



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

JENNIFER COHAN
SECRETARY

MEMORANDUM

TO: Sireen Muhtaseb, New Castle Review Coordinator
FROM: Troy Brestel, Project Engineer TEB
DATE: November 25, 2020
SUBJECT: **Glasgow Commons (Protocol Tax Parcel #1102200015)
Results of Traffic Operational Analysis (TOA)**

We have reviewed the traffic operational analysis (TOA) for the proposed Glasgow Commons development, submitted by Becker Morgan Group on September 16, 2020. The analysis evaluates the traffic impacts of the proposed development, which is to be located on the east side of Delaware Route 896, north of GBC Drive and southeast of Old Cooches Bridge Road in New Castle County.

A traffic analysis was previously completed for New Castle County Project No. 2005-1249, which approved 1,635,139 square feet of office / manufacturing / warehousing space for the subject property ("Parcels B, D, and F – Glasgow Commons"). The County granted a traffic impact study (TIS) waiver for that project. They did so, in part based on the attached letter in which DelDOT confirmed that the project could meet New Castle County's level of service (LOS) concurrency requirement by completing certain enumerated improvements for the intersections of Delaware Route 896 / Old Cooches Bridge Road / Four Seasons Parkway and Delaware Route 896 / Corporate Boulevard / GBC Drive.

The purpose of this TOA is to examine the current condition of the two intersections specified above and to identify any necessary improvements needed at them in order to achieve concurrency as specified in New Castle County's Unified Development Code (UDC).

The proposed development will occupy three distinct parcels, specified as Parcels B, D and F, totaling approximately 149.12 acres. Parcel B (Tax Parcel: 11-018.00-061) will consist of 375,000 square feet of manufacturing space. Parcel D (Tax Parcel: 11-018.00-059) will consist of 455,000 square feet of manufacturing space, and Parcel F (Tax Parcel: 11-022.00-015) will consist of 480,000 square feet of manufacturing space. Manufacturing space, in this context, may include some combination of uses from light industry, manufacturing, warehousing, and fulfilment center uses. The land is currently split-zoned as OR (Office Regional) and BP (Business Park) in New Castle County, and the developer does not plan to rezone the land.

Regarding access, Parcels B and D are each proposed to have a full access on Old Cooches Bridge Road, while Parcel F is proposed to have a full access on GBC Drive. Construction is anticipated to be complete in 2023.

There are two relevant DeIDOT projects in the area. One project is an improvement at the intersection of Delaware Route 896, Corporate Boulevard and GBC Drive, scheduled for construction beginning in Fiscal Year 2021. It will add a second northbound left-turn lane on Delaware Route 896. The other project is a widening project to provide a third through lane each way on Delaware Route 896 from US Route 40 to I-95. It is scheduled for construction beginning in Fiscal Year 2026.

Based on our review, we find the following:

- 1) The intersection of Delaware Route 896 / Corporate Boulevard / GBC Drive would operate at worse than LOS D during the a.m. and p.m. peak hours for the future build condition (2023). Construction of the DeIDOT project to add a second northbound left-turn lane on Delaware Route 896 will mitigate the poor LOS at this intersection, and is expected to be complete prior to construction of the development in 2023.
- 2) The intersection of Delaware Route 896 / Old Cooches Bridge Road would operate at LOS D or better during the a.m. and p.m. peak hours for all conditions that were analyzed. However, the westbound left-turn queue would increase to 475 feet during the future build condition; to accommodate this queue, the developer's engineer has recommended that the left-turn lane be lengthened. We recommend more specifically that the left-turn lane be lengthened to 525 feet, which is the length of the queue plus a 50-foot taper.

With the above-mentioned improvements, we find that concurrency as defined in New Castle County's UDC will be met.

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

TB:km

Enclosure

cc: Michael Hoffman, Tarabicos Grosso, L.L.P.
J. Michael Riemann, Becker Morgan Group, Inc.
Christopher Duke, Becker Morgan Group, Inc.
Owen Robotino, New Castle County Department of Land Use
Pamela Steinebach, Assistant Director, Project Development North, DOTS
Todd Sammons, Assistant Director, Development Coordination
T. William Brockenbrough, Jr., County Coordinator, Development Coordination
Chris Sylvester, Traffic Studies Manager, Traffic, DOTS
Breanna Kovach, Group Engineer, Project Development North, DOTS
Claudy Joinville, Project Engineer, Development Coordination
Will Mobley, Johnson, Mirmiran & Thompson, Inc.

Table 1
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Glasgow Commons
 Prepared by Becker Morgan Group, Inc.

Signalized Intersection ¹	LOS per TOA		LOS per DelDOT ²	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 896 / Corporate Boulevard / GBC Drive				
2020 Existing	C (33.1)	C (24.0)	C (20.7)	C (23.2)
2023 without development	E (57.2)	E (67.4)	D (37.2)	D (54.0)
2023 with full development	E (76.9)	F (87.1)	E (55.4)	E (64.7)
2023 with full development and with DelDOT project #1 ³	---	---	D (46.9)	D (54.3)

¹ Numbers in parentheses are average seconds of delay per vehicle.

² In the review of the TOA, DelDOT considered the westbound right-turn lane on GBC Drive as a free-flow movement; therefore, it was removed from the analysis. DelDOT also used a cycle length of 150 seconds.

³ DelDOT project #1 consists of the addition of a northbound left-turn lane on Delaware Route 896.

Table 2
 PEAK HOUR LEVELS OF SERVICE (LOS)
 Glasgow Commons
 Prepared by Becker Morgan Group, Inc.

Signalized Intersection ¹	LOS per TOA		LOS per DelDOT ²	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Delaware Route 896 / Old Cooches Bridge Road				
2020 Existing	B (17.9)	C (30.3)	B (15.7)	C (21.9)
2023 without development	B (17.9)	C (31.3)	B (17.0)	C (25.3)
2023 with full development	C (25.9)	D (46.1)	C (22.8)	D (38.3)
2023 with full development and with DelDOT project #1 ³	---	---	C (22.8)	D (38.1)

¹ Numbers in parentheses are average seconds of delay per vehicle.

² In the review of the TOA, DelDOT considered the eastbound right-turn lane on Four Seasons Parkway and the westbound right-turn lane on Old Cooches Bridge Road as free-flow movements; therefore, they were removed from the analysis. DelDOT also used a cycle length of 150 seconds.

³ DelDOT project #1 consists of the addition of a northbound left-turn lane on Delaware Route 896 at Corporate Boulevard / GBC Drive.



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CAROLANN WICKS, P.E.
SECRETARY

May 5, 2008

Mr. John P. Janowski
Transportation Planner
New Castle County Department of Land Use
87 Reads Way
New Castle, DE 19720

Dear Mr. Janowski:

We are writing in response to your December 21, 2007, letter to Ms. Lisa B. Goodman of Young, Conaway, Stargatt & Taylor, LLP, regarding the W.L. Gore & Associates' Glasgow Commons plan (New Castle County Application 2005-1249-S, addressing Parcels B, D and F of Glasgow Commons). Ms. Goodman had written to the County requesting a traffic impact study (TIS) waiver for the proposed 1,635,139 square foot office/research and development complex under Section 40.11.121(C) of the County's Unified Development Code (UDC). Significantly, a TIS was completed for this development in December 2004 and we commented to your Department regarding it on July 6, 2005. A copy of our comments on the TIS is enclosed.

In your letter, you asked us if we "concur with the location of this proposed development in relation to a TID [Transportation Improvement District] or similarly identified area." You also stated that DelDOT must confirm that the UDC's requirement for transportation concurrency is met and mentioned that notes will have to be placed on the plan identifying off-site improvements and the timing of certificates of occupancy as related to the completion of the improvements.

As to whether we "concur with the location of this proposed development in relation to a TID [Transportation Improvement District] or similarly identified area," we do. This development is located in the area addressed by the US 40 Corridor Study and meets our criteria for a TIS waiver due to location within a TID, found in Section 2.3.4 of DelDOT's Standards and Regulations for Subdivision Streets and State Highway Access.

Our determination of this development's area of influence, for the purposes of UDC Section 40.11.210, is that it consists of the following intersections:



Mr. John P. Janowski

May 5, 2008

Page 2 of 7

- 1) Old Cooches Bridge Road (New Castle Road 408) / Parcel B Access
- 2) Old Cooches Bridge Road (New Castle Road 408) / Parcel D Access
- 3) Old Cooches Bridge Road / Cobble Creek Curve
- 4) Old Cooches Bridge Road / Eggerts Lane (New Castle Road 386)
- 5) Old Cooches Bridge Road / Phoenix Avenue
- 6) Delaware Route 896 / Old Cooches Bridge Road / Four Seasons Parkway
- 7) Delaware Route 896 / Four Seasons Plaza Entrance
- 8) Delaware Route 896 / Winsome Way
- 9) Delaware Route 896 / West Side Service Road
- 10) Delaware Route 896 / Corporate Boulevard / GBC Drive
- 11) GBC Drive / Parcel F Access
- 12) GBC Drive / Technology Drive
- 13) GBC Drive / Yoon Lane
- 14) Delaware Route 72 / GBC Drive
- 15) Delaware Route 72 / Reybold Road (New Castle Road 385)
- 16) Delaware Route 72 / Dayett Mill Road (New Castle Road 353)
- 17) Reybold Road / Persimmon Tree Drive
- 18) Delaware Route 72 / Broadleaf Drive
- 19) Delaware Route 72 / Rite-Aid Entrance

As you may recall, this area of influence was agreed upon in our February 20, 2008, meeting with Ms. Goodman, Mr. Christopher Williams of McMahon Associates and Mr. Jay Steimer of W.L. Gore & Associates (hereinafter Gore).

Of these 19 intersections, 17 of them are unsignalized intersections, controlled by Stop signs on the minor approaches, and can reasonably be expected to remain unsignalized. Our understanding of UDC Section 40.11.210 is that the level of service (LOS) criteria apply only to those intersections for which an overall LOS can be determined, which is to say signalized intersections and all-way stops. While most of the intersections listed above are addressed in the 2004 TIS, and we have recommendations for some of them based on the TIS, for concurrency purposes they do not need to be addressed here.

Turning to the two signalized intersections, from our review of the TIS for this project, we provide the following summary of LOS, in which the 2010 LOS reflect the expected development of the site and road improvements that we expected to be done by the applicant, DelDOT or others. This information was current in 2005 but it is now likely that neither development nor the road improvements will be complete by 2010.

Intersection	2003		Projected 2010	
	AM	PM	AM	PM
Delaware Rte 896 / Four Seasons Pkwy / Old Cooches Br Rd	D	D	E	F
Delaware Rte 896 / Corporate Blvd / GBC Dr	E	F	F	F

Pursuant to our discussions at the February meeting cited above, Mr. Williams has prepared a traffic report, dated March 17, 2008, examining conditions at these two intersections in 2011 with the subject development, and has determined what would be needed to achieve LOS D at these locations then during both peak hours. The improvements he has identified are as follows:

- 1) Route 896/ Four Seasons Pkwy / Old Cooches Bridge Road
 - a) Widen northbound Route 896 to provide a second left-turn lane
 - b) Widen southbound Route 896 to provide a second left-turn lane
 - c) Widen westbound Old Cooches Bridge Road to provide a second left-turn lane

- 2) Route 896 / Corporate Boulevard / GBC Drive
 - a) Widen northbound Route 896 to provide a second left-turn lane
 - b) Widen southbound Route 896 to provide a third through lane
 - c) Widen eastbound Corporate Boulevard to provide a second through lane
 - d) Widen westbound GBC Drive to provide a dedicated through lane

In reviewing his report, we find the analysis to be accurate, however, we identified one further improvement. For the right turn lane from westbound Old Cooches Bridge Road to northbound Route 896 to operate as proposed, it must be extended back along Old Cooches Bridge Road such that it will not be blocked by the queue of through vehicles. This is a relatively minor improvement but its omission draws attention to a larger issue that Mr. Williams does not mention in his report.

This project is grandfathered with regard to DelDOT's subdivision street and commercial entrance regulations. While Mr. Williams states Gore's agreement to comply with the new regulations, he does not explicitly mention that those regulations require that proposed turning lanes be designed accommodate the 95th percentile maximum queue. In other words, they must be long enough that there is a 95 percent probability that they will accommodate all queues occurring during the peak hour. Because this is a new requirement, we want Gore to clearly understand what is involved in designing to the new standards.

With the improvements discussed above, we find that the UDC's requirement for transportation concurrency would be met.

Mr. John P. Janowski

May 5, 2008

Page 4 of 7

There are, however, additional transportation improvements which we recommend that the County require of Gore in the interest of improving operational safety. We offer the following recommendations regarding off-site improvements and the timing of permits as related to the completion of those improvements. Items 1b, 2b, and 3b are taken from our letter of July 6, 2005. Items 1c, 1d, 2a and 3a are the improvements discussed above as being necessary for concurrency; they are listed again for your convenience. The remaining items are derived from conversations with the applicant. Further, and importantly, the applicant has entered into a Traffic Mitigation Agreement (TMA) with DelDOT (copy enclosed) and that agreement should also be referenced on the plan.

- 1) Prior to the issuance of the first building permit for Glasgow Commons Parcel B, D or F, the applicant shall:
 - a) Enter into a signal agreement with DelDOT for the intersection of Route 72 and GBC Drive, with such costs to be shared equitably with any other projects also obligated to contribute at the time the signal is installed. The agreement may include pedestrian signals, crosswalks, cameras and interconnection.
 - b) Enter into a signal agreement with DelDOT for the modification of the signal located at the intersection of Glasgow Avenue/Porter Road and Route 896, to accommodate changing the westbound approach from a left, shared left/through, right configuration to a left, through, right configuration, and changing the signal phasing to allow eastbound and westbound movements to run concurrently. The agreement should provide that costs be shared equitably with any other projects also obligated to contribute at the time the signal is installed. The agreement may include pedestrian signals, crosswalks, cameras, and interconnection.
 - c) Enter into a signal agreement with DelDOT for the intersection of Route 896 / Old Cooches Bridge Road / Four Seasons Parkway to address all modifications necessitated by item 2a below.
 - d) Enter into a signal agreement with DelDOT for the intersection of Route 896 / GBC Drive and Corporate Boulevard to address all modifications necessitated by item 3a below.
 - e) Assure the implementation of the travel demand management (TDM) Strategies outlined in the TMA with a financial guarantee, deposited with and held by DelDOT. The financial guarantee shall be provided by a bond, certified check, letter of credit, or other form of security in a manner and form approved by DelDOT, and shall be in the amount equal to 150% of the total anticipated costs

Mr. John P. Janowski
May 5, 2008
Page 5 of 7

of implementing the TDM strategies for the five years following the issuance of the certificate of occupancy, as described in the TMA.

- 2) Prior to the issuance of a Certificate of Occupancy for 10,000 square feet or more on either Parcel B or D, the applicant shall:
 - a) Provide one additional left turn lane each for the northbound, westbound and southbound approaches to the intersection of Route 896 / Old Cooches Bridge Road / Four Seasons Parkway, extend the westbound right turn lane to provide access to it from the back of the queue of westbound through vehicles and widen Old Cooches Bridge Road and Four Seasons Parkway as necessary to receive the additional left turn lanes.
 - b) Provide full unsignalized access at the Parcel B entrance, including separate left and right turn lanes into the Parcel B entrance, with a 5-foot shoulder maintained through the right turn lanes. If the necessary right-of-way (ROW) to complete this improvement is not acquired by DelDOT within 6 months of the applicant notifying DelDOT that they are ready to proceed, DelDOT shall issue an entrance permit for Parcel B, and applicant shall complete the improvement within 6 months (with adjustment for weather-related delays) of DelDOT's acquisition of the necessary ROW.
 - c) Construct a 10-foot multi-use path within a 15-foot wide ROW or permanent easement from the bus stop on Route 896 to the Parcel B entrance.
 - d) Improve Old Cooches Bridge Road between Route 896 and the Parcel B entrance to provide two 11-foot travel lanes with 5-foot shoulders, including replacing the existing substandard bridge on the east side of the Parcel D entrance and replacing the substandard guardrail between Route 896 and the Parcel D entrance. If additional ROW to complete this improvement is required and is not acquired by DelDOT within 6 months of the applicant notifying DelDOT that they are ready to proceed, DelDOT shall issue an entrance permit for Parcel B and D, as requested by the applicant, and the applicant shall complete the improvement within 6 months (with adjustment for weather-related delays) of DelDOT's acquisition of the necessary ROW.

The 10,000 square foot threshold was identified, in conversations with the applicant, as a threshold below which office/research and development could be considered to generate negligible traffic.

Mr. John P. Janowski

May 5, 2008

Page 6 of 7

- 3) Prior to the issuance of a Certificate of Occupancy for 10,000 square feet or more on Parcel F, the applicant shall:
 - a) Provide a second left turn lane from northbound Route 896 onto Corporate Boulevard, provide a third through lane on southbound Route 896 through the Route 896/GBC Drive/Corporate Boulevard intersection, provide a second through lane from eastbound Corporate Boulevard through the Route 896/GBC Drive/Corporate Boulevard intersection, provide a dedicated through lane on westbound GBC Drive through the Route 896/GBC Drive/Corporate Boulevard intersection, and widen GBC Drive and Corporate Boulevard as necessary to receive the additional through and left turn lanes. If the necessary ROW to complete this improvement is not acquired by DelDOT within 6 months of the applicant notifying DelDOT that they are ready to proceed, DelDOT shall issue an entrance permit for Parcel F, and the applicant shall complete the improvement within 6 months (with adjustment for weather-related delays) of DelDOT's acquisition of the necessary ROW.
 - b) Provide full unsignalized access at the Parcel F entrance, including separate left and right turn lanes into the Parcel F entrance, with a 5-foot shoulder maintained through the right turn lanes. If the necessary ROW to complete this improvement is not acquired by DelDOT within 6 months of the applicant notifying DelDOT that they are ready to proceed, DelDOT shall issue an entrance permit for Parcel F, and the applicant shall complete the improvement within 6 months (with adjustment for weather-related delays) of DelDOT's acquisition of the necessary ROW.
 - c) Improve GBC Drive from Route 72 to Route 896 to meet DelDOT local road standards, including 11 foot travel lanes with 5 foot shoulders and minimum geometric criteria. If additional ROW to complete this improvement is required and is not acquired by DelDOT within 6 months of the applicant notifying DelDOT that they are ready to proceed, DelDOT shall issue an entrance permit for Parcel F, as requested by the applicant, and the applicant shall complete the improvement within 6 months (with adjustment for weather-related delays) of DelDOT's acquisition of the necessary ROW.

The 10,000 square foot threshold was identified, in conversations with the applicant, as a threshold below which office/research and development could be considered to generate negligible traffic.

Mr. John P. Janowski
May 5, 2008
Page 7 of 7

In his report, Mr. Williams requested assurances, on Gore's behalf, that the studies provided and the improvements discussed in his report would be sufficient to satisfy the requirements of Sections 3.9 (Operational Analysis) and 3.10.2 (Off-Site Improvement Agreement) of DelDOT's Standards and Regulations for Subdivision Streets and State Highway Access and that no further analysis or improvements would be required. We will require no improvements at locations beyond those noted in this letter and no substantially new improvements at the noted locations. We reserve the right to require additional analysis in the design of the improvements discussed and to elaborate on the nature of those improvements. For example, at the two intersections discussed in detail above, Mr. Williams' report does not provide information on queue lengths. We will likely require additional Highway Capacity Software printouts and we reserve the right to require Synchro analyses at these intersections to verify that the turning lane lengths proposed in the design of the improvements will be sufficient.

Please contact me at (302) 760-2109 if you have questions concerning this correspondence.

Sincerely,



T. William Brockenbrough, Jr.
County Coordinator

TWB:km
Enclosures

cc: Ms. Lisa B. Goodman, Young, Conaway, Stargatt & Taylor
Mr. Chris Williams, McMahon Associates
Mr. Mark C. Ziegler, McBride & Ziegler
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