Shipley Road
- 8) Silverside Road & Greenmount Drive
- 9) Silverside Road & Assisted Living Driveway
- 10) Silverside Road & Proposed Right-In/Right-Out (RIRO) Site Driveway

<sup>2</sup> For All Land Uses: Weekday = 1% Interaction  
Concord Plaza

**Conditions examined:**

- 1) 2016 existing conditions (Case 1)
- 2) 2020 without proposed development (Case 2)
- 3) 2020 with proposed development (Case 3)

**Peak hours evaluated:** Weekday morning and evening and Saturday mid-day peak hours

**Committed developments considered:**

- 1) Pilot school: 91,500 square-foot / 31-classroom school
- 2) Columbia Place: 149 active-adult townhouses/condominiums
- 3) Concord Mall: 343,000 square feet of additional retail
- 4) Seasons Pizza: 3,891 square-foot restaurant, 1,653 square feet of retail
- 5) AstraZeneca Fairfax: 1,147,859 square-foot office and research and development center

**Intersection Descriptions**

- 1) **SB US Route 202 & NB Crossover**  
**Type of Control:** signalized three-leg intersection  
**Southbound approach:** (US Route 202) three through lanes  
**Westbound approach:** (NB Crossover for u-turns from NB US 202 to SB US 202) one left-turn-only lane; left on flashing red arrow permitted after stop
- 2) **SB US Route 202 & Garden of Eden Road / Silverside Road WB Left-Turn**  
**Type of Control:** signalized four-leg intersection  
**Southbound approach:** (US Route 202) three through lanes and one right-turn lane  
**Eastbound approach:** (Garden of Eden Road) one right-turn-only lane; right turn prohibited during right red arrow  
**Westbound approach:** (WB Crossover from Silverside Road) two left-turn lanes
- 3) **NB Route 202 & Brandywine Boulevard**  
**Type of Control:** signalized four-leg intersection  
**Northbound approach:** (US Route 202) one shared through/left-turn lane, one exclusive through lane, and one shared through/right-turn lane  
**Westbound approach:** (Brandywine Boulevard) one shared through/right-turn lane
- 4) **NB Route 202 & Silverside Road**  
**Type of Control:** signalized five-leg intersection  
**Northbound approach:** (US Route 202) three through lanes and one right-turn lane  
**Southbound approach:** (SB Crossover from SB Route 202) one shared u-turn/left-turn lane and one exclusive left-turn lane to Silverside Road  
**Westbound approach:** (Silverside Road) two left-turn lanes and one right-turn lane

- 5) **Silverside Road & Talleyville Shopping Center / Talleyville Towne Shoppes**  
**Type of Control:** signalized four-leg intersection  
**Northbound approach:** (Talleyville Towne Shoppes) one shared through/left-turn lane and one right-turn lane  
**Southbound approach:** (Talleyville Shopping Center) one left-turn lane and one right-turn lane<sup>3</sup>  
**Eastbound approach:** (Silverside Road) one left-turn lane, two through lanes and one right-turn lane  
**Westbound approach:** (Silverside Road) one left-turn lane, two through lanes and one right-turn lane
- 6) **Silverside Road & Brookfield Lane / Concord Plaza Site Driveway**<sup>4</sup>  
**Type of Control:** signalized four-leg intersection  
**Northbound approach:** (Brookfield Lane) one shared left/through/right-turn lane  
**Southbound approach:** (Concord Plaza Site Driveway) one shared through/left-turn lane and one right-turn lane  
**Eastbound approach:** (Silverside Road) one left-turn lane, one through lane and one right-turn lane  
**Westbound approach:** (Silverside Road) one left-turn lane, one exclusive through lane and one shared through/right-turn lane
- 7) **Silverside Road & Shipley Road**  
**Type of Control:** signalized four-leg intersection  
**Northbound approach:** (Shipley Road) one left-turn lane, one through lane and one right-turn lane  
**Southbound approach:** (Shipley Road) one left-turn lane, one through lane and one right-turn lane  
**Eastbound approach:** (Silverside Road) one left-turn lane, one through lane and one right-turn lane  
**Westbound approach:** (Silverside Road) one left-turn lane, one through lane and one right-turn lane
- 8) **Silverside Road & Greenmount Drive**  
**Type of Control:** two-way stop-controlled (three-leg intersection)  
**Southbound approach:** (Greenmount Drive) one shared left/right-turn lane, stop-controlled  
**Eastbound approach:** (Silverside Road) one shared through/left-turn lane  
**Westbound approach:** (Silverside Road) one shared through/right-turn lane

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<sup>3</sup> Northbound and southbound through movements occur at this intersection. Signal is split phase and a center island used to exist on Silverside Road, prohibiting northbound and southbound through movements. Island was removed in 2011. On the southbound approach, it is unclear which lane the through movements use, due to very low through volume and southbound striping/pavement markings not changed after island removal.

<sup>4</sup> Northbound and southbound through movements are prohibited during weekday morning and evening peak periods.



- 9) **Silverside Road & Assisted Living Driveway**  
**Type of Control:** two-way stop-controlled (three-leg intersection)  
**Northbound approach:** (Assisted Living Driveway) shared left/right-turn lane, stop-controlled  
**Eastbound approach:** (Silverside Road) one through lane and one right-turn lane  
**Westbound approach:** (Silverside Road) one left-turn lane and one through lane
- 10) **Silverside Road & Proposed Right-In/Right-Out (RIRO) Site Driveway**  
**Type of Control:** proposed two-way stop-controlled (three-leg intersection)  
**Southbound approach:** (Proposed Site Driveway) proposed one right-turn lane, stop-controlled  
**Eastbound approach:** (Silverside Road) existing two through lanes separated from westbound lanes by concrete median; proposed two through lanes separated from westbound lanes by concrete median  
**Westbound approach:** (Silverside Road) existing two through lanes; proposed two through lanes and one right-turn lane

### Safety Evaluation

**Crash Data:** Crash data was obtained within the following areas. Note that some areas overlap.

- 0.1 mile radius of the NB US 202 and Silverside Road intersection, covering the three-year period from March 8, 2013 to March 8, 2016. During the study period, a total of 86 crashes were reported, including 12 personal injury crashes, zero crashes that involved pedestrians and four alcohol-related crashes. The data indicates that the most common types of crashes were rear-end crashes (40%) and angle crashes (36%). Most of the crashes occurred during daylight hours (72%), or dark-lit conditions (22%) and with dry surface conditions (81%). The highest occurrence of crashes was during the hour of 3:00 PM to 4:00 PM (14% of all crashes). Most crashes were a result of following too closely (19%), disregarding the traffic signal (15%) or failure to yield right-of-way (14%). Of the 86 reported crashes, 24 were associated with the NB US 202 and Silverside Road intersection. There were no fatal crashes within this area during this time period.
- 0.1 mile radius of NB US 202 and Brandywine Boulevard intersection, covering the three-year period from March 8, 2013 to March 8, 2016. During the study period, a total of 94 crashes were reported, including 13 personal injury crashes, zero crashes that involved pedestrians and one alcohol-related crash. The data indicates that the most common types of crashes were rear-end crashes (49%) and angle crashes (31%). Most of the crashes occurred during daylight hours (80%), or dark-lit conditions (16%) and with dry surface conditions (79%). The highest occurrence of crashes was during the hour of 12:00 - 1:00 PM (18% of all crashes). Most crashes were a result of driver inattention, distraction or fatigue (26%), following too closely (17%), or improper lane changes (13%). Of the 94 reported crashes, 21 were associated with the NB US 202 and Mount Lebanon Road intersection. There were no fatal crashes within this area during this time period.

- 0.1 mile radius of Silverside Road and Brookfield Lane/Concord Plaza intersection, covering the three-year period from March 8, 2013 to March 8, 2016. During the study period, a total of 17 crashes were reported, including three personal injury crashes, zero crashes that involved pedestrians and zero alcohol-related crashes. The data indicates that the most common types of crashes were rear-end crashes (41%) and angle crashes (29%). Most of the crashes occurred during daylight hours (94%) and with dry surface conditions (94%). The highest occurrences of crashes was during the hours of 11:00 AM to 12:00 PM and 12:00 PM to 1:00 PM (24% of all crashes during each). Most crashes were a result of driver inattention, distraction or fatigue (41%), failing to yield right-of-way (24%), or following too closely (12%). Of the 17 reported crashes, 11 were associated with the Silverside Road and Brookfield Lane/Concord Plaza intersection. There were no fatal crashes within this area during this time period.
- 0.1 mile radius of Silverside Road/Greenmount Drive intersection, covering the three-year period from March 8, 2013 to March 8, 2016. During the study period, a total of five crashes were reported, including one personal injury crash, zero crashes that involved pedestrians and zero alcohol-related crashes. The data indicates that the most common types of crashes were rear-end crashes (80%) with dry surface conditions (80%). The highest occurrence of crashes was not particular to any time. Most crashes were a result of driver inattention, distraction, or fatigue (60%). There were no fatal crashes within this area during this time period.
- 0.1 mile radius of the Silverside Road/Assisted Living Driveway intersection, covering the three-year period from March 8, 2013 to March 8, 2016. During the study period, a total of four crashes were reported, including one personal injury crash, zero crashes that involved pedestrians and zero alcohol-related crashes. No common type of crash occurred. All of the crashes occurred during daylight hours and three of four with dry surface conditions. Half of all crashes was during the hour of 3:00 PM to 4:00 PM. Crashes were a result of no particular cause, but included following too closely, failure to yield right-of-way, improper turns and careless/reckless driving. There were no fatal crashes within this area during this time period.
- 0.1 mile radius of the Silverside Road and Shipley Road intersection, covering the three-year period from March 8, 2013 to March 8, 2016. During the study period, a total of 27 crashes were reported, including five personal injury crashes, zero crashes that involved pedestrians, one bicycle-related crash and one alcohol-related crash. The data indicates that the most common types of crashes were rear-end crashes (48%) and angle crashes (22%). Most of the crashes occurred during daylight hours (67%), or dark-unlit conditions (19%) and with dry surface conditions (74%). The highest occurrences of crashes was during the hours of 3:00 PM to 4:00 PM and 5:00 PM to 6:00 PM (15% of all crashes during each). Most crashes were a result of driver inattention, distraction or fatigue (22%). Of the 27 reported crashes, 18 were associated with the Silverside Road and Shipley Road intersection. There were no fatal crashes within this area during this time period.

**Sight Distance:** With generally straight and flat roadways, and few potential visual obstructions, sight distance is largely adequate throughout the study area and no major problems were observed during field observations in the area.

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

**Existing transit service:** DART, a service of the Delaware Transit Corporation (DTC) operates two bus routes in the project area. DART Route 2 serves US Route 202. DART Route 35 serves US Route 202, Silverside Road (with a bus shelter at Concord Plaza) and Shipley Road.

**Planned transit service:** DTC is considering changes for the US Route 202 corridor, including a more commuter-oriented transit service with limited stops and shorter travel times between certain employment centers and the City of Wilmington.

**Existing bicycle and pedestrian facilities:** According to DelDOT's New Castle County Bicycle Map (dated 2011), Silverside Road along the site frontage is classified as a Connector Bicycle Route with a bikeway that contains high traffic (over 10,000 vehicles daily). It has wide shoulders and has a designated bicycle lane, signing, and striping in the vicinity of the Assisted Living Driveway east of Concord Plaza. According to the bicycle level of service (BLOS) calculator developed by the *League of Illinois Bicyclists*, the Silverside Road corridor operates at BLOS D.

There are currently sidewalks along both sides of Silverside Road from US Route 202 to Shipley Road, including crosswalks and pedestrian signals. There is a marked pedestrian crossing across US Route 202 from Silverside Road to Garden of Eden Road, including pedestrian signals.

**Planned bicycle and pedestrian facilities:** The TIS did not include any correspondence with DelDOT's Statewide and Regional Planning Section regarding planned or requested bicycle and pedestrian facilities in the area of this proposed development.

### **Previous Comments**

All comments from DelDOT's Scoping Letter and Traffic Count Review Letter were addressed in the Final TIS submission, except that there were no indications that the applicant contacted DelDOT's Statewide and Regional Planning Section for bicycle and pedestrian-related comments.

**General Analysis Comments**

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

- 1) For existing conditions, the TIS and McCormick Taylor determined, for each intersection, overall intersection peak hour factors (PHF). For some intersections, the PHF used in the TIS analysis doesn't appear to match the provided traffic count data and it is unknown how the PHF used in the analysis was determined. McCormick Taylor applied PHF based on the provided traffic count data. For future conditions, the TIS and McCormick Taylor generally assumed existing PHF for all intersections.
- 2) McCormick Taylor input existing right-turn-on-red (RTOR) volumes for existing and future conditions analyses. The TIS did not note whether RTOR volumes were used in their analysis, either in the letter or the capacity analysis appendix, and the TIS did not include overlapping right-turn phases.
- 3) The analyses included in the TIS did not always reflect the lane widths observed in the field by McCormick Taylor. McCormick Taylor's HCS analyses incorporated our field-measured lane widths.
- 4) The TIS and McCormick Taylor used different signal timings when analyzing the signalized intersections in some cases. For example, at the intersection of SB US Route 202 & Garden of Eden Road / Silverside Road WB Left-Turn, the TIS used a cycle length consistently 10 seconds less than the signal at NB Route 202 & Silverside Road. McCormick Taylor used the same cycle length for both signals.
- 5) The TIS shows that volumes are permitted to cross from Concord Plaza to Brookfield Lane during weekday peak hours, and vice versa, but this movement is currently prohibited.

Table 3  
PEAK HOUR LEVELS OF SERVICE (LOS)  
*based on Traffic Impact Study for Concord Plaza Development  
Report dated April 1, 2016  
Prepared by Traffic Planning and Design, Inc.*

Signalized Intersection <sup>5</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Southbound US 202 &amp; Northbound US 202 Crossover</b>						
2016 Existing (Case 1)	B (19.4)	B (17.2)	B (13.7)	B (17.8)	B (16.0)	B (12.7)
2020 without Development (Case 2)	B (18.6)	B (19.2)	B (13.5)	B (16.2)	B (17.7)	B (12.6)
2020 with Development (Case 3)	B (18.6)	B (19.5)	B (13.5)	B (16.2)	B (18.0)	B (12.6)

<sup>5</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

Table 4  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Concord Plaza Development  
Report dated April 1, 2016  
Prepared by Traffic Planning and Design, Inc.

Signalized Intersection <sup>6</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday MIDDAY	Weekday AM	Weekday PM	Saturday MIDDAY
<b>Southbound US 202 &amp; Garden of Eden Road / Silverside Road WB Left-Turn</b>						
2016 Existing (Case 1)	C (28.6)	D (39.7)	C (30.2)	D (35.9)	D (36.4)	C (24.4)
2020 without Development (Case 2)	C (34.1)	D (49.9)	C (25.9)	C (30.3)	D (39.1)	C (28.2)
2020 with Development (Case 3)	D (35.9)	D (51.7)	C (28.0)	C (32.8)	D (42.3)	C (29.3)

<sup>6</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

Table 5  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Concord Plaza Development  
Report dated April 1, 2016  
Prepared by Traffic Planning and Design, Inc.

Signalized Intersection <sup>7</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday MIDDAY	Weekday AM	Weekday PM	Saturday MIDDAY
Northbound US 202 & Brandywine Boulevard						
2016 Existing (Case 1)	A (2.5)	A (3.4)	A (5.1)	A (3.3)	A (4.9)	A (5.7)
2020 without Development (Case 2)	A (2.6)	A (4.1)	A (5.2)	A (3.4)	A (6.5)	A (6.3)
2020 with Development (Case 3)	A (2.6)	A (4.4)	A (5.3)	A (3.4)	A (7.0)	A (6.6)

<sup>7</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

Table 6  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Concord Plaza Development  
Report dated April 1, 2016  
Prepared by Traffic Planning and Design, Inc.

Signalized Intersection <sup>8</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Middy	Weekday AM	Weekday PM	Saturday Middy
<b>Northbound US 202 &amp; Silverside Road</b>						
2016 Existing (Case 1)	C (29.6)	D (42.6)	D (36.6)	C (30.1)	D (48.1)	D (43.8)
2020 without Development (Case 2)	D (37.1)	D (46.2)	D (49.3)	C (33.6)	D (48.3)	D (53.3)
2020 with Development (Case 3)	D (38.0)	D (48.1)	D (53.3)	D (35.5)	D (43.2)	D (53.2)

<sup>8</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.



Table 7  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Concord Plaza Development  
Report dated April 1, 2016  
Prepared by Traffic Planning and Design, Inc.

Signalized Intersection <sup>9</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Silverside Road &amp; Talleyville Shopping Center / Talleyville Towne Shoppes</b>						
2016 Existing (Case 1)	B (11.1)	B (16.3)	B (15.8)	B (11.5)	B (15.6)	B (15.3)
2020 without Development (Case 2)	B (10.1)	B (17.0)	B (15.8)	B (11.1)	B (15.6)	B (15.4)
2020 with Development (Case 3)	B (11.8)	B (18.1)	B (16.7)	B (12.3)	B (17.0)	B (16.3)

<sup>9</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

Table 8  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Concord Plaza Development  
Report dated April 1, 2016  
Prepared by Traffic Planning and Design, Inc.

Signalized Intersection <sup>10</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday MIDDAY	Weekday AM	Weekday PM	Saturday MIDDAY
<b>Silverside Road &amp; Brookfield Lane / Concord Plaza Site Driveway</b>						
2016 Existing (Case 1)	A (9.5)	B (14.5)	A (7.8)	A (9.9)	B (15.8)	A (8.2)
2020 without Development (Case 2)	B (16.6)	C (34.9)	B (10.3)	B (15.1)	D (44.4)	B (11.0)
2020 with Development (Case 3)	C (21.8)	D (42.8)	B (17.0)	B (19.6)	D (54.0)	B (16.9)

<sup>10</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

Table 9  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Concord Plaza Development  
Report dated April 1, 2016  
Prepared by Traffic Planning and Design, Inc.

Signalized Intersection <sup>11</sup>	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Silverside Road &amp; Shipley Road</b>						
2016 Existing (Case 1)	C (25.6)	C (32.4)	C (23.5)	C (25.2)	C (31.2)	C (22.8)
2020 without Development (Case 2)	C (33.3)	D (39.6)	C (29.0)	C (32.3)	D (40.0)	C (26.5)
2020 with Development (Case 3)	C (33.4)	D (43.7)	D (39.1)	C (32.3)	D (45.1)	C (30.3)

<sup>11</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

Table 10  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Concord Plaza Development  
Report dated June 2015  
Prepared by Traffic Planning and Design, Inc.

Unsignalized Intersection <sup>12</sup> Two-Way Stop Control (T-intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM <sup>13</sup>	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Silverside Road &amp; Greenmount Drive</b>						
2016 Existing (Case 1)						
Southbound Greenmount Drive	C (18.7)	N/A	C (24.0)	C (18.9)	B (13.7)	C (21.1)
Eastbound Silverside Rd. – Left	B (10.4)	A (9.5)	B (10.9)	B (10.4)	A (9.5)	B (10.3)
2020 without Development (Case 2)						
Southbound Greenmount Drive	D (29.9)	N/A	C (18.3)	D (26.3)	B (14.4)	C (21.1)
Eastbound Silverside Rd. – Left	B (12.1)	A (9.7)	B (10.2)	B (12.1)	A (9.7)	B (10.3)
2020 with Development (Case 3)						
Southbound Greenmount Drive	D (32.4)	N/A	C (24.0)	D (26.8)	C (15.5)	D (25.1)
Eastbound Silverside Rd. – Left	B (12.0)	B (10.1)	B (10.9)	B (12.0)	B (10.2)	B (10.9)

<sup>12</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

<sup>13</sup> HCS report provided in TIS did not show any delay for southbound approach during the PM peak hour. This appears to be because there are zero southbound left turns and the version of HCS 2010 software used by TPD does not process this correctly.

Table 11  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Impact Study for Concord Plaza Development  
Report dated June 2015

Prepared by Traffic Planning and Design, Inc.

Unsignalized Intersection <sup>14</sup> Two-Way Stop Control (T-intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Silverside Road &amp; Assisted Living Driveway</b>						
2016 Existing (Case 1)						
NB Assisted Living Driveway	C (16.6)	E (46.1)	D (31.2)	C (16.6)	E (44.6)	D (31.4)
WB Silverside Road – Left	A (8.3)	B (10.1)	A (9.1)	A (8.4)	B (10.2)	A (9.2)
2020 without Development (Case 2)						
NB Assisted Living Driveway	C (22.1)	F (87.4)	E (46.7)	C (22.2)	F (82.1)	E (46.3)
WB Silverside Road – Left	A (8.5)	B (11.4)	A (9.7)	A (8.5)	B (11.5)	A (9.7)
2020 with Development (Case 3)						
NB Assisted Living Driveway	C (23.6)	F (123.0)	F (67.3)	C (23.7)	F (113.2) <sup>15</sup>	F (67.6) <sup>16</sup>
WB Silverside Road – Left	A (8.7)	B (11.8)	B (10.2)	A (8.8)	B (11.8)	B (10.2)

<sup>14</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

<sup>15</sup> The 95<sup>th</sup> percentile queue length for the northbound approach is less than 3 vehicles during the Case 3 PM peak hour.

<sup>16</sup> The 95<sup>th</sup> percentile queue length for the northbound approach is less than 1 vehicle during the Case 3 Saturday peak hour.

Table 12  
PEAK HOUR LEVELS OF SERVICE (LOS)  
*based on Traffic Impact Study for Concord Plaza Development  
Report dated June 2015*  
Prepared by Traffic Planning and Design, Inc.

Unsignalized Intersection <sup>17</sup> Two-Way Stop Control (Right-in/Right-Out)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
Silverside Road & Right In/Right Out Site Driveway <sup>18</sup>						
2020 with Development (Case 3)						
Southbound Site Driveway – Right	C (17.2)	C (24.8)	C (21.8)	B (12.1)	B (13.8)	B (13.1)

<sup>17</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

<sup>18</sup> The TIS analysis assumed one through lane in each direction along Silverside Road. Based on the proposed location, McCormick Taylor assumed two through lanes in each direction.