REZ2023-00003, HICKORY HILL II, L.L.C.

Residential Rezoning Report
Beaverdam Magisterial District
Board Meeting Date: July 26, 2023

Overview

Requested Zoning	RS(c), Single-Family Residential District with conditions
Requested Density	2.87 dwelling units per acre
Current Zoning	A-1, Agricultural District
Acreage	52.25 acres
Location	North line of East Patrick Henry Road (State Route 54) at its intersection with Providence Church Road (State Route 662)
GPINs	7880-92-1335(part) and 7880-81-6802
General Land Use Plan	Planned Business and Commercial
Major Thoroughfare Plan	East Patrick Henry Road is shown as a Minor Arterial with a 100' ultimate right-of-way
Case Planner	Claudia Cheely

Executive Summary

This is a request to rezone from A-1, Agricultural District, to RS(c), Single-Family Residential District with conditions, to allow 150 age-restricted, single-family detached homes for a gross density of 2.87 dwelling units per acre.

The proposed development is located on East Patrick Henry Road (State Route 54) at its intersection with Providence Church Road, just east of the Town of Ashland on the edge of the Suburban Service Area (SSA). The layout of this subdivision includes the relocation of the intersection of Providence Church Road with East Patrick Henry Road approximately 580 feet to the east from its current location to provide safer spacing from Woodside Lane. Providence Church Road currently intersects East Patrick Henry Road immediately east of Woodside Lane and is at an angle that creates unsafe turning movements. With this request, Providence Church Road will be relocated to the east and its current right-of-way is to be abandoned, with the exception of that portion that is to remain for the cul-de-sac shown for use by an adjacent property (GPIN 7880-72-6758). The abandoned right-of-way will be divided between this project and the Providence subdivision.

Recommendations

Staff

Should the Board determine that residential development at the density proposed is appropriate, then staff recommends **APPROVAL** of this request, subject to the submitted conceptual plan and proffers.

Planning Commission

The Planning Commission recommends **APPROVAL**, subject to conceptual plan and proffers submitted.

Planning Analysis

This is a request to rezone 52.25 acres to RS(c), Single-Family Residential District with conditions, for the development of 150 age-restricted, single-family homes.

Conceptual Plan

The following chart summarizes the required features of the proposed RS development as shown on the conceptual plan:

Overview Conceptual Plan Features	
Housing Types	150 single-family detached homes that are age-restricted
Gross Residential Density	2.87 units per acre
Net Residential Density	2.88 units per acre
Lot Sizes	• Lot size range: 6,250 square feet (0.14 acres) to 8,389 square feet (0.19 acres)
Access and Circulation	Two full-movement entrances on East Patrick Henry Road that include the following road improvements: • A left turn lane and a right turn lane with 200' of storage at the northern entrance to Relocated Providence Church Road • A left turn lane and a right turn taper to Meyers Park Drive (main entrance to project) In addition, there is one full-access entrance on Providence Church Road.
Open Space	• 10.41 acres are required, and 12.65 acres of open space are provided (24.2% of site).
Streetlights	• Streetlights are shown in accordance with the RS District requirements on both sides of each entrance from East Patrick Henry Road and from Providence Church Road. • One additional streetlight is shown to the front-right of the center pavilion, which will balance the view to that feature from East Patrick Henry Road.
Landscaping	• The landscaping for the 25' (along Providence Church Road) and 50' (along East Patrick Henry Road) road buffers consists of deciduous and evergreen trees and shrubs and has been proffered to meet the standard in §26-264.3, but enhanced by increasing the number of trees by 25% for trees and 30% for shrubs. • Street trees will also be provided on both sides of each road. • In the buffers shown on the plan between the eastern and southern property lines and interior lots, existing vegetation will be maintained. • Open spaces will also be landscaped in accordance with the landscaping plan, which includes additional evergreen shrubs where the side or rear of lots might be visible from Route 54.
Pedestrian/Bicycle Infrastructure	• Sidewalks are provided on both sides of all subdivision streets. • Asphalt pedestrian paths are provided within the thoroughfare buffers and open spaces, which will connect the proposed sidewalks to the Providence subdivision via two sidewalk connections. • Mid-block pedestrian cut-throughs are provided at two locations.

The following are unique features of the proposed subdivision, which are provided to address existing features on the property, the applicant's desired amenities for this community, and the provision of a transportation improvement that the applicant has agreed to incorporate into this development for better roadway design and safety purposes:

- *Relocation of Providence Church Road*
  - Providence Church Road will be relocated 580' to the east with a design that provides a 90-degree radius at both corners where it intersects East Patrick Henry Road.
  - From the area of roadway to be abandoned, a short cul-de-sac road will be located at a possible future entrance to the adjacent parcel at the corner of Woodside Lane and East Patrick Henry Road for the purpose of maintaining that property's entrance from this location.
  - After Providence Church Road is vacated, the abandoned roadway will be divided between the proposed subdivision and the Providence Subdivision, with the exception of that portion that is to remain for the cul-de-sac shown for use by GPIN 7880-72-6758.
- *Enhanced Thoroughfare Buffers*

  The RS zoning district regulations do not require specific plantings within the thoroughfare buffer. However, the applicant has proffered to plant an enhanced buffer in accordance with the commercial thoroughfare buffer standard in Section 26-264.3 and increases the number of trees required by 25% and by 30% for shrubs. That equates to twenty-eight (28) trees and forty-nine (49) shrubs that will be clustered in several locations across the property's frontage on East Patrick Henry Road. Clustering plantings within the buffer (instead of planting them in a row) will create a more natural and organic design, reflecting the rural character found along Route 54 in the area.

  The applicant has also revised the conceptual plan to provide rows of evergreen screening where the sides of homes would be oriented towards Route 54, further improving views from that roadway.
- *Active Open Space along East Patrick Henry Road*

  Three additional active open space areas are provided that expand the open space along the thoroughfare buffers on East Patrick Henry Road and include a pavilion or gazebo and trails; these spaces are 2.55 acres, 2.29 acres and 1.82 acres in size.
- *Preserved Cemetery with Pedestrian Access*

  A cemetery will be preserved and surrounded by a black aluminum fence and have sidewalk access. Landscaping is being provided between the end lot and the cemetery, and a sidewalk to it is provided.
- *Resident RV/Boat Storage*

  A parking area for residents' RVs and boats is provided that will be screened with a 6' board-on-board privacy fence and existing vegetation to the north.

  The applicant has proffered to provide a vegetative screen along the rear line of the cemetery that will be clustered to create a more natural and organic design should that be determined necessary during construction plan review. They have also shown on the conceptual plan groupings of evergreen trees to the front of the RV storage area.
- *Amenitized Central Open Space*

  A central active open space area includes parking for the following active recreational amenities:
  - Pavilion with a fire pit
  - Pickleball courts
  - Community garden

- Dog Park

The following are the RS standards for review of the conceptual plan found in Section 26-67.3 of the Zoning Ordinance:

a. *The open and common space areas shall be directly accessible to the largest practicable number of lots within the district. Non-adjoining lots shall be provided with safe and convenient pedestrian access to neighborhood common and open space.*

   The interior open space is central to the overall layout and provides active recreational amenities, including a pavilion with a fire pit, pickleball courts, a community gardening area, a dog park, and residential parking. Access to this space is provided by sidewalks and a pedestrian trail system that connects the entire community to this area as well as the other open spaces provided along the development's frontage on East Patrick Henry Road. The layout includes open space breaks between longer blocks of housing to allow for easier pedestrian access throughout the site.

b. *The common and open space areas shall be suitable for recreational uses, either active or passive, without interfering with adjacent dwelling units, parking, driveways, and roads.*

   The open spaces are provided in areas that are suitable for recreational uses, both active and passive. These larger open areas are near homes, but will not interfere with the dwellings, parking, driveways, and roads.

c. *The open and common space areas shall be undivided by public or private roads, except where necessary for proper traffic circulation.*

   The three main open and common space areas are not divided by roads and are large enough for activities to occur in those areas. Where the two main roads are accessed from East Patrick Henry Road, pedestrian crosswalks are provided to interconnect the separate open space areas.

d. *Open space areas shall be left in their natural state to the maximum practicable extent, unless located to provide a screening buffer from adjoining property and roadways. Pedestrian paths may be located within the open space, including the buffer areas.*

   A tree line is shown along the southern property line adjacent to existing residential development. It continues around the site along the eastern and northern lines of the property to provide a buffer between this development and adjacent residential and along Providence Church Road on the northern side. The notes indicate that existing vegetation will be maintained in these areas to provide a buffer between this development and adjacent properties.

e. *Historic features other than structures, when identified on the property, shall be incorporated into the open space areas and a preservation plan shall be provided for protection and maintenance of the features. If approved by the board, historic structures may be included in common space for use by the homeowners or may be located on a residential lot for conveyance and use as a residence.*

   There are no historic structures on the property, but there is a historic cemetery. The development will incorporate this cemetery into one of its passive open space areas, and it will be protected by a black aluminum fence. A sidewalk is shown to the cemetery for visitor access.

f. Streets shall generally be designed to minimize the area within the project devoted to vehicular travel; calm traffic speeds; promote pedestrian movement; and terminate in views of open or common space or other appropriate vista.

Providence Church Road is being relocated 580' east of Woodside Lane to provide a safer intersection design. It will continue to mainly serve the existing residents along that road but will also provide secondary access for the proposed development. The interior roads simply provide access to all interior lots. Several views to open space areas are provided from these roads, including vistas to these areas where three roads terminate at cul-de-sacs that are surrounded by open space instead of lots.

Transitions between Suburban and Rural Areas

The proposed development is located on the edge of the Suburban Service Area (SSA), which is the County's designated growth area. The applicant is attempting to develop a residential community that is more consistent with the residential development to the north and then transition to both the rural landscape to the east and commercial development to the south. The applicant is providing a thoroughfare buffer with an enhanced planting standard that is proffered as well as a three-rail fence along the entire frontage to promote a more agricultural aesthetic across the frontage on Route 54. Additionally, wide open space areas along Route 54 further improve views from the corridor and provide a visual transition from rural to suburban areas.

Elevations

Residential elevations have been provided that represent the architectural style proposed for this community. Each of the elevations shows one or more design elements that may be included with the future homes in this development. With each building permit, the particular elevation provided with the permit must include at least three (3) design elements. With individual homeowners choosing the design elements and colors, some variation in design should be realized.

Elevations have also been provided for a 1,320 square foot pavilion that includes a stone fireplace, a pergola, a gazebo, and the mail kiosk. These structures appear to use a consistent style and materials as provided with the elevations for the homes.

Transportation

A traffic impact analysis was prepared for the proposed community of 150 age-restricted, single-family homes. The study looked at existing traffic conditions, No-Build 2027 conditions, Build 2027 conditions, and Build 2027 conditions with trip counts from Phase I of the Iron Horse Business Park added. The study included the AM and PM peak hour counts for the following intersections:

- Route 54 at Hill Carter Parkway
- Route 54 at 1-95 Southbound Ramps
- Route 54 at 1-95 Northbound Ramps
- Route 54 at Woodside Lane
- Route 54 at Providence Church Road
- Route 54 at Meyers Park Drive
- Route 54 at Goddins Hill Road

According to the study, all of the study intersections are expected to operate acceptably at build-out of the neighborhood with LOS of D or greater (Hanover County Board of Supervisors Transportation Policy dated March 13, 2013, revised July 27, 2016).

The projected build-out traffic volumes do not warrant any turn lanes on Route 54 at realigned Providence Church Road or the proposed site driveway. However, the applicant is proposing significant improvements to Route 54 and Providence Church:

- Realign Providence Church Road approximately 580 feet to the east to improve the spacing from Woodside Lane.
    - The relocation of Providence Church Road to the east is an improvement that the County and VDOT have long supported in order to improve safety.
- Widen Route 54 to a three-lane section from Woodside Lane to Meyers Park Drive to provide eastbound left-turn lanes on Route 54 at realigned Providence Church Road and Meyers Park Drive.

The applicant has also proffered specific improvements at each intersection along Route 54, which will be designed in accordance with VDOT standards and specifications:

- Construct one eastbound left-turn lane on Route 54 with 200 feet of storage and a right-turn lane with 200 feet of storage at Relocated Providence Church Road.
- Provide separate southbound left and right-turn lanes on Relocated Providence Church Road.
- Construct one eastbound left-turn lane on Route 54 with 200 feet of storage and a 100 foot right-turn taper into the southwest entrance into the proposed subdivision (Meyers Park Drive); and
- Provide separate southbound left and right-turn lanes on the southwest entrance (Meyers Park Drive).

Some of these proposed improvements are intended to address community concerns regarding traffic flow along Route 54, including comments received during the community meeting and Planning Commission public hearing. A concern about a possible backup of right-turning traffic into the westbound through lane of Route 54 (East Patrick Henry Road) was raised. To address those concerns, the applicant is now providing a dedicated right turn lane with 200' of storage to Providence Church Road from Route 54 in accordance with VDOT standards and specifications. The number of trips at Meyer Park Drive is adequately served by the provision of a 100' right turn taper.

Comprehensive Plan

The Comprehensive Plan designation shown for a majority of this site is *Planned Business*, with some *Commercial* at the western end of the site where it currently extends to the corner of Providence Church Road and Woodside Lane. The applicant has submitted two previous zoning applications on this site for developments that were consistent with the current land use designations. The previous applications were denied by the Board of Supervisors. In both cases, the Board agreed with nearby residents who voiced opposition to any commercial or retail development, which was consistent with the current General Land Use Plan Map.

In response to Board and citizen concerns regarding commercial development of the property, the applicant has submitted an application for residential zoning in an effort to more closely align

development of the property to the vision expressed by residents. The application for a residential development consisting of 150 single-family homes with a gross density of 2.87 dwelling units per acre is within the density range recommended within the *Suburban General* (1.5 – 3.0 dwelling units per acre) land use designation. Further, the proposal provides for age-restriction of all units in this community to mitigate traffic and school capacity concerns.

Although the application does not align with the *Planned Business* designation as shown on the Comprehensive Plan, it does appear to align more closely with the community's vision and the recommended *Suburban Neighborhood Residential* (1.5 – 3.0 dwelling units per acre) land use designation in the 2023 Draft Plan currently under review.

The General Land Use map in the Comprehensive Plan was considered by the Planning Commission at its meeting on June 15, 2023, but they had no comments on land use as it related to the subject proposal.

Should the Board of Supervisors determine that development consistent with the *Suburban General* land use designation is more appropriate for this location, staff has provided a review of the goals and objectives for *Suburban General* land use and notes the following:

- *Achieve quality neighborhoods by encouraging the use of high-quality construction techniques and materials*

  The elevations provided show use of brick or stone foundations and include a list of materials that the homes must use. This list includes quality building materials.

- *Community design should incorporate concepts outlined in Section 4, Active Living and Healthy Neighborhoods; Promote the interconnection of communities to enhance vehicular, bicycle, and pedestrian circulation and reduce demand along existing and proposed thoroughfares.*

  Sidewalks are provided on both sides of all interior roads, and pedestrian trails are shown throughout the common open spaces, including all road buffer areas. The trails in the buffers on the north side of the proposed development show possible pedestrian connections to the Providence Subdivision to allow both communities to use the trails and sidewalks in both communities. Providing both communities with additional trails and sidewalks promotes physical exercise and strengthens social cohesion between these communities.

- *Ensure provision of adequate and safe vehicular access to thoroughfares*

  With development of this property, Providence Church Road will be relocated approximately 580 feet to the east to provide better spacing with Woodside Lane and to improve the design of its intersection with East Patrick Henry Road. After widening this section of East Patrick Henry Road to a three-lane section, left turn lanes will be provided for both Providence Church Road and the subdivision road, Meyers Park Drive, as well as a dedicated right turn lane to Providence Church Road. The applicant indicates that with these improvements, adequate and safe vehicular access to thoroughfares will be provided.

- *Ensure provision of contiguous open space designed for passive and active recreation that is conveniently and centrally located for residents, and encourage the preservation of cultural resources and environmental features such as wetlands and Resource Protection Areas, scenic viewsheds, and existing trees/vegetation*

The community provides contiguous open spaces that are designed for both passive and active recreation, including an active area that is centrally located with pedestrian and sidewalk access from all directions. A small parking lot is provided should any resident need that option. In addition, the layout provides for preservation of a cemetery, which will be protected using a black aluminum fence. No wetlands are on this property, but scenic viewsheds are provided. Existing trees and vegetation will be maintained in buffer areas.

- *Ensure land uses are harmonious with surrounding uses and residential density and non-residential uses should transition appropriately to adjoining uses*

  This property is located on the north line of East Patrick Henry Road and is immediately south of the Providence Subdivision. To the east is the preservation lot for the Hickory Hill Subdivision, and to the west is the Town of Ashland. With this request, the applicant has submitted a proposal that provides for similar types of homes and density of development as the Providence subdivision. The applicant has indicated that this proposal provides a harmonious transition between the Providence subdivision and the existing zoning of the development south of East Patrick Henry Road, which is currently zoned MX, Mixed Use District, and the subject of a proposal to rezone to OS, Office Service District, for the development of flex warehouse space. In addition, this property is adjacent to a major thoroughfare road where the density may be managed with the proposed roadway improvements.

- *Promote variation in building elevations through diverse but complementary architectural forms, materials, colors, and texture*

  The elevations submitted represent the architectural styles that are proposed, and variation will be achieved through application of the rules provided on the elevations sheet that require the builder or purchaser to make choices regarding architectural features and colors with each building permit. No more than three (3) adjacent houses may be constructed with the same elevations and the same materials.

Compatibility with Surrounding Area

This property is located on the north line of East Patrick Henry Road and is immediately south of the Providence subdivision. To the east is the preservation lot for the Hickory Hill Subdivision, and to the west is the Town of Ashland. To the south is the East Ashland/Ironhorse project, which currently has a rezoning request under review for O/S, Office/Service District, for the development of large flex space buildings, and RM, Multi-Family Residential District, for townhomes.

With this request, the applicant has submitted a proposal that provides for similar types of homes and density as the Providence subdivision. The original Providence subdivision had a density of 2.54 dwelling units per acre, but the section of Providence that was added after the original rezoning and is immediately north of the subject site was approved at a density of 2.92 dwelling units per acre. Together, the overall density in Providence is approximately 2.63 dwelling units per acre. This proposal contemplates a density of 2.87 dwelling units per acre, which is a slight reduction from the original application. The applicant has indicated that this proposal provides a harmonious transition between the Providence subdivision and the East Ashland site to the south and to the agricultural areas to the east.

However, based on community input and to further address the County's vision for transitions between rural areas and the Suburban Service Area, staff recommends that the density proposed be further reduced to a density that is less than the density of the overall Providence subdivision.

Schools

Because the proposed development will be age-restricted, there should be no impact on the capacity of Hanover County Public Schools.

Historical Analysis

Under the Guidelines for Historical Commission Review, zoning requests are brought to the Commission for review that are Category 1 and 2 sites, which include sites that are designated as:

- National Historic Landmarks and/or are determined to be of exceptional cultural and/or historic resources;
- Properties and districts that are on the National Register of Historic Places, or determined eligible or potentially eligible for the National Register;
- Century Farms;
- Battlefield sites; and,
- Documented historic cemeteries.

The Commission reviewed this request because the property is near two surveyed cemeteries and the Civil War feature, Jackson's March from Beaverdam to Mechanicsville, passes by this property along Providence Church Road. Both cemeteries are far enough away that they will not be impacted by the development of the subject property, and there are no physical features in this area related to the Civil War feature. The Commission determined this request will not impact the historic resources.

Community Meeting

A community meeting was held by the applicant on April 19, 2023. Issues raised at the meeting included the following:

- Traffic Concerns: Questions were raised about the traffic impact analysis because it was based on 2019 data and VDOT had indicated that traffic counts on Route 54 had increased 10-19% since 2019. It was also asked why right turn lanes into the site were not being provided.
    - The traffic study was updated to include updated data and traffic counts, and its outcome did not change.

- Features of the Development: There were many questions about the details of the development's layout and the type of homes planned, high density, use of emergency access to Providence, and when the project would be built out. Also, there was a request for more breaks between long rows of homes for additional pedestrian connections.

- Comprehensive Plan: The Comprehensive Plan for this site shows *Planned Business*, and questions were asked why a comprehensive plan amendment prior to the rezoning was not being considered.

Agency Analysis

Most agency comments on this request have been addressed with the applicant's resubmittals or they apply to the construction and subdivision processes. The following comments that do relate to the rezoning do not appear to have been addressed:

- *VDOT* - VDOT had concerns about the design of some interior roads. The applicant has made corrections to the design of those roads with the latest conceptual plan, which was provided to VDOT. At the time of this report, VDOT had not yet responded as to whether the roadway redesign was acceptable.
- *Public Utilities* – The Department of Public Utilities had noted that portions of the property could not be served by public sanitary sewer. When questioned about this comment, they indicated that this is only an issue for the existing conditions of the property. Coordinating the grading with the lot layout can lead to an acceptable design for the RS zoning. Public Utilities believes the site can be designed to create an approvable construction plan layout that can be served entirely by gravity public sanitary sewer.

Proffers

The applicant has submitted the following proffers, submitted June 30, 2023:

1. Age Restriction. Accept. All units are proffered to be age restricted. Age restricted communities produce less traffic and have no impact on the school system since no school age children will reside in these homes.

2. Right-of-Way Dedication. Accept. The applicant has proffered to dedicate right-of-way in accordance with the Major Thoroughfare Plan for both Providence Church Road and East Patrick Henry Road.

3. Transportation Improvements. Accept. The applicant has proffered to complete roadway improvements along East Patrick Henry Road at its intersections with Relocated Providence Church Road and Meyers Park Drive in accordance with VDOT standards and specifications.

4. Providence Church Road. Accept. Should the portion of Providence Church Road be approved for abandonment as proposed on the conceptual plan, the applicant has proffered to construct and dedicate right-of-way for a cul-de-sac road to the access drive for the off-site parcel, GPIN 7880-72-6758, prior to such vacation or abandonment to allow access from Providence Church Road to the off-site parcel. This proffer refers to an attached exhibit that has not been provided with this application. The conceptual plan shows the proposed cul-de-sac, so the applicant should either submit the referenced exhibit or refer to the conceptual plan.

5. Enhanced Thoroughfare Buffer. Accept. The applicant has proffered to provide the plantings for a thoroughfare buffer along East Patrick Henry Road that is enhanced with 25% more trees and

30% more shrubs than are required for that type buffer that will be planted in appropriate clusters to create a more natural and organic design.

6. Recreational Amenities. Accept. The applicant proffers that the listed amenities must be designed, bonded, and constructed as subdivision improvements with the first section that is developed.

7. Trailer/RV Storage Area Landscaping. Accept. If existing vegetation is found inadequate to screen the storage area during construction plan review by the Zoning Administrator, the owner will provide commercial screening of the back of the storage area. If additional plantings are needed, a combination of deciduous and evergreen trees and plant materials clustered to create a natural and organic design.

Summary/Final Analysis

While the current Comprehensive Plan land use designations for this property are for *Planned Business* and *Commercial*, two previous zoning requests that were designed to align with these designations were not supported by the Board or the community. The applicant is now proposing residential zoning in an effort to align development of the property more closely to the vision expressed by residents. The application is for an age-restricted residential development consisting of 150 single-family homes with a gross density of 2.87 dwelling units per acre, which is within the density range recommended within the *Suburban General* (1.5 – 3.0 dwelling units per acre) land use designation.

At the Planning Commission meeting, it considered the land use in its review but had no specific comments. Further, it recommended approval of the request if the staff's recommended changes were made. Therefore, the Board of Supervisors should consider whether the proposed use and density are appropriate in a location that transitions to agricultural/residential uses to the east along Route 54. The proposed density is 2.87 dwelling units per acre. While the Providence subdivision's overall density is 2.63 dwelling units per acre, Section 2 of Providence that is immediately north of the subject property had a density of 2.92 dwelling units per acre. The applicant has indicated that this demonstrates that this site is providing a density transition from Providence to the agricultural/residential areas to the east. The applicant is also providing substantial vegetative plantings in the thoroughfare buffer with rural features (e.g., a 3-rail fence) along its frontage on Route 54. Additionally, significant open space areas are provided along the Route 54 frontage. To the south of Route 54 is an area zoned MX, Mixed Use, for a mix of commercial and residential development, but that is currently under consideration by both the Town and County for office and warehouse uses with some retail along the frontage on Route 54. Finally, the land use proposed for this area under the Comprehensive Plan 2023 update is for residential development at this location. The draft maps currently show this area for *Suburban Neighborhood Residential* (1.5 – 3.0 dwelling units per acre).

Staff recommends that the Board make a determination as to whether residential use is appropriate at this location and whether the density of the proposed residential development is appropriate, given its location on the edge of the Suburban Service Area (SSA). Should the Board determine that residential development at the density proposed is appropriate, then staff recommends approval subject to the submitted conceptual plan and proffers.

Planning Commission Recommendation

At their meeting of June 15, 2023, the Hanover County Planning Commission, on a motion by Mrs. Iverson, seconded by Mr. Bailey, voted to recommend **DENIAL** as submitted, but **APPROVAL** to rezone to RS(c), Single-Family Residential District with conditions, on GPIN(s) 7880-92-1335(part) and 7880-81-6802, consisting of approximately 52.25 acres, subject to the applicant addressing the following recommendations:

1. To transition from the Suburban Service Area to the rural area, density should be reduced to reflect that transition, which staff recommends be less than the density of the entire Providence Subdivision.
2. Staff has recommended that the landscaping for the central open space be provided in a manner that better screens views from East Patrick Henry Road to the cul-de-sac and the side yards of the last homes on that cul-de-sac. Since the proffer contemplates specific numbers of planting materials, staff suggests that more landscaping may be needed than has been proffered in order to accomplish this and also provide adequate landscaping along the remainder of the frontage along East Patrick Henry Road.
3. Provide additional plantings to enhance the existing vegetation around the RV storage lot to further screen this fenced area from view from Providence Church Road.
4. To address citizen concerns regarding traffic, the right turn tapers proposed from East Patrick Henry Road should be redesigned as right turn lanes in accordance with VDOT standards and specifications.
5. The inconsistencies related to the elevations and the depiction of those structures on the conceptual plan should be corrected.
6. The applicant should provide information as to how the applicant has resolved the Public Utilities comment that sewer may not be available to the entire site.
7. To address citizen comments related to the rural character of the area, staff recommends that a fence be added to the road buffer to enhance the site along the property frontage with an agricultural feature that cues an observer that they are moving from the Town of Ashland into the rural area east of the Town along East Patrick Henry Road. The Planning Commission should determine whether this recommendation is appropriate.
8. The conceptual plan must be amended to show landscaping in areas between paths and lots.
9. Proffer #4 regarding the proposed Providence Church Road cul-de-sac should be revised to correct the exhibit reference and add language that indicates when in the process the cul-de-sac design will be reviewed, approved, and constructed.
10. The proffers should be amended to revise Proffer #5 regarding the road buffer in accordance with staff's recommendations.

The applicant has revised the conceptual plan and proffers to address the recommended changes, with the exception of reducing the density. Therefore, should the Board determine that residential development at the density proposed is appropriate, then staff recommends approval subject to the submitted conceptual plan and proffers.

Attachments

- ☑ Maps (land use, vicinity, zoning, aerial)
- ☐ Photographs
- ☑ Application
- ☑ Postal Verification of Adjacent Owner Notifications
- ☑ Traffic Study
- ☐ Approval Letter Proffers/Elevations/Conceptual Plan
- ☑ Historical Commission Recommendation
- ☑ Agency Review Comments
- ☑ Community Meeting Notes
- ☑ Citizen Correspondence
- ☑ Proffers
- ☑ Conceptual Plan Set with Elevations
- ☑ Ordinance

Initials: CDC

Maps

Hanover County, Virginia

Land Use Map

Legend

- Agricultural
- Rural Village
- Suburban Transitional
- Suburban General
- Suburban High
- Multi-Family
- Commercial
- Multi-Use
- Business-Industrial
- Industrial
- Limited Industrial
- Planned Business
- Mech MU Low
- Mech MU High
- Destination Commerce
- Flood Plain

REZ2023-00003

Hickory Hill II, L.L.C.

Rezone A-1 to RS

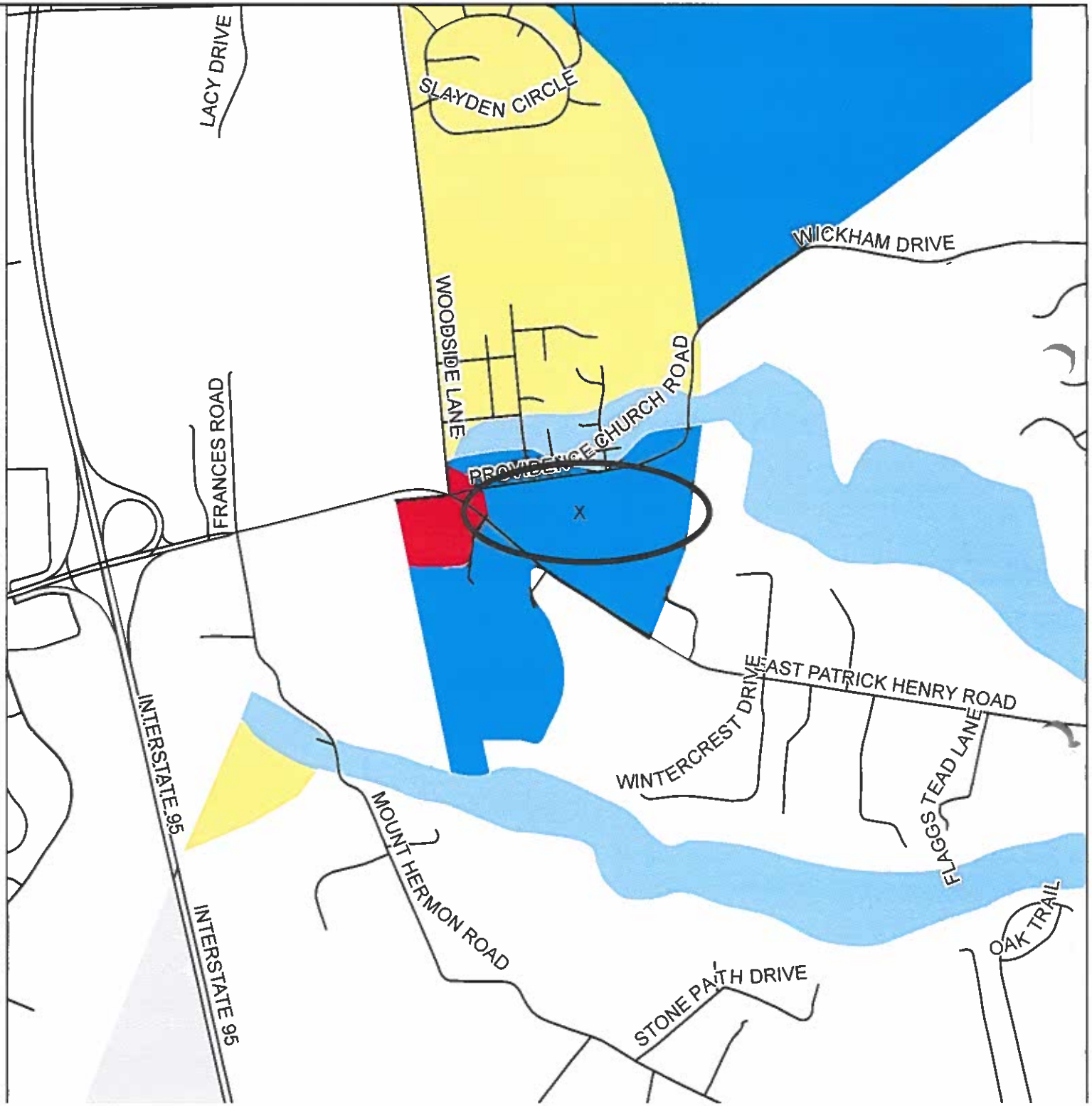
Planned Business & Commercial Land Use

GPIN's: 7880-92-1335 (part) & 7880-81-6802
Beaverdam Magisterial District

N
W E
S

1 inch = 1,500 feet

February 03, 2023



Hanover County, Virginia

General Parcel Map

Legend

- Roads
- Water
- Structures
- Parcels
- Trees

REZ2023-00003

Hickory Hill II, L.L.C.

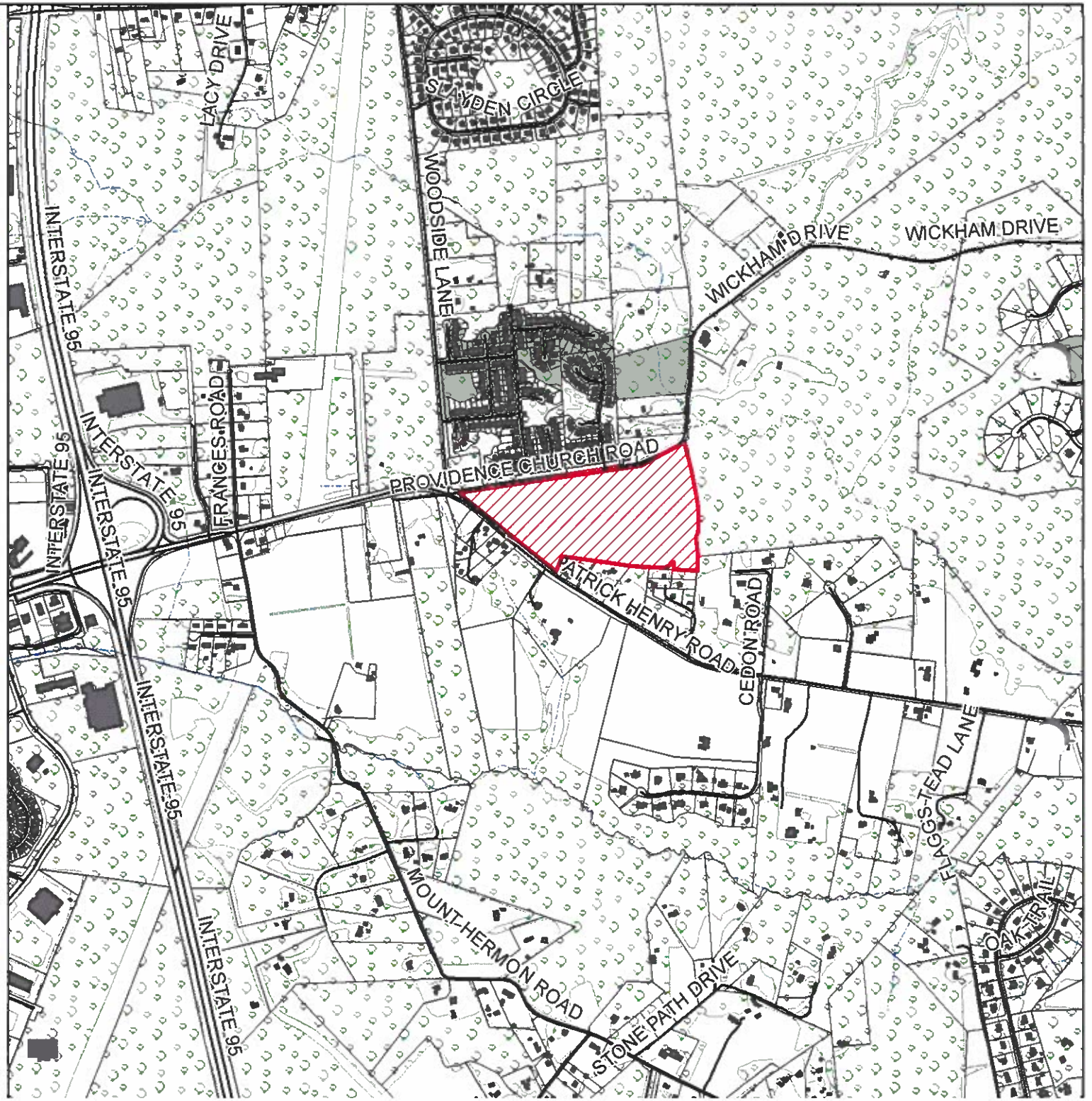
Rezone A-1 to RS

GPIN's: 7880-92-1335 (part) & 7880-81-6802
Beaverdam Magisterial District

N
W E
S

1 inch = 1,500 feet

February 03, 2023



Hanover County, Virginia

Zoning Map

Legend

Roads	R-1
Water	R-2
Parcels	R-3
CUP	R-4
A-1	R-5
PUD	R-6
RRC	RM
RR-1	MX
RO-1	B-1
PSC	B-2
POB	B-3
PMH	B-4
HE	O-S
AR-1	B-O
AR-2	M-1
AR-6	M-2
RC	M-3
RS	

REZ2023-00003

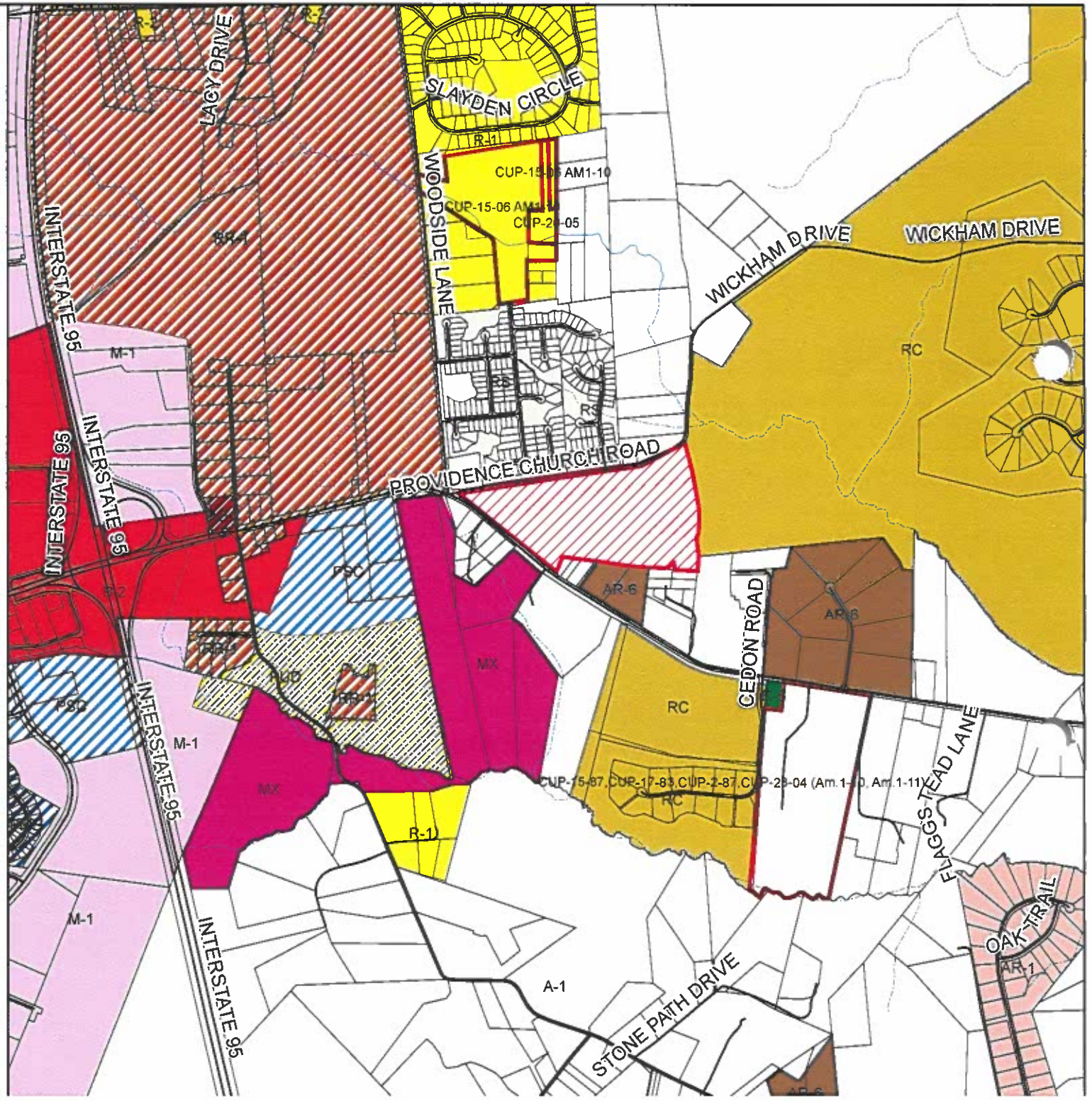
Hickory Hill II, L.L.C.

Rezone A-1 to RS

GPIN's: 7880-92-1335 (part) & 7880-81-6802
Beaverdam Magisterial District

N
W E
S

1 inch = 1,500 feet




REZ2023-00003

Application

Hanover County Planning Department Application

Request for REZONING

Case #: REZ2023-00003

Please type or print in **black** ink.

APPLICANT INFORMATION

Owner: Hickory Hill II, LLC Contact Name: Todd D. Rogers Address: 9245 Shady Grove Road, Suite 200 Mechanicsville, VA 23116	Telephone No. 804-569-1534 Fax No. Email Address ToddR@HTRSI.com
Applicant/Contract Purchaser: Rogers-Chenault, Inc. Contact Name: Todd D. Rogers Address: 9245 Shady Grove Road, Suite 200 Mechanicsville, VA 23116	Telephone No. 804-569-1534 Fax No. Email Address ToddR@HTRSI.com

PARCEL INFORMATION

For multiple parcels, please complete Page 4 ☑

GPIN(s) (Tax ID #'s) 7880-92-1335 (in part) & 7880-81-6802 Deed Book see attached Page see attached Magisterial District Beaverdam Location Description (Street Address, if applicable) 10035 Providence Church Rd, south of Providence Church Rd at its intersection with Route 54	Total Area (acres/square feet) 52.25 Current Zoning A-1 Requested Zoning RS Requested Use 150 Age-Restricted Single-Family detached homes

SIGNATURE OF OWNER☐ POWER OF ATTORNEY☐ CONTRACT PURCHASER■ *(attach contract)*

As owner or authorized agent of this property, I hereby certify that this application is complete and accurate to the best of my knowledge, and I authorize County representatives entry onto the property for purposes of reviewing this request.

Signature _____ Date 5-23-23

Print Name Todd D. Rogers

Signature _____ Date _____

Print Name _____

QUESTIONS/ LETTERS/ REPORTS SHOULD BE FORWARDED TO THE FOLLOWING**:

Name Todd Rogers Address: 9245 Shady Grove Road, Suite 200 Mechanicsville, VA 23116	Telephone No. 804-569-1534 Fax No. Email Address ToddR@HTRSI.com

**It is the responsibility of the contact person to provide copies of all correspondence to other interested parties to the application.

FOR APPLICATIONS WITH MULTIPLE PARCELS, PLEASE LIST:					
GPIN	**Property Owner(s)**	**Deed Book and Page Number**	**Area (acres/square feet)**	**Current Zoning**	**Requested Zoning**
7880-92-1335 (in part)	Print Hickory Hill II, LLC Sign	2968, p158	51.30 acres	A-1	RS
7880-81-6802	Print Hickory Hill II, LLC Sign	3217, p3428	0.95 acres	A-1	RS
	Print Sign				
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ATTACHMENTS - For ALL REQUESTS you must submit the following:

- [x] **a. Acknowledgement of Application Fee Payment Procedure** (Page 6)

- [x] **b. Adjacent property owners, Board of Supervisors, and Planning Commissioner notification form** (Page 7) – please list all adjacent property owners including those across roadways, watercourses, and/or railroads as well as the members of the Board of Supervisors and Planning Commission for the magisterial district in which the property is located. Adjacent property owners, Board members, and Planning Commissioners must be notified prior to submittal of this application. The form must include owners' names, address, and GPINs for all adjacent property owners. (This information is available from the County website or may be obtained from the Planning Department.) A sample letter has been provided (Page 9), and may be used to notify the adjacent property owners.

- [x] **c. A plat of the subject property,** which accurately reflects the current property boundaries, includes metes and bounds, is drawn to scale, and shows existing structures. If the full-size plat is larger than 8 ½" x 11", the plat must be folded no larger than 9" x 12", and a reduction of the plat must be submitted which is 8 ½" x 11" in size. (Typically available from the County Clerk's Office in the Circuit Court building.)

- [x] **d. Responses to questions on Pages 10 and 11**

- [x] **e. Historic Impact Information** (Page 12) (This information is available on the County website or may be obtained from the Planning Department.)

- [x] **f. Traffic Impact Analysis Certification Form** (Page 13) In compliance with VDOT's new Traffic Impact Analysis Regulations (24 VAC 30-155 *et seq.*, commonly known as "Chapter 527"), rezonings that meet certain thresholds require Traffic Impact Analyses (TIA).
  The process for submitting a TIA is as follows:
  1) Submit the number of copies of the TIA required by VDOT to the Hanover County Planning Department with your comprehensive plan amendment/rezoning/conditional use permit submittal.
  2) The Hanover County Planning Department will stamp "received" on all copies of the TIA, and will keep a copy for its files.
  3) The applicant will deliver the remaining copies of the TIA to VDOT and pay the necessary TIA review fee directly to VDOT.

- [x] **g. Community Meeting Guide** (Please check if you have read and understand Pages 14 & 15.)

- [x] **h. USPS Cluster Box Units (CBUs),** please show the general location of USPS' Central Box Units (CBUs) along with elevations, access, parking and lighting, if provided. Please contact the local postmaster to obtain specific guidelines.

- [x] **i. For applications requiring plans,** please submit thirteen (13) full-size plans, with sheets no larger than 24" x 36", folded to 9" x 12" in size, and **one – 8 ½" x 11" reduction**. MX Project Design Manuals no larger than 8.5" x 11"
  Specific district requirements:
  RS* - Conceptual plans that meet the requirements of Section 26-67 of the Zoning Ordinance.
  RC - Existing Feature and Site Analysis plans that meet the requirements of Section 26-54(a).
  RM* - Conceptual plans that meet the requirements of Section 26-84.
  MX - Master Plan that meets the requirements of Section 26-93.
  BP - Master Plan that meets the requirements of Section 26-157.

*RS and RM conceptual plans may also serve as the subdivision preliminary plat. In addition to the Zoning Ordinance requirements noted above, the preliminary plat requirements in Section 25-25 of the Subdivision Ordinance must also be addressed.

■ **Check here** if the conceptual plan will serve as the preliminary plat.

NOTE: When **conceptual plans and/or elevations** are requested by the Director of Planning which are larger in size than 8½" x 11" or are in color, please submit thirteen (13) full-size or colored plans, with sheets no larger than 24" x 36", folded to 9" x 12" in size, and **one - 8 ½" x 11" reduction**.

ACKNOWLEDGEMENT OF APPLICATION FEE PAYMENT PROCEDURE

Application fees are not accepted at the time of submittal. I hereby acknowledge that this application is not complete until the payment for all applicable application fees has been received by the Hanover County Planning Department. The Hanover County Planning Department shall notify me by mail, email and/or fax, (if selected below) of the applicable fee(s) at such time that they determine that the application is complete and acceptable. I acknowledge that I am responsible for ensuring that such fees are received by the Hanover County Planning Department by the Tuesday the week following the application deadline. I further acknowledge that any application fee submitted after this date shall result in the application being considered filed for the next application deadline.

Should the applicable fees not be submitted within forty-five (45) days of the date of the notification letter, it shall be my responsibility to arrange for the retrieval of all application materials. The application and any supplementary materials for incomplete applications that are not retrieved within forty-five (45) days of the date of the notification letter shall be destroyed by the Hanover County Planning Department.

Should my application be accepted, my fee payment will be due by _____. (To be filled in by a Planning Staff member.)

Signature of applicant/authorized agent _____ Date 5-23-23

Print Name Todd D. Rogers

Signature of applicant/authorized agent _____ Date _____

Print Name _____

Address to which notification letter is to be sent:

9245 Shady Grove Road, Suite 200

Mechanicsville, VA 23116

If you would like your letter emailed and/or faxed, please make selections, and provide the information below:

☑ Email NathenaH@HTRSI.com ☐ Fax _____

FEES

Following application acceptance, make checks payable to Treasurer, Hanover County:

A-1, OHP	$500
AR-6 (>2 lots), RC, RS, RM, MX	$1500 + $75/acre* for 1st 200 acres; $30/acre* for acreage>200 acres
B, OS, M, BP	$1100
Amendment of Proffer or Planned Unit Development	$1500

*Fractions of acreage are rounded up to the nearest whole number.

Please note: Applicants which request tax-exempt status may have their application fee waived upon presentation of official documentation of such status.

FOR STAFF USE ONLY:

Base Fee _____	
Acreage Fee _____	Accepted by: _____
TOTAL FEE _____	HTE #: _____

NOTIFICATION OF ADJOINING PROPERTY OWNERS, BOARD OF SUPERVISORS, AND PLANNING COMMISSIONERS

Applicant's Statement:

I hereby certify that I have notified all adjacent property owners to the property, which is the subject of this request, as well as the members of the Board of Supervisors and Planning Commission for the magisterial district in which the property is located. Adjacent property includes all property across roadways, watercourses, railroads, and/or municipal boundaries. I further certify that the names and addresses below are those of the adjacent property owners as listed in the tax records of the Commissioner of Revenue of Hanover County.

Applicant's Signature: _____

COMMONWEALTH OF VIRGINIA)

) to-wit:

COUNTY OF HANOVER)

NATHENA ELIZABETH HADDRILL
Notary Public
Commonwealth of Virginia
Registration No. 7864620
My Commission Expires Aug 31, 2024

The foregoing instrument was acknowledged before me this 23 day of May, 2022, by Todd Rogers, President of Rogers-Cherault, Inc. (Name of Applicant).

My commission expires: 08-31-2024

_____
Notary Public

Board of Supervisors Representative: R. Allen Davidson

Planning Commission Representative: Edmonia Iverson

List of Adjacent Property Owners: ☑ **Check here if list is attached.**

GPIN	Name	Address

NOTIFICATION OF ADJOINING PROPERTY OWNERS continued		
List of Adjacent Property Owners:		
GPIN	Name	Address

GPIN	Name	Mailing Address
7880-63-9486	Riley & Helen Lowe Rev Trust	PO Box 175, Mechanicsville, VA 23111
7880-70-4924 & 7880-72-4067	Harris & Douglas Properties, LLC	7113 Three Chopt Road, Suite 209, Richmond, VA 23226
7880-71-9467 & 7880-80-6263	Harris & Douglas Properties, LLC	7113 Three Chopt Road, Suite 209, Richmond, VA 23226
7880-71-9482	Harris & Douglas Properties, LLC	7113 Three Chopt Road, Suite 209, Richmond, VA 23226
7880-72-5367	Hanover County	PO Box 470, Hanover, VA 23069
7880-72-7200	Joyce M. Corker Rev Trust	11101 Wychwood Dr, Mechanicsville, VA 23116
7880-72-7041	Kimberly Baber & Donald Matthews	13097 Hill Top Dr, Ashland, VA 23005
7880-71-6956	Kimberly Baber & Donald Matthews	13097 Hill Top Dr, Ashland, VA 23005
7880-71-6798	Christopher Culley	13083 Hill Top Drive, Ashland, VA 23005
7880-71-8619	Harold & Gary Dyson	10820 Hinton Court, Glen Allen, VA 23060
7880-81-0951	Lewis Hopkins	10109 East Patrick Henry Road, Ashland, VA 23005
7880-71-9959	James & Virginia Dyson	10115 East Patrick Henry Road, Ashland, VA 23005
7880-72-8161	Jolene Gonner	10125 East Patrick Henry Road, Ashland, VA 23005
7880-81-7146	Russell & Joanie Pond	10067 East Patrick Henry Road, Ashland, VA 23005
7890-00-0204	Harneet & Sarbjit Kaur Jaswal	9988 East Patrick Henry Road, Ashland, VA 23005
7890-01-1439	Ann & Herman Smith	28248 Signboard Rd, Ruther Glen, VA 22546
7890-01-0411	Grace Anderson	28248 Signboard Rd, Ruther Glen, VA 22546
7890-01-0503	Mary Graves & Dorothy Tyler	PO Box 1431, Ashland, VA 23005
7880-91-8500	Mary Cash	322 New Street, Ashland, VA 23005
7880-91-8516	James Tyler & Nora Bowles	3205 Aldersgate Drive, Richmond, VA 23223
7880-91-8617	Kelvin & Linda Holman	PO Box 119, Ashland, VA 23005
7890-01-0675	Melinda Spurlock	12473 Tarrers Ln, Ashland, VA 23005
7880-91-8737	Betty Burleigh	PO Box 944, Ashland, VA 23005
7890-01-0787	AAA Plumbing Co Inc.	PO Box 438, Lightfoot, VA 23090
7880-91-4455	Georgie L. Stephens Rev Trust	10034 East Patrick Henry Road, Ashland, VA 23005
7880-91-1671 & 7880-91-0618	Rose Moore	10052 East Patrick Henry Road, Ashland, VA 23005
7880-81-9731	Pam Moore & Angela Burney	10068 East Patrick Henry Road, Ashland, VA 23005
7880-81-8734	Berry Norris	11339 Flemings Ln, Rockville, VA 23146
7880-81-7757	Daniel Davis	10076 East Patrick Henry Road, Ashland, VA 23005
7890-23-4555	Ashley Farm LLC	9245 Shady Grove Rd, Suite 200, Mechanicsville, VA 23116
7880-93-6580	George & Carrie Winston	9544 Providence Church Road, Ashland, VA 23005
7880-93-6288	Augusta Tarrer-Reel	9534 Providence Church Road, Ashland, VA 23005
7880-93-6078 & 7880-92-4935	Jean Folley	10028 Providence Church Road, Ashland, VA 23005
7880-92-0864 & 7880-83-0625	Providence Homeowners Association, In	7231 Forest Ave, Ste 102, Richmond, VA 23226
7880-72-6758	Billie Smith	19036 Hewlett Rd, Ruther Glen, VA 22546
7880-72-9777	William & Janina Pearce	10845 Providence Woods Ln, Ashland, VA 23005
7880-82-0788	Paul & Heather Agnello	10841 Providence Woods Ln, Ashland, VA 23005
7880-82-1860	Darryl & Ashleigh Puller	10837 Providence Woods Ln, Ashland, VA 23005
7880-82-2821	Josh & Morgan Merkel	10833 Providence Woods Ln, Ashland, VA 23005
7880-82-2882	Donna Rea	10829 Providence Woods Ln, Ashland, VA 23005
7880-82-3832	Jonathan Garner	10825 Providence Woods Ln, Ashland, VA 23005
7880-82-3893	Jason & Patricia Wood	10821 Providence Woods Ln, Ashland, VA 23005
7880-82-4864	Stephen & Kelly Ernest	10817 Providence Woods Ln, Ashland, VA 23005
7880-82-5835	Maria Bordera-Amerigo	10813 Providence Woods Ln, Ashland, VA 23005
7880-82-6806	Judith & Mary Obrien	10809 Providence Woods Ln, Ashland, VA 23005
7880-82-6877	Ronnie & Emilie Smithwick	10805 Providence Woods Ln, Ashland, VA 23005
7880-82-7838	Donald Rea	10801 Providence Woods Ln, Ashland, VA 23005
7880-82-7899	Sayak & Moumita Bhattacharya	10797 Providence Woods Ln, Ashland, VA 23005
7880-82-8950	Erkan & Nilay Yardimci	10793 Providence Woods Ln, Ashland, VA 23005
7880-82-9911	Keith & Ebony King	10789 Providence Woods Ln, Ashland, VA 23005
7880-82-9972	Ricardo Rodriguez & Ana Afanador	10785 Providence Woods Ln, Ashland, VA 23005
7880-92-0932	Samantha Sperry	10781 Providence Woods Ln, Ashland, VA 23005
7880-92-0993	John & Alison Denler	10777 Providence Woods Ln, Ashland, VA 23005
7880-92-1953	Lewis & Iris Vaughan	10773 Providence Woods Ln, Ashland, VA 23005
7880-92-2945	Keith & Angela Manion	10765 Providence Woods Ln, Ashland, VA 23005
7880-92-3906	Antoine & Crystal Fitzgerald	10761 Providence Woods Ln, Ashland, VA 23005
7890-00-5918	Laura Divine	36073 Malinda Ct, Round Hill, VA 20141
7880-91-8174	Robert & Lesley Meisoll Rev Trust	10281 Brickerton Dr, Mechanicsville, VA 23116
7890-04-3243	Providence Baptist Church	9491 Providence Church Rd, Ashland, VA 23005

7880-73-5067	David McCall & Fiona Murphy-McCall	13400 Dyson Trail Circle, Ashland, VA 23005
7880-73-6069	David & Rebecca Bulman	13404 Dyson Trail Circle, Ashland, VA 23005
7880-73-7127	Bryan & Stephanie Farley	13408 Dyson Trail Circle, Ashland, VA 23005
7880-73-6254	Frank Meyers & Sara Fields	13412 Dyson Trail Circle, Ashland, VA 23005
7880-73-6340	Chad Ratcliff & Jacqueline Donaghy	13416 Dyson Trail Circle, Ashland, VA 23005
7880-73-7238	Filippo Amato & Farwa Mateen	10733 Providence Park Dr, Ashland, VA 23005
7880-73-7299	James & Alison Gurley	10729 Providence Park Dr, Ashland, VA 23005
7880-73-8259	Ryan & Hope Riddell	10725 Providence Park Dr, Ashland, VA 23005
7880-73-9219	Brian & June Sealy	10721 Providence Park Dr, Ashland, VA 23005
7880-73-9279	Ryan Poznanczyk & Kourtney Davis	10717 Providence Park Dr, Ashland, VA 23005
7880-83-0239	Brandon & Sara Brugh	10713 Providence Park Dr, Ashland, VA 23005
7880-83-0392	Peter & Dana Hamm	10709 Providence Park Dr, Ashland, VA 23005
7880-83-1353	Ryan & Sarah Zylstra	10705 Providence Park Dr, Ashland, VA 23005
7880-83-2313	Taj Khan	10701 Providence Park Dr, Ashland, VA 23005
7880-83-1253	Brett & Sinath Wallace	13517 Providence Run Rd, Ashland, VA 23005
7880-83-1155	Joel & Heather Martin	13513 Providence Run Rd, Ashland, VA 23005
7880-83-1057	Corbin & Rochele Nelson	13509 Providence Run Rd, Ashland, VA 23005
7880-82-2969	Jordan & Joshua Price	10828 Providence Woods Ln, Ashland, VA 23005
7880-82-1998	Seth & Amanda Bontrager	10832 Providence Woods Ln, Ashland, VA 23005
7880-82-1937	Michael Peterson & Barbara Peterson-W	10836 Providence Woods Ln, Ashland, VA 23005
7880-82-0967	Bekele Defersha & Redet Shiferaw	10840 Providence Woods Ln, Ashland, VA 23005
7880-72-9987	Krista Park	10844 Providence Woods Ln, Ashland, VA 23005
7880-72-9837	Titanium Jubilee LLC	100 S 15th Ave, Hopewell, VA 23860
7880-73-5428	Steven & Alicia Talbot	10744 Providence Park Dr, Ashland, VA 23005
7880-73-5487	Kevin & Carmen Klaibor	10740 Providence Park Dr, Ashland, VA 23005
7880-73-6447	Wesley & Judith Austin	10736 Providence Park Dr, Ashland, VA 23005
7880-73-7408	Ross Almanza Living Trust	10732 Providence Park Dr, Ashland, VA 23005
7880-73-7459	Steele Holland & Crystal Montague-Holl	10728 Providence Park Dr, Ashland, VA 23005
7880-73-8428	Rashida & Gerrick Waters	10724 Providence Park Dr, Ashland, VA 23005
7880-73-8499	Christopher & Patricia Condon	10720 Providence Park Dr, Ashland, VA 23005
7880-83-0418	Steven Newcomb	10712 Providence Park Dr, Ashland, VA 23005
7880-83-0489	Debora Volk	10708 Providence Park Dr, Ashland, VA 23005
7880-83-1439	Emily Rivera & Giovanni Rivera Contrera	10704 Providence Park Dr, Ashland, VA 23005
7880-83-2500	Barbara Lownes	10700 Providence Park Dr, Ashland, VA 23005
7880-83-3264	Nicole Newville	13516 Providence Run Rd, Ashland, VA 23005
7880-83-3177	Thomas & Lore Lynch	13512 Providence Run Rd, Ashland, VA 23005
7880-83-3181	Timothy & Nicole Waer	13508 Providence Run Rd, Ashland, VA 23005
7880-83-3095	Frances Owens-Bell & Donald Bell	13504 Providence Run Rd, Ashland, VA 23005
7880-82-4918	Kranthi Gandham & Vuha Cheedalla	13500 Providence Run Rd, Ashland, VA 23005
7880-83-5020	William & Brandee Wilkins	13601 Providence Trail Cir, Ashland, VA 23005
7880-83-5016	Lillian Chenault	13605 Providence Trail Cir, Ashland, VA 23005
7880-83-5103	Ian & Nancy Wilson	13609 Providence Trail Cir, Ashland, VA 23005
7880-83-4199	Angela Lawson	13613 Providence Trail Cir, Ashland, VA 23005
7880-83-4286	Brian & Stephanie Flynn	13617 Providence Trail Cir, Ashland, VA 23005
7880-83-6364	Matthew & Monica Morris	13620 Providence Trail Cir, Ashland, VA 23005
7880-83-6298	Michael Denisar & Emily Withers	13616 Providence Trail Cir, Ashland, VA 23005
7880-83-6282	Rui Wang	13612 Providence Trail Cir, Ashland, VA 23005
7880-83-6195	Andrew & Judith D'Amato	13608 Providence Trail Cir, Ashland, VA 23005
7880-83-6099	Kakhramon & Aziza Talibdjanov	13604 Providence Trail Cir, Ashland, VA 23005
7880-83-7002	Felicia Smithers	13600 Providence Trail Cir, Ashland, VA 23005
7880-83-8007	Lisa Slade	10792 Providence Woods Ln, Ashland, VA 23005
7880-83-8068	Jerry & Irene Robertson	10788 Providence Woods Ln, Ashland, VA 23005
7880-83-9028	Bryan & Lindsey Voltz	10784 Providence Woods Ln, Ashland, VA 23005
7880-83-9089	Adam Caston & Alisa Emelianova	10780 Providence Woods Ln, Ashland, VA 23005
7880-93-0140	Curtis & Abby Vanbrackle	10776 Providence Woods Ln, Ashland, VA 23005
7880-93-1101	Eric Voltz	10772 Providence Woods Ln, Ashland, VA 23005
7880-93-0292	Lamar & Amy Adkins	10801 Parmele Pl, Ashland, VA 23005
7880-93-0222	Ebony Butler & Raymond Benton	10805 Parmele Pl, Ashland, VA 23005
7880-83-9271	Tina Jackson & Jonathan Woodson	10809 Parmele Pl, Ashland, VA 23005
7880-83-8280	Joscelyn Scarpello	10813 Parmele Pl, Ashland, VA 23005

7880-83-8215	Christopher & Lucy Trapp	10817 Parmele Pl, Ashland, VA 23005
7880-83-8305	Kory & Tracey Mohr	10821 Parmele Pl, Ashland, VA 23005
7880-93-2229	Rudolph Benz & Denise Leffler-Benz	13634 Hewlett Trail Dr, Ashland, VA 23005
7880-93-2243	Katherina Koh	13630 Hewlett Trail Dr, Ashland, VA 23005
7880-93-2157	Usoro Udo & Kurston Anderson	13626 Hewlett Trail Dr, Ashland, VA 23005
7880-93-2160	David & Jordan Motsek	13622 Hewlett Trail Dr, Ashland, VA 23005
7880-93-0597	Rita D'Amico & Kathleen Kindle	13645 Hewlett Trail Dr, Ashland, VA 23005
7880-93-0685	Kristin Collins & Melissa Ramsey	13649 Hewlett Trail Dr, Ashland, VA 23005
7880-93-0791	Elliot & Caitlin Shiben	13653 Hewlett Trail Dr, Ashland, VA 23005
7880-93-2771	George Maddox, Sr.	13654 Hewlett Trail Dr, Ashland, VA 23005
7880-93-2665	Christopher Thomas	13650 Hewlett Trail Dr, Ashland, VA 23005
7880-93-2559	Jae & Mi Cho	13646 Hewlett Trail Dr, Ashland, VA 23005
7880-93-2543	Samuel Kube & Angelica Masiero	13642 Hewlett Trail Dr, Ashland, VA 23005
	Robert Monolo - Beaverdam supervisor	7516 County Complex Rd, Hanover, VA 23069
	Edmonia Iverson - Beaverdam PC	7516 County Complex Rd, Hanover, VA 23069

NOTIFICATION OF ZONING APPLICATION SUBMITTAL

TO: Adjacent Property Owner

FROM: Hickory Hill II, LLC

DATE: _____

The following application will be submitted for review to the Hanover County Planning Department:

- ☑ Rezoning
- ☐ Conditional Use Permit
- ☐ Special Exception

Applicant: Rogers-Chenault, Inc.

Property Location: 52.25 acres, generally south of Providence Church Road at its intersection with Route 54.
10035 Providence Church Rd, Ashland, VA 23005

GPIN(s): 7880-92-1335 (in part) & 7880-81-6802

Requested Zoning District: RS

Requested Use/Exception: 150 Age-Restricted Single Family homes.

The application will be available for viewing at the Hanover County Planning Department. The Planning Department shall notify all adjacent property owners of the time, day, and place of the public hearings to be held on this application. Should you have any questions or comments, please contact the Planning Department at (804) 365-6171.

PLEASE RESPOND FOR ALL REZONING APPLICATIONS:

1. What is the General Land Use Plan Map designation for the subject property? Commercial and Planned Business
2. What, if any, is the Major Thoroughfare Plan designation for the public road on which the subject property has frontage? Minor Arterial
3. Describe in detail the proposed use of the property. Age-Restricted subdivision with 150 Single Family lots.
4. List any sensitive environmental or unique features on the property. Are there any 150kV or greater transmission lines, transmission lines for natural gas, other public utilities, or other entity? N/A
5. Is the subject property located in a Dam Break Inundation Zone? ☐ Yes ☑ No (Please contact the Department of Planning or Public Works for assistance in addressing this question.) If yes, please contact the Department of Public Works for further information.

RESPOND FOR RS AND RM REZONING APPLICATIONS: (Attach additional pages, if needed)

1. Have you provided a conceptual plan of the proposed development, including general lot configurations and road locations? Yes.
2. How does your proposal preserve or protect the existing trees on the property? If the property is treeless, does your proposal contain provisions to provide trees on the property? The RS District require significant amount of open space and amenity space. The Proposal provides for preservation of significant treed areas already existing on the Property and planting of buffers and landscaping throughout the project.
3. Are recreational amenities being proposed for the project? If so, specify in detail the amenities planned. Gazebo, Pavilions, a fire pit, walking trails, sidewalks, RV/Trailer parking area, community gardens, a dog park, and a pond with a pier.
4. What provisions will be made to ensure safe and adequate access to the subject property? (Note: A second means of access should be provided for any project in which there will be fifty-one (51) or more lots.) Two means of access.

RESPOND FOR AR-6 and RC REZONING APPLICATIONS: (Attach additional pages, if needed)

1. For **AR-6** rezoning requests: Have you provided a conceptual plan of the proposed development, including general lot configurations and road locations? Are the proposed lot sizes compatible with existing parcel sizes in the area? _____

2. How is the proposed subdivision compatible with the rural setting and sensitive to natural and cultural features? _____

3. What provisions will be made to ensure safe and adequate access to the subject property? (Note: A second means of access should be provided for any project in which there will be fifty-one (51) or more lots.) _____

RESPOND FOR B-1, B-2, B-3, BO, OS, M-1, M-2, M-3 REZONING APPLICATIONS: (Attach additional pages, if needed)

1. Has a conceptual plan of the proposed development been provided, showing proposed building locations, parking lots, entrances, and other features? _____
2. What provisions will be made to ensure safe and adequate access to the subject property? _____
3. How will the traffic impact of this development be addressed?: _____
4. Describe why the proposed use is desirable and appropriate for the area. What measures will be taken to assure that the proposed use will not have a negative impact on the surrounding vicinity? _____
5. What type of signage is proposed for the site? _____
6. Have architectural/building elevations been submitted with this application? _____

HISTORIC SITE IMPACT ANALYSIS

Please identify any **known or suspected historic resources on both the subject property and adjacent properties**, to include both structural and non-structural resources, such as trenches, cemeteries, and archeological sites. Please include the GPIN (Tax Parcel Number) associated with the resource. Please attach additional sheets, if necessary. Should you need assistance completing this form, please contact the Planning Staff.

1. Historic Resource/File No. N/A GPIN _____
2. Historic Resource/File No. _____ GPIN _____
3. Historic Resource/File No. _____ GPIN _____
4. Historic Resource/File No. _____ GPIN _____
5. Historic Resource/File No. _____ GPIN _____

If you have identified known or suspected historic resources on the subject property or adjacent property, please provide the following information on each site:

a) Is the historic site listed as a National or State Registered Landmark? _____

b) Is the historic site open to the public? _____

c) Describe the impact the proposed request will have on the identified historic resources with regard to noise, traffic, dust, vibration, visual impact, and air pollution. _____

d) Describe voluntary measures that will be undertaken to help mitigate the impact that the proposed use may have on the identified historic resources. _____

If there are no known or suspected historic resources on the subject property or immediately adjacent, including structural and non-structural resources, trenches, cemeteries, and archeological sites, **please sign and date.**

Signature: _____ Date: 5-23-23

COMPLIANCE WITH VDOT & COUNTY TRAFFIC IMPACT ANALYSIS REQUIREMENTS

The following must be completed for all applications: The selection below is based on a projected daily trip generation of 836 vehicles per day and a site peak hour trip generation of 53 AM / 61 PM vehicles per hour, based on the stipulations of 24 VAC 30-155. The 11th edition (latest edition) of the ITE Trip Generation Manual was used in determining the trip generation (Code Number 251 and Page Number 405 - 407).

Choose one of the two options below:

☐ I certify that this proposal **DOES NOT EXCEED** 380 vehicle trips per day that would require submittal of a Traffic Impact Analysis.

☑ I certify that this proposal **DOES EXCEED** 380 vehicle trips per day that would require a Traffic Impact Analysis be submitted.

Choose one of the two options below:

☑ I certify that this proposal DOES NOT MEET any of the VDOT thresholds identified in the Traffic Impact Analysis Regulations Administrative Guidelines (24 VAC 30-155) that would require a Traffic Impact Analysis to be submitted in conjunction with this application.

☐ I certify that this proposal MEETS at least one of the VDOT thresholds identified in the Traffic Impact Analysis Regulations Administrative Guidelines (24 VAC 30-155) that would require a Traffic Impact Analysis to be submitted in conjunction with this application. A Traffic Impact Analysis, prepared in accordance with the Traffic Impact Analysis Regulations Administrative Guidelines (24 VAC 30-155), has been prepared and will be submitted to VDOT the same day.

Carl Hultgren — 05-18-23

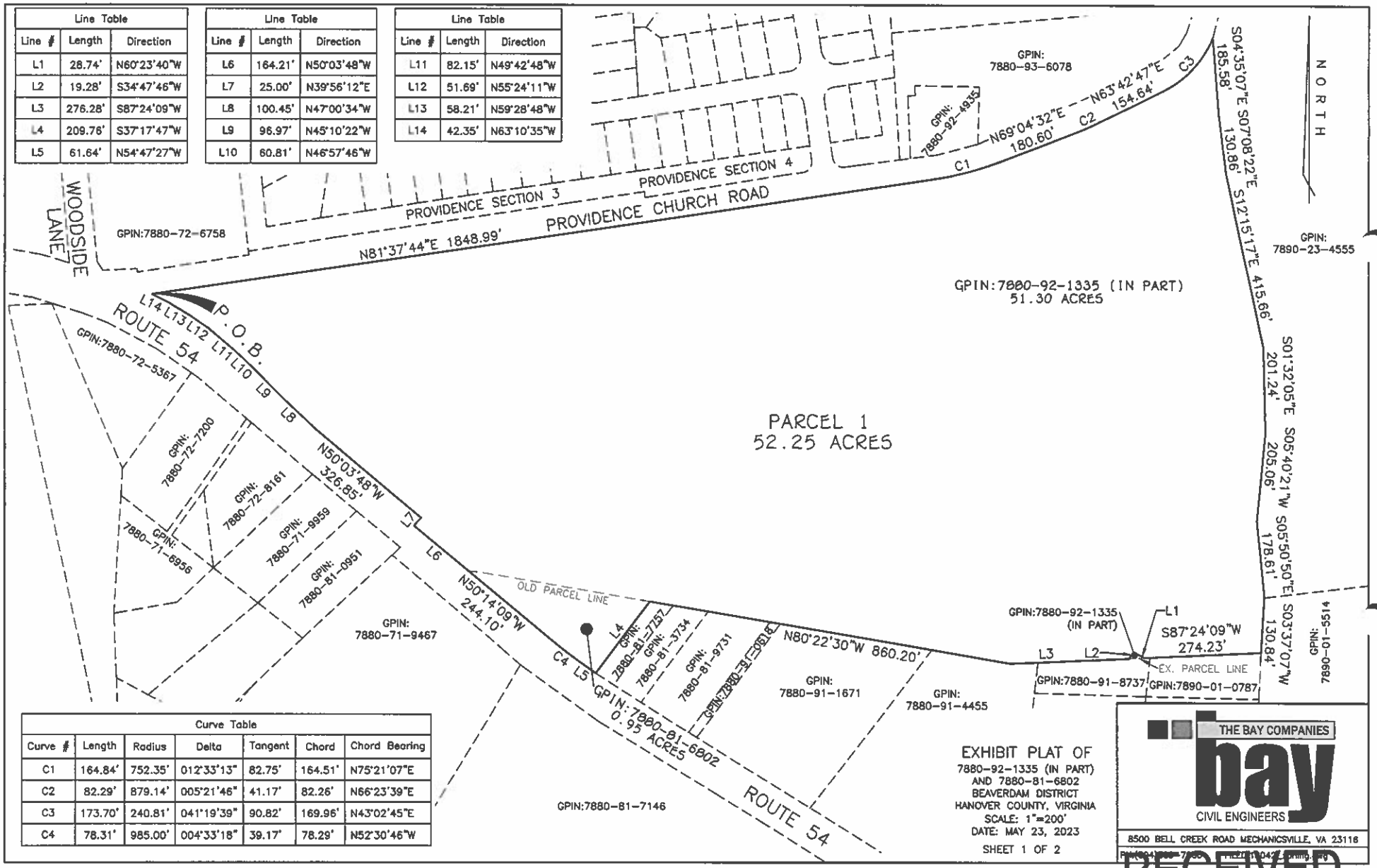
(Signature of Applicant/Applicant's Representative) (Date)

Carl Hultgren, P.E., PTOE

(Applicant/Applicant's Representative – Print Name)

For questions regarding VDOT requirements:

Virginia Department of Transportation (VDOT) – Ashland Residency
Robert Butler, Assistant Residency Administrator
523 North Washington Highway
Ashland, VA 23005
Phone (804) 752-5511
Fax (804) 752-6431
Email: robert.butler@vdot.virginia.gov
http://www.virginiadot.org/projects/chapter527/



RECEIVED

MAY 23 2023

HANOVER COUNTY

PARCEL 1: 52.25 ACRES

ALL THAT CERTAIN PIECE OR PARCEL OF LAND, LYING AND BEING IN THE BEAVERDAM MAGISTERIAL DISTRICT OF HANOVER COUNTY, VIRGINIA, SITUATED ALONG THE NORTHERN RIGHT-OF-WAY LINE OF ROUTE 54 AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT (P.O.B.) ON THE NORTHERN LINE OF ROUTE 54 AT THE INTERSECTION OF ROUTE 54 AND PROVIDENCE CHURCH ROAD LABELED P.O.B. ON THIS PLAT;

THENCE N81°37'44"E 1848.99';
THENCE ALONG A CURVE TO THE LEFT WITH A RADIUS OF 752.35' A LENGTH OF 164.84';
THENCE N69°04'32"E 180.60';
THENCE ALONG A CURVE TO THE LEFT WITH A RADIUS OF 879.14' A LENGTH OF 82.29';
THENCE N63°42'47"E 154.64';
THENCE ALONG A CURVE TO THE LEFT WITH A RADIUS OF 240.81' A LENGTH OF 173.70';
THENCE S04°35'07"E 185.58';
THENCE S07°08'22"E 130.86';
THENCE S12°15'17"E 415.66';
THENCE S01°32'05"E 201.24';
THENCE S05°40'21"W 205.06';
THENCE S05°50'50"E 178.61';
THENCE S03°37'07"W 130.84';
THENCE S87°24'09"W 274.23';
THENCE N60°23'40"W 28.74';
THENCE S34°47'46"W 19.28';
THENCE S87°24'09"W 276.28';
THENCE N80°22'30"W 860.20';
THENCE S37°17'47"W 209.76';
THENCE N54°47'27"W 61.64';
THENCE ALONG A CURVE TO THE RIGHT WITH A RADIUS OF 985.00' A LENGTH OF 78.31';
THENCE N50°14'09"W 244.10';
THENCE N50°03'48"W 164.21';
THENCE N39°56'12"E 25.00';
THENCE N50°03'48"W 326.85';
THENCE N47°00'34"W 100.45';
THENCE N45°10'22"W 96.97';
THENCE N46°57'46"W 60.81';
THENCE N49°42'48"W 82.15';
THENCE N55°24'11"W 51.69';
THENCE N59°28'48"W 58.21';
THENCE N63°10'35"W 42.35' TO THE POINT AND PLACE OF BEGINNING CONTAINING 52.25 ACRES OF LAND.

EXHIBIT PLAT OF
7880-92-1335 (IN PART)
AND 7880-81-6802
BEAVERDAM DISTRICT
HANOVER COUNTY, VIRGINIA
DATE: MAY 23, 2023

SHEET 2 OF 2

THE BAY COMPANIES
bay
CIVIL ENGINEERS
8500 BELL CREEK ROAD MECHANICSVILLE, VA 23116
PH:(804)569-7060 FILED:18042_zoning.dwg

Postal Verification of Adjacent Owner Notifications

United States Postal Service® **Confirmation Services Certification**

REZ2023-00003
Please return signed form to Kellyn Kirby Planning
Mailed 7/11/23

Company Information

Company Name	Address (Number, street, suite no., city, state and ZIP Code™)
COUNTY OF HANOVER	PO Box 470 Hanover VA 23069 US
Mailer Identification (MID) 902800903	

Electronic File

The electronic file submitted by the company shown above has been certified by the National Customer Support Center (NCSC) to be complete and accurate in both content and transmission and to meet the requirements as defined in Publication 199, Intelligent Mail Package Barcode (IMpb) Implementation Guide for: Confirmation Services and Electronic Verification System (eVS) Mailers.

Authorized Signature	Date Signed

Barcoded Labels

The barcoded labels printed and submitted by the company shown above have been certified by the NCSC to meet the standards and specifications as prescribed in Publication 199 and the appropriate ANSI or AIM published standards.

Authorized Signature	Date Signed

Instructions to Mailer

Keep the original of this form in a safe place and provide a copy to your local USPS® facility if requested. Shipments included in Service Performance Measurement should submit a PS Form 3152 with each mailing. In the space below, place a GS1-128 barcode representing the Electronic File Number from the Header Record. If you cannot print the barcode, fill in the sequence numbers and check digit (the digits that follow the MID) from your Electronic File Number. This information is in the Header Record of the electronic file.

IMPB barcodes are required for all tracking numbers effective 1/27/2013. Valid Application Identifiers (AI): IMpb barcode AI "92" uses a 9-digit Mailer ID for commercial permit payment mailers. IMpb barcode "93" uses a 6-digit Mailer ID for commercial permit payment mailer. IMpb barcode "94" is used for online and meter mailers. Legacy barcode AI "91" will continue to be accepted for a limited time with an approved exception or waiver.

Place the barcode here or write the serial number and check digit of the electronic file in the spaces provided.

Confirmation Services Electronic File Number

94750149028009030076 51

Instructions for Acceptance Employee

If mailings are presented under an authorized manifest mailing system, verify payment of postage and fees, where applicable, using standard sampling procedures for pieces with special services. In addition, check the barcode formatting for the following:

1. Horizontal bars above and below the barcode.
2. Human-readable numbers below the barcode.
3. Depending on the product used, the words "USPS TRACKING #", "USPS SIGNATURE TRACKING #", "USPS CERTIFIED MAIL", or product specific found in Publication 199 based on the service type code.
4. For Electronic Verification System, (eVS) or "e-VS" should be included either before or after the service banner text. For example: "eVS USPS TRACKING", "USPS TRACKING eVS", "e-VS USPS USPS TRACKING", and "USPS TRACKING e-VS."

Date and Time of Verification	Date and Time of Mailing (if different from date of verification)
7/11/23 4:26 PM	7/11/23 4:26 PM

Computerized PS Form 3152, July 2013 Facsimile

RECEIVED
JUL 13 2023
HANOVER COUNTY
PLANNING OFFICE

USPS Manifest Mailing System Page 1

Mailer's Name & Address	Permit Number	MAC Ver. Number
COUNTY OF HANOVER PO Box 470 Hanover, VA 23069		Transtream
	Sequence Number 1-2779	**Class of Mail** Mixed

Article #/ Piece ID Shipper Ref#	Addressee Name Delivery Address	ES Type	Postage	ES Fee	Insurance Amount	Due/ Sender	Total Charge
9414814902800903069265 8798 REZ2023-00003 BOS 7.26.2023	**HICKORY HILL II LLC 496 ST ALBANS WAY, HENRICO, VA 23229	ERR C	0.600	2.10 4.15			6.85
9414814902800903069272 8799 REZ2023-00003 BOS 7.26.2023	**ROGERS-CHENAULT INC 9245 SHADY GROVE ROAD SUITE 200, MECHANICSVILLE, VA 23116	ERR C	0.600	2.10 4.15			6.85
9414814902800903069289 8800 REZ2023-00003 BOS 7.26.2023	AAA PLUMBING CO INC PO BOX 438, LIGHTFOOT, VA 23090	ERR C	0.600	2.10 4.15			6.85
9414814902800903069296 8801 REZ2023-00003 BOS 7.26.2023	AGNELLO, PAUL THOMAS & HEATHER RAE 10841 PROVIDENCE WOODS LANE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069302 8802 REZ2023-00003 BOS 7.26.2023	ASHLEY FARM LLC 9245 SHADY GROVE ROAD SUITE 200, MECHANICSVILLE, VA 23116	ERR C	0.600	2.10 4.15			6.85
9414814902800903069319 8803 REZ2023-00003 BOS 7.26.2023	BABER, KIMBERLY & MATTHEWS, DONALD R/S 13097 HILL TOP DRIVE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
Page Totals	6		3.60	37.50			41.10
Cumulative Totals	6		3.60	37.50			41.10

USPS Manifest Mailing System Page 2

Mailer's Name & Address	Permit Number	MAC Ver. Number
COUNTY OF HANOVER PO Box 470 Hanover, VA 23069		Transtream
	Sequence Number 1-2779	**Class of Mail** Mixed

Article #/ Piece ID Shipper Ref#	Addressee Name Delivery Address	ES Type	Postage	ES Fee	Insurance Amount	Due/ Sender	Total Charge
9414814902800903069326 8804 REZ2023-00003 BOS 7.26.2023	BHATTACHARYA, SAYAK & BHATTACHARYA, MOUMITA R/S 10797 PROVIDENCE WOODS LANE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069333 8805 REZ2023-00003 BOS 7.26.2023	BORDERA-AMERIGO, MARIA JOSE 10513 PROVIDENCE WOODS LANE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069340 8806 REZ2023-00003 BOS 7.26.2023	BURLEIGH, BETTY ROSE PO BOX 944, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069357 8807 REZ2023-00003 BOS 7.26.2023	CORKER, JOYCE M REVOCABLE TRUST 11101 WYCHWOOD DRIVE, MECHANICSVILLE, VA 23116	ERR C	0.600	2.10 4.15			6.85
9414814902800903069364 8808 REZ2023-00003 BOS 7.26.2023	DAVIS, DANIEL PAUL 10076 EAST PATRICK HENRY ROAD, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069371 8809 REZ2023-00003 BOS 7.26.2023	DENLER, JOHN R & DENLER, ALISON C 10777 PROVIDENCE WOODS LANE,	ERR C	0.600	2.10 4.15			6.85
Page Totals	6		3.60	37.50			41.10
Cumulative Totals	12		7.20	75.00			82.20

USPS Manifest Mailing System Page 3

Mailer's Name & Address	Permit Number	MAC Ver. Number
COUNTY OF HANOVER PO Box 470 Hanover, VA 23069		Transtream
	Sequence Number 1-2779	**Class of Mail** Mixed

Article #/ Piece ID Shipper Ref#	Addressee Name Delivery Address	ES Type	Postage	ES Fee	Insurance Amount	Due/ Sender	Total Charge
	ASHLAND, VA 23005						
9414814902800903069388 8810 REZ2023-00003 BOS 7.26.2023	DIVINE, LAURA RUSSO 13047 CEDON ROAD, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069395 8811 REZ2023-00003 BOS 7.26.2023	DYSON, JAMES O JR & VIRGINIA H 10115 EAST PATRICK HENRY ROAD, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069401 8812 REZ2023-00003 BOS 7.26.2023	ERNEST, STEPHEN & KELLY 10317 PROVIDENCE WOODS LANE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069418 8813 REZ2023-00003 BOS 7.26.2023	FITZGERALD, ANTOINE PIERRE & FITZGERALD, CRYSTAL 10761 PROVIDENCE WOODS LANE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069425 8814 REZ2023-00003 BOS 7.26.2023	FOLLEY, JEAN WILSON 10028 PROVIDENCE CHURCH RD, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
Page Totals	6		3.60	37.50			41.10
Cumulative Totals	18		10.80	112.50			123.30

USPS Manifest Mailing System Page 4

Mailer's Name & Address	Permit Number	MAC Ver. Number
COUNTY OF HANOVER PO Box 470 Hanover, VA 23069		Transtream
	Sequence Number 1-2779	Class of Mail Mixed

Article #/ Piece ID Shipper Ref#	Addressee Name Delivery Address	ES Type	Postage	ES Fee	Insurance Amount	Due/ Sender	Total Charge
9414814902800903069432 8815 REZ2023-00003 BOS 7.26.2023	FOLLY, JEAN A 10028 PROVIDENCE CHURCH ROAD, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069449 8816 REZ2023-00003 BOS 7.26.2023	GARNER, JONATHAN 10825 PROVIDENCE WOODS LANE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069456 8817 REZ2023-00003 BOS 7.26.2023	GONNER, JOLENE F 10125 EAST PATRICK HENRY ROAD, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069463 8818 REZ2023-00003 BOS 7.26.2023	HANOVER COUNTY PO BOX 470, HANOVER, VA 23069	ERR C	0.600	2.10 4.15			6.85
9414814902800903069470 8819 REZ2023-00003 BOS 7.26.2023	HARRIS & DOUGLAS PROPERTIES, LLC 7113 THREE CHOPT ROAD STE 209, RICHMOND, VA 23226	ERR C	0.600	2.10 4.15			6.85
9414814902800903069487 8820 REZ2023-00003 BOS 7.26.2023	HICKORY HILL II LLC 8729 RUGGLES ROAD, HENRICO, VA 23229	ERR C	0.600	2.10 4.15			6.85
Page Totals	5		3.00	31.25			34.25
Cumulative Totals	23		13.80	143.75			157.55

USPS Manifest Mailing System Page 5

Mailer's Name & Address	Permit Number	MAC Ver. Number
COUNTY OF HANOVER PO Box 470		Transtream
	Sequence Number	Class of Mail
Hanover, VA 23069	1-2779	Mixed

Article #/ Piece ID Shipper Ref#	Addressee Name Delivery Address	ES Type	Postage	ES Fee	Insurance Amount	Due/ Sender	Total Charge
9414814902800903069494 8821 REZ2023-00003 BOS 7.26.2023	HOPKINS, LEWIS O JR 10109 EAST PATRICK HENRY ROAD. ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069500 8822 REZ2023-00003 BOS 7.26.2023	KING, KEITH CLEMENTE & KING, EBONY JETER 10789 PROVIDENCE WOODS LANE. ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069517 8823 REZ2023-00003 BOS 7.26.2023	LOWE, RILEY S REVOCABLE TRUST & LOWE, HELEN F REVOCABLE TRUS PO BOX 176. MECHANICSVILLE, VA 23111	ERR C	0.600	2.10 4.15			6.85
9414814902800903069524 8824 REZ2023-00003 BOS 7.26.2023	MANION, KEITH L & MANION, ANGELA MICHELLE 10765 PROVIDENCE WOODS LANE. ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069531 8825 REZ2023-00003 BOS 7.26.2023	MERKEL, JOSHUA & MORGAN LEE 10833 PROVIDENCE WOODS LANE. ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069548 8826 REZ2023-00003 BOS 7.26.2023	MOORE, PAMELA & BURNEY, ANGELA M & MOORE, STEPHANIE L 10068 EAST PATRICK HENRY ROAD.	ERR C	0.600	2.10 4.15			6.85
Page Totals	6		3.60	37.50			41.10
Cumulative Totals	29		17.40	181.25			198.65

USPS Manifest Mailing System Page 6

Mailer's Name & Address	Permit Number	MAC Ver. Number
COUNTY OF HANOVER PO Box 470 Hanover, VA 23069		Transtream
	Sequence Number 1-2779	**Class of Mail** Mixed

Article #/ Piece ID Shipper Ref#	Addressee Name Delivery Address	ES Type	Postage	ES Fee	Insurance Amount	Due/ Sender	Total Charge
	ASHLAND, VA 23005						
9414814902800903069556 8827 REZ2023-00003 BOS 7.26.2023	MOORE, ROSE 10052 EAST PATRICK HENRY ROAD ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069562 8828 REZ2023-00003 BOS 7.26.2023	HORRIS, BERRY 11339 FLEMINGS LANE ROCKVILLE, VA 23146	ERR C	0.600	2.10 4.15			6.85
9414814902800903069579 8829 REZ2023-00003 BOS 7.26.2023	OBRIEN, JUDITH & OBRIEN, MARY R/S 10909 PROVIDENCE WOODS LANE ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069586 8830 REZ2023-00003 BOS 7.26.2023	PEARCE, WILLIAM F & PEARCE, JANNA V R/S 10845 PROVIDENCE WOODS LANE ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069593 8831 REZ2023-00003 BOS 7.26.2023	POND, D RUSSELL & JOANIE A 10067 EAST PATRICK HENRY ROAD ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85

Page Totals	6	3.60	37.50		41.10
Cumulative Totals	35	21.00	218.75		239.75

USPS Manifest Mailing System Page 7

Mailer's Name & Address	Permit Number	MAC Ver. Number
COUNTY OF HANOVER PO Box 470 Hanover, VA 23069		Transtream
	Sequence Number 1-2779	**Class of Mail** Mixed

Article #/ Piece ID Shipper Ref#	Addressee Name Delivery Address	ES Type	Postage	ES Fee	Insurance Amount	Due/ Sender	Total Charge
9414814902800903069609 8832 REZ2023-00003 BOS 7.26.2023	PROVIDENCE HOMEOWNERS ASSOCIATION INC 7231 FOREST AVENUE, RICHMOND, VA 23226	ERR C	0.600	2.10 4.15			6.85
9414814902800903069616 8833 REZ2023-00003 BOS 7.26.2023	PULLER, DARRYL C & ASHLEIGH D 10937 PROVIDENCE WOODS LANE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069623 8834 REZ2023-00003 BOS 7.26.2023	REA, DONALD 10901 PROVIDENCE WOODS LANE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069630 8835 REZ2023-00003 BOS 7.26.2023	REA, DONNA 10829 PROVIDENCE WOODS LANE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069647 8836 REZ2023-00003 BOS 7.26.2023	RODRIGUEZ, RICARDO MURILLO & AFANADOR, ANA L BARAJAS R/S 10785 PROVIDENCE WOODS LANE. ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069654 8837 REZ2023-00003 BOS 7.26.2023	SMITH, BILLIE T 19036 HEWLETT ROAD, RUTHER GLEN, VA 22546	ERR C	0.600	2.10 4.15			6.85
Page Totals	5		3.00	31.25			34.25
Cumulative Totals	40		24.00	250.00			274.00

USPS Manifest Mailing System Page 8

Mailer's Name & Address	Permit Number	MAC Ver. Number
COUNTY OF HANOVER PO Box 470 Hanover, VA 23069		Transtream
	Sequence Number 1-2779	**Class of Mail** Mixed

Article #/ Piece ID Shipper Ref#	Addressee Name Delivery Address	ES Type	Postage	ES Fee	Insurance Amount	Due/ Sender	Total Charge
9414814902800903069661 8838 REZ2023-00003 BOS 7.26 2023	SMITHWICK, RONNIE & EMILIE 10805 PROVIDENCE WOODS LANE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069678 8839 REZ2023-00003 BOS 7.26 2023	SPERRY, SAMANTHA 10761 PROVIDENCE WOODS LANE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069685 8840 REZ2023-00003 BOS 7.26.2023	STEPHENS, GEORGIE LEE REVOC TR 3/1/04 10034 EAST PATRICK HENRY ROAD, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069692 8841 REZ2023-00003 BOS 7.26 2023	VAUGHAN, LEWIS C & VAUGHAN, IRIS N 10773 PROVIDENCE WOODS LANE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069708 8842 REZ2023-00003 BOS 7.26 2023	WOOD, JASON & PATRICIA 10821 PROVIDENCE WOODS LANE, ASHLAND, VA 23005	ERR C	0.600	2.10 4.15			6.85
9414814902800903069715 8843 REZ2023-00003 BOS 7.26 2023	YARDIMCI, ERKAN & YARDIMCI, NILAY 8602 SATINWOOD DRIVE,	ERR C	0.600	2.10 4.15			6.85
Page Totals	8		3.60	37.50			41.10
Cumulative Totals	46		27.60	287.50			315.10

USPS Manifest Mailing System Page 9

Mailer's Name & Address	Permit Number	MAC Ver. Number
COUNTY OF HANOVER PO Box 470 Hanover, VA 23069		Transtream
	Sequence Number 1-2779	**Class of Mail** Mixed

Article #/ Piece ID Shipper Ref#	Addressee Name Delivery Address	ES Type	Postage	ES Fee	Insurance Amount	Due/ Sender	Total Charge
	URBANA MD 21704						

Page Totals	0	0.00	0.00	0.00
Cumulative Totals	46	27.60	287.50	315.10

USPS CERTIFICATION

Total Number Of Pieces Received 46 Round Stamp

Signature of Receiving Employee

PS Form 3877 (Facsimile)

Extra Service Codes

C	Certified
ERR	Return Receipt
CMRD	Certified Mail Restricted Delivery

REZ2023-00003
SendPro Spreadsheet

REZ2023-00003		**HICKORY HILL II LLC	496 ST ALBANS WAY	HENRICO	VA	23229	US
REZ2023-00003	C/O TODD ROGERS	**ROGERS-CHENAULT INC	9245 SHADY GROVE ROAD SUITE 200	MECHANICSVILLE	VA	23116	US
REZ2023-00003		AAA PLUMBING CO INC	PO BOX 438	LIGHTFOOT	VA	23090	US
REZ2023-00003		AGNELLO, PAUL THOMAS & HEATHER RAE	10841 PROVIDENCE WOODS LANE	ASHLAND	VA	23005	US
REZ2023-00003		ASHLEY FARM LLC	9245 SHADY GROVE ROAD SUITE 200	MECHANICSVILLE	VA	23116	US
REZ2023-00003		BABER, KIMBERLY & MATTHEWS, DONALD R/S	13097 HILL TOP DRIVE	ASHLAND	VA	23005	US
REZ2023-00003		BHATTACHARYA, SAYAK & BHATTACHARYA, MOUMITA R/S	10797 PROVIDENCE WOODS LANE	ASHLAND	VA	23005	US
REZ2023-00003		BORDERA-AMERIGO, MARIA JOSE	10813 PROVIDENCE WOODS LANE	ASHLAND	VA	23005	US
REZ2023-00003		BURLEIGH, BETTY ROSE	PO BOX 944	ASHLAND	VA	23005	US
REZ2023-00003		CORKER, JOYCE M REVOCABLE TRUST	11101 WYCHWOOD DRIVE	MECHANICSVILLE	VA	23116	US
REZ2023-00003		DAVIS, DANIEL PAUL	10076 EAST PATRICK HENRY ROAD	ASHLAND	VA	23005	US
REZ2023-00003		DENLER, JOHN R & DENLER, ALISON C	10777 PROVIDENCE WOODS LANE	ASHLAND	VA	23005	US
REZ2023-00003		DIVINE, LAURA RUSSO	13047 CEDON ROAD	ASHLAND	VA	23005	US
REZ2023-00003		DYSON, JAMES O JR & VIRGINIA H	10115 EAST PATRICK HENRY ROAD	ASHLAND	VA	23005	US
REZ2023-00003		ERNEST, STEPHEN & KELLY	10817 PROVIDENCE WOODS LANE	ASHLAND	VA	23005	US
REZ2023-00003		FITZGERALD, ANTOINE PIERRE & FITZGERALD, CRYSTAL	10761 PROVIDENCE WOODS LANE	ASHLAND	VA	23005	US
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REZ2023-00003		GARNER, JONATHAN	10825 PROVIDENCE WOODS LANE	ASHLAND	VA	23005	US
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REZ2023-00003		HANOVER COUNTY	PO BOX 470	HANOVER	VA	23069	US
REZ2023-00003		HARRIS & DOUGLAS PROPERTIES, LLC	7113 THREE CHOPT ROAD STE 209	RICHMOND	VA	23226	US
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REZ2023-00003		MOORE, ROSE	10052 EAST PATRICK HENRY ROAD	ASHLAND	VA	23005	US
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REZ2023-00003		WOOD, JASON & PATRICIA	10821 PROVIDENCE WOODS LANE	ASHLAND	VA	23005	US
REZ2023-00003		YARDIMCI, ERKAN & YARDIMCI, NILAY	8602 SATINWOOD DRIVE	URBANA	MD	21704	US

REZ2023-00003
Adj Spreadsheet

GPIN	OWN_NAME1	OWN_NAME2	MAIL_ADDRESS	MAIL_CITY	MAIL_STATE	MAIL_ZIP
7880-92-1335	**HICKORY HILL II LLC		496 ST ALBANS WAY	HENRICO	VA	23229
	**ROGERS-CHENAULT INC	C/O TODD ROGERS	9245 SHADY GROVE ROAD SUITE 200	MECHANICSVILLE	VA	23116
7890-01-0787	AAA PLUMBING CO INC		PO BOX 438	LIGHTFOOT	VA	23090
7880-82-0788	AGNELLO, PAUL THOMAS & HEATHER RAE		10841 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7890-23-4555	ASHLEY FARM LLC		9245 SHADY GROVE ROAD SUITE 200	MECHANICSVILLE	VA	23116
7880-71-6956	BABER, KIMBERLY & MATTHEWS, DONALD R/S		13097 HILL TOP DRIVE	ASHLAND	VA	23005
7880-82-7899	BHATTACHARYA, SAYAK & BHATTACHARYA, MOUMITA R/S		10797 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7880-82-5835	BORDERA-AMERIGO, MARIA JOSE		10813 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7880-91-8737	BURLEIGH, BETTY ROSE		PO BOX 944	ASHLAND	VA	23005
7880-72-7200	CORKER, JOYCE M REVOCABLE TRUST		11101 WYCHWOOD DRIVE	MECHANICSVILLE	VA	23116
7880-81-7757	DAVIS, DANIEL PAUL		10076 EAST PATRICK HENRY ROAD	ASHLAND	VA	23005
7880-92-0993	DENLER, JOHN R & DENLER, ALISON C		10777 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7890-00-5918	DIVINE, LAURA RUSSO		13047 CEDON ROAD	ASHLAND	VA	23005
7880-71-9959	DYSON, JAMES O JR & VIRGINIA H		10115 EAST PATRICK HENRY ROAD	ASHLAND	VA	23005
7880-82-4864	ERNEST, STEPHEN & KELLY		10817 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
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7880-72-8161	GONNER, JOLENE F		10125 EAST PATRICK HENRY ROAD	ASHLAND	VA	23005
7880-72-5367	HANOVER COUNTY		PO BOX 470	HANOVER	VA	23069
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7880-82-9911	KING, KEITH CLEMENTE & KING, EBONY JETER		10789 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7880-63-9486	LOWE, RILEY B REVOCABLE TRUST & LOWE, HELEN F REVOCABLE TRUS		PO BOX 175	MECHANICSVILLE	VA	23111
7880-92-2945	MANION, KEITH L & MANION, ANGELA MICHELLE		10765 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
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7880-81-9731	MOORE, PAMELA & BURNEY, ANGELA M & MOORE, STEPHANIE L		10068 EAST PATRICK HENRY ROAD	ASHLAND	VA	23005
7880-91-0618	MOORE, ROSE		10052 EAST PATRICK HENRY ROAD	ASHLAND	VA	23005
~~7880-91-1671~~	~~MOORE, ROSE~~		~~10052 EAST PATRICK HENRY ROAD~~	~~ASHLAND~~	~~VA~~	~~23005~~
7880-81-8734	NORRIS, BERRY		11339 FLEMINGS LANE	ROCKVILLE	VA	23146
7880-82-6806	OBRIEN, JUDITH & OBRIEN, MARY R/S		10809 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7880-72-9777	PEARCE, WILLIAM F & PEARCE, JANINA V R/S		10845 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
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7880-82-1860	PULLER, DARRYL C & ASHLEIGH D		10837 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7880-82-7838	REA, DONALD		10801 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7880-82-2882	REA, DONNA		10829 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7880-82-9972	RODRIGUEZ, RICARDO MURILLO & AFANADOR, ANA L BARAJAS R/S		10785 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7880-72-6758	SMITH, BILLIE T		19036 HEWLETT ROAD	RUTHER GLEN	VA	22546
7880-82-6877	SMITHWICK, RONNIE & EMILIE		10805 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7880-92-0932	SPERRY, SAMANTHA		10781 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7880-91-4455	STEPHENS, GEORGIE LEE REVOC TR 3/1/04		10034 EAST PATRICK HENRY ROAD	ASHLAND	VA	23005
7880-92-1953	VAUGHAN, LEWIS C & VAUGHAN, IRIS N		10773 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7880-82-3893	WOOD, JASON & PATRICIA		10821 PROVIDENCE WOODS LANE	ASHLAND	VA	23005
7880-82-8950	YARDIMCI, ERKAN & YARDIMCI, NILAY		8602 SATINWOOD DRIVE	URBANA	MD	21704

REZ2023-00003
Original Spreadsheet

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7880-63-9486	LOWE, RILEY B REVOCABLE TRUST & LOWE, HELEN F REVOCABLE TRUS	<Null>	PO BOX 175	MECHANICSVILLE	VA	23111
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7890-23-4555	ASHLEY FARM LLC	<Null>	9245 SHADY GROVE ROAD SUITE 200	MECHANICSVILLE	VA	23116

HANOVER COUNTY

ESTABLISHED IN 1720

WWW.HANOVERCOUNTY.GOV

P. O. BOX 470
HANOVER, VIRGINIA 23069
PHONE 804-365-6171

HANOVER COUNTY PLANNING OFFICE
NOTICE TO APPLICANT

DATE: 07/06/2023

This is to inform you that YOUR ZONING REQUEST has been advertised for public hearing.

REZ2023-00003, HICKORY HILL II, L.L.C.
Requests to rezone from A-1, Agricultural District, to RS(c), Single-Family Residential District with conditions, on GPINs 7880-92-1335(part) and 7880-81-6802, consisting of approximately 52.25 acres, and located on the north line of East Patrick Henry Road (State Route 54) at its intersection with Providence Church Road (State Route 662). The subject property is designated on the General Land Use Plan Map as Planned Business and Commercial. The proposed zoning amendment would allow the development of 150 single-family homes for a gross density of 2.87 dwelling units per acre. (PUBLIC HEARING) **Magisterial District: Beaverdam**

The Hanover County Board of Supervisors will hold a hearing on the following date and time:

WEDNESDAY, JULY 26, 2023, AT 6:00 P.M.

The hearing will be held in the Board Room of the Hanover County Government Building (Administration Building), Hanover Courthouse, Hanover, Virginia. You or your representative should plan to be present at this hearing.

If you have questions on the request please contact the Planning Office or you may also go to https://www.hanovercounty.gov/697/Board-of-Supervisors-Upcoming-and-Archiv for more information.

NOTE: YOU ARE REQUESTED TO RETURN THE SIGN(S) POSTED ON YOUR PROPERTY TO THE PLANNING OFFICE AT THE TIME OF YOUR BOARD OF SUPERVISORS PUBLIC HEARING.

HANOVER COUNTY

ESTABLISHED IN 1720
WWW.HANOVERCOUNTY.GOV

P. O. BOX 470
HANOVER, VIRGINIA 23069
PHONE 804-365-6171

HANOVER COUNTY PLANNING OFFICE
NOTICE TO ADJACENT PROPERTY OWNER(S)

DATE: 07/06/2023

This is to inform you that a ZONING REQUEST has been filed on property adjacent to yours. A public hearing has been scheduled for the following request:

REZ2023-00003, HICKORY HILL II, L.L.C.
Requests to rezone from A-1, Agricultural District, to RS(c), Single-Family Residential District with conditions, on GPINs 7880-92-1335(part) and 7880-81-6802, consisting of approximately 52.25 acres, and located on the north line of East Patrick Henry Road (State Route 54) at its intersection with Providence Church Road (State Route 662). The subject property is designated on the General Land Use Plan Map as Planned Business and Commercial. The proposed zoning amendment would allow the development of 150 single-family homes for a gross density of 2.87 dwelling units per acre. (PUBLIC HEARING) **Magisterial District: Beaverdam**

The Hanover County Board of Supervisors will hold a hearing on the following date and time:

WEDNESDAY, JULY 26, 2023, AT 6:00 P.M.

The hearing will be held at 6:00 PM or as soon thereafter as the Board's consideration of the administrative agenda permits. The public hearing will be held in in the Board Room of the Hanover County Government Building (Administration Building), Hanover Courthouse, Hanover, Virginia. You are cordially invited to comment on this request either in person at the hearing or by writing to:

Hanover County Planning Office
c/o Jo Ann Hunter, AICP
Post Office Box 470
Hanover, Virginia 23069

Please be sure to include the case number in your correspondence. If you have questions on the request, please contact the Planning Office or you may also go to https://www.hanovercounty.gov/697/Board-of-Supervisors-Upcoming-and-Archiv for more information.

Traffic

Traffic Impact Analysis

Hickory Grove

Hanover County, Virginia

May 2023

Prepared for:

RCI Builders

9245 Shady Grove Road

Suite 200

Mechanicsville, VA 23116

GOROVE SLADE

Transportation Planners and Engineers

Prepared by:

GOROVE SLADE
Transportation Planners and Engineers

Richmond, VA

Fairfax, VA

Alexandria, VA

Washington, DC

www.goroveslade.com

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Executive Summary

RCI Builders is proposing to construct an age-restricted neighborhood in the northeast quadrant of the Route 54 at Providence Church Road intersection in Hanover County, Virginia. This Traffic Impact Analysis (TIA) was performed in accordance with Hanover County and Virginia Department of Transportation (VDOT) requirements.

The development plan includes up to 150 single-family detached age-restricted lots. The access plan includes realigning Providence Church Road to the east to improve the geometrics of the intersection, and one full-movement driveway on Route 54. If approved, the neighborhood is expected to be built and occupied in 2027.

The original TIA was dated June 2019, and was a Chapter 527 TIA because the proposed development plan generated over 9,500 daily trips. The revised TIA dated September 2021 removed the convenience store and fast-food restaurant, and replaced those uses with fast casual and quality restaurants, which resulted in 4,820 daily trips, which is below the VDOT threshold for a Chapter 527 TIA. The current plan generates just 836 daily trips – a reduction of 83% compared to the September 2021 TIA.

Site Location and Study Area

The proposed neighborhood is located in the northeast quadrant of the Route 54 at Providence Church Road intersection. Based on TIA scope coordination with the County and VDOT, the following scenarios were analyzed:

- Existing 2023 traffic conditions
- No-build 2027 traffic conditions
- Build 2027 traffic conditions
- Build 2027 traffic conditions with Phase 1 of the Iron Horse Business Park Trips

The weekday AM and PM peak hour were studied for the following intersections:

- Route 54 at Hill Carter Parkway
- Route 54 at I-95 Southbound Ramps
- Route 54 at I-95 Northbound Ramps
- Route 54 at Woodside Lane
- Route 54 at Providence Church Road
- Route 54 at Meyers Park Drive
- Route 54 at Goddins Hill Road

Recommendations

All of the study intersections are expected to operate acceptably at build-out of the neighborhood.

The projected build-out traffic volumes do not warrant any turn lanes on Route 54 at realigned Providence Church Road or the proposed site driveway. However, the applicant is proposing the following improvements:

- Realign Providence Church Road approximately 580 feet to the east to improve the spacing from Woodside Lane
- Widen Route 54 to a three-lane section from Woodside Lane to Meyers Park Drive to provide eastbound left-turn lanes on Route 54 at realigned Providence Church Road and Meyers Park Drive.

Introduction

This report summarizes the findings of the TIA that was performed for the proposed age-restricted neighborhood in the northeast quadrant of the Route 54 at Providence Church Road intersection in Hanover County, Virginia. This TIA was performed in accordance with Hanover County and VDOT requirements.

Scope of the Traffic Analysis

Based on the TIA scoping coordination with the County and VDOT, the study area includes the following intersections:

- Route 54 at Hill Carter Parkway
- Route 54 at I-95 Southbound Ramps
- Route 54 at I-95 Northbound Ramps
- Route 54 at Woodside Lane
- Route 54 at Providence Church Road
- Route 54 at Meyers Park Drive
- Route 54 at Goddins Hill Road

Figure 1 shows the site location and study intersections.

Figure 1: Site Location and Study Intersections

Existing Conditions

Existing Roadway Network

Existing lane configurations and turn lane storage lengths were collected in the field by Gorove Slade and signal timing information was provided by VDOT. A description of the major roadways within the study area is presented below in Table 1. The existing 2023 lane configurations at the study intersections are illustrated on Figure 2.

Table 1: Existing Roadway Network

Roadway	RTE #	VDOT Classification	Legal/Design Speed Limit (mph)	AADT (vpd)
England Street/East Patrick Henry Road	54	Minor Arterial	35/55	6,000/4,300*
Woodside Lane	1055	Local	25	3,000
Goddins Hill Road	798	Major Collector	45	820*
Providence Church Road	662	Local	35	60*
*VDOT 2019 ADT Traffic Data				

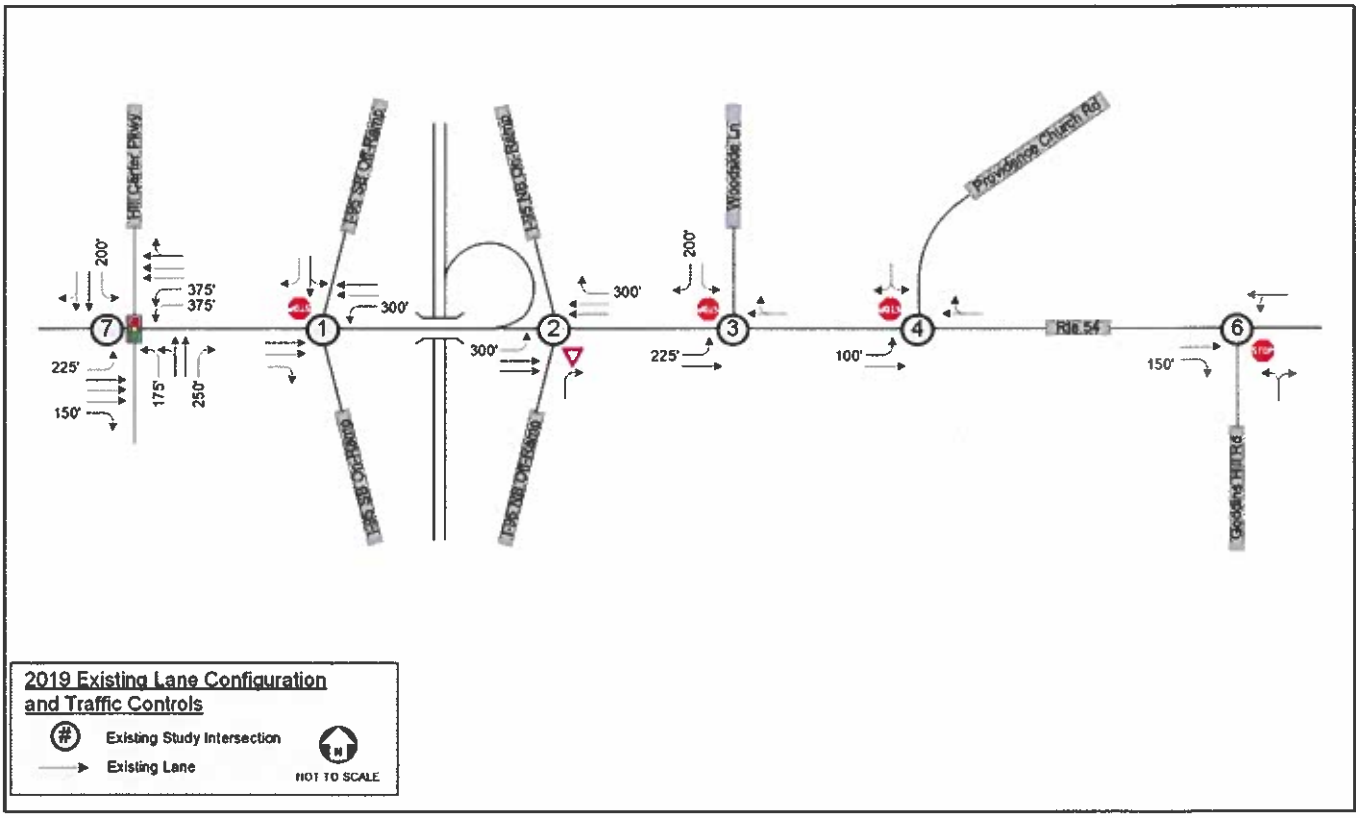


Figure 2: Existing Lane Configuration

Existing Traffic Volumes

The AM peak hour (7:00 to 9:00 AM) and PM peak hour (4:00 to 6:00 PM) turning movement counts were conducted at the following intersections by Peggy Malone & Associates, Inc. in May 2019:

- Route 54 at Hill Carter Parkway (from 2009 East Ashland TIA)
- Route 54 at I-95 Southbound Ramps
- Route 54 at I-95 Northbound Ramps
- Route 54 at Woodside Lane
- Route 54 at Providence Church Road
- Route 54 at Goddins Hill Road

These traffic counts were performed before the Covid-19 shutdowns started in March 2020. To calibrate the baseline traffic volumes, Burns Services, Inc. performed updated AM and PM peak hour turning movement counts at the following intersection on April 25, 2023:

- Route 54 at Woodside Lane

Figure 3 shows that the total approach volume at this intersection has dropped by 3.1% in the AM peak hour since 2019 – a decrease of 0.8% per year. The total approach volume has increased by 14.3% in the PM peak hour since 2019 – an increase of 3.4% per year.

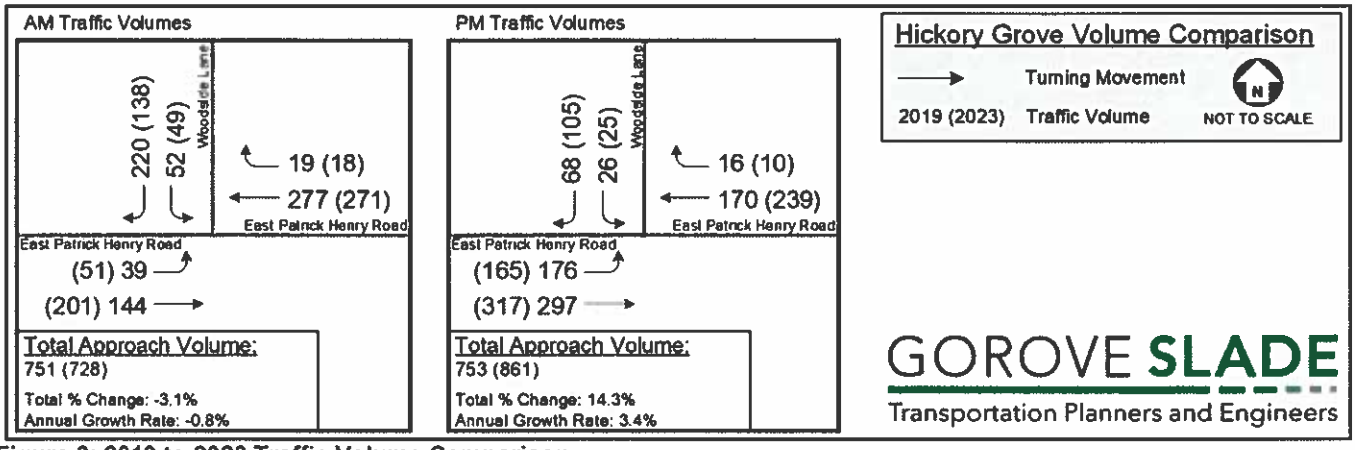


Figure 3: 2019 to 2023 Traffic Volume Comparison

Based on discussion with the County, the PM peak hour volumes have been adjusted up to match the April 2023 traffic volumes. Even though the AM peak hour volumes have dropped slightly since 2019, the AM peak hour traffic volumes were not adjusted down to be conservative.

The existing 2019 and 2023 peak hour traffic volumes for the study intersections are shown in Figure 4 and Figure 5, respectively. The turning movement count data are included in Appendix B.

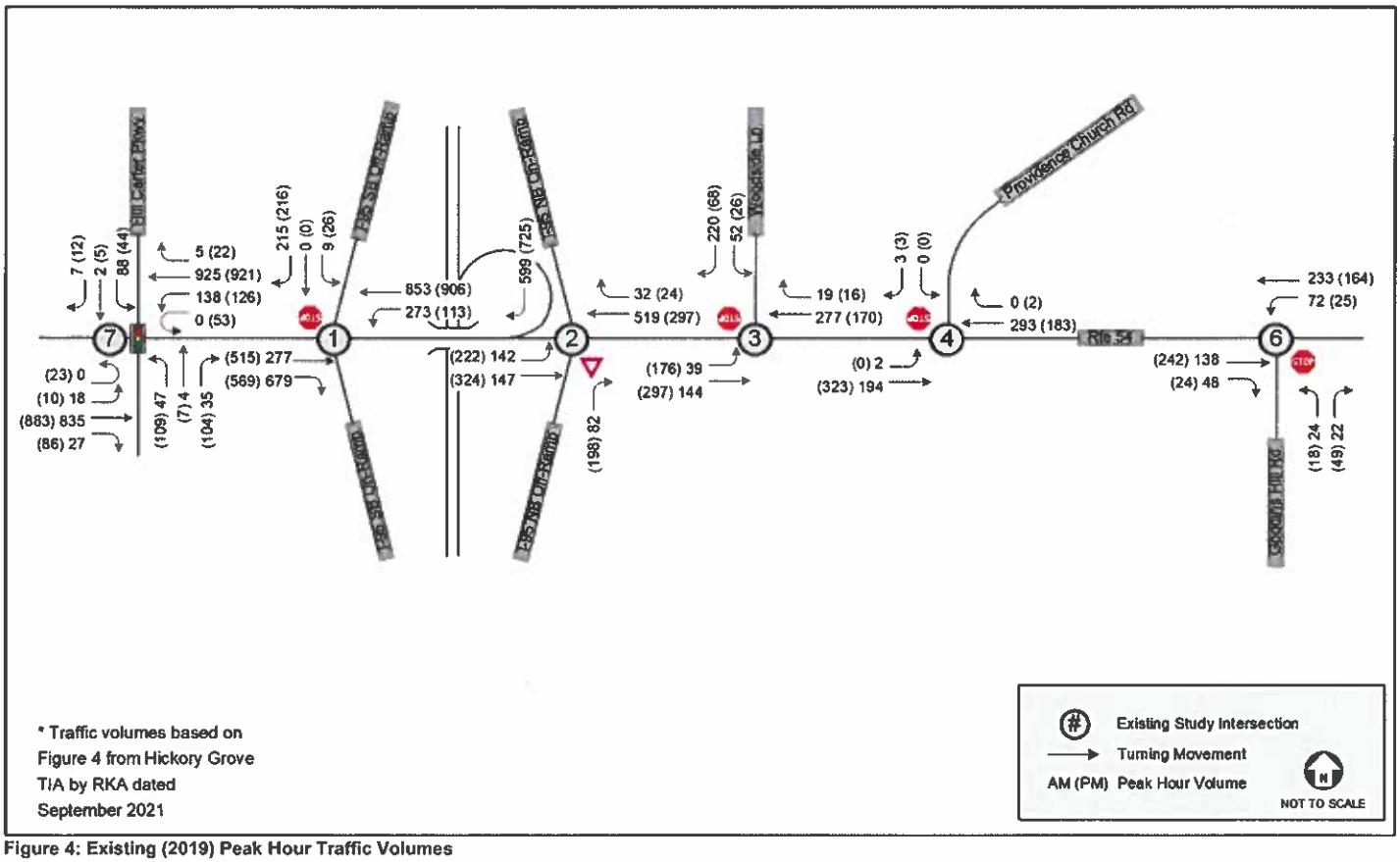


Figure 4: Existing (2019) Peak Hour Traffic Volumes

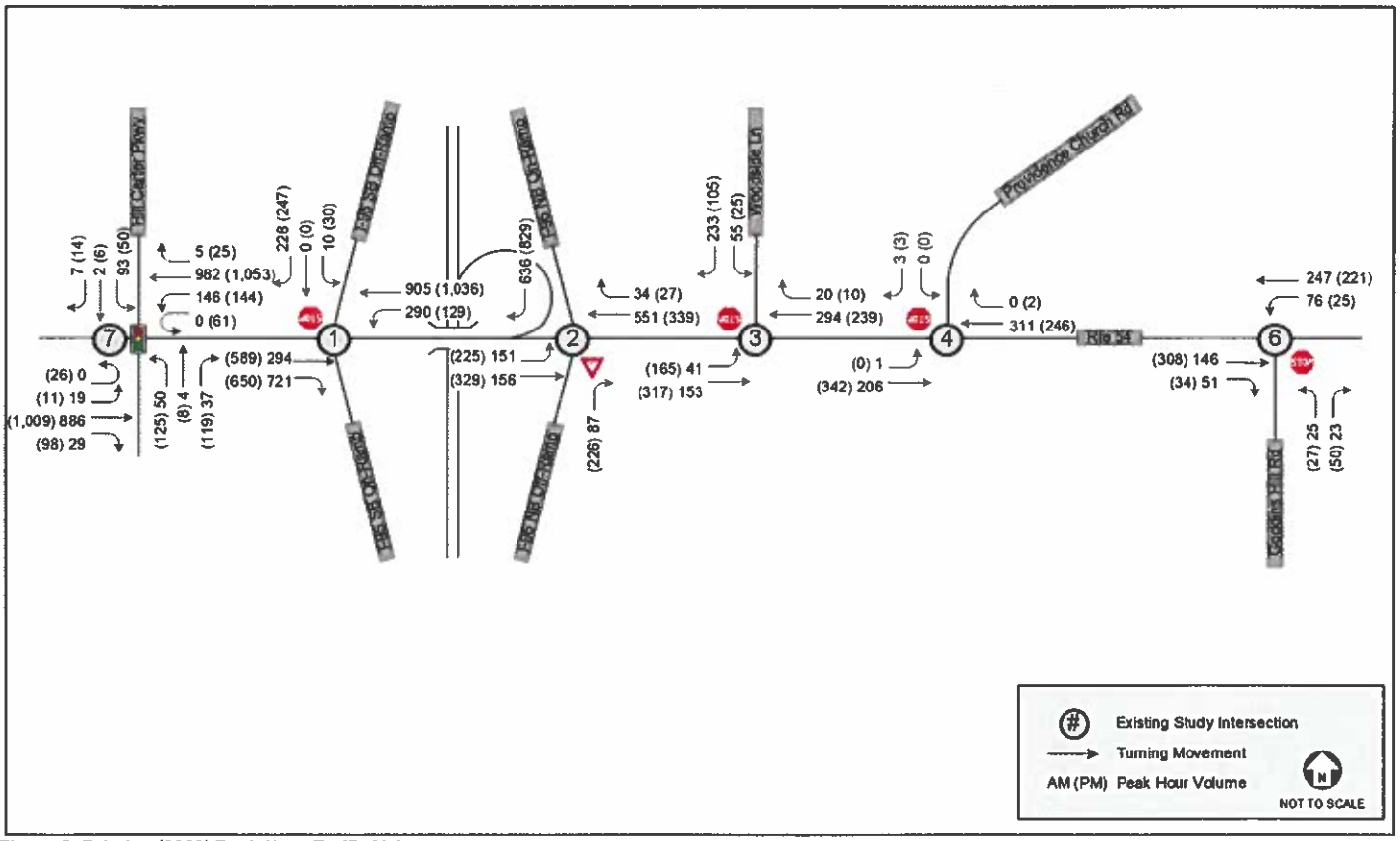


Figure 5: Existing (2023) Peak Hour Traffic Volumes

No-Build Conditions

In order to determine the traffic impact of the proposed development, a comparison of the future conditions of the study intersections must be made. This is achieved by analyzing the horizon year (2027) with and without the traffic generated by the proposed neighborhood. The future year condition without the development is called the no-build condition, and it is determined by projected the existing traffic to the build-out year using an annualized growth rate and adding it the traffic from approved (but not yet built) developments in the study area.

Approved Development Traffic

Based on discussions with the County and VDOT, there are no approved developments in the vicinity of the site that need to be included in addition to the annual traffic growth rate.

An additional scenario was analyzed that includes the site trips and Phase 1 of the Iron Horse Business Park trips. The Iron Horse Business Park TIA was performed by Timmons Group in August 2022. Figure 6 shows the Iron Horse Business Park site trips.

Background Traffic Growth

Based on the TIA scope meeting with the County and VDOT, an annual traffic growth rate of 1.5% was applied to the existing traffic count volumes. The existing 2023 counts were increased by the annual growth rate for four years to estimate the 2027 no-build traffic volumes, which are shown in Figure 7.

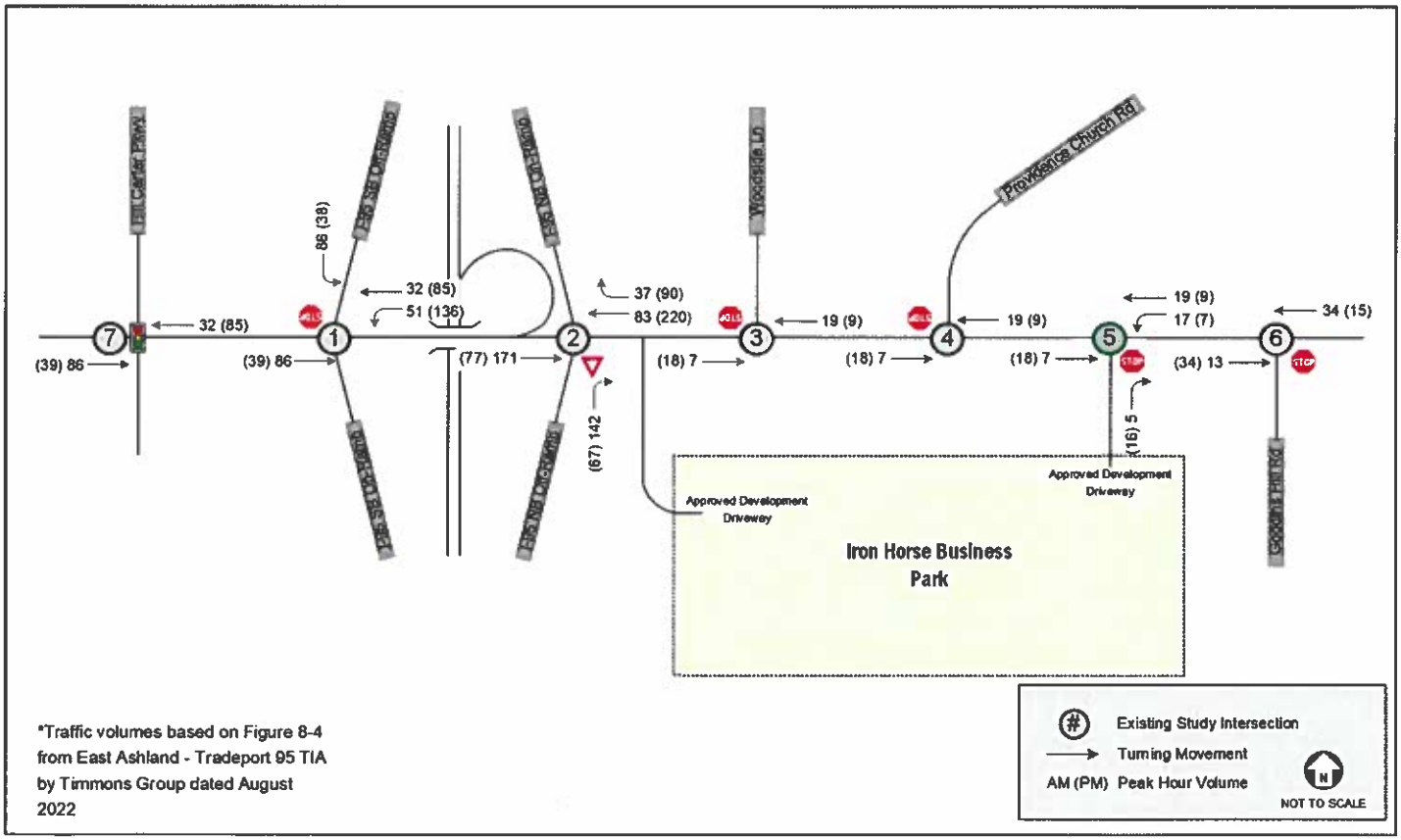


Figure 6: Iron Horse Business Park Site Trips

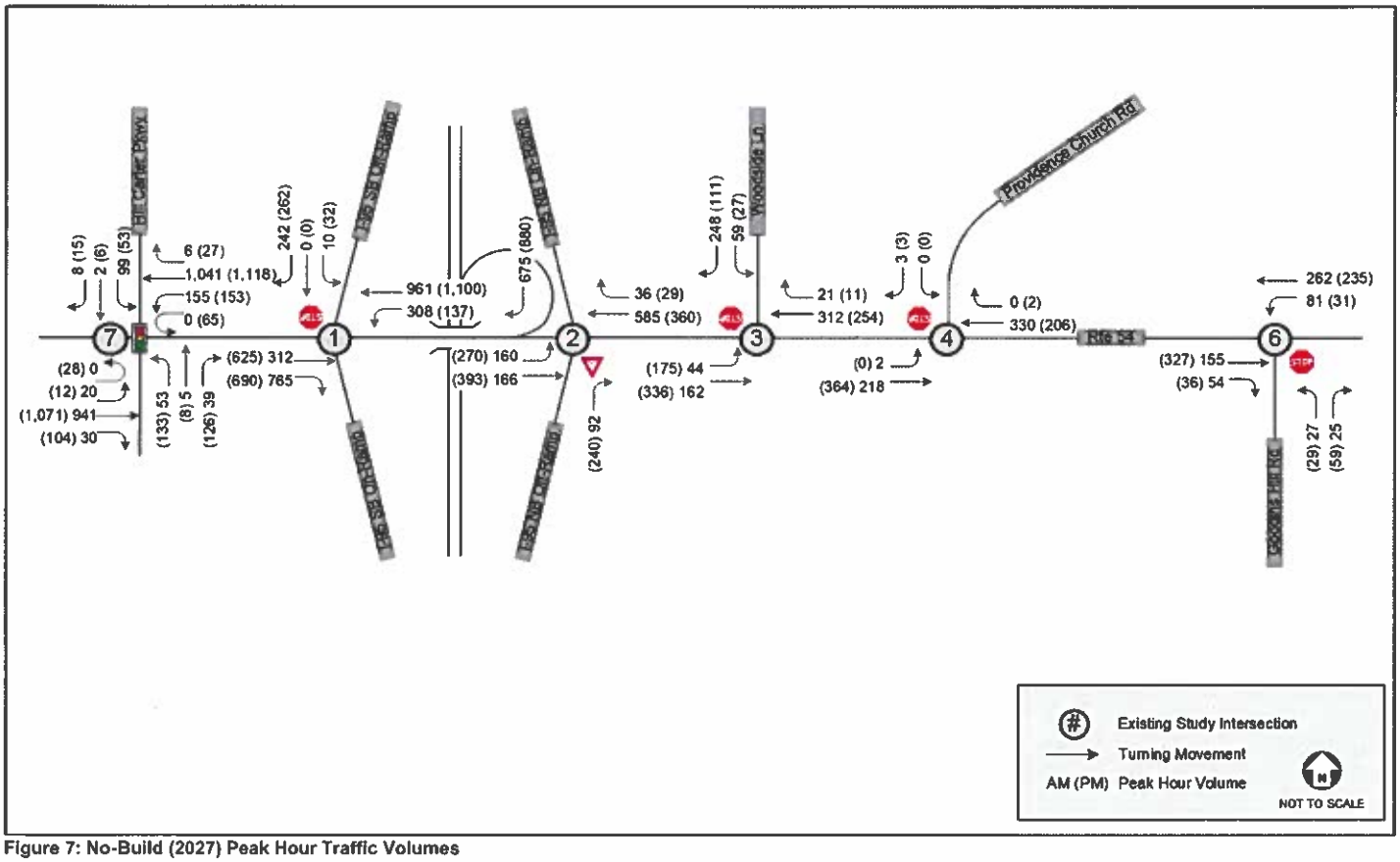


Figure 7: No-Build (2027) Peak Hour Traffic Volumes

Build Conditions

Conditions were also analyzed with the recommended lane configurations and traffic control used to mitigate site trip impacts.

Site Trip Generation

The Institute of Transportation Engineer's (ITE) *Trip Generation Manual, 11th Edition* was used to estimate the trip potential of the proposed neighborhood during the weekday AM and PM peak hours. Table 2 shows the trip generation potential of the project.

Table 2: Hickory Grove – ITE Trip Generation – Typical Weekday – 11th edition

Land Use (ITE Land Use Code)	Size	Average Daily Traffic (vpd)		AM Peak Hour (vph)		PM Peak Hour (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit
Senior Adult Housing – Single Family (251)	150 lots	418	418	17	36	37	24
February 2020 TIA		4,793	4,793	435	409	420	425
% Reduction from February 2020 TIA		-91%		-94%		-93%	
September 2021 TIA		2,410	2,410	47	72	195	147
% Reduction from September 2021 TIA		-83%		-55%		-82%	

The trip potential of the neighborhood was estimated based on the ITE trip rates and equations published in Volume 3 of the 11th edition of the ITE *Trip Generation Manual* on Pages 405-407.

For land use 251, ITE publishes an average trip rate per unit, and a fitted curve equation to predict the trip potential. The trip potential of the project was estimated based on the average rate and the fitted curve equation, and the higher results were used to be conservative.

As shown in Table 2, the trip potential of the current plan is a small fraction of the previous TIA's because all of the commercial uses have been removed.

Site Trip Distribution

The site trip distribution was determined based on discussions with the County and VDOT, a review of existing traffic patterns, surrounding land uses, and engineering judgement:

- 40% to / from the south on I-95
- 25% to / from the north on I-95
- 15% to / from the west on Route 54
- 15% to / from the east on Route 54
- 5% to / from the north on Woodside Lane

The site trip distribution and assignment are shown in Figure 8 and Figure 9, respectively.

Build 2027 Traffic Volumes

The build (2027) traffic volumes were determined by adding the no-build 2027 volumes (Figure 7) and the site trips (Figure 8) to estimate the projected build 2027 peak hour traffic volumes which are shown in Figure 10.

Build 2027 with Iron Horse Business Park Traffic Volumes

The build (2027) with Iron Horse Business Park trips were determined by adding the build traffic volumes (Figure 10) with the Iron Horse Business Park Trips (Figure 6), which are shown in Figure 11.

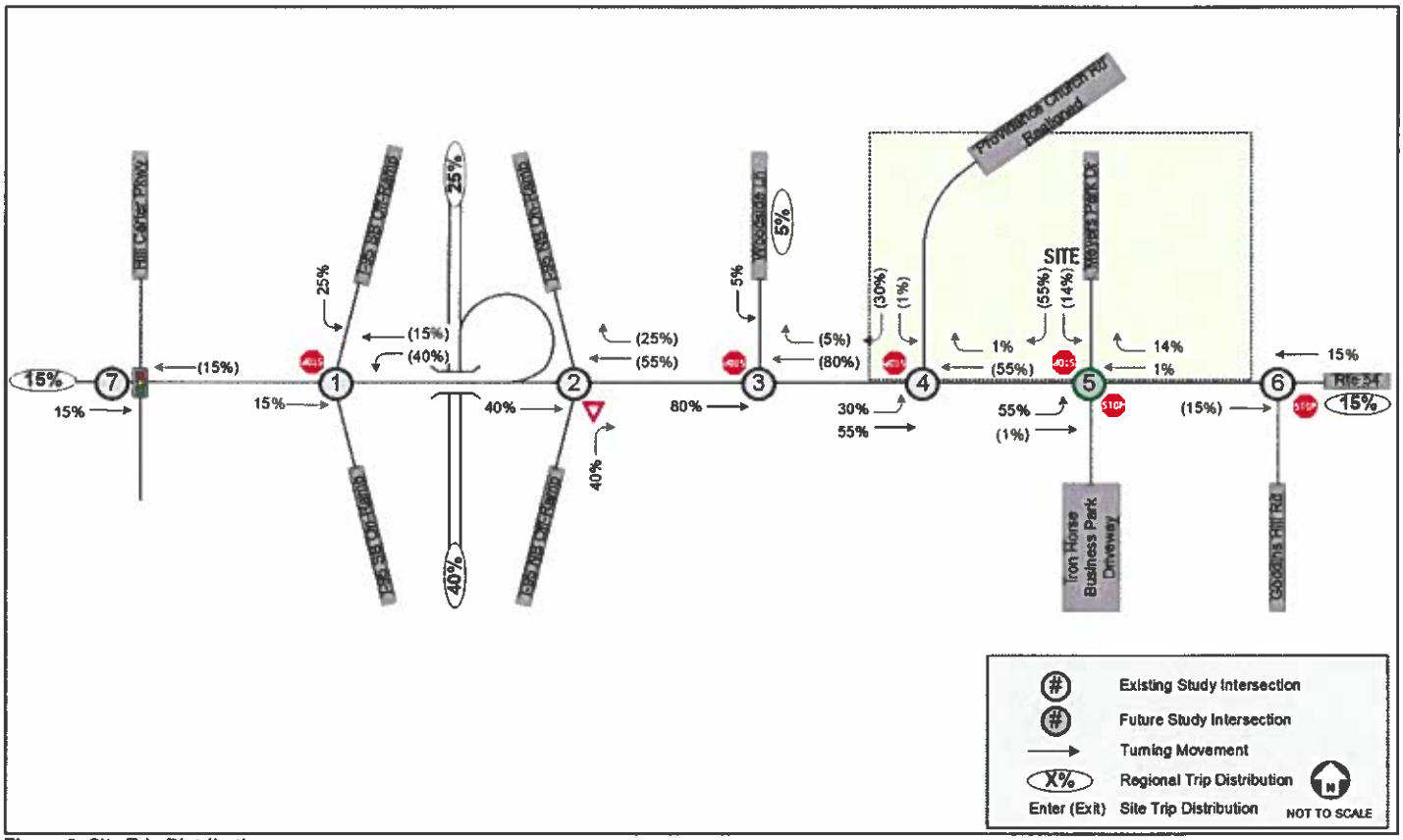


Figure 8: Site Trip Distribution

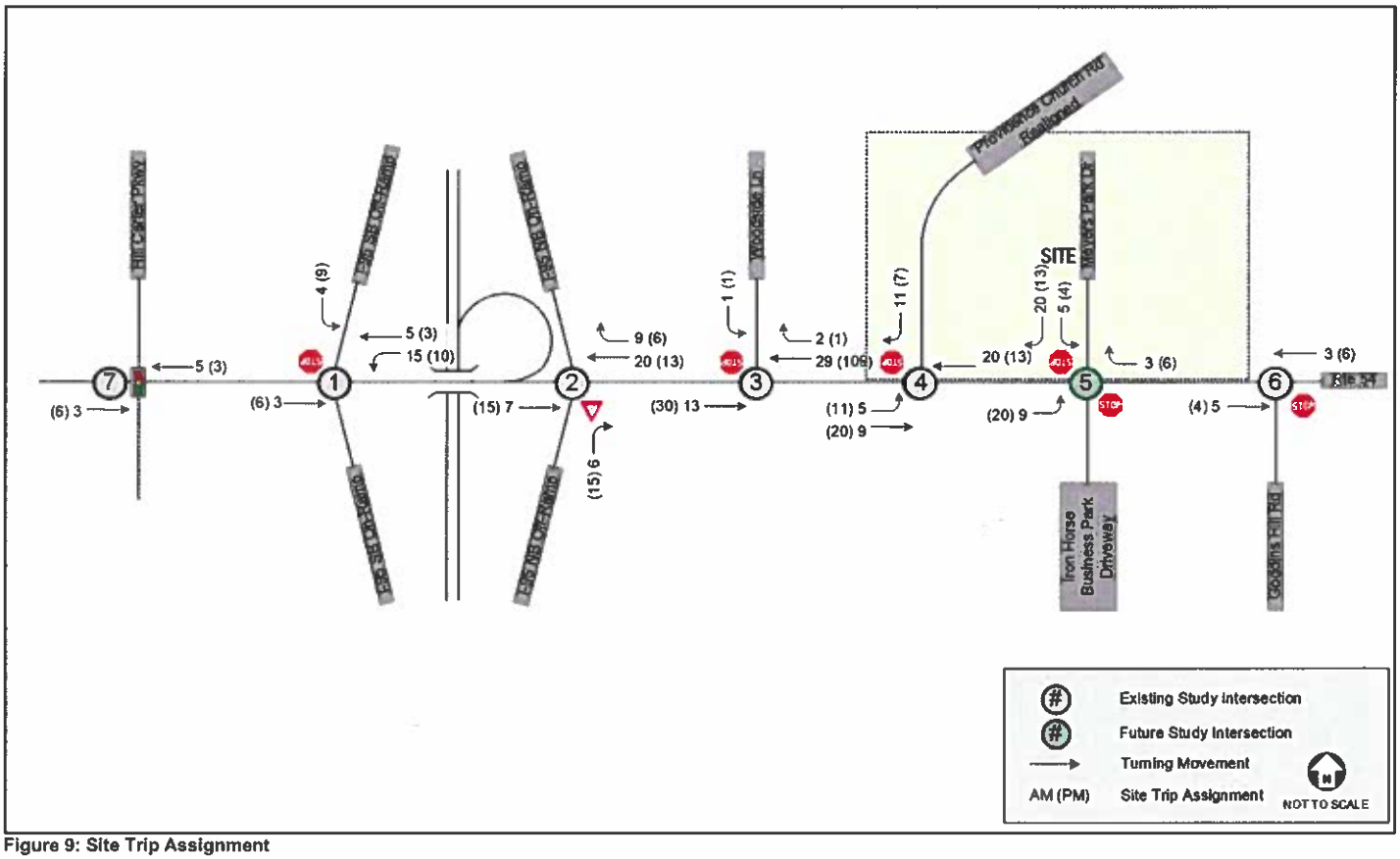


Figure 9: Site Trip Assignment

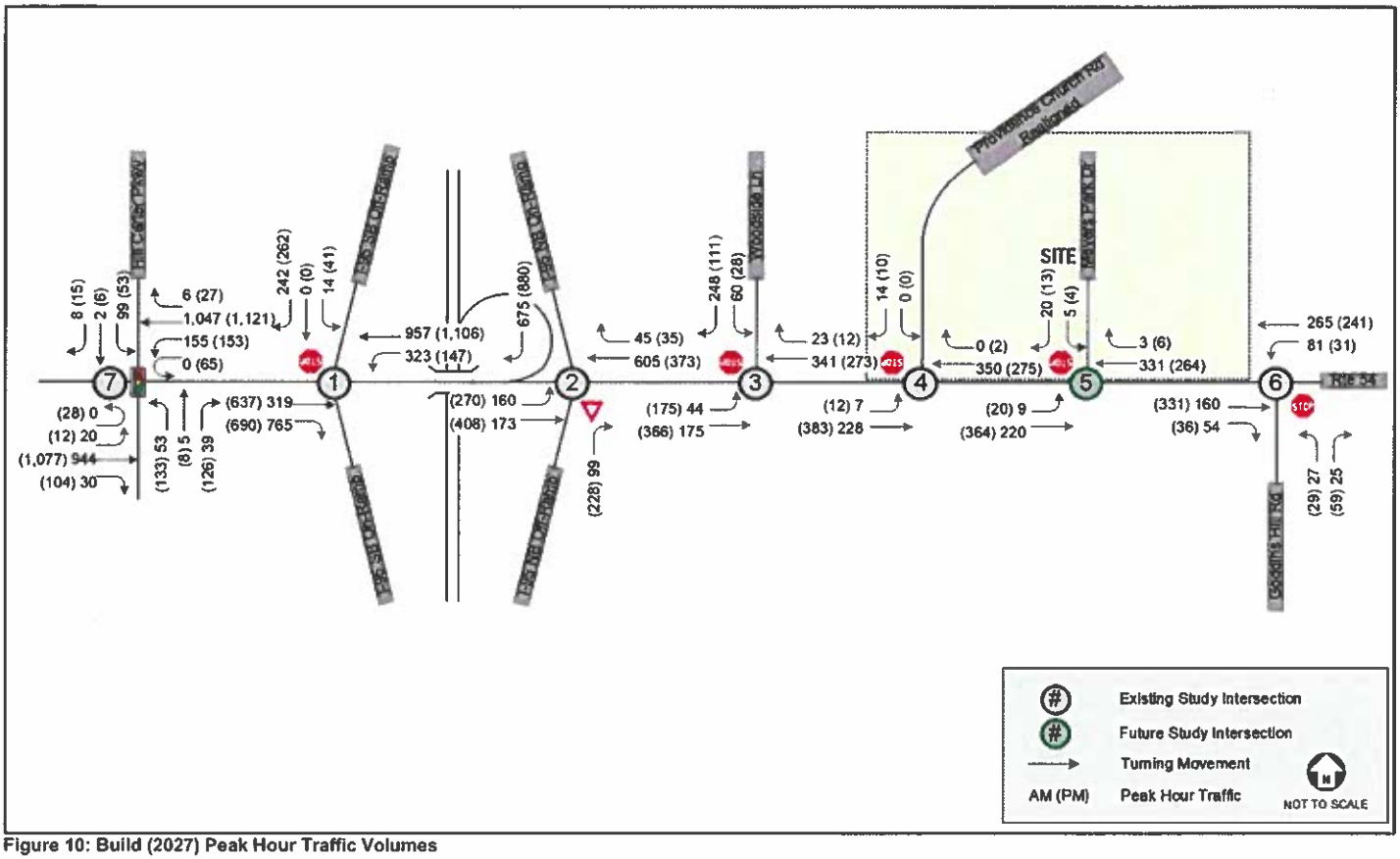


Figure 10: Build (2027) Peak Hour Traffic Volumes

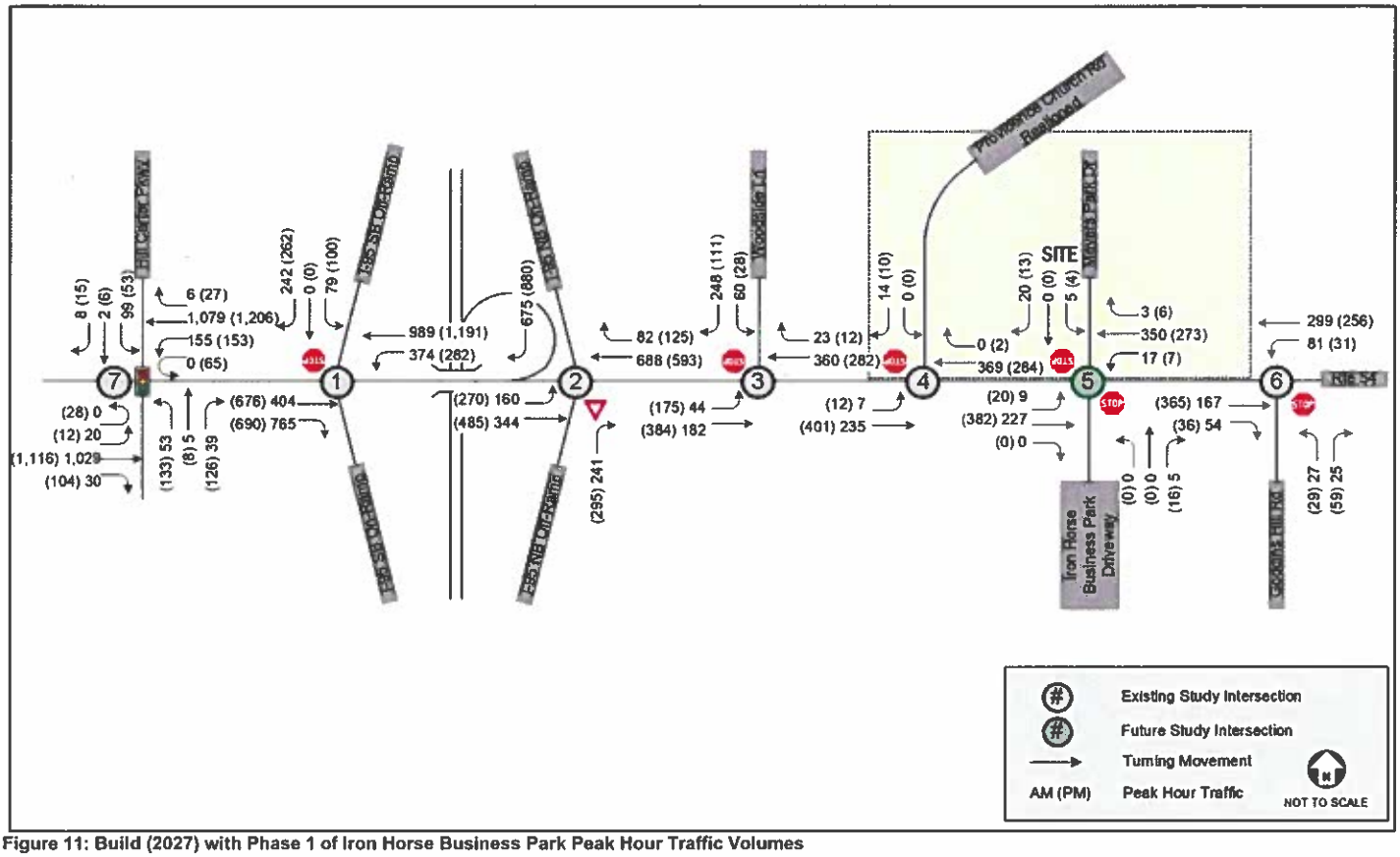


Figure 11: Build (2027) with Phase 1 of Iron Horse Business Park Peak Hour Traffic Volumes

Traffic Capacity Analysis

Capacity Analysis Procedure

Capacity analyses were performed at the study intersections during the weekday AM and PM peak hours. Synchro Version 11 was used to analyze the study intersections based on the Highway Capacity Manual (HCM) methodology and include level of service, delay, and queue length comparisons for the turning movements analyzed. For the purpose of this analysis, a peak hour factor of 0.92 was used for each of the study intersections only if existing PHF was less than 0.92. Otherwise, existing PHF was used. The Synchro and SimTraffic outputs are included in the Appendix.

Capacity Analysis Results

For unsignalized intersections, the average delays for the minor street left-turn movements are described as short delays (less than 25 seconds), moderate delays (between 25 and 50 seconds), and long delays (greater than 50 seconds). It is common for side street movements and left turns to experience long delays during the peak hours at intersections with major thoroughfares. Capacity analysis results are summarized in Table 3 through Table 9.

Table 3: Capacity Analysis Results – Route 54 at Hill Carter Parkway

Condition	Lane Group	Lane Storage (ft.)	AM Peak Hour LOS	AM Peak Hour Delay (sec)	AM Peak Hour Queue (ft.)	AM Peak Hour SimTraffic Avg. Max. Queue (ft.)	AM Peak Hour Overall LOS	PM Peak Hour LOS	PM Peak Hour Delay (sec)	PM Peak Hour Queue (ft.)	PM Peak Hour SimTraffic Avg. Max. Queue (ft.)	PM Peak Hour Overall LOS
Existing (2023) Conditions	EBL	225	E	62.9	42	60	B (19.6 Sec)	E	56.3	65	90	C (23.0 Sec)
	EBT	-/-/-	B	14.9	200	327		B	17.1	262	256	
	EBR	150	B	12	0	124		B	13.7	19	137	
	WBL	375/375	D	53.4	94	104		D	53.5	123	115	
	WBT/R	-/-/-	B	11.1	206	162		B	13.7	257	186	
	NBL	250	E	56	56	15		D	54.3	105	126	
	NBL/T	-	D	54.2	29	102		D	51.4	55	157	
	NBR	250	D	53.5	0	56		D	50.3	52	80	
	SBL	200	E	54.6	135	156		E	56.7	81	105	
	SBT/R	-/-	D	49.1	0	32		D	55.5	16	37	
No-Build (2027) Conditions	EBL	225	D	51.5	38	65	B (19.5 Sec)	E	56.3	69	92	C (23.6 Sec)
	EBT	-/-/-	B	16.9	208	331		B	18.0	287	322	
	EBR	150	B	13.3	0	170		B	14.2	24	249	
	WBL	375/375	D	43.3	83	109		D	53.4	129	141	
	WBT/R	-/-/-	B	12.7	215	188		B	14.3	283	216	
	NBL	250	D	45.5	49	23		D	54.2	109	138	
	NBL/T	-	D	44.2	27	98		D	51.2	58	174	
	NBR	250	D	43.6	0	58		D	50.1	59	115	
	SBL	200	D	48.8	123	153		E	56.9	86	111	
	SBT/R	-/-	D	40.4	0	31		E	52.3	16	42	
Build (2027) Conditions	EBL	225	D	51.5	38	64	B (19.5 Sec)	E	56.3	69	86	C (23.6 Sec)
	EBT	-/-/-	B	16.9	208	357		B	18.1	289	333	
	EBR	150	B	13.3	0	212		B	14.2	24	215	
	WBL	375/375	D	43.3	83	114		D	53.4	129	162	
	WBT/R	-/-/-	B	12.7	217	185		B	14.4	283	230	
	NBL	250	D	45.5	49	5		D	54.2	109	146	
	NBL/T	-	D	44.2	27	93		D	51.2	58	178	
	NBR	250	D	43.6	0	58		D	50.1	59	119	
	SBL	200	D	48.8	123	152		E	56.9	86	109	
	SBT/R	-/-	D	40.4	0	36		D	52.3	16	46	
Build (2027) Conditions *with Iron Horse Business Park Trips*	EBL	225	D	51.5	38	56	B (18.6 Sec)	E	56.3	69	94	C (24.9 Sec)
	EBT	-/-/-	B	17.4	230	335		B	18.3	302	344	
	EBR	150	B	13.3	0	162		B	14.2	24	250	
	WBL	375/375	D	46.9	88	106		D	48.9	131	157	
	WBT/R	-/-/-	A	9.9	197	196		B	19.1	388	236	
	NBL	250	D	45.5	49	8		D	54.2	109	144	
	NBL/T	-	D	44.2	27	98		D	51.2	58	190	
	NBR	250	D	43.6	0	61		D	50.1	59	110	
	SBL	200	D	48.8	123	141		E	56.9	86	116	
	SBT/R	-/-	D	40.4	0	32		E	52.3	16	34	

Based on the capacity analysis, the intersection currently operates at LOS B during the AM peak hour and LOS C during the PM peak hour. Under no-build conditions, the intersection is expected to continue to operate at LOS B during the AM peak hour and LOS C during the PM peak hour.

Under build conditions, the intersection is expected to continue to operate at LOS B during the AM peak hour and LOS C during the PM peak hour, with all movements operating at LOS E or better.

No improvements are warranted or recommended at this intersection at build-out of the proposed neighborhood.

Under build conditions with Phase 1 of the Iron Horse Business Park trips, the intersection is expected to continue to operate at LOS B during the AM peak hour and LOS C during the PM peak hour, with all movements operating at LOS E or better.

Table 4: Capacity Analysis Results – Route 54 at I-95 Southbound Ramps

Condition	Lane Group	Lane Storage (ft.)	AM Peak Hour					PM Peak Hour				
			LOS	Delay (sec)	Queue (ft.)	SimTraffic Avg. Max. Queue (ft.)	Overall LOS	LOS	Delay (sec)	Queue (ft.)	SimTraffic Avg. Max. Queue (ft.)	Overall LOS
Existing (2023) Conditions	EBT	-/-	-	-	-	-	N/A	-	-	-	-	N/A
	WBL	300	A	8.9	25	97		A	9.5	13	79	
	WBT	-/-	-	-	-	-		-	-	-	-	
	SBL/T	-	F	84.0	18	42		F	96.4	48	104	
	SBR	-	-	-	-	-		-	-	-	-	
No-Build (2027) Conditions	EBT	-/-	-	-	-	-	N/A	-	-	-	-	N/A
	WBL	300	A	9.0	28	121		A	9.7	15	85	
	WBT	-/-	-	-	-	-		-	-	-	-	
	SBL/T	-	F	105.6	20	49		F	136.9	63	109	
	SBR	-	-	-	-	-		-	-	-	-	
Build (2027) Conditions	EBT	-/-	-	-	-	-	N/A	-	-	-	-	N/A
	WBL	300	A	9.2	30	209		A	9.8	15	126	
	WBT	-/-	-	-	-	-		-	-	-	-	
	SBL/T	-	F	128.2	33	53		F	197.5	90	152	
	SBR	-	-	-	-	-		-	-	-	-	
Build (2027) Conditions *with Iron Horse Business Park Trips*	EBT	-/-	B	14.0	60	181	C (20.7 Sec)	C	34.9	376	196	C (27.9 Sec)
	WBL	300	D	43.9	319	354		E	56.5	304	232	
	WBT	-/-	A	6.0	214	584		A	8.4	318	398	
	SBL/T	-	D	39.0	104	150		D	42.7	99	137	
	SBR	-	D	48.7	160	101		E	63.4	243	80	

Based on the capacity analysis, the minor street left-turn movement currently operates with long delays during the AM and PM peak hours. Under no-build conditions, the minor street left-turn movement is expected to continue to operate with long delays during the AM and PM peak hours.

Under build conditions, the minor street left-turn movement is expected to continue to operate with long delays during the AM and PM peak hours. Long delays are common for left-turn movements at intersections with major thoroughfares. The trip potential of the Hickory Grove project will not meet any Manual on Uniform Traffic Control Devices (MUTCD) traffic signal warrants. No improvements are warranted or recommended at this intersection at build-out of the proposed neighborhood.

Under build conditions with Phase 1 of the Iron Horse Business Park trips, the intersection is expected to be signalized or converted to an alternative configuration approved by VDOT as part of the Iron Horse Business Park improvements. If a conventional traffic signal is installed, the intersection is expected to operate at LOS C during the AM and PM peak hours.

Table 5: Capacity Analysis Results – Route 54 at I-95 Northbound Ramps

Condition	Lane Group	Lane Storage (ft.)	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec)	Queue (ft.)	SimTraffic Avg. Max. Queue (ft.)	LOS	Delay (sec)	Queue (ft.)	SimTraffic Avg. Max. Queue (ft.)
Existing (2023) Conditions	EBL	300	C	20.1	48	116	C	17.3	65	140
	EBT	-/-	-	-	-	-	-	-	-	-
	WBT	-/-	-	-	-	-	-	-	-	-
	WBR	300	-	-	-	-	-	-	-	-
	NBR	-	-	-	-	-	-	-	-	-
No-Build (2027) Conditions	EBL	300	C	22.5	58	109	C	18.9	78	145
	EBT	-/-	-	-	-	-	-	-	-	-
	WBT	-/-	-	-	-	-	-	-	-	-
	WBR	300	-	-	-	-	-	-	-	-
	NBR	-	-	-	-	-	-	-	-	-
Build (2027) Conditions	EBL	300	C	23.5	63	146	C	19.6	83	158
	EBT	-/-	-	-	-	-	-	-	-	-
	WBT	-/-	-	-	-	-	-	-	-	-
	WBR	300	-	-	-	-	-	-	-	-
	NBR	-	-	-	-	-	-	-	-	-
Build (2027) Conditions *with Iron Horse Business Park Trips*	EBL	300	D	29.2	78	158	E	42.3	165	175
	EBT	-/-	-	-	-	-	-	-	-	-
	WBT	-/-	-	-	-	-	-	-	-	-
	WBR	300	-	-	-	-	-	-	-	-
	NBR	-	-	-	-	-	-	-	-	-

Based on the capacity analysis, the major street left-turn movement is expected to operate with short delays during the AM and PM peak hours. Under no-build conditions, the major street left-turn movement is expected to continue to operate with short delays during the AM and PM peak hours.

Under build conditions, the major street left-turn movement is expected to continue to operate with short delays during the AM and PM peak hours. No improvements are warranted or recommended at this intersection at build-out of the proposed neighborhood.

Under build conditions, with Phase 1 of the Iron Horse Business Park trips, the major street left-turn movement is expected to operate with moderate delays during the AM and PM peak hours.

Table 6: Capacity Analysis Results – Route 54 at Woodside Lane

Condition	Lane Group	Lane Storage (ft.)	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec)	Queue (ft.)	SimTraffic Avg. Max. Queue (ft.)	LOS	Delay (sec)	Queue (ft.)	SimTraffic Avg. Max. Queue (ft.)
Existing (2023) Conditions	EBL	225	A	8.1	3	7	A	8.3	13	21
	EBT	-	-	-	-	-	-	-	-	-
	WBT/R	-	-	-	-	-	-	-	-	-
	SBL	-	B	14.9	13	55	C	24.0	10	33
	SBR	200	B	13.4	45	76	B	10.6	15	58
No-Build (2027) Conditions	EBL	225	A	8.2	3	6	A	8.4	15	18
	EBT	-	-	-	-	-	-	-	-	-
	WBT/R	-	-	-	-	-	-	-	-	-
	SBL	-	C	15.7	15	60	D	26.7	13	51
	SBR	200	B	14.2	53	71	B	10.9	15	63
Build (2027) Conditions	EBL	225	A	8.3	3	37	A	8.5	15	72
	EBT	-	-	-	-	-	-	-	-	-
	WBT/R	-	-	-	-	-	-	-	-	-
	SBL	-	C	16.7	18	69	D	29.1	15	51
	SBR	200	B	14.9	58	142	B	11.1	15	68
Build (2027) Conditions *with Iron Horse Business Park Trips*	EBL	225	A	8.4	3	48	A	8.5	15	89
	EBT	-	-	-	-	-	-	-	-	-
	WBT/R	-	-	-	-	-	-	-	-	-
	SBL	-	C	17.3	18	72	D	30.3	18	46
	SBR	200	C	15.4	60	126	B	11.2	18	68

Based on the capacity analysis, the minor street left-turn movement is expected to operate with short delays during the AM and PM peak hours. Under no-build conditions, the minor street left-turn movement is expected to operate with short delays during the AM peak hour and moderate delays during the PM peak hour.

Under build conditions, the minor street left-turn movement is expected to continue to operate with short delays in the AM peak hour and moderate delays during the PM peak hour. No improvements are warranted or recommended at this intersection at build-out of the proposed neighborhood.

Under build conditions, with Phase 1 of the Iron Horse Business Park trips, the minor street left-turn movement is expected to continue to operate with short delays during the AM peak hour and moderate delays during the PM peak hour.

Table 7: Capacity Analysis Results – Route 54 at Providence Church Road

Condition	Lane Group	Lane Storage (ft.)	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec)	Queue (ft.)	SimTraffic Avg. Max. Queue (ft.)	LOS	Delay (sec)	Queue (ft.)	SimTraffic Avg. Max. Queue (ft.)
Existing (2023) Conditions	EBL	100	A	8.0	0	0	A	7.8	0	0
	EBT	-	-	-	-	-	-	-	-	-
	WBT/R	-	-	-	-	-	-	-	-	-
	SBL/R	-	B	10.9	0	4	B	10.8	0	4
No-Build (2027) Conditions	EBL	100	A	8.1	0	0	A	7.9	0	0
	EBT	-	-	-	-	-	-	-	-	-
	WBT/R	-	-	-	-	-	-	-	-	-
	SBL/R	-	B	11.1	0	3	B	11.0	0	4
Build (2027) Conditions	EBL	100	A	8.1	0	24	A	7.9	0	18
	EBT	-	-	-	-	-	-	-	-	-
	WBT/R	-	-	-	-	-	-	-	-	-
	SBL/R	-	B	10.9	3	29	B	10.5	3	33
Build (2027) Conditions *with Iron Horse Business Park Trips*	EBL	100	A	8.2	0	26	A	8.0	0	24
	EBT	-	-	-	-	-	-	-	-	-
	WBT/R	-	-	-	-	-	-	-	-	-
	SBL/R	-	B	11.1	3	31	B	10.6	3	28

Capacity analysis indicates that the minor street left-turn movement currently operates with short delays during the AM and PM peak hours. Under no-build conditions, the minor street left-turn movement is expected to continue to operate with short delays during the AM and PM peak hours.

The applicant is proposing to realign Providence Church Road approximately 580 feet to the east to improve the spacing from Woodside Lane, and build an eastbound left-turn lane on Route 54. Under build conditions, the minor street left-turn movement is expected to continue to operate with short delays during the AM and PM peak hours, with queue lengths of two vehicles or less.

Under build conditions, with Phase 1 of the Iron Horse Business Park trips, the minor street left-turn movement is expected to continue to operate with short delays during the AM and PM peak hours.

Table 8: Capacity Analysis Results – Route 54 at Meyers Park Drive / Iron Horse Driveway

Condition	Lane Group	Lane Storage (ft.)	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec)	Queue (ft.)	SimTraffic Avg. Max. Queue (ft.)	LOS	Delay (sec)	Queue (ft.)	SimTraffic Avg. Max. Queue (ft.)
Build (2027) Conditions	EBL	200	A	8.0	0	23	A	7.9	3	29
	EBT	-	-	-	-	-	-	-	-	-
	WBT/R	-	-	-	-	-	-	-	-	-
	SBL/R	-	B	11.1	3	33	B	11.1	3	38
Build (2027) Conditions *with Iron Horse Business Park Trips*	EBL	200	A	8.1	0	22	A	7.9	3	29
	EBT/R	-	-	-	-	-	-	-	-	-
	WBL	200	A	7.8	0	26	A	8.2	0	26
	WBT/R	-	-	-	-	-	-	-	-	-
	NBL/T/R	-	A	0.0	0	0	B	10.8	3	29
	SBL/T/R	-	B	11.7	5	40	B	11.8	3	33

Under build conditions, the minor street left-turn movement is expected to operate with short delays during the AM and PM peak hours, with queue lengths of two vehicles or less.

The Iron Horse Business Park is proposing to construct a full-movement driveway on Route 54 across from the Hickory Grove proposed site driveway. Under build conditions with Meyers Park Drive in place and Phase 1 of the Iron Horse Business Park trips, the minor street left-turn movement is expected to continue to operate with short delays during the AM and PM peak hours.

Table 9: Capacity Analysis Results – Route 54 at Goddins Hill Road

Condition	Lane Group	Lane Storage (ft.)	AM Peak Hour				PM Peak Hour			
			LOS	Delay (sec)	Queue (ft.)	SimTraffic Avg. Max. Queue (ft.)	LOS	Delay (sec)	Queue (ft.)	SimTraffic Avg. Max. Queue (ft.)
Existing (2023) Conditions	EBT	-	-	-	-	-	-	-	-	-
	EBR	150	-	-	-	-	-	-	-	-
	WBL/T	-	A	7.9	5	0	A	8.2	3	0
	NBL/R	-	B	12.2	8	63	B	12.6	15	71
No-Build (2027) Conditions	EBT	-	-	-	-	-	-	-	-	-
	EBR	150	-	-	-	-	-	-	-	-
	WBL/T	-	A	7.9	5	0	A	8.2	3	0
	NBL/R	-	B	12.6	10	64	B	13.1	15	70
Build (2027) Conditions	EBT	-	-	-	-	-	-	-	-	-
	EBR	150	-	-	-	-	-	-	-	-
	WBL/T	-	A	7.9	5	84	A	8.2	3	63
	NBL/R	-	B	12.7	10	74	B	13.2	18	93
Build (2027) Conditions *with Iron Horse Business Park Trips*	EBT	-	-	-	-	-	-	-	-	-
	EBR	150	-	-	-	-	-	-	-	-
	WBL/T	-	A	7.9	5	64	A	8.4	3	56
	NBL/R	-	B	13.1	10	64	B	13.8	18	96

Capacity analysis indicates that the minor street left-turn movement currently operates with short delays during the AM and PM peak hours. Under no-build conditions, the minor street left-turn movement is expected to continue to operate with short delays during the AM and PM peak hours.

Under build conditions, the minor street left-turn movement is expected to continue to operate with short delays during the AM and PM peak hours, with queue lengths of three vehicles or less.

No improvements are warranted or recommended at this intersection at build-out of the proposed neighborhood.

Under build conditions, with Phase 1 of the Iron Horse Business Park trips, the minor street left-turn movement is expected to continue to operate with short delays during the AM and PM peak hours.

Turn Lane Warrant Analysis

Turn lanes were evaluated at the intersection of Route 54 at realigned Providence Church Road and at Meyers Park Drive based on Build 2027 traffic conditions. The projected build-out traffic volumes do not warrant any turn lanes on Route 54 at either intersection. The VDOT turn lane warrant worksheets are included in the appendix.

Recommendations

All of the study intersections are expected to operate acceptably at build-out of the proposed Hickory Grove neighborhood.

The projected build-out traffic volumes do not warrant any turn lanes on Route 54 at realigned Providence Church Road or Meyers Park Drive. However, the applicant is proposing the following improvements:

- Realign Providence Church Road approximately 580 feet to the east to improve the spacing from Woodside Lane
- Widen Route 54 to a three-lane section from Woodside Lane to Meyers Park Drive to provide eastbound left-turn lanes on Route 54 at realigned Providence Church Road and at Meyers Park Drive.

The recommended lane configuration is shown in Figure 12.

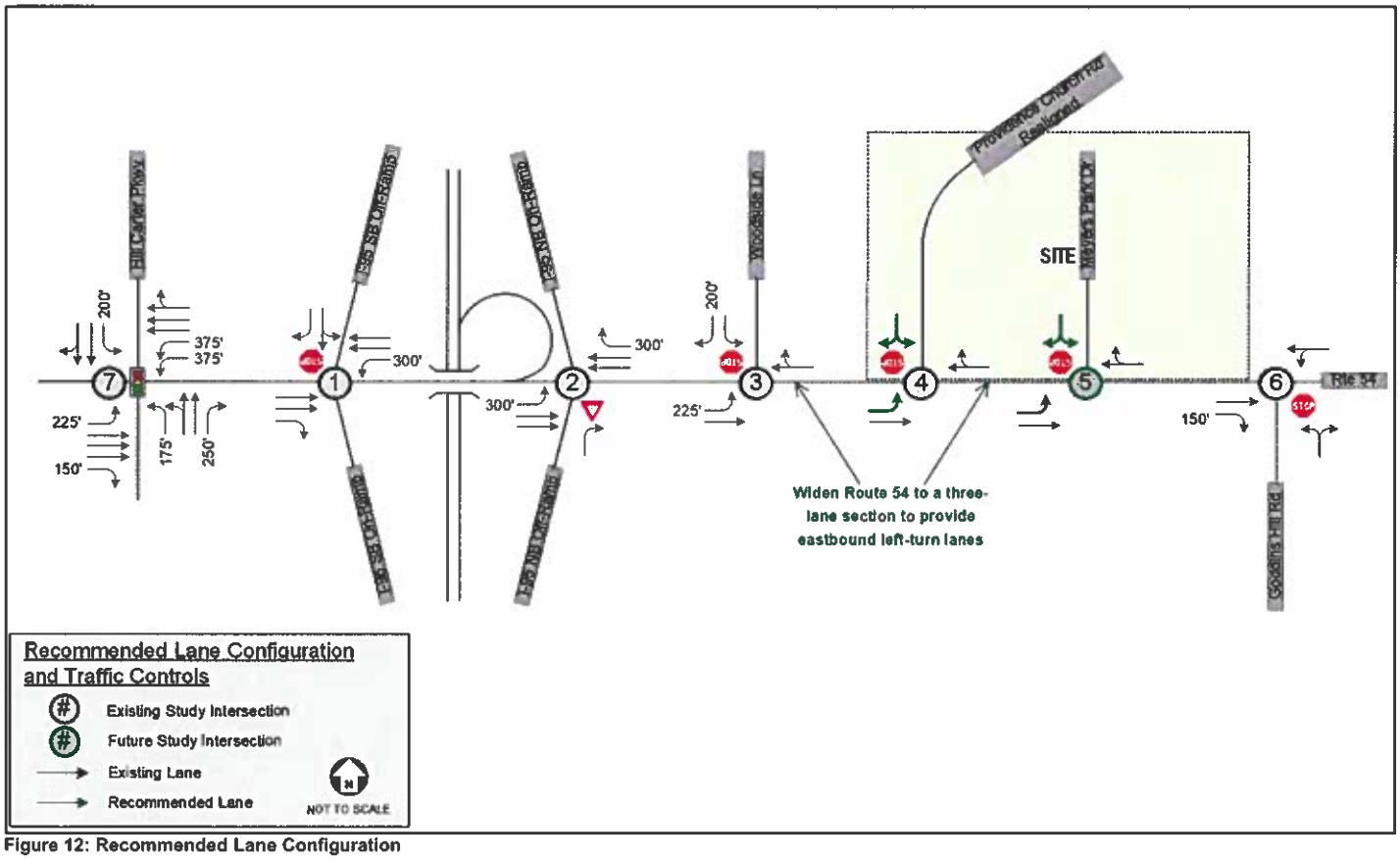


Figure 12: Recommended Lane Configuration

APPENDIX

APPENDIX A: TIA SCOPING DOCUMENT

VDOT Virginia Department of Transportation

PRE-SCOPE OF WORK MEETING FORM

Information on the Project
Traffic Impact Analysis Base Assumptions

The applicant is responsible for entering the relevant information and submitting the form to VDOT and the locality no less than three (3) business days prior to the meeting. If a form is not received by this deadline, the scope of work meeting may be postponed.

Contact Information				
Consultant Name: Tele: E-mail:	Gorove Slade - Carl Hultgren, P.E., PTOE (804) 310-6040 ch@goroveslade.com			
Developer/Owner Name: Tele: E-mail:	ROgers-Chenault - Corey Sedlar (804) 249-3501 coreys@htrsi.com			
Project Information				
Project Name:	Hickory Grove		Locality/County:	Hanover County
Project Location: (Attach regional and site specific location map)	See Figure 1			
Submission Type	Comp Plan ☐	Rezoning ☒	Site Plan ☐	Subd Plat ☐
Project Description: (Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary)	Property located on the north side of Route 54, east of the I-95 interchange. The project includes 157 age-restricted homes and apartments. The access plan includes realigning Providence Church Road and another site driveway on Route 54.			
Proposed Use(s): (Check all that apply; attach additional pages as necessary)	Residential ☒	Commercial ☐	Mixed Use ☐	Other ☐
	Residential Uses(s) Number of Units: See trip table ITE LU Code(s): ____ ____ ____ **Commercial Use(s)** ITE LU Code(s): ____ ____ ____ Square Ft or Other Variable:		**Other Use(s)** ITE LU Code(s): ____ ____ Independent Variable(s): ____ ____ ____	
Total Peak Hour Trip Projection:	Less than 100 ☒	100 – 499 ☐	500 – 999 ☐	1,000 or more ☐

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Traffic Impact Analysis Assumptions

Study Period	Existing Year: 2019	Build-out Year: 2027	Design Year: 2027
Study Area Boundaries (Attach map)	North: See Figure 1	South:	
	East:	West:	
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	Iron Horse Business Park TIA by Timmons Group		
Consistency With Comprehensive Plan (Land use, transportation plan)	Existing zoning is A-1		
Available Traffic Data (Historical, forecasts)	Route 54 - 3,500 vpd in 2012 / 4,200 vpd in 2017 Providence Church Road - 70 vpd in 2012 / 60 vpd in 2017		
Trip Distribution (Attach sketch)	Road Name: See Figure 2	Road Name:	
	Road Name:	Road Name:	
Annual Vehicle Trip Growth Rate:	1.5%	Peak Period for Study (check all that apply)	☒ AM ☒ PM ☐ SAT
		Peak Hour of the Generator	
Study Intersections and/or Road Segments (Attach additional sheets as necessary)	1.Route 54 at Hill Carter Parkway	6.Route 54 at Goddins Hill Road	
	2.Route 54 at I-95 Southbound Ramps	7.	
	3.Route 54 at I-95 Northbound Ramps	8.	
	4.Route 54 at Proposed Site Driveway	9.	
	5.Route 54 at Providence Church Road	10.	
Trip Adjustment Factors	Internal allowance: ☐ Yes ☒ No Reduction: _____% trips	Pass-by allowance: ☐ Yes ☒ No Reduction: _____% trips	
Software Methodology	☒ Synchro ☐ HCS (v.2000/+) ☐ aaSIDRA ☐ CORSIM ☒ Other SimTraffic		
Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	Synchro / SimTraffic 11 will be used to analyze LOS, delay, and queueing at the study intersections. SIDRA 7 will be used to analyze any future roundabouts.		

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Improvement(s) Assumed or to be Considered	The need for turn lanes and other off-site improvements will be determined based on the results of the analysis.
Background Traffic Studies Considered	Iron Horse Business Park TIA by Timmons Group
Plan Submission	☐ Master Development Plan (MDP) ☒ Generalized Development Plan (GDP) ☐ Preliminary/Sketch Plan ☐ Other Plan type (Final Site, Subd. Plan)
Additional Issues to be Addressed	☒ Queuing analysis ☒ Actuation/Coordination ☐ Weaving analysis ☐ Merge analysis ☐ Bike/Ped Accommodations ☒ Intersection(s) ☐ TDM Measures ☐ Other ____

NOTES on ASSUMPTIONS:

The TIA will include three analysis scenarios:

- Existing (2019) Conditions
- No-Build (2027) Conditions
- Build (2027) Conditions

SIGNED: _____ DATE: _____
Applicant or Consultant

PRINT NAME: _____
Applicant or Consultant

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

APPENDIX B: TURNING MOVEMENT COUNT DATA

Peggy Malone & Associates
904-992-8072

File Name : 4-I-95 SB Ramps & Route 55 AI
Site Code :
Start Date : 5/29/2019
Page No : 1

Groups Printed- Combined

	SB I-95 Off Ramps Southbound					Rt. 54 Westbound					SB I-95 On Ramps Northbound					Rt. 54 Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	50	0	2	0	52	0	162	67	0	229	0	0	0	0	0	158	44	0	0	202	483
07:15 AM	52	0	5	0	57	0	189	89	0	278	0	0	0	0	0	182	60	0	0	242	577
07:30 AM	60	0	3	0	63	0	232	66	0	298	0	0	0	0	0	197	62	0	0	259	620
07:45 AM	66	0	1	0	67	0	226	52	0	278	0	0	0	0	0	152	76	0	0	228	573
Total	228	0	11	0	239	0	809	274	0	1083	0	0	0	0	0	689	242	0	0	931	2253
08:00 AM	37	0	0	0	37	0	206	66	0	272	0	0	0	0	0	148	79	0	0	227	536
08:15 AM	46	0	4	0	50	0	167	52	0	219	0	0	0	0	0	146	71	0	0	217	486
08:30 AM	52	0	1	0	53	0	140	17	0	157	0	0	0	0	0	134	68	0	0	202	412
08:45 AM	47	0	3	0	50	0	152	29	0	181	0	0	0	0	0	141	70	0	0	211	442
Total	182	0	8	0	190	0	665	164	0	829	0	0	0	0	0	569	288	0	0	857	1876
Grand Total	410	0	19	0	429	0	1474	438	0	1912	0	0	0	0	0	1258	530	0	0	1788	4129
Apprch %	95.6	0	4.4	0		0	77.1	22.9	0		0	0	0	0		70.4	29.6	0	0		
Total %	9.9	0	0.5	0	10.4	0	35.7	10.6	0	46.3	0	0	0	0	0	30.5	12.8	0	0	43.3	

	SB I-95 Off Ramps Southbound				Rt. 54 Westbound				SB I-95 On Ramps Northbound				Rt. 54 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	52	0	5	57	0	189	89	278	0	0	0	0	182	60	0	242	577
07:30 AM	60	0	3	63	0	232	66	298	0	0	0	0	197	62	0	259	620
07:45 AM	66	0	1	67	0	226	52	278	0	0	0	0	152	76	0	228	573
08:00 AM	37	0	0	37	0	206	66	272	0	0	0	0	148	79	0	227	536
Total Volume	215	0	9	224	0	853	273	1126	0	0	0	0	679	277	0	956	2306
% App. Total	96	0	4		0	75.8	24.2		0	0	0		71	29	0		
PHF	.814	.000	.450	.836	.000	.919	.767	.945	.000	.000	.000	.000	.862	.877	.000	.923	.930

Peggy Malone & Associate
904-992-8072

File Name : 4-I-95 SB Ramps & Route 55 PI
Site Code :
Start Date : 5/29/2019
Page No : 1

Groups Printed- Combined

	SB I-95 Off Ramps Southbound					Rt. 54 Westbound					SB I-95 On Ramps Northbound					Rt. 54 Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	51	0	3	0	54	0	180	28	0	208	0	0	0	0	0	137	92	0	0	229	491
04:15 PM	43	0	4	0	47	0	198	39	0	237	0	0	0	0	0	157	125	0	0	282	566
04:30 PM	37	1	6	0	44	0	212	30	0	242	0	0	0	0	0	147	119	0	0	266	552
04:45 PM	62	0	6	0	68	0	202	33	0	235	0	0	0	0	0	123	120	0	0	243	546
Total	193	1	19	0	213	0	792	130	0	922	0	0	0	0	0	564	456	0	0	1020	2155
05:00 PM	46	0	5	0	51	0	203	27	0	230	0	0	0	0	0	159	135	0	0	294	575
05:15 PM	49	0	9	0	58	0	256	31	0	287	0	0	0	0	0	150	125	0	0	275	620
05:30 PM	59	0	6	0	65	0	245	22	0	267	0	0	0	0	0	137	135	0	0	272	604
05:45 PM	52	0	2	0	54	0	213	17	0	230	0	0	0	0	0	137	122	0	0	259	543
Total	206	0	22	0	228	0	917	97	0	1014	0	0	0	0	0	583	517	0	0	1100	2342
Grand Total	399	1	41	0	441	0	1709	227	0	1936	0	0	0	0	0	1147	973	0	0	2120	4497
Apprch %	90.5	0.2	9.3	0		0	88.3	11.7	0		0	0	0	0		54.1	45.9	0	0		
Total %	8.9	0	0.9	0	9.8	0	38	5	0	43.1	0	0	0	0	0	25.5	21.6	0	0	47.1	

	SB I-95 Off Ramps Southbound				Rt. 54 Westbound				SB I-95 On Ramps Northbound				Rt. 54 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	62	0	6	68	0	202	33	235	0	0	0	0	123	120	0	243	546
05:00 PM	46	0	5	51	0	203	27	230	0	0	0	0	159	135	0	294	575
05:15 PM	49	0	9	58	0	256	31	287	0	0	0	0	150	125	0	275	620
05:30 PM	59	0	6	65	0	245	22	267	0	0	0	0	137	135	0	272	604
Total Volume	216	0	26	242	0	906	113	1019	0	0	0	0	569	515	0	1084	2345
% App. Total	89.3	0	10.7		0	88.9	11.1		0	0	0		52.5	47.5	0		
PHF	.871	.000	.722	.890	.000	.885	.856	.888	.000	.000	.000	.000	.895	.954	.000	.922	.946

Peggy Malone & Associates
904-992-8072

File Name : 3-I-95 NB Ramps & Route 54 AI
Site Code :
Start Date : 5/29/2019
Page No : 1

Groups Printed- Combined

	NB I-95 On Ramps Southbound					Rt 54 Westbound					NB I-95 Off Ramps Northbound					Rt 54 Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	134	0	0	0	134	4	94	0	0	98	13	1	0	0	14	0	11	35	0	46	292
07:15 AM	140	0	0	0	140	9	143	0	0	152	17	0	0	0	17	0	25	43	0	68	377
07:30 AM	151	0	0	0	151	7	148	0	0	155	21	0	0	0	21	0	35	30	0	65	392
07:45 AM	164	0	0	0	164	11	113	0	0	124	20	0	0	0	20	0	46	31	0	77	385
Total	589	0	0	0	589	31	498	0	0	529	71	1	0	0	72	0	117	139	0	256	1446
08:00 AM	144	0	0	0	144	5	115	0	0	120	24	0	0	0	24	0	41	38	0	79	367
08:15 AM	129	0	0	0	129	1	89	0	0	90	31	0	0	0	31	0	40	30	0	70	320
08:30 AM	106	0	0	0	106	7	57	0	0	64	23	0	0	0	23	0	27	43	0	70	263
08:45 AM	110	0	0	0	110	3	73	0	0	76	26	0	0	0	26	0	38	36	0	74	286
Total	489	0	0	0	489	16	334	0	0	350	104	0	0	0	104	0	146	147	0	293	1236
Grand Total	1078	0	0	0	1078	47	832	0	0	879	175	1	0	0	176	0	263	286	0	549	2682
Apprch %	100	0	0	0		5.3	94.7	0	0		99.4	0.6	0	0		0	47.9	52.1	0		
Total %	40.2	0	0	0	40.2	1.8	31	0	0	32.8	6.5	0	0	0	6.6	0	9.8	10.7	0	20.5	

	NB I-95 On Ramps Southbound				Rt 54 Westbound				NB I-95 Off Ramps Northbound				Rt 54 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	140	0	0	140	9	143	0	152	17	0	0	17	0	25	43	68	377
07:30 AM	151	0	0	151	7	148	0	155	21	0	0	21	0	35	30	65	392
07:45 AM	164	0	0	164	11	113	0	124	20	0	0	20	0	46	31	77	385
08:00 AM	144	0	0	144	5	115	0	120	24	0	0	24	0	41	38	79	367
Total Volume	599	0	0	599	32	519	0	551	82	0	0	82	0	147	142	289	1521
% App. Total	100	0	0		5.8	94.2	0		100	0	0		0	50.9	49.1		
PHF	.913	.000	.000	.913	.727	.877	.000	.889	.854	.000	.000	.854	.000	.799	.826	.915	.970

TRAFFIC DATA COLLECTION

File Name : Hanover-Hanover(Woodside Lane and East Patrick Henry Roac
Site Code :
Start Date : 4/25/2023
Page No : 1

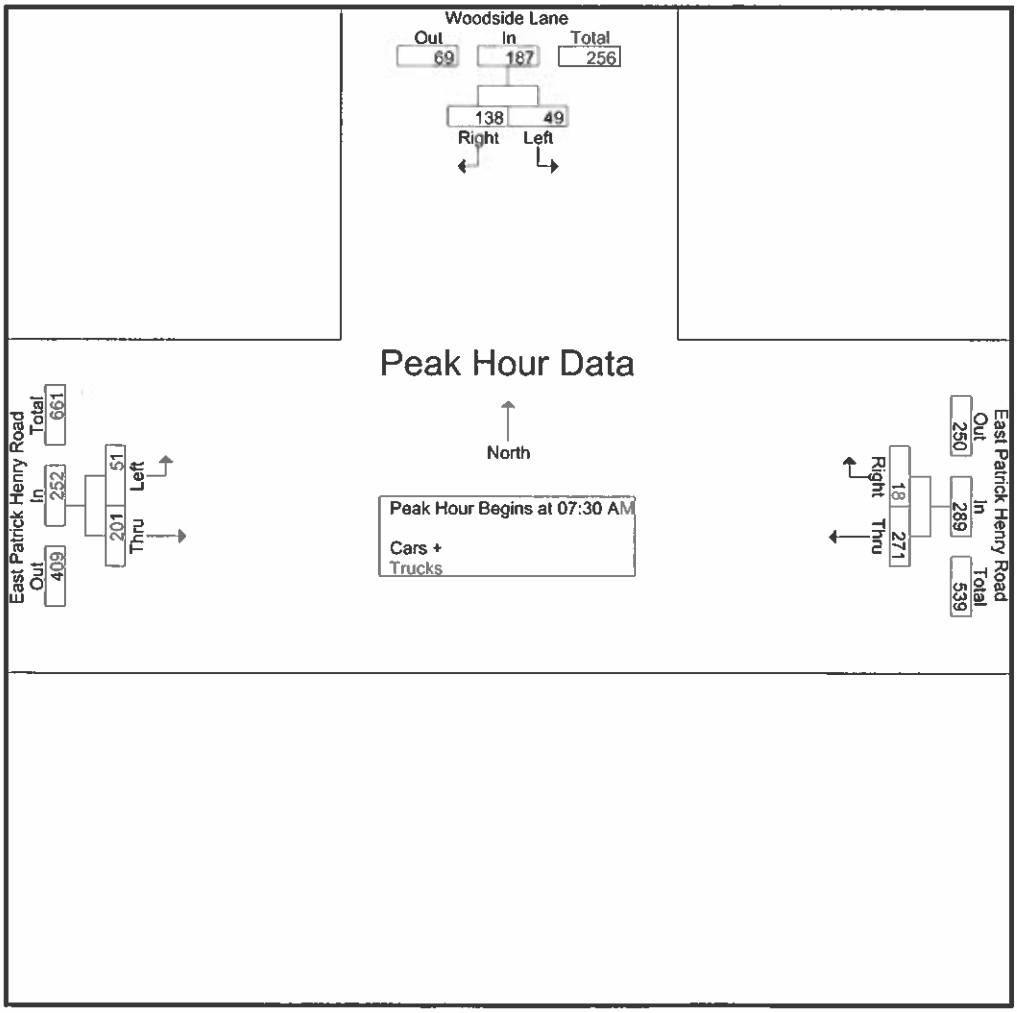
Groups Printed- Cars + - Trucks

	Woodside Lane Southbound			East Patrick Henry Road Westbound			East Patrick Henry Road Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
07:00 AM	30	7	37	0	58	58	26	5	31	126
07:15 AM	39	13	52	0	66	66	25	10	35	153
07:30 AM	35	12	47	4	68	72	39	10	49	168
07:45 AM	38	10	48	3	84	87	59	9	68	203
Total	142	42	184	7	276	283	149	34	183	650
08:00 AM	40	12	52	9	67	76	51	20	71	199
08:15 AM	25	15	40	2	52	54	52	12	64	158
08:30 AM	27	6	33	2	68	70	43	11	54	157
08:45 AM	24	2	26	6	50	56	37	11	48	130
Total	116	35	151	19	237	256	183	54	237	644
Grand Total	258	77	335	26	513	539	332	88	420	1294
Apprch %	77	23		4.8	95.2		79	21		
Total %	19.9	6	25.9	2	39.6	41.7	25.7	6.8	32.5	
Cars +	256	72	328	24	488	512	315	87	402	1242
% Cars +	99.2	93.5	97.9	92.3	95.1	95	94.9	98.9	95.7	96
Trucks	2	5	7	2	25	27	17	1	18	52
% Trucks	0.8	6.5	2.1	7.7	4.9	5	5.1	1.1	4.3	4

TRAFFIC DATA COLLECTION

File Name : Hanover-Hanover(Woodside Lane and East Patrick Henry Roa
Site Code :
Start Date : 4/25/2023
Page No : 2

	Woodside Lane Southbound			East Patrick Henry Road Westbound			East Patrick Henry Road Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Tota
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	35	12	47	4	68	72	39	10	49	168
07:45 AM	38	10	48	3	**84**	**87**	**59**	9	68	**203**
08:00 AM	**40**	12	**52**	**9**	67	76	51	**20**	**71**	195
08:15 AM	25	**15**	40	2	52	54	52	12	64	158
Total Volume	138	49	187	18	271	289	201	51	252	726
% App. Total	73.8	26.2		6.2	93.8		79.8	20.2		
PHF	.863	.817	.899	.500	.807	.830	.852	.638	.887	.897



TRAFFIC DATA COLLECTION

File Name : Hanover-Hanover(Woodside Lane and East Patrick Henry Roac
Site Code :
Start Date : 4/25/2023
Page No : 1

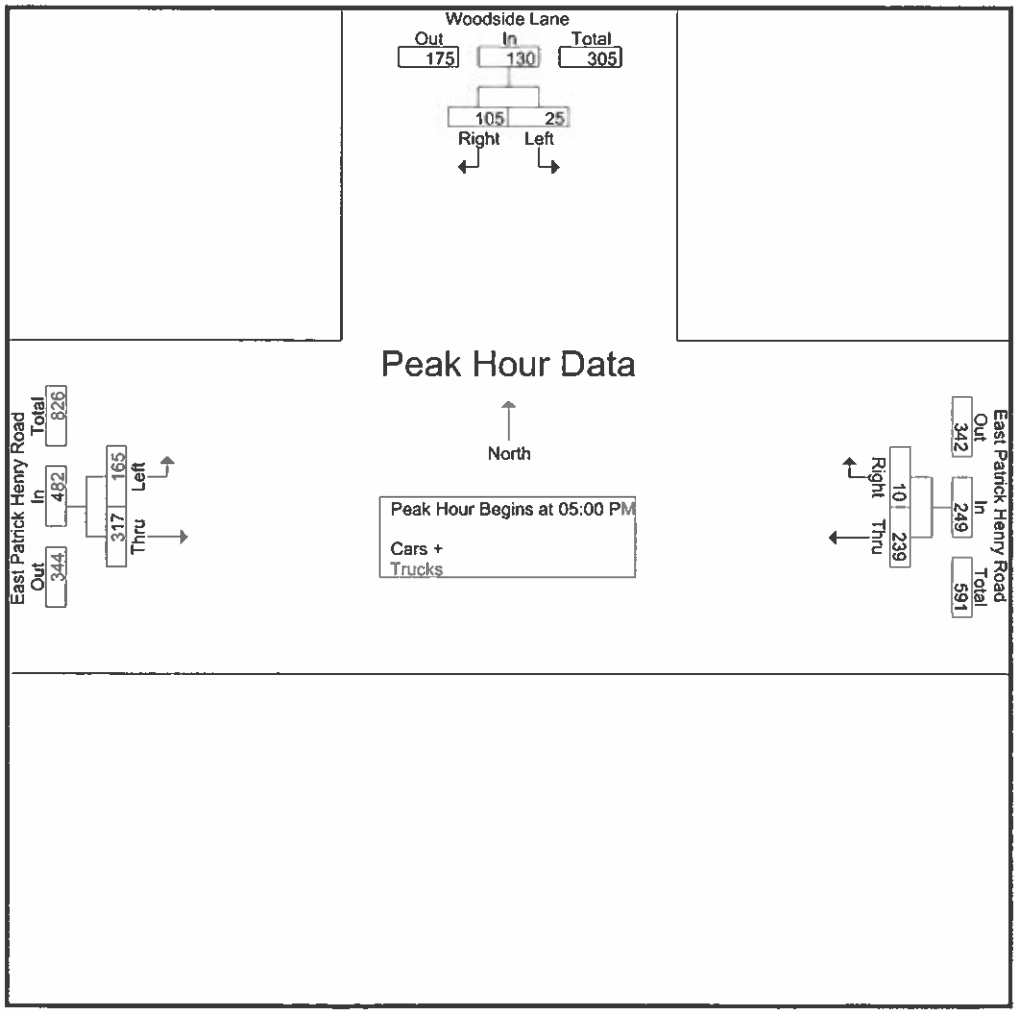
Groups Printed- Cars + - Trucks

	Woodside Lane Southbound			East Patrick Henry Road Westbound			East Patrick Henry Road Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
04:00 PM	23	0	23	9	37	46	72	19	91	160
04:15 PM	26	4	30	6	47	53	69	26	95	178
04:30 PM	27	4	31	2	63	65	78	34	112	208
04:45 PM	29	2	31	4	47	51	62	35	97	179
Total	105	10	115	21	194	215	281	114	395	725
05:00 PM	25	6	31	3	75	78	73	34	107	216
05:15 PM	19	10	29	1	60	61	92	51	143	233
05:30 PM	34	3	37	1	49	50	82	43	125	212
05:45 PM	27	6	33	5	55	60	70	37	107	200
Total	105	25	130	10	239	249	317	165	482	861
Grand Total	210	35	245	31	433	464	598	279	877	1586
Apprch %	85.7	14.3		6.7	93.3		68.2	31.8		
Total %	13.2	2.2	15.4	2	27.3	29.3	37.7	17.6	55.3	
Cars +	209	33	242	27	426	453	590	277	867	1562
% Cars +	99.5	94.3	98.8	87.1	98.4	97.6	98.7	99.3	98.9	98.5
Trucks	1	2	3	4	7	11	8	2	10	24
% Trucks	0.5	5.7	1.2	12.9	1.6	2.4	1.3	0.7	1.1	1.5

TRAFFIC DATA COLLECTION

File Name : Hanover-Hanover(Woodside Lane and East Patrick Henry Roac
Site Code :
Start Date : 4/25/2023
Page No : 2

	Woodside Lane Southbound			East Patrick Henry Road Westbound			East Patrick Henry Road Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	25	6	31	3	**75**	**78**	73	34	107	216
05:15 PM	19	**10**	29	1	60	61	**92**	**51**	**143**	**233**
05:30 PM	**34**	3	**37**	1	49	50	82	43	125	212
05:45 PM	27	6	33	**5**	55	60	70	37	107	200
Total Volume	105	25	130	10	239	249	317	165	482	861
% App. Total	80.8	19.2		4	96		65.8	34.2		
PHF	.772	.625	.878	.500	.797	.798	.861	.809	.843	.924



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904-992-8072

File Name : 3-I-95 NB Ramps & Route 54 PI
Site Code :
Start Date : 5/29/2019
Page No : 1

Groups Printed- Combined

	NB I-95 On Ramps Southbound					Rt 54 Westbound					NB I-95 Off Ramps Northbound					Rt 54 Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	136	0	0	0	136	7	67	0	0	74	23	0	0	0	23	0	55	41	0	96	329
04:15 PM	147	0	0	0	147	9	89	0	0	98	52	0	0	0	52	0	67	65	0	132	429
04:30 PM	150	0	0	0	150	6	92	0	0	98	43	0	0	0	43	0	70	56	0	126	417
04:45 PM	171	0	0	0	171	11	65	0	0	76	40	0	0	0	40	0	73	56	0	129	416
Total	604	0	0	0	604	33	313	0	0	346	158	0	0	0	158	0	265	218	0	483	1591
05:00 PM	153	0	0	0	153	5	81	0	0	86	54	0	0	0	54	0	79	57	0	136	429
05:15 PM	194	0	0	0	194	3	88	0	0	91	45	0	0	0	45	0	87	53	0	140	470
05:30 PM	207	0	0	0	207	5	63	0	0	68	59	0	0	0	59	0	85	56	0	141	475
05:45 PM	165	0	0	0	165	6	65	0	0	71	52	0	0	0	52	0	65	59	0	124	412
Total	719	0	0	0	719	19	297	0	0	316	210	0	0	0	210	0	316	225	0	541	1786
Grand Total	1323	0	0	0	1323	52	610	0	0	662	368	0	0	0	368	0	581	443	0	1024	3377
Apprch %	100	0	0	0		7.9	92.1	0	0		100	0	0	0		0	56.7	43.3	0		
Total %	39.2	0	0	0	39.2	1.5	18.1	0	0	19.6	10.9	0	0	0	10.9	0	17.2	13.1	0	30.3	

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904-992-8072

File Name : 2-Woodside Ln_Providence Church Rd & Route 54 Al
Site Code :
Start Date : 5/29/2019
Page No : 1

Groups Printed- Combined

	Woodside Ln Southbound					Rt 54 Westbound					Rt 54 Eastbound					Providence Church Rd Southwestbound					
Start Time	Right	Left	Hard Left	Peds	App. Total	Hard Right	Right	Thru	Peds	App. Total	Thru	Bear Left	Left	Peds	App. Total	Hard Right	Bear Right	Hard Left	Peds	App. Total	Int. Total
07:00 AM	49	6	0	0	55	0	1	56	0	57	15	1	3	0	19	0	0	0	0	0	131
07:15 AM	72	6	0	0	78	0	3	53	0	56	21	0	11	0	32	1	1	0	0	2	168
07:30 AM	62	23	0	0	85	0	2	88	0	90	32	1	9	0	42	0	0	0	0	0	217
07:45 AM	42	17	0	0	59	0	3	61	0	64	41	1	10	0	52	0	1	0	0	1	176
Total	225	52	0	0	277	0	9	258	0	267	109	3	33	0	145	1	2	0	0	3	692
08:00 AM	44	6	0	0	50	0	10	73	0	83	48	0	9	0	57	0	0	0	0	0	190
08:15 AM	28	2	0	0	30	0	4	37	0	41	49	0	12	0	61	0	0	0	0	0	132
08:30 AM	21	2	0	0	23	0	2	30	0	32	30	0	9	0	39	0	2	0	0	2	96
08:45 AM	21	3	0	1	25	0	2	37	0	39	46	0	11	0	57	0	0	0	0	0	121
Total	114	13	0	1	128	0	18	177	0	195	173	0	41	0	214	0	2	0	0	2	539
Grand Total	339	65	0	1	405	0	27	435	0	462	282	3	74	0	359	1	4	0	0	5	1231
Apprch %	83.7	16	0	0.2		0	5.8	94.2	0		78.6	0.8	20.6	0		20	80	0	0		
Total %	27.5	5.3	0	0.1	32.9	0	2.2	35.3	0	37.5	22.9	0.2	6	0	29.2	0.1	0.3	0	0	0.4	

	Woodside Ln Southbound				Rt 54 Westbound				Rt 54 Eastbound				Providence Church Rd Southwestbound				
Start Time	Right	Left	Hard Left	App. Total	Hard Right	Right	Thru	App. Total	Thru	Bear Left	Left	App. Total	Hard Right	Bear Right	Hard Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	72	6	0	78	0	3	53	56	21	0	11	32	1	1	0	2	168
07:30 AM	62	23	0	85	0	2	88	90	32	1	9	42	0	0	0	0	217
07:45 AM	42	17	0	59	0	3	61	64	41	1	10	52	0	1	0	1	176
08:00 AM	44	6	0	50	0	10	73	83	48	0	9	57	0	0	0	0	190
Total Volume	220	52	0	272	0	18	275	293	142	2	39	183	1	2	0	3	751
% App. Total	80.9	19.1	0		0	6.1	93.9		77.6	1.1	21.3		33.3	66.7	0		
PHF	.764	.565	.000	.800	.000	.450	.781	.814	.740	.500	.886	.803	.250	.500	.000	.375	.865

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904-992-8072

File Name : 2-Woodside Ln_Providence Church Rd & Route 54 Pl
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Groups Printed- Combined

	Woodside Ln Southbound					Rt 54 Westbound					Rt 54 Eastbound					Providence Church Rd Southwestbound					
Start Time	Right	Left	Hard Left	Peds	App. Total	Hard Right	Right	Thru	Peds	App. Total	Thru	Bear Left	Left	Peds	App. Total	Hard Right	Bear Right	Hard Left	Peds	App. Total	Int. Total
04:00 PM	14	3	0	0	17	0	4	38	0	42	39	0	19	0	58	0	0	0	0	0	117
04:15 PM	17	2	0	0	19	0	4	53	0	57	62	1	32	0	95	0	1	0	0	1	172
04:30 PM	20	5	0	0	25	1	2	60	0	63	67	2	30	0	99	0	1	0	0	1	188
04:45 PM	25	5	0	0	30	0	5	30	0	35	58	0	30	0	88	1	0	0	0	1	154
Total	76	15	0	0	91	1	15	181	0	197	226	3	111	0	340	1	2	0	0	3	631
05:00 PM	14	6	0	0	20	1	3	50	0	54	78	0	34	0	112	0	0	0	0	0	186
05:15 PM	21	6	0	0	27	1	2	47	0	50	84	0	41	0	125	2	1	0	0	3	205
05:30 PM	16	11	0	0	27	0	5	44	0	49	72	0	58	0	130	0	0	0	0	0	206
05:45 PM	17	3	0	0	20	0	4	28	0	32	63	0	43	0	106	0	0	0	0	0	158
Total	68	26	0	0	94	2	14	169	0	185	297	0	176	0	473	2	1	0	0	3	755
Grand Total	144	41	0	0	185	3	29	350	0	382	523	3	287	0	813	3	3	0	0	6	1386
Apprch %	77.8	22.2	0	0		0.8	7.6	91.6	0		64.3	0.4	35.3	0		50	50	0	0		
Total %	10.4	3	0	0	13.3	0.2	2.1	25.3	0	27.6	37.7	0.2	20.7	0	58.7	0.2	0.2	0	0	0.4	

	Woodside Ln Southbound				Rt 54 Westbound				Rt 54 Eastbound				Providence Church Rd Southwestbound				
Start Time	Right	Left	Hard Left	App. Total	Hard Right	Right	Thru	App. Total	Thru	Bear Left	Left	App. Total	Hard Right	Bear Right	Hard Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	14	6	0	20	1	3	50	54	78	0	34	112	0	0	0	0	186
05:15 PM	21	6	0	27	1	2	47	50	84	0	41	125	2	1	0	3	205
05:30 PM	16	11	0	27	0	5	44	49	72	0	58	130	0	0	0	0	206
05:45 PM	17	3	0	20	0	4	28	32	63	0	43	106	0	0	0	0	158
Total Volume	68	26	0	94	2	14	169	185	297	0	176	473	2	1	0	3	755
% App. Total	72.3	27.7	0		1.1	7.6	91.4		62.8	0	37.2		66.7	33.3	0		
PHF	.810	.591	.000	.870	.500	.700	.845	.856	.884	.000	.759	.910	.250	.250	.000	.250	.916

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904-992-8072

File Name : 1-Goddins Hill Rd & Route 54 A
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	Rt. 54 Westbound				Goddins Hill Rd Northbound				Rt. 54 Eastbound					
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Tota
07:00 AM	47	9	0	56	0	3	0	3	3	17	0	0	20	79
07:15 AM	53	20	0	73	5	2	0	7	4	23	0	0	27	107
07:30 AM	67	21	0	88	5	5	0	10	18	32	0	0	50	148
07:45 AM	54	15	0	69	6	5	0	11	18	40	0	0	58	138
Total	221	65	0	286	16	15	0	31	43	112	0	0	155	472
08:00 AM	59	16	0	75	6	12	0	18	8	43	0	0	51	144
08:15 AM	33	3	0	36	3	3	0	6	1	46	0	0	47	89
08:30 AM	26	2	0	28	7	2	0	9	1	27	1	0	29	66
08:45 AM	27	2	0	29	6	3	0	9	4	35	0	0	39	77
Total	145	23	0	168	22	20	0	42	14	151	1	0	166	376
Grand Total	366	88	0	454	38	35	0	73	57	263	1	0	321	848
Apprch %	80.6	19.4	0		52.1	47.9	0		17.8	81.9	0.3	0		
Total %	43.2	10.4	0	53.5	4.5	4.1	0	8.6	6.7	31	0.1	0	37.9	

	Rt. 54 Westbound			Goddins Hill Rd Northbound			Rt. 54 Eastbound				
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	Left	App. Total	Int. Tota
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 07:15 AM											
07:15 AM	53	20	73	5	2	7	4	23	0	27	107
07:30 AM	**67**	**21**	**88**	5	5	10	**18**	32	0	50	148
07:45 AM	54	15	69	6	5	11	18	40	0	58	138
08:00 AM	59	16	75	6	**12**	**18**	8	**43**	0	51	144
Total Volume	233	72	305	22	24	46	48	138	0	186	537
% App. Total	76.4	23.6		47.8	52.2		25.8	74.2	0		
PHF	.869	.857	.866	.917	.500	.639	.667	.802	.000	.802	.907

Peggy Malone & Associates
904-992-8072

File Name : 1-Goddins Hill Rd & Route 54 PI
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Groups Printed- Combined

	Rt. 54 Westbound				Goddins Hill Rd Northbound				Rt. 54 Eastbound					
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	29	7	0	36	9	8	0	17	3	37	1	0	41	94
04:15 PM	34	3	0	37	7	1	0	8	2	50	0	0	52	97
04:30 PM	41	6	0	47	15	4	0	19	7	55	0	0	62	128
04:45 PM	30	7	0	37	12	6	0	18	4	52	0	0	56	111
Total	134	23	0	157	43	19	0	62	16	194	1	0	211	430
05:00 PM	54	5	0	59	11	5	0	16	7	56	0	0	63	138
05:15 PM	39	7	0	46	11	3	0	14	6	79	0	0	85	145
05:30 PM	28	4	0	32	14	7	0	21	12	62	0	0	74	127
05:45 PM	26	1	0	27	7	6	0	13	7	46	0	0	53	93
Total	147	17	0	164	43	21	0	64	32	243	0	0	275	503
Grand Total	281	40	0	321	86	40	0	126	48	437	1	0	486	933
Apprch %	87.5	12.5	0		68.3	31.7	0		9.9	89.9	0.2	0		
Total %	30.1	4.3	0	34.4	9.2	4.3	0	13.5	5.1	46.8	0.1	0	52.1	

	Rt. 54 Westbound			Goddins Hill Rd Northbound			Rt. 54 Eastbound				
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 04:30 PM											
04:30 PM	41	6	47	15	4	19	7	55	0	62	128
04:45 PM	30	7	37	12	6	18	4	52	0	56	111
05:00 PM	54	5	59	11	5	16	7	56	0	63	138
05:15 PM	39	7	46	11	3	14	6	79	0	85	145
Total Volume	164	25	189	49	18	67	24	242	0	266	522
% App. Total	86.8	13.2		73.1	26.9		9	91	0		
PHF	.759	.893	.801	.817	.750	.882	.857	.766	.000	.782	.900

APPENDIX C: SYNCHRO & SIMTRAFFIC OUTPUT – EXISTING (2023) CONDITIONS

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↰	↑↑						↱	↱
Traffic Vol, veh/h	0	294	0	290	905	0	0	0	0	10	1	228
Future Vol, veh/h	0	294	0	290	905	0	0	0	0	10	1	228
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	13	2	2	5	2	2	2	2	2	2	10
Mvmt Flow	0	316	0	312	973	0	0	0	0	11	1	245

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	-	316	0	0	1755	1913	-
Stage 1	-	-	-	-	-	-	1597	1597	-
Stage 2	-	-	-	-	-	-	158	316	-
Critical Hdwy	-	-	-	4.14	-	-	6.84	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	4.02	-
Pot Cap-1 Maneuver	0	-	0	1241	-	0	76	67	0
Stage 1	0	-	0	-	-	0	152	164	0
Stage 2	0	-	0	-	-	0	854	654	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	-	-	-	1241	-	-	57	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	57	0	-
Stage 1	-	-	-	-	-	-	152	0	-
Stage 2	-	-	-	-	-	-	640	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.2	84
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1241	-	57	-
HCM Lane V/C Ratio	-	0.251	-	0.208	-
HCM Control Delay (s)	-	8.9	-	84	0
HCM Lane LOS	-	A	-	F	A
HCM 95th %tile Q(veh)	-	1	-	0.7	-

Intersection										
Int Delay, s/veh	0									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NEL	NER
Lane Configurations										
Traffic Vol, veh/h	151	156	0	0	551	34	0	0	0	87
Future Vol, veh/h	151	156	0	0	551	34	0	0	0	87
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	-	Free
Storage Length	300	-	-	-	-	0	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	20	5	2	2	2	16	2	2	2	6
Mvmt Flow	162	168	0	0	592	37	0	0	0	94

Major/Minor	Minor2			Major2		
Conflicting Flow All	592	592	-	-	-	0
Stage 1	592	592	-	-	-	-
Stage 2	0	0	-	-	-	-
Critical Hdwy	7.2	6.6	-	-	-	-
Critical Hdwy Stg 1	6.2	5.6	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	3.7	4.05	-	-	-	-
Pot Cap-1 Maneuver	398	411	0	0	-	-
Stage 1	469	485	0	0	-	-
Stage 2	-	-	0	0	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	398	0	-	-	-	-
Mov Cap-2 Maneuver	398	0	-	-	-	-
Stage 1	469	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	EBLn3	WBT	WBR
Capacity (veh/h)	398	-	-	-	-
HCM Lane V/C Ratio	0.408	-	-	-	-
HCM Control Delay (s)	20.1	-	-	-	-
HCM Lane LOS	C	-	-	-	-
HCM 95th %tile Q(veh)	1.9	-	-	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	41	153	294	20	55	233
Future Vol, veh/h	41	153	294	20	55	233
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	225	-	-	-	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	7	2	28	6	2
Mvmt Flow	47	176	338	23	63	268

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	361	0	-	0	620	350
Stage 1	-	-	-	-	350	-
Stage 2	-	-	-	-	270	-
Critical Hdwy	4.13	-	-	-	6.46	6.22
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.227	-	-	-	3.554	3.318
Pot Cap-1 Maneuver	1192	-	-	-	445	693
Stage 1	-	-	-	-	705	-
Stage 2	-	-	-	-	766	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1192	-	-	-	428	693
Mov Cap-2 Maneuver	-	-	-	-	428	-
Stage 1	-	-	-	-	678	-
Stage 2	-	-	-	-	766	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1192	-	-	-	428	693
HCM Lane V/C Ratio	0.04	-	-	-	0.148	0.386
HCM Control Delay (s)	8.1	-	-	-	14.9	13.4
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	1.8

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	206	311	1	1	3
Future Vol, veh/h	2	206	311	1	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	7	2	2	2	2
Mvmt Flow	2	237	357	1	1	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	358	0	-	0	599	358
Stage 1	-	-	-	-	358	-
Stage 2	-	-	-	-	241	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1201	-	-	-	465	686
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	799	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1201	-	-	-	464	686
Mov Cap-2 Maneuver	-	-	-	-	464	-
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	799	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1201	-	-	-	613
HCM Lane V/C Ratio	0.002	-	-	-	0.008
HCM Control Delay (s)	8	-	-	-	10.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	146	51	76	247	25	23
Future Vol, veh/h	146	51	76	247	25	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	6	4	3	13	5
Mvmt Flow	160	56	84	271	27	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	216	0	599	160
Stage 1	-	-	-	-	160	-
Stage 2	-	-	-	-	439	-
Critical Hdwy	-	-	4.14	-	6.53	6.25
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	-	-	2.236	-	3.617	3.345
Pot Cap-1 Maneuver	-	-	1342	-	447	877
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1342	-	414	877
Mov Cap-2 Maneuver	-	-	-	-	414	-
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	554	-	-	1342	-
HCM Lane V/C Ratio	0.095	-	-	0.062	-
HCM Control Delay (s)	12.2	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	21	963	32	159	1072	27	31	40	101	10
v/c Ratio	0.17	0.33	0.03	0.51	0.32	0.24	0.13	0.17	0.60	0.01
Control Delay	56.1	15.6	0.1	57.4	11.1	57.6	53.3	1.5	66.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	15.6	0.1	57.4	11.1	57.6	53.3	1.5	66.6	0.0
Queue Length 50th (ft)	16	147	0	61	110	21	12	0	76	0
Queue Length 95th (ft)	42	200	0	94	206	56	29	0	135	0
Internal Link Dist (ft)		601			622		348			415
Turn Bay Length (ft)	225		150	375		250		250	200	
Base Capacity (vph)	280	2877	954	543	3345	268	541	377	194	730
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.33	0.03	0.29	0.32	0.10	0.06	0.11	0.52	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	886	29	146	982	5	50	4	37	93	2	7
Future Volume (vph)	19	886	29	146	982	5	50	4	37	93	2	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5082		1610	3249	1583	1770	3115	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5082		1610	3249	1583	1770	3115	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	963	32	159	1067	5	54	4	40	101	2	8
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	38	0	9	0
Lane Group Flow (vph)	21	963	18	159	1072	0	27	31	2	101	1	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	3.4	66.7	66.7	10.9	74.2		6.9	6.9	6.9	11.5	11.5	
Effective Green, g (s)	3.4	66.7	66.7	10.9	74.2		6.9	6.9	6.9	11.5	11.5	
Actuated g/C Ratio	0.03	0.56	0.56	0.09	0.62		0.06	0.06	0.06	0.10	0.10	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	50	2826	879	311	3142		92	186	91	169	298	
v/s Ratio Prot	0.01	0.19		c0.05	c0.21		c0.02	0.01		c0.06	0.00	
v/s Ratio Perm			0.01						0.00			
v/c Ratio	0.42	0.34	0.02	0.51	0.34		0.29	0.17	0.03	0.60	0.00	
Uniform Delay, d1	57.3	14.6	12.0	52.0	11.1		54.2	53.8	53.4	52.0	49.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.6	0.3	0.0	1.4	0.1		1.8	0.4	0.1	5.6	0.0	
Delay (s)	62.9	14.9	12.0	53.4	11.1		56.0	54.2	53.5	57.6	49.1	
Level of Service	E	B	B	D	B		E	D	D	E	D	
Approach Delay (s)		15.8			16.6			54.4			56.8	
Approach LOS		B			B			D			E	

Intersection Summary

HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 1: I-95 SB On-Ramp & Route 54

Movement	WB	B35	SB
Directions Served	L	T	LT
Maximum Queue (ft)	87	10	42
Average Queue (ft)	35	0	11
95th Queue (ft)	69	11	35
Link Distance (ft)	98	151	103
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-95 NB On-Ramp & Route 54

Movement	EB	EB	EB	WB	WB
Directions Served	L	T	T	T	T
Maximum Queue (ft)	116	88	34	4	21
Average Queue (ft)	43	32	5	0	1
95th Queue (ft)	89	60	23	2	12
Link Distance (ft)		179	179	146	146
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	300				
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Route 54 & Woodside Lane

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	7	15	55	76
Average Queue (ft)	0	1	18	39
95th Queue (ft)	4	9	41	63
Link Distance (ft)		23	891	
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)	225			200
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Route 54 & Providence Church Road

Movement	EB	SB
Directions Served	T	LR
Maximum Queue (ft)	4	4
Average Queue (ft)	0	0
95th Queue (ft)	4	2
Link Distance (ft)	23	1232
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Goddins Hill Road & Route 54

Movement	NB
Directions Served	LR
Maximum Queue (ft)	63
Average Queue (ft)	24
95th Queue (ft)	51
Link Distance (ft)	529
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 22: Route 54

Movement	SW	B24
Directions Served	R	T
Maximum Queue (ft)	184	33
Average Queue (ft)	54	1
95th Queue (ft)	135	17
Link Distance (ft)	166	852
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 31: Route 54

Movement	EB	EB	WB	WB	WB
Directions Served	T	R	T	T	T
Maximum Queue (ft)	7	345	30	36	3
Average Queue (ft)	0	120	13	7	0
95th Queue (ft)	7	274	33	28	3
Link Distance (ft)	610	610	155	155	155
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 32: I-95 SB On-Ramp

Movement	SE
Directions Served	L
Maximum Queue (ft)	206
Average Queue (ft)	83
95th Queue (ft)	155
Link Distance (ft)	215
Upstream Blk Time (%)	0
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	T	T	T	R	UL	L	T	T	TR	L	LT
Maximum Queue (ft)	60	195	274	327	124	79	104	129	144	162	15	102
Average Queue (ft)	17	81	88	162	12	23	51	57	66	74	1	40
95th Queue (ft)	47	151	225	276	64	62	89	109	122	138	13	84
Link Distance (ft)		632	632	632				610	610	610		352
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				150	375	375				250	
Storage Blk Time (%)		0		9								
Queuing Penalty (veh)		0		3								

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	NB	NB	SB	SB	SB
Directions Served	T	R	L	T	TR
Maximum Queue (ft)	2	56	156	25	32
Average Queue (ft)	0	16	71	3	7
95th Queue (ft)	2	40	132	16	27
Link Distance (ft)	352			429	429
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		250	200		
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Network Summary

Network wide Queuing Penalty: 4

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑						↰	↗
Traffic Vol, veh/h	0	589	0	129	1036	0	0	0	0	30	1	247
Future Vol, veh/h	0	589	0	129	1036	0	0	0	0	30	1	247
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	13	2	2	5	2	2	2	2	2	2	10
Mvmt Flow	0	633	0	139	1114	0	0	0	0	32	1	266

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	-	633	0	0	1709	2025	-
Stage 1	-	-	-	-	-	-	1392	1392	-
Stage 2	-	-	-	-	-	-	317	633	-
Critical Hdwy	-	-	-	4.14	-	-	6.84	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	4.02	-
Pot Cap-1 Maneuver	0	-	0	946	-	0	82	57	0
Stage 1	0	-	0	-	-	0	196	207	0
Stage 2	0	-	0	-	-	0	711	472	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	-	-	-	946	-	-	70	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	70	0	-
Stage 1	-	-	-	-	-	-	196	0	-
Stage 2	-	-	-	-	-	-	606	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1	96.4
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	946	-	70	-
HCM Lane V/C Ratio	-	0.147	-	0.476	-
HCM Control Delay (s)	-	9.5	-	96.4	0
HCM Lane LOS	-	A	-	F	A
HCM 95th %tile Q(veh)	-	0.5	-	1.9	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NEL	NER
Lane Configurations										
Traffic Vol, veh/h	254	370	0	0	339	27	0	0	0	226
Future Vol, veh/h	254	370	0	0	339	27	0	0	0	226
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	-	Free
Storage Length	300	-	-	-	-	0	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	20	5	2	2	2	16	2	2	2	6
Mvmt Flow	273	398	0	0	365	29	0	0	0	243

Major/Minor	Minor2			Major2		
Conflicting Flow All	365	365	-	-	-	0
Stage 1	365	365	-	-	-	-
Stage 2	0	0	-	-	-	-
Critical Hdwy	7.2	6.6	-	-	-	-
Critical Hdwy Stg 1	6.2	5.6	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	3.7	4.05	-	-	-	-
Pot Cap-1 Maneuver	562	555	0	0	-	-
Stage 1	622	614	0	0	-	-
Stage 2	-	-	0	0	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	562	0	-	-	-	-
Mov Cap-2 Maneuver	562	0	-	-	-	-
Stage 1	622	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	EBLn3	WBT	WBR
Capacity (veh/h)	562	-	-	-	-
HCM Lane V/C Ratio	0.486	-	-	-	-
HCM Control Delay (s)	17.3	-	-	-	-
HCM Lane LOS	C	-	-	-	-
HCM 95th %tile Q(veh)	2.6	-	-	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	165	317	239	10	25	105
Future Vol, veh/h	165	317	239	10	25	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	225	-	-	-	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	7	2	28	6	2
Mvmt Flow	190	364	275	11	29	121

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	286	0	-	0	1025	281
Stage 1	-	-	-	-	281	-
Stage 2	-	-	-	-	744	-
Critical Hdwy	4.13	-	-	-	6.46	6.22
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.227	-	-	-	3.554	3.318
Pot Cap-1 Maneuver	1270	-	-	-	256	758
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	463	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1270	-	-	-	218	758
Mov Cap-2 Maneuver	-	-	-	-	218	-
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	463	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1270	-	-	-	218	758
HCM Lane V/C Ratio	0.149	-	-	-	0.132	0.159
HCM Control Delay (s)	8.3	-	-	-	24	10.6
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.4	0.6

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	342	246	2	1	3
Future Vol, veh/h	1	342	246	2	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	7	2	2	2	2
Mvmt Flow	1	393	283	2	1	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	285	0	-	0	679	284
Stage 1	-	-	-	-	284	-
Stage 2	-	-	-	-	395	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1277	-	-	-	417	755
Stage 1	-	-	-	-	764	-
Stage 2	-	-	-	-	681	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1277	-	-	-	417	755
Mov Cap-2 Maneuver	-	-	-	-	417	-
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	681	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1277	-	-	-	628
HCM Lane V/C Ratio	0.001	-	-	-	0.007
HCM Control Delay (s)	7.8	-	-	-	10.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	308	34	29	221	27	56
Future Vol, veh/h	308	34	29	221	27	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	6	4	3	13	5
Mvmt Flow	338	37	32	243	30	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	375	0	645	338
Stage 1	-	-	-	-	338	-
Stage 2	-	-	-	-	307	-
Critical Hdwy	-	-	4.14	-	6.53	6.25
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	-	-	2.236	-	3.617	3.345
Pot Cap-1 Maneuver	-	-	1173	-	420	697
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	722	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1173	-	407	697
Mov Cap-2 Maneuver	-	-	-	-	407	-
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	699	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	566	-	-	1173	-
HCM Lane V/C Ratio	0.161	-	-	0.027	-
HCM Control Delay (s)	12.6	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	40	1097	107	223	1172	68	77	129	54	22
v/c Ratio	0.31	0.40	0.12	0.60	0.38	0.47	0.26	0.48	0.38	0.08
Control Delay	58.5	18.1	1.9	57.4	14.9	62.1	52.3	13.7	59.8	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.5	18.1	1.9	57.4	14.9	62.1	52.3	13.7	59.8	28.0
Queue Length 50th (ft)	30	179	0	86	175	56	31	0	41	2
Queue Length 95th (ft)	65	262	19	123	257	105	55	52	81	16
Internal Link Dist (ft)		601			622		348			415
Turn Bay Length (ft)	225		150	375		250		250	200	
Base Capacity (vph)	280	2768	923	543	3058	268	541	377	191	357
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.40	0.12	0.41	0.38	0.25	0.14	0.34	0.28	0.06

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	26	11	1009	98	61	144	1053	25	125	8	119	50
Future Volume (vph)	26	11	1009	98	61	144	1053	25	125	8	119	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor		1.00	0.91	1.00		0.97	0.91		0.91	0.91	1.00	1.00
Frt		1.00	1.00	0.85		1.00	1.00		1.00	1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00		0.95	0.96	1.00	0.95
Satd. Flow (prot)		1770	5085	1583		3433	5068		1610	3247	1583	1770
Flt Permitted		0.95	1.00	1.00		0.95	1.00		0.95	0.96	1.00	0.95
Satd. Flow (perm)		1770	5085	1583		3433	5068		1610	3247	1583	1770
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	12	1097	107	66	157	1145	27	136	9	129	54
RTOR Reduction (vph)	0	0	0	50	0	0	1	0	0	0	117	0
Lane Group Flow (vph)	0	40	1097	57	0	223	1171	0	68	77	12	54
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA		Split	NA	Perm	Split
Protected Phases	5	5	2		1	1	6		4	4		3
Permitted Phases				2							4	
Actuated Green, G (s)		7.3	64.1	64.1		13.1	69.9		10.8	10.8	10.8	8.0
Effective Green, g (s)		7.3	64.1	64.1		13.1	69.9		10.8	10.8	10.8	8.0
Actuated g/C Ratio		0.06	0.53	0.53		0.11	0.58		0.09	0.09	0.09	0.07
Clearance Time (s)		6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		107	2716	845		374	2952		144	292	142	118
v/s Ratio Prot		0.02	0.22			c0.06	c0.23		c0.04	0.02		c0.03
v/s Ratio Perm				0.04							0.01	
v/c Ratio		0.37	0.40	0.07		0.60	0.40		0.47	0.26	0.08	0.46
Uniform Delay, d1		54.2	16.6	13.5		50.9	13.6		51.9	50.9	50.1	53.9
Progression Factor		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		2.2	0.4	0.2		2.6	0.1		2.4	0.5	0.2	2.8
Delay (s)		56.3	17.1	13.7		53.5	13.7		54.3	51.4	50.3	56.7
Level of Service		E	B	B		D	B		D	D	D	E
Approach Delay (s)			18.0				20.0			51.6		
Approach LOS			B				C			D		

Intersection Summary

HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations	↑↱	
Traffic Volume (vph)	6	14
Future Volume (vph)	6	14
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	6.0	
Lane Util. Factor	0.95	
Frt	0.90	
Flt Protected	1.00	
Satd. Flow (prot)	3177	
Flt Permitted	1.00	
Satd. Flow (perm)	3177	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	7	15
RTOR Reduction (vph)	14	0
Lane Group Flow (vph)	8	0
Turn Type	NA	
Protected Phases	3	
Permitted Phases		
Actuated Green, G (s)	8.0	
Effective Green, g (s)	8.0	
Actuated g/C Ratio	0.07	
Clearance Time (s)	6.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	211	
v/s Ratio Prot	0.00	
v/s Ratio Perm		
v/c Ratio	0.04	
Uniform Delay, d1	52.4	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	52.5	
Level of Service	D	
Approach Delay (s)	55.5	
Approach LOS	E	

Intersection Summary

Intersection: 1: I-95 SB On-Ramp & Route 54

Movement	WB	SB	B28
Directions Served	L	LT	T
Maximum Queue (ft)	79	104	50
Average Queue (ft)	31	32	3
95th Queue (ft)	64	81	47
Link Distance (ft)	98	103	987
Upstream Blk Time (%)	0	2	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-95 NB On-Ramp & Route 54

Movement	EB	EB	EB	WB	WB
Directions Served	L	T	T	T	T
Maximum Queue (ft)	140	104	76	1	24
Average Queue (ft)	62	53	25	0	2
95th Queue (ft)	116	89	56	1	12
Link Distance (ft)		179	179	146	146
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	300				
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Route 54 & Woodside Lane

Movement	EB	B36	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	18	3	34	33	58
Average Queue (ft)	1	0	2	10	29
95th Queue (ft)	11	3	17	27	44
Link Distance (ft)		146	23	891	
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			0		
Storage Bay Dist (ft)	225				200
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: Route 54 & Providence Church Road

Movement	EB	SB
Directions Served	T	LR
Maximum Queue (ft)	6	4
Average Queue (ft)	0	0
95th Queue (ft)	0	2
Link Distance (ft)	23	1232
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Goddins Hill Road & Route 54

Movement	NB
Directions Served	LR
Maximum Queue (ft)	71
Average Queue (ft)	32
95th Queue (ft)	57
Link Distance (ft)	529
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 22: Route 54

Movement	EB	SW	B24
Directions Served	T	R	T
Maximum Queue (ft)	13	261	160
Average Queue (ft)	1	114	14
95th Queue (ft)	9	235	91
Link Distance (ft)	151	166	852
Upstream Blk Time (%)		8	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 31: Route 54

Movement	EB	WB	WB	WB
Directions Served	R	T	T	T
Maximum Queue (ft)	298	38	47	54
Average Queue (ft)	95	17	13	2
95th Queue (ft)	225	38	40	19
Link Distance (ft)	610	155	155	155
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 32: I-95 SB On-Ramp

Movement	SE
Directions Served	L
Maximum Queue (ft)	111
Average Queue (ft)	42
95th Queue (ft)	82
Link Distance (ft)	215
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	T	T	T	R	UL	L	T	T	TR	L	LT
Maximum Queue (ft)	94	278	261	320	190	127	132	149	164	193	140	178
Average Queue (ft)	31	140	100	151	34	63	67	68	83	99	15	91
95th Queue (ft)	71	235	220	258	110	112	115	127	145	171	80	154
Link Distance (ft)		632	632	632				610	610	610		352
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				150	375	375				250	
Storage Blk Time (%)		1		8								
Queuing Penalty (veh)		0		8								

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	NB	NB	SB	SB	SB
Directions Served	T	R	L	T	TR
Maximum Queue (ft)	75	98	113	38	41
Average Queue (ft)	3	37	42	6	11
95th Queue (ft)	35	73	87	25	35
Link Distance (ft)	352			429	429
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		250	200		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 9

APPENDIX D: SYNCHRO & SIMTRAFFIC OUTPUT – NO-BUILD (2027) CONDITIONS

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑						↱	↗
Traffic Vol, veh/h	0	316	0	308	952	0	0	0	0	10	1	242
Future Vol, veh/h	0	316	0	308	952	0	0	0	0	10	1	242
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	13	2	2	5	2	2	2	2	2	2	10
Mvmt Flow	0	340	0	331	1024	0	0	0	0	11	1	260

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	-	340	0	0	1856	2026	-
Stage 1	-	-	-	-	-	-	1686	1686	-
Stage 2	-	-	-	-	-	-	170	340	-
Critical Hdwy	-	-	-	4.14	-	-	6.84	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	4.02	-
Pot Cap-1 Maneuver	0	-	0	1216	-	0	65	57	0
Stage 1	0	-	0	-	-	0	135	149	0
Stage 2	0	-	0	-	-	0	843	638	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	-	-	-	1216	-	-	47	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	47	0	-
Stage 1	-	-	-	-	-	-	135	0	-
Stage 2	-	-	-	-	-	-	614	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.2	105.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1216	-	47	-
HCM Lane V/C Ratio	-	0.272	-	0.252	-
HCM Control Delay (s)	-	9.1	-	105.6	0
HCM Lane LOS	-	A	-	F	A
HCM 95th %tile Q(veh)	-	1.1	-	0.8	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NEL	NER
Lane Configurations										
Traffic Vol, veh/h	160	166	0	0	585	36	0	0	0	92
Future Vol, veh/h	160	166	0	0	585	36	0	0	0	92
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	-	Free
Storage Length	300	-	-	-	-	0	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	20	5	2	2	2	16	2	2	2	6
Mvmt Flow	172	178	0	0	629	39	0	0	0	99

Major/Minor	Minor2			Major2		
Conflicting Flow All	629	629	-	-	-	0
Stage 1	629	629	-	-	-	-
Stage 2	0	0	-	-	-	-
Critical Hdwy	7.2	6.6	-	-	-	-
Critical Hdwy Stg 1	6.2	5.6	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	3.7	4.05	-	-	-	-
Pot Cap-1 Maneuver	375	391	0	0	-	-
Stage 1	447	466	0	0	-	-
Stage 2	-	-	0	0	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	375	0	-	-	-	-
Mov Cap-2 Maneuver	375	0	-	-	-	-
Stage 1	447	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	EBLn3	WBT	WBR
Capacity (veh/h)	375	-	-	-	-
HCM Lane V/C Ratio	0.459	-	-	-	-
HCM Control Delay (s)	22.5	-	-	-	-
HCM Lane LOS	C	-	-	-	-
HCM 95th %tile Q(veh)	2.3	-	-	-	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	44	162	312	21	59	248
Future Vol, veh/h	44	162	312	21	59	248
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	225	-	-	-	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	7	2	28	6	2
Mvmt Flow	51	186	359	24	68	285

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	383	0	-	0	659	371
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	288	-
Critical Hdwy	4.13	-	-	-	6.46	6.22
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.227	-	-	-	3.554	3.318
Pot Cap-1 Maneuver	1170	-	-	-	422	675
Stage 1	-	-	-	-	689	-
Stage 2	-	-	-	-	752	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1170	-	-	-	403	675
Mov Cap-2 Maneuver	-	-	-	-	403	-
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	752	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1170	-	-	-	403	675
HCM Lane V/C Ratio	0.043	-	-	-	0.168	0.422
HCM Control Delay (s)	8.2	-	-	-	15.7	14.2
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6	2.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	219	330	1	1	3
Future Vol, veh/h	2	219	330	1	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	7	2	2	2	2
Mvmt Flow	2	252	379	1	1	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	380	0	-	0	636	380
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	256	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1178	-	-	-	442	667
Stage 1	-	-	-	-	691	-
Stage 2	-	-	-	-	787	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1178	-	-	-	441	667
Mov Cap-2 Maneuver	-	-	-	-	441	-
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	787	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1178	-	-	-	591
HCM Lane V/C Ratio	0.002	-	-	-	0.008
HCM Control Delay (s)	8.1	-	-	-	11.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	2.2					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	155	54	81	262	27	25
Future Vol, veh/h	155	54	81	262	27	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	6	4	3	13	5
Mvmt Flow	170	59	89	288	30	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	229	0	636	170
Stage 1	-	-	-	-	170	-
Stage 2	-	-	-	-	466	-
Critical Hdwy	-	-	4.14	-	6.53	6.25
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	-	-	2.236	-	3.617	3.345
Pot Cap-1 Maneuver	-	-	1327	-	425	866
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	609	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1327	-	391	866
Mov Cap-2 Maneuver	-	-	-	-	391	-
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	560	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	531	-	-	1327	-
HCM Lane V/C Ratio	0.108	-	-	0.067	-
HCM Control Delay (s)	12.6	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	22	1023	33	168	1140	29	34	42	108	11
v/c Ratio	0.15	0.40	0.04	0.47	0.37	0.22	0.12	0.15	0.61	0.02
Control Delay	45.3	17.6	0.1	46.5	12.5	46.6	43.2	1.1	57.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.3	17.6	0.1	46.5	12.5	46.6	43.2	1.1	57.6	0.0
Queue Length 50th (ft)	13	153	0	53	115	19	11	0	66	0
Queue Length 95th (ft)	38	208	0	83	215	49	27	0	123	0
Internal Link Dist (ft)		601			622		348			415
Turn Bay Length (ft)	225		150	375		250		250	200	
Base Capacity (vph)	230	2541	873	446	3077	289	585	419	194	718
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.40	0.04	0.38	0.37	0.10	0.06	0.10	0.56	0.02

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	941	30	155	1042	6	53	5	39	99	2	8
Future Volume (vph)	20	941	30	155	1042	6	53	5	39	99	2	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5081		1610	3252	1583	1770	3105	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5081		1610	3252	1583	1770	3105	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	1023	33	168	1133	7	58	5	42	108	2	9
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	39	0	10	0
Lane Group Flow (vph)	22	1023	16	168	1140	0	29	34	3	108	1	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	3.3	48.8	48.8	10.3	55.8		6.8	6.8	6.8	10.1	10.1	
Effective Green, g (s)	3.3	48.8	48.8	10.3	55.8		6.8	6.8	6.8	10.1	10.1	
Actuated g/C Ratio	0.03	0.49	0.49	0.10	0.56		0.07	0.07	0.07	0.10	0.10	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	58	2481	772	353	2835		109	221	107	178	313	
v/s Ratio Prot	0.01	0.20		c0.05	c0.22		c0.02	0.01		c0.06	0.00	
v/s Ratio Perm			0.01						0.00			
v/c Ratio	0.38	0.41	0.02	0.48	0.40		0.27	0.15	0.03	0.61	0.00	
Uniform Delay, d1	47.3	16.4	13.2	42.3	12.6		44.2	43.9	43.5	43.0	40.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.1	0.5	0.0	1.0	0.1		1.3	0.3	0.1	5.7	0.0	
Delay (s)	51.5	16.9	13.3	43.3	12.7		45.5	44.2	43.6	48.8	40.4	
Level of Service	D	B	B	D	B		D	D	D	D	D	
Approach Delay (s)		17.5			16.6			44.3			48.0	
Approach LOS		B			B			D			D	

Intersection Summary

HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 1: I-95 SB On-Ramp & Route 54

Movement	WB	B33	B35	SB
Directions Served	L	T	T	LT
Maximum Queue (ft)	106	5	10	49
Average Queue (ft)	38	0	0	12
95th Queue (ft)	84	6	8	39
Link Distance (ft)	98	206	151	103
Upstream Blk Time (%)	1			
Queuing Penalty (veh)	3			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: I-95 NB On-Ramp & Route 54

Movement	EB	EB	EB	WB	WB
Directions Served	L	T	T	T	T
Maximum Queue (ft)	109	76	38	6	28
Average Queue (ft)	45	31	5	0	2
95th Queue (ft)	89	57	25	4	14
Link Distance (ft)		179	179	146	146
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	300				
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Route 54 & Woodside Lane

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	6	27	60	71
Average Queue (ft)	0	1	20	39
95th Queue (ft)	4	14	43	62
Link Distance (ft)		23	891	
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)	225			200
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Route 54 & Providence Church Road

Movement	EB	SB
Directions Served	T	LR
Maximum Queue (ft)	10	3
Average Queue (ft)	0	0
95th Queue (ft)	5	2
Link Distance (ft)	23	1232
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Goddins Hill Road & Route 54

Movement	NB
Directions Served	LR
Maximum Queue (ft)	64
Average Queue (ft)	26
95th Queue (ft)	52
Link Distance (ft)	529
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 22: Route 54

Movement	SW	B24
Directions Served	R	T
Maximum Queue (ft)	180	6
Average Queue (ft)	58	0
95th Queue (ft)	141	7
Link Distance (ft)	166	852
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 31: Route 54

Movement	EB	EB	WB	WB	WB
Directions Served	T	R	T	T	T
Maximum Queue (ft)	7	391	33	41	19
Average Queue (ft)	0	149	13	7	1
95th Queue (ft)	8	297	33	29	16
Link Distance (ft)	610	610	155	155	155
Upstream Blk Time (%)		0			0
Queuing Penalty (veh)		0			0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 32: I-95 SB On-Ramp

Movement	SE
Directions Served	L
Maximum Queue (ft)	199
Average Queue (ft)	94
95th Queue (ft)	172
Link Distance (ft)	215
Upstream Blk Time (%)	1
Queuing Penalty (veh)	2
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	T	T	T	R	UL	L	T	T	TR	L	LT
Maximum Queue (ft)	65	182	270	331	170	92	109	158	163	188	23	98
Average Queue (ft)	17	86	99	180	18	30	55	61	68	85	1	39
95th Queue (ft)	48	154	232	285	87	72	98	121	127	155	17	81
Link Distance (ft)		632	632	632				610	610	610		352
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				150	375	375				250	
Storage Blk Time (%)		0		12								
Queuing Penalty (veh)		0		4								

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	NB	SB	SB	SB
Directions Served	R	L	T	TR
Maximum Queue (ft)	58	153	25	31
Average Queue (ft)	17	71	1	7
95th Queue (ft)	43	128	12	26
Link Distance (ft)			429	429
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	250	200		
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Network Summary

Network wide Queuing Penalty: 9

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑						↰	↗
Traffic Vol, veh/h	0	631	0	137	1103	0	0	0	0	32	1	262
Future Vol, veh/h	0	631	0	137	1103	0	0	0	0	32	1	262
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	13	2	2	5	2	2	2	2	2	2	10
Mvmt Flow	0	678	0	147	1186	0	0	0	0	34	1	282

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	-	678	0	0	1819	2158	-
Stage 1	-	-	-	-	-	-	1480	1480	-
Stage 2	-	-	-	-	-	-	339	678	-
Critical Hdwy	-	-	-	4.14	-	-	6.84	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	4.02	-
Pot Cap-1 Maneuver	0	-	0	910	-	0	69	47	0
Stage 1	0	-	0	-	-	0	175	188	0
Stage 2	0	-	0	-	-	0	693	450	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	-	-	-	910	-	-	58	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	58	0	-
Stage 1	-	-	-	-	-	-	175	0	-
Stage 2	-	-	-	-	-	-	581	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.1	136.9
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	910	-	58	-
HCM Lane V/C Ratio	-	0.162	-	0.612	-
HCM Control Delay (s)	-	9.7	-	136.9	0
HCM Lane LOS	-	A	-	F	A
HCM 95th %tile Q(veh)	-	0.6	-	2.5	-

Intersection										
Int Delay, s/veh	0									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NEL	NER
Lane Configurations										
Traffic Vol, veh/h	270	393	0	0	360	29	0	0	0	213
Future Vol, veh/h	270	393	0	0	360	29	0	0	0	213
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	-	Free
Storage Length	300	-	-	-	-	0	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	20	5	2	2	2	16	2	2	2	6
Mvmt Flow	290	423	0	0	387	31	0	0	0	229

Major/Minor	Minor2			Major2		
Conflicting Flow All	387	387	-	-	-	0
Stage 1	387	387	-	-	-	-
Stage 2	0	0	-	-	-	-
Critical Hdwy	7.2	6.6	-	-	-	-
Critical Hdwy Stg 1	6.2	5.6	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	3.7	4.05	-	-	-	-
Pot Cap-1 Maneuver	544	539	0	0	-	-
Stage 1	606	601	0	0	-	-
Stage 2	-	-	0	0	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	544	0	-	-	-	-
Mov Cap-2 Maneuver	544	0	-	-	-	-
Stage 1	606	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	EBLn3	WBT	WBR
Capacity (veh/h)	544	-	-	-	-
HCM Lane V/C Ratio	0.534	-	-	-	-
HCM Control Delay (s)	18.9	-	-	-	-
HCM Lane LOS	C	-	-	-	-
HCM 95th %tile Q(veh)	3.1	-	-	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	175	336	254	11	27	111
Future Vol, veh/h	175	336	254	11	27	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	225	-	-	-	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	7	2	28	6	2
Mvmt Flow	201	386	292	13	31	128

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	305	0	-	0	1087	299
Stage 1	-	-	-	-	299	-
Stage 2	-	-	-	-	788	-
Critical Hdwy	4.13	-	-	-	6.46	6.22
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.227	-	-	-	3.554	3.318
Pot Cap-1 Maneuver	1250	-	-	-	235	741
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	441	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1250	-	-	-	197	741
Mov Cap-2 Maneuver	-	-	-	-	197	-
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	441	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1250	-	-	-	197	741
HCM Lane V/C Ratio	0.161	-	-	-	0.158	0.172
HCM Control Delay (s)	8.4	-	-	-	26.7	10.9
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.6	-	-	-	0.5	0.6

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	363	262	2	1	3
Future Vol, veh/h	1	363	262	2	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	7	2	2	2	2
Mvmt Flow	1	417	301	2	1	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	303	0	-	0	721	302
Stage 1	-	-	-	-	302	-
Stage 2	-	-	-	-	419	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1258	-	-	-	394	738
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	664	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1258	-	-	-	394	738
Mov Cap-2 Maneuver	-	-	-	-	394	-
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	664	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1258	-	-	-	606
HCM Lane V/C Ratio	0.001	-	-	-	0.008
HCM Control Delay (s)	7.9	-	-	-	11
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	2					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	327	36	31	235	29	59
Future Vol, veh/h	327	36	31	235	29	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	6	4	3	13	5
Mvmt Flow	359	40	34	258	32	65

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	399	0	685	359
Stage 1	-	-	-	-	359	-
Stage 2	-	-	-	-	326	-
Critical Hdwy	-	-	4.14	-	6.53	6.25
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	-	-	2.236	-	3.617	3.345
Pot Cap-1 Maneuver	-	-	1149	-	397	679
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	707	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1149	-	383	679
Mov Cap-2 Maneuver	-	-	-	-	383	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	682	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	541	-	-	1149	-
HCM Lane V/C Ratio	0.179	-	-	0.03	-
HCM Control Delay (s)	13.1	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	43	1164	113	237	1244	72	82	137	58	23
v/c Ratio	0.32	0.43	0.12	0.61	0.41	0.49	0.27	0.51	0.40	0.08
Control Delay	58.7	19.1	2.4	57.3	15.7	62.2	52.1	15.0	60.2	27.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.7	19.1	2.4	57.3	15.7	62.2	52.1	15.0	60.2	27.6
Queue Length 50th (ft)	32	197	0	91	193	59	32	0	44	2
Queue Length 95th (ft)	69	287	24	129	283	109	58	59	86	16
Internal Link Dist (ft)		601			622		348			415
Turn Bay Length (ft)	225		150	375		250		250	200	
Base Capacity (vph)	280	2728	912	543	3031	268	540	378	191	357
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.43	0.12	0.44	0.41	0.27	0.15	0.36	0.30	0.06

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	28	12	1071	104	65	153	1118	27	133	8	126	53
Future Volume (vph)	28	12	1071	104	65	153	1118	27	133	8	126	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor		1.00	0.91	1.00		0.97	0.91		0.91	0.91	1.00	1.00
Frt		1.00	1.00	0.85		1.00	1.00		1.00	1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00		0.95	0.96	1.00	0.95
Satd. Flow (prot)		1770	5085	1583		3433	5068		1610	3246	1583	1770
Flt Permitted		0.95	1.00	1.00		0.95	1.00		0.95	0.96	1.00	0.95
Satd. Flow (perm)		1770	5085	1583		3433	5068		1610	3246	1583	1770
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	13	1164	113	71	166	1215	29	145	9	137	58
RTOR Reduction (vph)	0	0	0	54	0	0	1	0	0	0	124	0
Lane Group Flow (vph)	0	43	1164	59	0	237	1243	0	72	82	13	58
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA		Split	NA	Perm	Split
Protected Phases	5	5	2		1	1	6		4	4		3
Permitted Phases				2							4	
Actuated Green, G (s)		7.5	63.1	63.1		13.6	69.2		11.1	11.1	11.1	8.2
Effective Green, g (s)		7.5	63.1	63.1		13.6	69.2		11.1	11.1	11.1	8.2
Actuated g/C Ratio		0.06	0.53	0.53		0.11	0.58		0.09	0.09	0.09	0.07
Clearance Time (s)		6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		110	2673	832		389	2922		148	300	146	120
v/s Ratio Prot		0.02	0.23			c0.07	c0.25		c0.04	0.03		c0.03
v/s Ratio Perm				0.04							0.01	
v/c Ratio		0.39	0.44	0.07		0.61	0.43		0.49	0.27	0.09	0.48
Uniform Delay, d1		54.1	17.5	14.0		50.7	14.2		51.7	50.7	49.8	53.9
Progression Factor		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		2.3	0.5	0.2		2.7	0.1		2.5	0.5	0.3	3.0
Delay (s)		56.3	18.0	14.2		53.4	14.3		54.2	51.2	50.1	56.9
Level of Service		E	B	B		D	B		D	D	D	E
Approach Delay (s)			18.9				20.6			51.4		
Approach LOS			B				C			D		

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations	↑↑	
Traffic Volume (vph)	6	15
Future Volume (vph)	6	15
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	6.0	
Lane Util. Factor	0.95	
Frt	0.90	
Flt Protected	1.00	
Satd. Flow (prot)	3170	
Flt Permitted	1.00	
Satd. Flow (perm)	3170	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	7	16
RTOR Reduction (vph)	15	0
Lane Group Flow (vph)	8	0
Turn Type	NA	
Protected Phases	3	
Permitted Phases		
Actuated Green, G (s)	8.2	
Effective Green, g (s)	8.2	
Actuated g/C Ratio	0.07	
Clearance Time (s)	6.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	216	
v/s Ratio Prot	0.00	
v/s Ratio Perm		
v/c Ratio	0.04	
Uniform Delay, d1	52.2	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	52.3	
Level of Service	D	
Approach Delay (s)	55.6	
Approach LOS	E	

Intersection Summary

Intersection: 1: I-95 SB On-Ramp & Route 54

Movement	EB	WB	SB	SB	B28
Directions Served	T	L	LT	R	T
Maximum Queue (ft)	8	85	109	73	134
Average Queue (ft)	0	33	37	6	10
95th Queue (ft)	6	66	94	59	104
Link Distance (ft)	155	98	103	103	987
Upstream Blk Time (%)		0	4		
Queuing Penalty (veh)		1	0		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: I-95 NB On-Ramp & Route 54

Movement	EB	EB	EB	WB
Directions Served	L	T	T	T
Maximum Queue (ft)	145	139	74	18
Average Queue (ft)	69	53	27	1
95th Queue (ft)	129	94	57	11
Link Distance (ft)		179	179	146
Upstream Blk Time (%)	0	0		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (ft)	300			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	0	0		

Intersection: 3: Route 54 & Woodside Lane

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	18	37	51	63
Average Queue (ft)	1	2	13	29
95th Queue (ft)	9	19	36	46
Link Distance (ft)		23	891	
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)	225			200
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Route 54 & Providence Church Road

Movement	EB	SB
Directions Served	T	LR
Maximum Queue (ft)	2	4
Average Queue (ft)	0	0
95th Queue (ft)	2	2
Link Distance (ft)	23	1232
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Goddins Hill Road & Route 54

Movement	NB
Directions Served	LR
Maximum Queue (ft)	70
Average Queue (ft)	34
95th Queue (ft)	56
Link Distance (ft)	529
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 22: Route 54

Movement	EB	SW	B24
Directions Served	T	R	T
Maximum Queue (ft)	27	268	323
Average Queue (ft)	1	146	45
95th Queue (ft)	13	274	216
Link Distance (ft)	151	166	852
Upstream Blk Time (%)		17	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 31: Route 54

Movement	EB	EB	WB	WB	WB
Directions Served	T	R	T	T	T
Maximum Queue (ft)	50	307	36	42	40
Average Queue (ft)	2	122	18	14	2
95th Queue (ft)	37	255	39	42	19
Link Distance (ft)	610	610	155	155	155
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 32: I-95 SB On-Ramp

Movement	SE
Directions Served	L
Maximum Queue (ft)	106
Average Queue (ft)	45
95th Queue (ft)	84
Link Distance (ft)	215
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	T	T	T	R	UL	L	T	T	TR	L	LT
Maximum Queue (ft)	92	305	287	322	249	141	135	147	177	216	138	174
Average Queue (ft)	36	155	130	172	42	67	70	77	94	115	17	96
95th Queue (ft)	77	255	253	279	138	117	118	137	158	189	85	160
Link Distance (ft)		632	632	632				610	610	610		352
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				150	375	375				250	
Storage Blk Time (%)		2		12								
Queuing Penalty (veh)		1		13								

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	NB	NB	SB	SB	SB
Directions Served	T	R	L	T	TR
Maximum Queue (ft)	59	115	111	40	42
Average Queue (ft)	2	43	46	6	12
95th Queue (ft)	28	89	92	27	36
Link Distance (ft)	352			429	429
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		250	200		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 15

APPENDIX E: SYNCHRO & SIMTRAFFIC OUTPUT – BUILD (2027) CONDITIONS

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↰	↑↑						↱	↱
Traffic Vol, veh/h	0	319	0	323	957	0	0	0	0	14	1	242
Future Vol, veh/h	0	319	0	323	957	0	0	0	0	14	1	242
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	13	2	2	5	2	2	2	2	2	2	10
Mvmt Flow	0	343	0	347	1029	0	0	0	0	15	1	260

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	-	343	0	0	1895	2066	-
Stage 1	-	-	-	-	-	-	1723	1723	-
Stage 2	-	-	-	-	-	-	172	343	-
Critical Hdwy	-	-	-	4.14	-	-	6.84	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	4.02	-
Pot Cap-1 Maneuver	0	-	0	1213	-	0	61	54	0
Stage 1	0	-	0	-	-	0	129	142	0
Stage 2	0	-	0	-	-	0	841	636	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	-	-	-	1213	-	-	44	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	44	0	-
Stage 1	-	-	-	-	-	-	129	0	-
Stage 2	-	-	-	-	-	-	600	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.3	128.2
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1213	-	44	-
HCM Lane V/C Ratio	-	0.286	-	0.367	-
HCM Control Delay (s)	-	9.2	-	128.2	0
HCM Lane LOS	-	A	-	F	A
HCM 95th %tile Q(veh)	-	1.2	-	1.3	-

Intersection										
Int Delay, s/veh	0									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NEL	NER
Lane Configurations										
Traffic Vol, veh/h	160	173	0	0	605	45	0	0	0	99
Future Vol, veh/h	160	173	0	0	605	45	0	0	0	99
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	-	Free
Storage Length	300	-	-	-	-	0	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	20	5	2	2	2	16	2	2	2	6
Mvmt Flow	172	186	0	0	651	48	0	0	0	106

Major/Minor	Minor2			Major2		
Conflicting Flow All	651	651	-	-	-	0
Stage 1	651	651	-	-	-	-
Stage 2	0	0	-	-	-	-
Critical Hdwy	7.2	6.6	-	-	-	-
Critical Hdwy Stg 1	6.2	5.6	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	3.7	4.05	-	-	-	-
Pot Cap-1 Maneuver	363	380	0	0	-	-
Stage 1	435	455	0	0	-	-
Stage 2	-	-	0	0	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	363	0	-	-	-	-
Mov Cap-2 Maneuver	363	0	-	-	-	-
Stage 1	435	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	EBLn3	WBT	WBR
Capacity (veh/h)	363	-	-	-	-
HCM Lane V/C Ratio	0.474	-	-	-	-
HCM Control Delay (s)	23.5	-	-	-	-
HCM Lane LOS	C	-	-	-	-
HCM 95th %tile Q(veh)	2.5	-	-	-	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	44	175	341	23	60	248
Future Vol, veh/h	44	175	341	23	60	248
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	225	-	-	-	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	7	2	28	6	2
Mvmt Flow	51	201	392	26	69	285

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	418	0	-	0	708	405
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	303	-
Critical Hdwy	4.13	-	-	-	6.46	6.22
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.227	-	-	-	3.554	3.318
Pot Cap-1 Maneuver	1136	-	-	-	395	646
Stage 1	-	-	-	-	665	-
Stage 2	-	-	-	-	740	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1136	-	-	-	377	646
Mov Cap-2 Maneuver	-	-	-	-	377	-
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	740	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1136	-	-	-	377	646
HCM Lane V/C Ratio	0.045	-	-	-	0.183	0.441
HCM Control Delay (s)	8.3	-	-	-	16.7	14.9
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7	2.3

Intersection						
Int Delay, s/veh	0.4					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	228	350	1	1	14
Future Vol, veh/h	7	228	350	1	1	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	7	2	2	2	2
Mvmt Flow	8	262	402	1	1	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	403	0	-	0	681	403
Stage 1	-	-	-	-	403	-
Stage 2	-	-	-	-	278	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1156	-	-	-	416	647
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	769	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1156	-	-	-	413	647
Mov Cap-2 Maneuver	-	-	-	-	413	-
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	769	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1156	-	-	-	623
HCM Lane V/C Ratio	0.007	-	-	-	0.028
HCM Control Delay (s)	8.1	-	-	-	10.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0.6					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	220	331	3	5	20
Future Vol, veh/h	9	220	331	3	5	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	239	360	3	5	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	363	0	-	0	621	362
Stage 1	-	-	-	-	362	-
Stage 2	-	-	-	-	259	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1196	-	-	-	451	683
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	784	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1196	-	-	-	447	683
Mov Cap-2 Maneuver	-	-	-	-	447	-
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	784	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1196	-	-	-	618
HCM Lane V/C Ratio	0.008	-	-	-	0.044
HCM Control Delay (s)	8	-	-	-	11.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	54	81	265	27	25
Future Vol, veh/h	160	54	81	265	27	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	6	4	3	13	5
Mvmt Flow	176	59	89	291	30	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	235	0	645	176
Stage 1	-	-	-	-	176	-
Stage 2	-	-	-	-	469	-
Critical Hdwy	-	-	4.14	-	6.53	6.25
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	-	-	2.236	-	3.617	3.345
Pot Cap-1 Maneuver	-	-	1321	-	420	859
Stage 1	-	-	-	-	829	-
Stage 2	-	-	-	-	607	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1321	-	386	859
Mov Cap-2 Maneuver	-	-	-	-	386	-
Stage 1	-	-	-	-	829	-
Stage 2	-	-	-	-	558	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	525	-	-	1321	-
HCM Lane V/C Ratio	0.109	-	-	0.067	-
HCM Control Delay (s)	12.7	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	22	1026	33	168	1145	29	34	42	108	11
v/c Ratio	0.15	0.40	0.04	0.47	0.37	0.22	0.12	0.15	0.61	0.02
Control Delay	45.3	17.6	0.1	46.5	12.5	46.6	43.2	1.1	57.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.3	17.6	0.1	46.5	12.5	46.6	43.2	1.1	57.6	0.0
Queue Length 50th (ft)	13	154	0	53	116	19	11	0	66	0
Queue Length 95th (ft)	38	208	0	83	217	49	27	0	123	0
Internal Link Dist (ft)		601			622		348			415
Turn Bay Length (ft)	225		150	375		250		250	200	
Base Capacity (vph)	230	2541	873	446	3077	289	585	419	194	718
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.40	0.04	0.38	0.37	0.10	0.06	0.10	0.56	0.02

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	944	30	155	1047	6	53	5	39	99	2	8
Future Volume (vph)	20	944	30	155	1047	6	53	5	39	99	2	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5081		1610	3252	1583	1770	3105	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5081		1610	3252	1583	1770	3105	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	1026	33	168	1138	7	58	5	42	108	2	9
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	39	0	10	0
Lane Group Flow (vph)	22	1026	16	168	1145	0	29	34	3	108	1	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	3.3	48.8	48.8	10.3	55.8		6.8	6.8	6.8	10.1	10.1	
Effective Green, g (s)	3.3	48.8	48.8	10.3	55.8		6.8	6.8	6.8	10.1	10.1	
Actuated g/C Ratio	0.03	0.49	0.49	0.10	0.56		0.07	0.07	0.07	0.10	0.10	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	58	2481	772	353	2835		109	221	107	178	313	
v/s Ratio Prot	0.01	0.20		c0.05	c0.23		c0.02	0.01		c0.06	0.00	
v/s Ratio Perm			0.01						0.00			
v/c Ratio	0.38	0.41	0.02	0.48	0.40		0.27	0.15	0.03	0.61	0.00	
Uniform Delay, d1	47.3	16.4	13.2	42.3	12.6		44.2	43.9	43.5	43.0	40.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.1	0.5	0.0	1.0	0.1		1.3	0.3	0.1	5.7	0.0	
Delay (s)	51.5	16.9	13.3	43.3	12.7		45.5	44.2	43.6	48.8	40.4	
Level of Service	D	B	B	D	B		D	D	D	D	D	
Approach Delay (s)		17.5			16.6			44.3			48.0	
Approach LOS		B			B			D			D	

Intersection Summary

HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 1: I-95 SB On-Ramp & Route 54

Movement	EB	WB	B33	B35	B35	B35	SB
Directions Served	T	L	T	T	T	T	LT
Maximum Queue (ft)	3	156	41	13	12	9	53
Average Queue (ft)	0	54	2	0	1	0	14
95th Queue (ft)	3	118	29	9	11	9	40
Link Distance (ft)	155	98	206	151	151	151	103
Upstream Blk Time (%)		4	0				
Queuing Penalty (veh)		17	0				
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: I-95 NB On-Ramp & Route 54

Movement	EB	EB	EB	WB	WB
Directions Served	L	T	T	T	T
Maximum Queue (ft)	146	98	51	6	32
Average Queue (ft)	60	35	8	0	3
95th Queue (ft)	118	70	34	3	18
Link Distance (ft)		179	179	146	146
Upstream Blk Time (%)	0	0			
Queuing Penalty (veh)	0	0			
Storage Bay Dist (ft)	300				
Storage Blk Time (%)	0	0			
Queuing Penalty (veh)	0	0			

Intersection: 3: Route 54 & Woodside Lane

Movement	EB	SB	SB
Directions Served	L	L	R
Maximum Queue (ft)	37	69	142
Average Queue (ft)	12	22	55
95th Queue (ft)	34	48	101
Link Distance (ft)		891	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	225		200
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 4: Route 54 & Providence Church Road

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	24	29
Average Queue (ft)	2	11
95th Queue (ft)	13	32
Link Distance (ft)		1008
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Route 54 & Site Driveway

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	23	33
Average Queue (ft)	2	17
95th Queue (ft)	14	41
Link Distance (ft)		539
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Goddins Hill Road & Route 54

Movement	EB	WB	NB
Directions Served	R	LT	LR
Maximum Queue (ft)	3	84	74
Average Queue (ft)	0	17	28
95th Queue (ft)	3	56	59
Link Distance (ft)		1778	529
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 22: Route 54

Movement	EB	SW	B24
Directions Served	T	R	T
Maximum Queue (ft)	5	190	26
Average Queue (ft)	0	62	1
95th Queue (ft)	4	147	18
Link Distance (ft)	151	166	852
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 31: Route 54

Movement	EB	EB	WB	WB	WB
Directions Served	T	R	T	T	T
Maximum Queue (ft)	41	400	33	37	15
Average Queue (ft)	1	155	13	7	1
95th Queue (ft)	38	312	33	30	9
Link Distance (ft)	610	610	155	155	155
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 32: I-95 SB On-Ramp

Movement	SE
Directions Served	L
Maximum Queue (ft)	229
Average Queue (ft)	138
95th Queue (ft)	240
Link Distance (ft)	215
Upstream Blk Time (%)	5
Queuing Penalty (veh)	16
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	T	T	T	R	UL	L	T	T	TR	L	LT
Maximum Queue (ft)	64	185	294	357	212	89	114	163	170	185	5	93
Average Queue (ft)	16	93	109	189	24	36	58	75	80	84	0	41
95th Queue (ft)	45	163	258	309	118	75	96	136	144	152	3	82
Link Distance (ft)		632	632	632				610	610	610		352
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				150	375	375				250	
Storage Blk Time (%)		0		14								
Queuing Penalty (veh)		0		4								

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	NB	NB	SB	SB	SB
Directions Served	T	R	L	T	TR
Maximum Queue (ft)	2	58	152	25	36
Average Queue (ft)	0	17	68	2	8
95th Queue (ft)	2	41	127	13	30
Link Distance (ft)	352			429	429
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		250	200		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 37

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↰	↑↑						↱	↱
Traffic Vol, veh/h	0	637	0	147	1106	0	0	0	0	41	1	262
Future Vol, veh/h	0	637	0	147	1106	0	0	0	0	41	1	262
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	13	2	2	5	2	2	2	2	2	2	10
Mvmt Flow	0	685	0	158	1189	0	0	0	0	44	1	282

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	-	685	0	0	1848	2190	-
Stage 1	-	-	-	-	-	-	1505	1505	-
Stage 2	-	-	-	-	-	-	343	685	-
Critical Hdwy	-	-	-	4.14	-	-	6.84	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	4.02	-
Pot Cap-1 Maneuver	0	-	0	904	-	0	66	45	0
Stage 1	0	-	0	-	-	0	170	182	0
Stage 2	0	-	0	-	-	0	690	447	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	-	-	-	904	-	-	54	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	54	0	-
Stage 1	-	-	-	-	-	-	170	0	-
Stage 2	-	-	-	-	-	-	569	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.2	197.5
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	904	-	54	-
HCM Lane V/C Ratio	-	0.175	-	0.836	-
HCM Control Delay (s)	-	9.8	-	197.5	0
HCM Lane LOS	-	A	-	F	A
HCM 95th %tile Q(veh)	-	0.6	-	3.6	-

Intersection										
Int Delay, s/veh	0									
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NEL	NER
Lane Configurations										
Traffic Vol, veh/h	270	408	0	0	373	35	0	0	0	228
Future Vol, veh/h	270	408	0	0	373	35	0	0	0	228
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	-	Free
Storage Length	300	-	-	-	-	0	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	20	5	2	2	2	16	2	2	2	6
Mvmt Flow	290	439	0	0	401	38	0	0	0	245

Major/Minor	Minor2			Major2		
Conflicting Flow All	401	401	-	-	-	0
Stage 1	401	401	-	-	-	-
Stage 2	0	0	-	-	-	-
Critical Hdwy	7.2	6.6	-	-	-	-
Critical Hdwy Stg 1	6.2	5.6	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	3.7	4.05	-	-	-	-
Pot Cap-1 Maneuver	532	529	0	0	-	-
Stage 1	595	592	0	0	-	-
Stage 2	-	-	0	0	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	532	0	-	-	-	-
Mov Cap-2 Maneuver	532	0	-	-	-	-
Stage 1	595	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	EBLn3	WBT	WBR
Capacity (veh/h)	532	-	-	-	-
HCM Lane V/C Ratio	0.546	-	-	-	-
HCM Control Delay (s)	19.6	-	-	-	-
HCM Lane LOS	C	-	-	-	-
HCM 95th %tile Q(veh)	3.3	-	-	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	175	366	273	12	28	111
Future Vol, veh/h	175	366	273	12	28	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	225	-	-	-	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	7	2	28	6	2
Mvmt Flow	201	421	314	14	32	128

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	328	0	-	0	1144	321
Stage 1	-	-	-	-	321	-
Stage 2	-	-	-	-	823	-
Critical Hdwy	4.13	-	-	-	6.46	6.22
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.227	-	-	-	3.554	3.318
Pot Cap-1 Maneuver	1226	-	-	-	217	720
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	425	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1226	-	-	-	181	720
Mov Cap-2 Maneuver	-	-	-	-	181	-
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	425	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1226	-	-	-	181	720
HCM Lane V/C Ratio	0.164	-	-	-	0.178	0.177
HCM Control Delay (s)	8.5	-	-	-	29.1	11.1
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.6	-	-	-	0.6	0.6

Intersection						
Int Delay, s/veh	0.3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	383	275	2	1	10
Future Vol, veh/h	12	383	275	2	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	7	2	2	2	2
Mvmt Flow	14	440	316	2	1	11

Major/Minor	Major1			Major2		Minor2	
Conflicting Flow All	318	0	-	0	785	317	
Stage 1	-	-	-	-	317	-	
Stage 2	-	-	-	-	468	-	
Critical Hdwy	4.12	-	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1242	-	-	-	361	724	
Stage 1	-	-	-	-	738	-	
Stage 2	-	-	-	-	630	-	
Platoon blocked, %			-	-	-		
Mov Cap-1 Maneuver	1242	-	-	-	357	724	
Mov Cap-2 Maneuver	-	-	-	-	357	-	
Stage 1	-	-	-	-	730	-	
Stage 2	-	-	-	-	630	-	

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1242	-	-	-	662
HCM Lane V/C Ratio	0.011	-	-	-	0.019
HCM Control Delay (s)	7.9	-	-	-	10.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	364	264	6	4	13
Future Vol, veh/h	20	364	264	6	4	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	396	287	7	4	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	294	0	-	0	731	291
Stage 1	-	-	-	-	291	-
Stage 2	-	-	-	-	440	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1268	-	-	-	389	748
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	649	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1268	-	-	-	382	748
Mov Cap-2 Maneuver	-	-	-	-	382	-
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	649	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1268	-	-	-	610
HCM Lane V/C Ratio	0.017	-	-	-	0.03
HCM Control Delay (s)	7.9	-	-	-	11.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	331	36	31	241	29	59
Future Vol, veh/h	331	36	31	241	29	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	6	4	3	13	5
Mvmt Flow	364	40	34	265	32	65

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	404	0	697	364
Stage 1	-	-	-	-	364	-
Stage 2	-	-	-	-	333	-
Critical Hdwy	-	-	4.14	-	6.53	6.25
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	-	-	2.236	-	3.617	3.345
Pot Cap-1 Maneuver	-	-	1144	-	391	674
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	702	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1144	-	377	674
Mov Cap-2 Maneuver	-	-	-	-	377	-
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	677	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	535	-	-	1144	-
HCM Lane V/C Ratio	0.181	-	-	0.03	-
HCM Control Delay (s)	13.2	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	43	1171	113	237	1247	72	82	137	58	23
v/c Ratio	0.32	0.43	0.12	0.61	0.41	0.49	0.27	0.51	0.40	0.08
Control Delay	58.7	19.2	2.4	57.3	15.7	62.2	52.1	15.0	60.2	27.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.7	19.2	2.4	57.3	15.7	62.2	52.1	15.0	60.2	27.6
Queue Length 50th (ft)	32	199	0	91	194	59	32	0	44	2
Queue Length 95th (ft)	69	289	24	129	283	109	58	59	86	16
Internal Link Dist (ft)		601			622		348			415
Turn Bay Length (ft)	225		150	375		250		250	200	
Base Capacity (vph)	280	2728	912	543	3031	268	540	378	191	357
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.43	0.12	0.44	0.41	0.27	0.15	0.36	0.30	0.06

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	28	12	1077	104	65	153	1121	27	133	8	126	53
Future Volume (vph)	28	12	1077	104	65	153	1121	27	133	8	126	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor		1.00	0.91	1.00		0.97	0.91		0.91	0.91	1.00	1.00
Frt		1.00	1.00	0.85		1.00	1.00		1.00	1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00		0.95	0.96	1.00	0.95
Satd. Flow (prot)		1770	5085	1583		3433	5068		1610	3246	1583	1770
Flt Permitted		0.95	1.00	1.00		0.95	1.00		0.95	0.96	1.00	0.95
Satd. Flow (perm)		1770	5085	1583		3433	5068		1610	3246	1583	1770
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	13	1171	113	71	166	1218	29	145	9	137	58
RTOR Reduction (vph)	0	0	0	54	0	0	1	0	0	0	124	0
Lane Group Flow (vph)	0	43	1171	59	0	237	1246	0	72	82	13	58
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA		Split	NA	Perm	Split
Protected Phases	5	5	2		1	1	6		4	4		3
Permitted Phases				2							4	
Actuated Green, G (s)		7.5	63.1	63.1		13.6	69.2		11.1	11.1	11.1	8.2
Effective Green, g (s)		7.5	63.1	63.1		13.6	69.2		11.1	11.1	11.1	8.2
Actuated g/C Ratio		0.06	0.53	0.53		0.11	0.58		0.09	0.09	0.09	0.07
Clearance Time (s)		6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		110	2673	832		389	2922		148	300	146	120
v/s Ratio Prot		0.02	0.23			c0.07	c0.25		c0.04	0.03		c0.03
v/s Ratio Perm				0.04							0.01	
v/c Ratio		0.39	0.44	0.07		0.61	0.43		0.49	0.27	0.09	0.48
Uniform Delay, d1		54.1	17.5	14.0		50.7	14.3		51.7	50.7	49.8	53.9
Progression Factor		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		2.3	0.5	0.2		2.7	0.1		2.5	0.5	0.3	3.0
Delay (s)		56.3	18.1	14.2		53.4	14.4		54.2	51.2	50.1	56.9
Level of Service		E	B	B		D	B		D	D	D	E
Approach Delay (s)			19.0				20.6			51.4		
Approach LOS			B				C			D		

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations	↑↑↱	
Traffic Volume (vph)	6	15
Future Volume (vph)	6	15
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	6.0	
Lane Util. Factor	0.95	
Frt	0.90	
Flt Protected	1.00	
Satd. Flow (prot)	3170	
Flt Permitted	1.00	
Satd. Flow (perm)	3170	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	7	16
RTOR Reduction (vph)	15	0
Lane Group Flow (vph)	8	0
Turn Type	NA	
Protected Phases	3	
Permitted Phases		
Actuated Green, G (s)	8.2	
Effective Green, g (s)	8.2	
Actuated g/C Ratio	0.07	
Clearance Time (s)	6.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	216	
v/s Ratio Prot	0.00	
v/s Ratio Perm		
v/c Ratio	0.04	
Uniform Delay, d1	52.2	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	52.3	
Level of Service	D	
Approach Delay (s)	55.6	
Approach LOS	E	

Intersection Summary

Intersection: 1: I-95 SB On-Ramp & Route 54

Movement	WB	WB	B33	B35	B35	SB	SB	B28
Directions Served	L	T	T	T	T	LT	R	T
Maximum Queue (ft)	108	6	5	13	2	152	151	430
Average Queue (ft)	42	0	0	0	0	69	25	88
95th Queue (ft)	85	4	5	13	2	150	127	489
Link Distance (ft)	98	98	206	151	151	103	103	987
Upstream Blk Time (%)	1					23		4
Queuing Penalty (veh)	3					0		0
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2: I-95 NB On-Ramp & Route 54

Movement	EB	EB	EB	WB	WB
Directions Served	L	T	T	T	T
Maximum Queue (ft)	158	179	83	1	30
Average Queue (ft)	79	58	27	0	2
95th Queue (ft)	141	112	60	1	17
Link Distance (ft)		179	179	146	146
Upstream Blk Time (%)	0	0			
Queuing Penalty (veh)	0	1			
Storage Bay Dist (ft)	300				
Storage Blk Time (%)	0	0			
Queuing Penalty (veh)	0	1			

Intersection: 3: Route 54 & Woodside Lane

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	72	2	51	68
Average Queue (ft)	26	0	14	32
95th Queue (ft)	57	2	37	53
Link Distance (ft)		529	891	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	225			200
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Route 54 & Providence Church Road

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	18	33
Average Queue (ft)	2	7
95th Queue (ft)	11	27
Link Distance (ft)		1008
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Route 54 & Site Driveway

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	29	38
Average Queue (ft)	3	13
95th Queue (ft)	17	39
Link Distance (ft)		539
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Goddins Hill Road & Route 54

Movement	EB	WB	NB
Directions Served	R	LT	LR
Maximum Queue (ft)	10	63	93
Average Queue (ft)	0	10	38
95th Queue (ft)	6	40	69
Link Distance (ft)		1778	529
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 22: Route 54

Movement	EB	SW	B24
Directions Served	T	R	T
Maximum Queue (ft)	35	269	306
Average Queue (ft)	1	150	37
95th Queue (ft)	17	273	187
Link Distance (ft)	151	166	852
Upstream Blk Time (%)		16	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 31: Route 54

Movement	EB	EB	WB	WB	WB
Directions Served	T	R	T	T	T
Maximum Queue (ft)	7	350	36	45	42
Average Queue (ft)	0	123	17	15	2
95th Queue (ft)	7	260	39	43	20
Link Distance (ft)	610	610	155	155	155
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 32: I-95 SB On-Ramp

Movement	SE
Directions Served	L
Maximum Queue (ft)	152
Average Queue (ft)	57
95th Queue (ft)	116
Link Distance (ft)	215
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	T	T	T	R	UL	L	T	T	TR	L	LT
Maximum Queue (ft)	86	283	271	333	215	162	154	203	222	230	146	178
Average Queue (ft)	34	163	133	176	44	80	80	96	112	124	21	96
95th Queue (ft)	74	256	252	289	150	137	134	172	192	211	96	163
Link Distance (ft)		632	632	632				610	610	610		352
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				150	375	375				250	
Storage Blk Time (%)		2		12								0
Queuing Penalty (veh)		1		13								0

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	NB	NB	SB	SB	SB
Directions Served	T	R	L	T	TR
Maximum Queue (ft)	18	119	109	46	39
Average Queue (ft)	1	42	44	7	12
95th Queue (ft)	14	87	90	29	35
Link Distance (ft)	352			429	429
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		250	200		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 19

Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	434	402	1063	109	260
v/c Ratio	0.35	0.82	0.43	0.40	0.79
Control Delay	16.0	47.2	6.9	40.3	37.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	47.2	6.9	40.3	37.3
Queue Length 50th (ft)	55	238	121	63	85
Queue Length 95th (ft)	60	319	214	104	160
Internal Link Dist (ft)	190		68	110	
Turn Bay Length (ft)					
Base Capacity (vph)	1237	619	2492	426	445
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.35	0.65	0.43	0.26	0.58

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	404	0	374	989	0	0	0	0	100	1	242
Future Volume (vph)	0	404	0	374	989	0	0	0	0	100	1	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0						6.0	6.0
Lane Util. Factor		0.95		1.00	0.95						1.00	1.00
Frt		1.00		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		3195		1770	3438						1775	1468
Flt Permitted		1.00		0.95	1.00						0.95	1.00
Satd. Flow (perm)		3195		1770	3438						1775	1468
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	434	0	402	1063	0	0	0	0	108	1	260
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	103
Lane Group Flow (vph)	0	434	0	402	1063	0	0	0	0	0	109	157
Heavy Vehicles (%)	2%	13%	2%	2%	5%	2%	2%	2%	2%	2%	2%	10%
Turn Type		NA		Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		38.7		27.8	72.5						15.5	15.5
Effective Green, g (s)		38.7		27.8	72.5						15.5	15.5
Actuated g/C Ratio		0.39		0.28	0.72						0.16	0.16
Clearance Time (s)		6.0		6.0	6.0						6.0	6.0
Vehicle Extension (s)		3.0		3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1236		492	2492						275	227
v/s Ratio Prot		0.14		c0.23	c0.31						0.06	
v/s Ratio Perm												c0.11
v/c Ratio		0.35		0.82	0.43						0.40	0.69
Uniform Delay, d1		21.7		33.7	5.5						38.0	40.0
Progression Factor		0.61		1.00	1.00						1.00	1.00
Incremental Delay, d2		0.7		10.1	0.5						0.9	8.8
Delay (s)		14.0		43.9	6.0						39.0	48.7
Level of Service		B		D	A						D	D
Approach Delay (s)		14.0			16.4			0.0			45.9	
Approach LOS		B			B			A			D	

Intersection Summary

HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection										
Int Delay, s/veh	0									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NEL	NER
Lane Configurations										
Traffic Vol, veh/h	160	344	0	0	688	82	0	0	0	241
Future Vol, veh/h	160	344	0	0	688	82	0	0	0	241
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	-	Free
Storage Length	300	-	-	-	-	0	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	20	5	2	2	2	16	2	2	2	6
Mvmt Flow	172	370	0	0	740	88	0	0	0	259

Major/Minor	Minor2			Major2		
Conflicting Flow All	740	740	-	-	-	0
Stage 1	740	740	-	-	-	-
Stage 2	0	0	-	-	-	-
Critical Hdwy	7.2	6.6	-	-	-	-
Critical Hdwy Stg 1	6.2	5.6	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	3.7	4.05	-	-	-	-
Pot Cap-1 Maneuver	316	~ 337	0	0	-	-
Stage 1	388	414	0	0	-	-
Stage 2	-	-	0	0	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	316	0	-	-	-	-
Mov Cap-2 Maneuver	316	0	-	-	-	-
Stage 1	388	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	EBLn3	WBT	WBR
Capacity (veh/h)	316	-	-	-	-
HCM Lane V/C Ratio	0.544	-	-	-	-
HCM Control Delay (s)	29.2	-	-	-	-
HCM Lane LOS	D	-	-	-	-
HCM 95th %tile Q(veh)	3.1	-	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	44	182	360	23	60	248
Future Vol, veh/h	44	182	360	23	60	248
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	225	-	-	-	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	7	2	28	6	2
Mvmt Flow	51	209	414	26	69	285

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	440	0	-	0	738	427
Stage 1	-	-	-	-	427	-
Stage 2	-	-	-	-	311	-
Critical Hdwy	4.13	-	-	-	6.46	6.22
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.227	-	-	-	3.554	3.318
Pot Cap-1 Maneuver	1115	-	-	-	379	628
Stage 1	-	-	-	-	650	-
Stage 2	-	-	-	-	734	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1115	-	-	-	362	628
Mov Cap-2 Maneuver	-	-	-	-	362	-
Stage 1	-	-	-	-	620	-
Stage 2	-	-	-	-	734	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	15.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1115	-	-	-	362	628
HCM Lane V/C Ratio	0.045	-	-	-	0.191	0.454
HCM Control Delay (s)	8.4	-	-	-	17.3	15.4
HCM Lane LOS	A	-	-	-	C	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7	2.4

Intersection						
Int Delay, s/veh	0.3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	235	369	1	1	14
Future Vol, veh/h	7	235	369	1	1	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	7	2	2	2	2
Mvmt Flow	8	270	424	1	1	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	425	0	-	0	711	425
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	286	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1134	-	-	-	400	629
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	763	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1134	-	-	-	397	629
Mov Cap-2 Maneuver	-	-	-	-	397	-
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	763	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1134	-	-	-	605
HCM Lane V/C Ratio	0.007	-	-	-	0.028
HCM Control Delay (s)	8.2	-	-	-	11.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	227	0	17	350	3	0	0	0	5	0	20
Future Vol, veh/h	9	227	0	17	350	3	0	0	0	5	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	247	0	18	380	3	0	0	0	5	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	383	0	0	247	0	0	696	686	247	685	685	382
Stage 1	-	-	-	-	-	-	267	267	-	418	418	-
Stage 2	-	-	-	-	-	-	429	419	-	267	267	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1175	-	-	1319	-	-	356	370	792	362	371	665
Stage 1	-	-	-	-	-	-	738	688	-	612	591	-
Stage 2	-	-	-	-	-	-	604	590	-	738	688	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1175	-	-	1319	-	-	339	361	792	356	362	665
Mov Cap-2 Maneuver	-	-	-	-	-	-	339	361	-	356	362	-
Stage 1	-	-	-	-	-	-	731	682	-	606	583	-
Stage 2	-	-	-	-	-	-	576	582	-	732	682	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	0	11.7
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1175	-	-	1319	-	-	567
HCM Lane V/C Ratio	-	0.008	-	-	0.014	-	-	0.048
HCM Control Delay (s)	0	8.1	-	-	7.8	-	-	11.7
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.2

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	167	54	81	299	27	25
Future Vol, veh/h	167	54	81	299	27	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	6	4	3	13	5
Mvmt Flow	184	59	89	329	30	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	243	0	691	184
Stage 1	-	-	-	-	184	-
Stage 2	-	-	-	-	507	-
Critical Hdwy	-	-	4.14	-	6.53	6.25
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	-	-	2.236	-	3.617	3.345
Pot Cap-1 Maneuver	-	-	1312	-	394	851
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	583	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1312	-	361	851
Mov Cap-2 Maneuver	-	-	-	-	361	-
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	535	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	499	-	-	1312	-
HCM Lane V/C Ratio	0.115	-	-	0.068	-
HCM Control Delay (s)	13.1	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	22	1118	33	168	1180	29	34	42	108	11
v/c Ratio	0.15	0.44	0.04	0.47	0.38	0.22	0.12	0.15	0.61	0.02
Control Delay	45.3	18.0	0.1	49.7	9.8	46.6	43.2	1.1	57.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.3	18.0	0.1	49.7	9.8	46.6	43.2	1.1	57.6	0.0
Queue Length 50th (ft)	13	171	0	42	112	19	11	0	66	0
Queue Length 95th (ft)	38	230	0	88	197	49	27	0	123	0
Internal Link Dist (ft)		601			622		348			415
Turn Bay Length (ft)	225		150	375		250		250	200	
Base Capacity (vph)	230	2541	873	446	3077	289	585	419	194	717
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.44	0.04	0.38	0.38	0.10	0.06	0.10	0.56	0.02

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1029	30	155	1079	6	53	5	39	99	2	8
Future Volume (vph)	20	1029	30	155	1079	6	53	5	39	99	2	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5081		1610	3252	1583	1770	3105	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5081		1610	3252	1583	1770	3105	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	1118	33	168	1173	7	58	5	42	108	2	9
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	39	0	10	0
Lane Group Flow (vph)	22	1118	16	168	1180	0	29	34	3	108	1	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	3.3	48.8	48.8	10.3	55.8		6.8	6.8	6.8	10.1	10.1	
Effective Green, g (s)	3.3	48.8	48.8	10.3	55.8		6.8	6.8	6.8	10.1	10.1	
Actuated g/C Ratio	0.03	0.49	0.49	0.10	0.56		0.07	0.07	0.07	0.10	0.10	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	58	2481	772	353	2835		109	221	107	178	313	
v/s Ratio Prot	0.01	c0.22		c0.05	c0.23		c0.02	0.01		c0.06	0.00	
v/s Ratio Perm			0.01						0.00			
v/c Ratio	0.38	0.45	0.02	0.48	0.42		0.27	0.15	0.03	0.61	0.00	
Uniform Delay, d1	47.3	16.8	13.2	42.3	12.7		44.2	43.9	43.5	43.0	40.4	
Progression Factor	1.00	1.00	1.00	1.09	0.77		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.1	0.6	0.0	0.9	0.1		1.3	0.3	0.1	5.7	0.0	
Delay (s)	51.5	17.4	13.3	46.9	9.9		45.5	44.2	43.6	48.8	40.4	
Level of Service	D	B	B	D	A		D	D	D	D	D	
Approach Delay (s)		17.9			14.5			44.3			48.0	
Approach LOS		B			B			D			D	

Intersection Summary

HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 1: I-95 SB On-Ramp & Route 54

Movement	EB	EB	WB	WB	WB	B33	B33	B33	B35	B35	B35	SB
Directions Served	T	T	L	T	T	T	T	T	T	T	T	LT
Maximum Queue (ft)	181	159	193	141	157	279	5	15	146	148	105	150
Average Queue (ft)	120	72	163	53	62	104	0	1	17	14	13	75
95th Queue (ft)	190	158	199	118	132	268	4	10	94	102	95	134
Link Distance (ft)	155	155	98	98	98	206	206	206	151	151	151	103
Upstream Blk Time (%)	9	1	55	1	2	11			3	2	2	5
Queuing Penalty (veh)	18	1	249	5	8	38			12	9	7	0
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 1: I-95 SB On-Ramp & Route 54

Movement	SB	B28
Directions Served	R	T
Maximum Queue (ft)	59	42
Average Queue (ft)	3	3
95th Queue (ft)	41	26
Link Distance (ft)	103	987
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: I-95 NB On-Ramp & Route 54

Movement	EB	EB	EB	WB	WB
Directions Served	L	T	T	T	T
Maximum Queue (ft)	158	159	116	8	55
Average Queue (ft)	74	57	26	1	7
95th Queue (ft)	141	111	67	4	33
Link Distance (ft)		179	179	146	146
Upstream Blk Time (%)	0	0	0		
Queuing Penalty (veh)	0	0	0		
Storage Bay Dist (ft)	300				
Storage Blk Time (%)	0	0			
Queuing Penalty (veh)	0	0			

Intersection: 3: Route 54 & Woodside Lane

Movement	EB	SB	SB
Directions Served	L	L	R
Maximum Queue (ft)	48	72	126
Average Queue (ft)	12	23	57
95th Queue (ft)	35	52	101
Link Distance (ft)		891	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	225		200
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Route 54 & Providence Church Road

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	26	31
Average Queue (ft)	2	10
95th Queue (ft)	12	32
Link Distance (ft)		1008
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Route 54 & Site Driveway

Movement	EB	WB	SB
Directions Served	L	L	LTR
Maximum Queue (ft)	22	26	40
Average Queue (ft)	2	2	18
95th Queue (ft)	13	14	43
Link Distance (ft)			540
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200	200	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Goddins Hill Road & Route 54

Movement	EB	WB	NB
Directions Served	R	LT	LR
Maximum Queue (ft)	2	64	64
Average Queue (ft)	0	17	27
95th Queue (ft)	2	50	55
Link Distance (ft)		1778	529
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 22: Route 54

Movement	EB	EB	WB	WB	SW	B24
Directions Served	T	T	T	T	R	T
Maximum Queue (ft)	26	6	52	43	219	113
Average Queue (ft)	1	0	4	5	70	11
95th Queue (ft)	14	6	43	50	174	130
Link Distance (ft)	151	151	179	179	166	852
Upstream Blk Time (%)			0	0	3	
Queuing Penalty (veh)			0	1	0	
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 31: Route 54

Movement	EB	EB	EB	WB	WB	WB
Directions Served	T	T	R	T	T	T
Maximum Queue (ft)	168	119	342	38	51	31
Average Queue (ft)	27	9	146	14	9	1
95th Queue (ft)	108	62	285	36	37	15
Link Distance (ft)	610	610	610	155	155	155
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 32: I-95 SB On-Ramp

Movement	SE
Directions Served	L
Maximum Queue (ft)	230
Average Queue (ft)	204
95th Queue (ft)	267
Link Distance (ft)	215
Upstream Blk Time (%)	12
Queuing Penalty (veh)	46
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	T	T	T	R	UL	L	T	T	TR	L	LT
Maximum Queue (ft)	56	226	302	335	162	90	106	180	189	196	8	98
Average Queue (ft)	19	111	114	183	16	37	63	68	76	81	0	37
95th Queue (ft)	46	191	259	301	81	77	99	143	158	162	4	79
Link Distance (ft)		632	632	632				610	610	610		352
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				150	375	375				250	
Storage Blk Time (%)		0		13				0				
Queuing Penalty (veh)		0		4				0				

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	NB	NB	SB	SB	SB
Directions Served	T	R	L	T	TR
Maximum Queue (ft)	4	61	141	20	32
Average Queue (ft)	0	17	66	1	7
95th Queue (ft)	2	43	120	11	27
Link Distance (ft)	352			429	429
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		250	200		
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Network Summary

Network wide Queuing Penalty: 398

Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	727	303	1281	86	282
v/c Ratio	0.50	0.80	0.52	0.27	0.85
Control Delay	38.8	60.6	9.3	42.3	55.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	60.6	9.3	42.3	55.2
Queue Length 50th (ft)	297	224	212	57	153
Queue Length 95th (ft)	376	304	318	99	243
Internal Link Dist (ft)	190		68	110	
Turn Bay Length (ft)					
Base Capacity (vph)	1454	486	2470	428	416
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.62	0.52	0.20	0.68

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	676	0	282	1191	0	0	0	0	79	1	262
Future Volume (vph)	0	676	0	282	1191	0	0	0	0	79	1	262
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0						6.0	6.0
Lane Util. Factor		0.95		1.00	0.95						1.00	1.00
Frt		1.00		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		3195		1770	3438						1775	1468
Flt Permitted		1.00		0.95	1.00						0.95	1.00
Satd. Flow (perm)		3195		1770	3438						1775	1468
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	727	0	303	1281	0	0	0	0	85	1	282
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	67
Lane Group Flow (vph)	0	727	0	303	1281	0	0	0	0	0	86	215
Heavy Vehicles (%)	2%	13%	2%	2%	5%	2%	2%	2%	2%	2%	2%	10%
Turn Type		NA		Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		54.6		25.6	86.2						21.8	21.8
Effective Green, g (s)		54.6		25.6	86.2						21.8	21.8
Actuated g/C Ratio		0.46		0.21	0.72						0.18	0.18
Clearance Time (s)		6.0		6.0	6.0						6.0	6.0
Vehicle Extension (s)		3.0		3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1453		377	2469						322	266
v/s Ratio Prot		0.23		c0.17	c0.37						0.05	
v/s Ratio Perm												c0.15
v/c Ratio		0.50		0.80	0.52						0.27	0.81
Uniform Delay, d1		23.1		44.8	7.6						42.2	47.1
Progression Factor		1.46		1.00	1.00						1.00	1.00
Incremental Delay, d2		1.1		11.7	0.8						0.4	16.3
Delay (s)		34.9		56.5	8.4						42.7	63.4
Level of Service		C		E	A						D	E
Approach Delay (s)		34.9			17.6			0.0			58.5	
Approach LOS		C			B			A			E	

Intersection Summary

HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection										
Int Delay, s/veh	0									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NEL	NER
Lane Configurations										
Traffic Vol, veh/h	270	485	0	0	593	125	0	0	0	295
Future Vol, veh/h	270	485	0	0	593	125	0	0	0	295
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	-	Free
Storage Length	300	-	-	-	-	0	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	20	5	2	2	2	16	2	2	2	6
Mvmt Flow	290	522	0	0	638	134	0	0	0	317

Major/Minor	Minor2			Major2		
Conflicting Flow All	638	638	-	-	-	0
Stage 1	638	638	-	-	-	-
Stage 2	0	0	-	-	-	-
Critical Hdwy	7.2	6.6	-	-	-	-
Critical Hdwy Stg 1	6.2	5.6	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	3.7	4.05	-	-	-	-
Pot Cap-1 Maneuver	370	~ 387	0	0	-	-
Stage 1	442	~ 462	0	0	-	-
Stage 2	-	-	0	0	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	370	0	-	-	-	-
Mov Cap-2 Maneuver	370	0	-	-	-	-
Stage 1	442	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	EBLn3	WBT	WBR
Capacity (veh/h)	370	-	-	-	-
HCM Lane V/C Ratio	0.785	-	-	-	-
HCM Control Delay (s)	42.3	-	-	-	-
HCM Lane LOS	E	-	-	-	-
HCM 95th %tile Q(veh)	6.6	-	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	3.6					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	175	384	282	12	28	111
Future Vol, veh/h	175	384	282	12	28	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	225	-	-	-	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	7	2	28	6	2
Mvmt Flow	201	441	324	14	32	128

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	338	0	-	0	1174	331
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	843	-
Critical Hdwy	4.13	-	-	-	6.46	6.22
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.227	-	-	-	3.554	3.318
Pot Cap-1 Maneuver	1216	-	-	-	208	711
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	416	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1216	-	-	-	174	711
Mov Cap-2 Maneuver	-	-	-	-	174	-
Stage 1	-	-	-	-	600	-
Stage 2	-	-	-	-	416	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1216	-	-	-	174	711
HCM Lane V/C Ratio	0.165	-	-	-	0.185	0.179
HCM Control Delay (s)	8.5	-	-	-	30.3	11.2
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.6	-	-	-	0.7	0.7

Intersection						
Int Delay, s/veh	0.3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	401	284	2	1	10
Future Vol, veh/h	12	401	284	2	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	7	2	2	2	2
Mvmt Flow	14	461	326	2	1	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	328	0	-	0	816	327
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	489	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1232	-	-	-	347	714
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	616	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1232	-	-	-	343	714
Mov Cap-2 Maneuver	-	-	-	-	343	-
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	616	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1232	-	-	-	650
HCM Lane V/C Ratio	0.011	-	-	-	0.019
HCM Control Delay (s)	8	-	-	-	10.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	382	0	7	273	6	0	0	16	4	0	13
Future Vol, veh/h	20	382	0	7	273	6	0	0	16	4	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	415	0	8	297	7	0	0	17	4	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	304	0	0	415	0	0	783	779	415	785	776	301
Stage 1	-	-	-	-	-	-	459	459	-	317	317	-
Stage 2	-	-	-	-	-	-	324	320	-	468	459	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1257	-	-	1144	-	-	311	327	637	310	328	739
Stage 1	-	-	-	-	-	-	582	566	-	694	654	-
Stage 2	-	-	-	-	-	-	688	652	-	575	566	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1257	-	-	1144	-	-	299	319	637	296	320	739
Mov Cap-2 Maneuver	-	-	-	-	-	-	299	319	-	296	320	-
Stage 1	-	-	-	-	-	-	572	556	-	682	649	-
Stage 2	-	-	-	-	-	-	670	647	-	550	556	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.2	10.8	11.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	637	1257	-	-	1144	-	-	547
HCM Lane V/C Ratio	0.027	0.017	-	-	0.007	-	-	0.034
HCM Control Delay (s)	10.8	7.9	-	-	8.2	-	-	11.8
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

Intersection						
Int Delay, s/veh	1.9					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	365	36	31	256	29	59
Future Vol, veh/h	365	36	31	256	29	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	6	4	3	13	5
Mvmt Flow	401	40	34	281	32	65

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	441	0	750	401
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	349	-
Critical Hdwy	-	-	4.14	-	6.53	6.25
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	-	-	2.236	-	3.617	3.345
Pot Cap-1 Maneuver	-	-	1108	-	364	643
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	690	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1108	-	351	643
Mov Cap-2 Maneuver	-	-	-	-	351	-
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	665	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	13.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	505	-	-	1108	-
HCM Lane V/C Ratio	0.191	-	-	0.031	-
HCM Control Delay (s)	13.8	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	43	1213	113	237	1340	72	82	137	58	23
v/c Ratio	0.32	0.44	0.12	0.61	0.44	0.49	0.27	0.51	0.40	0.08
Control Delay	58.7	19.4	2.4	52.2	20.7	62.2	52.1	15.0	60.2	27.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.7	19.4	2.4	52.2	20.7	62.2	52.1	15.0	60.2	27.6
Queue Length 50th (ft)	32	209	0	92	188	59	32	0	44	2
Queue Length 95th (ft)	69	302	24	131	388	109	58	59	86	16
Internal Link Dist (ft)		601			622		348			415
Turn Bay Length (ft)	225		150	375		250		250	200	
Base Capacity (vph)	280	2728	912	543	3031	268	540	378	191	357
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.44	0.12	0.44	0.44	0.27	0.15	0.36	0.30	0.06

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	28	12	1116	104	65	153	1206	27	133	8	126	53
Future Volume (vph)	28	12	1116	104	65	153	1206	27	133	8	126	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor		1.00	0.91	1.00		0.97	0.91		0.91	0.91	1.00	1.00
Frt		1.00	1.00	0.85		1.00	1.00		1.00	1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00		0.95	0.96	1.00	0.95
Satd. Flow (prot)		1770	5085	1583		3433	5069		1610	3246	1583	1770
Flt Permitted		0.95	1.00	1.00		0.95	1.00		0.95	0.96	1.00	0.95
Satd. Flow (perm)		1770	5085	1583		3433	5069		1610	3246	1583	1770
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	13	1213	113	71	166	1311	29	145	9	137	58
RTOR Reduction (vph)	0	0	0	54	0	0	1	0	0	0	124	0
Lane Group Flow (vph)	0	43	1213	59	0	237	1339	0	72	82	13	58
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA		Split	NA	Perm	Split
Protected Phases	5	5	2		1	1	6		4	4		3
Permitted Phases				2							4	
Actuated Green, G (s)		7.5	63.1	63.1		13.6	69.2		11.1	11.1	11.1	8.2
Effective Green, g (s)		7.5	63.1	63.1		13.6	69.2		11.1	11.1	11.1	8.2
Actuated g/C Ratio		0.06	0.53	0.53		0.11	0.58		0.09	0.09	0.09	0.07
Clearance Time (s)		6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		110	2673	832		389	2923		148	300	146	120
v/s Ratio Prot		0.02	0.24			c0.07	c0.26		c0.04	0.03		c0.03
v/s Ratio Perm				0.04							0.01	
v/c Ratio		0.39	0.45	0.07		0.61	0.46		0.49	0.27	0.09	0.48
Uniform Delay, d1		54.1	17.7	14.0		50.7	14.6		51.7	50.7	49.8	53.9
Progression Factor		1.00	1.00	1.00		0.92	1.30		1.00	1.00	1.00	1.00
Incremental Delay, d2		2.3	0.6	0.2		2.3	0.1		2.5	0.5	0.3	3.0
Delay (s)		56.3	18.3	14.2		48.9	19.1		54.2	51.2	50.1	56.9
Level of Service		E	B	B		D	B		D	D	D	E
Approach Delay (s)			19.1				23.5			51.4		
Approach LOS			B				C			D		

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations	↑↑↱	
Traffic Volume (vph)	6	15
Future Volume (vph)	6	15
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	6.0	
Lane Util. Factor	0.95	
Frt	0.90	
Flt Protected	1.00	
Satd. Flow (prot)	3170	
Flt Permitted	1.00	
Satd. Flow (perm)	3170	
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	7	16
RTOR Reduction (vph)	15	0
Lane Group Flow (vph)	8	0
Turn Type	NA	
Protected Phases	3	
Permitted Phases		
Actuated Green, G (s)	8.2	
Effective Green, g (s)	8.2	
Actuated g/C Ratio	0.07	
Clearance Time (s)	6.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	216	
v/s Ratio Prot	0.00	
v/s Ratio Perm		
v/c Ratio	0.04	
Uniform Delay, d1	52.2	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	52.3	
Level of Service	D	
Approach Delay (s)	55.6	
Approach LOS	E	

Intersection Summary

Intersection: 1: I-95 SB On-Ramp & Route 54

Movement	EB	EB	WB	WB	WB	B33	B33	B33	B35	B35	B35	SB
Directions Served	T	T	L	T	T	T	T	T	T	T	T	LT
Maximum Queue (ft)	196	168	188	137	152	205	19	14	41	25	24	137
Average Queue (ft)	122	71	155	57	66	52	0	1	2	1	1	66
95th Queue (ft)	209	172	200	118	135	152	4	9	21	16	18	121
Link Distance (ft)	155	155	98	98	98	206	206	206	151	151	151	103
Upstream Blk Time (%)	9	2	42	1	2	1				0		2
Queuing Penalty (veh)	31	7	207	6	11	3				0		0
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 1: I-95 SB On-Ramp & Route 54

Movement	SB	B28
Directions Served	R	T
Maximum Queue (ft)	40	40
Average Queue (ft)	1	2
95th Queue (ft)	29	23
Link Distance (ft)	103	987
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: I-95 NB On-Ramp & Route 54

Movement	EB	EB	EB	WB	WB
Directions Served	L	T	T	T	T
Maximum Queue (ft)	175	221	115	16	70
Average Queue (ft)	106	88	37	1	16
95th Queue (ft)	177	175	81	9	46
Link Distance (ft)		179	179	146	146
Upstream Blk Time (%)	1	1	0		
Queuing Penalty (veh)	0	4	0		
Storage Bay Dist (ft)	300				
Storage Blk Time (%)	1	1			
Queuing Penalty (veh)	2	3			

Intersection: 3: Route 54 & Woodside Lane

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	89	4	46	68
Average Queue (ft)	30	0	14	33
95th Queue (ft)	67	3	34	55
Link Distance (ft)		529	891	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	225			200
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Route 54 & Providence Church Road

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	24	28
Average Queue (ft)	2	8
95th Queue (ft)	14	28
Link Distance (ft)		1008
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Route 54 & Site Driveway

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	29	26	29	33
Average Queue (ft)	3	2	12	13
95th Queue (ft)	16	14	35	38
Link Distance (ft)			408	540
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200	200		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Goddins Hill Road & Route 54

Movement	EB	WB	NB
Directions Served	R	LT	LR
Maximum Queue (ft)	7	56	96
Average Queue (ft)	0	10	40
95th Queue (ft)	5	40	73
Link Distance (ft)		1778	529
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 22: Route 54

Movement	EB	EB	B35	B33	WB	SW	B24	B25
Directions Served	T	T	T	T	T	R	T	T
Maximum Queue (ft)	131	30	11	10	2	267	291	16
Average Queue (ft)	19	1	1	0	0	150	44	1
95th Queue (ft)	90	16	12	6	2	272	270	17
Link Distance (ft)	151	151	206	98	179	166	852	358
Upstream Blk Time (%)	0					17	0	
Queuing Penalty (veh)	1					0	0	
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 31: Route 54

Movement	EB	EB	EB	WB	WB	WB
Directions Served	T	T	R	T	T	T
Maximum Queue (ft)	305	267	306	45	49	57
Average Queue (ft)	71	35	123	18	15	4
95th Queue (ft)	229	158	254	41	45	28
Link Distance (ft)	610	610	610	155	155	155
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 32: I-95 SB On-Ramp

Movement	SE
Directions Served	L
Maximum Queue (ft)	228
Average Queue (ft)	128
95th Queue (ft)	247
Link Distance (ft)	215
Upstream Blk Time (%)	3
Queuing Penalty (veh)	10
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	T	T	T	R	UL	L	T	T	TR	L	LT
Maximum Queue (ft)	94	301	294	344	250	157	146	222	227	236	144	190
Average Queue (ft)	33	176	135	183	50	77	78	107	116	129	14	91
95th Queue (ft)	73	281	269	295	164	135	124	180	191	205	79	156
Link Distance (ft)		632	632	632				610	610	610		352
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				150	375	375				250	
Storage Blk Time (%)		3		14								0
Queuing Penalty (veh)		1		15								0

Intersection: 34: Hill Carter Parkway & England Street/Route 54

Movement	NB	NB	SB	SB	SB
Directions Served	T	R	L	T	TR
Maximum Queue (ft)	49	110	116	33	34
Average Queue (ft)	2	41	46	6	13
95th Queue (ft)	30	86	96	24	36
Link Distance (ft)	352			429	429
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		250	200		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 302

APPENDIX F: VDOT TURN LANE WARRANT ANALYSIS

VIRGINIA DEPARTMENT OF TRANSPORTATION
COMMERCIAL ENTRANCE DESIGN

General Project Information *Enter a value for all input cells*

Project Name: Hickory Grove - Rte 54 at Realigned Providence Church Rd - Build 2027 AM

County: Hanover County

Reviewer: GS Date: 5/17/2023

Adjacent Roadway Data

Adjacent Road Name: Rte 54 Number of Lanes: 2

Posted Speed: 55 mph * Classification: Minor Rural Arterial

AADT: N/A VPD D: N/A k: N/A *enter N/A if factors are unknown*

*Use Design Speed if available

Trip Generation

Generated Trips: 836 VPD % Trucks in Entrance: 2 %

Right In: 0 VPH Advancing Volume: 235 VPH

Left In: 7 VPH 3% Opposing Volume: 350 VPH**

**Also used as Approaching Volume for Rt. Turns

Entrance Criteria Entrance is a Standard Commercial Entrance

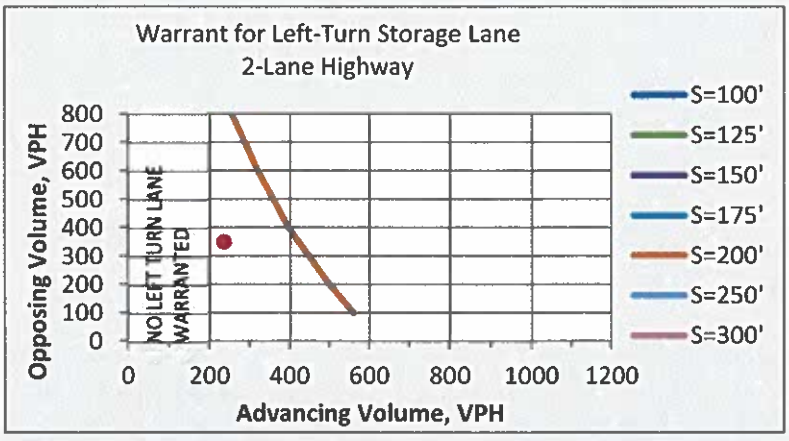
Entrance Type: Full Access Entrance

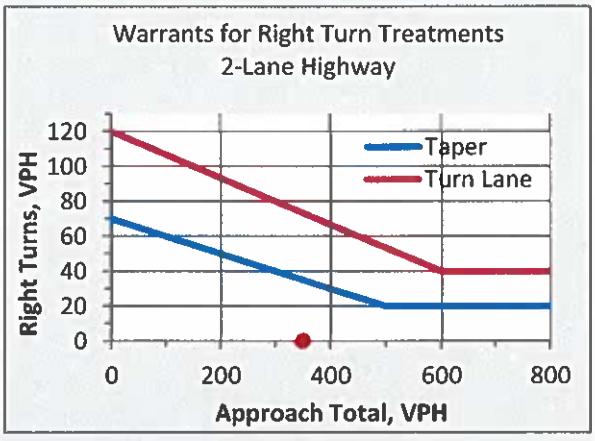
Minimum Spacing: **555** ft SDL: **610** ft SDR: **610** ft

Left Turn Lane Warrant: Advancing Volume ≥ 423 VPH **No Left Turn Lane**

Right Turn Taper Warrant: Rt. Turn Volume ≥ 35 VPH **No Taper Required**

Right Turn Lane Warrant: Rt. Turn Volume ≥ 73 VPH **No Right Turn Lane Required**





1. The minimum warranted left turn lane length shall be 100' for speeds ≤ 40 mph and 200' for speeds ≥ 45 mph
2. Left turn lanes with high truck volume shall be increased as calculated and tabulated below:

Left Turn Storage Length Increase Required for Truck Ratio (in Feet)						
S = 100'	S = 125'	S = 150'	S = 175'	S = 200'	S = 250'	S = 300'
0	0	0	0	0	0	0

VIRGINIA DEPARTMENT OF TRANSPORTATION
COMMERCIAL ENTRANCE DESIGN

General Project Information *Enter a value for all input cells*

Project Name: Hickory Grove - Rte 54 at Realigned Providence Church Rd - Build 2027 PM

County: Hanover County

Reviewer: GS Date: 5/17/2023

Adjacent Roadway Data

Adjacent Road Name: Rte 54 Number of Lanes: 2

Posted Speed: 55 mph * Classification: Minor Rural Arterial

AADT: N/A VPD D: N/A k: N/A *enter N/A if factors are unknown*

*Use Design Speed if available

Trip Generation

Generated Trips: 836 VPD % Trucks in Entrance: 2 %

Right In: 2 VPH Advancing Volume: 395 VPH

Left In: 12 VPH 3% Opposing Volume: 277 VPH**

**Also used as Approaching Volume for Rt. Turns

Entrance Criteria Entrance is a Standard Commercial Entrance

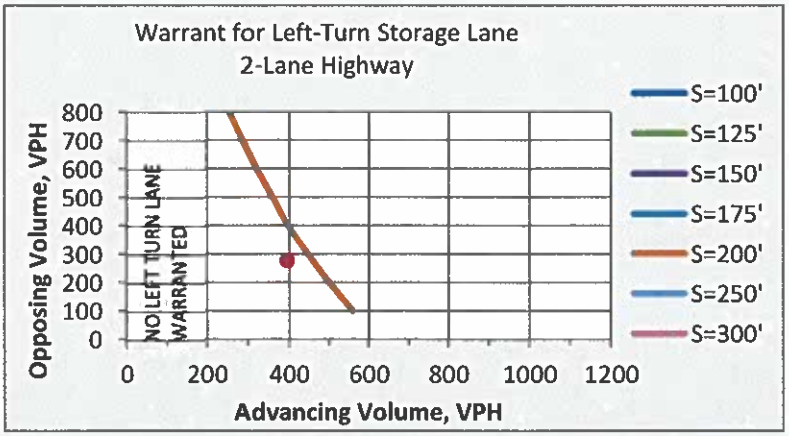
Entrance Type: Unsignalized Intersection/Crossover

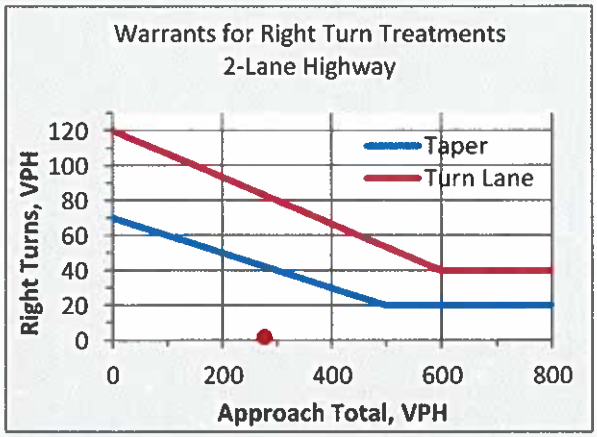
Minimum Spacing: **1050** ft SDL: **610** ft SDR: **610** ft

Left Turn Lane Warrant: Advancing Volume ≥ 460 VPH **No Left Turn Lane**

Right Turn Taper Warrant: Rt. Turn Volume ≥ 42 VPH **No Taper Required**

Right Turn Lane Warrant: Rt. Turn Volume ≥ 83 VPH **No Right Turn Lane Required**





1. The minimum warranted left turn lane length shall be 100' for speeds ≤ 40 mph and 200' for speeds ≥ 45 mph
2. Left turn lanes with high truck volume shall be increased as calculated and tabulated below:

Left Turn Storage Length Increase Required for Truck Ratio (in Feet)						
S = 100'	S = 125'	S = 150'	S = 175'	S = 200'	S = 250'	S = 300'
0	0	0	0	0	0	0

VIRGINIA DEPARTMENT OF TRANSPORTATION
COMMERCIAL ENTRANCE DESIGN

General Project Information *Enter a value for all input cells*

Project Name: Hickory Grove - Rte 54 at Site Driveway - Build 2027 AM

County: Hanover County

Reviewer: GS Date: 5/17/2023

Adjacent Roadway Data

Adjacent Road Name: Rte 54 Number of Lanes: 2

Posted Speed: 55 mph * Classification: Minor Rural Arterial

AADT: N/A VPD D: N/A k: N/A *enter N/A if factors are unknown*

*Use Design Speed if available

Trip Generation

Generated Trips: 836 VPD % Trucks in Entrance: 2 %

Right In: 3 VPH Advancing Volume: 229 VPH

Left In: 9 VPH 4% Opposing Volume: 334 VPH**

**Also used as Approaching Volume for Rt. Turns

Entrance Criteria Entrance is a Standard Commercial Entrance

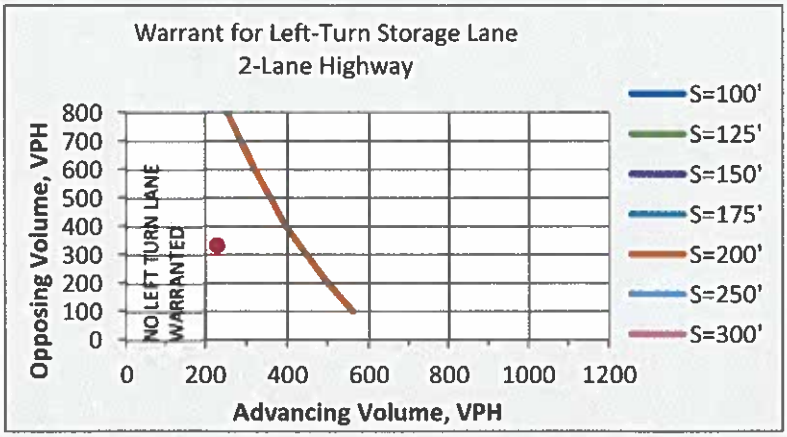
Entrance Type: Full Access Entrance

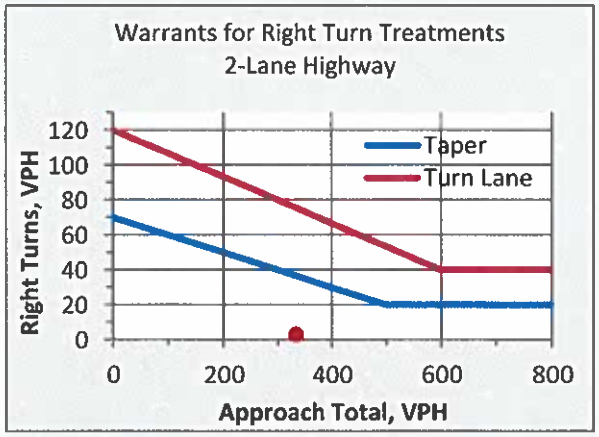
Minimum Spacing: **555** ft SDL: **610** ft SDR: **610** ft

Left Turn Lane Warrant: Advancing Volume ≥ 431 VPH **No Left Turn Lane**

Right Turn Taper Warrant: Rt. Turn Volume ≥ 37 VPH **No Taper Required**

Right Turn Lane Warrant: Rt. Turn Volume ≥ 76 VPH **No Right Turn Lane Required**





1. The minimum warranted left turn lane length shall be 100' for speeds ≤ 40 mph and 200' for speeds ≥ 45 mph
2. Left turn lanes with high truck volume shall be increased as calculated and tabulated below:

Left Turn Storage Length Increase Required for Truck Ratio (in Feet)						
S = 100'	S = 125'	S = 150'	S = 175'	S = 200'	S = 250'	S = 300'
0	0	0	0	0	0	0

VIRGINIA DEPARTMENT OF TRANSPORTATION
COMMERCIAL ENTRANCE DESIGN

General Project Information *Enter a value for all input cells*

Project Name: Hickory Grove - Rte 54 at Site Driveway - Build 2027 PM

County: Hanover County

Reviewer: GS Date: 5/17/2023

Adjacent Roadway Data

Adjacent Road Name: Rte 54 Number of Lanes: 2

Posted Speed: 55 mph * Classification: Minor Rural Arterial

AADT: N/A VPD D: N/A k: N/A *enter N/A if factors are unknown*

*Use Design Speed if available

Trip Generation

Generated Trips: 836 VPD % Trucks in Entrance: 2 %

Right In: 6 VPH Advancing Volume: 384 VPH

Left In: 20 VPH 5% Opposing Volume: 270 VPH**

**Also used as Approaching Volume for Rt. Turns

Entrance Criteria Entrance is a Standard Commercial Entrance

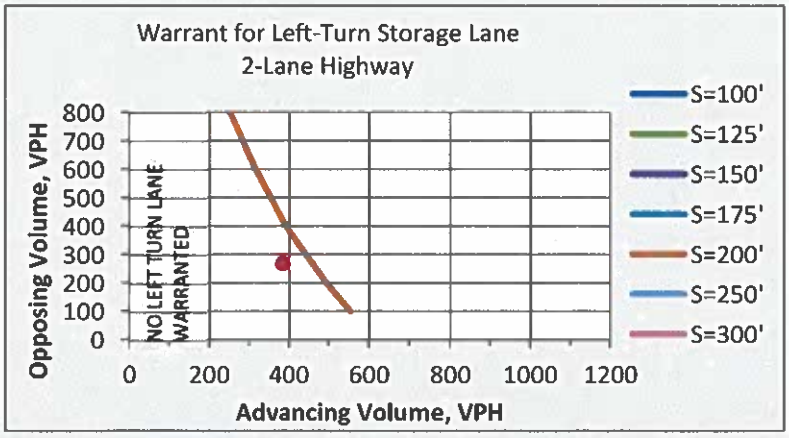
Entrance Type: Full Access Entrance

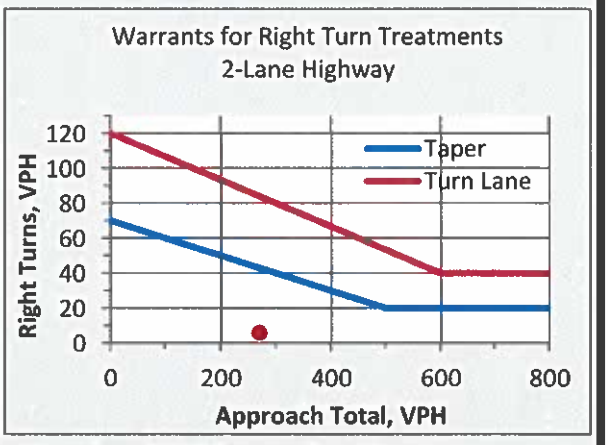
Minimum Spacing: **555** ft SDL: **610** ft SDR: **610** ft

Left Turn Lane Warrant: Advancing Volume ≥ 458 VPH **No Left Turn Lane**

Right Turn Taper Warrant: Rt. Turn Volume ≥ 43 VPH **No Taper Required**

Right Turn Lane Warrant: Rt. Turn Volume ≥ 84 VPH **No Right Turn Lane Required**





1. The minimum warranted left turn lane length shall be 100' for speeds ≤ 40 mph and 200' for speeds ≥ 45 mph
2. Left turn lanes with high truck volume shall be increased as calculated and tabulated below:

Left Turn Storage Length Increase Required for Truck Ratio (in Feet)						
S = 100'	S = 125'	S = 150'	S = 175'	S = 200'	S = 250'	S = 300'
0	0	0	0	0	0	0

Version 2.1 -Based on July 2012 Appendix F - VDOT Road Design Manual 8-1-12

Historical Commission Recommendation

Hanover County Historical Commission

Post Office Box 470, Hanover, Virginia 23069

MEMORANDUM

TO: Gretchen Biernot, Current Planning Manager

FROM: Claudia Cheely, Senior Planner II CDC

SUBJECT: Historical Commission Recommendation
REZ2023-00003, Hickory Hill II, L.L.C.

DATE: March 9, 2023

At the Historical Commission meeting on March 7, 2023, the Commission reviewed the request to rezone from A-1, Agricultural District, to RS(c), Single-Family Residential District with conditions, for the purpose of developing 155 single family age restricted homes (76 carriage homes and 79 detached homes). The Commission reviewed this request because the property is adjacent and near two surveyed cemeteries and the Civil War feature, Jackson's March from Beaverdam to Mechanicsville, passes by this property along Providence Church Road. Both cemeteries are far enough away that they will not be impacted by the development of the subject property and there are no physical features in this area related to the Civil War feature. The Commission determined this request will not impact the historic resources.

/cdc

Agency Review Comments

Cheely, Claudia

From: Watkins, Tyrone O.
Sent: Thursday, July 6, 2023 9:48 AM
To: Cheely, Claudia
Cc: Biernot, Gretchen W.
Subject: RE: Hickory Hill II LLC REZ2023-00003 (1).pdf

Hi Claudia,

Dan is correct, this comment may be addressed during the construction plan design with site grading. My comment is driven by the existing topography of the land. If RS zoning requires public utility service then Bay will need to design the development accordingly. Coordinating the grading with the lot layout can lead to an acceptable design for the RS zoning. It is also possible that area outside of the natural or developed sanitary sewer drainage shed could be utilized as part of their amenities or open space that do not require sewer service, again this is all part of Bay's overall design in developing a cohesive construction plan. In general, I am confident that they can design an approvable construction plan layout that can be served by gravity public sanitary sewer. If you need additional clarification on this comment to send to the Board let me know. Thanks

Tyrone O. Watkins, P.E.
Engineering Manager
Hanover County Public Utilities
7516 County Complex Road
Hanover, Virginia 23069
Office: (804) 365-6812
Email: towatkins@hanovercounty.gov

From: Cheely, Claudia <cdcheely@hanovercounty.gov>
Sent: Wednesday, July 5, 2023 5:30 PM
To: Watkins, Tyrone O. <TOWatkins@hanovercounty.gov>
Cc: Biernot, Gretchen W. <gwbiernot@hanovercounty.gov>
Subject: Hickory Hill II LLC REZ2023-00003 (1).pdf

Tyrone,

Attached are your comments on this request. At Planning Commission, Comment #2 became a talking point, which the applicant's engineer, Dan Caskie, indicated was issue would that would be addressed with the grading of the property. Can you respond to this or try to talk with Dan about it and then provide me some sort of written comment that indicates whether you're confident or not that they can do this? It's fairly important since the RS District requires all lots to be served by public utilities. We will be sending Board reports next week and would like to include your response.

Thank you!
Claudia

ZONING STAFF MEETING

Department of Public Utilities Comments

CASE NAME: Hickory Hills II, LLC

PROJECT #: REZ2023-00003

PLEASE MARK THE APPROPRIATE BOX BELOW:

No Comment: ☐

Comments Below: ☑

DATE: 2/15/2023 REVIEWED BY: T. Watkins

The Hanover County Department of Public Utilities (DPU) has reviewed the above referenced rezoning request and has the following comments:

1. All water and sanitary sewer extensions will need to be completed in accordance with DPU requirements.
2. Portions of the property may not be able to be served by the public sewer system.
3. Water and sanitary sewer extensions and/or easements will need to be extended to serve nearby properties.
4. After the zoning process, but prior to initiating site design or construction drawings, the developer should meet with the Fire Marshal's Office to discuss the proposed layout and determine the location of the fire hydrants. DPU should be consulted either jointly or following the meeting with the Fire Marshal's Office to discuss the layout of the waterlines that will supply the hydrants.
5. Two independent waterline connections will be required with approval of more than 50 lots within this development.
6. Depending on the proposed phasing of the development a Utility Master Plan must be approved for the entire development prior to DPU recommending approval of any construction plans.

Please feel free to contact me if you have any questions or concerns.

HANOVER COUNTY
Office of the Fire Marshal

Office (804) 365-6195
Fax (804) 537-5488

13326 Hanover Courthouse Road
P.O. Box 470 Hanover, VA 23069

fmo@hanovercounty.gov
Dispatch (804) 365-6140

PLANS REVIEW

JURISDICTION:	**Hanover**
FMO FILE #	**REZ2023-00003**
TO:	**Claudia Cheely**
FROM:	**Doug Atkins, Plan Examiner** **Office 804-365-4858** **Email: jdatkins@hanovercounty.gov**
SUBJECT:	**Hickory Hill II LLC**
DATE:	**2-15-2023**
TYPE OF REVIEW	**REZ 1st Review**
COMMENTS:	1. The applicant should be aware of the requirements of the Hanover Fire Marshal's office. The requirements of the Hanover Fire Marshal's Office can be found online at https://www.hanovercounty.gov/1082/Plans-Review 2. Apparatus access roads with hydrants or buildings greater than 30 feet in height shall be 26 feet wide. The measurement is from the edge of the pavement to the edge of the pavement. Hanover Fire Marshal's Office will not accept the measurement from the curb and gutter as part of the apparatus access road. 3. All turnarounds shall meet the requirements of the 2018 Virginia Statewide Fire Prevention Code Appendix D.
TrackIt:	**2-15-2023**

REZONING

Department of Public Works Comments

CASE NAME: Hickory Hill II LLC

TRACKIT PROJECT #: REZ2023-00003

PLEASE MARK THE APPROPRIATE BOX BELOW:

No Comment ☒

Comments Below ☑

DATE: 02/14/2023 REVIEWED BY: MJD

No comments on rezoning.

1) Additional development subject to runoff reduction and channel protection.
2) Any wetlands and RPA areas must meet regulations. WQIA required in support of these studies.

2/22/2023 10:33:08 AM (Planning Code Compliance - Jason Hazelwood)
Elevations need to show brick and stone.

2/16/2023 2:19:01 PM (Health Department - David N Wachsmann)
If property is to use private water and sewer disposal developer must contact and AOSE/PE to evaluate for the onsite sewage disposal and private water supply. If public water and sewer no comment from Onsite EHS Health.

2/16/2023 3:56:19 PM (Planning Development Review - Donald Stewart)

- Pedestrian path is shown on the Northern side of Providence Road, but it also needs to be shown on the Southern side of the road within the 25' buffer.
- While I understand other communities may have had the parking for boats/RVs/camper etc. I don't think it is appropriate for this neighborhood.
- If it stays, I believe it should be relocated to away from Providence and not immediately within the side yard of two residences. Also I think it should be screened with a fence and slats along with a single row of evergreens.
- **Also - the plans show a fence going all the way around that storage lot... where's the fence detail? How tall will it be? Will it be locked? Does the Fire Department need a knox box for access in case of an emergency? What about lighting? If it's locked, how will residents have access to their vehicles?

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
RICHMOND DISTRICT
2430 Pine Forest Drive
COLONIAL HEIGHTS, VA 23834
www.VDOT.Virginia.gov

Stephen C. Brich, P.E.
COMMISSIONER

March 22, 2023

County of Hanover
Department of Planning and Zoning
P.O. Box 470
Hanover, VA 23069
Attn.: Claudia Cheely

Re: REZ2023-00003 Hickory Grove

Ms. Cheely,

The Department of Transportation, Ashland Residency Transportation and Land Use Section has reviewed the above referenced plans as submitted by the Bay Companies, dated January 19, 2023 and the Traffic Impact Analysis as submitted by Gorove Slade, dated January 2023, and offer the following comments:

1. All public roads shall be designed and constructed in accordance with the SSAR Regulations.
2. The realignment of existing Providence Church Road and associated right of way will be subject to the policies and procedures set forth in VDOT's Guide to Highway System Changes.
3. What is the purpose of the proposed street segment and cul-de-sac within the existing Providence Church Road right of way? It does not appear to be necessary for property access.
4. Acceptable turn-arounds meeting the SSAR regulations and Appendix B(1) of the VDOT Road Design Manual shall be provided on any future road plans.
5. The proposed realignment of Providence Church Road must meet standards appropriate for the current classification, speed, and traffic volume.
6. All connections to existing public roads must provide intersection sight distance.
7. The proposed road section of 30-ft. measured from the face of curb to face of curb is wider than the minimum for streets providing parking on both sides. Please consider road designs that feature passive traffic calming elements (widths no larger than minimums and utilization of parking lanes with bump-outs).

If further information is desired, please contact me at 804-585-3585.
A VDOT Land Use Permit will be required prior to any work within the right of way. The owner/developer must contact the Ashland Residency Transportation and Land Use Section at 804-585-3592 for information pertaining to this process.

Sincerely,

Adam J. Moore P.E.
Area Land Use Engineer
Ashland Residency

Community Meeting Notes

Community Meeting Notes:
REZ2023-00003, Hickory Hill II, L.L.C.

A community meeting on REZ2023-00003 was held by the applicant on April 19, 2023, at 6:00 p.m. at Bass Pro Shops. The project is located on the north line of East Patrick Henry Road at its intersection with Providence Church Road. The applicant is proposing to rezone from A-1, Agricultural District, to RS(c), Single-Family Residential District with conditions. The proposed zoning amendment would allow the development of 155 age-restricted single-family homes (76 carriage homes and 79 detached homes) for a gross density of 2.95 dwelling units per acre.

Approximately 25 people attended the meeting. Representatives of the Board of Supervisors who were present included Rob Monolo and Faye Prichard. Edmonia Iverson and Larry Leadbetter were present to represent the Planning Commission. Staff included Todd Kilduff, Jo Ann Hunter, Gretchen Biernot, and Claudia Cheely.

The applicant introduced the proposed development with basic information describing the features and plans. The floor was then opened for citizens to ask questions and express their concerns. The following is a summary of those questions and concerns along with the applicant's responses (in sub-bullets):

- Traffic concerns – Questions were raised about the traffic impact analysis that was submitted with this request because it was based on 2019 data, and VDOT has indicated that traffic counts on Route 54 have increased 10-19% since then. It was noted there is a "blind curve" near Burleigh Drive, where those residents already have a hard time getting out. Not having a right turn lane at the first entrance to the project west of this curve might be an issue especially with all the additional trucks using Route 54. What are the turn lane lengths? It was asked if other proposed development in the area was included in the traffic study (East Ashland/Ironhorse property in particular) and if traffic numbers go up in the area, would they provide improvements to address the additional traffic.
    - The applicant said the traffic consultant would be contacted about the traffic counts and revise the TIA and recommended roadway improvements, if necessary; will consider the "blind curve" near Burleigh Drive and the distance to the first right turn taper at the first entrance to the west of these locations.
    - A right turn taper is provided at each entrance that typically is about two car lengths long, and left turn lanes will typically include a length for five cars.
    - The traffic counts projected for Providence Church Road would not warrant a traffic signal at Route 54.
    - Background growth in the TIA accounts for the known proposed development.
    - Traffic improvements are determined during the rezoning based on the trips of the proposed development at the time it is built.

- Features of the Development – There were questions about the type of homes planned, their square footage, yard size, home visibility from Route 54, the detention pond, the size of the pavilion, the buffers, use of well water for sprinklers in the green spaces, high density, use of emergency access to Providence, the siding material to be used in the homes, preservation of trees in buffers, and when the project would be built out. Also, there was a request for more breaks between long rows of homes for additional pedestrian connections.
    - Half of the homes will be detached single family and the other half townhomes, with all being between 1,600 and 2,400 square feet in size and starting in price at over $400K.

- Would be mostly one-story homes or set up for first floor living with master bedrooms on the first floor and at the choice of the buyer, may have a bedroom and bath upstairs for visitors.
- Backyards would be approximately 20' – 50' deep depending on type of lot and unit.
- Both sides of the interior streets will have sidewalks
- Wide HOA owned buffers with vegetation are provided along Route 54 to partially screen views to homes.
- The detention pond is for stormwater runoff, and it will include a pier for fishing and walking trails around it. The pond will be stocked with fish and will be aerated. They will have two deep wells for water sprinklers, but one will be set up to keep the water in the pond filled with water during periods of no rain. Residential wells are typically shallow wells, and this should be a deep bored well, so will not draw from the same water source as the shallow wells.
- The size of the pavilion was not provided, but the applicant felt the location for meetings of the HOA would not be highly attended (usually around 20% of residents) in his experience.
- The emergency access to Providence cannot be widened enough to accommodate a road connection, but it could accommodate a pedestrian connection, which would be up to Providence as to whether that would be allowed.
- The siding on the homes would be high quality/thick vinyl. Normally have used hardie board, but there has been an issue with peeling on recent hardie board.
- The proposed density is 2.95 dwelling units/acre, which is within the range for Suburban General in the Comprehensive Plan, which allows up to 3.0 units/acre. The proposed density is not too high because this property is adjacent to a major thoroughfare road.
- The 100'-125' buffers shown on the plan will be landscaped and maintained by the HOA; where Providence Church Road is being vacated, that area would be divided between Providence and this development, and this development will work with Providence on what to do with this area and on any pedestrian connections.
- The applicant noted the breaks on long rows of housing for additional pedestrian connections would be considered.
- The applicant proposes connections with Providence so residents from both communities can use each other's trails and sidewalks but only with an agreement with Providence HOA.

- GPS issue for Providence Church Road – It was requested that the County do something about GPS directing truck traffic incorrectly to Providence Church Road (instances with 18-wheelers coming all the way to its dead end and having to turn around on residents' properties or even having to back up the length of the road because the truck was too big to turn around)
  - The County will look into this issue and see if the Sheriff can resolve it.

- Comprehensive plan - The comprehensive plan for this site shows Planned Business; will there be a comp plan amendment prior to the rezoning being considered?
  - This property has been through two previous zoning requests that were in accordance with the Comprehensive Plan but were denied because of the office and retail uses. This tells the applicant that the citizens in this area only want residential, so that is what is being proposed. In addition, the proposed land use for the area as shown on the Envision Hanover maps is residential.

This project is tentatively scheduled for the June Planning Commission meeting. Should you have any questions regarding this meeting, please contact the staff.

Citizen Correspondence

Cheely, Claudia

From: Joe Chambers <joechambers43@yahoo.com>
Sent: Thursday, June 15, 2023 11:06 PM
To: Maloney, David P.; Cheely, Claudia; Iverson, Edmonia P.; Thomas Agnello
Cc: Goldstein Mitchell; Keith Manion; John Denler; June Sealy; Heather Pike Agnello; Todd Rogers; Kristin Parrish; Biernot, Gretchen W.; Monolo, J. Robert
Subject: Re: Comments for Public Hearing Case: REZ2023-00003 Hickory Grove

Yes, I agree.

On Thursday, June 15, 2023 at 04:09:57 PM EDT, Thomas Agnello <ptagnello@gmail.com> wrote:

Good afternoon,

The HOA has received several concerns/questions about the Hickory Hill Rezoning case. A summary of these concerns/questions regarding Hickory Hill Rezoning generally fall into three categories:
1. Concerns about the buffering between Hickory Grove and Providence not being adequate.
2. Concerns about pedestrian connections.
3. Questions about density and traffic mitigation.

Several of our members will be at the PH this evening, but I cannot attend due to predetermined travel plans.

On behalf of the HOA, I request a meeting between representatives of Providence with County Staff and the Developer similar to what we did last summer for this case to discuss concerns and questions before this case goes to the Board for Action. I am hopeful we can work together cooperatively to try to address PHOA member concerns.

Sincerely,

Paul Agnello

PHOA President for 2023
(804) 317-6141

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APR 20 2023
HANOVER COUNTY
PLANNING OFFICE

COMMENTS ON JANUARY 2023 HICKORY GROVE TIA
HICKORY HILL II LLC, REZ2023-00003

These brief comments summarize traffic concerns raised at the April 19, 2023 community meeting.

Existing Conditions. The Traffic Impact Analysis (TIA) improperly uses stale and inadequate 2019 traffic counts and data to assess traffic impacts. Attached is an Excel spreadsheet which supports this conclusion.[1] The data is stale because it was collected on May 29, 2019 almost four years ago. The data is inadequate because it fails to consider VDOT annual reports from 2019 to 2021 and major 10.9% to 19.5% traffic growth in two years on Route 54 East and Goddins Hill Road, as well as the limited traffic data collected in May 2019.

2019 is not representative of existing conditions. A new TIA is required and must be prepared.

Trip Generation. The application at page 13 contains a form for compliance with VDOT and county TIA requirements. The form correctly lists the two codes (251 – senior adult single-family housing, 252 – senior adult multi-family housing) applicable to this rezoning and claims that the daily trip generation (vehicles per day) and AM and PM hour trip generation (vehicles per hour) were determined in compliance with the 11th Edition of the ITE Trip Generation Manual. However, the respective page numbers listed (403, 414) are largely cover pages for 20 pages of data and studies for weekday, peak hours, and other periods for code 251 (pages 405-413) and code 252 (pages 415-425).

I have reviewed the 11th Edition of the ITE Trip Generation Manual twice and cannot determine how the trip generation numbers in the application and the TIA (page 14) were derived. In my opinion, there is a lack of transparency. The application should not be processed until work papers and supporting documents are provided to resolve this issue.

APRIL RNJ

Bob Nelson, Ashland District, [redacted] 20, 2023

---

[1] The TIA reference to the VDOT 2019 jurisdictional report has been corrected in the attached Excel spreadsheet to page 7. Page 9 is nonetheless relevant because it confirms that May 2019 traffic counts were used in determining the "existing traffic volumes" in the January 2023 TIA. See also, TIA, Appendix B, pp. 35-43 – Peggy Malone & Associates May 29, 2019 Four Hour Traffic Counts.

VDOT REPORTED ANNUAL AVERAGE DAILY TRAFFIC (AADT) AND ANNUAL AVERAGE WEEKDAY TRAFFIC (AAWDT)

	ROUTE 54 EAST - ASHLAND		ROUTE 54 EAST - HANOVER		GODDINS HILL RD.	
YEAR	**AADT**	**AAWDT**	**AADT**	**AAWDT**	**AADT**	**AAWDT**
Jan. 2023 TIA, p. 7	6,000		4,300		820	
2019	6,000	6,400	4,300	4,300	820	830
2020	6,100	6,500	4,400	4,300	860	840
2021	6,700	7,100	5,000	5,000	980	960
% increase 2021 over 2019	11.7%	10.9%	16.3%	16.3%	19.5%	15.7%

CONCLUSIONS AND SOURCES

VDOT reported increases ranging from 10.9% to 19.5% in average daily and weekday traffic in two years on roads studied in the Jan. 2023 TIA. Almost all of the increase was in 2021. The increases must be considered major.

The traffic counts in the TIA were taken on May 29, 2019; and the data was collected only during four hours (7-9 AM and 4-6 PM). The TIA traffic count data is almost four years old. It is stale and inadequate.

Given major increases in annual average daily and weekday traffic in recent VDOT reports and the stale and inadequate 2019 data used in the Jan. 2023 TIA, 2019 is not representative of current conditions. A new TIA is required and must be prepared.

All AADT and AAWDT data is taken from the VDOT Jurisdictional Report 42 for Hanover County and the Town of Ashland. These reports are published in the following year, generally the spring. The 2022 report is not yet available.

AAWDT data is not reported in the TIA but is equal to or higher than AADT on Route 54 East of I-95, the primary road of concern.

Bob Nelson, Ashland District, 4/20/2023

Proffers

REZ2023-00003, Hickory Hill II, LLC Proffers:

The undersigned, Hickory Hill II, LLC, owner of parcels designated GPINs 7880-92-1335 (in part) and 7880-81-6802 (the "Property"), voluntarily agree for themselves, their agent, personal representatives, successors and assigns (collectively "the Property Owner") that, in the event the Property is rezoned from A-1 Agricultural District to RS Single-Family Residential District, the development and use of the Property must be subject to the following conditions:

1. Age Restriction on Residential Uses. The 150 single-family detached homes within the Property are to be occupied only by persons age 55 years and older and the occupancy of these dwellings must comply with provisions of the Virginia Fair Housing Law (found at Section 36-96.1 et seq. of the Code of Virginia (1950) as amended) and the Federal Fair Housing Act (found at Title VIII of the Civil Rights Act of 1968, as amended, 42 U.S.C. 3601-3619) related to "housing for older persons" as defined in the Virginia Fair Housing Law. A restrictive covenant must be recorded, and a homeowners' association established for the enforcement of such covenants, to limit the use and occupancy of the dwellings as specified herein.

2. Right-of-Way Dedication. The Property Owner agrees to dedicate fifty feet (50') of right-of-way measured from the centerline of East Patrick Henry Road (U.S. Route 54) to the Property and twenty-five feet (25') of right-of-way measured from the centerline of Providence Church Road where that road remains for future road widening as shown on the Hanover County Major Thoroughfare Plan, and fifty feet (50') of right-of-way for Realigned Providence Church Road. Dedication must take place when requested by the County and must be free of cost and free of encumbrances interfering with the use for road purposes.

3. Transportation Improvements. The Property Owner must be responsible for the following road improvements listed below in accordance with the timing specified herein.
    a. Prior to the issuance of the first Certificate of Occupancy on the Property, the following improvements must be completed:
        i. At Realigned Providence Church Road Entrance:
            1. Construct one eastbound left-turn lane on Route 54 with 200 feet of storage.
            2. Construct one westbound right-turn lane with 200 feet of storage.
            3. Provide separate southbound left and right-turn lanes on Realigned Providence Church Road.
        ii. At Southwest Entrance to Hickory Grove:
            1. Construct one eastbound left-turn lane on Route 54 with 200 feet of storage.
            2. Construct one westbound 100' right-turn taper.
            3. Provide separate southbound left and right-turn lanes on the Southwest Entrance of Hickory Grove.
    b. All such improvements must be designed and constructed in accordance with VDOT standards and specifications.

4. Providence Church Road. If a portion of Providence Church Road is approved for vacation or abandonment along the boundary of the Property, the Property Owner must construct a cul-de-sac prior to such vacation or abandonment to allow access from Providence Church Road on to Rt.

54, and dedicate as soon as practicable, with such cul-de-sac generally shown on the attached exhibit entitled "EXHIBIT OF POSSIBLE PROVIDENCE CHURCH ROAD CUL-DE-SAC, LOCATED IN THE BEAVERDAM DISTRICT OF HANOVER COUNTY, VIRGINIA", dated September 9, 2020, and prepared by the Bay Companies (the "Providence Church Road Plan"). It is intended that the cul-de-sac will partially be located on and serve as access to and from the portion of Providence Church Road that adjoins the property with an existing GPIN of 7880-72-6758, all as shown on such Providence Church Road Plan. The cul-de-sac design will be shown on the construction plans for the adjacent section of the subdivision and bonded as a subdivision improvement.

5. Enhanced Thoroughfare Buffer. The 50' road buffer along East Patrick Henry Road must be landscaped in accordance with the thoroughfare buffer standards (Section 26-264.3), which will be enhanced by increasing the required plantings by 25% for trees and 30% for shrubs. Trees must consist of a combination of deciduous and evergreen trees and plant materials must be appropriately clustered to create a more natural and organic design.

6. Recreational Amenities. The pedestrian paths and trails, pavilions, gazebo, pergola, community gardens, dog park and pickle ball courts, as shown on the Conceptual Plan, must be designed, bonded, and constructed as subdivision improvements with the first section that is developed.

7. Trailer/RV Storage Area Landscaping. The Property Owner must provide Commercial Screening to the back of the Trailer/RV Storage area, as seen from Providence Church Road, unless otherwise approved by the Hanover County Zoning Administrator that existing foliage is found to be adequate. If additional plantings are found necessary, they must consist of a combination of deciduous and evergreen trees and plant materials must be appropriately clustered to create a more natural and organic design.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

Hickory Hill II, LLC, a Virginia limited liability company

By: _____

Title: Member Manager

COMMONWEALTH OF VIRGINIA,

COUNTY OF HANOVER, to-wit:

I, Pamela G Castro, hereby certify that Michael H Campbell, [Title] Member Manager, on behalf of Hickory Hill II, LLC, has acknowledged the foregoing Proffers before me, this 20 day of June, 2023.

_____ (SEAL)

Notary Public

My Commission Expires: March 6, 2026

PAMELA G CASTRO NOTARY PUBLIC WAKE COUNTY, NC

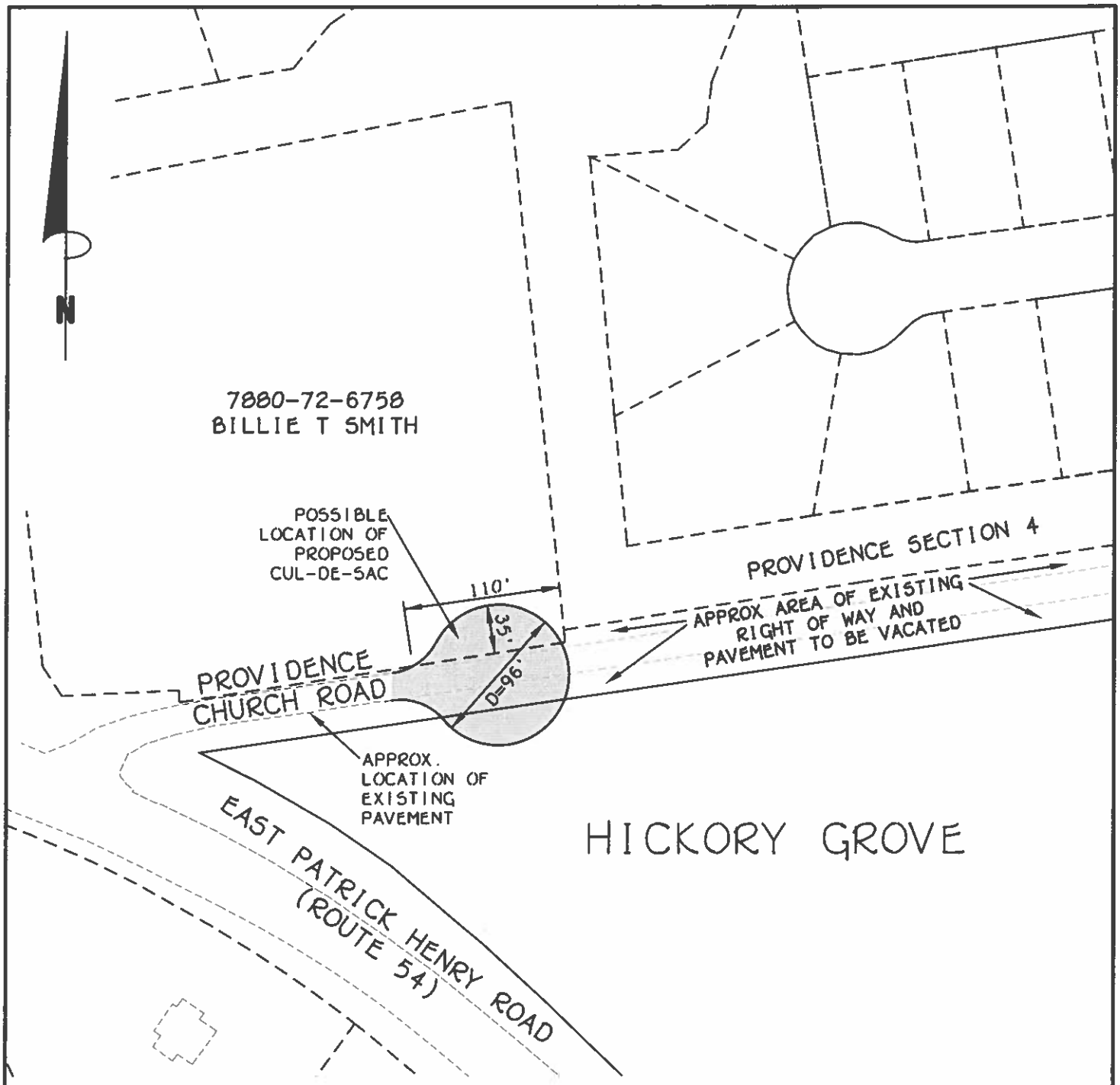
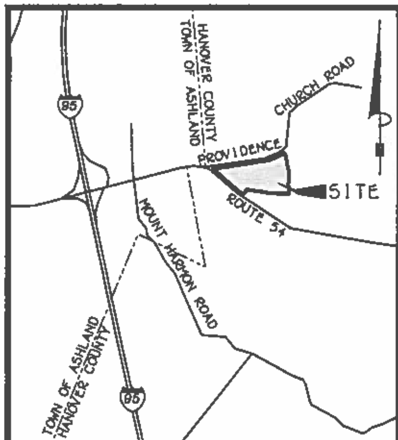


EXHIBIT OF

POSSIBLE PROVIDENCE CHURCH ROAD
CUL-DE-SAC
LOCATED IN THE BEAVERDAM DISTRICT OF
HANOVER COUNTY, VIRGINIA
SCALE: 1"= 100'
DATE: SEPTEMBER 9, 2020

THE BAY COMPANIES
bay
CIVIL ENGINEERS
8500 BELL CREEK ROAD MECHANICSVILLE, VA 23116
PH:(804)569-7060 FILED:18042_cul-de-sac exhibit

Conceptual Plan set w/Elevations



VICINITY MAP
SCALE: 1"=2000'

SITE STATISTICS

OWNERS:
HICKORY HILL II LLC
[illegible]
HENRICO COUNTY, VA [illegible]

CONTRACT PURCHASE/DEVELOPER:
[illegible]
[illegible]
[illegible]
MECHANICSVILLE, VA 23116
PH. (804) [illegible]
EMAIL: [illegible]

ENGINEER:
THE BAY COMPANIES, INC.
C/O DAN CASKIE, P.E.
8500 BELL CREEK ROAD
MECHANICSVILLE, VA 23116
PH: 804.569.7080
EMAIL: [illegible]@thebaycompanies.com

EXISTING ZONING:
A-1

PROPOSED ZONING:
RS

SITE AREA:
TOTAL GROSS AREA = 52.25 ACRES
TOTAL AREA WITHIN RPA = 0 ACRES
TOTAL AREA WITHIN STEEP SLOPES = 0.21 ACRES
AREA W/IN R/W = 10.01 ACRES
TOTAL AREA W/IN LOTS = 22.85 ACRES
STREET FRONTAGE = 8,488 LF
TOTAL PROPOSED UNITS = 150 UNITS
TOTAL DETACHED UNITS = 150 UNITS

DENSITY
GROSS DENSITY = (150/52.25)=2.87 UN/AC
DENSITY NET ACREAGE (52.25-0.21)=52.04 ACRES
NET DENSITY (150/52.04)=2.88 UN/AC

OPEN SPACE
TOTAL OPEN SPACE PROVIDED = 19.99 ACRES
TOTAL RPA = 0 ACRES
TOTAL STEEP SLOPES = 0.21 ACRES
TOTAL ACREAGE IN NARROW STRIPS = 3.04 ACRES
TOTAL SWM AREA = 1.80 ACRES
NET ACREAGE (OPEN SPACE) = (52.25-0.21)=52.04 ACRES
TOTAL ACREAGE IN BUFFERS = 4.60 ACRES
1/2 OF OPEN SPACE IN BUFFER = 2.30 ACRES
OPEN SPACE REQUIRED (52.04*20%)=10.41 ACRES
QUALIFIED OPEN SPACE PROVIDED (19.99-3.04-2.30-1.80)=12.85 ACRES

BUILDING USE:
SINGLE FAMILY RESIDENTIAL

ADDRESS:
10035 PROVIDENCE CHURCH ROAD,
ASHLAND, VA 23005

GPINs:
7880-52-1335 (IN PART),
7880-61-[illegible]

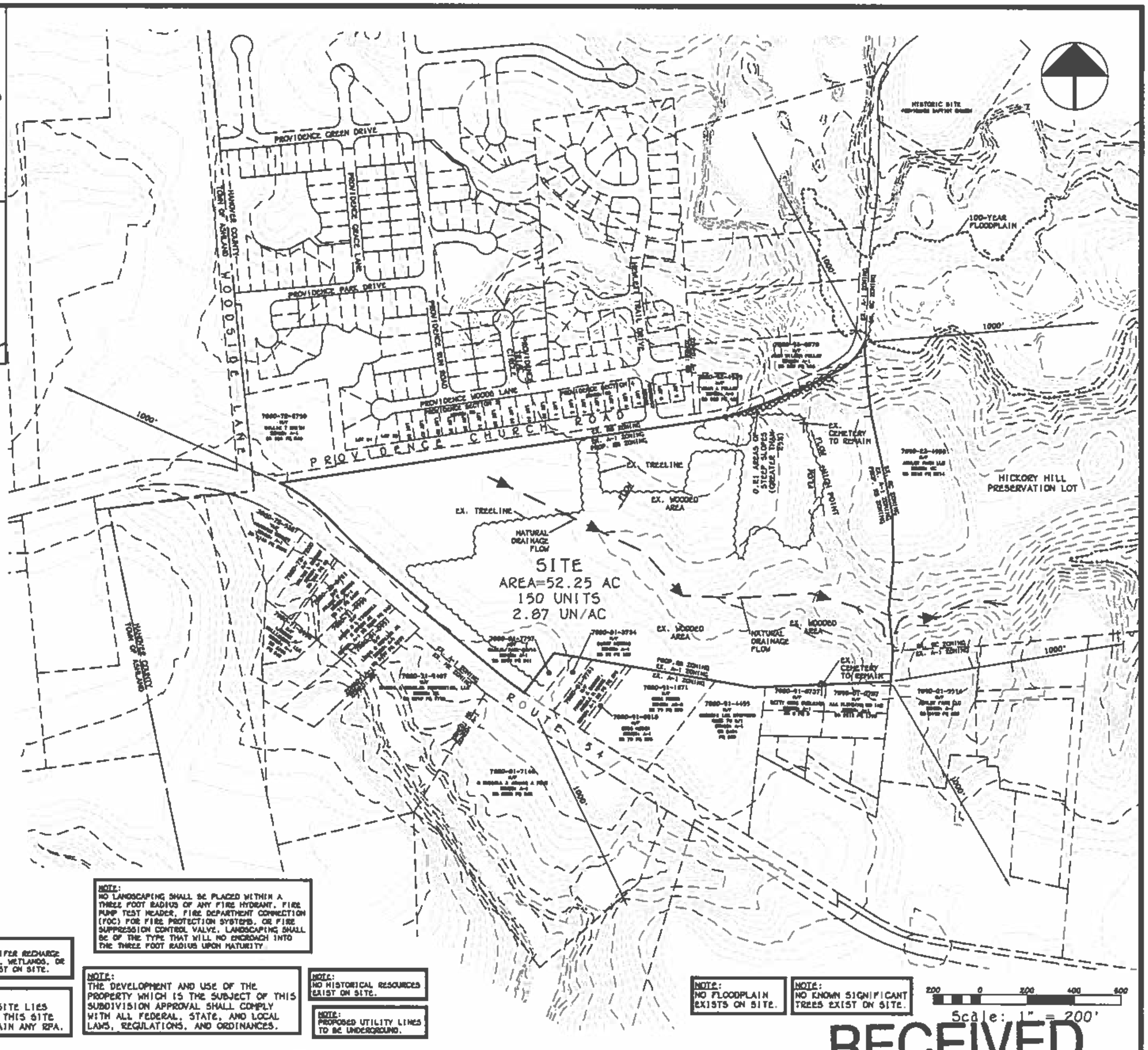
SOURCE OF WATER:
COUNTY SYSTEM (PUBLIC)
350 GAL/DAY PER UNIT

METHOD OF SEWAGE DISPOSAL:
COUNTY SYSTEM (PUBLIC)
350 GAL/DAY PER UNIT

TRAFFIC ZONE:
1726

ROADS:
PUBLIC

AVERAGE BUILDING SEPARATION:
10 FEET



NOTE:
NO LANDSCAPING SHALL BE PLACED WITHIN A THREE FOOT RADIUS OF ANY FIRE HYDRANT, FIRE PUMP TEST HEADER, FIRE DEPARTMENT CONNECTION (FDC) FOR FIRE PROTECTION SYSTEMS, OR FIRE SUPPRESSION CONTROL VALVE. LANDSCAPING SHALL BE OF THE TYPE THAT WILL NO ENCROACH INTO THE THREE FOOT RADIUS UPON MATURITY.

NOTE:
NO KNOWN AQUIFER RECHARGE AREAS, PONDS, WETLANDS, OR STREAMS EXIST ON SITE.

NOTE:
PART OF THIS SITE LIES WITHIN A RMA. THIS SITE DOES NOT CONTAIN ANY RPA.

NOTE:
THE DEVELOPMENT AND USE OF THE PROPERTY WHICH IS THE SUBJECT OF THIS SUBDIVISION APPROVAL SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.

NOTE:
NO HISTORICAL RESOURCES EXIST ON SITE.

NOTE:
PROPOSED UTILITY LINES TO BE UNDERGROUND.

NOTE:
NO FLOODPLAIN EXISTS ON SITE.

NOTE:
NO KNOWN SIGNIFICANT TREES EXIST ON SITE.

RECEIVED

JUN 30 2023

FILED: 18042_area map
DATE: January 19, 2023
REVISED: May 17, 2023
REVISED: June 20, 2023
REVISED:

THE BAY COMPANIES
bay
CIVIL ENGINEERS

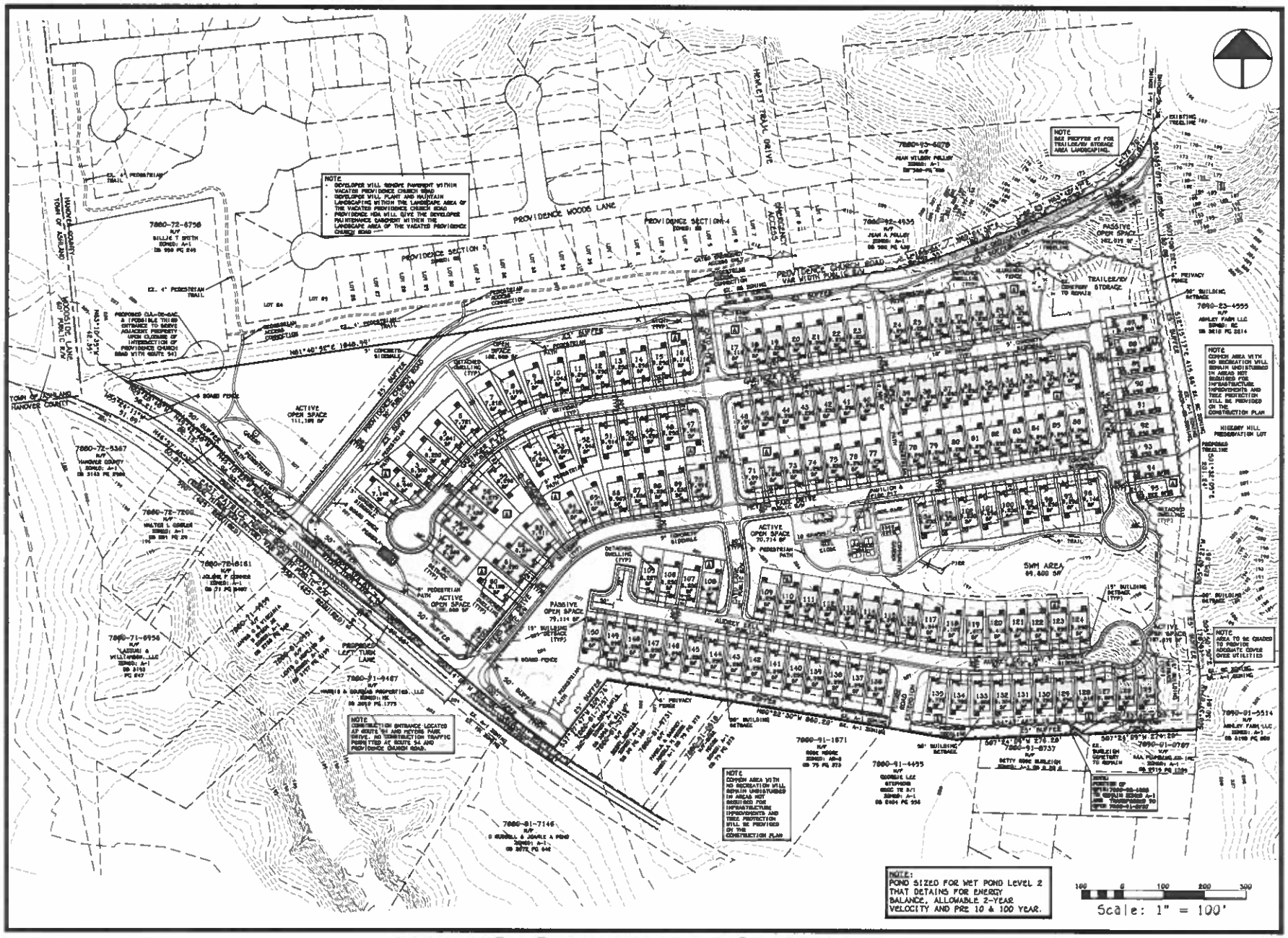
8500 BELL CREEK ROAD
MECHANICSVILLE, VA 23116
(804) 569-7080
FAX (804) 569-7081

PROJECT:
Hickory Grove
Preliminary Plan
Beaverdam District
Hanover County, Virginia

SHEET:
Area Map

SHEET NO: C1

JOB NO. 18042



FILED: 18042_zoning_Concept

DATE: January 19, 2023

REVISED: May 17, 2023

REVISED: June 20, 2023

REVISED:

THE BAY COMPANIES bay CIVIL ENGINEERS

6600 BELL CREEK ROAD
MECHANICSVILLE, VA 23116
(804) 569-7063
FAX: (804) 569-7061

PROJECT:

Hickory Grove

Preliminary Plan

Beaverdam District
Hanover County, Virginia

SHEET: Concept Plan

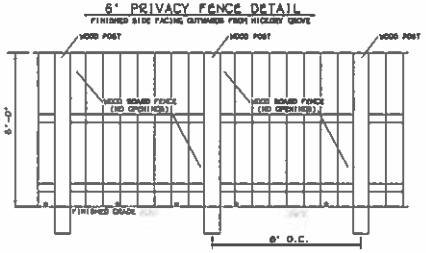
SHEET NO: C2

JOB NO. 18042

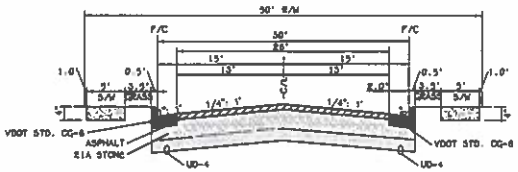
BLACK ALUMINUM FENCE

6' PRIVACY FENCE DETAIL

FINISHED SIDE FACING OUTWARDS FROM HICKORY GROVE

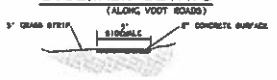


TYPICAL ROAD SECTION



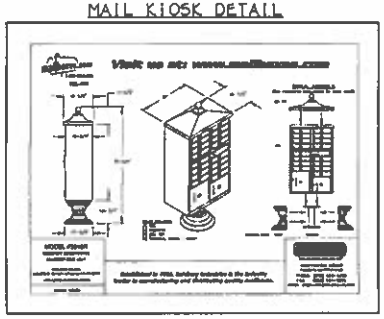
SIDEWALK DETAIL

(ALONG VDOT ROADS)

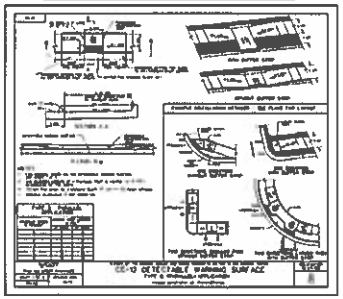


PEDESTRIAN TRAIL DETAIL

MAIL KIOSK DETAIL



CG-12 CURB RAMP DETAIL



QUALIFIED OPEN SPACE

LEGEND

QUALIFIED OPEN SPACE

SITE AREA:

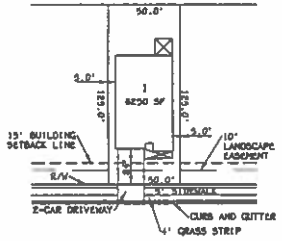
TOTAL GROSS AREA = 92.23 ACRES
TOTAL AREA WITHIN RPA = 0 ACRES
TOTAL AREA WITHIN STEEP SLOPES = 0.31 ACRES
TOTAL OPEN SPACE PROVIDED = 19.99 ACRES
TOTAL ACREAGE IN HARDEN STRIPS = 3.04 ACRES
TOTAL SWM AREA = 1.99 ACRES
NET ACREAGE (OPEN SPACE) = (92.23-0.31)=92.04 ACRES
TOTAL ACREAGE IN BUFFERS = 4.60 ACRES
1/2 OF OPEN SPACE IN BUFFER = 2.30 ACRES
OPEN SPACE REQUIRED (92.04x20%)=18.41 ACRES
QUALIFIED OPEN SPACE PROVIDED (19.99-3.04-2.30-1.60)=12.85 ACRES

150 0 150 300 450

Scale: 1" = 150'

TYPICAL UNIT LAYOUT

DETACHED SINGLE FAMILY UNIT



FILED: 18042_zoning_Concept

DATE: January 19, 2023

REVISED: May 17, 2023

REVISED: June 20, 2023

REVISED:

THE BAY COMPANIES bay CIVIL ENGINEERS

8800 BELL CREEK ROAD
MECHANICSVILLE, VA 23116
(804) 569-7080
FAX (804) 569-7081

PROJECT:

Hickory Grove

Preliminary Plan

Beaverdam District
Hanover County, Virginia

SHEET:

Site Detail

SHEET NO:

C3

JOB NO. 18042

Residential Elevations

1. Elevations shown are a representative some of the style of single-family homes to be built as part of this project. Minor variations to these elevations may be changed with the approval of the Director of Planning.

2. When the Building Permits are submitted they shall include an 8.5'x11' elevation of the proposed house that highlights at least three (3) design elements shown on the attached elevations. No more than three (3) adjacent houses shall be constructed with the same elevation and the same materials for the purposes of this proffer. A variation in the color or type of one or both siding materials shall be construed to be constructed using different materials.

3. Building Materials Selection:
   - Siding Materials: Brick, Hardi-Plank, Vinyl Siding, Stone (natural & cultured), Pre-Cast Concrete
   - Roof Materials: Standard Asphalt Shingles, Dimensional Asphalt Shingles, Cedar Shake Shingles, Standing Seam Metal (painted) Standing Seam Metal (unpainted)
   - Trim: Wood (painted), Vinyl, Aluminum, Composite, Pre-Cast Concrete
   - Windows: Glass (observed), Glass (specialty), Glass (black), Aluminum or Vinyl Frames, Aluminum or Vinyl Trim
   - Doors: Metal (painted), Wood (Stained or painted), Vinyl, Composite

The Charlotte

Design Element(s):
1. Craftsman Columns

The Meredith

Design Element(s):
1. Off-set reverse gable

The Wilton

Design Element(s):
1. Partial brick front
2. A-frame dormer

The Canter

Design Element(s):
1. Oversized reverse gable
2. Partial glass front door

The Allison

Design Element(s):
1. Brick front porch
2. Reverse gable

The Belmont

Design Element(s):
1. Oversized double reverse gable

The Alder

Design Element(s):
1. Garage door windows

The Newport

Design Element(s):
1. Vinyl water table
2. Shaker siding

The James

Design Element(s):
1. Craftsman Trim
2. Stone foundations

The Colt

Design Element(s):
1. Reverse Gables
2. Craftsman Style Columns
3. Vertical Siding

The Carriage

Design Element(s):
1. Metal Watertables
2. Shaker siding

FILED: 18042_zoning_Concept
DATE: January 19, 2023
REVISED: May 17, 2023
REVISED: June 20, 2023
REVISED:

THE BAY COMPANIES
bay
CIVIL ENGINEERS
9429 BELL CREEK ROAD
MECHANICSVILLE, VA 23116
(804) 569-7080
FAX: (804) 569-7041

PROJECT:
Hickory Grove
Preliminary Plan
Beaverdam District
Hanover County, Virginia

SHEET:
Elevations

SHEET NO:
C4

JOB NO. 18042

LANDSCAPE LEGEND

LARGE DECIDUOUS TREE
(2" MIN. CALIPER)
MIX OF MAPLES, OAKS, LINDEN, ELM

EVERGREEN TREE
(5' MIN. HEIGHT)
MIX OF NELLIE STEVENS HOLLY, AMERICAN HOLLY, EASTERN RED CEDAR, CRYPTOMERIA, LOBLOLLY PINE

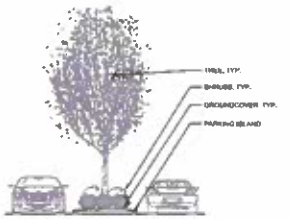
SHRUB
(2' MIN. HEIGHT)
MIX OF WAX MYRTLE, VIBURNUM

NO MORE THAN 20% OF THE SAME SPECIES PER 100 LF

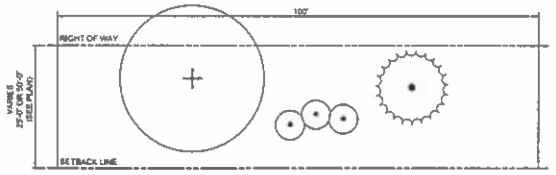
STREET TREES

STREET TREES REQUIRED:
RM ZONING = 1 TREE PER 50 LF
11,095 LF / 50 = 222 STREET TREES

STREET TREES PROVIDED
222 TREES



1 TYP. PARKING LOT LANDSCAPE
NTS



THOROUGHFARE BUFFERS

REQUIRED BUFFER PLANTINGS (REQUIRED BUFFER PLANTING PER SECTION 26-564.3) *

TOTAL LENGTH ALONG PROVIDENCE CHURCH ROAD 2,117 LF
- 1 LARGE DECIDUOUS OR EVERGREEN TREE PER 50 LF = 42.34 (43) TREES REQUIRED
  = 43 TREES PROVIDED
- 1 SHRUB PER 30 LF = 78.66 (71) SHRUBS REQUIRED.
  = 71 SHRUBS PROVIDED

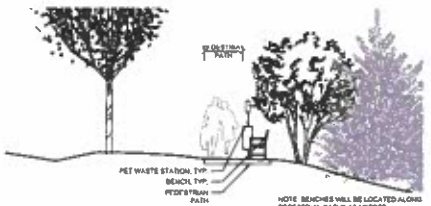
TOTAL LENGTH ALONG EAST PATRICK HENRY ROAD 1,162 LF
PER PROVISO "THE 50' ROAD BUFFER ALONG EAST PATRICK HENRY ROAD MUST BE LANDSCAPED IN ACCORDANCE WITH THE THOROUGHFARE BUFFER STANDARDS (SECTION 26-564.3), WHICH WILL BE ENHANCED BY INCREASING THE REQUIRED PLANTINGS BY 25% FOR TREES AND 30% FOR SHRUBS. TREES MUST CONSIST OF A COMBINATION OF DECIDUOUS AND EVERGREEN TREES AND PLANTINGS MUST BE APPROPRIATELY CLUSTERED TO CREATE A MORE NATURAL AND ORGANIC DESIGN."
- 1 LARGE DECIDUOUS OR EVERGREEN TREE PER 50 LF + 25% = 29.05 (30) TREES REQUIRED.
  = 30 TREES PROVIDED
- 1 SHRUB PER 30 LF + 30% = 50.35 (51) SHRUBS REQUIRED.
  = 51 SHRUBS PROVIDED

TOTAL LENGTH ALONG NW BUFFER, 823 LF
- 1 LARGE DECIDUOUS OR EVERGREEN TREE PER 50 LF = 12.46 (13) TREES REQUIRED.
  = 13 TREES PROVIDED
- 1 SHRUB PER 30 LF = 26.76 (27) SHRUBS REQUIRED.
  = 27 SHRUBS PROVIDED

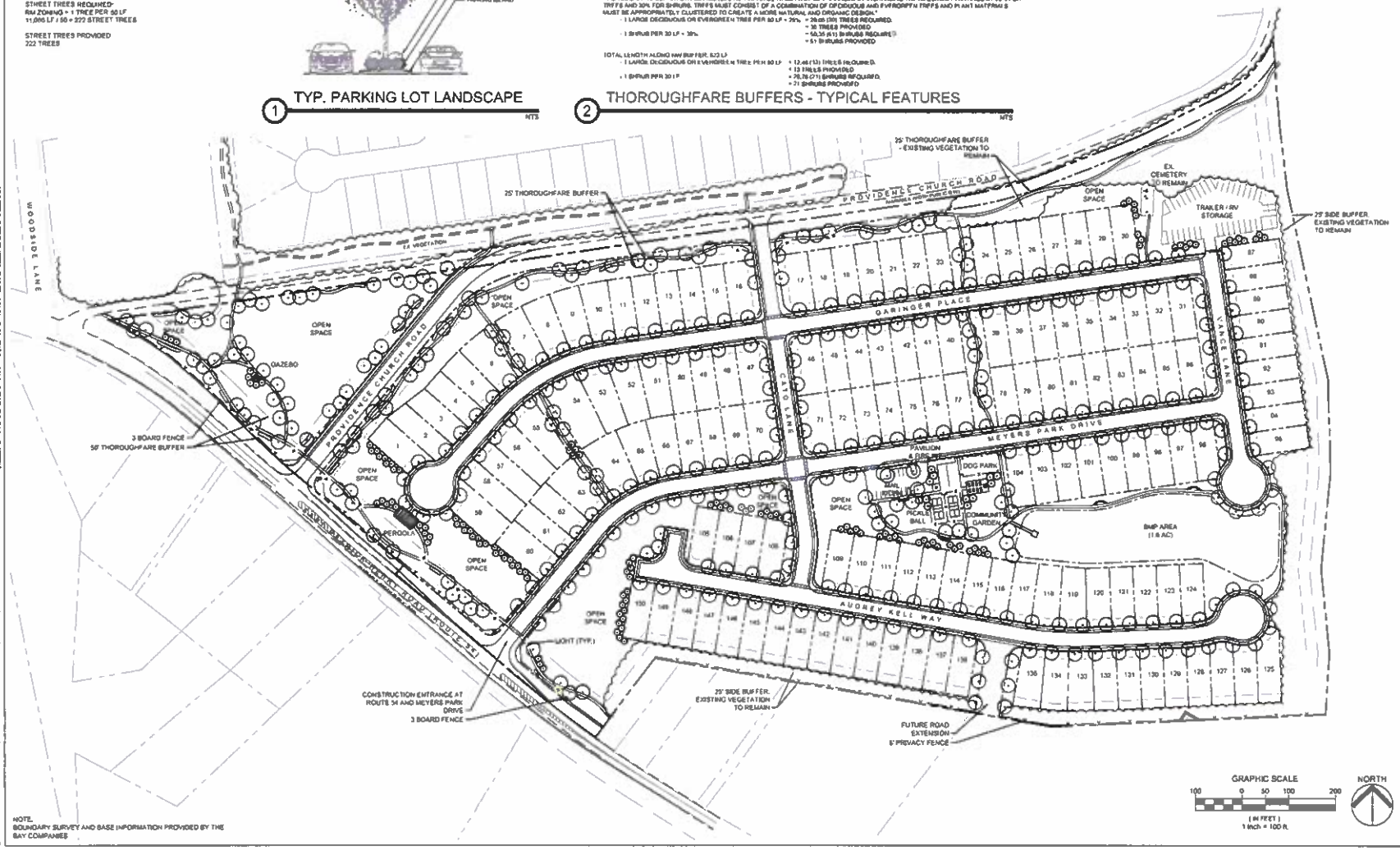
NOTE: BENCHES WILL BE LOCATED ALONG PEDESTRIAN PATHS AS NEEDED.

*REQUIREMENTS MAY BE MET BY EXISTING VEGETATION.

2 THOROUGHFARE BUFFERS - TYPICAL FEATURES
NTS



3 PEDESTRIAN PATH - TYP. CROSS SECTION
NTS



NOTE:
BOUNDARY SURVEY AND BASE INFORMATION PROVIDED BY THE BAY COMPANIES

vhb

COMMONWEALTH OF VIRGINIA
06/21/2023
RANDY J. BILTZ
Lic. No.
PROFESSIONAL ENGINEER

HICKORY GROVE

HANOVER COUNTY

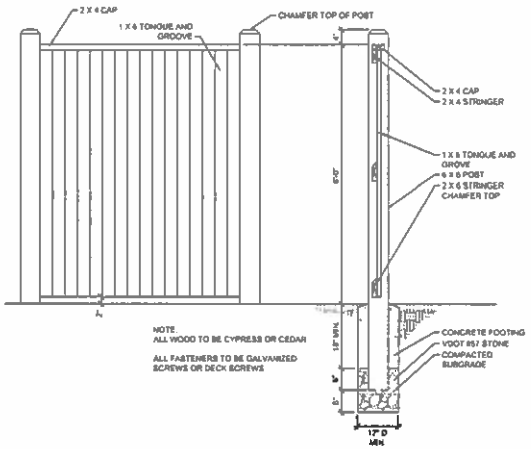
REVISIONS:

No.	Description	Date
1.	LAYOUT REVISION	01/20/2023
2.	LAYOUT REVISION	06/21/2023

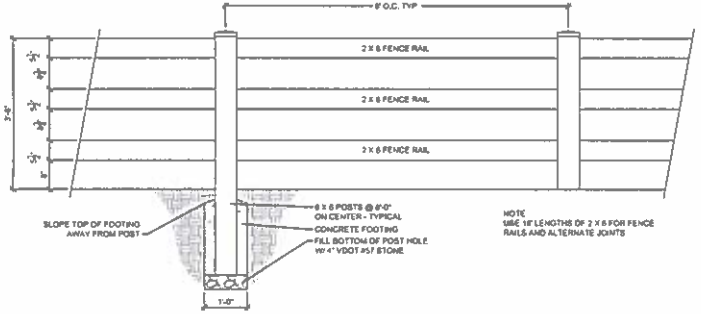
TENTATIVE LANDSCAPE PLAN

Designed By:	RJB
Drawn By:	MJW
Checked By:	RJB
QA/QC By:	DCG
Date:	JULY 27, 2022
Project Number	M19054
Sheet Number	L1.00

1 PRE-FABRICATED GAZEBO



2 6' PRIVACY FENCE

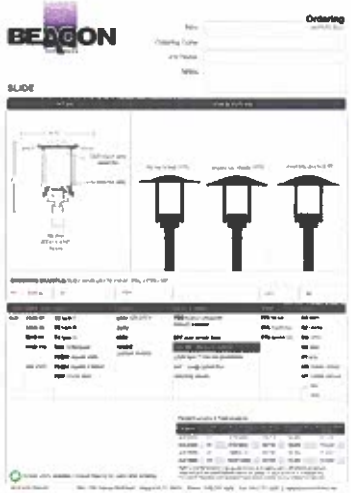


3 3 BOARD FENCE

LARGE ENTRANCE SIGN

SMALL ENTRANCE SIGN

4 CONCEPTUAL ENTRANCE FEATURES



5 TYPICAL ORNAMENTAL LAMP

6 TYPICAL PARKING LOT LIGHT

7 TYPICAL RECREATIONAL AMENITIES

vhb

06/21/2023
RANDY J. BILTZ

HICKORY GROVE

HANOVER COUNTY

REVISIONS:

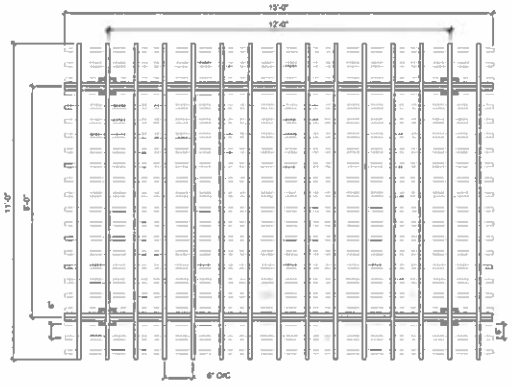
No.	Description	Date
1	LAYOUT REVISION	01/20/2023
2	LAYOUT REVISION	06/21/2023

TYPICAL DETAILS AND COMMON AREA ELEMENTS

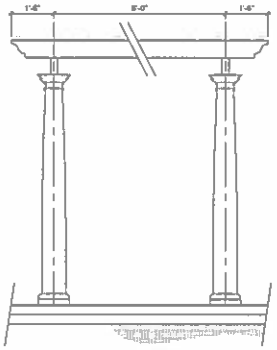
Designed By:	RJB
Drawn By:	MJW
Checked By:	RJB
QA/QC By:	DCG
Date:	JULY 27, 2022
Project Number:	M19054
Sheet Number:	L1.01

NOTES:

1. PRE-FAB PERGOLA:
   - ELITEWOOD, COLOR: WHITE
   - FOUR SEASONS BUILDING PRODUCTS
2. PROVIDED AND INSTALLED BY
   - OUTDOOR KITCHEN CREATIONS
     CONTACT PAUL PIETROWSKI (804-749-3177)



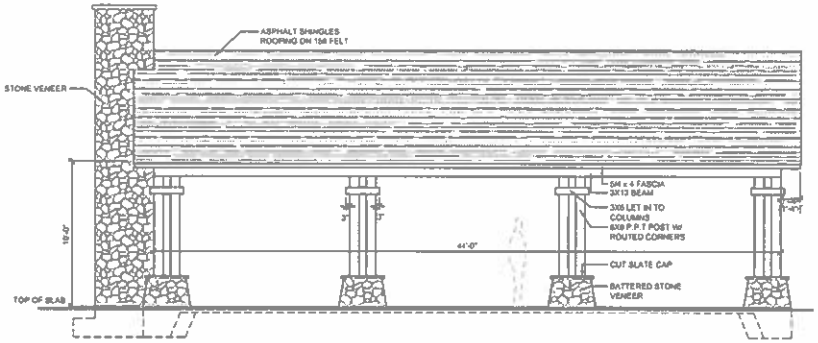
PLAN



FRONT / REAR ELEVATION

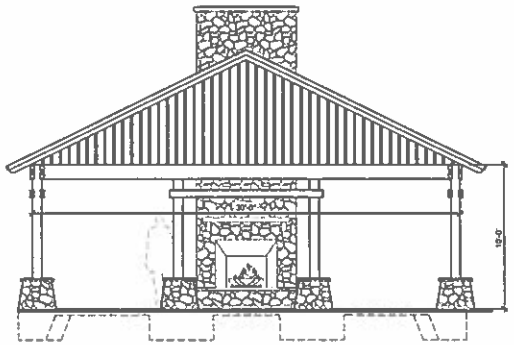
1 PERGOLA

1/2" = 1'-0"



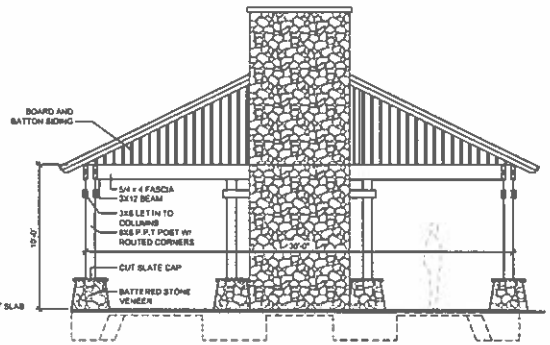
2 PAVILION SIDE ELEVATION

1/4" = 1'-0"



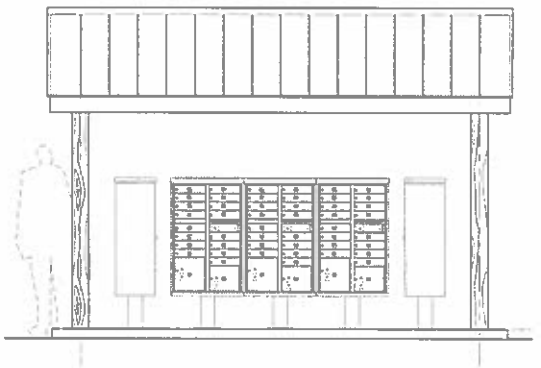
3 PAVILION FRONT ELEVATION

1/4" = 1'-0"



4 PAVILION BACK ELEVATION

1/4" = 1'-0"



5 MAIL KIOSK FRONT ELEVATION

1/2" = 1'-0"

vhb

06/21/2023
RANDY J. BILTZ

HICKORY GROVE

HANOVER COUNTY

REVISIONS:

1.	LAYOUT REVISION	01/20/2023
2.	LAYOUT REVISION	06/21/2023

No.	Description	Date

TYPICAL DETAILS AND COMMON AREA ELEMENTS

Designed By:	RJB
Drawn By:	MJW
Checked By:	RJB
QA/QC By:	DCG
Date:	JULY 27, 2022
Project Number:	M19054
Sheet Number:	L1.02

SIGN DETAIL

LARGE ENTRANCE SIGN

SMALL ENTRANCE SIGN

Preliminary Site Plan
HICKORY GROVE · SITE LAYOUT

ASHLAND · HANOVER COUNTY · VIRGINIA
DEVELOPER: RCI JUNE 21, 2023

100' 50' 0 200'
GRAPHIC SCALE: 1" = 100'

NORTH

Ordinance

ORDINANCE REZ2023-00003

OWNER OF RECORD: HICKORY HILL II, LLC

WHEREAS the Planning Commission of Hanover County has held an advertised public hearing and forwarded this case to the Board of Supervisors with a recommendation of **APPROVAL** of the adoption of the following amendment to the Zoning Ordinance and Zoning District Map of Hanover County; and

WHEREAS the Board of Supervisors has held public hearings on the July 26, 2023, and advertised in the Mechanicsville Local once a week for two successive weeks as required by Virginia Code Section 15.2-2204; and

WHEREAS the Board of Supervisors has determined that the public necessity, convenience, general welfare, and good zoning practices require this amendment.

NOW, THEREFORE, BE IT ORDAINED by the Board of Supervisors of Hanover County that the Zoning Ordinance and the Zoning District Map of this County are amended (with conditions) by the rezoning of the property described as GPINs 7880-92-1335(part) and 7880-81-6802, consisting of approximately 52.25 acres, and located on the north line of East Patrick Henry Road (State Route 54) at its intersection with Providence Church Road (State Route 662), from A-1, Agricultural District, to RS(c), Single-Family Residential District with conditions, subject to the following conditions, which were proffered by the Applicant on June 30, 2023, and accepted by the Board:

1. Age Restriction on Residential Uses. The 150 single-family detached homes within the Property are to be occupied only by persons age 55 years and older and the occupancy of these dwellings must comply with provisions of the Virginia Fair Housing Law (found at Section 36-96.1 et seq. of the Code of Virginia (1950) as amended) and the Federal Fair Housing Act (found at Title VIII of the Civil Rights Act of 1968, as amended, 42 U.S.C. 3601-3619) related to "housing for older persons" as defined in the Virginia Fair Housing Law. A restrictive covenant must be recorded, and a homeowners' association established for the enforcement of such covenants, to limit the use and occupancy of the dwellings as specified herein.

2. Right-of-Way Dedication. The Property Owner agrees to dedicate fifty feet (50') of right-of-way measured from the centerline of East Patrick Henry Road (U.S. Route 54) to the Property and twenty-five feet (25') of right-of-way measured from the centerline of Providence Church Road where that road remains for future road widening as shown on the Hanover County Major Thoroughfare Plan, and fifty feet (50') of right-of-way for Realigned Providence Church Road. Dedication must take place when requested by the County and must be free of cost and free of encumbrances interfering with the use for road purposes.

3. Transportation Improvements. The Property Owner must be responsible for the following road improvements listed below in accordance with the timing specified herein.
    a. Prior to the issuance of the first Certificate of Occupancy on the Property, the following improvements must be completed:
        i. At Realigned Providence Church Road Entrance:

1. Construct one eastbound left-turn lane on Route 54 with 200 feet of storage.
2. Construct one westbound right-turn lane with 200 feet of storage.
3. Provide separate southbound left and right-turn lanes on Realigned Providence Church Road.

ii. At Southwest Entrance to Hickory Grove:

1. Construct one eastbound left-turn lane on Route 54 with 200 feet of storage.
2. Construct one westbound 100' right-turn taper.
3. Provide separate southbound left and right-turn lanes on the Southwest Entrance of Hickory Grove.

b. All such improvements must be designed and constructed in accordance with VDOT standards and specifications.

4. Providence Church Road. If a portion of Providence Church Road is approved for vacation or abandonment along the boundary of the Property, the Property Owner must construct a cul-de-sac prior to such vacation or abandonment to allow access from Providence Church Road on to Rt. 54, and dedicate as soon as practicable, with such cul-de-sac generally shown on the attached exhibit entitled "EXHIBIT OF POSSIBLE PROVIDENCE CHURCH ROAD CUL-DE-SAC, LOCATED IN THE BEAVERDAM DISTRICT OF HANOVER COUNTY, VIRGINIA", dated September 9, 2020, and prepared by the Bay Companies (the "Providence Church Road Plan"). It is intended that the cul-de-sac will partially be located on and serve as access to and from the portion of Providence Church Road that adjoins the property with an existing GPIN of 7880-72-6758, all as shown on such Providence Church Road Plan. The cul-de-sac design will be shown on the construction plans for the adjacent section of the subdivision and bonded as a subdivision improvement.

5. Enhanced Thoroughfare Buffer. The 50' road buffer along East Patrick Henry Road must be landscaped in accordance with the thoroughfare buffer standards (Section 26-264.3), which will be enhanced by increasing the required plantings by 25% for trees and 30% for shrubs. Trees must consist of a combination of deciduous and evergreen trees and plant materials must be appropriately clustered to create a more natural and organic design.

6. Recreational Amenities. The pedestrian paths and trails, pavilions, gazebo, pergola, community gardens, dog park and pickle ball courts, as shown on the Conceptual Plan, must be designed, bonded, and constructed as subdivision improvements with the first section that is developed.

7. Trailer/RV Storage Area Landscaping. The Property Owner must provide Commercial Screening to the back of the Trailer/RV Storage area, as seen from Providence Church Road, unless otherwise approved by the Hanover County Zoning Administrator that existing foliage is found to be adequate. If additional plantings are found necessary, they must consist of a combination of deciduous and evergreen trees and plant materials must be appropriately clustered to create a more natural and organic design.

BE IT FURTHER ORDAINED that this Ordinance is effective on the date of adoption and the Planning Director is hereby directed to designate the boundaries of the foregoing area as rezoned, subject to conditions, on the Zoning District Map of Hanover County.

On motion of _____, seconded by _____, the members of the Board of Supervisors voted to approve Ordinance REZ2023-00003, as follows:

Vote:

Angela Kelly-Wiecek
Sean M. Davis
Susan P. Dibble
W. Canova Peterson, IV
Faye O. Prichard
J. Robert Monolo
F. Michael Herzberg

Public Hearings:

Planning Commission: June 15, 2023

Board of Supervisors: July 26, 2023

Adopted: July 26, 2023

This is to certify that the above is a true copy of REZ2023-00003, adopted by the Hanover County Board of Supervisors on July 26, 2023.

Dated:_____

_____
John A. Budesky
County Administrator/Clerk Hanover County
Board of Supervisors