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

NICOLE MAJESKI
SECRETARY

September 13, 2024

Mr. Christopher Duke P.E.
Becker Morgan Group, Inc.
100 Discovery Boulevard, Suite 102
Newark, DE 19713

Dear Mr. Duke,

The enclosed Traffic Impact Study (TIS) review letter for the **Harrington Subdivision** (Tax Parcels: 6-00-17100-05-2200-00001) residential 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 Annamaria.Furmato@delaware.gov.

Sincerely,

Annamaria Furmato
TIS Group Project Engineer

AF:km
Enclosures
cc with enclosures: Devraj Aiyar, Dev Developments, LLC
Kris Connelly, Kent County Planning and Zoning
Andrew J. Parker, McCormick Taylor, Inc.
Tucker Smith, McCormick Taylor, Inc.
DelDOT Distribution

DelDOT

DelDOT Distribution

Brad Eaby, Deputy Attorney General
Shanté Hastings, Deputy Secretary / Director, Transportation Solutions (DOTS)
Mark Luszcz, Deputy Director, DelDOT Traffic, DOTS
Michael Simmons, Assistant Director, Project Development South, DOTS
Peter Haag, Chief Traffic Engineer, Traffic, DOTS
Wendy Carpenter, Traffic Calming & Subdivision Relations Manager, DelDOT Traffic, DOTS
Sean Humphrey, Traffic Engineer, DelDOT Traffic, DOTS
Matthew Lichtenstein, Central District Engineer, Central District
Steve McCabe, Central District Public Works Manager, Central District
Jared Kaufman, Service Development Planner, Delaware Transit Corporation
Tremica Cherry, Service Development Planner, Delaware Transit Corporation
Pamela Steinebach, Director, Planning
Todd Sammons, Assistant Director, Development Coordination
Wendy Polasko, Subdivision Engineer, Development Coordination
Will Mobley, Acting Kent County Review Coordinator, Development Coordination
Josh Schwartz, Subdivision Reviewer, Development Coordination
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning
Sireen Muhtaseb, TIS Group Manager, Development Coordination
Ben Fisher, TIS Group Engineer, Development Coordination
Steve Bayer, Regional Transportation Planner, Statewide & Regional Planning

September 12, 2024

Ms. Annamaria Furmato
Project Engineer
DelDOT Division of Planning
P.O. Box 778
Dover, DE 19903

RE: Agreement No. 1946F
Traffic Impact Study Services
Task No. 5A Subtask 11A – Harrington Subdivision

Dear Ms. Furmato:

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for the Harrington Subdivision development prepared by Becker Morgan Group, Inc. dated June 2024. Becker Morgan Group prepared the report in a manner generally consistent with DelDOT's Development Coordination Manual.

The TIS evaluates the impacts of the proposed Harrington Subdivision development, along the north side of Delaware Route 14 (Milford Harrington Highway / Kent Road 36), 1,400 feet west of the intersection of Delaware Route 14 and Butler Road / Old Airport Road (Kent Road 429), in the City of Harrington, Kent County, Delaware. The proposed development would consist of 261 single family detached housing and 231 single family attached housing. One full-movement access point is proposed on Delaware Route 14. Construction is anticipated to be completed in 2032.

The subject land is located on an approximately 109.63-acre parcel. The subject land is currently zoned R-3 (Group Housing Residential), and the developer does not plan to rezone the land.

Relevant and On-Going Projects and Studies

Currently, DelDOT has no relevant or ongoing projects within the area of study.

Summary of Analysis Results

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:

Intersection	*Existing Traffic Control*	*Situations for which deficiencies occur*
3. DE Route 14 and Deep Grass Lane / Killens Pond Road (Kent Road 384)	Unsignalized	2032 with development PM (Case 3)

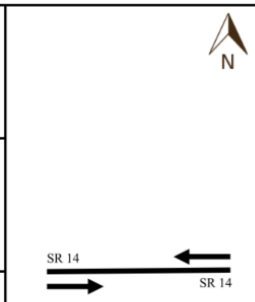
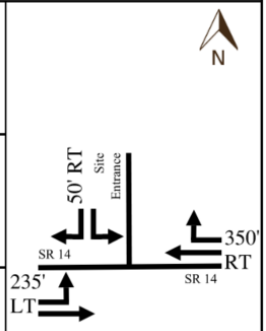
3. Delaware Route 14 and Deep Grass Lane / Killens Pond Road (See Recommendation 3 & Table 4, Pages 17-18)
This unsignalized intersection experiences LOS deficiencies during the PM peak in Case 3. In Case 3 during the PM peak, the westbound approach is expected to operate at LOS E with 44.9 seconds of delay. The developer proposes to construct a roundabout at this intersection to mitigate the LOS deficiency.

Development Improvements

Should the City of Harrington approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan by note or illustration, unless a Design Deviation is requested and approved by the Department. 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. The following items should be implemented at the same time as site construction once all agency approvals and permits are secured and completed in accordance with DelDOT's Standards and Specifications.

1. The developer shall improve the State-maintained Roads on which they front (Delaware Route 14), within the limits of their frontage. The improvements shall include both directions of travel, regardless of whether the developer's lands are on one or both sides of the road. "Frontage" means the length along the state right-of-way of a single property tract where an entrance is proposed or required. If a single property tract has frontage along multiple roadways, any segment of roadway including an entrance shall be improved to meet DelDOT's Functional Classification criteria as found in Section 1.1 of the Development Coordination Manual and elsewhere therein, and/or improvements established in the Traffic Operational Analysis and/or Traffic Impact Study. "Secondary Frontage" means the length along the state right-of-way of a single property tract where no entrance is proposed or required. The segment of roadway may be upgraded by improving the pavement condition of the existing roadway width. The Pavement Management Section and Subdivision Section will determine the requirements to improve the pavement condition.

2. The developer should construct the full-movement Site Entrance on Delaware Route 14. The proposed configuration is shown in the table below.

Approach	Current Configuration		Approach	Proposed Configuration	
Eastbound SR 14	One through lane.		Eastbound SR 14	One left turn lane and one through lane.	
Westbound SR 14	One through lane.		Westbound SR 14	One through lane and one right turn lane.	
Northbound	Approach does not exist.		Northbound	Approach does not exist.	
Southbound	Approach does not exist.		Southbound Site Entrance	One left turn lane and one right turn lane.	

At the proposed Site Entrance intersection, separate left-turn and right-turn lanes are warranted on Delaware Route 14 based on DelDOT's Auxiliary Lane Worksheet. Initial recommended minimum turn lane lengths (excluding tapers) include a 235-foot left-turn lane on eastbound Delaware Route 14 and a 350-foot right-turn lane on westbound Delaware Route 14. A 50-foot southbound right-turn lane is recommended on the southbound site entrance approach to accommodate the 95th percentile queues. 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.

3. The developer should design and construct a single-lane roundabout at the intersection of Delaware Route 14 and Deep Grass Lane / Killens Pond Road. The developer should coordinate with DelDOT's Subdivision Section to determine details regarding design, schedule and construction of the roundabout.

4. The following bicycle and pedestrian improvements should be included:

   a. Per the DelDOT Development Coordination Manual section 5.2.9.2, bicycle lanes are required where right-turn lanes are being installed.

   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. A minimum 15-foot-wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontage along Delaware Route 14. Within the easement, a minimum of a 10-foot wide shared-use path should be constructed. The shared-use path should meet AASHTO and ADA standards and should have a minimum of a five-foot buffer from the roadway. At the property boundaries, the shared-use path should connect to the adjacent property or to the shoulder in accordance with DelDOT's Development Coordination Manual. The developer shall coordinate with DelDOT's Development Coordination Section through the plan review process to determine the details of the shared-use path design and connections/terminations at or before both boundaries of the property.

e. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.

f. 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 path along the site frontage.

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.

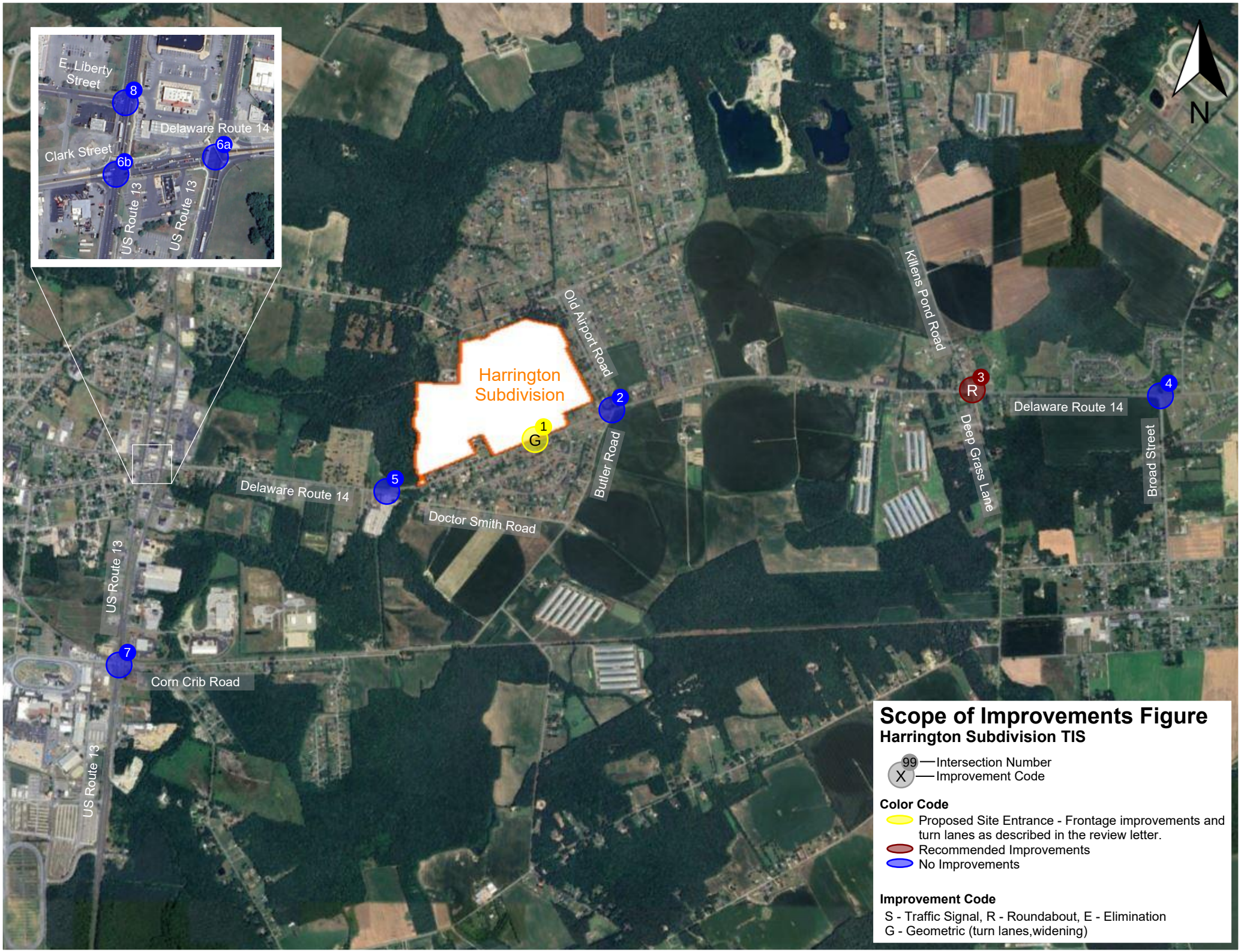
Additional details on our review of this TIS are attached. Please contact me at (610) 640-3500 or through e-mail at ajparker@mccormicktaylor.com if you have any questions concerning this review.

Sincerely,

McCormick Taylor, Inc.

Andrew J. Parker, PE, PTOE
Project Manager

Enclosure


E. Liberty Street
Delaware Route 14
Clark Street
US Route 13
US Route 13
8
6a
6b
N
Harrington Subdivision
Old Airport Road
Killens Pond Road
Delaware Route 14
Butler Road
Deep Grass Lane
Broad Street
Doctor Smith Road
US Route 13
Corn Crib Road
US Route 13
1
2
3
4
5
7
G
R
Scope of Improvements Figure
Harrington Subdivision TIS
99 — Intersection Number
X — Improvement Code
Color Code
Proposed Site Entrance - Frontage improvements and turn lanes as described in the review letter.
Recommended Improvements
No Improvements
Improvement Code
S - Traffic Signal, R - Roundabout, E - Elimination
G - Geometric (turn lanes,widening)

General Information

Report date: June 2024
Prepared by: Becker Morgan Group, Inc
Prepared for: Dev Developments, LLC.
Tax parcel: 6-00-17100-51-2200-00001
Generally consistent with DelDOT's Development Coordination Manual: Yes

Project Description and Background

Description: The proposed Harrington Subdivision development consists of 261 single family detached houses and 231 single family attached houses.
Location: The site is located along the north side of Delaware Route 14 (Milford Harrington Highway), 1,400 feet west of the intersection of Delaware Route 14 and Butler Road / Old Airport Road (Kent Road 429), in the City of Harrington, Kent County, Delaware. A site location map is included on page 7.
Amount of land to be developed: an approximately 109.63-acre parcel.
Land use approval(s) needed: The subject land is currently zoned R-3 (Group Housing Residential), and the developer does not plan to rezone the land.
Proposed completion year: 2032
Proposed access locations: One full access point is proposed on the north side of Delaware Route 14.
Average Daily Traffic Volumes (per DelDOT Traffic Summary 2022):

- Delaware Route 14: 7,295 vehicles/day


N
JACKSON DITCH ROAD
Old Airport Rd
MILFORD-HARRINGTON HIGHWAY
Delaware Route 14
Doctor Smith Rd
Site Location Map
Proposed Entrance

2020 Delaware Strategies for State Policies and Spending

Location with respect to the Strategies for State Policies and Spending Map of Delaware:
The proposed Harrington Subdivision development is located within Investment Level 3.

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 this 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 governments with land-use authority.

Due to the limits of finite financial resources, state infrastructure spending on "hard" or "grey" infrastructure such as roads, sewer, water, and public facilities will generally be directed to Investment Level 1 and 2 Areas during this planning period. The State will consider investing in these types of infrastructure in 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.

Proposed Development's Compatibility with Strategies for State Policies and Spending:
The proposed Harrington Subdivision development falls within Investment Level 3 and is to be developed as 261 single family detached houses and 231 single family attached houses. The parcel is intermingled with Investment Level 2 and has recently been annexed into the City of Harrington and is within a designated long-term growth area. It is therefore concluded that the proposed development appears to generally comply with the policies stated in the 2020 "Strategies for State Policies and Spending."

Comprehensive Plan

Kent County Comprehensive Plan:
(Source: Kent County Comprehensive Plan, September 2018)

The Kent County Comprehensive Plan Future Land Use Map indicates that the proposed Harrington Subdivision site is within the designated "Growth Zone Overlay" and is planned for "Low Density Residential" land use. However, the map was created before the proposed development was annexed into the City of Harrington. Kent 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 that

municipality's zoning ordinance, its public water and sewer capacities, and its comprehensive planning policies.

Proposed Development's Compatibility with Comprehensive Plan:
The proposed development appears to comply with the Kent County Comprehensive Plan and is on land designated for residential land use. The land is currently zoned R-3 (Group Housing Residential), and the developer does not plan to rezone the land. The proposed development generally aligns with both the Future Land Use Map and the proposed zoning.

City of Harrington Comprehensive Plan:
(Source: Comprehensive Land Use Plan, December 2013)

The City of Harrington Comprehensive Land Use Plan includes zoning and future land use maps that were completed before the Harrington Subdivision development was proposed and before the land parcel was annexed into the City of Harrington.

Proposed Development's Compatibility with Comprehensive Plan:
Although the proposed development is not included in the City of Harrington Comprehensive Land Use Plan, the proposed land use appears to be compatible with zoning and land use of nearby parcels.

Relevant Projects in the DelDOT Capital Transportation Program

Currently, DelDOT has no relevant or ongoing projects within the area of study.

Trip Generation

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Eleventh 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:

- 261 single family detached dwelling units (ITE Land Use Code 210)
- 231 single family attached dwelling units (ITE Land Use Code 215)

Table 1
Harrington Subdivision Peak Hour Trip Generation

Land Use	Size	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekday ADT		
		In	Out	Total	In	Out	Total	In	Out	Total
LUC 210	261 units	45	133	178	154	91	245	1,231	1,230	2,461
LUC 215	231 units	29	85	114	79	56	135	855	855	1,710
Total Trips	**492 units**	**74**	**218**	**292**	**233**	**147**	**380**	**2,086**	**2,085**	**4,171**

Overview of TIS

Intersections examined:

1) Site Entrance and Delaware Route 14
2) Delaware Route 14 and Butler Road / Old Airport Road
3) Delaware Route 14 and Deep Grass Lane / Killens Pond Road
4) Delaware Route 14 and Broad Street
5) Delaware Route 14 / Doctor Smith Road
6a) US Route 13 Northbound and Delaware Route 14 / Clark Street
6b) US Route 13 Southbound and Delaware Route 14 / Clark Street
7) US Route 13 / Fairground Road / Corn Crib Road
8) US Route 13 / East Liberty Street

Conditions examined:

1) 2024 Existing (Case 1)
2) 2032 without development (Case 2)
3) 2032 with development (Case 3)

Peak hours evaluated: Weekday morning and weekday evening peak hours.

Committed developments considered:

1) Harmill Village (58 single-family detached houses and 103 low-rise multifamily housing units)

Intersection Descriptions

1) **Site Entrance & Delaware Route 14**
   Type of Control: Proposed one-way stop control (T-intersection)
   Eastbound Approach: (DE Route 14) proposed one left-turn lane and one existing through lane
   Westbound Approach: (DE Route 14) existing one through and one proposed left-turn lane.
   Southbound Approach: (Site Entrance) stop-controlled; proposed one left-turn lane and one right-turn lane.

2) **Delaware Route 14 & Butler Road / Old Airport Road**
   Type of Control: two-way stop control
   Eastbound Approach: (DE Route 14) shared left-turn/through/right-turn lane.
   Westbound Approach: (DE Route 14) shared left-turn/through/right-turn lane.
   Northbound Approach: (Butler Road) shared left-turn/through/right-turn lane. Stop controlled.
   Southbound Approach: (Old Airport Road) shared left-turn/through/right-turn lane. Stop controlled.

3) **Delaware Route 14 & Killens Pond Road / Deep Grass Lane**
   Type of Control: all way stop control
   Eastbound Approach: (DE Route 14) shared left-turn/through/right-turn lane. Stop controlled.
   Westbound Approach: (DE Route 14) shared left-turn/through/right-turn lane. Stop controlled.
   Northbound Approach: (Deep Grass Lane) shared left-turn/through lane (stop controlled) and one right-turn lane (yield controlled).
   Southbound Approach: (Killens Pond Road) shared left-turn/through lane (stop controlled) and one right-turn lane (yield controlled).

4) **Delaware Route 14 & Broad Street**
   Type of Control: one-way stop control (T-intersection)
   Eastbound Approach: (DE Route 14) one through lane and one right-turn lane.
   Westbound Approach: (DE Route 14) one left-turn lane and one through lane.
   Northbound Approach: (Broad Street) one shared left-turn/right-turn lane. Stop controlled.

5) **Delaware Route 14 & Doctor Smith Road**
   Type of Control: one-way stop control (T-intersection)
   Eastbound Approach: (DE Route 14) one through lane and one right-turn lane.
   Westbound Approach: (DE Route 14) shared left-turn/through lane.
   Northbound Approach: (Doctor Smith Road) one shared left-turn/right-turn lane. Stop controlled.

6a) US Route 13 Northbound & Delaware Route 14 / Clark Street
Type of Control: signalized
Eastbound Approach: (DE Route 14) one left-turn lane and one through lane.
Westbound Approach: (DE Route 14) one through lane and one right-turn lane.
Northbound Approach: (US Route 13 NB) one left-turn lane, two through lanes, and one right-turn lane.

6b) US Route 13 Southbound & Delaware Route 14 / Clark Street
Type of Control: signalized
Eastbound Approach: (DE Route 14) one through lane and one right-turn lane.
Westbound Approach: (DE Route 14) one left-turn lane and one through lane.
Southbound Approach: (US Route 13 SB) one left-turn lane, two through lanes, and one right-turn lane.

7) US Route 13 & Fairground Road / Corn Crib Road
Type of Control: two-way stop control
Eastbound Approach: (Fairground Road) one right-turn lane. Stop controlled.
Westbound Approach: (Corn Crib Road) shared left-turn/through/right-turn lane. Stop controlled.
Northbound Approach: (US Route 13) one left-turn lane, two through lanes, and one right-turn lane.
Southbound Approach: (US Route 13) one through lane and one shared through/right-turn lane.

8) US Route 13 & East Liberty Road
Type of Control: one-way stop control (right-in/right-out T-intersection)
Eastbound Approach: (East Liberty Road) one right-turn lane. Stop controlled.
Southbound Approach: (US Route 13) two through lanes and one right-turn lane.

Safety Evaluation

Crash Data: Delaware Crash Analysis Reporting System (CARS) data was provided in the TIS for the three-year period from January 1, 2021, through December 31, 2023. A total of 178 crashes occurred within the study area, with the intersection of US Route 13 & East Liberty Road having the most, at 51 crashes. The most common crash within the study area was front-to-rear, with 47 crashes, or 26% of all crashes. It should be noted that the intersections US Route 13 & Delaware Route 14 and US Route 13 & East Liberty Road are such close in proximity to each other that most of the crashes have been on US Route 13 and have been double counted.

Sight Distance: The study area generally consists of relatively flat roadways and there are few visual obstructions. As always, the adequacy of available sight distance should be confirmed during the site plan review process for all proposed movements at the site accesses.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: Based on the current DART Bus Stop Map, the Delaware Transit Corporation (DTC) currently operates one fixed-route transit bus route in the area of the proposed Harrington Subdivision development. Route 117 Harrington / Dover runs along US Route 13 with the nearest stops located west of the site at US Route 13 & Holiday Inn Express Hotel, Clark St & Thomas St, and US Route 13 & Shaw Ave. There is one bus stop at the study intersection of US Route 13 & Fairground Road / Corn Crib Road.

Planned transit service: Delaware Transit Corporation (DTC) was contacted regarding the existing and planned transit service in the area. DTC did not have any transit-related comments for this project.

Existing bicycle and pedestrian facilities: According to DelDOT's Kent County Bicycle Map, Delaware Route 14 / Clark Street is designated as a High-Traffic Regional Bicycle Route with a Bikeway. US Route 13 is designated as a High-Traffic Connector Bicycle Route Suggestion with a Bikeway. Butler Road is designated as a Connector Bicycle Route Suggestion without a Bikeway. Killens Pond Road / Deep Grass Lane and Fairground Road / Corn Crib Road are designated as Statewide Bicycle Routes without a Bikeway. Broad Street is designated as a Connector Bicycle Route Suggestion with a Bikeway.

Planned bicycle and pedestrian facilities: A shared-use path is recommended along the north side of Delaware Route 14, within the extents of the property frontage. A bicycle lane is recommended between the through lane and right-turn lane into the site entrance.

Previous Comments

The initial scoping memorandum between the developer and DelDOT was dated March 27, 2024.

In a review letter dated May 6, 2024, DelDOT commented on the traffic counts and seasonally adjusted traffic volumes. The developer was asked to adjust the volume balancing on southbound US Route 13 and was provided with additional seasonal adjustment factors. The developer was directed to revise their figures and proceed to the Preliminary TIS.

In a second review letter dated June 6, 2024, DelDOT requested revisions to the volume figures and directed the develop to proceed to the Final TIS

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) The TIS utilized a combination of Highway Capacity Software (HCS) version 2023 and Synchro Software, Version 12, and McCormick Taylor used Synchro Software, Version 11 to complete the traffic analyses. Synchro was selected because the analysis of some intersection's geometry was not supported by Highway Capacity Software (HCS).

2) The TIS and McCormick Taylor generally used heavy vehicle percentages (HV%) from turning movement counts for existing and future conditions (as per DelDOT's Development Coordination Manual section 2.2.8.11.6.H). McCormick Taylor and the TIS assumed 3% HV for future movements and at the proposed site entrance.

3) The TIS and McCormick Taylor determined overall intersection peak hour factors (PHF) for each intersection based on the turning movement counts. Future PHFs were determined as per the DelDOT Development Coordination Manual section 2.2.8.11.6.F where applicable. The application of future PHFs in the TIS was inconsistent between intersections and volume scenarios.

4) For analyses of all intersections, McCormick Taylor and the TIS assumed 0% grade for all movements.

Table 2
Peak Hour Levels of Service (LOS)
Based on Harrington Subdivision Traffic Impact Study – June 2024
Prepared by Becker Morgan Group, Inc.

Unsignalized Intersection [1] Two-Way Stop-Control	**LOS per TIS**		**LOS per McCormick Taylor**	
1 – Delaware Route 14 & Site Entrance	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2032 Build (Case 3)				
Eastbound DE 14 – Left	A (8.1)	A (9.0)	A (8.1)	A (9.0)
Southbound Site Entrance	B (14.5)	C (18.9)	C (19.6)	D (29.0)

[1] 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 3
Peak Hour Levels of Service (LOS)
Based on Harrington Subdivision Traffic Impact Study – June 2024
Prepared by Becker Morgan Group, Inc.

Unsignalized Intersection [2] **Two-Way Stop-Control**	**LOS per TIS**		**LOS per McCormick Taylor**	
2 – Delaware Route 14 & **Butler Road / Old Airport Road**	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2024 Existing Condition (Case 1)				
Eastbound DE 14 – Left	A (8.1)	A (8.1)	A (8.1)	A (8.1)
Westbound DE 14 – Left	A (7.9)	A (7.9)	A (7.9)	A (7.9)
Northbound Butler Road	B (11.5)	B (12.6)	B (11.5)	B (12.7)
Southbound Old Airport Road	C (17.7)	C (17.7)	C (17.6)	C (17.7)
2032 No Build (Case 2)				
Eastbound DE 14 – Left	A (8.2)	A (8.3)	A (8.2)	A (8.3)
Westbound DE 14 – Left	A (8.1)	A (8.0)	A (8.0)	A (8.0)
Northbound Butler Road	B (12.3)	B (14.6)	B (12.3)	B (14.6)
Southbound Old Airport Road	C (21.1)	C (20.8)	C (20.8)	C (20.6)
2032 Build (Case 3)				
Eastbound DE 14 – Left	A (8.3)	A (8.6)	A (8.3)	A (8.5)
Westbound DE 14 – Left	A (8.3)	A (8.2)	A (8.3)	A (8.1)
Northbound Butler Road	B (14.6)	C (20.5)	B (14.6)	C (20.2)
Southbound Old Airport Road	C (27.1)	D (25.7)	D (26.5)	D (25.2)

[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.

Table 4
Peak Hour Levels of Service (LOS)
Based on Harrington Subdivision Traffic Impact Study – June 2024
Prepared by Becker Morgan Group, Inc.

Unsignalized Intersection [3] All-Way Stop-Control	**LOS per TIS**		**LOS per McCormick Taylor**	
3 – Delaware Route 14 & Deep Grass Lane / Killens Pond Road	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2024 Existing Condition (Case 1)				
Eastbound DE 14	B (13.0)	B (13.5)	B (12.6)	B (13.7)
Westbound DE 14	B (11.0)	C (18.4)	B (11.0)	C (18.3)
Northbound Deep Grass Lane	A (9.6)	B (10.5)	A (9.6)	B (10.5)
Southbound Killens Pond Road	A (9.3)	B (10.5)	A (9.3)	B (10.5)
Overall	B (11.7)	C (15.3)	B (11.5)	C (15.3)
2032 No Build (Case 2)				
Eastbound DE 14	C (15.5)	C (16.3)	B (14.9)	C (16.5)
Westbound DE 14	B (12.0)	D (26.5)	B (11.9)	D (25.8)
Northbound Deep Grass Lane	A (9.9)	B (11.1)	A (9.9)	B (11.1)
Southbound Killens Pond Road	A (9.6)	B (11.0)	A (9.6)	B (11.0)
Overall	B (13.4)	C (20.3)	B (13.1)	C (20.1)
2032 Build (Case 3) – AWSC				
Eastbound DE 14	C (20.8)	C (21.6)	C (20.2)	C (21.8)
Westbound DE 14	B (13.1)	E (46.9)	B (13.1)	E (44.9)
Northbound Deep Grass Lane	B (10.3)	B (11.9)	B (10.4)	B (11.8)
Southbound Killens Pond Road	A (9.9)	B (11.6)	A (10.0)	B (11.5)
Overall	C (16.7)	D (32.4)	C (16.4)	D (31.5)
2032 Build (Case 3) – AWSC DE 14 dedicated right-turn lane				
Eastbound DE 14	C (23.4)	C (22.0)	C (23.9)	C (23.8)
Westbound DE 14	B (13.5)	F (55.2)	B (14.2)	F (58.1)
Northbound Deep Grass Lane	B (10.2)	B (11.6)	B (10.5)	B (12.0)
Southbound Killens Pond Road	A (9.8)	B (11.3)	B (10.1)	B (11.7)
Overall	C (18.2)	E (36.5)	C (18.8)	E (38.6)

[3] 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 4 (continued)
Levels of Service (LOS)
Based on Harrington Subdivision Traffic Impact Study – June 2024
Prepared by Becker Morgan Group, Inc.

Unsignalized Intersection [4] **All-Way Stop-Control**	**LOS per TIS**		**LOS per McCormick Taylor**	
3 – Delaware Route 14 & **Deep Grass Lane / Killens Pond Road**	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2032 Build (Case 3) – TWSC				
Eastbound DE 14 – Left	A (8.0)	A (8.9)	A (7.9)	A (8.9)
Westbound DE 14 – Left	A (8.5)	A (8.2)	A (8.8)	A (8.2)
Northbound Deep Grass Lane	C (20.4)	E (45.9)	C (20.4)	E (41.7)
Southbound Killens Pond Road	C (17.0)	E (36.5)	C (17.0)	E (34.3)
2032 Build (Case 3) – Roundabout				
Eastbound DE 14	A (7.1)	A (6.6)	A (7.4)	A (6.5)
Westbound DE 14	A (5.3)	A (9.3)	A (5.8)	A (9.1)
Northbound Deep Grass Lane	A (5.9)	A (5.6)	A (6.2)	A (5.4)
Southbound Killens Pond Road	A (4.6)	A (7.3)	A (4.8)	A (7.2)
Overall	A (6.3)	A (7.9)	A (6.6)	A (7.7)

[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.

Table 5
Peak Hour Levels of Service (LOS)
Based on Harrington Subdivision Traffic Impact Study – June 2024
Prepared by Becker Morgan Group, Inc.

Unsignalized Intersection [5] Two-Way Stop-Control	**LOS per TIS**		**LOS per McCormick Taylor**	
4 – Delaware Route 14 & Broad Street	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2024 Existing Condition (Case 1)				
Westbound DE 14 – Left	A (8.5)	A (8.0)	A (8.5)	A (8.0)
Northbound Broad Street	B (12.2)	B (11.9)	B (12.5)	B (12.3)
2032 No Build (Case 2)				
Westbound DE 14 – Left	A (8.7)	A (8.2)	A (8.7)	A (8.1)
Northbound Broad Street	B (13.0)	B (12.7)	B (13.4)	B (13.0)
2032 Build (Case 3)				
Westbound DE 14 – Left	A (8.9)	A (8.3)	A (8.9)	A (8.3)
Northbound Broad Street	B (14.0)	B (13.6)	B (14.4)	B (14.0)

[5] 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 Harrington Subdivision Traffic Impact Study – June 2024
Prepared by Becker Morgan Group, Inc.

Unsignalized Intersection [6] Two-Way Stop-Control	**LOS per TIS**		**LOS per McCormick Taylor**	
5 – Delaware Route 14 & Doctor Smith Road	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2024 Existing Condition (Case 1)				
Westbound DE 14 – Left	A (7.9)	A (8.0)	A (0.0)	A (0.0)
Northbound Doctor Smith Road	B (13.0)	B (13.8)	B (13.0)	B (13.8)
2032 No Build (Case 2)				
Westbound DE 14 – Left	A (8.0)	A (8.1)	A (0.0)	A (0.0)
Northbound Doctor Smith Road	B (13.9)	C (15.4)	B (14.2)	C (15.2)
2032 Build (Case 3)				
Westbound DE 14 – Left	A (8.2)	A (8.6)	A (0.0)	A (0.0)
Northbound Doctor Smith Road	C (16.7)	C (19.8)	C (17.2)	C (18.2)

[6] 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 Harrington Subdivision Traffic Impact Study – June 2024
Prepared by Becker Morgan Group, Inc.

Signalized Intersection [7]	**LOS per TIS**		**LOS per McCormick Taylor**	
6a – US Route 13 Northbound & Delaware Route 14 / Clark Street	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2024 Existing Condition (Case 1)				
Overall	A (7.9)	A (8.0)	C (20.2)	C (21.7)
2032 No Build (Case 2)				
Overall	A (8.0)	A (8.1)	C (20.6)	C (22.6)
2032 Build (Case 3)				
Overall	A (8.2)	A (8.6)	C (23.8)	C (24.2)

[7] 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 8
Peak Hour Levels of Service (LOS)
Based on Harrington Subdivision Traffic Impact Study – June 2024
Prepared by Becker Morgan Group, Inc.

Signalized Intersection [8]	**LOS per TIS**		**LOS per McCormick Taylor**	
6b – US Route 13 Southbound & Delaware Route 14 / Clark Street	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2024 Existing Condition (Case 1)				
Overall	A (7.9)	A (8.0)	B (19.6)	C (21.1)
2032 No Build (Case 2)				
Overall	A (8.0)	A (8.1)	B (19.2)	C (21.6)
2032 Build (Case 3)				
Overall	A (8.2)	A (8.6)	C (22.2)	C (22.6)

[8] 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 Harrington Subdivision Traffic Impact Study – June 2024
Prepared by Becker Morgan Group, Inc.

Unsignalized Intersection [9] Two-Way Stop-Control	**LOS per TIS**		**LOS per McCormick Taylor**	
7 – US Route 13 & Fairground Road / Corn Crib Road	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2024 Existing Condition (Case 1)				
Eastbound Fairground Road	B (10.5)	B (11.8)	B (10.5)	B (11.8)
Westbound Corn Crib Road	C (16.4)	C (20.1)	C (16.4)	C (20.1)
Northbound US 13 – Left	A (9.6)	A (9.7)	A (9.5)	A (9.7)
2032 No Build (Case 2)				
Eastbound Fairground Road	B (10.8)	B (12.3)	B (10.8)	B (12.3)
Westbound Corn Crib Road	C (18.2)	C (22.9)	C (18.0)	C (22.8)
Northbound US 13 – Left	A (9.9)	B (10.2)	A (9.8)	B (10.1)
2032 Build (Case 3)				
Eastbound Fairground Road	B (11.0)	B (12.5)	B (11.0)	B (12.5)
Westbound Corn Crib Road	C (18.6)	C (24.1)	C (18.4)	C (24.1)
Northbound US 13 – Left	B (10.1)	B (10.3)	B (10.0)	B (10.2)

[9] 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 10
Peak Hour Levels of Service (LOS)
Based on Harrington Subdivision Traffic Impact Study – June 2024
Prepared by Becker Morgan Group, Inc.

Unsignalized Intersection [10] One-Way Stop-Control (RI/RO)	**LOS per TIS**		**LOS per McCormick Taylor**	
8 – US Route 13 & East Liberty Road	Weekday AM	Weekday PM	Weekday AM	Weekday PM
2024 Existing Condition (Case 1)				
Eastbound East Liberty Road	B (11.3)	B (12.0)	B (11.8)	B (13.0)
2032 No Build (Case 2)				
Eastbound East Liberty Road	B (11.6)	B (12.8)	B (12.8)	B (14.1)
2032 Build (Case 3)				
Eastbound East Liberty Road	B (11.7)	B (13.2)	B (13.0)	B (14.7)

[10] 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.