



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

JENNIFER COHAN
SECRETARY

March 18, 2020

Ms. Betty Tustin
The Traffic Group, Inc.
104 Kenwood Court
Berlin, MD 21811

Dear Ms. Tustin:

The enclosed Traffic Impact Study (TIS) review letter for the proposed **Coastal Villages** (Protocol Tax Parcel 533-10.00-87.00) 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. If you have any questions concerning this letter or the enclosed review letter, please contact me at (302) 760-2167.

Sincerely,

A handwritten signature in dark ink, appearing to read "Troy Brestel".

Troy Brestel
Project Engineer

TEB:km

Enclosures

cc with enclosures: Mr. Chris Carbaugh, Atlantic Group & Associates, Inc.
Ms. Constance C. Holland, Office of State Planning Coordination
Mr. Jamie Whitehouse, Sussex County Planning and Zoning
Mr. Andrew Parker, McCormick Taylor, Inc.
DelDOT Distribution

DelDOT Distribution

Brad Eaby, Deputy Attorney General
Drew Boyce, Director, Planning
Shanté Hastings, Director, Transportation Solutions (DOTS)
Mark Luszcz, Deputy Director, DOTS
Michael Simmons, Assistant Director, Project Development South, DOTS
J. Marc Coté, Assistant Director, Development Coordination
T. William Brockenbrough, Jr., County Coordinator, Development Coordination
Peter Haag, Chief Traffic Engineer, Traffic, DOTS
Chris Sylvester, Traffic Studies Manager, Traffic, DOTS
Alistair Probert, South District Engineer, South District
Gemez Norwood, South District Public Works Supervisor, South District
David Dooley, Service Development Planner, Delaware Transit Corporation
Susanne Laws, Sussex Review Coordinator, Development Coordination
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning
James Argo, Sussex Plan Reviewer, South District
Mark Galipo, Traffic Engineer, Traffic, DOTS
Claudy Joinville, Project Engineer, Development Coordination
Brian Yates, Johnson, Mirmiran & Thompson, Inc.



March 16, 2020

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

RE: Agreement No. 1773
Traffic Impact Study Services
Task No. 1 Subtask 18A – Coastal Villages

Dear Mr. Brestel:

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for the Coastal Villages residential development prepared by The Traffic Group, Inc. dated February 6, 2019. The Traffic Group prepared the report in a manner generally consistent with DelDOT's Development Coordination Manual.

The TIS evaluates the impacts of the proposed Coastal Villages residential development. The site is located on the north side of Delaware Route 54 (Lighthouse Road / Sussex Road 58), east of Polly Branch Road (Sussex Road 386), west of Hudson Road (Sussex Road 387), and south of Roxana Road (Delaware Route 17 / Sussex Road 52) in the Town of Selbyville, Sussex County Delaware. The proposed development would consist of 695 single-family detached homes. The site is planned for development over ten phases (see attached development phasing plan on Page 2). Construction is expected to progress at a rate of 50-70 homes per year, and Full Buildout is expected to be complete between 2029 and 2033.

Two full-access unsignalized driveways are proposed. One site driveway ("Site Entrance A") is proposed on Delaware Route 54 at Lynch Road. Lynch Road presently approaches Delaware Route 54 at a skew.

The second site driveway ("Site Entrance B") is proposed on Hudson Road approximately 1/3 mile north of Delaware Route 54. Site Entrance B will not be open to traffic until the 295th building permit is issued, as the portions of the overall site to be developed in the early phases are expected to be located much closer to Site Entrance A.

The subject land consists of 11 parcels totaling 321 acres. The land is currently zoned R-4 (Residential) within the Town of Selbyville. No rezoning is needed or sought to permit the proposed development.



PUNISHED FOR REVIEW

REVISIONS	DATE	DESCRIPTION

3334-100-10.00, 3334-100-10.01, 3334-100-10.02, 3334-100-10.03, 3334-100-10.04, 3334-100-10.05, 3334-100-10.06, 3334-100-10.07, 3334-100-10.08, 3334-100-10.09, 3334-100-10.10, 3334-100-10.11, 3334-100-10.12, 3334-100-10.13, 3334-100-10.14, 3334-100-10.15, 3334-100-10.16, 3334-100-10.17, 3334-100-10.18, 3334-100-10.19, 3334-100-10.20, 3334-100-10.21, 3334-100-10.22, 3334-100-10.23, 3334-100-10.24, 3334-100-10.25, 3334-100-10.26, 3334-100-10.27, 3334-100-10.28, 3334-100-10.29, 3334-100-10.30, 3334-100-10.31, 3334-100-10.32, 3334-100-10.33, 3334-100-10.34, 3334-100-10.35, 3334-100-10.36, 3334-100-10.37, 3334-100-10.38, 3334-100-10.39, 3334-100-10.40, 3334-100-10.41, 3334-100-10.42, 3334-100-10.43, 3334-100-10.44, 3334-100-10.45, 3334-100-10.46, 3334-100-10.47, 3334-100-10.48, 3334-100-10.49, 3334-100-10.50, 3334-100-10.51, 3334-100-10.52, 3334-100-10.53, 3334-100-10.54, 3334-100-10.55, 3334-100-10.56, 3334-100-10.57, 3334-100-10.58, 3334-100-10.59, 3334-100-10.60, 3334-100-10.61, 3334-100-10.62, 3334-100-10.63, 3334-100-10.64, 3334-100-10.65, 3334-100-10.66, 3334-100-10.67, 3334-100-10.68, 3334-100-10.69, 3334-100-10.70, 3334-100-10.71, 3334-100-10.72, 3334-100-10.73, 3334-100-10.74, 3334-100-10.75, 3334-100-10.76, 3334-100-10.77, 3334-100-10.78, 3334-100-10.79, 3334-100-10.80, 3334-100-10.81, 3334-100-10.82, 3334-100-10.83, 3334-100-10.84, 3334-100-10.85, 3334-100-10.86, 3334-100-10.87, 3334-100-10.88, 3334-100-10.89, 3334-100-10.90, 3334-100-10.91, 3334-100-10.92, 3334-100-10.93, 3334-100-10.94, 3334-100-10.95, 3334-100-10.96, 3334-100-10.97, 3334-100-10.98, 3334-100-10.99, 3334-100-11.00

Site Data
 Tax Map ID:
 Existing zoning:
 Proposed zoning:
 Flood hazard map:
 3334-100-10.00, 3334-100-10.01, 3334-100-10.02, 3334-100-10.03, 3334-100-10.04, 3334-100-10.05, 3334-100-10.06, 3334-100-10.07, 3334-100-10.08, 3334-100-10.09, 3334-100-10.10, 3334-100-10.11, 3334-100-10.12, 3334-100-10.13, 3334-100-10.14, 3334-100-10.15, 3334-100-10.16, 3334-100-10.17, 3334-100-10.18, 3334-100-10.19, 3334-100-10.20, 3334-100-10.21, 3334-100-10.22, 3334-100-10.23, 3334-100-10.24, 3334-100-10.25, 3334-100-10.26, 3334-100-10.27, 3334-100-10.28, 3334-100-10.29, 3334-100-10.30, 3334-100-10.31, 3334-100-10.32, 3334-100-10.33, 3334-100-10.34, 3334-100-10.35, 3334-100-10.36, 3334-100-10.37, 3334-100-10.38, 3334-100-10.39, 3334-100-10.40, 3334-100-10.41, 3334-100-10.42, 3334-100-10.43, 3334-100-10.44, 3334-100-10.45, 3334-100-10.46, 3334-100-10.47, 3334-100-10.48, 3334-100-10.49, 3334-100-10.50, 3334-100-10.51, 3334-100-10.52, 3334-100-10.53, 3334-100-10.54, 3334-100-10.55, 3334-100-10.56, 3334-100-10.57, 3334-100-10.58, 3334-100-10.59, 3334-100-10.60, 3334-100-10.61, 3334-100-10.62, 3334-100-10.63, 3334-100-10.64, 3334-100-10.65, 3334-100-10.66, 3334-100-10.67, 3334-100-10.68, 3334-100-10.69, 3334-100-10.70, 3334-100-10.71, 3334-100-10.72, 3334-100-10.73, 3334-100-10.74, 3334-100-10.75, 3334-100-10.76, 3334-100-10.77, 3334-100-10.78, 3334-100-10.79, 3334-100-10.80, 3334-100-10.81, 3334-100-10.82, 3334-100-10.83, 3334-100-10.84, 3334-100-10.85, 3334-100-10.86, 3334-100-10.87, 3334-100-10.88, 3334-100-10.89, 3334-100-10.90, 3334-100-10.91, 3334-100-10.92, 3334-100-10.93, 3334-100-10.94, 3334-100-10.95, 3334-100-10.96, 3334-100-10.97, 3334-100-10.98, 3334-100-10.99, 3334-100-11.00

Site Data (continued)
 Proposed minimum setbacks:
 Front yard:
 Side yard:
 Depth of lot:
 Proposed maximum building height: 35 FT (3 stories)
 Sanitary sewer:
 Town of Selbyville
 Town of Selbyville
 Water supply:
 30 FT (varies due to slope for one 30' setback)



GRAPHIC SCALE
 1" = 100 FT
 1" = 500 FT

1084 CB Ocean City Blvd

Baltimore Hundred
Town of Selbyville
Sussex County Delaware

Currently, there is one active DelDOT project within the study area. The project involves planned improvements at the intersection of Delaware Route 20 and Bayard Road (Sussex Road 384)/Johnson Road (Sussex Road 382A). In late 2018 and early 2019, DelDOT’s Traffic Studies Section conducted a traffic study and solicited public input to evaluate possible safety improvements at this unsignalized two-way stop-controlled intersection. Through this process, DelDOT determined that a traffic signal is recommended for this intersection. This recommendation and the associated documentation has been sent to DelDOT’s Traffic Design Section to start programming the design work. The construction date is to be determined; McCormick Taylor assumed a traffic signal would be constructed prior to the 2033 future year TIS scenarios.

Additionally, the intersection of Delaware Route 54 and Hudson Road has been included in the 2019 Hazard Elimination Program (HEP). The intersection was recently evaluated by the program, and at the 2019 HEP Task I meeting held on January 30, 2020 it was recommended to design and construct a roundabout at this location. At this time, the design details and the schedule for design and construction are not yet known. We recommend that DelDOT require the developer to make an equitable share contribution toward an improvement based on the estimated cost of installing a roundabout at this intersection. This contribution would satisfy any obligation the developer has in regards to this intersection.

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

The following intersections exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements:

<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Situations for which deficiencies occur</i>
Delaware Route 20 and Gum Road	Unsignalized	2033 with Coastal Villages summer Saturday (Case 3)
Delaware Route 20 and Bayard Road / Johnson Road	Unsignalized	2018 Existing summer Saturday (Case 1); 2033 without Coastal Villages weekday PM and summer Saturday (Case 2); 2033 with Coastal Villages weekday AM & PM, and summer Saturday (Case 3)
Delaware Route 54 and Hudson Road	Unsignalized	2033 without Coastal Villages summer Saturday (Case 2); 2033 with Coastal Villages weekday AM & PM, and summer Saturday (Case 3)

Delaware Route 20 and Gum Road

This unsignalized intersection experiences LOS deficiencies only in the summer Saturday peak hour under the 2033 scenario with Coastal Villages, with a projected 95th percentile queue length of approximately seven vehicles (less than 200 feet). While adding a separate right-turn lane on the eastbound Gum Road approach would address the LOS deficiency, the proximity of the church on the southwest corner of the intersection would require widening on the north side of Gum Road and realignment of the centerline to provide the right-turn lane. Given the necessary design and possible property impacts, it has been determined that the developer is not required to make any improvements at this intersection.

Delaware Route 20 and Bayard Road / Johnson Road

This unsignalized intersection experiences LOS deficiencies in the existing Saturday midday peak hour, the PM and Saturday peak hours under the 2033 scenario without Coastal Villages, and all three peak hours (AM, PM and Saturday) under the 2033 scenario with Coastal Villages. DelDOT has evaluated various improvement options for this intersection and determined that a traffic signal is recommended; to this end, the developer should make an equitable share contribution toward the installation of a traffic signal, as described below in Item No. 4.

Delaware Route 54 and Hudson Road

This unsignalized intersection experiences LOS deficiencies in the summer Saturday peak hour under the 2033 scenario without Coastal Villages and all three peak hours (AM, PM and Saturday) under the 2033 scenario with Coastal Villages. The intersection was recently evaluated by the 2019 Hazard Elimination Program (HEP), and at the 2019 HEP Task I meeting held on January 30, 2020 it was recommended to design and construct a roundabout at this location, which would resolve the projected LOS deficiencies at this intersection. In support of that HEP improvement, the developer should make an equitable share contribution toward a future DelDOT project based on the estimated cost of installing a roundabout at this intersection, as defined below in Item No. 5. This contribution would satisfy any obligation the developer has in regards to this intersection.

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

1. The developer should improve Hudson Road from the north end of the site frontage to the south end of the site frontage plus the additional distance required to accommodate the required turn lanes and transitions. This additional distance is estimated to be 434 feet. These standards include, but are not limited to, eleven-foot travel lanes and five foot shoulders. The developer should provide a bituminous concrete overlay to the existing travel lanes at DelDOT's discretion. DelDOT should analyze the existing lanes' pavement section and recommend an overlay thickness to the developer's engineer if necessary.

The developer should contribute to the improvement of Hudson Road from the south end of the improvements specified above to the northern end of the Hudson Road

improvements, which would be included as part of the HEP project discussed in Item No. 5. The distance of this improvement is estimated to be 444 feet +/- and would be included as part of the HEP project. The developer will make an equitable share contribution to the HEP project.

- The developer should construct the full-movement site access on Delaware Route 54. The proposed configuration is shown in the table below. Site Entrance A should be constructed in a manner such that it would form a right angle intersection with Lynch Road once Lynch Road is realigned in the future.

Approach	Existing Configuration	Proposed Configuration
Eastbound Delaware Route 54	One shared through/right-turn lane	One left-turn lane and one shared through/right-turn lane
Westbound Delaware Route 54	One shared through/left-turn lane	One left-turn lane, one through lane, and one right-turn lane
Northbound Lynch Road	One shared left-turn/right-turn lane	One shared left/through/right-turn lane
Southbound Site Entrance A	Approach does not exist	One shared left-turn/through lane and one right-turn lane

A conceptual design for this intersection, including proposed Site Entrance A and realigned Lynch Road, is included on page 6. The configuration shown in the “Option 2” concept is consistent with that described above, although it is noted that there should be only one ingress lane into the site (as indicated by the redline markup on the concept plan).

Initial recommended minimum turn-lane lengths (excluding tapers) of the separate turn lanes at the intersection of Delaware Route 54 and Lynch Road / Site Entrance A are listed below. The developer should coordinate with DelDOT’s Development Coordination Section to determine final turn-lane lengths and other design details during the site plan review.

Approach	Left-Turn Lane	Right-Turn Lane
Eastbound Delaware Route 54	210 feet *	N/A
Westbound Delaware Route 54	50 feet **	190 feet *
Northbound Lynch Road	N/A	N/A
Southbound Site Entrance A	N/A	50 feet ***

* turn-lane length based on DelDOT’s *Auxiliary Lane Worksheet*

** Turn lane is not warranted per DelDOT’s *Auxiliary Lane Worksheet*, but is recommended for safety to shadow the required eastbound left-turn lane.

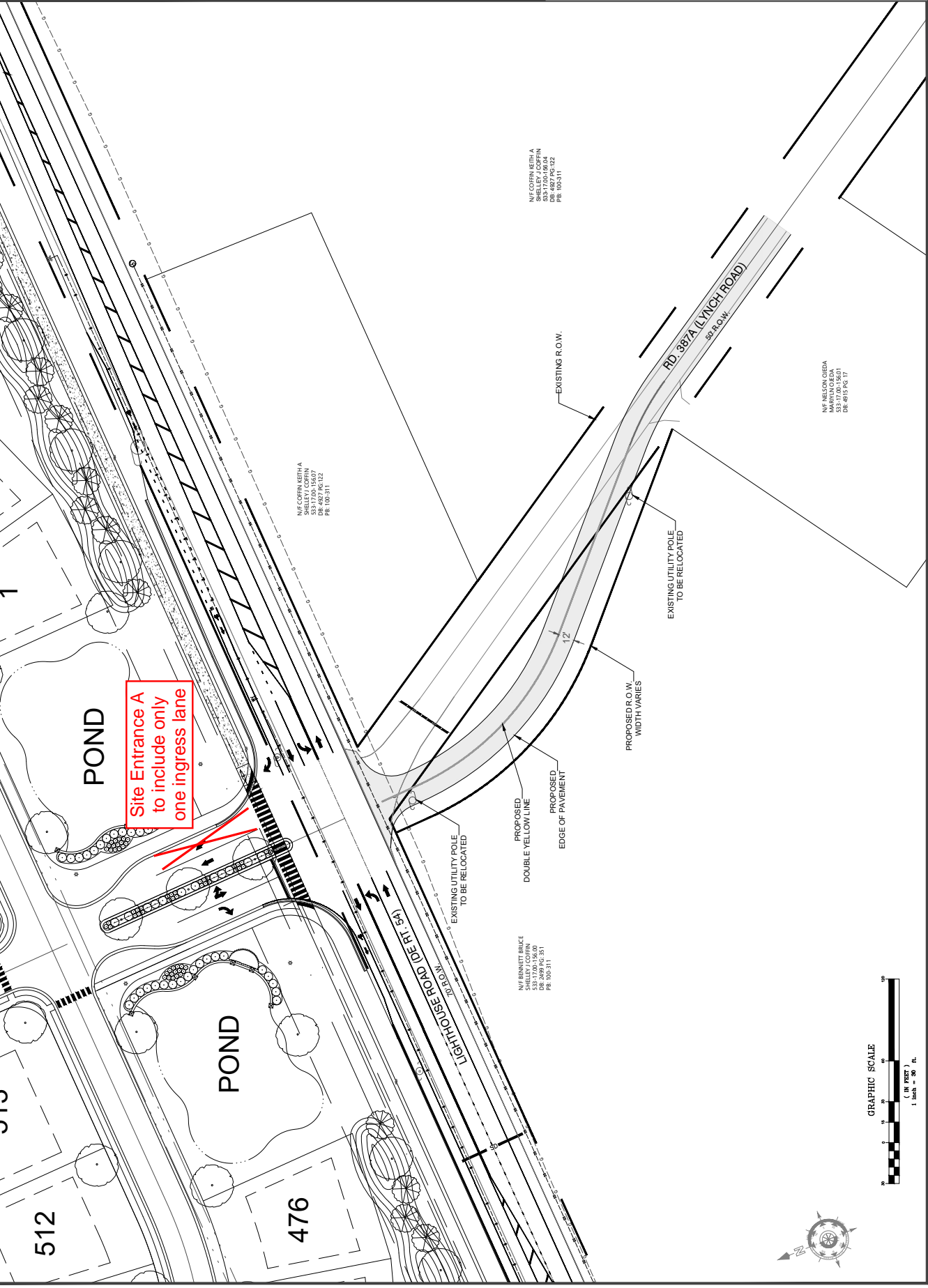
*** turn-lane length based on storage length per queuing analysis, with 50-foot minimum

PLANS ISSUED FOR:	
Revision	Date

COASTAL VILLAGES
 LIGHTHOUSE ROAD (ROUTE 54) x RD. 387A (LYNCH ROAD)
 TOWN OF SELBYVILLE, SUSSEX COUNTY, DELAWARE

Atlantic Group & Associates, Inc.
 Civil Engineers
 Landscape Architects
 Surveyors
 10044 Old Ocean City Boulevard
 Berlin, Maryland 21811
 Ph: (410) 629-1160
 Fax: (410) 629-1710
 www.theatlanticgrp.com

PROJECT	NO. 00	DATE	09/05/10
DRAWN BY	M.	SCALE	1"=20'
OPTION 2			
C-100			



N/T COFFIN KEITH A
 SHELLEY COFFIN
 DR: 2458 PG. 351
 PB: 100-311

N/T COFFIN KEITH A
 SHELLEY COFFIN
 DR: 487 PG. 122
 PB: 100-311

M/V NELSON ODEA
 MARIANO ODEA
 DR: 487 PG. 121
 PB: 100-311

N/T BENNETT BRUCE
 SHELLEY COFFIN
 DR: 2458 PG. 351
 PB: 100-311

- The developer should construct the full movement site access (Site Entrance B) on Hudson Road. Site Entrance B must not open to traffic until the 295th building permit is issued. The proposed configuration is shown in the table below.

Approach	Existing Configuration	Proposed Configuration
Eastbound Site Entrance B	Approach does not exist	One shared left-turn/right-turn lane
Northbound Hudson Road	One through lane	One left-turn lane and one through lane
Southbound Hudson Road	One through lane	One through lane and one right-turn lane

Initial recommended minimum turn-lane lengths (excluding tapers) of the separate turn lanes are listed below. The developer should coordinate with DelDOT’s Development Coordination Section to determine final turn-lane lengths during the site plan review.

Approach	Left-Turn Lane	Right-Turn Lane
Eastbound Site Entrance B	N/A	N/A
Northbound Hudson Road	185 feet *	N/A
Southbound Hudson Road	N/A	245 feet *

* Initial turn-lane length based on DelDOT’s *Auxiliary Lane Worksheet*.

- The developer should coordinate with DelDOT regarding an equitable share contribution toward a DelDOT project to install a traffic signal at the intersection of Delaware Route 20 and Bayard Road / Johnson Road. The amount of the contribution should be determined through coordination with DelDOT’s Development Coordination Section.
- The developer should enter into an agreement with DelDOT to make an equitable share contribution towards a future DelDOT project at the intersection of Delaware Route 54 and Hudson Road. DelDOT has determined the amount of this contribution will not exceed \$315,927.21. If DelDOT determines to extend their intersection project north to tie into the developer’s improvements, the developer shall contribute an additional amount toward that project, not to exceed \$43,858.00. The developer should coordinate with DelDOT’s Development Coordination Section regarding the implementation of the project and final amount of the contribution during the plan review process.

6. The following bicycle and pedestrian improvements should be included:
 - a. Adjacent to the proposed right-turn lanes on westbound Delaware Route 54 and southbound Hudson Road at the proposed site entrances, a minimum of a five-foot bicycle lane should be dedicated and striped with appropriate markings for bicyclists through the turn lane in order to facilitate safe and unimpeded bicycle travel.
 - b. Appropriate bicycle symbols, directional arrows, pavement markings, and signing should be included along bicycle facilities and turn lanes within the project limits.
 - c. Utility covers should be made flush with the pavement.
 - d. If clubhouses or other community facilities are constructed as shown on the site plan, bicycle parking should be provided near building entrances. Where building architecture provides for an awning, other overhang, or indoor parking, the bicycle parking should be covered.
 - e. A minimum 15-foot wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontages along Delaware Route 54 and Hudson Road.
 - f. As outlined in the TIS, shared-use paths should be constructed within the easements along the Delaware Route 54 and Hudson Road site frontages. The shared-use paths should meet AASHTO and ADA standards. As per the DelDOT Development Coordination Manual, shared-use paths should be at least 10-feet wide. In high use areas, it is recommended to increase the pathway width to 12-feet. Each shared-use path should have a minimum of a five-foot buffer from the roadway. At the property boundaries, the shared-use paths should be designed in accordance with DelDOT's *Shared-Use Path and/or Sidewalk Termination Reference Guide* dated August 1, 2018. The developer should coordinate with DelDOT's Development Coordination Section to determine the details of the shared-use path connections at the property boundaries.
 - g. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.
 - h. Internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative should be constructed within the development. These sidewalks should each be a minimum of five-feet wide (with a minimum of a five-foot buffer from the roadway) and should meet current AASHTO and ADA standards. Internal sidewalks in the development should connect to the proposed shared-use paths along Delaware Route 54 and Hudson Road.
 - i. Access-ways should be used to connect shared-use paths or sidewalks along a road to an interior trail or subdivision street when the spacing between streets is inadequate to



accommodate convenient pedestrian and bicycle travel. Based on the Office of State Planning Coordination PLUS review (October 24, 2018), two access-ways are recommended. One would be on Hudson Road near the north limits of the site frontage. The other would be on Smithfield Acres Road.

- j. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to prevent vehicular overhang onto the sidewalk.

Improvements in this TIS may be considered “significant” under DelDOT’s *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DelDOT’s website at http://deldot.gov/Publications/manuals/de_mutcd/index.shtml.

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 site plan review process.

Additional details on our review of this TIS are attached. Please contact me at (610) 640-3500 or through e-mail at ajparker@mccormicktaylor.com if you have any questions concerning this review.

Sincerely,

McCormick Taylor, Inc.

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

Andrew J. Parker, PE, PTOE
Project Manager

Enclosure

General Information

Report date: February 6, 2019

Prepared by: The Traffic Group, Inc.

Prepared for: Bunting Macks LLC

Tax parcel: 533-10.00-87.00, 533-17.00-71.00, 72.00, 73.00, 73.01, 74.00, 76.00, 82.00, 94.00, 94.02, and 251.00

Generally consistent with DelDOT's Development Coordination Manual: Yes

Project Description and Background

Description: The proposed Coastal Villages development consists of 695 single-family detached homes.

Location: The site is located on the north side of Delaware Route 54 (Lighthouse Road / Sussex Road 58), east of Polly Branch Road (Sussex Road 386), west of Hudson Road (Sussex Road 387), and south of Roxana Road (Delaware Route 17 / Sussex Road 52) in the Town of Selbyville, Sussex County, Delaware. A site location map is included on page 11.

Amount of land to be developed: Approximately 321 acres

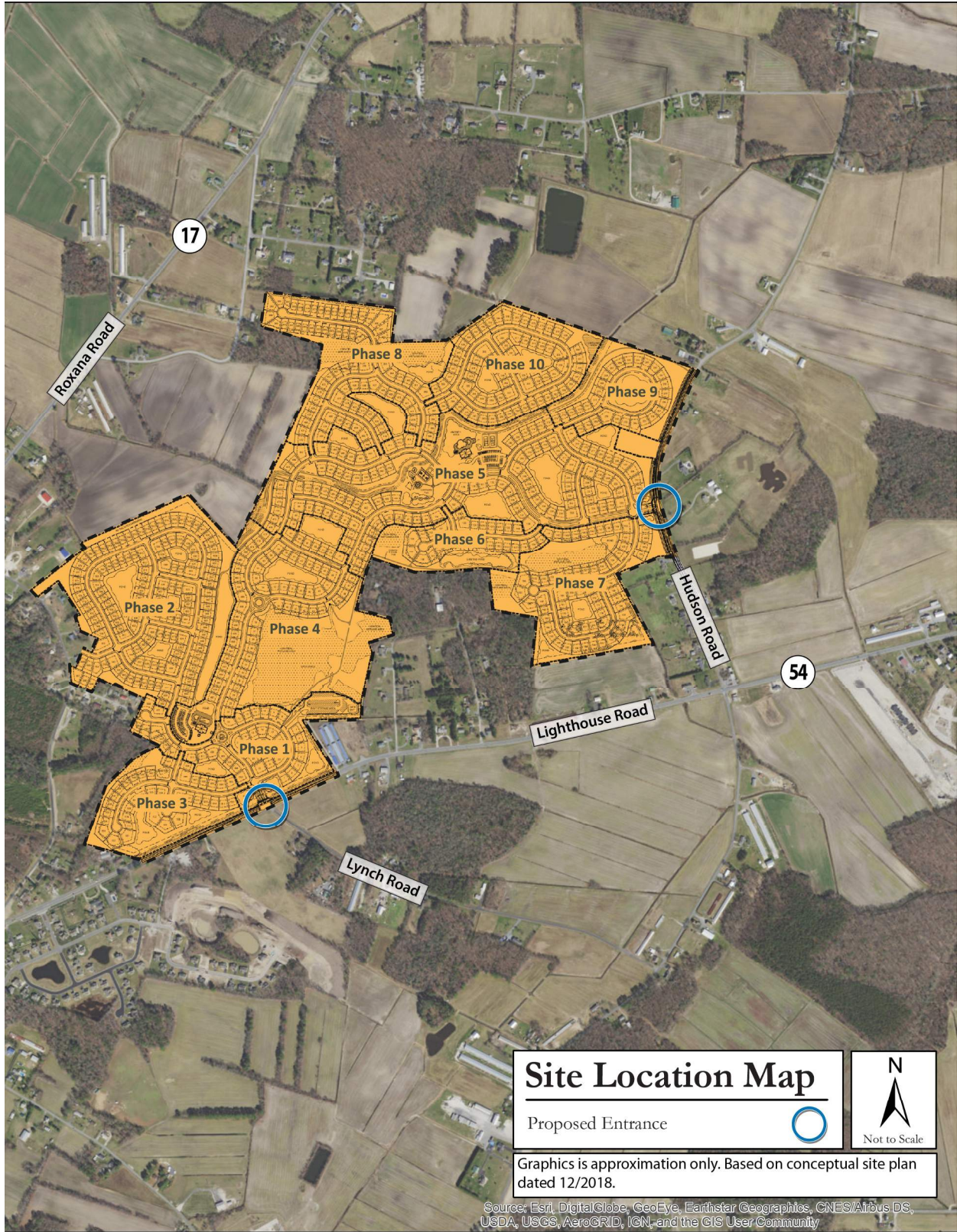
Land use approval(s) needed: Subdivision approval. The land is currently zoned R-4 (Residential) within the Town of Selbyville. No rezoning is needed or sought to permit the proposed development.

Proposed completion year: The developer plans to build the development in ten phases at a rate of 50 to 70 homes per year. Phases 1 through 4 will utilize the site access driveway on Delaware Route 54 only. Full buildout is expected between 2029 and 2033.

Proposed access locations: Two full-access driveways are proposed. One site driveway ("Site Entrance A") is proposed on Delaware Route 54 directly across from Lynch Road. The second site driveway ("Site Entrance B") is proposed on Hudson Road approximately 1/3 mile north of Delaware Route 54.

Daily Traffic Volumes (per DelDOT Traffic Summary 2017):

- 2017 Average Annual Daily Traffic on Delaware Route 54: 3,560 vehicles/day
- 2017 Average Annual Daily Traffic on Hudson Road: 1,448 vehicles/day



2015 Delaware Strategies for State Policies and Spending

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

The proposed Coastal Villages residential development is located within Investment Level 2 and Investment Level 3. Based on the site plan, it appears that most of the land located in Investment Level 3 is reserved for open space and wetland areas.

Investment Level 2

Investment Level 2 has many diverse characteristics. These areas can be composed of less developed areas within municipalities, rapidly growing areas in the counties that have or will have public water and wastewater services and utilities, areas that are generally adjacent to or near Investment Level 1, smaller towns and rural villages that should grow consistently with their historic character, and suburban areas with public water, wastewater, and utility services. These areas have been shown to be the most active portion of Delaware's developed landscape. They serve as transition areas between Level 1 and more open, less populated areas. They generally contain a limited variety of housing types, predominantly detached single-family dwellings.

In Investment Level 2, state investments and policies should support and encourage a wide range of uses and densities, promote other transportation options, foster efficient use of existing public and private investments, and enhance community identity and integrity.

Investments should encourage departure from the typical single-family-dwelling developments and promote a broader mix of housing types and commercial sites encouraging compact, mixed-use development where applicable. Overall, the State's intent is to use spending and management tools to promote well-designed development in these areas. Such development provides for a variety of housing types, user-friendly transportation systems, and provides essential open spaces and recreational facilities, other public facilities, and services to promote a sense of community. Investment Level 2 areas are prime locations for designating "pre-permitted areas."

Investment Level 3

Investment Level 3 generally falls into two categories. The first category covers lands that are in the long-term growth plans of counties or municipalities, but where development is not necessary to accommodate expected short-term population growth. The second category includes lands that are adjacent to fast-growing Investment Level 1 and 2 areas but are often impacted by environmentally sensitive features, agricultural-preservation issues, or other infrastructure issues. 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 governments with land-use authority.

Generally, Investment Level 3 areas should not be developed until surrounding Investment Level 1 and 2 areas are substantially built out. From a housing perspective, Investment Level 3 areas are characterized by low density and rural homes. New housing developments in the short term would, in most cases, represent leap-frog development, which is undesirable. Higher density housing in Investment Level 3 areas is more appropriate once Level 2 areas are built out and utilities are available.

Proposed Development’s Compatibility with Strategies for State Policies and Spending:

The proposed Coastal Villages residential development includes 695 single-family detached homes. The proposed development is located along Delaware Route 54, between Polly Branch Road and Hudson Road in Selbyville, Sussex County. The land to be developed is open space/farmland. Four additional developments¹ with approximately 580 total housing units are proposed or under construction in the immediate area. The TIS states that multi-use paths will be provided along the site frontages on Delaware Route 54 and Hudson Road, which will help promote active transportation options as adjacent properties are also developed in the future. Although only single-family detached homes are proposed, the development is located near existing transportation facilities and will be served by public water and sewer systems. The development will be served by established fire, police, and education systems. The site plan also depicts space for a community park and recreational facilities. Based on the site plan, it appears that most of the land located in Investment Level 3 is reserved for open space and wetland areas, while the houses will be constructed in Investment Level 2 areas. As such, the proposed development generally appears to comply with the guidelines for Investment Levels as described in the 2015 “Strategies for State Policies and Spending.”

Comprehensive Plan

Sussex County Comprehensive Plan: *(Source: Sussex County Comprehensive Plan Update, June 2008)*

The proposed Coastal Villages residential development is in the Town of Selbyville, a municipality. Sussex County strongly favors directing development to municipalities that desire it. The specific permitted uses and densities governing new construction within an incorporated municipality will continue to be governed by the zoning ordinance for that municipality, its public water and sewer capacities, and its comprehensive planning policies.

Town of Selbyville Comprehensive Plan: *(Source: Town of Selbyville Comprehensive Plan, September 2007)*

The Town of Selbyville Comprehensive Plan Future Land Use Map indicates that the site is planned for residential land use. The Town of Selbyville 2007 Comprehensive Plan Existing Zoning Map shows that the proposed development is located on lands zoned R-3 (residential). It appears that this version of the zoning map may be outdated, as the DelDOT TIS Scope of Work Memorandum and TIS indicate that the land is zoned R-4 (residential). Based on the Code of the Town of Selbyville (§ 200-35), detached single-family dwellings (excluding mobile homes) are permitted under R-4 zoning.

Proposed Development’s Compatibility with Comprehensive Plan:

The proposed Coastal Villages residential development appears to comply with the Town of Selbyville’s Comprehensive Plan. The proposed residential development generally aligns with both the Future Land Use Map and the existing zoning.

¹ Strawberry Ridge (f.k.a The Tides), Selbyville Towne Village, Warrington Property, and Lighthouse Lanes (f.k.a. Lynch Farm)

Relevant Projects in the DelDOT Capital Transportation Program

Currently, there is one active DelDOT project within the study area. The project involves planned improvements at the intersection of Delaware Route 20 and Bayard Road (Sussex Road 384)/Johnson Road (Sussex Road 382A). In late 2018 and early 2019, DelDOT's Traffic Studies Section conducted a traffic study and solicited public input to evaluate possible safety improvements at this unsignalized two-way stop-controlled intersection. Through this process, DelDOT determined that a traffic signal is recommended for this intersection. This recommendation and the associated documentation has been sent to DelDOT's Traffic Design Section to start programming the design work. The construction date is to be determined; McCormick Taylor assumed a traffic signal would be constructed prior to the 2033 future year TIS scenarios.

Additionally, the intersection of Delaware Route 54 and Hudson Road has been included in the 2019 Hazard Elimination Program (HEP). The intersection was recently evaluated by the program, and at the 2019 HEP Task I meeting held on January 30, 2020 it was recommended to design and construct a roundabout at this location. At this time, the design details and the schedule for design and construction are not yet known. We recommend that DelDOT require the developer to make an equitable share contribution toward an improvement based on the estimated cost of installing a roundabout at this intersection. This contribution would satisfy any obligation the developer has in regards to this intersection.

Trip Generation

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

- 695 single-family detached homes (ITE Land Use Code 210)

Table 1
COASTAL VILLAGES PEAK HOUR TRIP GENERATION

Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour			Saturday Mid-Day Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
695 Single-Family Homes	124	374	498	411	242	653	325	277	602

Table 2
COASTAL VILLAGES DAILY TRIP GENERATION

Land Use	Weekday Daily			Saturday Daily		
	In	Out	Total	In	Out	Total
695 Single-Family Homes	3094	3094	6188	3036	3036	6072

Overview of TIS

Intersections examined:

- 1) Gum Road (Sussex Road 392) & Hudson Road
- 2) Delaware Route 20 (Sussex Road 382) & Gum Road
- 3) Hudson Road & Deer Run Road/Bixler Road (Sussex Road 388)
- 4) Delaware Route 20 & Deer Run Road
- 5) Delaware Route 20 & Bayard Road (Sussex Road 384)/Johnson Road (Sussex Road 382A)
- 6) Delaware Route 17 & Polly Branch Road (Sussex Road 386)
- 7) Delaware Route 54 & Main Street (Sussex Road 398)
- 8) Delaware Route 54 & Bishopville Road (Sussex Road 397)
- 9) Delaware Route 54 & Polly Branch Road
- 10) Delaware Route 54 & Lynch Road (Sussex Road 387A)/Site Entrance A
- 11) Delaware Route 54 & Hudson Road
- 12) Delaware Route 54 & Johnson Road (Sussex Road 390)
- 13) Delaware Route 54 & Dickerson Road (Sussex Road 389)
- 14) Hudson Road & Site Entrance B

Conditions examined:

- 1) 2018 existing (Case 1)
- 2) 2033 without Coastal Villages (Case 2)
- 3) 2033 with Coastal Villages (Case 3)

Peak hours evaluated:

- Weekday AM and PM peak hours (all intersections)
- Summer Saturday midday peak hour (intersections along Delaware Routes 17, 20, and 54)

Committed developments considered:

- 1) Selbyville Towne Village – southwest corner of Delaware Route 54 & Hudson Road (129 single-family detached homes and 53 multi-family low-rise homes)
- 2) Lighthouse Lakes (f.k.a. Lynch Farm) – south side of Delaware Route 54 between Hudson Road and Marlyn Lane (169 single-family detached homes not yet occupied at time of traffic counts)
- 3) Strawberry Ridge (f.k.a. The Tides) – northwest corner of Delaware Route 54 & Polly Branch Road (132 single-family detached homes)
- 4) Warrington Property – southeast corner of Delaware Route 54 & Hudson Road (99 single-family detached homes)

5) Hampden Park – southeast corner of Delaware Route 20 & Deer Run Road (40 single-family detached homes)

Intersection Descriptions

1) Hudson Road & Gum Road

Type of Control: two-way stop

Eastbound Approach: (Gum Road) one shared left-turn/through/right-turn lane

Westbound Approach: (Gum Road) one shared left-turn/through/right-turn lane

Northbound Approach: (Hudson Road) one shared left-turn/through/right-turn lane, stop control

Southbound Approach: (Roxana Cemetery driveway) one shared left-turn/through/right-turn lane, stop control (assumed – no posted traffic control signs)

2) Delaware Route 20 & Gum Road

Type of Control: one-way stop (T-intersection)

Eastbound Approach: (Gum Road) one shared left-turn/right-turn lane, stop control

Northbound Approach: (Delaware Route 20) one shared left-turn/through lane and one by-pass lane

Southbound Approach: (Delaware Route 20) one shared through/right-turn lane

3) Hudson Road & Deer Run Road/Bixler Road

Type of Control: two-way stop

Eastbound Approach: (Bixler Road) one shared left-turn/through/right-turn lane, stop control

Westbound Approach: (Deer Run Road) one shared left-turn/through/right-turn lane, stop control

Northbound Approach: (Hudson Road) one shared left-turn/through/right-turn lane

Southbound Approach: (Hudson Road) one shared left-turn/through/right-turn lane

4) Delaware Route 20 & Deer Run Road

Type of Control: one-way stop (T-intersection)

Eastbound Approach: (Deer Run Road) one shared left-turn/right-turn lane, stop control

Northbound Approach: (Delaware Route 20) one shared left-turn/through lane

Southbound Approach: (Delaware Route 20) one shared through/right-turn lane

5) Delaware Route 20 & Bayard Road/Johnson Road

Type of Control: existing two-way stop; DelDOT traffic study proposes a traffic signal

Eastbound Approach: (Delaware Route 20) one left-turn lane, one through lane, one bicycle lane, and one right-turn lane

Westbound Approach: (Delaware Route 20) one shared left-turn/through/right-turn lane and one bicycle lane

Northbound Approach: (Johnson Road) one shared left-turn/through/right-turn lane, stop control

Southbound Approach: (Bayard Road) one shared left-turn/through/right-turn lane, stop control

6) Delaware Route 17 & Polly Branch Road

Type of Control: two-way stop

Eastbound Approach: (Polly Branch Road) one shared left-turn/through/right-turn lane, stop control

Westbound Approach: (Polly Branch Avenue) one shared left-turn/through/right-turn lane, stop control

Northbound Approach: (Delaware Route 17) one shared left-turn/through/right-turn lane

Southbound Approach: (Delaware Route 17) one shared left-turn/through/right-turn lane

7) Delaware Route 54 & Main Street

Type of Control: two-way stop

Westbound Approach: (Delaware Route 54) one shared left-turn/right-turn lane, stop control

Northbound Approach: (Main Street) one shared through/right-turn lane, stop control

Southbound Approach: (Delaware Route 54) one shared left-turn/through lane

8) Delaware Route 54 & Bishopville Road

Type of Control: one-way stop (T-intersection)

Eastbound Approach: (Delaware Route 54) one shared through/right-turn lane

Westbound Approach: (Delaware Route 54) one shared left-turn/through lane

Northbound Approach: (Bishopville Road) one shared left-turn/right-turn lane, stop control

9) Delaware Route 54 & Polly Branch Road

Type of Control: one-way stop (T-intersection)

Eastbound Approach: (Delaware Route 54) one shared left-turn/through lane

Westbound Approach: (Delaware Route 54) one shared through/right-turn lane

Southbound Approach: (Polly Branch Road) one shared left-turn/right-turn lane, stop control

10) Delaware Route 54 & Lynch Road/Site Entrance A

Type of Control: existing one-way stop (T-intersection); proposed two-way stop (four-leg intersection)

Eastbound Approach: (Delaware Route 54) existing one shared through/right-turn lane; proposed one left-turn lane, one shared through/right-turn lane

Westbound Approach: (Delaware Route 54) existing one shared left-turn/through lane; proposed one left-turn lane, one through lane, and one right-turn lane

Northbound Approach: (Lynch Road) one shared left-turn/right-turn lane, stop control

Southbound Approach: (Site Entrance A) proposed one left-turn lane and one shared through/right-turn lane, stop control

11) Delaware Route 54 & Hudson Road

Type of Control: two-way stop; proposed all-way stop

Eastbound Approach: (Delaware Route 54) existing one shared left-turn/through/right-turn lane, free-flow; proposed one left-turn lane and one shared through/right-turn lane, stop control (left turn lane proposed in Phase 4 of Coastal Villages development)

Westbound Approach: (Delaware Route 54) existing one shared left-turn/through/right-turn lane, free-flow; proposed one left-turn lane and one shared through/right-turn lane, stop control (left turn lane proposed in Phase 4 of Coastal Villages development)

Northbound Approach: (Hudson Road) one shared left-turn/through/right-turn lane, stop control

Southbound Approach: (Hudson Road) one shared left-turn/through/right-turn lane, stop control

McCormick Taylor does not recommend the installation of left-turn lanes on eastbound and westbound Delaware Route 54 along with an all-way stop condition (as recommended by the TIS). Based on capacity analysis, this intersection appears to be a good candidate for a single-lane roundabout. If a roundabout is determined to be infeasible, a traffic signal may be an option; a Traffic Signal Justification Study would need to be completed by Coastal Villages to determine this.

12) Delaware Route 54 & Johnson Road

Type of Control: one-way stop (T-intersection)

Eastbound Approach: (Delaware Route 54) one shared left-turn/through lane

Westbound Approach: (Delaware Route 54) one shared through/right-turn lane

Southbound Approach: (Johnson Road) one shared left-turn/right-turn lane, stop control

13) Delaware Route 54 & Dickerson Road

Type of Control: two-way stop

Eastbound Approach: (Delaware Route 54) one shared left-turn/through/right-turn lane

Westbound Approach: (Delaware Route 54) one shared left-turn/through/right-turn lane

Northbound Approach: (Dickerson Road) one shared left-turn/through/right-turn lane, stop control

Southbound Approach: (Dickerson Road) one shared left-turn/through lane and one channelized right-turn lane, stop control

14) Hudson Road & Site Entrance B

Type of Control: proposed one-way stop (T-intersection)

Eastbound Approach: (Site Entrance B) proposed one shared left-turn/right-turn lane, stop control

Northbound Approach: (Hudson Road) existing one through lane; proposed one left-turn lane and one through lane

Southbound Approach: (Hudson Road) existing one through lane; proposed one through lane and one right-turn lane

Safety Evaluation

Crash Data: Per current DelDOT policy, review of crash data was not conducted at this time.

Sight Distance: No significant sight distance issues were noted during a February 2019 field investigation. Site Entrance B on Hudson Road is located on horizontal curve. The designer must verify that adequate sight distance will be provided for both ingress and egress movements at this location.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: Based on the DART Bus Stop Map (accessed February 25, 2019), the Delaware Transit Corporation (DTC) does not currently operate any fixed-route transit bus service in the area of the proposed Coastal Villages residential development.

Planned transit service: The TIS states that a DTC representative was contacted and that no future service is planned at this time. However, there are no copies of this correspondence in the TIS. McCormick Taylor attempted to contact a DTC representative to confirm future transit needs; DTC did not respond or provide any comments. Other recent TIS's in the Selbyville area determined that there were no plans to provide transit service to the area in the near future.

Existing bicycle and pedestrian facilities: Several study area roadways are identified as "Bicycling Routes" on the *Sussex County Bicycle Map* published by DelDOT:

- Delaware Route 17: Connector bicycle route with bikeway
- Delaware Route 20
 - Regional bicycle route with bikeway
 - Over 5,000 vehicles daily
- Delaware Route 54: Regional bicycle route with bikeway
- Johnson Road and Bayard Road: Connector bicycle routes without bikeways
- Main Street: Statewide bicycle route without bikeway

There are no existing sidewalks or exclusive pedestrian facilities in the immediate areas of the proposed site entrances on Delaware Route 54 or Hudson Road.

The Town of Selbyville Comprehensive Plan includes three general bicycle and pedestrian recommendations:

- Encourage bicycle and pedestrian interconnections in new developments
- Continue to maintain and improve existing sidewalks, roads, and bicycle/pedestrian facilities
- Consider requiring sidewalks in new developments

Planned bicycle and pedestrian facilities: The TIS states that a representative from DelDOT's Local Systems Planning Section was contacted to determine requested accommodations for bicycles and pedestrians. However, there are no copies of this correspondence in the TIS.

Shared-use paths are proposed along the Hudson Road and Delaware Route 54 site frontages. Internal site pedestrian and bicycle accommodations are also proposed.

Access-ways are used to connect shared-use paths or sidewalks along a road to an interior trail or subdivision street when the spacing between streets is inadequate to accommodate convenient pedestrian and bicycle travel. Based on the Office of State Planning Coordination PLUS review (October 24, 2018), DelDOT requires two access-ways. One would be on Hudson Road near the north limits of the site frontage. The other would be on Smithfield Acres Road.

McCormick Taylor attempted to contact a DelDOT Statewide and Regional Planning representative to confirm future bicycle and pedestrian needs. McCormick Taylor did not receive a response or any comments.

Previous Comments

In a review letter dated December 24, 2018, DelDOT indicated that the Preliminary TIS was acceptable as submitted.

It appears that all substantive comments from DelDOT's TIS Scoping Memorandum, Traffic Count Review, Preliminary TIS Review, and other correspondence were addressed in the Final TIS submission.

General HCS Analysis Comments

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

- 1) Both The Traffic Group, Inc. and McCormick Taylor utilized Highway Capacity Software (HCS) version 7.7 to complete the traffic analyses. HCS is unable to analyze the unconventional two-way stop configuration at Delaware Route 54 & Main Street. The SimTraffic microsimulation component of Synchro version 10 software was utilized to evaluate that intersection.
- 2) As per DelDOT's Development Coordination Manual section 2.2.8.5, if an existing turning movement volume was less than 100 vehicles per hour, McCormick Taylor assumed an existing heavy vehicle percentage of 5%. It appears that The Traffic Group, Inc. did not follow this methodology.
- 3) As per HCM methodologies, The Traffic Group, Inc. and McCormick Taylor applied percent heavy vehicles (HV) by movement at two-way stop control and roundabout intersections, HV by lane at all-way stop control intersections, and HV by lane group at signalized intersections. In general, existing HV were applied to future conditions as well.
- 4) For existing conditions, the TIS and McCormick Taylor determined overall intersection peak hour factors (PHF) for each intersection. As per the DelDOT Development Coordination Manual, existing PHFs are generally applied to future conditions as well. Deviations are recorded in the detailed footnotes.

- 5) For analyses of signalized intersections, McCormick Taylor used a base saturation flow rate of 1,750 pc/hr/ln per DelDOT's Development Coordination Manual.
- 6) The TIS and McCormick Taylor used different signal timings when analyzing the signalized intersections in some cases.
- 7) McCormick Taylor used field-measured roadway grades in all analyses. It appears that The Traffic Group, Inc. assumed 0% roadway grades throughout the study area.

Table 3
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study - February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ^{2,3} Two-Way Stop	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Hudson Road & Gum Road				
2018 Existing (Case 1)				
Westbound Gum – Left	A (7.6)	A (7.6)	A (7.6)	A (7.6)
Northbound Hudson	A (9.7)	A (9.9)	A (9.8)	A (9.9)
2033 without Coastal Villages (Case 2)				
Westbound Gum – Left	A (7.7)	A (7.7)	A (7.6)	A (7.7)
Northbound Hudson	A (9.9)	B (10.4)	A (10.0-)	B (10.5)
2033 with Coastal Villages (Case 3)				
Westbound Gum – Left	A (7.7)	A (8.0)	A (7.7)	A (7.9)
Northbound Hudson	B (10.5)	B (11.5)	B (10.6)	B (11.7)

² For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

³ The southbound approach is an access driveway to the Roxana Cemetery and was not included in the TIS analyses. Therefore, no results for the southbound approach or eastbound left-turn movement were provided. Since this driveway appears to have minimal use, McCormick Taylor also excluded the southbound approach from the traffic analyses.

Table 4
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study - February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ⁴ One-Way Stop (T-Intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT ⁷	Weekday AM	Weekday PM	Summer SAT ⁸
Delaware Route 20 & Gum Road ^{5,6}						
2018 Existing (Case 1)						
Eastbound Gum	A (8.9)	A (9.4)	A (9.6)	B (13.2)	B (14.0)	C (16.7)
Northbound DE 20 – Left	A (8.0)	A (8.0)	A (8.3)	A (8.1)	A (8.0)	A (8.4)
2033 without Coastal Villages (Case 2)						
Eastbound Gum	B (13.3)	B (14.0)	C (17.5)	C (17.1)	C (18.6)	C (23.4)
Northbound DE 20 – Left	A (8.2)	A (8.3)	A (8.6)	A (8.3)	A (8.2)	A (8.7)
2033 with Coastal Villages (Case 3)						
Eastbound Gum	C (20.7)	C (21.2)	E (47.4)	D (27.3)	D (29.8)	F (55.5) ⁹
Northbound DE 20 – Left	A (8.3)	A (8.6)	A (8.9)	A (8.4)	A (8.6)	A (8.8)
2033 with Coastal Villages (Case 3) <i>With Improvement Option 1 ¹⁰</i>						
Eastbound Gum	-	-	-	C (20.0)	C (21.1)	D (31.7) ¹¹
Northbound DE 20 – Left	-	-	-	A (8.4)	A (8.6)	A (8.8)

⁴ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

⁵ Since the northbound right shoulder is marked as a bypass lane, McCormick Taylor coded the northbound approach with a short exclusive left-turn lane with storage for two vehicles. The TIS coded the northbound approach as a shared left-turn/thru lane.

⁶ It appears that the TIS coded the eastbound approach with a flared minor-street approach. McCormick Taylor does not concur with this coding; McCormick Taylor did not code a flared minor-street approach.

⁷ The TIS used a future Saturday peak hour factor (PHF) of 0.90. It is unclear why 0.90 was selected since this does not match the existing PHF or guidance in the DeIDOT Development Coordination Manual.

⁸ As per the DeIDOT Development Coordination Manual section 2.2.8.11.6 (F), McCormick Taylor determined that it is acceptable to use a future Saturday PHF of 0.92 rather than the existing Saturday PHF of 0.84.

⁹ 95th percentile queue length is anticipated to be approximately 7 vehicles (approximately 175 feet).

¹⁰ Improvement Option 1 consists of added a separate right-turn lane on the eastbound approach of Gum Road

¹¹ 95th percentile queue length is anticipated to be approximately 4 vehicles (approximately 100 feet).

Table 5
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study - February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ¹² Two-Way Stop	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Hudson Road & Deer Run Road / Bixler Road				
2018 Existing (Case 1)				
Eastbound Bixler	B (10.2)	B (10.2)	B (10.2)	B (10.2)
Westbound Deer Run	B (10.3)	B (10.2)	B (10.4)	B (10.2)
Northbound Hudson – Left	A (7.4)	A (7.3)	A (7.4)	A (7.3)
Southbound Hudson – Left	A (7.5)	A (7.5)	A (7.4)	A (7.5)
2033 without Coastal Villages (Case 2)				
Eastbound Bixler	B (10.8)	B (11.0)	B (10.8)	B (11.1)
Westbound Deer Run	B (11.1)	B (11.0)	B (11.3)	B (11.2)
Northbound Hudson – Left	A (7.4)	A (7.4)	A (7.5)	A (7.5)
Southbound Hudson – Left	A (7.6)	A (7.6)	A (7.5)	A (7.5)
2033 with Coastal Villages (Case 3)				
Eastbound Bixler	B (12.6)	B (13.5)	B (12.6)	B (13.5)
Westbound Deer Run	B (13.5)	C (15.4)	B (13.9)	C (15.9)
Northbound Hudson – Left	A (7.5)	A (7.7)	A (7.6)	A (7.7)
Southbound Hudson – Left	A (8.0)	A (7.9)	A (7.9)	A (7.8)

¹² For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 6
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study - February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ¹³ One-Way Stop (T-Intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT	Weekday AM	Weekday PM	Summer SAT
Delaware Route 20 & Deer Run Road						
2018 Existing (Case 1)						
Eastbound Deer Run	B (11.3)	B (10.6)	B (13.5)	B (11.4)	B (10.8)	B (13.9)
Northbound DE 20 – Left	A (8.0)	A (7.8)	A (8.3)	A (8.0)	A (7.8)	A (8.4)
2033 without Coastal Villages (Case 2)						
Eastbound Deer Run	B (12.3)	B (11.1)	C (15.1)	B (12.4)	B (11.4)	C (15.8)
Northbound DE 20 – Left	A (8.2)	A (7.9)	A (8.7)	A (8.2)	A (8.0)	A (8.7)
2033 with Coastal Villages (Case 3)						
Eastbound Deer Run	B (12.5)	B (11.3)	C (15.6)	B (12.6)	B (11.6)	C (16.3)
Northbound DE 20 – Left	A (8.2)	A (8.0)	A (8.8)	A (8.3)	A (8.1)	A (8.9)

¹³ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 7
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study - February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ¹⁴ Existing Two-Way Stop DelDOT Proposed Traffic Signal ¹⁵	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT	Weekday AM	Weekday PM	Summer SAT
Delaware Route 20 & Bayard Road / Johnson Road						
2018 Existing (Case 1)						
Eastbound DE 20 – Left	A (7.7)	A (8.0)	A (8.7)	A (7.7)	A (8.0)	A (8.8)
Westbound DE 20 – Left	A (7.9)	A (7.9)	A (8.0)	A (8.0)	A (7.9)	A (8.1)
Northbound Johnson	C (16.6)	C (20.0)	E (36.8)	C (16.8)	C (20.3)	E (38.1)
Southbound Bayard	C (20.5)	C (24.2)	F (124.4)	C (20.9)	D (25.9)	F (150.0)
2033 without Coastal Villages (Case 2)						
Eastbound DE 20 – Left	A (7.8)	A (8.1)	A (9.0)	A (7.8)	A (8.2)	A (9.2)
Westbound DE 20 – Left	A (8.1)	A (8.0)	A (8.2)	A (8.1)	A (8.1)	A (8.3)
Northbound Johnson	C (20.9)	D (28.3)	F (106.8)	C (21.2)	D (29.0)	F (111.6)
Southbound Bayard	D (29.6)	E (44.1)	F (473.6)	D (30.6)	F (50.2)	F (489.5)
2033 without Coastal Villages (Case 2) With DelDOT Proposed Traffic Signal ¹⁶						
Overall Intersection	-	-	-	B (10.9)	B (12.4)	B (17.5)
2033 with Coastal Villages (Case 3)						
Eastbound DE 20 – Left	A (7.8)	A (8.3)	A (9.2)	A (7.9)	A (8.3)	A (9.3)
Westbound DE 20 – Left	A (8.2)	A (8.1)	A (8.3)	A (8.3)	A (8.1)	A (8.4)
Northbound Johnson	C (23.3)	D (34.3)	F (214.8)	C (23.8)	E (35.5)	F (225.3)
Southbound Bayard	E (35.6)	F (61.1)	F (669.5)	E (37.3)	F (71.9)	F (696.4)

Table continues on next page.

¹⁴ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

¹⁵ DelDOT has proposed a traffic signal at this intersection. While the construction date is to be determined, McCormick Taylor assumed a traffic signal would be constructed prior to 2033. The TIS did not account for this project.

¹⁶ This analysis is preliminary. It uses the existing lane configuration, assumed traffic signal timing parameters based on the 2015 DelDOT Traffic Design Manual, and engineering judgement.

Table 7
Peak Hour Levels of Service (LOS)
Based on *Coastal Villages Traffic Impact Study - February 2019*
Prepared by *The Traffic Group, Inc.*

Unsignalized Intersection ¹⁷ Existing Two-Way Stop DelDOT Proposed Traffic Signal ¹⁸	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT	Weekday AM	Weekday PM	Summer SAT
Delaware Route 20 & Bayard Road / Johnson Road						
2033 with Coastal Villages (Case 3) <i>With TIS Improvements</i> ^{19, 20}						
Eastbound DE 20 – Left	-	-	-	A (7.9)	A (8.3)	A (9.3)
Westbound DE 20 – Left	-	-	-	A (8.3)	A (8.1)	A (8.4)
Northbound Johnson	-	-	-	C (23.8)	E (35.5)	F (225.3)
Southbound Bayard – Left	D (26.7)	D (33.6)	F (351.2)	D (26.7)	E (36.8)	F (378.8)
Southbound Bayard – Thru/Right	C (20.7)	D (25.6)	F (109.7)	C (21.7)	D (27.3)	F (110.1)
2033 with Coastal Villages (Case 3) <i>With DelDOT Proposed Traffic Signal</i> ²¹						
Overall Intersection	-	-	-	B (10.9)	B (12.7)	B (18.9)

¹⁷ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

¹⁸ DelDOT has proposed a traffic signal at this intersection. While the construction date is to be determined, McCormick Taylor assumed a traffic signal would be constructed prior to 2033. The TIS did not account for this project.

¹⁹ The TIS proposes a southbound left-turn lane to reduce delays, particularly in the summer Saturday peak hour. The TIS only provides the results for the southbound approach lanes in a summary table. The HCS reports and results for the other approaches were not provided. However, results for the other approaches are expected to be similar to the *Case 3 Without DelDOT Proposed Traffic Signal, Without Improvements* scenario.

²⁰ McCormick Taylor does not recommend construction of additional turn lanes at this intersection under the existing two-way stop control.

²¹ This analysis is preliminary. It uses the existing lane configuration, assumed traffic signal timing parameters based on the 2015 DelDOT Traffic Design Manual, and engineering judgement.

Table 8
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study - February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ²² Two-Way Stop	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT	Weekday AM	Weekday PM	Summer SAT
Delaware Route 17 & Polly Branch Road						
2018 Existing (Case 1)						
Eastbound Polly Branch	C (15.8)	B (14.7)	B (10.5)	C (16.2)	C (15.2)	B (10.7)
Westbound Polly Branch	C (15.7)	B (14.1)	A (10.0)	C (15.9)	B (14.6)	B (10.1)
Northbound DE 17 – Left	A (8.1)	A (7.9)	A (7.5)	A (8.2)	A (7.9)	A (7.6)
Southbound DE 17 – Left	A (7.9)	A (7.9)	A (7.4)	A (8.0)	A (8.0)	A (7.5)
2033 without Coastal Villages (Case 2)						
Eastbound Polly Branch	C (19.8)	C (18.5)	B (11.6)	C (20.6)	C (19.6)	B (11.9)
Westbound Polly Branch	C (16.8)	C (15.4)	A (9.9)	C (17.1)	C (16.1)	A (10.0)
Northbound DE 17 – Left	A (8.3)	A (8.0)	A (7.6)	A (8.4)	A (8.1)	A (7.6)
Southbound DE 17 – Left	A (8.1)	A (8.2)	A (7.5)	A (8.2)	A (8.3)	A (7.6)
2033 with Coastal Villages (Case 3)						
Eastbound Polly Branch	C (20.9)	C (20.1)	B (12.0)	C (21.9)	C (21.4)	B (12.2)
Westbound Polly Branch	C (18.6)	C (16.9)	B (10.5)	C (19.1)	C (17.8)	B (10.7)
Northbound DE 17 – Left	A (8.3)	A (8.0)	A (7.6)	A (8.4)	A (8.1)	A (7.6)
Southbound DE 17 – Left	A (8.1)	A (8.2)	A (7.5)	A (8.2)	A (8.3)	A (7.6)

²² For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 9
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study - February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ^{23, 24} Two-Way Stop (T-Intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT	Weekday AM	Weekday PM	Summer SAT
Delaware Route 54 & Main Street						
2018 Existing (Case 1)						
Westbound DE 54 – Left/Right	A (4.2)	A (4.4)	A (4.8)	A (4.5)	A (4.4)	A (5.0)
Northbound Main – Thru/Right	A (6.8)	A (6.9)	A (6.7)	A (5.5)	A (5.9)	A (5.6)
2033 without Coastal Villages (Case 2)						
Westbound DE 54 – Left/Right	A (6.3)	A (6.7)	A (7.2)	A (6.6)	A (6.7)	A (7.1)
Northbound Main – Thru/Right	A (7.4)	A (8.4)	A (7.4)	A (6.5)	A (7.4)	A (6.8)
2033 with Coastal Villages (Case 3)						
Westbound DE 54 – Left/Right	A (9.4)	B (10.6)	B (10.7)	A (10.0-)	A (9.5)	B (10.7)
Northbound Main – Thru/Right	A (8.2)	B (10.4)	A (8.9)	A (6.8)	A (10.0-)	A (8.5)

²³ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

²⁴ Due to the unconventional layout of the two-way stop condition, this intersection was analyzed with the SimTraffic component of Synchro version 10. McCormick Taylor used an average of 10 SimTraffic runs.

Table 10
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study - February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ²⁵ One-Way Stop (T-Intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT	Weekday AM	Weekday PM	Summer SAT
Delaware Route 54 & Bishopville Road						
2018 Existing (Case 1)						
Westbound DE 54 – Left	A (7.7)	A (7.7)	A (7.8)	A (7.8)	A (7.6)	A (7.8)
Northbound Bishopville	B (10.8)	B (10.5)	B (11.6)	B (10.8)	B (10.4)	B (11.5)
2033 without Coastal Villages (Case 2)						
Westbound DE 54 – Left	A (8.0)	A (8.2)	A (8.3)	A (8.0)	A (8.1)	A (8.3)
Northbound Bishopville	B (12.9)	B (13.0)	B (14.4)	B (12.8)	B (12.7)	B (14.2)
2033 with Coastal Villages (Case 3)						
Westbound DE 54 – Left	A (8.1)	A (8.7)	A (8.7)	A (8.2)	A (8.6)	A (8.8)
Northbound Bishopville	B (15.0)	C (16.1)	C (17.1)	B (14.8)	C (15.5)	C (16.8)

²⁵ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 11
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study - February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ²⁶ One-Way Stop (T-Intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT	Weekday AM	Weekday PM	Summer SAT
Delaware Route 54 & Polly Branch Road						
2018 Existing (Case 1)						
Eastbound DE 54 – Left	A (7.7)	A (7.7)	A (7.7)	A (7.7)	A (7.7)	A (7.6)
Southbound Polly Branch	B (10.5)	A (9.9)	A (10.0)	B (10.5)	B (10.3)	B (10.1)
2033 without Coastal Villages (Case 2)						
Eastbound DE 54 – Left	A (8.2)	A (8.1)	A (8.1)	A (8.1)	A (8.3)	A (8.0)
Southbound Polly Branch	B (13.2)	B (12.0)	B (12.1)	B (13.2)	B (13.6)	B (12.2)
2033 with Coastal Villages (Case 3)						
Eastbound DE 54 – Left	A (8.8)	A (8.4)	A (8.5)	A (8.7)	A (8.7)	A (8.4)
Southbound Polly Branch	C (17.9)	C (16.6)	C (16.2)	C (17.8)	C (22.1)	C (16.4)

²⁶ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 12
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study - February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ²⁷ Existing One-Way Stop (T-Intersection) Proposed Two-Way Stop	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT	Weekday AM	Weekday PM	Summer SAT
Delaware Route 54 & Lynch Road / Site Entrance A						
2018 Existing (Case 1)						
Westbound DE 54 – Left	A (7.5)	A (7.8)	A (7.9)	A (7.6)	A (7.6)	A (7.7)
Northbound Lynch	B (10.6)	B (10.1)	B (10.5)	A (10.0)	B (10.2)	A (9.9)
2033 without Coastal Villages (Case 2)						
Westbound DE 54 – Left	A (7.7)	A (8.1)	A (8.3)	A (7.7)	A (7.9)	A (8.1)
Northbound Lynch	B (11.7)	B (11.2)	B (11.4)	B (10.9)	B (11.3)	B (10.7)
2033 with Coastal Villages (Case 3) With TIS Site Entrance Configuration ²⁸						
Eastbound DE 54 – Left	A (8.0)	A (8.3)	A (8.5)	A (8.1)	A (8.3)	A (8.6)
Westbound DE 54 – Left	A (7.7)	A (8.2)	A (8.4)	A (7.8)	A (8.0)	A (8.2)
Northbound Lynch	C (16.1)	C (19.1)	C (18.3)	C (15.1)	C (19.4)	C (17.5)
Southbound Site Entrance	B (12.9)	B (14.4)	C (16.6)	B (13.0)	B (14.5)	C (16.8)

²⁷ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

²⁸ The TIS recommends two southbound egress lanes (left-turn lane and shared thru/right-turn lane).

Table 13
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study - February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ²⁹ Existing Two-Way Stop TIS Proposed All-Way Stop	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT	Weekday AM	Weekday PM	Summer SAT
Delaware Route 54 & Hudson Road						
2018 Existing (Case 1)						
Eastbound DE 54 – Left	A (7.7)	A (7.6)	A (7.6)	A (7.5)	A (7.6)	A (7.7)
Westbound DE 54 – Left	A (7.9)	A (7.7)	A (8.0)	A (7.9)	A (7.7)	A (8.0)
Northbound Hudson – Left/Thru/Right	B (12.9)	B (12.9)	B (13.3)	B (13.3)	B (13.1)	B (13.6)
Southbound Hudson – Left/Thru/Right	C (16.9)	B (13.9)	C (21.9)	C (16.4)	B (13.8)	C (21.1)
2033 without Coastal Villages (Case 2)						
Eastbound DE 54 – Left	A (8.0)	A (7.8)	A (7.9)	A (7.8)	A (7.9)	A (8.0)
Westbound DE 54 – Left	A (8.3)	A (8.1)	A (8.5)	A (8.3)	A (8.1)	A (8.5)
Northbound Hudson – Left/Thru/Right	D (27.1)	C (24.3)	E (35.3)	D (29.4)	D (26.0)	E (39.5)
Southbound Hudson – Left/Thru/Right	D (32.5)	D (27.2)	F (75.2)	D (30.5)	D (26.4)	F (67.6)
2033 with Coastal Villages (Case 3 Buildout) <i>Without Improvements (two-way stop)</i>						
Eastbound DE 54 – Left	A (8.2)	A (8.2)	A (8.2)	A (7.9)	A (8.3)	A (8.3)
Westbound DE 54 – Left	A (8.3)	A (8.1)	A (8.6)	A (8.3)	A (8.2)	A (8.6)
Northbound Hudson – Left/Thru/Right	E (47.6)	F (57.4)	F (115.5)	F (53.1)	F (67.4)	F (136.1)
Southbound Hudson – Left/Thru/Right	F (225.8)	F (190.7)	F (569.8)	F (209.2)	F (192.5)	F (540.2)
2033 with Coastal Villages (Case 3 Buildout) <i>With TIS Improvements</i> ^{30, 31}						
Eastbound DE 54 – Left	B (11.6)	B (11.5)	B (11.3)	B (11.2)	B (11.7)	B (11.5)
Eastbound DE 54 – Thru/Right	C (21.0)	C (18.5)	C (20.7)	C (21.1)	C (18.6)	C (20.8)
Westbound DE 54 – Left	B (13.2)	B (12.3)	C (15.6)	B (13.3)	B (12.4)	C (15.7)
Westbound DE 54 – Thru/Right	C (15.5)	C (24.2)	C (24.3)	C (15.5)	C (24.3)	C (24.5)
Northbound Hudson – Left/Thru/Right	B (13.3)	B (15.0)	B (13.4)	B (13.5)	C (15.2)	B (13.6)
Southbound Hudson – Left/Thru/Right	C (15.5)	B (13.9)	B (14.5)	C (15.6)	B (14.1)	B (14.6)
Overall Intersection	unknown	unknown	unknown	C (16.2)	C (18.0)	C (18.7)

Table continues on next page.

²⁹ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

³⁰ The TIS proposes converting intersection to an all-way stop and adding left-turn lanes on eastbound and westbound Delaware Route 54.

³¹ The TIS did not include HCS reports for this scenario, only a summary of results which did not include delay/LOS for the overall intersection.

Table 13
Peak Hour Levels of Service (LOS)
Based on *Coastal Villages Traffic Impact Study - February 2019*
Prepared by *The Traffic Group, Inc.*

Unsignalized Intersection ³² Existing Two-Way Stop TIS Proposed All-Way Stop	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT	Weekday AM	Weekday PM	Summer SAT
Delaware Route 54 & Hudson Road						
2033 w/ Coastal Villages (Case 3 Buildout) <i>With Single-Lane Roundabout</i> ³³						
Eastbound DE 54 – Left/Thru/Right	-	-	-	A (9.2)	A (7.3)	A (9.0)
Westbound DE 54 – Left/Thru/Right	-	-	-	A (6.5)	A (8.8)	A (9.3)
Northbound Hudson – Left/Thru/Right	-	-	-	A (7.1)	A (7.3)	A (6.6)
Southbound Hudson – Left/Thru/Right	-	-	-	A (7.1)	A (6.9)	A (8.3)
Overall Intersection	-	-	-	A (7.6)	A (7.8)	A (8.7)
2023 with Coastal Villages (Case 3 Interim – Phases 1-3) ³⁴ <i>With TIS Interim Improvements</i> ³⁵						
Eastbound DE 54 – Left/Thru/Right	C (16.8)	B (15.0)	C (17.3)	C (17.8)	C (15.9)	C (17.9)
Westbound DE 54 – Left/Thru/Right	C (15.7)	C (19.6)	D (33.6)	C (15.9)	C (20.7)	D (33.7)
Northbound Hudson – Left/Thru/Right	B (11.8)	B (12.8)	B (12.4)	B (12.0)	B (13.3)	B (12.7)
Southbound Hudson – Left/Thru/Right	B (11.4)	B (11.2)	B (12.1)	B (11.6)	B (11.8)	B (12.4)
Overall Intersection	B (14.9)	B (15.9)	C (23.4)	C (15.4)	C (16.6)	C (23.5)
2023 with Coastal Villages Phases 1-3 (Case 3 Interim – Phases 1-3) ³⁴ <i>Without Improvements (two-way stop)</i>						
Eastbound DE 54 – Left	-	-	-	A (7.9)	A (8.0)	A (8.1)
Westbound DE 54 – Left	-	-	-	A (8.3)	A (8.1)	A (8.5)
Northbound Hudson – Left/Thru/Right	-	-	-	E (38.4) ³⁶	D (32.5)	F (53.2) ³⁷
Southbound Hudson – Left/Thru/Right	-	-	-	E (35.1) ³⁸	D (25.2)	F (62.5) ³⁹

³² For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

³³ McCormick Taylor does not recommend the installation of left-turn lanes on eastbound and westbound Delaware Route 54 along with an all-way stop condition (as recommended by the TIS). Based on capacity analysis, this intersection appears to be a good candidate for a single-lane roundabout.

³⁴ The TIS indicates that the development is expected to add 50 – 70 homes per year. Phases 1-3 includes 229 homes, which equates to a Phase 3 build year of approximately 2023. McCormick Taylor calculated slightly different intersection volumes than the TIS. It is unclear what year the TIS assumed for Phase 1-3 completion.

³⁵ In the interim condition (development Phases 1-3), the TIS proposes converting intersection to an all-way stop and keeping existing lane configurations.

³⁶ The 95th percentile queue length is expected to be 4 vehicles (approximately 100 feet).

³⁷ The 95th percentile queue length is expected to be 5 vehicles (approximately 125 feet).

³⁸ The 95th percentile queue length is expected to be 3 vehicles (approximately 75 feet).

³⁹ The 95th percentile queue length is expected to be 5 vehicles (approximately 125 feet).

Table 14
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study - February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ⁴⁰ One-Way Stop (T-Intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT	Weekday AM	Weekday PM	Summer SAT
Delaware Route 54 & Johnson Road						
2018 Existing (Case 1)						
Eastbound DE 54 – Left	A (7.7)	A (7.8)	A (8.0)	A (7.7)	A (7.8)	A (8.0)
Southbound Johnson	A (9.9)	A (9.9)	B (11.8)	A (9.9)	A (9.9)	B (12.0)
2033 without Coastal Villages (Case 2)						
Eastbound DE 54 – Left	A (7.9)	A (8.2)	A (8.4)	A (7.9)	A (8.2)	A (8.5)
Southbound Johnson	B (10.6)	B (11.2)	B (14.8)	B (10.7)	B (11.3)	C (15.4)
2033 with Coastal Villages (Case 3)						
Eastbound DE 54 – Left	A (8.0)	A (8.5)	A (8.7)	A (8.0)	A (8.5)	A (8.7)
Southbound Johnson	B (10.9)	B (12.1)	C (16.5)	B (11.0)	B (12.2)	C (17.4)

⁴⁰ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 15
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study - February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ⁴¹ Two-Way Stop	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT	Weekday AM	Weekday PM	Summer SAT
2018 Existing (Case 1)						
Eastbound DE 54 – Left	A (7.8)	A (7.6)	A (7.9)	A (7.6)	A (7.6)	A (8.0)
Westbound DE 54 - Left	A (7.5)	A (7.6)	A (7.8)	A (7.6)	A (7.6)	A (7.9)
Northbound Dickerson	B (11.4)	B (11.6)	B (14.2)	B (11.0)	B (11.3)	B (13.2)
Southbound Dickerson – Left/Thru	B (11.6)	B (12.0)	B (15.0)	B (11.8)	B (12.4)	C (16.0)
Southbound Dickerson – Right	A (9.4)	A (9.1)	B (10.1)	A (9.2)	A (9.2)	B (10.3)
2033 without Coastal Villages (Case 2)						
Eastbound DE 54 – Left	A (8.0)	A (7.9)	A (8.3)	A (7.7)	A (7.9)	A (8.4)
Westbound DE 54 - Left	A (7.8)	A (7.8)	A (8.1)	A (7.9)	A (7.9)	A (8.2)
Northbound Dickerson	B (13.3)	B (14.0)	C (18.3)	B (12.4)	B (13.3)	C (16.3)
Southbound Dickerson – Left/Thru	B (13.9)	B (15.0)	C (20.5)	B (14.3)	C (15.7)	C (22.6)
Southbound Dickerson – Right	A (9.7)	A (9.9)	B (11.1)	A (9.6)	A (10.0)	B (11.4)
2033 with Coastal Villages (Case 3)						
Eastbound DE 54 – Left	A (8.0)	A (8.1)	A (8.5)	A (7.8)	A (8.1)	A (8.6)
Westbound DE 54 - Left	A (8.0)	A (7.9)	A (8.3)	A (8.0)	A (8.0)	A (8.4)
Northbound Dickerson	B (14.4)	C (15.8)	C (20.9)	B (13.4)	B (14.7)	C (18.1)
Southbound Dickerson – Left/Thru	C (15.4)	C (17.1)	C (24.1)	C (16.1)	C (18.3)	D (27.1) ⁴²
Southbound Dickerson – Right	A (9.9)	B (10.4)	B (11.7)	A (9.7)	B (10.6)	B (12.0)

⁴¹ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

⁴² The 95th percentile queue length is expected to be less than one vehicle.

Table 16
Peak Hour Levels of Service (LOS)
Based on Coastal Villages Traffic Impact Study – February 2019
Prepared by The Traffic Group, Inc.

Unsignalized Intersection ⁴³ One-Way Stop (T-Intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Summer SAT	Weekday AM	Weekday PM	Summer SAT
Hudson Road & Site Entrance B						
2033 with Coastal Villages (Case 3)						
Eastbound Site Entrance B	B (12.2)	B (12.9)	B (12.5)	B (12.3)	B (13.1)	B (12.6)
Northbound Hudson Road – Left	A (7.6)	A (8.1)	A (7.9)	A (7.7)	A (8.1)	A (8.0)

⁴³ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.