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

NICOLE MAJESKI
SECRETARY

August 19, 2021

Ms. Teresa Lord
Pennoni Associates, Inc.
Christiana Executive Campus
121 Continental Drive, Suite 207
Newark, DE 19713

Dear Ms. Lord:

The enclosed Traffic Impact Study (TIS) review letter for the proposed **Ching Mixed-Use Property** (Tax Parcels 5-00-152.00-01-37.00, 37.01, 44.00, 44.03, 45.00, 53.00, 67.00) 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 letter and concurs with the recommendations.

Sincerely,

Claudy Joinville
Project Engineer

CJ:km
Enclosures
cc with enclosures:

Mr. David L. Edgell, Office of State Planning Coordination
Mr. Steve Martin, Ching, LLC
Mr. Douglas D. Barry, Pennoni Associates, Inc.
Mr. Kris Connelly, Kent County Department of Planning Services
Mr. Jason Berry, Kent County Department of Planning Services
Mr. Mir Wahed, Johnson, Mirmiran & Thompson, Inc.
Ms. Joanne Arellano, Johnson, Mirmiran & Thompson, Inc.
DelDOT Distribution

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Brad Eaby, Deputy Attorney General
Pam Steinebach, Director, Planning
Shanté Hastings, Deputy Secretary
Mark Luszcz, Deputy Director, Traffic, DOTS
Michael Simmons, Assistant Director, Project Development South, DOTS
Todd Sammons, Assistant Director, Development Coordination
T. William Brockenbrough, Jr., County Coordinator, Development Coordination
Peter Haag, Chief Traffic Engineer, Traffic, DOTS
Matthew Lichtenstein, Central District Engineer, Central District
Erin Osborne, Central District Public Works Manager, Central District
Jared Kauffman, Service Development Planner, Delaware Transit Corporation
Tremica Cherry, Service Development Planner, Delaware Transit Corporation
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning
Wendy Polasko, Subdivision Engineer, Development Coordination
Olayiwola Okesola, Kent County Review Coordinator, Development Coordination
Joshua Schwartz, Kent County Subdivision Manager, Development Coordination
Mark Galipo, Traffic Engineer, Traffic, DOTS
Troy Brestel, Project Engineer, Development Coordination
Annamaria Furmato, Project Engineer, Development Coordination

August 17, 2021

Mr. Troy E. Brestel
Project Engineer
Delaware Department of Transportation
Development Coordination, Division of Planning
800 Bay Road
Dover, DE 19901

RE: Agreement No. 1945F
Project Number T202069012
Traffic Impact Study Services
Task 18A – Ching Mixed-Use Property

Dear Mr. Brestel:

Johnson, Mirmiran, and Thompson (JMT) has completed a review of the Traffic Impact Study (TIS) for the Ching Mixed-Use Property, which was prepared by Pennoni in November 2020. This review was assigned as Task Number 18A. The report is prepared in a manner generally consistent with DelDOT's *Development Coordination Manual*.

It should be noted, the land uses described in the TIS were updated from the land uses detailed in the DelDOT scoping letter dated March 10, 2020 and previously coordinated with DelDOT. As part of the DelDOT scoping letter, the development was originally proposed to consist of 140 units of multi-family low-rise houses, 29,200 square feet of retail space, a 4,400 square-foot variety store, a 6,100 square-foot convenience market with gas pumps, four (4) 2,500 square-foot fast-food restaurants totaling 10,000 square feet, a 4,100 square-foot high-turnover sit-down restaurant, a 100-room hotel, a 4,400 square-foot bar, and a 215- parking space / 3.48-acre water-slide. This review letter was compiled using the land uses proposed by the TIS as referenced in the following paragraph.

The TIS evaluates the impacts of a proposed mixed-use development in Kent County, Delaware. The development would be comprised of a 105-unit campground (35 cabins and 70 R/V camper spaces), 29,200 square feet of retail space, a 5,585 square foot convenience market with 16 fueling positions, three 2,500 square foot fast-food restaurants, a 5,000 square foot high-turnover sit-down restaurant, a 100-room hotel, a 7,500 square foot daycare, 3,200 square feet of office/store space, and a 215-parking space 1-slide park. The site is located on the western side of Delaware Route 1 and on both sides of Old Cemetery Road in Kent County. The subject property is on an approximately 55-acre assemblage. The subject land is currently split-zone as AR (Agricultural Residential), BG (General Business), and AC (Agricultural Conservation). The developer plans to rezone the AR portion to RMH (Residential Manufactured Home). Construction is anticipated to be completed in 2026.

The developer is proposing to realign Old Cemetery Road as well as relocate the Old Cemetery Road intersection with Delaware Route 1 approximately 1,100 feet north and create a new rights-

in/rights-out intersection. With the realignment of Old Cemetery Road, a service road would also be constructed which would connect Old Cemetery Road to Cicada Lane. The developer is proposing to remove the intersection of Cicada Lane with Delaware Route 1. It should be noted, these improvements are currently portrayed by the concept plans for the Corridor Capacity Preservation Program (CCPP) described later in this letter. Additionally, per correspondence from DelDOT, DelDOT is willing to discuss phased buildouts of the proposed uses and service road with the developer.

Directly west of the realigned Old Cemetery Road intersection with Delaware Route 1, two rights-in/rights-out access points are proposed along Old Cemetery Road. Further west on Old Cemetery Road a roundabout is proposed to provide access to the north and south side of the proposed development on Old Cemetery Road. A full movement access point is also proposed along Cicada Lane (Kent Road 403) to provide access to the proposed campground.

While the development is now proposing four access points, it should be noted the initial scoping letter dated March 10, 2020 described three access points for the site; two along Old Cemetery Road and one on Cicada Lane. This review letter was compiled using the four access points displayed by the most recent concept plans provided by Pennoni dated July 2021. In addition to the four access points described above, three minor access points are being proposed along the new roadway connection between the realigned Old Cemetery Road and Cicada Lane. Based on the low traffic anticipated to use these three entrances, they were not included in the TIS or review letter analysis.

There are several relevant and ongoing projects within the project limit. The DelDOT's *SR 1 South Frederica Grade Separated Intersection* (Contract No. T200812202) has been implemented within site limits in accordance with the CCPP. This substantially complete project had construction occurring from Spring 2016 to Fall 2019. To improve safety and capacity, the project removed the existing at grade-intersections of Delaware Route 1 with Frederica Road, Tub Mill Pond Road, and Milford Neck Road. The project also implemented additional interchanges and realigned adjacent roadways to Delaware Route 1.
https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T200812202

DelDOT's *Replacement of Bridge 2-008M on SR1* (Contract No. T202107202) will replace an existing partially corroded corrugated metal pipe culvert along Delaware Route 1 just north of Cicada Lane. The project is in the planning and design phase, and construction is expected to start and end in 2025.
https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T202107202

The site's location adjacent to Delaware Route 1 makes it subject to the policies of the Corridor Capacity Preservation Program (CCPP). The Program's primary goal is to manage and preserve the traffic capacity and safety of the existing highway. The Program was established in accordance with the provisions of Title 17, Section 145 of the Delaware Code. The strategy for Delaware Route 1 is to convert the corridor to a limited access highway. This conversion can be accomplished by proactively coordinating necessary road improvements and consolidating the number of existing conflict points (driveways access points) to mitigate the increase in vehicular traffic due to new developments.

The CCPP is currently updating their master plans relevant to the site location. These plans are subject to change and have no set implementation date. The CCPP long-term plan includes closing all median crossovers between the South Frederica and Thompsonville Road grade separated interchanges. A plan set dated June 2020 shows significant improvements adjacent to the site, which include converting the median between north/southbound Delaware Route 1 to be continuous, removing driveway access to Delaware Route 1, minimizing local road access to Delaware Route 1, and either realigning current local roads and/or proposing new local access roads adjacent and parallel to Delaware Route 1 to separate local traffic from the corridor. The plan set also depicts the realignment of Old Cemetery Road consistent with the improvements proposed by the developer.

Kent County is currently developing a master land use plan for the east and west sides of Delaware Route 1 near the South Frederica Grade Separated Interchange based on the Land Use Strategies Map of their 2018 Comprehensive Plan. In conjunction with this master planning process, DelDOT is developing a CCPP for Delaware Route 1 in this area. Both efforts will seek to improve safety and traffic flow in the area along Delaware Route 1 by identifying transportation linkages and a service road network necessary to support the proposed master land use plan.

Based on our review of the TIS, we have the following comments and recommendations. The table below shows intersections which exhibit level of service (LOS) deficiencies without the implementation of any physical roadway and/or traffic control improvements. This table incorporates the traffic analyses for Cases 2 and 3 conditions (with and without the development).

Intersection	LOS Deficiencies Occur			Case
	AM	PM	Saturday	
Delaware Route 1/ Old Cemetery Road (Kent Road 402)	X	X	X	Case 1 – 2020 Existing
	X	X	X	Case 2 – 2026 without development
	X	X	X	Case 3 – 2026 with development
Frederica Road (Kent Road 10)/ Southbound Delaware Route 1 Ramp			X	Case 1 – 2020 Existing
			X	Case 2 – 2026 without development
			X	Case 3 – 2026 with development

The existing and proposed unsignalized intersection of Delaware Route 1 and Old Cemetery Road exhibits LOS deficiencies during the AM, PM, and Saturday peak hours under existing and future conditions with and without the proposed development. These deficiencies occur along the eastbound Old Cemetery Road approach with delays of up to 347.6 seconds per vehicle and 95th percentile queues up to approximately 365 feet during the Saturday peak hour. To mitigate the LOS deficiencies, an acceleration lane can be implemented along southbound Delaware Route 1 for right turning vehicles from Old Cemetery Road. With the implementation of this acceleration lane, the right turning vehicles merging from Old Cemetery Road onto southbound Delaware Route 1 would operate at acceptable LOS. Therefore, we recommend that the developer construct

the acceleration lane along southbound Delaware Route 1. The developer should coordinate with DelDOT to identify the design speed utilized along Delaware Route 1 at this intersection to determine the minimum acceleration length.

The existing unsignalized intersection of Frederica Road with the Southbound Delaware Route 1 Ramp exhibits LOS deficiencies during the Saturday peak hour under existing and future conditions with and without the proposed development. These deficiencies occur along the Southbound Delaware Route 1 Ramp left turn movement with delays of up to 202.5 seconds per vehicle and 95th percentile queues up to approximately 115 feet during the Saturday peak hour. To mitigate the LOS deficiencies, a signal was also considered at this intersection while maintaining the existing intersection geometry. With the implementation of a signal, the intersection would operate with acceptable LOS. Therefore, we recommend that the developer enter into a traffic signal agreement for the intersection of Frederica Road and the Southbound Delaware Route 1 Ramp and coordinate with DelDOT on the implementation and equitable cost sharing of a traffic signal installation.

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

1. The developer should provide a bituminous concrete overlay to the existing travel lanes along Delaware Route 1, Old Cemetery Road, and Cicada Lane in the areas affected by the realignment of Old Cemetery Road or entrance plan constructions, including any auxiliary lanes, at DelDOT's discretion. The exact limits will be determined during the Entrance Plan review process. DelDOT should analyze the existing lanes' pavement section and recommend an overlay thickness to the developer's engineer, if necessary.

2. The developer should coordinate the realignment of Old Cemetery Road in coordination with DelDOT's Corridor Capacity Preservation Program (CCPP). The updates to any roadways as part of this realignment shall meet DelDOT's standards for their Functional Classification as found in Section 1.1 of the *Development Coordination Manual* and elsewhere therein. The following items should be implemented as part of the realignment:

    a. The developer should construct a new connector roadway between Old Cemetery Road and Cicada Lane. As part of this new connector roadway, the developer should remove the Cicada Lane intersection with Delaware Route 1. The right turn lane along southbound Delaware Route 1 accessing the existing Cicada Lane should also be removed. Any phased buildouts of the new connector roadway and of the proposed land uses should be coordinated with DelDOT Development Coordination Section during the Entrance Plan Review process

    b. The developer should relocate the Old Cemetery Road intersection with Delaware Route 1 approximately 1,100 feet north of its existing location. The new intersection should be constructed as a rights-in/rights-out access along Delaware

Route 1 for the realigned Old Cemetery Road. The new intersection to be consistent with the lane configurations shown in the table below.

Approach	Current Configuration	Proposed Configuration
Northbound Delaware Route 1	Two through lanes	Two through lanes
Southbound Delaware Route 1	Two through lanes	Two through lanes and a channelized right turn lane
Eastbound Site Entrance	Approach does not exist	One channelized right-turn lane with acceleration lane onto southbound Delaware Route 1

Based on DelDOT's *Development Coordination Manual* and *Road Design Manual* and assuming the provided radius is greater than 50 feet, the recommended minimum storage length along southbound Delaware Route 1 is 365 feet (excluding taper) for the right turn lane. The calculated queue lengths from the HCS analysis can be accommodated within the recommended storage length. In addition, the developer should provide a minimum 1,140 foot acceleration lane with a 300 foot parallel taper per Chapter 10 of AASHTO's *Policy on Geometric Design of Highways and Streets* (Green Book). The developer should submit a plan to DelDOT's Development Coordination section depicting the design of the intersection.

c. An overhead variable message sign (VMS) protected by guardrail and an I-beam guide sign for the Thompsonville Road Exit is located along the southbound Delaware Route 1 site frontage. The developer will be required to fund all associated costs due to impacts to the VMS and I-beam guide sign. The developer should coordinate with DelDOT Development Coordination section during the entrance plan review process to determine the exact cost.

d. With the relocation of the Old Cemetery Road, the developer should close the existing median opening along Delaware Route 1 at the existing Old Cemetery Road intersection. The associated left turn lanes for this median opening should also be closed.

e. For safety purposes, the developer should close the median along Delaware Route 1 at the new intersection created when the Old Cemetery Road is realigned as part of Item # 2b mentioned above. The associated left turn lanes to northbound and southbound Delaware Route 1 vehicles should also be closed.

f. Improvements or closures to median openings along Delaware Route 1 north and south of the existing and realigned Old Cemetery Road locations may be needed. The developer should coordinate with DelDOT's Development Coordination section during the Entrance Plan review to identify the needed improvements/closures.

g. The developer will be required to undertake a public process for any closures to median openings. The developer should coordinate with DelDOT's Development Coordination section regarding that process.

h. A narrow, barrier-type median should be provided along the realigned Old Cemetery Road between Delaware Route 1 and the proposed roundabout to discourage left turns and through movements at the rights-in/rights-out entrances.

3. The developer should construct a northerly right-in/right-out site entrance access along Old Cemetery Road for the proposed Ching Mixed-Use Property to be consistent with the lane configurations shown in the table below.

Approach	Current Configuration	Proposed Configuration
Eastbound Old Cemetery Road	One through lane	One through lane
Westbound Old Cemetery Road	One through lane	One through lane and one channelized right-turn lane
Southbound Site Entrance	Approach does not exist	One channelized right-turn lane

Based on DelDOT's *Development Coordination Manual,* the recommended minimum storage length along Old Cemetery Road is 290 feet (excluding taper) on the westbound approach right turn lane. The calculated queue lengths from the HCS analysis can be accommodated with the recommended storage length. Design deviations may be submitted to DelDOT if the recommended storage lengths cannot be provided.

4. The developer should construct a southerly right-in/right-out site entrance access along Old Cemetery Road for the proposed Ching Mixed-Use Property to be consistent with the lane configurations shown in the table below.

Approach	Current Configuration	Proposed Configuration
Eastbound Old Cemetery Road	Approach does not exist	One through lane and one channelized right-turn lane
Westbound Old Cemetery Road	Approach does not exist	One through lane
Northbound Site Entrance	Approach does not exist	One channelized right-turn lane

Based on DelDOT's *Development Coordination Manual,* the recommended minimum storage length along Old Cemetery Road is 290 feet (excluding taper) on the eastbound approach right turn lane. The calculated queue lengths from the HCS analysis can be accommodated with the recommended storage length. Design deviations may be submitted to DelDOT if the recommended storage lengths cannot be provided.

5. The developer should construct a single lane roundabout access point along Old Cemetery Road for the proposed Ching Mixed-Use Property to be consistent with the lane configuration shown in the table below.

Approach	Current Configuration	Proposed Configuration
Eastbound Old Cemetery Road	Approach does not exist	One shared through/left turn/right turn lane
Westbound Old Cemetery Road	Approach does not exist	One shared through/left turn/right turn lane
Northbound Site Entrance	Approach does not exist	One shared through/left turn/right turn lane
Southbound Site Entrance	Approach does not exist	One shared through/left turn/right turn lane

The developer's design should follow *NCHRP: Report 672 2ne Edition – Roundabouts: An Information Guide,* DelDOT's *Road Design Manual*, and DelDOT's *Design Guidance Memorandum Number 1-26* for roundabouts. The roundabout should also be designed to accommodate pedestrians and bicyclists as described in Item # 9. Additionally, lighting at the roundabout should be evaluated per DelDOT's *Traffic Lighting Policy*. The developer should submit a plan to DelDOT's Development Coordination and other pertinent sections depicting the roundabout design. This plan should be submitted as early in the plan review process as possible.

6. The developer should construct a full access unsignalized access point along Cicada Lane for the proposed Ching Mixed-Use Property to be consistent with the lane configurations shown in the table below.

Approach	Current Configuration	Proposed Configuration
Eastbound Cicada Lane	One through lane	One shared through/left turn lane
Westbound Cicada Lane	One through Lane	One shared through/right turn lane
Southbound Site Entrance	Approach does not exist	One shared left turn/right turn lane

7. The developer should enter into a traffic signal agreement for the intersection of Frederica Road and the Southbound Delaware Route 1 Ramp. The developer should coordinate with DelDOT on the implementation and equitable cost sharing of a traffic signal installation. At least one other developer, Meding Property Development, is also planning to participate in this agreement. At DelDOT's discretion, the developer may contribute to the Traffic Signal Revolving Fund in lieu of a traffic signal agreement.

8. The Water Park is separated from the main development by Tax Parcel Nos. 5-00-152.00-01-38.00 and 39.00. The Water Park should be accessed only by way of the service road. The development rights to the Water Park may be purchased by the developer if subsequently approved by DelDOT, in its sole discretion. The purchase prices will be determined by an appraisal obtained by DelDOT at its sole cost and expense. The developer may elect to purchase the development rights at the appraised value, in its sole discretion. If DelDOT approves the sale of the development rights described above and the developer and DelDOT agree on the purchase, the development rights shall be conveyed from DelDOT to the developer when the needed parcel easements, satisfactory to DelDOT, are signed and recorded. The conveyance of any development rights shall be subject to a denial of access to Delaware Route 1. No direct access from Delaware Route 1, permanent or temporary, shall be permitted.

9. The following bicycle, pedestrian, and transit improvements should be included:

    a. A minimum of fifteen-foot wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT along Old Cemetery Road, and Cicada Lane site frontages. Within the easement, the developer should construct a ten-foot wide shared-use path (SUP). The SUP should be designed to meet current AASHTO and ADA standards. A minimum five-foot setback should be maintained from the edge of the pavement to the SUP. If feasible, the SUP should be placed behind utility poles and street trees should be provided within the buffer area. The developer should coordinate with DelDOT's Development Coordination Section during the plan review process to identify the exact location of the SUP.

    b. An internal connection be provided from the SUP along Old Cemetery Road, and Cicada Lane into the site.

    c. SUP should be provided to create a continuous network connection for bicyclists and pedestrians between the campground and water park being developed as part of the site.

    d. Where internal sidewalks are located alongside of parking spaces, a buffer, physical barrier, or signage should be added to eliminate vehicular overhang onto the sidewalk.
    e. Internal bicycle racks should be provided for the commercial uses.

    f. ADA compliant curb ramps and marked crosswalks should be provided along all the site entrances.

    g. Minimum five-foot wide bicycle lanes should be incorporated in the right turn lanes and shoulder along the eastbound Old Cemetery Road approach to Site Entrance A and the westbound Old Cemetery Road approach to Site Entrance B.

h. The realignment of Old Cemetery Road as well as the roundabout providing site access along Old Cemetery Road shall be constructed to DelDOT and FHWA standards, including on-road and separate facilities for bicycles. This includes, but is not limited to, shoulders for bicycle use along the realigned roadway, a 10-foot wide shared-use path along the entirety of the roundabout, bicycle slip ramps as well as bicycle and pedestrian crossings at each leg of the roundabout. Each leg of the roundabout shall also include splitter islands for pedestrian refuge.

i. Coordinate with DART the possibility of a bus stop, either along the roadway adjacent to the site or internally. If bus stops will be provided with a shelter, a concrete pad should also be installed for two U-bike racks per DelDOT standards.

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DelDOT's Plan Review process.

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 https://www.deldot.gov//Publications/manuals/de_mutcd/index.shtml. For any additional information regarding the work zone impact and mitigation procedures during construction, please contact Mr. Don Weber, Assistant Director for Traffic Operations and Management. Mr. Weber can be reached at (302) 659-4651 or by email at Don.Weber@delaware.gov.

Additional details on our review of the TIS are attached. Please contact me at (302) 266-9600 if you have any questions concerning this review.

Sincerely,
Johnson, Mirmiran, and Thompson, Inc.

Mir Abe Wahed,
Mir Wahed, P.E., PTOE

cc: Joanne M. Arellano, P.E., PTOE
Nathan Rahaim, P.E.

Enclosure

General Information

Report date: November 25, 2020
Prepared by Pennoni
Prepared for: Ching, LLC
Tax Parcels: 5-00-152.00-01-37.00, 37.01, 44.00, 44.03, 45.00, 53.00, 67.00
Generally consistent with DelDOT's *Development Coordination Manual (DCM)*: Yes

Project Description and Background

Description: The proposed development is a mixed-use development consisting of a 105 unit campground (35 cabins and 70 R/V camper spaces), 29,200 square feet of retail space, 5,585 square foot convenience market with 16 fueling station, three 2,500 square foot fast-food restaurants, 5,000 square foot high-turnover sit-down restaurant, 100-room hotel, 7,500 square foot daycare, 3,200 square feet of office/store space, and a 215-parking space water slide park.

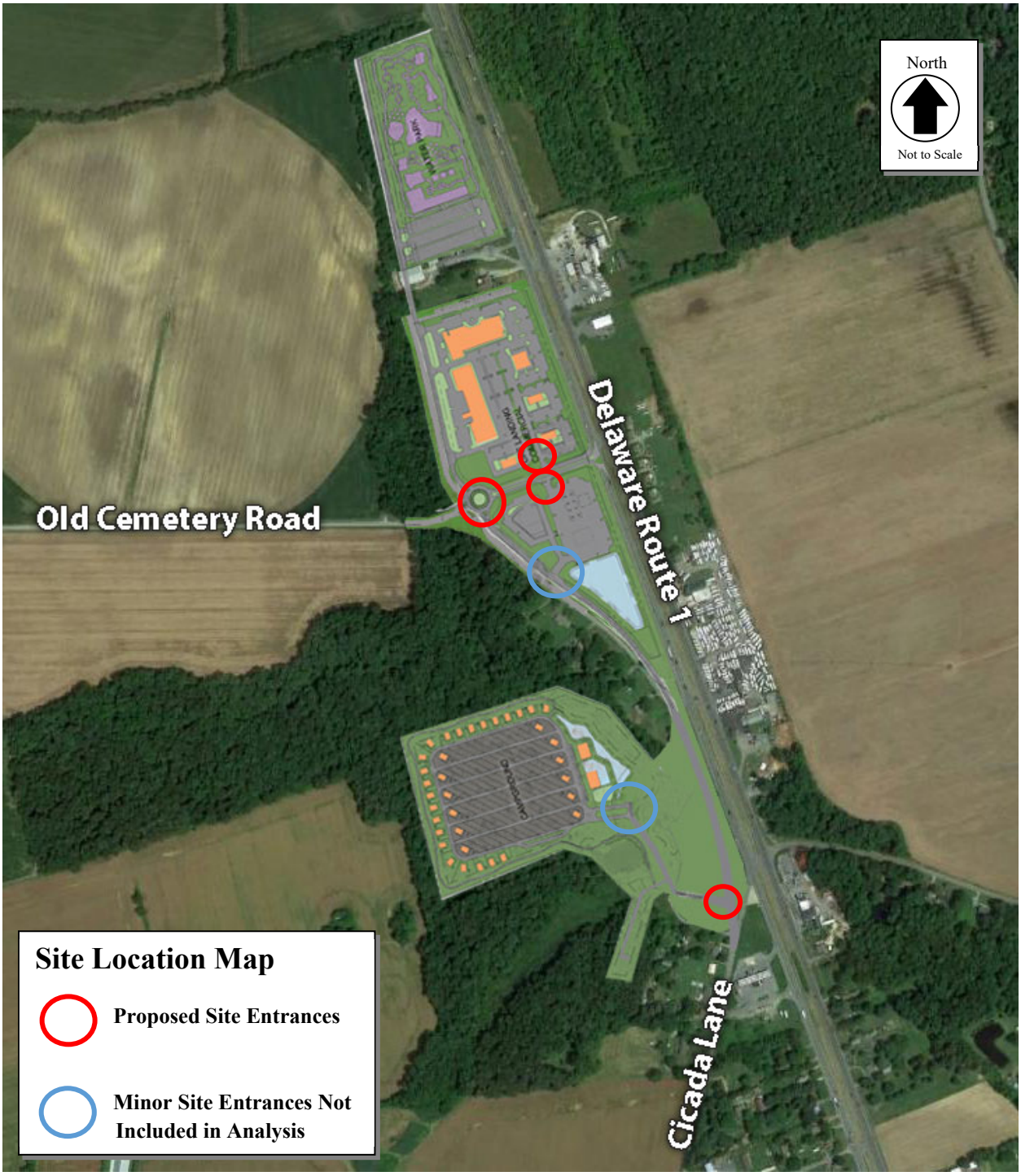
It should be noted, the above description was provided by the TIS report dated 11/25/2020 and was used when preparing this review letter. These land uses were updated from the land uses detailed in the DelDOT scoping letter dated 3/10/2020. As part of the DelDOT scoping letter, the development was originally proposed to consist of 140 units of multi-family low-rise houses, 29,200 square feet of retail space, a 4,400 square-foot variety store, a 6,100 square-foot convenience market with gas pumps, four (4) 2,500 square-foot fast-food restaurants totaling 10,000 square feet, a 4,100 square-foot high-turnover sit-down restaurant, a 100-room hotel, a 4,400 square-foot bar, and a 215- parking space / 3.48-acre water-slide park

Location: The subject site is located west of Delaware Route 1 north and south of Old Cemetery Road (Kent Road 402), in Kent County Delaware.
Amount of Land to be developed: an approximately 55.0-acre assemblage of parcels
Land Use approval(s) needed: Entrance Plan and Rezoning of AR portion to RMH.
Proposed completion date: 2026
Proposed access locations: The initial scoping letter dated March 10, 2020 calls out three access point; two along Old Cemetery Road and one on Cicada Lane. However, the most recent plans, dated October 30, 2020, display four. The developer is proposing to realign Old Cemetery Road to intersect with Delaware Route 1 approximately 1100 feet north of the current location and creating a rights-in/rights-out intersection. This realignment is in accordance with the Corridor Capacity Preservation Program discussed in subsequent sections of this review letter. Directly west of this access point, two right-in/right-out and access points are proposed along Old Cemetery Road. Further west on Old Cemetery Road a roundabout is proposed to provide access to the north and south side of the proposed development on Old Cemetery Road. A full movement access point is also proposed along Cicada Lane (Kent Road 403).

Daily Traffic Volumes:

- 2019 Average Annual Daily Traffic on Delaware Route 1: 44,511
- 2019 Average Annual Daily Traffic on Cemetery Road (Kent Road 402): 134
- 2019 Average Annual Daily Traffic on Cicada Lane (Kent Road 403): 898

Site Map



**Graphic is an approximation based on the Overall Concept Plan prepared by Pennoni dated July 2021*

Relevant and On-going Projects

There are several relevant and ongoing projects within the project limit. The DelDOT's *SR 1 South Frederica Grade Separated Intersection* (Contract No. T200812202) has been implemented within site limits in accordance with the CCPP. This substantially complete project had construction occurring from Spring 2016 to Fall 2019. To improve safety and capacity, the project removed the existing at grade-intersections of Delaware Route 1 with Frederica Road, Tub Mill Pond Road, and Milford Neck Road. The project also implemented additional interchanges and realigned adjacent roadways to Delaware Route 1.
https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T200812202

DelDOT's *Replacement of Bridge 2-008M on SR1* (Contract No. T202107202) will replace an existing partially corroded corrugated metal pipe culvert along Delaware Route 1 just north of Cicada Lane. The project is in the planning and design phase, and construction is expected to start and end in 2025.
https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T202107202

The site's location adjacent to Delaware Route 1 makes it subject to the policies of the Corridor Capacity Preservation Program (CCPP). The Program's primary goal is to manage and preserve the traffic capacity and safety of the existing highway. The Program was established in accordance with the provisions of Title 17, Section 145 of the Delaware Code. The strategy for Delaware Route 1 is to convert the corridor to a limited access highway. This conversion can be accomplished by proactively coordinating necessary road improvements and consolidating the number of existing conflict points (driveways access points) to mitigate the increase in vehicular traffic due to new developments.

The CCPP is currently updating their master plans relevant to the site location. These plans are subject to change and have no set implementation date. The CCPP long-term plan includes closing all median crossovers between the South Frederica and Thompsonville Road grade separated interchanges. A plan set dated June 2020 shows significant improvements adjacent to the site, which include converting the median between north/southbound Delaware Route 1 to be continuous, removing driveway access to Delaware Route 1, minimizing local road access to Delaware Route 1, and either realigning current local roads and/or proposing new local access roads adjacent and parallel to Delaware Route 1 to separate local traffic from the corridor. The plan set also depicts the realignment of Old Cemetery Road consistent with the improvements proposed by the developer.

Kent County is currently developing a master land use plan for the east and west sides of Delaware Route 1 near the South Frederica Grade Separated Interchange based on the Land Use Strategies Map of their 2018 Comprehensive Plan. In conjunction with this master planning process, DelDOT is developing a CCPP for Delaware Route 1 in this area. Both efforts will seek to improve safety and traffic flow in the area along Delaware Route 1 by identifying transportation linkages and a service road network necessary to support the proposed master land use plan.

Livable Delaware
(Source: Delaware Strategies for State Policies and Spending, 2020)

Location with respect to the Strategies for State Policies and Spending Map of Delaware:
The proposed development is located within the Investment Level 3, Level 4, and Out of Play area.

Investment Level 3

Investment Level 3 Areas generally fall into two categories. The first category covers lands that are in the long-term growth plans of counties or municipalities where development is not necessary to accommodate expected population growth during a five-year planning period (or longer). In these instances, development in Investment Level 3 may be least appropriate for new growth and development in the near term. The second category includes lands that are adjacent to or intermingled with fast-growing areas within counties or municipalities that are otherwise categorized as Investment Levels 1 or 2. Environmentally sensitive features, agricultural-preservation issues, or other infrastructure issues most often impact these lands. In these instances, development and growth may be appropriate in the near term, but the resources on the site and in the surrounding area should be carefully considered and accommodated by state agencies and local government with land-use authority. Investment Level 3 is further characterized by areas with new development separated from existing development by a substantial amount of vacant land that is not contiguous with existing infrastructure, areas that are experiencing some development pressure, areas with existing but disconnected development, and possible lack of adequate infrastructure.

The state will consider investing in infrastructure within Investment Level 3 Areas once the Investment Level 1 and 2 Areas are substantially built out, or when the infrastructure or facilities are logical extensions of existing systems and deemed appropriate to serve a particular area. The priorities in the Level 3 Areas are for DelDOT to focus on regional movements between towns and other population centers. DelDOT also supports the development and implementation of Transportation Improvement Districts in Investment Level 3 areas. Local roadway improvements will be made by developers and property owners as development occurs. Lower priority is given to transportation system–capacity improvements and transit-system enhancements.

Investment Level 4

Delaware's Investment Level 4 Areas are rural in nature and are where the bulk of the state's open space/natural areas and agricultural industry is located. These areas contain agribusiness activities, farm complexes, and small settlements. They typically include historic crossroads or points of trade, often with rich cultural ties. Delaware's Investment Level 4 Areas are also the location of scattered residential uses, featuring almost entirely single-family detached residential structures. Delaware's Investment Level 4 Areas also include many unincorporated communities, typically with their own distinctive character and identity. Investment Level 4 Areas depend on a transportation system primarily of secondary roads linked to roadways used as regional thoroughfares for commuting and trucking.

It is the state's intent to discourage additional urban and suburban development in Investment Level 4 Areas unrelated to agriculture and to the areas' needs. In Investment Level 4 Areas, the state's investments and policies should retain the rural landscape and preserve open spaces and farmlands, support farmland-related industries, and establish defined edges to more concentrated development. The focus for the Level 4 Areas will be to preserve and maintain existing facilities in safe working order, corridor-capacity preservation, and the enhancement of transportation facilities to support agricultural business. The lowest priority is given to transit system enhancements.

Out of Play

These lands, which are not available for development, include publicly owned lands, private conservation lands, lands for which serious legal and/or environmental constraints on development are identified, and lands in some form of permanent open-space protection. These areas are generally not expected to be the location of private development activities such as residential subdivisions or commercial shopping centers. However, government entities, private property owners, and conservation organizations are still expected to invest in these areas for the purposes in which they were acquired and preserved. There may also be times when private property owners could be able to build or redevelop on these lands in accordance with State and local environmental and land use regulations.

Proposed Development's Compatibility with Livable Delaware:
The proposed site would be in an Investment Level 3 and 4 area. According to Livable Delaware, the state's investments and policies dictate that any development should retain the rural landscapes and preserve open space in Level 4 areas. The northern-most portion of the site containing the proposed waterpark is in an Out of Play area, for which serious legal and/or environmental constraints on development are identified. The remaining portion of the site would be in Investment Level 3. Per Livable Delaware, these areas may be desirable for a variety of housing types, styles and densities in conjunction with local government comprehensive plans. Therefore, the proposed development is generally inconsistent with the 2020 update of the Livable Delaware "Strategies for State Policies and Spending."

Comprehensive Plans
(Source: Kent County September 2018)

Kent County Comprehensive Plan:
Per the *Kent County Comprehensive Plan Future Land Use Map 7B,* the proposed development is in an area designated for highway commercial and low-density residential use. Per the *Kent County Comprehensive Plan Land Use Strategy Map 7C* the proposed development is in an area at the edge of the growth zone but otherwise undesignated.

Proposed Development's Compatibility with the Kent County Comprehensive Plan:
Per the *Kent County Comprehensive Plan Future Land Use Map 7B*, the proposed development is in an area designated for highway commercial and low-density residential use, with highway commercial supporting a broad range of commercial activities, a variety of retail stores and related activities which serve the community and low density residential supporting agriculture and

supporting uses and single family detached homes. Per the *Kent County Comprehensive Plan Land Use Strategy Map 7C,* the proposed development is also in an area at the edge of the growth zone but otherwise undesignated, with recommendation for development in such locations to preserve the rural character of the county and cluster design while maintaining low density development. The site is reasonably compliant with the goals of highway commercial development but at odds with the goals of low-density residential land use and its land strategy designations, therefore the proposed development is generally inconsistent with the *Kent County September 2018 Comprehensive Plan.*

Trip Generation

The trip generation for the proposed development was determined by using the comparable land use and rates/equations contained in the *Trip Generation, 10th Edition: An ITE Informational Report*, published by the Institute of Transportation Engineers (ITE) for ITE Land Use Codes 310 (Hotel), 416 (Campground/ Recreational Vehicle Park), 482 (Water Slide Park), 565 (day Care Center), 710 (General Office Building), 820 (Shopping Center), 932 (High-Turnover (Sit-Down) Restaurant), 934 (Fast Food Restaurant with Drive through), and 960 (Super Convenience Market/Gas Station). The trip generation was previously approved by DelDOT during the PTIS review. However, the land uses of the site have been updated since the original DelDOT scoping letter dated 3/10/2020. Based on JMT's review of the trip generation calculations, no updates were found to be needed.

Table 1
Ching Mixed Use Development Trip Generation

	Weekday Daily	**Weekday AM Peak Hour**			**Weekday PM Peak Hour**			**Saturday Midday Peak Hour**		
	Total	In	Out	Total	In	Out	Total	In	Out	Total
Total Trips	**13,260**	**629**	**562**	**1,191**	**552**	**576**	**1,128**	**631**	**657**	**1,288**
Internal Trips	-2,270	-22	-22	-44	-110	-110	-220	-129	-129	-258
External Trips	10,990	607	540	1147	442	466	908	502	528	1030
Pass-By-Trips	-3,077	-263	-261	-524	-220	-209	-429	-209	-199	-408
Net New Trips	**7,913**	**344**	**279**	**623**	**222**	**257**	**479**	**293**	**329**	**622**

Overview of TIS

Intersections examined:

1. North Site Entrance A/Old Cemetery Road (Kent Road 402)
2. South Site Entrance B/Old Cemetery Road (Kent Road 402)

2a. Roundabout Site Entrance/Old Cemetery Road (Kent Road 402)

3. Site Entrance C/Cicada Lane (Kent Road 403)
4. Tub Mill Pond Road (Kent Road 119)/Old Cemetery Road (Kent Road 402)
5. Delaware Route 1/Old Cemetery Road (Kent Road 402)
6. Tub Mill Pond Road (Kent Road 119)/Fork Landing Road (Kent Road 390)
7. Frederica Road (Kent Road 10)/Tub Mill Pond Road (Kent Road 119)/Milford Neck Road (Kent Road 120) (
8. Frederica Road (Kent Road 10)/Southbound Delaware Route 1 Ramps
9. Milford Neck Road (Kent Road 120)/Northbound Delaware Route 1 Ramps
10. Tub Mill Pond Road (Kent Road 119)/Bowman Road (Kent Road 401)/Blue Jay Lane (Kent Road 392)
11. Tub Mill Pond Road (Kent Road 119)/Cicada Lane (Kent Road 403)
12. Tub Mill Pond Road (Kent Road 119)/Thompsonville Road (Kent Road 19)/Church Hill Road (Kent Road 404)
13. Thompsonville Road (Kent Road 19)/Southbound Delaware Route 1
14. Thompsonville Road (Kent Road 19)/Northbound Delaware Route 1

Conditions examined:

1. Case 1 – Existing (2020)
2. Case 2 – 2026 without development
3. Case 3 – 2026 with development

Committed Developments considered:

1. Sophia's Landing (a.k.a. Erb Property/a.k.a. Harbourtown) - 169 single-family detached and 166 townhouses.
2. Asbury Square - 42,500 square-foot shopping center, 12,800 square-feet of high turnover sit-down restaurants, 4,768 square-foot convenience store with gas pumps, and 98-room hotel.
3. Frederica Park-and-Ride - 160-parking space Park-and-Ride and 9,800 square-foot medical office building.

Peak hours evaluated: Weekday Morning, Weekday Evening, and Summer Saturday Midday peak hours

Intersection Descriptions

1. **North Site Entrance A/Old Cemetery Road (Kent Road 402)**
   Type of Control: Proposed rights-in/rights-out stop controlled
   Eastbound Approach: (Old Cemetery Road) Proposed one through lane
   Westbound Approach: (Old Cemetery Road) Proposed one shared through/right-turn lane.
   Southbound Approach (North Entrance A) Proposed one channelized right-turn lane, stop controlled.

   Note: The TIS is proposing to realign Old Cemetery Road and intersect Delaware Route 1 approximately 1,100 feet north of its current location.

2. **South Site Entrance B/Old Cemetery Road (Kent Road 402)**Error! Bookmark not defined.
   Type of Control: Proposed rights-in/rights-out stop controlled
   Eastbound Approach: (Old Cemetery Road) Proposed one shared through/right-turn lane.
   Westbound Approach: (Old Cemetery Road) Proposed one through lane
   Northbound Approach (South Site Entrance B) Proposed one channelized right-turn lane, stop controlled.

2a. Roundabout Site Entrance/Old Cemetery Road (Kent Road 402) Error! Bookmark not defined.
   Type of Control: Proposed Single Lane Roundabout
   Eastbound Approach: (Old Cemetery Road) Proposed one shared-left-turn/through/right-turn lane.
   Westbound Approach: (Old Cemetery Road) Proposed one shared left-turn/through/right-turn lane.
   Northbound Approach: (Site Entrance) Proposed one shared left-turn/through/right-turn lane.
   Southbound Approach (Site Entrance) Proposed one shared left-turn/through/right-turn lane.

3. **Site Entrance C/Cicada Lane (Kent Road 403)**
   Type of Control: Proposed two-way stop-controlled intersection (T-Intersection)
   Eastbound Approach: (Cicada Lane) Existing one through lane, proposed one shared left-turn/through lane.
   Westbound Approach: (Cicada Lane) Existing one through lane, proposed one shared through/right-turn lane.

Southbound Approach: (Site Entrance) Proposed one shared left-turn/right-turn lane, stop controlled

4. **Tub Mill Pond Road (Kent Road 119) / Old Cemetery Road (Kent Road 402)**Error! Bookmark not defined.
   Type of Control: Existing two-way stop-controlled intersection (T-Intersection)
   Westbound Approach: (Old Cemetery Road) Existing one shared left-turn/right-turn lane, stop controlled.
   Northbound Approach: (Tub Mill Pond Road) Existing one shared through/right-turn lane.
   Southbound Approach: (Tub Mill Pond Road) Existing one shared left-turn/through lane.

5. **Delaware Route 1 / Old Cemetery Road (Kent Road 402)**Error! Bookmark not defined.
   Type of Control: Existing two-way stop-controlled intersection (T-Intersection)
   Eastbound Approach: (Old Cemetery Road) Existing one shared left-turn/through/right-turn lane, stop controlled.
   Northbound Approach: (Delaware Route 1) Existing one-left-turn lane and two through lanes.
   Southbound Approach: (Delaware Route 1) Existing one-left-turn lane, two through lanes and one right-turn lane.

6. **Tub Mill Pond Road (Kent Road 119) / Fork Landing Road (Kent Road 390)**
   Type of Control: Existing two-way stop-controlled intersection (T-Intersection)
   Eastbound Approach: (Fork Landing Road) Existing one shared left-turn/right-turn lane, stop controlled.
   Northbound Approach: (Tub Mill Pond Road) Existing one shared left-turn/through lane.
   Southbound Approach: (Tub Mill Pond Road) Existing one shared through/right-turn lane.

7. **Frederica Road (Kent Road 10) / Tub Mill Pond Road (Kent Road 119) / Milford Neck Road (Kent Road 120)**
   Type of Control: Existing two-way stop-controlled intersection (T-Intersection)
   Westbound Approach: (Milford Neck Road) Existing one left-turn lane and one channelized right-turn lane, stop controlled.
   Northbound Approach: (Tub Mill Pond) Existing one through lane and one right-turn lane.

Southbound Approach: (Federica Road) Existing one left-turn lane and one through lane.

8. Frederica Road (Kent Road 10) / Southbound Delaware Route 1 Ramps

Type of Control: Existing two-way stop-controlled intersection (T-Intersection)

Westbound Approach: (Delaware Route 1 Ramp) Existing one left-turn lane, and one channelized right-turn lane, stop controlled.

Northbound Approach: (Federica Road) Existing one through lane and one right-turn lane, yield control

Southbound Approach: (Federica Road) Existing one left-turn lane, and one through lane.

9. Milford Neck Road (Kent Road 120) / Northbound Delaware Route 1 Ramps

Type of Control: Existing two-way stop-controlled intersection (T-Intersection)

Eastbound Approach: (Milford Neck road) Existing one left-turn lane, and one channelized right-turn lane, stop controlled.

Northbound Approach: (Milford Neck Road) Existing one left-turn lane and one through lane.

Southbound Approach: (Delaware Route 1 Ramp) Existing one through lane and one channelized right-turn lane, yield controlled.

10. Tub Mill Pond Road (Kent Road 119)/ Bowman Road (Kent Road 401) / Bay Jay Lane (Kent Road 392)

Type of Control: Existing two-way stop-controlled intersection

Eastbound Approach: (Blue Jay Lane) Existing one shared left-turn/through/right-turn lane, stop controlled.

Westbound Approach: (Tub Mill Pond Road) Existing one shared left-turn/through/right-turn lane, yield control.

Northbound Approach (Bowman Road) Existing one shared left-turn/through/right-turn lane, stop controlled.

Southbound Approach: (Tub Mill Pond Road) Existing one shared left-turn/through/right-turn lane.

11. Tub Mill Pond Road (Kent Road 119)/ Cicada Lane (Kent Road 401)

Type of Control: Existing two-way stop-controlled intersection (T-Intersection)

Westbound Approach: (Cicada Lane) Existing one shared left-turn/right-turn lane, stop controlled.

Northbound Approach: (Tub Mill Pond Road) Existing one shared through/right-turn lane.

Southbound Approach: (Tub Mill Pond Road) Existing one shared left-turn/through lane.

12. Tub Mill Pond Road (Kent Road 119)/ Thompsonville Road (Kent Road 19)/ Church Hill Road (Kent Road 404)

Type of Control: Existing two-way stop-controlled intersection

Eastbound Approach: (Church Hill Road) Existing one shared left-turn/through/right-turn lane.

Westbound Approach: (Thompsonville Road) Existing one shared left-turn/through lane and one channelized right-turn lane.

Northbound Approach: (Tub Mill Pond Road) Existing one shared left-turn/through/right-turn lane, stop controlled.

Southbound Approach: (Tub Mill Pond Road) Existing one shared left-turn/through/right-turn lane, stop controlled.

13. Thompsonville Road (Kent Road 19) / Southbound Delaware Route 1 Ramps

Type of Control: Existing two-way stop-controlled intersection

Eastbound Approach: (Thompsonville Road) Existing one left-turn lane, one through lane and one channelized right-turn lane.

Westbound Approach: (Thompsonville Road) Existing one left-turn lane and one shared through/right-turn lane.

Northbound Approach: (Delaware Route 1 Ramp) Existing one shared left-turn/through lane and one channelized right-turn lane, stop controlled.

Southbound Approach: (Driveway) Existing one shared left-turn/through/right-turn lane, stop controlled.

14. Thompsonville Road (Kent Road 19)/ Northbound Delaware Route 1 Ramps

Type of Control: Existing two-way stop-controlled intersection (T-Intersection)

Eastbound Approach: (Thompsonville Road) Existing one through lane and one channelized right-turn lane.

Westbound Approach: (Thompsonville Road) Existing one left-turn lane and one through lane.

Northbound Approach: (Delaware Route 1 Ramp) Existing one left-turn lane and one channelized right-turn lane, stop controlled.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: Per DelDOT Gateway, Delaware Transit Corporation (DTC) currently provides existing services within the study area via DART Routes 303, 305, and 307. Two bus stops servicing route 303 exist near the study intersection of Thompsonville Road (Kent Road

19)/Northbound Delaware Route 1 Ramps; one is located at the southwest corner of the intersection of Delaware Route 1 and Cicada Lane (Kent Road 402) and the other is located at the northeast corner of the intersection of Delaware Route 1 and Spring Hill Road (Kent Road 424). Additionally, a "Park and Ride" exists at the southwest corner of the Milford Neck Road (Kent Road 120) intersection with Northbound Delaware Route 1 Ramps, which services DART Routes 305 and 307. DART Route 303 provides eight round trips from 4:46 am to 8:56 pm on weekdays. DART Route 305 (which only runs from late May to early September) provides three round trips from 8:02 am to 10:21 pm on Saturday and Sundays. DART Route 307 provides five round trips from 5:27 am to 9:44 pm on weekdays.

Planned transit service:
Per email correspondence on December 3, 2020 with Mr. Jared Kauffman, Fixed-Route Planner, at the DTC, there are no transit improvements recommended for this study.

Existing bicycle and pedestrian facilities: According to DelDOT's Kent County Bicycle Map, two Statewide Bicycle Routes and a Connector Bicycle Route exist within the study area. A Statewide Bicycle Route travels along Delaware Route 1 which traverses through the intersection of the realigned Old Cemetery Road and Delaware Route 1. The Statewide Bicycle Route that travels along Bowman Road and Tub Pond Mill Road traverses through the intersections of Tub Mill Pond Road with Old Cemetery Road, Fork Road, and Blue Jay Lane/Bowman Road. A Connector Bicycle Route exists along Tub Mill Pond Road and traverses through the intersection of Tub Mill Pond Road and Fork Road which then connects to the Statewide Route. There are no pedestrian facilities within the study area.

Planned bicycle and pedestrian facilities: Per email correspondence dated December 16th, 2020, from Mr. John Fiori, DelDOT's Bicycle Coordinator and Ms. Linda Osiecki, DelDOT's Pedestrian Coordinator, the following improvements were recommended:

- Since the site generates more than 2000 trips, a 10-foot wide shared-use path (SUP) shall be required along all property frontages, extended to the property lines with angled terminations into the shoulder.
- The roundabout shall be designed to DelDOT/FHWA standards which shall include on-road and separate facilities for bicycles. This includes but is not limited to shoulders for bicycle use along the connector road, a 10-foot wide SUP along the entire roundabout, bike slip on/off ramps, and bike/ped crossings at each leg of the roundabout which include splitter islands for pedestrian refuge.
- Internal bicycle racks required on the commercial property and internal connection required from the SUP.
- Coordinate with DART the possibility of a bus stop either along the roadway or internally. If bus stops will include a shelter, also install a concrete pad for two U-bike racks per DelDOT standards.
- Per the Development Coordination Manual (DCM), the site shall dedicate right-of-way per the roadway classification and establish a 15-foot wide permanent easement along the property frontage.
- If Cicada Lane is to have a cul-de-sac, the existing right turn lane along Delaware Route 1 will need to be removed.

- All entrance, roadway and/or intersection improvements required shall incorporate bicycle and pedestrian facilities. Per the DCM, if the right turn lane is warranted, then a bike lane shall be incorporated along the right turn lane. If a left turn lane is required, any roadway improvements shall include a shoulder matching the roadway functional classification or existing conditions.

Bicycle Level of Traffic Stress in Delaware: Researchers with the Mineta Transportation Institute developed a framework to measure low-stress connectivity, which can be used to evaluate and guide bicycle network planning. Bicycle LTS analysis uses factors such as the speed of traffic, volume of traffic, and the number of lanes to rate each roadway segment on a scale of 1 to 4, where 1 is a low-stress place to ride and 4 is a high-stress place to ride. It analyzes the total connectivity of a network to evaluate how many destinations can be accessed using low-stress routes. Developed by planners at the Delaware Department of Transportation (DelDOT), the bicycle Level of Traffic Stress (LTS) model will be applied to bicycle system planning and evaluation throughout the state. The Bicycle LTS for the roadways under existing conditions along the site frontage are summarized below. The Bicycle LTS was determined utilizing the map on the DelDOT Gateway.

- Delaware Route 1 Northbound – LTS: 4
- Delaware Route 1 Southbound – LTS: 4
- Cemetery Road – LTS: 4
- Cicada Lane – LTS: 4

Crash Evaluation

Per the crash data included in the TIS from January 2017 to December 2019 which was provided by the Delaware Crash Analysis Reporting (CAR) System, a total of 85 crashes were reported within the study area. Of these 85 total crashes, the TIS designated a total of 28 as being intersection related. Of these 28 crashes:

- Four crashes occurred at the intersection of Delaware Route 1/Old Cemetery Road. One of these crashes resulted in an injury.
- Eight crashes occurred at the intersection of Thompsonville Road/Delaware Route 1 Southbound Ramps. Two of these crashes resulted in an injury.
- One property damage only crash occurred at each of the Tub Mill Pond Road intersections with Fork Landing Road, Bowman Road/Blue Jay Lane, and Cicada Lane.
- Two crashes occurred at the intersection of Tub Mill Pond Road/Thompsonville Road/Churchill Road. One of these crashes resulted in an injury.
- Eight crashes occurred at the intersection of Delaware Route 1/Cicada Lane/Spring Hill Road. Three of these crashes resulted in an injury.
- Three crashes occurred at the intersection of Milford Neck Road/Delaware Route 1. However, these crashes occurred prior to the Frederica grade change project. No crash data has been collected since the new interchange structure has been opened to traffic.

The crash data was not found to indicate any unusual concerns or safety issues within the study area

It should be noted, seven crashes were reported along the roadway segment of Cicada Lane. None of these crashes were related to a midblock accident. No Hazard Elimination Program (HEP) locations from the last 5 years exist within the study area.

Previous Comments

All comments from DelDOT for the Preliminary Traffic Impact Study (PTIS) have been addressed in the Final TIS. However, it should be noted the number of access points to the proposed development as well as the proposed land uses of the development have been updated since the original scoping letter dated March 10, 2020 was provided.

General HCS Analysis Comments

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

1. Per DelDOT's *Development Coordination Manual*, JMT and the TIS used a heavy vehicle percentage of 3% for each movement greater than 100 vph in the Case 2 and Case 3 future scenario analyses, unless the existing heavy vehicle percentage was greater than 3% and there was no significant increase of vehicles along that movement, in which case the existing heavy vehicle percentage was used for analysis of future scenarios.

2. Per DelDOT's *Development Coordination Manual* and coordination with DelDOT Planning, JMT used a heavy vehicle percentage of 5% for each movement less than 100 vph along roadways and site entrances, whereas the TIS did not.

3. Per DelDOT's *Development Coordination Manual,* JMT and the TIS utilized the existing PHF for the Case 1 scenario and a future PHF for Cases 2 and 3 scenarios of 0.80 for roadways with less than 500 vph, 0.88 for roadways between 500 and 1,000 vph, and 0.92 for roadways with more than 1,000 vph or the existing PHF, whichever was higher.

4. TIS includes approach grades in analysis whereas, JMT did not.

Table 2
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control (T-intersection) [1]	**LOS per TIS**			**LOS per JMT**		
North Site Entrance A/Old Cemetery Road (Kent Road 402)	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2026 With Development (Case 3)						
Southbound Site Entrance Right Turn	A (9.9)	A (9.6)	A (9.7)	A (9.9)	A (9.6)	A (9.7)

Table 3
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control (T-intersection) [1]	**LOS per TIS**			**LOS per JMT**		
South Site Entrance B/Old Cemetery Road (Kent Road 402)	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2026 With Development (Case 3)						
Northbound Site Entrance Right Turn	A (10.0)	A (9.8)	A (9.7)	A (10.0)	A (9.8)	A (9.8)

[1] For signalized and unsignalized analysis, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

Table 3-a
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Roundabout [1]	**LOS per TIS**			**LOS per JMT**		
Roundabout Site Entrance/Old Cemetery Road (Kent Road 402)	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2026 With Development (Case 3)	A (7.3)	A (5.8)	A (6.7)	A (6.7)	A (5.5)	A (6.0)

Table 4
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control (T-intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Site Entrance C/ Cicada Lane (Kent Road 403)	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2026 With Development (Case 3)						
Eastbound Cicada Lane Left Turn	A (7.7)	A (7.6)	A (7.6)	A (7.7)	A (7.6)	A (7.6)
Southbound Site Entrance C Approach	A (8.4)	A (8.4)	A (8.4)	A (8.4)	A (8.4)	A (8.4)

Table 5
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control (T-intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Tub Mill Pond Road (Kent Road 119)/ Old Cemetery Road (Kent Road 402)	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2020 Existing (Case 1)						
Westbound Old Cemetery Road Approach	A (8.6)	A (8.5)	A (0.0)	A (8.6)	A (8.5)	A (0.0)
Southbound Tub Mill Road Left Turn Lane	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
2026 Without Development (Case 2)						
Westbound Old Cemetery Road Approach	A (8.7)	A (8.6)	A (0.0)	A (8.8)	A (8.7)	A (0.0)
Southbound Tub Mill Road Left Turn Lane	A (7.3)	A (7.3)	A (7.3)	A (7.4)	A (7.4)	A (7.4)
2026 With Development (Case 3)						
Westbound Old Cemetery Road Approach	B (11.0)	B (10.4)	A (12.3)	B (11.0)	B (10.5)	A (12.0)
Southbound Tub Mill Road Left Turn Lane	A (7.6)	A (7.5)	A (7.6)	A (7.6)	A (7.5)	A (7.6)

Table 6
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control (T-intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Delaware Route 1/ Old Cemetery Road (Kent Road 402) [2, 3]	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2020 Existing (Case 1)						
Eastbound Old Cemetery Road Approach	D (29.8)	C (23.8)	A (0.0)	D (27.9)	C (23.4)	A (0.0)
Northbound Delaware Route 1 Left Turn	D (32.0)	E (49.7)	F (150.9)	D (33.7)	F (53.6)	F (164.4)
Southbound Delaware Route 1 Left Turn	F (54.4)	E (39.0)	E (35.9)	F (57.8)	E (41.0)	E (38.9)
2026 Without Development (Case 2)						
Eastbound Old Cemetery Road Approach	E (35.4)	D (26.7)	A (0.0)	D (30.6)	D (26.1)	A (0.0)
Northbound Delaware Route 1 Left Turn	E (39.5)	F (64.9)	F (208.8)	E (38.3)	F (70.7)	F (229.2)
Southbound Delaware Route 1 Left Turn	F (69.1)	E (48.6)	E (42.6)	F (66.4)	F (51.5)	E (46.4)
2026 With Development (Case 3) [4, 5]						
Eastbound Old Cemetery Road Right Turn Lane	F (71.7)	F (153.5)	F (384.3)	F (53.4)	F (137.3)	F (347.6)

[2] JMT did not include the westbound private driveway in the analysis whereas the TIS did.
[3] The TIS utilized a 2% grade for eastbound Old Cemetery Road approach whereas JMT did not.
[4] As part of the proposed development, Old Cemetery Road (KR 402) will be realigned to intersect with Delaware Route 1 approximately 1,100 feet north of its existing location with one right-in and right-out access will be provided along Delaware Route 1 southbound.
[5] JMT modeled the southbound Delaware Route right turn and eastbound Old Cemetery (Kent Road 402) as a channelized right turn whereas the TIS did not.

Table 6 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Merging analysis [6]	**LOS per TIS**			**LOS per JMT**		
Delaware Route 1/ Old Cemetery Road (Kent Road 402)	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2026 With Development (Case 3) *with Improvement* [7, 8]						
Eastbound Old Cemetery Road Right Turn Lane	B (16.2)	B (18.5)	C (21.8)	B (15.5)	B (19.3)	C (23.4)

[6] The numbers in parentheses following levels of service are Density in Ramp Influence Area (DR), pc/mi/ln, measured in seconds.
[7] Improvement scenario includes providing an acceleration lane for eastbound Old Cemetery Road (Kent Road 402) right turn movements to southbound Delaware Route 1.
[8] JMT utilized an acceleration lane length of 960 feet based on the DelDOT Road Design Manual assuming the posted speed limit of 55 MPH matched the design speed whereas the TIS selected a different value..

Table 7
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control (T-intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Tub Mill Pond Road (Kent Road 119)/ Fork Landing Road (Kent Road 390)	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2020 Existing (Case 1)						
Eastbound Fork Landing Road Approach	A (8.6)	A (8.9)	A (8.9)	A (8.7)	A (8.7)	A (8.9)
Northbound Tub Mill Pond Road Left Turn	A (7.2)	A (7.3)	A (7.5)	A (7.3)	A (7.3)	A (7.3)
2026 Without Development (Case 2)						
Eastbound Fork Landing Road Approach	A (9.1)	A (9.6)	A (9.4)	A (9.2)	A (9.2)	A (9.4)
Northbound Tub Mill Pond Road Left Turn	A (7.3)	A (7.4)	A (7.5)	A (7.4)	A (7.4)	A (7.4)
2026 With Development (Case 3)						
Eastbound Fork Landing Road Approach	B (10.5)	B (10.5)	B (11.5)	B (10.5)	B (10.2)	B (11.0)
Northbound Tub Mill Pond Road Left Turn	A (7.5)	A (7.5)	A (7.7)	A (7.6)	A (7.6)	A (7.6)

Table 8
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control (T-intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Frederica Road (Kent Road 10)/ Tub Mill Pond Road (Kent Road 119)/ Milford Neck Road (Kent Road 120)	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2020 Existing (Case 1)						
Westbound Milford Neck Road Approach	A (8.7)	A (9.3)	A (9.1)	A (8.7)	A (9.4)	A (9.2)
Southbound Tub Mill Pond Road Left Turn	A (7.3)	A (7.5)	A (7.5)	A (7.4)	A (7.5)	A (7.5)
2026 Without Development (Case 2)						
Westbound Milford Neck Road Approach	A (9.5)	B (11.0)	B (10.5)	A (9.5)	B (10.7)	B (10.2)
Southbound Tub Mill Pond Road Left Turn	A (7.5)	A (7.7)	A (7.7)	A (7.6)	A (7.7)	A (7.7)
2026 With Development (Case 3)						
Westbound Milford Neck Road Approach	A (9.9)	B (11.5)	B (11.1)	A (9.9)	B (11.2)	B (10.8)
Southbound Tub Mill Pond Road Left Turn	A (8.4)	A (8.4)	A (8.6)	A (8.3)	A (8.3)	A (8.5)

Table 8 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Signalized Intersection [1]	**LOS per TIS**			**LOS per JMT**		
Frederica Road (Kent Road 10)/ Tub Mill Pond Road (Kent Road 119)/ Milford Neck Road (Kent Road 120) [9, 10]	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2026 With Development (Case 3)	B (11.5)	B (12.8)	B (12.8)	B (12.0)	B (14.9)	B (13.4)

[9] Based on the traffic impact study conducted for the Meding Property (Project No. T202069012 – Task 11A) development dated June 12, 2020, the installation of a traffic signal was recommended for this intersection. Therefore, both JMT and the TIS conducted an additional signalized analysis for this intersection.

[10] JMT modeled the intersection as an uncoordinated signal with field measured phase time whereas the TIS did not.

Table 9
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control (T-intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Frederica Road (Kent Road 10)/ Southbound Delaware Route 1 Ramp	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2020 Existing (Case 1)						
Westbound Southbound Delaware Route 1 Ramp Left Turn	B (12.8)	B (13.1)	E (39.1)	B (12.7)	B (13.0)	E (37.2)
Westbound Southbound Delaware Route 1 Ramp Right Turn	A (8.8)	A (9.3)	A (8.6)	A (8.8)	A (9.3)	A (8.6)
Westbound Southbound Delaware Route 1 Ramp Approach	B (12.4)	B (12.9)	E (37.0)	B (12.3)	B (12.8)	E (35.2)
Southbound Frederica Road Left Turn	A (7.8)	A (7.9)	A (8.1)	A (7.8)	A (7.9)	A (8.1)
2026 Without Development (Case 2)						
Westbound Southbound Delaware Route 1 Ramp Left Turn	D (26.1)	D (26.1)	F (182.3)	C (23.6)	C (24.7)	F (162.7)
Westbound Southbound Delaware Route 1 Ramp Right Turn	A (9.7)	B (10.5)	A (9.5)	A (9.7)	B (10.5)	A (9.6)
Westbound Southbound Delaware Route 1 Ramp Approach	C (21.1)	C (24.0)	F (146.3)	C (20.2)	C (22.7)	F (130.8)
Southbound Frederica Road Left Turn	A (8.6)	A (8.8)	A (9.3)	A (8.5)	A (8.8)	A (9.4)
2026 With Development (Case 3)						
Westbound Southbound Delaware Route 1 Ramp Left Turn	D (29.5)	D (29.1)	F (227.6)	D (26.3)	D (27.3)	F (202.5)
Westbound Southbound Delaware Route 1 Ramp Right Turn	A (9.9)	B (10.7)	A (9.8)	A (9.9)	B (10.8)	A (9.8)
Westbound Southbound Delaware Route 1 Ramp Approach	C (24.8)	D (26.6)	F (182.3)	C (22.3)	D (25.0)	F (162.3)
Southbound Frederica Road Left Turn	A (8.7)	A (8.9)	A (9.5)	A (8.6)	A (8.9)	A (9.6)

Table 9 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Signalized Intersection [1]	**LOS per TIS**			**LOS per JMT**		
Frederica Road (Kent Road 10)/ Southbound Delaware Route 1 Ramp [9, 10]	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2026 Without Development (Case 2)[11]	-	-	-	A (8.7)	B (12.5)	A (8.7)
2026 With Development (Case 3)	A (9.9)	B (13.6)	A (8.8)	A (9.0)	B (12.9)	A (9.1)

[11] The TIS did not conduct a signalized analysis for the Case 2 scenario.

Table 10
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control (T-intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Milford Neck Road (Kent Road 120)/ Northbound Delaware Route 1 Ramps	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2020 Existing (Case 1)						
Eastbound Milford Neck Road Approach	A (8.8)	A (9.0)	A (9.1)	A (8.8)	A (9.1)	A (9.2)
Northbound Delaware Route 1 Ramps Left Turn	A (7.5)	A (7.4)	A (7.4)	A (7.3)	A (7.4)	A (7.5)
2026 Without Development (Case 2)						
Eastbound Milford Neck Road Approach	A (9.2)	A (9.6)	A (9.8)	A (9.1)	A (9.4)	A (9.8)
Northbound Delaware Route 1 Ramps Left Turn	A (7.6)	A (7.5)	A (7.6)	A (7.4)	A (7.5)	A (7.6)
2026 With Development (Case 3)						
Eastbound Milford Neck Road Approach	B (11.7)	B (13.5)	C (18.8)	B (11.8)	B (12.3)	C (15.1)
Northbound Delaware Route 1 Ramps Left Turn	A (7.6)	A (7.6)	A (7.6)	A (7.4)	A (7.5)	A (7.6)

Table 10 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Signalized Intersection [1]	**LOS per TIS**			**LOS per JMT**		
Milford Neck Road (Kent Road 120)/ Northbound Delaware Route 1 Ramps [9, 10]	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2026 With Development (Case 3)	B (19.3)	B (15.5)	B (17.5)	B (14.7)	B (13.1)	B (14.7)

Table 11
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection [1]	**LOS per TIS**			**LOS per JMT**		
Tub Mill Pond Road (Kent Road 119)/Bowman Road (Kent Road 401)/ Blue Jay (Kent Road 392) [12]	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2020 Existing (Case 1)						
Eastbound Blue Jay Lane Approach	A (4.5)	A (2.4)	A (5.6)	A (7.3)	A (7.1)	A (7.6)
Westbound Tub Mill Pond Road Approach	A (0.7)	A (2.4)	A (1.0)	A (6.7)	A (7.0)	A (7.2)
Northbound Bowman Road Approach	A (8.6)	A (8.2)	A (9.2)	A (7.2)	A (7.3)	A (7.7)
Southbound Tub Mill Pond Road Approach	A (0.9)	A (0.9)	A (1.2)	A (7.3)	A (7.3)	A (8.1)
Overall	A (3.1)	A (3.6)	A (4.1)	A (7.2)	A (7.2)	A (7.9)
2026 Without Development (Case 2)						
Eastbound Blue Jay Lane Approach	A (3.8)	A (3.2)	A (5.7)	A (7.5)	A (7.4)	A (7.9)
Westbound Tub Mill Pond Road Approach	A (0.6)	A (2.3)	A (0.9)	A (6.8)	A (7.1)	A (7.3)
Northbound Bowman Road Approach	A (9.1)	A (9.0)	A (9.7)	A (7.3)	A (7.4)	A (7.9)
Southbound Tub Mill Pond Road Approach	A (0.9)	A (0.9)	A (1.3)	A (7.4)	A (7.4)	A (8.4)
Overall	A (3.5)	A (3.9)	A (4.3)	A (7.3)	A (7.4)	A (8.1)

[12] Due to the limitation of HCS software analyzing the unique configuration of the existing intersection with a yield-control along the westbound approach and stop-controls along the northbound and eastbound approaches, JMT modeled the intersection as an all-way stop control to provide a conservative analysis. The TIS utilized Synchro software to analyze the intersection and Synchro methodology to report results.

Table 11 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection [1]	**LOS per TIS**			**LOS per JMT**		
Tub Mill Pond Road (Kent Road 119)/Bowman Road (Kent Road 401)/ Blue Jay (Kent Road 392) [12]	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2026 With Development (Case 3)						
Eastbound Blue Jay Lane Approach	A (3.7)	A (3.3)	A (5.1)	A (7.8)	A (7.7)	A (8.2)
Westbound Tub Mill Pond Road Approach	A (0.5)	A (1.9)	A (0.7)	A (7.0)	A (7.2)	A (7.5)
Northbound Bowman Road Approach	A (9.3)	A (9.0)	A (9.9)	A (7.5)	A (7.6)	A (8.2)
Southbound Tub Mill Pond Road Approach	A (1.0)	A (1.0)	A (1.4)	A (7.5)	A (7.6)	A (8.8)
Overall	A (3.7)	A (3.9)	A (4.5)	A (7.6)	A (7.6)	A (8.5)

Table 12
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control (T-intersection) [1]	**LOS per TIS**			**LOS per JMT**		
Tub Mill Pond Road (Kent Road 119)/ Cicada Lane (Kent Road 403)	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2020 Existing (Case 1)						
Westbound Cicada Lane Approach	A (8.8)	A (9.0)	A (9.0)	A (8.8)	A (9.1)	A (9.1)
Southbound Tub Mill Pond Road Left Turn	A (7.3)	A (7.3)	A (7.5)	A (7.3)	A (7.4)	A (7.5)
2026 Without Development (Case 2)						
Westbound Cicada Lane Approach	A (8.8)	A (9.1)	A (9.1)	A (8.9)	A (9.1)	A (9.1)
Southbound Tub Mill Pond Road Left Turn	A (7.3)	A (7.3)	A (7.5)	A (7.3)	A (7.4)	A (7.5)
2026 With Development (Case 3)						
Westbound Cicada Lane Approach	A (9.8)	A (9.6)	B (10.4)	A (9.8)	A (9.6)	B (10.4)
Southbound Tub Mill Pond Road Left Turn	A (7.9)	A (7.7)	A (8.0)	A (8.0)	A (7.8)	A (8.0)

Table 13
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
Tub Mill Pond Road (Kent Road 119)/ Thompsonville Road (Kent Road 19)/ Church Hill Road (Kent Road 404)	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2020 Existing (Case 1)						
Eastbound Church Hill Road Approach	A (7.4)	A (7.5)	A (7.4)	A (7.4)	A (7.5)	A (7.4)
Westbound Thompsonville Road Approach	A (7.5)	A (7.4)	A (7.4)	A (7.5)	A (7.4)	A (7.4)
Northbound Tub Mill Pond Road Approach	A (9.7)	B (10.1)	B (11.0)	A (9.7)	B (10.1)	B (10.7)
Southbound Tub Mill Pond Road Approach	A (9.4)	A (9.7)	A (9.5)	A (9.5)	A (9.8)	A (9.5)
2026 Without Development (Case 2)						
Eastbound Church Hill Road Approach	A (7.4)	A (7.5)	A (7.5)	A (7.4)	A (7.5)	A (7.4)
Westbound Thompsonville Road Approach	A (7.5)	A (7.4)	A (7.4)	A (7.5)	A (7.4)	A (7.4)
Northbound Tub Mill Pond Road Approach	A (9.8)	B (10.2)	B (11.1)	A (9.8)	B (10.2)	B (10.8)
Southbound Tub Mill Pond Road Approach	A (9.5)	A (9.8)	A (9.7)	A (9.6)	A (9.9)	A (9.6)
2026 With Development (Case 3)						
Eastbound Church Hill Road Approach	A (8.1)	A (8.1)	A (8.1)	A (7.5)	A (7.6)	A (7.5)
Westbound Thompsonville Road Approach	A (7.5)	A (7.4)	A (7.5)	A (7.5)	A (7.5)	A (7.5)
Northbound Tub Mill Pond Road Approach	B (11.3)	B (12.0)	B (14.3)	B (10.7)	B (10.9)	B (12.3)
Southbound Tub Mill Pond Road Approach	B (10.1)	B (10.9)	B (10.2)	B (10.2)	B (11.0)	B (10.0)

Table 14
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
Thompsonville Road (Kent Road 19)/ Southbound Delaware Route 1 Ramps [13]	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2020 Existing (Case 1)						
Eastbound Thompsonville Road Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.4)	A (7.4)
Westbound Thompsonville Road Left Turn	A (7.5)	A (7.7)	A (7.7)	A (7.5)	A (7.7)	A (7.7)
Northbound Delaware Route 1 Ramps Approach	B (11.2)	B (13.0)	B (13.7)	B (11.2)	B (12.9)	B (13.5)
Southbound Private Driveway Approach	B (11.0)	B (11.8)	B (12.3)	B (11.0)	B (11.7)	B (12.2)
2026 Without Development (Case 2)						
Eastbound Thompsonville Road Left Turn	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.4)	A (7.4)
Westbound Thompsonville Road Left Turn	A (7.5)	A (7.7)	A (7.7)	A (7.5)	A (7.7)	A (7.7)
Northbound Delaware Route 1 Ramps Approach	B (11.4)	B (13.4)	B (14.1)	B (11.3)	B (13.3)	B (13.9)
Southbound Private Driveway Approach	B (11.1)	B (11.9)	B (12.4)	B (11.0)	B (11.8)	B (12.3)

[13] The TIS modeled the eastbound Thompsonville Road left turn lane with a short left turn-turn packet and a capacity of 9 vehicles whereas the JMT modeled as a left turn lane with adequate storage.

Table 14 (continued)
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
Thompsonville Road (Kent Road 19)/ Southbound Delaware Route 1 Ramps [14]	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2026 With Development (Case 3)						
Eastbound Thompsonville Road Left Turn	A (7.9)	A (7.8)	A (7.9)	A (7.9)	A (7.7)	A (7.8)
Westbound Thompsonville Road Left Turn	A (7.5)	A (7.8)	A (7.8)	A (7.5)	A (7.8)	A (7.8)
Northbound Delaware Route 1 Ramps Approach	C (16.5)	C (21.5)	C (20.8)	B (14.4)	C (17.5)	C (17.2)
Southbound Private Driveway Approach	B (14.3)	B (14.5)	C (16.0)	B (13.3)	B (13.5)	B (14.6)

[14] The TIS modeled the eastbound Thompsonville Road left turn lane with a short left turn-turn packet and a capacity of 9 vehicles whereas the JMT modeled as a left turn lane with adequate storage.

Table 15
Peak Hour Levels Of Service (LOS)
Based on Traffic Impact Study for Ching Mixed-Use Property
Report Dated: November 2020
Prepared by: Pennoni

Unsignalized Intersection Two-Way Stop Control [1]	**LOS per TIS**			**LOS per JMT**		
Thompsonville Road (Kent Road 19)/ Northbound Delaware Route 1 Ramps	Weekday AM	Weekday PM	Saturday Peak	Weekday AM	Weekday PM	Saturday Peak
2020 Existing (Case 1)						
Westbound Thompsonville Road Left Turn	A (7.2)	A (7.3)	A (7.3)	A (7.4)	A (7.4)	A (7.3)
Northbound Delaware Route 1 Ramps Approach	A (9.7)	A (9.3)	A (9.4)	A (9.7)	A (9.3)	A (9.4)
2026 Without Development (Case 2)						
Westbound Thompsonville Road Left Turn	A (7.2)	A (7.3)	A (7.3)	A (7.5)	A (7.4)	A (7.3)
Northbound Delaware Route 1 Ramps Approach	A (9.8)	A (9.3)	A (9.4)	A (9.7)	A (9.3)	A (9.4)
2026 With Development (Case 3)						
Westbound Thompsonville Road Left Turn	A (7.5)	A (7.4)	A (7.3)	A (7.5)	A (7.4)	A (7.4)
Northbound Delaware Route 1 Ramps Approach	B (14.3)	B (11.1)	B (12.2)	B (13.0)	B (10.6)	B (11.5)