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October 21, 2019

Brea Hopkins
Development Planner
Montgomery County
755 Roanoke Street, Suite 2A
Christiansburg, VA 24073

RE: Westhill Rezoning
Balzer Job #24190010.00

Dear Brea,

The following letter hereby addresses the comments provided to our office on October 3, 2019 for the above project. Please find our responses to your comments below.

PLANNING COMMENTS:

1. Proffer Statement:
 - When will amenities be provided? Please specify?
 - **The clubhouse area will be constructed during the first phase of the subdivision. This has been specified in the narrative and in the proffer statement.**
2. Is the clubhouse area the only area with amenities? It would be helpful to identify other potential amenity areas and the types of amenities (i.e. playgrounds, ball courts, etc.).
 - **Two paved walking trails have been noted and shown on the plans. One that leads to Prices Fork Elementary School and one that connects to the trail system proposed along Prices Fork Road. In the location near the school connection trail, a playground area is proposed. There are also several areas of recreation space shown on the open space plan that would allow for amenities such as playgrounds or gazebos.**
3. Accommodations for school buses, such as a shelter and adequate turning radius, should be considered.
 - **All turning radii proposed will meet requirements for large vehicles such as school buses and fire trucks. Two bus stop/shelter locations area shown on the masterplan.**
4. Please provide/show connected open space and the square footage to confirm conformity with the ordinance. (refer to PUD-Res Open Space Criteria) Small areas of disconnected open space may not be beneficial for active recreation areas.
 - **The large clubhouse, pool and amenity area is approximately 54,615 s.f. which more than meets the minimum ordinance requirements. A playground and trail are proposed adjacent to Road D that will connect to the School property and is approximately 31,713 s.f. in area. Several other areas are planned as open space and while not contiguous,**



do provide recreational opportunities to the various townhome pods they are adjacent to. We see this as a very viable and attractive recreational opportunity to the higher density areas of the development.

5. Staff received a phone call from a representative of Virginia Vaughan. Concerns regarding stormwater and runoff onto her remaining parcel were noted. The representative also stated a road connection built to VDOT standards was part of the purchase contract. This is not shown on plan, please include if desired.
 - **This has been addressed with the representative of Virginia Vaughan. Access has now been provided.**

6. Prices Fork Village Plan Comments
 - The higher density of 3-story units (6 unit blocks) located on Prices Fork Road are not compatible with the Prices Fork Village Plan. Staff recognizes the desire to not place the higher density toward Montgomery Farms; however, this is an issue and in direct conflict with the village plan. The comp plan speaks to no more than 4 units per block, 2-stories above road, and higher density situated away from Prices Fork Road to preserve views and rural character. Lower elevation is addressed; however, verification is needed to ensure there are no more than 2-stories above grade. Please address- renderings would be helpful. (PFV 1.1.2 Compatibility is Fundamental. PFV 1.4.3 Encourage Smaller Lots to Locate at Rear of Sites. PFV 1.5.1 Preserve Views. PFV 1.6.1 Preserve the Open Fields Adjacent to Prices Fork Road.)
 - **The 3-story townhome sections along Prices Fork Road have been removed. They were replaced by the 2-story Villa product which are grouped no more than 4 units per block. A much larger buffer between these units and Prices Fork Road is now proposed as well. This buffer varies between 102' and 160' wide. Additional landscape buffering in this area has been included in the application as well. All these revisions will help soften the Prices Fork Road frontage and preserve the long-range southern views.**

 - The VITL plan for Prices Fork refers to the need for bike and pedestrian accommodations in this area. Please show/describe how this will be met.

Sidewalks are proposed through the development. A trail connection is proposed to connect the subdivision to the future trail on the south side of Prices Fork Road. A trail connection is proposed from the subdivision across Virginia Tech property and connecting to Prices Fork Elementary School. A trail easement is shown through the single family residential area for allowance of a future trail system.

 - During recent village meetings, discussions have taken place regarding prioritizing a multi-use trail on the South-side of Prices Fork Road to connect with the Town of Blacksburg. Please consider this in your application. Additional details can be provided upon request.

Right of way and road design for the Prices Fork Road improvements has taken into consideration the VITL trail plan. A proffer has been added to further address this.

7. Please clarify maximum number of units desired (434). There is a discrepancy in the narrative vs. the traffic study.
 - **The maximum unit number has been reduced to 416 and is consistent between the narrative and the traffic study.**



8. Please label the architectural sample photos for clarity. (ie. townhome types)
 - **The photos have been labeled.**
9. According to TIA, some movements are operating at a Level of service F. Please address accordingly. VDOT nor the County will accept an intersection operating at this level of service.
 - **The TIA has been revised. The project now includes a roundabout that addresses the previous Level of Service concerns.**
10. Please note, a full site plan may be required for mass grading (page 15) to ensure all requirements/inspections for roads is completed.
 - **Noted.**

ENGINEERING COMMENTS:

1. Page 15 of the Conditional rezoning Application dated September 3, 2019, contains the following statements on page 15 concerning stormwater management: We would suggest a clarification as to whether the intent is to address both the current channel and flood protection requirements set by the Virginia Stormwater Management Program section 9VAC-870-66 and also address some of the channel adequacy requirements of ESC section 9VAC25-840-40.
 - **This section has been revised per the recommendation.**

VDOT COMMENTS:

Traffic Impact Analysis (TIA): SEE RESPONSES BELOW FROM RAMEY KEMP.

1. Overall – Anticipated Level of service F for proposed eastern access “left and through” as well as impact to Stratford View Drive “left and through” is not an adequate level of service for the proposed condition, shown in Table 3, page 21. A similar situation is shown for the proposed western access left, shown in Table 4, page 22. The TIA states that a traffic signal is not warranted for the development; however, with poor performance levels of service for the 2030 build out conditions, the recommended improvements are insufficient to mitigate the level of service at the side streets. Please propose mitigations to address the poor levels of service for the peak hours for the access entrances and Stratford View Drive. Examples of the innovative intersections to mitigate poor levels of service include continuous green-T, restricted crossing U-turn, roundabout or a median U-turn. The innovative intersections web site can be found at <http://www.virginiadot.org/innovativeintersections/>
 - **Development access plan has been modified to provide a roundabout at a single access on Prices Fork Road, with the eastern access eliminated.**
2. Signal warrant analysis – As discussed during the pre-scope meeting, please use the Preserve at Walnut Springs TIA as a reference point for the signal warrant analysis and re-do the traffic signal warrant analysis for the Westhill Rezoning since the proposed Preserve at Walnut Springs is in close proximity to the Westhill Rezoning. In a similar manner, as discussed at the pre-scope meeting, please describe the impact that this proposed development will have on the proposed intersection for Preserve at Walnut Springs.



- **While the previous TIA included an abbreviated signal warrant analysis, no analysis is needed in the revised TIA since a roundabout is now being proposed at the main access.**

3. Signal warrant analysis – Rather than an abbreviated signal warrant analysis, please provide an analysis in accordance with descriptions as stated in the Manual on Uniform Traffic Control Devices

(MUTCD) in order to warrant a traffic signal at the development. These need to include but not limited to: eight-hour vehicular warrant, four-hour vehicular warrant, crash experience, school crossing, pedestrians and so on.

Refer to comment under #2.

4. Model compared to TIA – On page 2, recommended improvements for the “intersection of Prices Fork Road and Stratford View Road/Eastern Site Access”, text states to construct a 200’ bay taper on the eastbound approach of Prices Fork Road. The Build models show 50’ storage for the eastbound right turn for the AM peak hour. Please revise the models.

- **Access has been eliminated under the modified development plan.**

5. Model - No existing and future background (No-Build) Synchro models were provided for this TIA. Please construct existing and future background (No-Build) AM and PM Synchro models for the purposes of analysis and comparison, or explain why these models are not included in the report.

- **No models were prepared in the previous TIA because the site access points did not exist under existing and future ‘no-build’ conditions. However, the revised TIA has added the access for The Preserve at Walnut Springs per discussions and will be analyzed under the future ‘no-build’ conditions. But no existing analysis will be modeled since the access points do not currently exist.**

6. In the appendix, the counts from Prices Fork Road at Prices Fork Elementary are included as part of a previous TIA (The Preserve at Walnut Springs), but not included in the models. Please describe and/or explain.

- **We included the counts from the previously prepared TIA for The Preserve at Walnut Springs because they were utilized to calculate the existing peak hour traffic volumes on Prices Fork Road at the future access points for The Preserve at Walnut Springs and Westhill Rezoning. The intersection was not included in any models because it was not included in the TIA’s study area that was developed through coordination with VDOT.**

7. There are no analyses for the existing and future background conditions as required by VDOT’s Traffic Impact Analysis Regulations. Please include in the next submission.

- **Refer to comment under #5.**

8. Table 2: Trip Generation: The TIA states to construct 145 single family homes and 289 townhouses. In the rezoning plans, it shows 144 single family homes and 284 townhouses. This has the potential to change the number of daily and peak hour trips for the development. Explain if this is the most conservative estimate for trip generation.

- **The trip generation has been revised based on the modified development plan that proposes 154 single-family homes and 262 townhomes.**



Secondary Streets Acceptance Requirements - Connectivity:

1. Taken as a whole, the proposed site layout meets VDOT Connectivity requirements. It was noted that while mass grading of the site is described in the narrative, no information was provided as to when the street infrastructure including storm drainage and paving would occur. Please be aware that if street network is not brought in for state maintenance as a whole, the individual phases will also be required to meet connectivity and public service requirements. Please identify any potential phasing of street construction for evaluation of connectivity standards.

- **The applicant is aware of the connectivity standards. However, exact phasing of the development cannot be determined/proffered at this time. Applicant shall coordinate with VDOT during the early stages of the first site plan process to ensure connectivity for future phases is maintained.**

2. The proposed stubout for Road C to the Northstar property was reviewed for coordination with the church masterplan. The stubout is directed to dedicated open space on the church masterplan. Please insure that stubouts are directed to areas where roads can be extended to meet connectivity requirements. It appears that there is the opportunity to modify Road C, in order to connect to the church property north of the open space and meet a drive aisle in the church parking lot. See attached image.

- **The location of the proposed stubout for Road C has been relocated to avoid the Northstar church open space.**

3. Proposed sidewalk on both sides of the road appears to meet VDOT regulations regarding pedestrian accommodations regardless of street ADT and lot size. Comment pertaining to sidewalk along Prices Fork Road is described below (comments on Figure Z8).

- **Sidewalk/Future Trail Connections along Prices Fork Road have been addressed within the application text and proffer statement.**

Transportation Exhibit (Figure Z8):

1. Identify the proposed VDOT standard to which the streets will be developed to, i.e. GS-SSAR.

- **The note has been added to the plan sheet Z8.**

2. VDOT requires pedestrian accommodations related to school connectivity. Please identify the point(s) where the road centerline distance is one-half mile from Prices Fork Elementary (as measured along Prices Fork and into the subdivision.) Inclusion of sidewalk on both sides of the interior streets is already provided, however, please refer to Montgomery County Prices Fork Village Plan, specifically the ViTL plan for paved shoulder and sidewalk adjacent Prices Fork Road.

- **These distances have been shown on the plan sheet. The proposed roundabout and road improvements take into account for the future trail along Prices Fork Road. A trail and easement is being secured across Virginia Tech to allow pedestrians to access Prices Fork Elementary School.**

3. Please provide specific street cross-sections with defined widths (not variable as shown), where (if) on-street parking will be allowed, and detail as to how storm runoff will be conveyed (curb/gutter or swale). Note the following items:

- a. Within the "Site Development Regulations" of the narrative it is described that "road widths will be designed to allow for on-street parking on one or both sides of the road." However, the legend on Figure Z8 describes public roads to be "no parking".
 - **This has been clarified in the application narrative as well as on Sheet Z8.**



- b. It is specifically noted that the ADT of street segment A-F exceeds 2,000 vehicles. If parking was allowed along this segment, the pavement and right of way width will need to be increased.
 - **No parking will be allowed on this section of Road A.**
 - c. The vegetated strip between pavement/back of curb is noted as 2.5'. Three (3) feet is the minimum allowable distance. If signs are to be incorporated between the curb and sidewalk, additional width is also required. Specific guidance is found in Appendix A(1).
 - **This standard detail has been revised.**
 - d. The sections show ground behind the back of curb as sloping away from the street. Areas where sidewalk is incorporated into the roadway network are generally directed towards the street if curb and gutter is provided.
 - **This standard detail has been revised.**
4. On the legend, please identify the 10' Asphalt Multi-Use Trail as "Private".
- **These have been noted as Private in the Legend.**

Proposed Road Improvements (Figure Z9):

1. The proposed layout identifies left hand and right hand turn lanes between the two proposed connections to Prices Fork Road. In general, the geometric layout of the proposed improvements appear to be adequate. However, please be aware that the adjacent Northstar Church property is in final stages of plan approval for construction of their own turn lane improvements. The extent of these improvements end approximately 350' east of the shared Westhill/Northstar property line. At the time of construction plan design, it may be necessary to modify the proposed layout to fit in with the Northstar improvements. This may include additional widening beyond that shown to create a consistent 12' center lane between the two projects.
- **Noted. The new road improvement plan shows a roundabout at the Road A intersection at Prices Fork Road. Road lane extensions toward Northstar church have been preliminarily shown to accommodate their improvements. Final design will occur at site plan stage.**

Stormwater Management:

1. The provided narrative and figures do not provide adequate information on how stormwater management / storm sewer will be handled for the project. Please provide language in the narrative and a Figure that generally addresses the following:
- a. the storm pipes transporting the 10-year storm event,
 - b. roadside ditches transporting the 10-year storm event,
 - c. sag conditions including a culvert passing the 100-year storm event,
 - d. No BMPs are planned within the right of way,
 - e. outfalls will be in a dedicated easement to an adequate channel,
 - f. show any conveyance channels proposed within the right of way,
- **These design items have been addressed in the Water Quality & Stormwater Management Standards section of the rezoning narrative.**



MONTGOMERY COUNTY PUBLIC SCHOOLS COMMENTS:

1. Consider accommodating children and parents waiting for the school bus.
 - **Development plan now shows two preliminary locations for covered bus stops that will be constructed with the project. The exact location and specification of these stops will be coordinated with MCPS at the site plan stage.**

2. Ensure all cul-de-sacs have adequate radii for school bus movements.
 - **All cul-de-sacs have been shown and proffered to be built to VDOT standards thus allowing full access for school buses.**

3. Provide walking trails
 - **Sidewalks will be on both sides of all streets in the new development. The applicant has an agreement in place with Virginia Tech to allow access across their property for a trail connection to the Prices Fork Elementary School property. Final details of the trail will be coordinated with MCPS and Virginia Tech at the site plan stage.**

If you have any additional questions or comments, please feel free to contact me.

Sincerely,
BALZER AND ASSOCIATES, INC.

Steven M. Semones
Executive Vice President

**CONDITIONAL REZONING APPLICATION
FOR**

KIPPS FARMS, LLC

WESTHILL SUBDIVISION

**TAX PARCEL #052-A124
TAX PARCEL #052-A125, 126
TAX PARCEL #052-A128, 130
TAX PARCEL #052-A129**

**September 3, 2019
Revised: October 21, 2019**

**PREPARED FOR:
KIPPS FARMS, LLC
500 South Main Street
Blacksburg, VA 24060**

**PREPARED BY:
BALZER & ASSOCIATES, INC.
80 College Street, Suite H
Christiansburg, VA 24073**

WESTHILL SUBDIVISION
COMPREHENSIVE PLAN JUSTIFICATION

Property and Project Description

The properties described in the Rezoning application are currently zoned Agriculture A1. There are multiple parcels requested for rezoning in this application. They are designated as follows:

- 1) Tax Map ID# 052- A 130, 128 & Parcel ID# 019364
Existing Acreage: 26.710 acres
Proposed Acreage for Rezoning: 26.710 Acres
Proposed Use: Single Family Detached and Townhome
Existing Zoning Designation: A1 -Agriculture
Proposed Zoning Designation: PUD-RES -Planned Unit Development Residential

- 2) Tax Map ID# 052- A 125, 126 & Parcel ID# 012091
Existing Acreage: 24.255 acres
Proposed Acreage for Rezoning: 24.255 Acres
Proposed Use: Single Family Detached and Townhome
Existing Zoning Designation: A1 -Agriculture
Proposed Zoning Designation: PUD-RES -Planned Unit Development Residential

- 3) Tax Map ID# 052- A 124 & Parcel ID# 011177
Existing Acreage: 53.900 acres
Proposed Acreage for Rezoning: 53.900 Acres
Proposed Use: Single Family Detached and Townhome
Existing Zoning Designation: A1 -Agriculture
Proposed Zoning Designation: PUD-RES -Planned Unit Development Residential

- 4) Tax Map ID# 052- A 129 & Parcel ID# 020291
Existing Acreage: 3.00 acres
Proposed Acreage for Rezoning: 3.00 Acres
Proposed Use: Single Family Detached and Townhome
Existing Zoning Designation: A1 -Agriculture
Proposed Zoning Designation: PUD-RES -Planned Unit Development Residential

The requested zoning change to PUD-RES Planned Unit Development Residential would allow for a future land use that is in keeping with the Montgomery County Comprehensive Plan which designates this area as Village Expansion. According to the Comprehensive Plan, *“Village Expansion Areas are intended to provide an alternative to scattered rural residential development and to provide an opportunity to enhance the vitality of existing villages by providing for compatible expansions of residential and employment uses. Village Expansion Areas are adjacent to existing villages where appropriate new development can be accommodated while retaining the viability and character of the historic village core. These are natural expansion areas for the Villages*

that may potentially be served by future public sewer and water extensions. Development in Village Expansion Areas should be designed to tie into the existing street network serving the village it is adjacent to and to complement and augment the historic character and development pattern of the existing village. A mix of appropriately scaled residential, non-residential and community uses are anticipated in Village Expansion Areas.” The Village Expansion areas, along with Urban Expansion Areas and the Village Areas, are where the Comprehensive Plan anticipates the future growth of the unincorporated portions of the County.

The project is designed as a master planned development with a mix of four different housing types, community clubhouse and amenity area, extensive sidewalk infrastructure, new road improvements, and a multi-use trail. The unit types have been designed to provide housing product that is in high demand in Montgomery County, and appeal to a wide range of buyers. All units will be subdivided and will be “for sale” product. The expected timeline for total buildout of the property is 5-8 years. It is planned that the property will be developed in phases and that all four different housing types will be available in the early phases of the construction. The overall conceptual masterplan is shown on Sheet Z2 included with this application and narrative. More detailed drawings of each housing section are also included in the application.

The first housing type proposed are Townhomes. The majority of the townhomes will be located on the northern portion of the property and adjacent to the future Northstar Church development. They will primarily be 3-bedroom units and will be provided with a 1 or 2 car garage. These units are arranged in blocks of no more than 5 units and are all accessed from private alleys. These private alleys limit the curb cuts onto the new public roads and allow the units to have rear loaded garages. This takes the garage doors and cars out of sight from the main roads and allows the units to be situated closer to the roads. With units addressing the street and streetscape, it creates a more walkable and interactive community. These townhomes are situated to either front the streets as described above or to front on an open green area. These green areas provide opportunities for more community gathering areas in each of the townhome pods.

The second housing type are the Villa Units. The Villas are attached units and are also defined as a townhouse by the County code. However, these units are larger in footprint and provide a different living experience. The Villas will be primarily 3-bedroom units and a first-floor master bedroom will be available thus providing for single level living for residents who so desire that option. They will also have the option for a 1 or 2 car garage. The Villas will have individual driveways that are accessed directly off the proposed public roads. The Villas will be located near the center of the property just west of the clubhouse area and adjacent to Prices Fork Road.

The third housing type is Single Family Detached – Type A Lots. These units will be on individual subdivided lots of greater than 9,000 square feet and a minimum of 80’ in width. Multiple house styles, footprints, and options will be available to buyers in the single-family section. Most of the homes will be built to suit so the future buyers can

truly make the house their own. These homes will be mix of 3 and 4 bedroom and will also be provided with garages as desired by the purchaser.

The fourth housing type is Single Family Detached – Type B Lots. These units will be on individual subdivided lots of greater than 7,200 square feet and a minimum of 60’ in width. Multiple house styles, footprints, and options will be available to buyers of these lots as well and will be at a different price point than the Type A lots. As stated above, these homes will also be built to suit so the future buyers can truly make the house their own. These homes will be mix of 3 and 4 bedroom and will also be provided with garages as desired by the purchaser.

The single-family home section of the project is located on the back acreage and is situated adjacent to the surrounding Montgomery Farms subdivision. It was important to the applicant to provide a similar housing type next to Montgomery Farms to avoid any perceived lifestyle conflicts.

This project has not only been designed in keeping with the current Comprehensive Plan and Prices Fork Village Plan but has reviewed all available public documents on the Prices Fork Village Plan update that is currently being finalized. Many of the goals in that updated Village Plan are incorporated into this proposal.

The elements that directly conform to the issues stated in the **Montgomery County 2025 Comprehensive Plan** are the following:

- 1) **PLU 1.6** – The development is located within an area designated Village Expansion.
- 2) **PLU 1.6.4.b** – The development will have a range of housing types.
- 3) **PLU 1.6.4.e.** – The development will preserve critical open space and natural features.
- 4) **PLU 1.6.5a & PLU 1.7.5a,e** – The development will have public utilities and will provide stormwater management for the new development.
- 5) **PLU 1.6.5c & PLU 1.7.5d**– The new roads within the development will provide a new connection to Prices Fork Road from Montgomery Farms and will have sidewalks along both sides of the new streets.
- 6) **PLU 1.7.4.c** – The development is proposing extensive open space and pedestrian connections throughout the subdivision. Setbacks create an inviting streetscape and parking for the higher density Townhomes is off the rear loaded alleys.
- 7) **PLU 2.1.1** – The development is located within an area designated Village Expansion.
- 8) **PLU 2.1.2** – The development will be served by public water and sewer.
- 9) **PLU 2.1.3** – The road access point is shown from Prices Fork along with the associated improvements and determined by the accompanying traffic study.
- 10) **PLU 2.1.4** – The concept plan shows the location of all roads, sidewalks, trails and open spaces.
- 11) **PLU 2.1.5**– The development will provide multiple access points to adjacent parcels.
- 12) **PLU 2.1.6** – The development will have open space, and pedestrian access.
- 13) **PLU 2.1.7** – The development will have buffers along all uses with lower intensities.
- 14) **ENV 1.5** – The development will utilize BMP’s to protect water quality.
- 15) **ENV 3.2.4** – The development will minimize any negative effect on water quality.

- 16) **ENV 3.2.6** – Several areas of natural landscaping are planned to be preserved.
- 17) **ENV 3.2.7** – The development will protect main water sources and riparian areas.
- 18) **ENV 5.6** – The development will provide for stormwater management and is located in an area where public water and sewer service exists.
- 19) **ENV 6.5** – The proposed development will maintain existing drainage patterns for stormwater management.
- 20) **ENV 7.0** – The proposed development will maintain water quality and protect downstream properties with stormwater management techniques.
- 21) **HSG 1.3.3** – The development provides interconnectivity of roads and sidewalk infrastructure.
- 22) **PRC 2.1.4** Open spaces and playground areas will be provided in the development to serve the residents.
- 23) **PRC 2.3** – The development is proposing a trail connection from the development just west of proposed Road D to Prices Fork Elementary School. A trail easement is also shown through the middle of the property that could accommodate a future trail section should a larger corridor trail be proposed on either side of the property in the future.
- 24) **TRN 1.3.1** – Very few cul-de-sacs are proposed in the overall development.
- 25) **TRN 1.3.2** – Streets are designed provide connectivity within the subdivision, to the existing Montgomery Farms subdivision and to undeveloped adjacent parcels.
- 26) **TRN 1.3.3** – All public streets and right of ways will be designed and constructed to VDOT standards.
- 27) **TRN 1.3.5** – Sidewalks will be provided on both sides of the public roads.
- 28) **UTL 4.1.2** – The project could allow for regional stormwater management facility with coordination with Montgomery County.

The elements that directly conform to the issues stated in the Montgomery County 2025 Comprehensive Plan for the **Prices Fork Village Area** are the following:

PFV 1.1.2 Compatibility is Fundamental. *The density, type and character of new development must be compatible with the existing village, the vision of the village’s future, and be generally consistent with the Land Use Plan Map. New development must be compatible with the traditional forms and architectural character of the village.*

The proposed project will provide development that is consistent with the Land Use Plan. The architecture will be responsible and respectful of the traditional village character.

PFV 1.1.4 A Variety of Housing Types Should be Built. *The County will encourage a variety of housing types, costs and net densities, in order to provide high quality housing for a range of ages and income levels. Most housing will be single-family detached units, but may include accessory units, small single-family detached dwellings, and apartments on the second-floor levels of employment or civic buildings, and housing for elderly citizens.*

The project is proposing four different housing types that will be attractive for multiple buyer types. These types will vary in home size, lot size, and price.

PFV 1.1.6 Proffers Are Expected to Mitigate Impacts. *Any rezoning to a higher intensity of land use, particularly residential land uses, will be expected to provide proffers of land, infrastructure and/or funding to offset the impacts of the development, particularly on capital facilities such as roads, parks, schools and public safety.*

The proposed proffers will help mitigate impacts and concerns.

PFV 1.1.7 Incorporate Universal Design Features. A portion of dwelling units within any given residential project should feature "universal design" in order to provide for all age groups and to allow people to "age in place" within the village.

The Villa units provide a master bedroom on the main floor which helps allow aging in place.

PFV 1.3.2 Areas with Higher Net Densities. Areas with higher net densities should be dispersed throughout the planning area as shown conceptually on the Land Use Plan Map. Each such area should be small and compact so as to form a focal point for a particular neighborhood or development, and should be designed to reinforce the traditional, grid street network.

The overall density of the project will be 3.86 units per acre. The proposed masterplan currently shows a total of 416 dwelling units which would be 3.86 units per acre. Lot configurations and numbers may vary slightly based on final engineering design including road grading, stormwater management and sanitary sewer design. Final density will be determined during the site plan stage but no more than 3.86 units per acres will be allowed.

PFV 1.3.3 Streetscape Features on Major Streets. Streetscape improvements in these areas should include curb and gutter, sidewalks, on-street parking with curb bump-outs, pedestrian crosswalks at intersections, parking behind buildings and in alleys, building heights of two stories above the front street level, small front building setbacks, traditional street lights and street furniture, pocket parks and public greens or squares defined by adjacent building facades.

Extensive landscaping is planned along Prices Fork Road.

PFV 1.3.4 Streetscape Features on Minor Streets. Streetscape improvements should include walking paths, street trees and parking behind buildings.

Landscaping will be provided throughout the development and along the subdivision's internal road network. Sidewalks will be provided on both sides of the proposed public roads. Future trail locations have also been shown on the master plan.

PFV 1.3.5 Street and Walking Connections. New development should provide street and pedestrian path connections within the site and to adjacent properties, including "stub" connections to the property line of sites that are planned but not yet rezoned or developed.

The property will have sidewalks connecting all onsite uses and open spaces. Road stubs are shown throughout the development. Future trail or sidewalk connections to adjacent properties will be determined during the site plan process.

PFV 1.5.1 Preserve Views. Except in the Historic Core, as development occurs along the corridor, site new buildings away from the existing roadway so that they are at a low enough elevation to preserve the views of the surrounding farms, forests and mountains.

The development along Prices Fork Road is planned to sit at a lower elevation than the road itself. There is also a large buffer area between the first residential units and the Prices Fork right of way. This area is planned to be landscaped and potentially be graded for some additional topographic separation such as berms. This should provide a softening affect to overall Prices Fork Road streetscape with still maintaining southern views.

PFV 1.5.2 Avoid Reverse-Frontage Development. New development adjacent to Prices Fork Road should front a new parallel street so that the fronts of new buildings (rather than the rear) face toward Prices Fork Road.

Based on the distance away from Prices Fork Road to the first residential units (102'-160'), the architectural treatment of the homes and the landscaping proposed, no negative visual impact is anticipated from the orientation of the residential units adjacent to Prices Fork Road.

PFV 1.5.3 Manage Access. *Develop and implement an access management plan along Prices Fork Road to limit the number of access points on the road, consistent with the land use and design policies for this corridor.*

One main access point into the subdivision from Prices Fork is proposed. This location is close to the center of the overall road frontage. Per the submitted traffic analysis, a roundabout is proposed at this intersection of Prices Fork Road and proposed Road A.

PFV 1.5.4 Encourage Connectivity. *Encourage interparcel connections between all sites along Prices Fork Road for both vehicles and pedestrians, including making new connections to existing neighborhoods that need better and safer access, such as Montgomery Farms.*

This project provides the vehicular and pedestrian access to Montgomery Farms stated in this goal. Future connections to other adjacent parcels are also planned for with this development.

PFV 6.6 Promote Regional Stormwater Management. *The County will create guidelines and regulations for coordinating stormwater management facilities on a regional and sub-regional basis rather than site by site.*

At the time of redevelopment and site plan preparation, the applicant will engage the County on options, either onsite or offsite, that may mutually benefit the applicant and the Village regarding regional stormwater management.

PFV 9.1 Greenway Park and Trail System. *Support the development a county-wide greenway park and trail system master plan.*

The development plan shows a proposed trail connection from the development, across Virginia Tech property to Prices Fork Elementary School. A trail easement is also shown near the center of the single-family residential area that could be used for a future multi-use trail and that could provide a connection in the future to parcels on either side of Westhill. Right of way or public easement will be dedicated along Prices Fork Road for the future construction of the VITL trail system.

PFV 9.2 Pocket and Neighborhood Parks and Green Spaces. *Encourage developers to provide pocket and neighborhood parks and green spaces in their development designs.*

Open space and parks will be provided to serve the residents of the development. Additional information on these spaces is included in the Open Space section of this document.

PFV 10.2.1 Interconnected Grid Network. *Interconnect new streets to form a loose grid network.*

A street network has been designed for the subdivision and provides interconnectivity to all parts of the neighborhood as well as to the existing Montgomery Farms subdivision.

PFV 10.2.2 Pedestrian Facilities. *Incorporate pedestrian paths or sidewalks into all new and existing street systems to protect pedestrians and improve mobility.*

Sidewalks are proposed on both sides of all new public roads to be constructed in the Westhill neighborhood. Trail systems are proposed within the development as well.

PFV 10.3 Strongly Discourage Cul-de-Sacs. As shown on the Illustrative Plan Map, cul-de-sacs undermine the desired connectivity of Prices Fork. In order to achieve safe streets with a sense of privacy, courts or "eyebrows" can be created rather than cul-de-sacs.

Very few cul-de-sacs are proposed in the overall development. Private alleys are proposed to service the townhome portions of the project.

PFV 10.6 Manage Access. Limit new access points on the major through-roads designated in this Plan.

Entrances planned with this development have been planned incorporating access management guidelines.

PFV 10.7 Construct Roads in Conjunction with Rezoning Approvals. Require development applicants to dedicate right-of-way and build their portion of new roads, in conjunction with receiving zoning approvals for higher densities.

The project will construct any road improvements required per the results of the traffic study performed for this project.

PFV 10.9 Pursue Public Transit. The County will pursue opportunities for public transit, such as a trolley or bus system service to key points within Prices Fork.

The developer would be in favor of the County bringing public transit opportunities to the Village. This service would be very helpful for the residents of Westhill. The applicant is proposing several school bus stop locations/shelters which could double as public transit stops in the future.

PVF 11.1 Extent Public Water and Sewer Service. The County will provide and manage public water and sewer service for Prices Fork. The County will require that new development connect to these systems and will prohibit new private wells and septic systems.

The project will connect to public water and sewer.

PFV 11.2 Limit of Public Water and Sewer Expansion. The County will limit water and sewer service to the designated Service Area set forth in this Plan. Providing public utility service only to the designated area will ensure that new development is compatible with the villages historic character, is affordable for the County to serve, and enhances rather than degrades the quality of life for local residents.

Public water and sewer service are available to the site and it has been anticipated that those utilities would serve this property.

PFV 11.3 Treatment Capacity. The County will monitor available treatment capacity. The County will approve rezonings to higher intensity uses only in conjunction with assurances that adequate water and wastewater treatment capacity will be available. Treatment capacity will be expanded in accord with the County's long-range capital improvement plans. Public utility capacity will be planned to accommodate the orderly growth in the area, in accord with the County's overall Comprehensive Plan, rather than to create or "drive" that growth.

The County has provided a water and sewer availability letter for this rezoning. Additional projected flow information is included below.

PFV 11.5 Underground & Buried Utilities. Require developers to place utilities underground in all new developments.

New utilities resulting from the redevelopment of this site will be installed underground.

Site Development Regulations

Parent Parcel Perimeter Setbacks and Yards

- (a) Buffer yards shall be provided along the exterior property lines as required by the Montgomery County Zoning Ordinance.

Lot Area, Setbacks, Frontage, Lot Depth, and Area (Townhomes only)

- (a) Minimum setbacks for Townhomes are as follows:
 - Front Setback: Ten (10) feet
 - Side Setback for end units: Ten (10) feet
 - Rear Setback: Twenty (20) feet
 - (b) The minimum lot width shall be twenty-two (22) feet and be maintained, at a minimum, for the entire depth of the lot.
 - (c) Minimum lot depth shall be sixty-six (66) feet
 - (d) Although the above dimensions indicate required minimums, no lot shall have less than 1,430 square feet in total lot area.
 - (e) Front porches & stoops, rear decks and patios (covered or uncovered) and steps may extend into the front and rear setbacks.
 - (f) Cantilevered elements or overhangs may extend into the side setbacks by no more than three (3) feet.
- * No structural element can encroach into a public utility easement.

Lot Area, Setbacks, Frontage, Lot Depth, and Area (Villas only)

- (a) Minimum setbacks for Villas are as follows:
 - Front Setback: Twenty (20) feet
 - Side Setback for end units: Fifteen (15) feet
 - Rear Setback: Fifteen (15) feet
 - (b) The minimum lot width shall be thirty-two (32) feet and be maintained, at a minimum, for the entire depth of the lot.
 - (c) Minimum lot depth shall be ninety-five (95) feet.
 - (d) Although the above dimensions indicate required minimums, no lot shall have less than 3,000 square feet in total lot area.
 - (e) Front porches & stoops, rear decks and patios (covered or uncovered) and steps may extend into the front and rear setbacks.
 - (f) Cantilevered elements or overhangs may extend into the side setbacks by no more than three (3) feet.
- * No structural element can encroach into a public utility easement.

Lot Area, Setbacks, Frontage, Lot Depth, and Area (Single Family – Type A Lots only)

- (a) Minimum setbacks for Single Family homes are as follows:
 - Front Setback: Twenty (20) feet
 - Side Setback: Ten (10) feet

Rear Setback: Thirty (30) feet

- (b) The minimum lot width shall be eighty (80) feet and be maintained, at a minimum, for the entire depth of the lot.
- (c) Minimum lot depth shall be one hundred twenty (120) feet.
- (d) Although the above dimensions indicate required minimums, no lot shall have less than 9,600 square feet in total lot area.
- (e) Front porches & stoops, rear decks and patios (covered or uncovered) and steps may extend into the front and rear setbacks.
- (f) Cantilevered elements or overhangs may extend into the side setbacks by no more than three (3) feet.

* No structural element can encroach into a public utility easement.

Lot Area, Setbacks, Frontage, Lot Depth, and Area (Single Family – Type B Lots only)

- (a) Minimum setbacks for Single Family homes are as follows:

Front Setback: Twenty (20) feet

Side Setback: Seven and one half (7 ½) feet

Rear Setback: Thirty (30) feet

- (b) The minimum lot width shall be eighty (60) feet and be maintained, at a minimum, for the entire depth of the lot.
- (c) Minimum lot depth shall be one hundred twenty (120) feet.
- (d) Although the above dimensions indicate required minimums, no lot shall have less than 7,200 square feet in total lot area.
- (e) Front porches & stoops, rear decks and patios (covered or uncovered) and steps may extend into the front and rear setbacks.
- (f) Cantilevered elements or overhangs may extend into the side setbacks by no more than three (3) feet.

* No structural element can encroach into a public utility easement.

Clubhouse and constructed amenities

- (a) The clubhouse will be setback a minimum of twenty (20) feet from any public right of way.
- (b) Other constructed amenities such as the pool will be setback a minimum of twenty (20) feet from any public right of way.
- (c) Parking for the clubhouse shall be setback a minimum of fifteen (15) feet from any public right of way.

Height

Buildings may be erected up to Forty (40) feet in height above the main finished floor elevation; except that no accessory building within twenty (20) feet of any lot line shall be more than thirty-five (35) in height. All accessory buildings shall be less than the main building in height.

Accessory Buildings

The minimum setback for accessory buildings, regardless of height, is five feet from any adjoining rear or interior side property line and a minimum of 10 feet from any side street right-of-way line, except:

- a. Accessory buildings shall not be constructed inside of, or on any portion of, any easement.
- b. The front facade of any accessory structure shall be set back a minimum of ten feet from the rear of the principle structure.

Density

The maximum residential density for the overall development shall be 3.86 units per acre.

Driveways (Townhomes only)

- (a) Driveways for Townhome Type A units shall enter from private alleys as shown on the Masterplan.
- (b) Driveways for Townhome Type B units shall enter from the public streets and shall meet VDOT driveway spacing criteria.
- (c) Driveways for Single Family lots shall enter from the public streets and shall meet VDOT driveway spacing criteria.

Parking

- (a) Townhomes shall be parked at a ratio of 2 spaces per unit and may be provided in garages, in driveways (including behind garages). Additional parking spaces may be provided off the internal alleys during the site plan development stage.
- (b) Villas shall be parked at a ratio of 2 spaces per unit and may be provided in garages and in driveways (including behind garages).
- (c) Any residential units with a garage may count garage spaces towards their required parking ratio.
- (d) As all main roads will be public, road widths may be designed to allow for on-street parking on one or both sides of the road. That on-street parking will provide adequate additional parking for any visitors or guests.
- (e) Parking on one side of the private alleys shall be allowed if determined appropriate by the Homeowners Association. Allowances and restrictions of this use will be provided in the Association documents.

Occupancy

Townhomes and Villas will have the following occupancy requirements. The maximum dwelling unit occupancy shall be a family, plus two (2) unrelated individuals; or no more than three (3) unrelated persons.

Miscellaneous Provisions

- (a) Driveways entrances will be designed and constructed in accordance with the Montgomery County Zoning Ordinance and VDOT standards.
- (b) Sidewalks will be provided along both sides all proposed public streets. All principle structures shall be provided with a minimum three feet wide walkway connected to the street right-of-way, or alternatively, to the driveway. Units may share sidewalks.
- (c) Rear privacy fencing between townhome units shall not be required.

Water & Sewer Service

The proposed rezoning area is on the north side of Prices Fork Road and north of the existing Montgomery Farms subdivision. Currently the site does have public water service located adjacent to the parcel boundaries via a 12” waterline in Prices Fork Road. The property directly west of the subject property is owned by Northstar Church and is currently under construction. As part of the new church facility, an 8” waterline extension is being installed from a new connection to the 12” waterline. Montgomery County PSA has discussed the Westhill application with the NRV Regional Water Authority that controls the 12” waterline in Prices Fork. The Water Authority prefers not to have a separate connection to the 12” waterline for the Westhill subdivision but instead prefers a connection to the new 8” line being constructed for Northstar. Westhill will plan to tie to that new waterline and extend new waterlines throughout the proposed development at a minimum of 8” diameter. However, if the Church project were to not move forward and the 8” waterline is not installed or easements are not able to be obtained, Westhill would have the right to make a new connection to the 12” waterline in Prices Fork with approval of the Water Authority. The project will also connect to the existing 6” waterline located on Old Fort Road in the Montgomery Farms subdivision. This will complete a “loop” which is beneficial for redundant service to customers in case of a watermain break. Fire hydrants will be installed throughout the development as well in accordance with PSA and Emergency Services requirements.

Sanitary sewer extensions will be required for the development as well. A new 8” sanitary sewer main is proposed to be constructed by Northstar Church and Shah Development which will cross the Westhill property. Easements for this line have already been dedicated and design plans have been prepared. When installed, Westhill will be able to connect to that new dedicated public sewer main. Westhill would be able to design and construct their own sewer main extension if the Northstar/Shah line is not constructed. A minimum of 8” gravity sewer will be designed to service the proposed single-family homes and the townhomes in Westhill. A preliminary grading analysis has been performed and it appears the proposed lots can be serviced by gravity sewer and no public pump stations should be required.

The applicant will be required to dedicate Public Utility easements centered on all utilities that are designed and installed as public mains per Montgomery County PSA standards.

Based on Virginia Department of Health Standards, an average daily flow is estimated as follows for the proposed uses as shown on the conceptual master plan:

SINGLE-FAMILY RESIDENTIAL & TOWNHOME USE

Single Family Residential Dwelling: 154 units (a mix of 3 and 4-bedroom units).
Assumed average of 3.5 bedrooms per unit for a total of 539 bedrooms.

Design Assumptions and Calculations:

1. Assume 3.5 bedrooms per dwelling
2. Assume 2 persons per bedroom based on 12VAC5-610-670 Table 5.1
3. Water and Sewer usage for residential use is 100 gal/day per person
= 107,800 gallons per day

Townhome Residential Dwelling: 262 units (3-bedroom units).
Assumed 3-bedroom units for a total of 786 bedrooms

Design Assumptions and Calculations:

1. Assume 3 bedrooms per dwelling
2. Assume 2 persons per bedroom based on 12VAC5-610-670 Table 5.1
3. Water and Sewer usage for residential use is 100 gal/day per person
= 157,200 gallons per day

TOTAL ESTIMATED WATER/SEWER USAGE BY PROPOSED DEVELOPMENT = 265,000 gallons per day

The subject property is identified in the Montgomery County Comprehensive Plan as Village Expansion. The Comprehensive Plan further states that Village Expansion areas are "...natural expansion areas for the Villages that may potentially be served by future public sewer and water extensions. Preliminary boundaries should be set based on utility service areas, physical and natural features that define the "area of interest" and existing zoning." As this area already has water and sewer service available, as specified in service availability letter provided by the Montgomery County PSA, this development does meet the requirements as described in the Comprehensive Plan.

Applicant will construct or cause to be constructed at no expense to the County all water/sewer mains and appurtenances on the Property and will connect the water/sewer mains to publicly owned water/sewer mains. All water mains and sewer mains will be constructed to the standards of the Montgomery County PSA, will comply with the regulations and standards of the PSA and will comply with the regulations and standards of all other applicable regulatory authorities. All water mains and appurtenances and sewer mains will be dedicated to public use.

Roads

The proposed development conceptual plan indicates that there will be one main entrance /access point into the Westhill development from Prices Fork Road. This entrance is approximately 525 feet west of Stratford View Drive and is planned to be a main boulevard type entrance road. It is designated Road A on the conceptual master plans. The road will be heavily landscaped and will have no private access points off it until you reach the clubhouse parking area and the single-family residential lots. The intersection at Prices Fork Road will be improved with a roundabout as proposed in the submitted Traffic Impact Analysis and will be designed and constructed to VDOT standards. All other public roads proposed in the development shall also be designed to VDOT and Montgomery County standards. All public roads will have sidewalks on both sides of the road and curb and gutter. All internal public subdivision streets are proposed to have parking on both sides of the road, with the exception of Road A from the Prices Fork Intersection south to the intersection of Road F as shown on Sheet Z8.

The single-family detached lots and the Villa lots will have individual driveway connections to the public roads fronting each lot. The townhome units will not have individual driveway access to the public roads. The townhomes have been designed in pods which will be accessed by a series of private alleys. These alleys lead to the rear of the units where their driveways and garages are. While this is an additional expense by the applicant, it allows the townhomes to move closer to the main roads and create a more inviting and pedestrian level streetscape. It also allows for internal greenspace courtyards to be created where lots do not front directly on the public street. All alleys and parking areas internal to the project will be private and will not be dedicated as public right of way. Thus, all maintenance of these areas will be the responsibility of the future Homeowners Association or management company.

The road layout provides extensive connectivity throughout the subdivision and has very few cul-de-sacs. There are only three cul-de-sacs shown and they serve a total of only 40 lots of the overall 154 single family detached lots. The road system and design also will provide a secondary connection to Old Fort Road in the existing Montgomery Farms subdivision to Prices Fork Road. Currently Montgomery Farms only has one access to Prices Fork Road and that is along Thomas Lane. A second connection has been discussed and desired for many years for convenience to residents and for better access for emergency services. This connection point to Old Fort Road is in the location of a platted right of way that was dedicated to Montgomery County during the original subdivision platting process. There is also multiple future road connection stub-outs shown on the masterplan to undeveloped adjacent properties. This will allow for future connectivity as desired by Montgomery County and VDOT. A 10' wide paved multi-use trail has been provided on the eastern side of the property and connects to the location of the future trail system along Prices Fork Road. This trail may also serve as an emergency access point to Westhill if needed. Removable bollards are shown on each end of the trail to prevent vehicular access unless there is an emergency. At that time emergency services or VDOT would be able to unlock and remove those bollards to allow traffic to utilize the trail.

As part of this rezoning application, a Traffic Impact Analysis has been performed to study the potential impacts of this new development on the existing road system of Prices Fork Road. Meetings with County staff and VDOT representative occurred prior to this filing to ensure the parameters of the study were appropriate and considered the additional planned growth that is occurring along the Prices Fork Road corridor. Traffic consultants Ramey Kemp were contracted to perform this analysis. The complete study is included with this application and provides all background data, analysis and recommendations. Below is the trip generation for the proposed subdivision and the recommendations provided in their report for road improvements necessary to accommodate the new development.

Upon review of the ITE Trip Generation 10th Edition manual, the project is expected to generate the following additional vehicle trips.

TRIP GENERATION

ITE Land Use (ITE Code)	Density	Average Daily Traffic (vpd)	AM Peak Hour (vph)		PM Peak Hour (vph)	
			Enter	Exit	Enter	Exit
Single-Family Detached Housing (210)	154 Dwelling Units	1,547	29	86	97	57
Multifamily Housing (Low-rise) (220)	262 Dwelling Units	1,940	27	92	88	51
Total		3,487	56	178	185	108

Based on VDOT’s Access Management Design Standards for Entrances and Intersections and traffic capacity analysis, the following improvements are expected to accommodate the projected 2030 traffic conditions with the proposed development fully built out:

Prices Fork Road and Road “A” Site Access:

- Construct a one-lane roundabout. exclusive right turn lane with a minimum of 100 feet of full storage and 200 feet of bay taper on the eastbound approach of Prices Fork Road.
- Construct a two-lane cross-section for Road “A” with one ingress lane and one egress lane.

These proposed road improvements will effectively manage the increased traffic generated by the development as well as provide for safe movement for all vehicles along Prices Fork Road. It also takes into consideration the road improvements proposed along Prices Fork Road for the Walnut Springs project and the Northstar Church project.

Water Quality & Stormwater Management Standards

The overall property currently drains naturally north to south in multiple smaller drainage areas. All these areas flow to Walls Branch – some by overland flow through the Vaughan and Wall properties and some off to the southwest which forms a small tributary that flows through Montgomery Farms and ties into Walls Branch near the terminus of Mockingbird Drive. Approximately 1,600 feet further south, Walls Branch connects to Stroubles Creek which then continues southwest until it converges with the New River.

All stormwater conveyance within the proposed public right of way will be curb and gutter (CG-6 or roll face), drop inlets and storm sewer pipes. No roadside ditches are proposed for this development. All storm sewer pipes will be sized for transporting the 10-year storm event and sag conditions including culverts will be sized to pass the 100-year storm event. As storm sewer traverses through private property to stormwater management facilities or other drainage channels, all outfalls shall be in a dedicated public drainage easement to an adequate channel.

Open space areas have been sited throughout the property to allow for multiple stormwater management facilities to be constructed upon the development of the project. These facilities will be designed and permitted through Montgomery County and the Department of Environmental Quality during the site plan and subdivision platting stage. As development occurs and impervious areas increase on the project site, stormwater management will be required to control the increased water flows as they move offsite to these tributaries. These stormwater management facilities would be sized to accommodate the additional stormwater runoff created by the increased impervious areas of the development and designed to reduce the amount of post development runoff. It is anticipated that water quality requirements for the project may be achieved through a variety of possible design options such as retention, bio-retention and the purchase of nutrient credits. No stormwater management facilities or BMP's are proposed within the dedicated road right of way.

The proposed stormwater management areas will conform to all applicable Department of Environmental Quality regulations dealing with stormwater quantity and quality. At a minimum, the 2-Year and 10-Year post-development runoff rates will be less than or equal to the 2-Year and 10-Year pre-development runoff rates, and all current channel and flood protection requirements set by the Virginia Stormwater Management Program will be met. Downstream adequacy will also be addressed with the overall stormwater management plan to ensure areas downstream of the project site do not see increased flooding or erosion. In addition, the minimum standards listed in Virginia Administrative Code Section 9VAC25-840-40 will be met, where applicable, during construction. With these design measures in place, there should be no negative impact on the groundwater supply for any adjacent well users.

Project Phasing

The development of the project is planned to be constructed over a 5-8-year period. It is planned that an overall mass grading plan will be provided in the first set of construction documents so that the entire site can be graded at one time. This will ensure that all roads, sanitary sewer and stormwater management facilities are planned accordingly for the entire development. The exact infrastructure to be constructed in the first phases will be dependent on which areas of the site are developed first. It is the applicant's desire to have multiple product type available for sale early in the project timeline. This would require any infrastructure needed for construction of a portion of the townhomes, the villas and the single family to be in place.

All product type including the townhome units also proposed to be subdivided on individual lots and will be for sale units. All subdivided lots will meet the requirements stated within this rezoning application and the Montgomery County Zoning Ordinance and Subdivision Ordinance as applicable.

Open Spaces / Amenities

The PUD-RES zoning district requires that a project reserve a minimum of 20% of the overall project area acreage as open space. Based on the project size, Westhill would be required to reserve approximately 21.7 acres for open space. A minimum contiguous area of 20,000 s.f. (0.46 acres) is also required to be usable, active recreation space. The proposed development masterplan has proposed approximately 27.7 acres of reserved open space which represents 25.6% of the overall property acreage. There are also several areas of active open space proposed. The largest begin a clubhouse and pool area located near the center of the development. This amenity area alone is approximately 54,615 s.f. (1.25 acres) which far exceeds the PUD-RES minimum. Other activities such as pavilion space, bocce ball, a putting green, and/or playground equipment are all possible within this area. It is planned that this clubhouse area will be constructed during the first phase of development.

A parking area is proposed along Road D that will allow residents to park and access a proposed trail system that will connect the subdivision to Prices Fork Elementary School. Along this area, a playground is also proposed for neighborhood children. Other areas of active open space are also planned throughout the development – primarily in the courtyards throughout the Townhome section. These specific spaces will be programmed during the site plan stage and shall be constructed at the time of the townhomes adjacent to them are constructed. A Homeowner's Association or a management association will be formed and be responsible for the maintenance of the proposed open space and active recreational uses.

Homeowner's Association

A Homeowner's Association or a management association will be formed and be responsible for the maintenance of the proposed open space and active recreational uses including the Clubhouse and pool area. These areas will be under the development's

ownership or the established Association and will be maintained at no cost to the general taxpayer. A management company will also oversee exterior maintenance required for the parking areas and stormwater management areas. Lawn maintenance for portions of the development may also be provided for at the developer's discretion.

No dumpsters are proposed with this plan as all units will have individual trash cans. Pickup of these trash cans shall be by a private collection company contracted by the Homeowner's Association.

Landscaping/Buffering

Landscaping will be provided as specified in the Montgomery County Zoning Ordinance based on the land use buffer matrix. The subject property use would have two Land Use Group classifications. The single-family lots would be a Land Use Group 1 and the Townhomes would be classified as Land Use Group 2. No buffers are required for a Land Use Group 1 classification. However, the Land Use Group 2 areas would be required to provide buffers along certain perimeters of the development. A Type 2 buffer would be required along the perimeter of the parent parcel where the Townhomes are proposed and adjacent to the northern most proposed single-family lots. A Type 1 may be required between the two different types of townhome styles proposed with this development. While only a Type 2 buffer is required along Prices Fork Road, the applicant wishes to provide additional landscaping along this critical corridor. The modified Type 2 buffer proposed is 3 Canopy Trees, 5 Understory Trees, 15 Shrubs and 2 Evergreen Trees per 100' of road frontage. There is also planned to be additional landscaping along the boulevard entry road, specific open space parcels and around the clubhouse area.

Site Lighting

Site lighting will be provided as specified in the Montgomery County Zoning Ordinance.

Signage

The developer reserves the right to construct project identification signs at locations to be determined during the final construction plan development and approval process. Any proposed signage will be permitted separately, and the designs and sizes will meet the signage requirements as stated within the Montgomery County zoning ordinance.

Housing Resources

Housing continues to be a challenge for Montgomery County as a whole. Particularly in areas adjacent to the two Towns. Housing stock is at a very low level and when homes become available for sale, they are typically under contract in a short amount of time and often with multiple back up offers. The type of housing desired is also changing in Montgomery County. While the standard single-family detached home on large lot is still in demand, there has been a shift towards attached units such as townhomes,

duplexes, and multi-family. These units, when new, provide a high-quality, energy efficient housing opportunity for young professionals, smaller families, empty nesters, and seniors with little outside maintenance.

According to the Housing Resources section of the Comprehensive Plan, single family attached housing units account for only 6.5% of the housing stock in Montgomery County in 2000. While this number has likely increased over the last 19 years, it is still a more underutilized housing unit in the unincorporated areas of the County. Based on overall development patterns and availability of adequate infrastructure, most of these units are within the limits of the Town of Blacksburg and Town of Christiansburg. The majority of the townhome units in the Blacksburg area are purpose built or marketed to undergraduate students. There are some larger townhome developments such as The Orchards, Oaktree, Cambria Crossing, Clifton Townhomes that do not cater towards the Virginia Tech student population and provide this critical housing type. The location of Westhill will provide an excellent location for these units and will continue to address the increasing housing demand near the Blacksburg area of the County.

Public School Impacts

The proposed residential master planned development in the proposed PUD-RES zoning district will be designed to allow up to 416 residential units. Based on the national average of a single dwelling unit adding 0.6 students to the school system, the project would on average have the potential of increasing the enrollment by 250 total students. Full build-out and occupancy of the project will likely be 5-8 years after rezoning approval, thus the development would likely not create an instant adverse impact on the school system.

APPENDIX A

PSA AVAILABILITY LETTER



**MONTGOMERY COUNTY
PUBLIC SERVICE AUTHORITY**

**Government Center
Suite 2I
755 Roanoke Street
Christiansburg, VA 24073-3185**

M. Todd King, Chairman
Darrell O. Sheppard, Vice-Chair
Mary W. Biggs, Secretary-Treasurer
Sara R. Bohn, Member
April N. DeMotts, Member
Steve R. Fijalkowski, Member
Christopher A. Tuck, Member

Charles E. Campbell
Interim PSA Director

August 28, 2019

Steve Semones, LA
Executive President
Balzer & Associates
80 College Street, Suite H
Christiansburg, Virginia 24073

Dear Mr. Semones:

Water is available to parce #019364, 012091 and 011177 by an 8" line not yet constructed by Northstar Church. There will also be a connection to a 6" line at the intersection of Old Fort Road.

Sewer will be available to these parcels once a sanitary sewer line extension is built by the developer of Northstar Property and Shah Development.

Cost for connections:

Water \$3,425.00 per connection

Sewer \$3,950.00 per connection

Pool and Pool House fee will be based on meter size.

Please feel free to contact me with any questions you may have.

Sincerely,

A handwritten signature in black ink that reads "Charles E. Campbell".

Charles E. Campbell
Interim PSA Director

ADMINISTRATIVE OFFICES: (540) 381-1997
BILLING & COLLECTIONS: (540) 382-6930
FAX NO. (540) 382-5703

APPENDIX B

ARCHITECTURAL EXAMPLES
AND HOME STYLES



Single Family Home



Single Family Home



Single Family Home



Single Family Home



Townhome Units



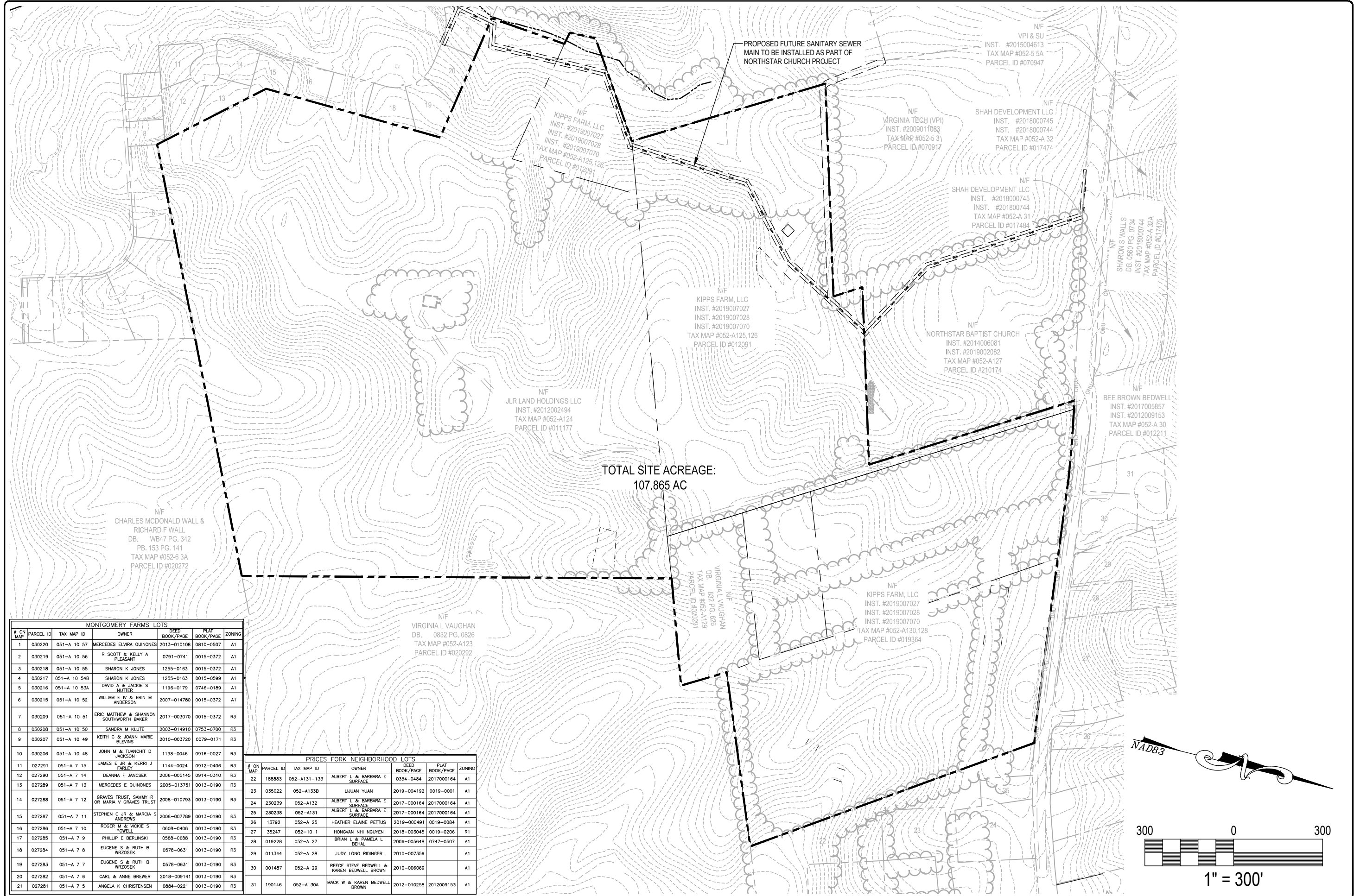
Villa Units

APPENDIX C
ZONING DRAWINGS



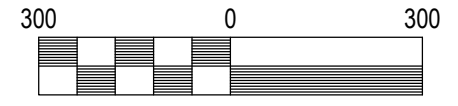
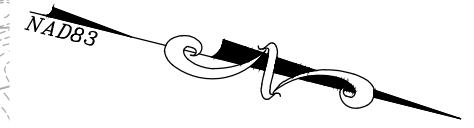
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540.381.4290



MONTGOMERY FARMS LOTS						
# ON MAP	PARCEL ID	TAX MAP ID	OWNER	DEED BOOK/PAGE	PLAT BOOK/PAGE	ZONING
1	030220	051-A 10 57	MERCEDES ELVIRA QUINONES	2013-010108	0810-0507	A1
2	030219	051-A 10 56	R SCOTT & KELLY A PLEASANT	0791-0741	0015-0372	A1
3	030218	051-A 10 55	SHARON K JONES	1255-0163	0015-0372	A1
4	030217	051-A 10 54B	SHARON K JONES	1255-0163	0015-0599	A1
5	030216	051-A 10 53A	DAVID A & JACKIE S NUTTER	1196-0179	0746-0189	A1
6	030215	051-A 10 52	WILLIAM E IV & ERIN M ANDERSON	2007-014780	0015-0372	A1
7	030209	051-A 10 51	ERIC MATTHEW & SHANNON SOUTHWORTH BAKER	2017-003070	0015-0372	R3
8	030208	051-A 10 50	SANDRA M KLUTE	2003-014910	0753-0700	R3
9	030207	051-A 10 49	KEITH C & JOANN MARIE BLEVINS	2010-003720	0079-0171	R3
10	030206	051-A 10 48	JOHN M & TJANCHIT D JACKSON	1198-0046	0916-0027	R3
11	027291	051-A 7 15	JAMES E JR & KERRI J FARLEY	1144-0024	0912-0406	R3
12	027290	051-A 7 14	DEANNA F JANCSEK	2006-005145	0914-0310	R3
13	027289	051-A 7 13	MERCEDES E QUINONES	2005-013751	0013-0190	R3
14	027288	051-A 7 12	GRAVES TRUST, SAMMY R OR MARIA V GRAVES TRUST	2008-010793	0013-0190	R3
15	027287	051-A 7 11	STEPHEN C JR & MARCIA S ANDREWS	2008-007789	0013-0190	R3
16	027286	051-A 7 10	ROGER M & VICKIE S POWELL	0608-0406	0013-0190	R3
17	027285	051-A 7 9	PHILLIP E BERLINSKI	0588-0688	0013-0190	R3
18	027284	051-A 7 8	EUGENE S & RUTH B WRZOSEK	0578-0631	0013-0190	R3
19	027283	051-A 7 7	EUGENE S & RUTH B WRZOSEK	0578-0631	0013-0190	R3
20	027282	051-A 7 6	CARL & ANNE BREWER	2018-009141	0013-0190	R3
21	027281	051-A 7 5	ANGELA K CHRISTENSEN	0884-0221	0013-0190	R3

PRICES FORK NEIGHBORHOOD LOTS						
# ON MAP	PARCEL ID	TAX MAP ID	OWNER	DEED BOOK/PAGE	PLAT BOOK/PAGE	ZONING
22	188883	052-A131-133	ALBERT L & BARBARA E SURFACE	0354-0484	2017000164	A1
23	035022	052-A133B	LIUJIAN YUAN	2019-004192	0019-0001	A1
24	230239	052-A132	ALBERT L & BARBARA E SURFACE	2017-000164	2017000164	A1
25	230238	052-A131	ALBERT L & BARBARA E SURFACE	2017-000164	2017000164	A1
26	13792	052-A 25	HEATHER ELAINE PETTUS	2019-000491	0019-0084	A1
27	35247	052-10 1	HONGVAN NHI NGUYEN	2018-003045	0019-0206	R1
28	019228	052-A 27	BRIAN L & PAMELA L BEHAL	2006-005648	0747-0507	A1
29	011344	052-A 28	JUDY LONG RIDINGER	2010-007359		A1
30	001487	052-A 29	REECE STEVE BEDWELL & KAREN BEDWELL BROWN	2010-006069		A1
31	190146	052-A 30A	MACK W & KAREN BEDWELL BROWN	2012-010258	2012009153	A1



1" = 300'

WESTHILL SUBDIVISION

EXISTING CONDITIONS

PRICES FORK MAGISTERIAL DISTRICT
MONTGOMERY COUNTY, VIRGINIA

DRAWN BY: GLM
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DATE: 9/3/19
SCALE: 1" = 300'
REVISIONS:
10/21/2019

Z1

PROJECT NO: 24190010.00



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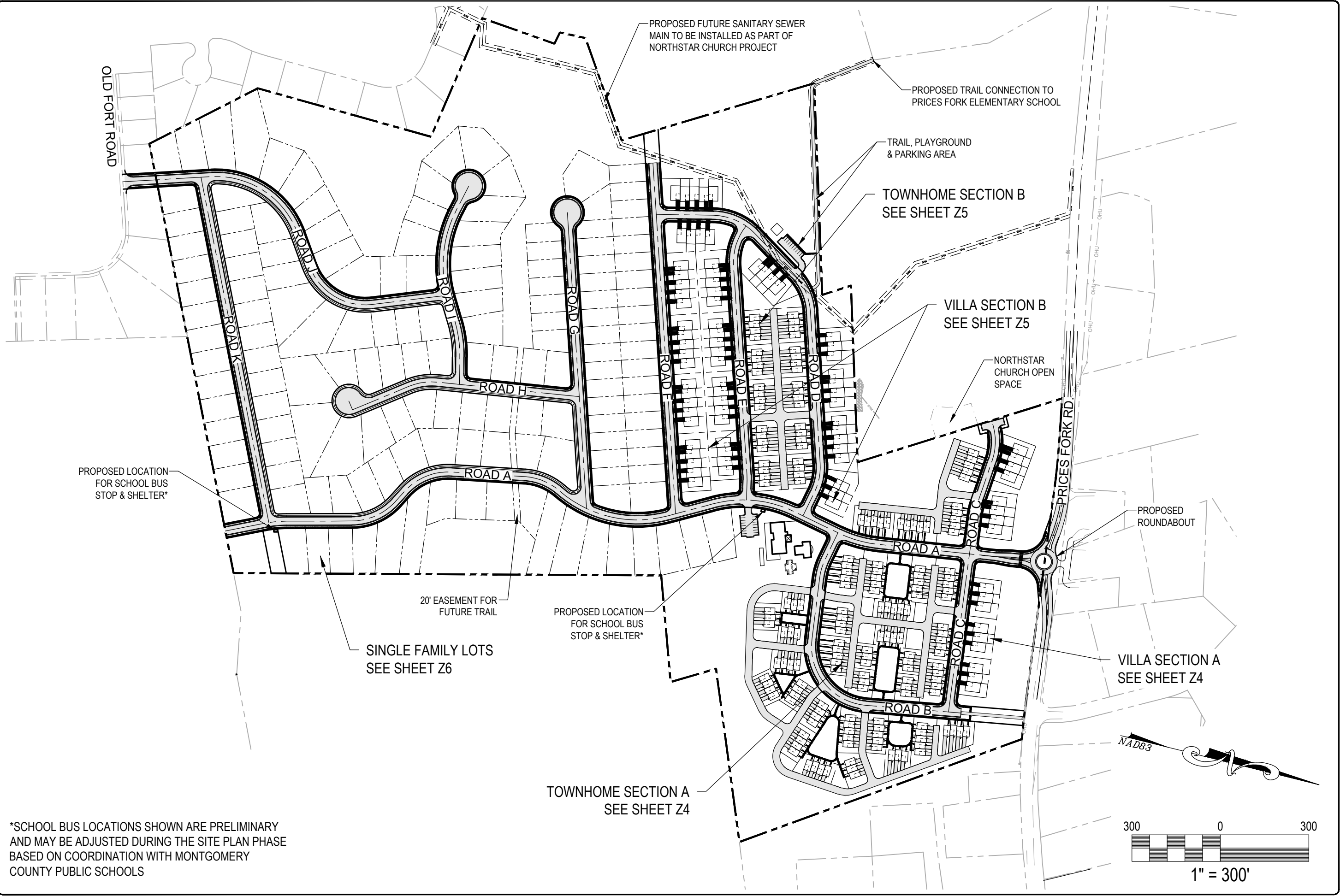
CONCEPTUAL MASTER PLAN

PRICES FORK MAGISTERIAL DISTRICT
MONTGOMERY COUNTY, VIRGINIA

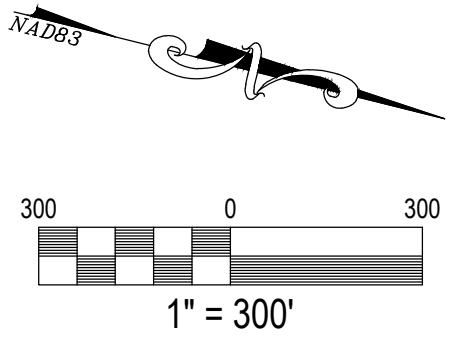
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PROJECT NO 24190010.00

Z2



*SCHOOL BUS LOCATIONS SHOWN ARE PRELIMINARY AND MAY BE ADJUSTED DURING THE SITE PLAN PHASE BASED ON COORDINATION WITH MONTGOMERY COUNTY PUBLIC SCHOOLS





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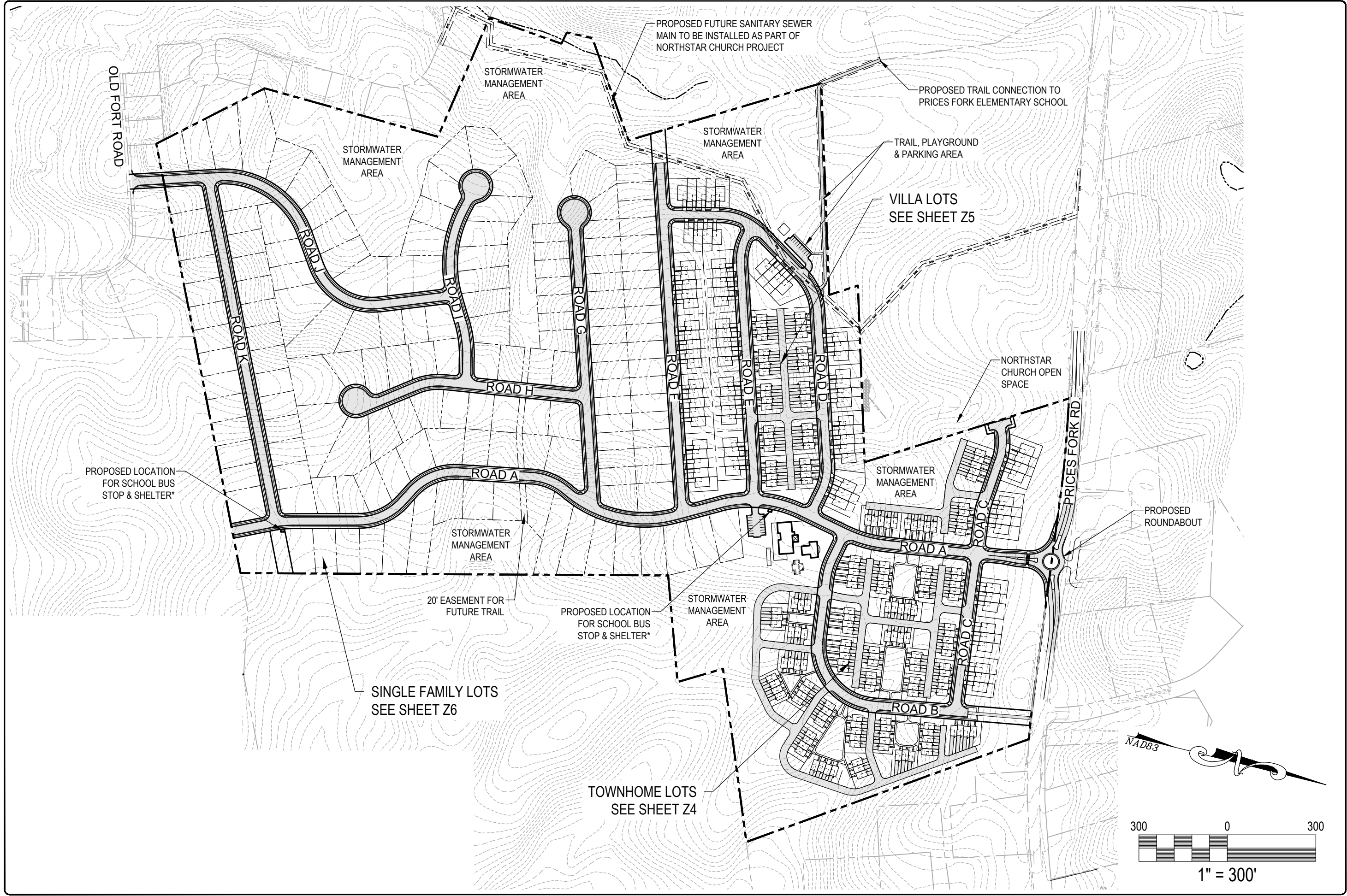
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TOPOGRAPHICAL MASTER PLAN

PRICES FORK MAGISTERIAL DISTRICT
MONTGOMERY COUNTY, VIRGINIA

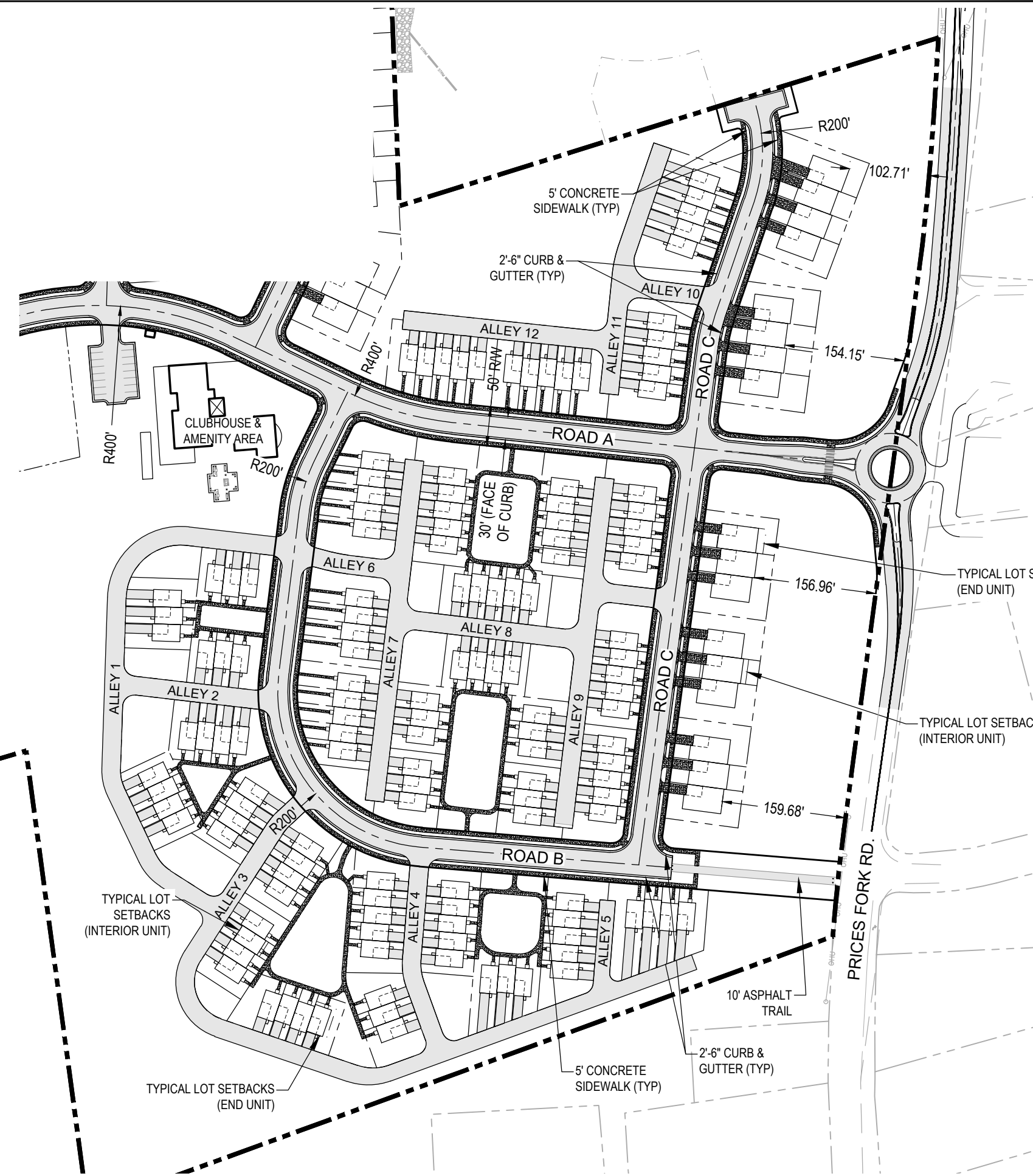
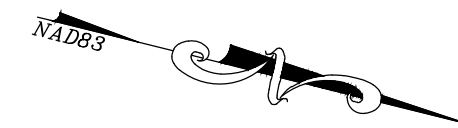
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REVISIONS 10/21/2019





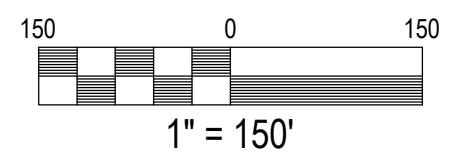
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TOTAL NUMBER OF SECTION A
TOWNHOME LOTS AS SHOWN=138

TOTAL NUMBER OF SECTION A
VILLA LOTS AS SHOWN=17



WESTHILL SUBDIVISION

TOWNHOMES & VILLAS
SECTION A

PRICES FORK MAGISTERIAL DISTRICT
MONTGOMERY COUNTY, VIRGINIA

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DATE 9/3/19
SCALE 1" = 150'
REVISIONS
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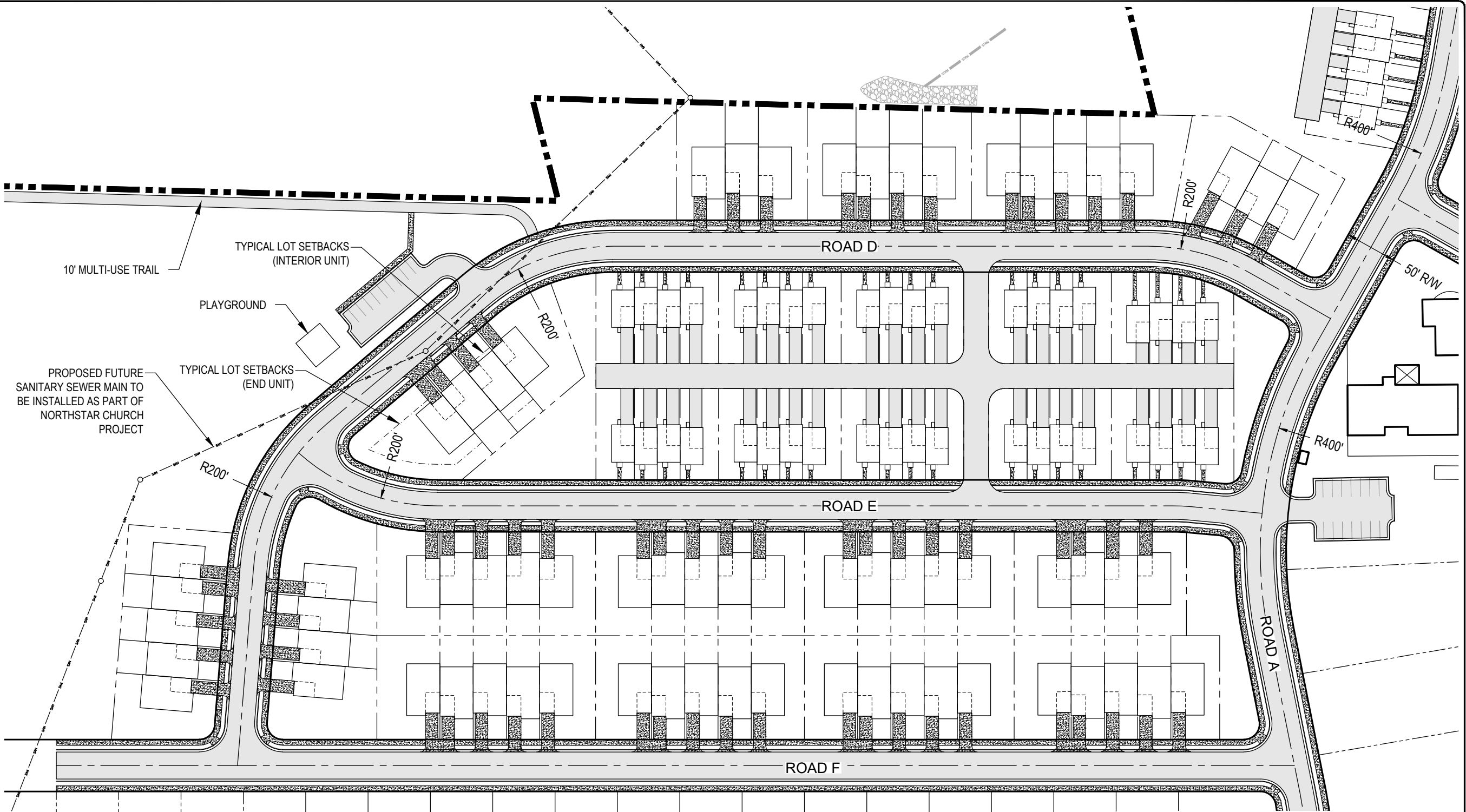
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PROJECT NO 24190010.00



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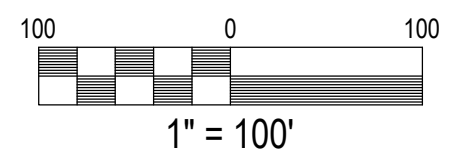
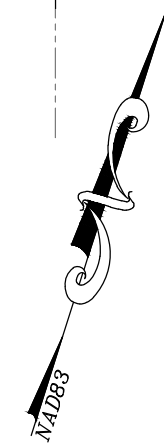
**TOWNHOMES & VILLAS
SECTION B**

PRICES FOR MAGISTERIAL DISTRICT
MONTGOMERY COUNTY, VIRGINIA

DRAWN BY GLM
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DATE 9/3/19
SCALE 1" = 100'
REVISIONS 10/21/2019

TOTAL NUMBER OF SECTION B
TOWNHOME LOTS AS SHOWN=40

TOTAL NUMBER OF SECTION B
VILLA LOTS AS SHOWN=67





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SINGLE FAMILY LOTS

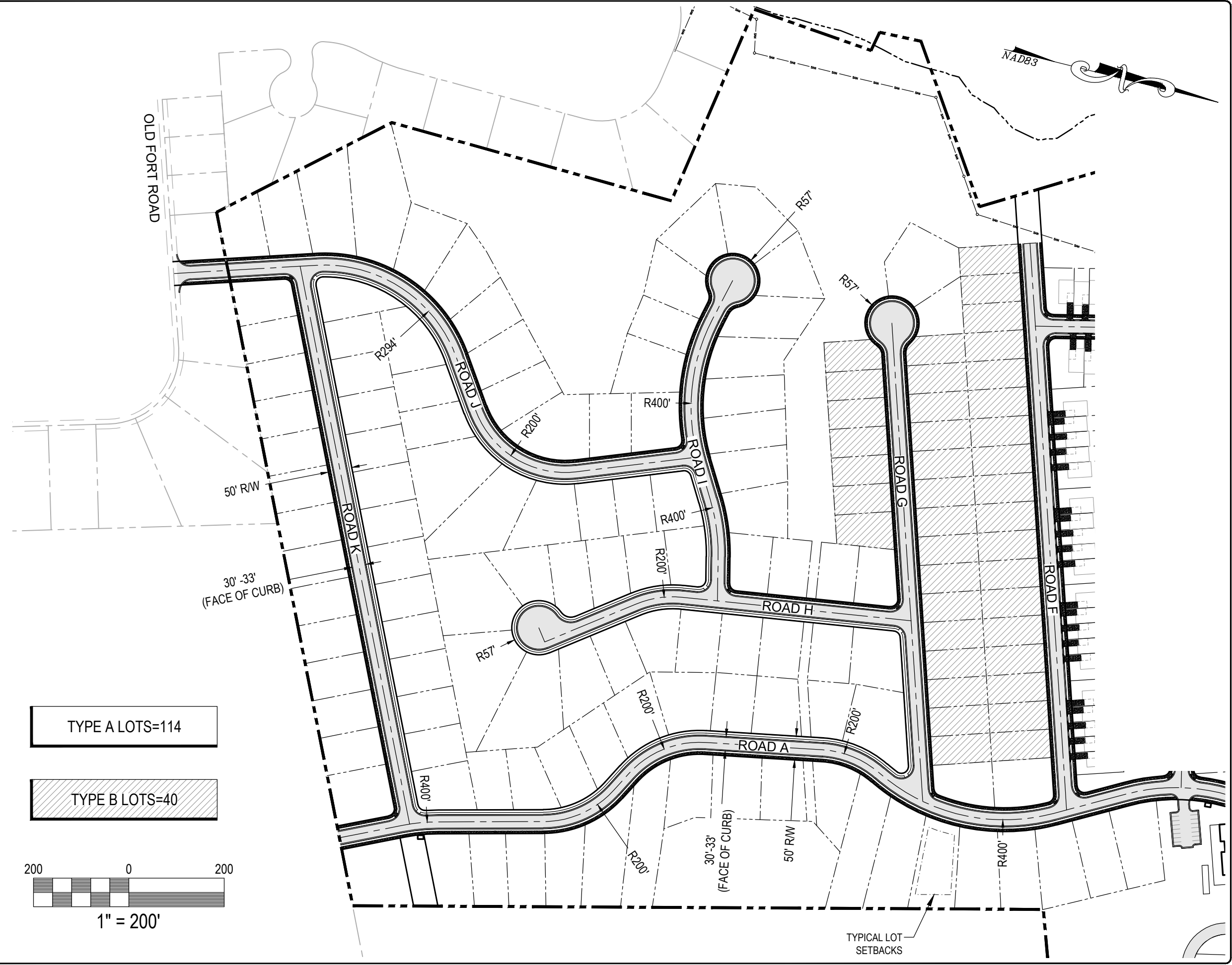
PRICES FOR MAGISTERAL DISTRICT
MONTGOMERY COUNTY, VIRGINIA

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SCALE 1" = 200'
REVISIONS

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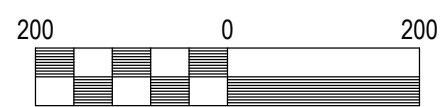
Z6

PROJECT NO 24190010.00



TYPE A LOTS=114

TYPE B LOTS=40



1" = 200'

TYPICAL LOT SETBACKS



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WESTHILL SUBDIVISION
OPEN SPACE PLAN
PRICES FORK MAGISTERIAL DISTRICT
MONTGOMERY COUNTY, VIRGINIA

DRAWN BY GLM
DESIGNED BY GLM
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DATE 9/3/19
SCALE 1" = 300'
REVISIONS 10/21/2019

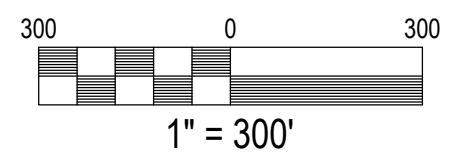


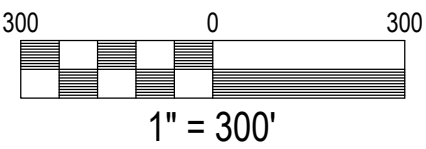
LEGEND

	RECREATIONAL OPEN SPACE
	NON-RECREATIONAL OPEN SPACE

OPEN SPACE CALCULATIONS

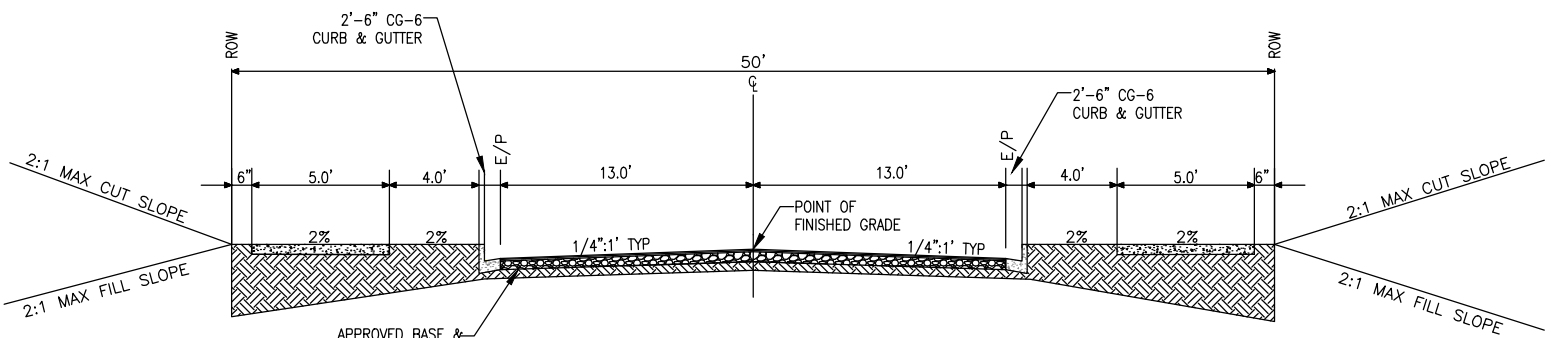
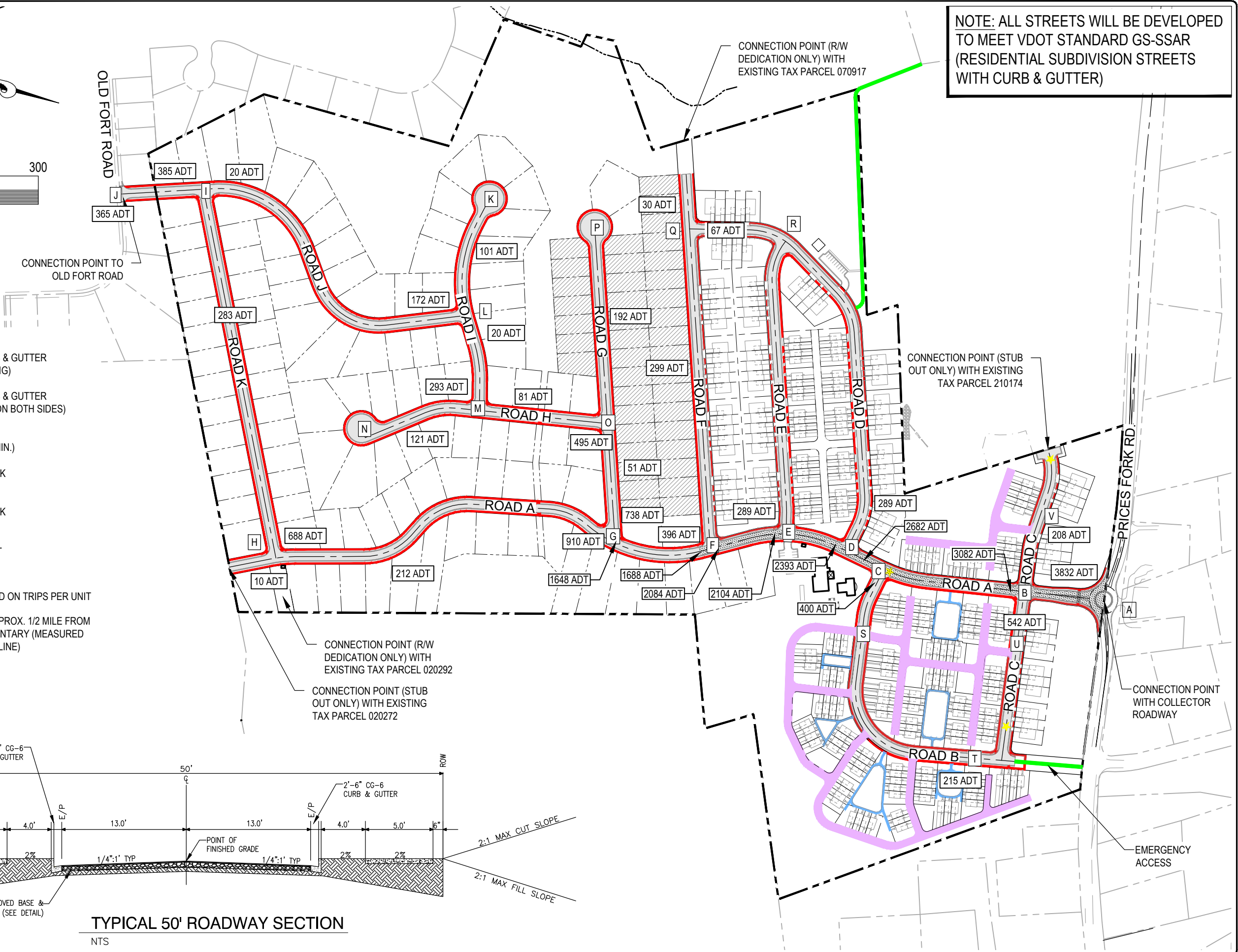
REQUIRED OPEN SPACE:	946,803 SF (20%)
PROPOSED OPEN SPACE:	
RECREATIONAL:	123,353 SF
NON-RECREATIONAL:	1,182,617 SF
TOTAL OPEN SPACE:	1,305,970 (27.6%)





NOTE: ALL STREETS WILL BE DEVELOPED TO MEET VDOT STANDARD GS-SSAR (RESIDENTIAL SUBDIVISION STREETS WITH CURB & GUTTER)

- LEGEND**
- PUBLIC ROAD - CURB & GUTTER SECTION (NO PARKING)
 - PUBLIC ROAD - CURB & GUTTER SECTION (PARKING ON BOTH SIDES)
 - PRIVATE ALLEY (WIDTH VARIES, 20' MIN.)
 - CONCRETE SIDEWALK (PUBLIC)
 - CONCRETE SIDEWALK (PRIVATE)
 - 10' PRIVATE ASPHALT MULTI-USE TRAIL
 - ADT ESTIMATE BASED ON TRIPS PER UNIT
 - INDICATES POINT APPROX. 1/2 MILE FROM PRICES FORK ELEMENTARY (MEASURED ALONG THE CENTERLINE)



TYPICAL 50' ROADWAY SECTION
NTS

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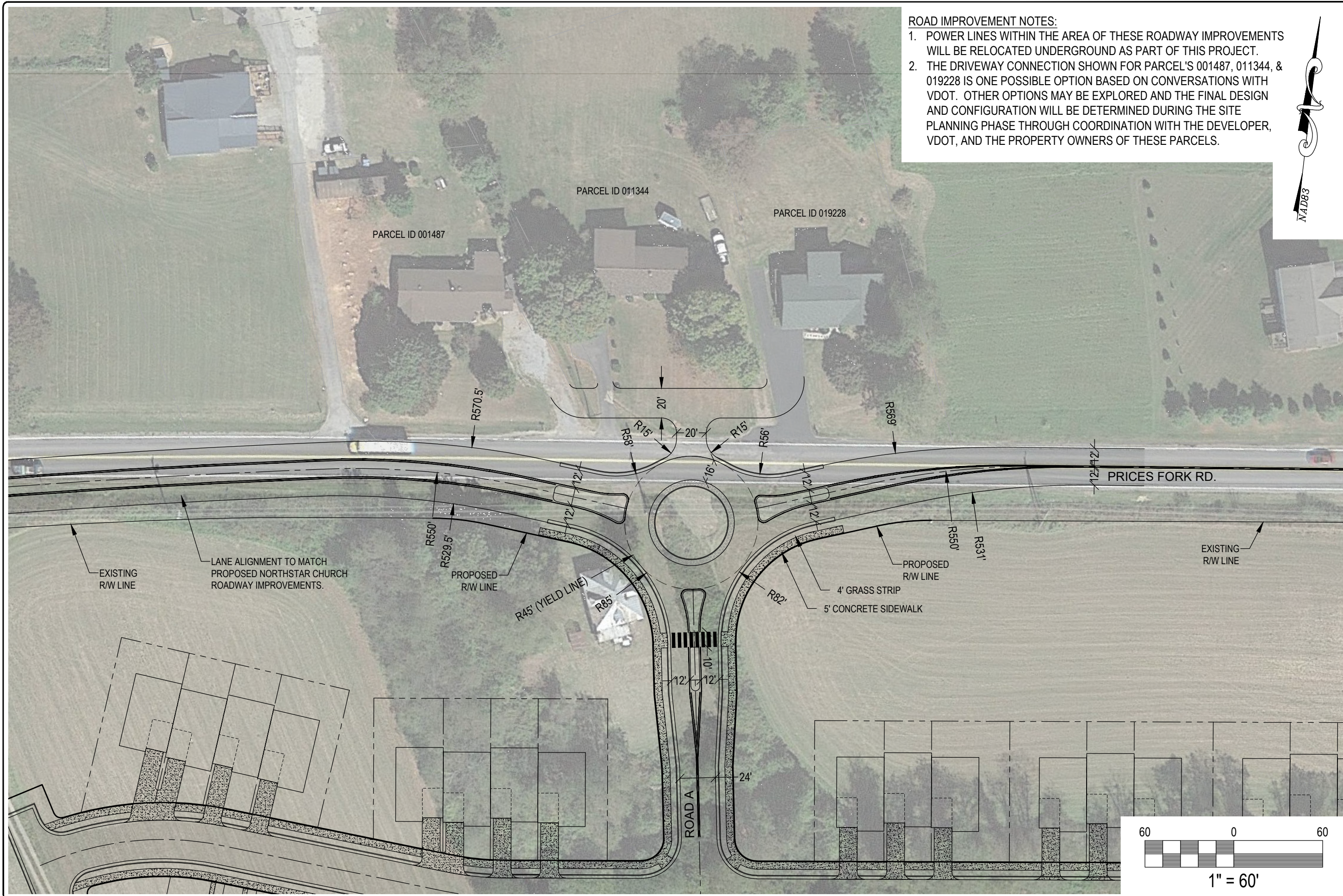
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WESTHILL SUBDIVISION
TRANSPORTATION EXHIBIT

PRICES FORK MAGISTERIAL DISTRICT
MONTGOMERY COUNTY, VIRGINIA

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SCALE: 1" = 300'
REVISIONS:
10/21/2019



- ROAD IMPROVEMENT NOTES:**
1. POWER LINES WITHIN THE AREA OF THESE ROADWAY IMPROVEMENTS WILL BE RELOCATED UNDERGROUND AS PART OF THIS PROJECT.
 2. THE DRIVEWAY CONNECTION SHOWN FOR PARCEL'S 001487, 011344, & 019228 IS ONE POSSIBLE OPTION BASED ON CONVERSATIONS WITH VDOT. OTHER OPTIONS MAY BE EXPLORED AND THE FINAL DESIGN AND CONFIGURATION WILL BE DETERMINED DURING THE SITE PLANNING PHASE THROUGH COORDINATION WITH THE DEVELOPER, VDOT, AND THE PROPERTY OWNERS OF THESE PARCELS.



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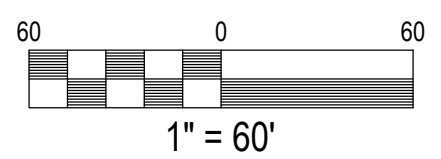
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PROPOSED ROUNDABOUT - OPTION 1
 PRICES FORK MAGISTERIAL DISTRICT
 MONTGOMERY COUNTY, VIRGINIA

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 SCALE 1" = 60'
 REVISIONS

10/21/2019



Parcel ID Number: _____

Board of Supervisors Ordinance No: _____

This document prepared by: Martin M. McMahon, County Attorney

755 Roanoke Street, Suite 2E

Christiansburg, VA 24073

Exempted from recordation taxes and fees under Sections 58.1-811, 17.1-279(E)

Voluntary Proffer Statement Form

Date (include revision dates): September 3, 2019; Revised October 21, 2019

Applicant Name: KIPPS FARMS, LLC

Owner(s) Name: KIPPS FARMS, LLC

Applicant Address: 500 SOUTH MAIN ST.

Owner Address: 500 SOUTH MAIN ST.

BLACKSBURG, VA 24060

BLACKSBURG, VA 24060

Applicant Name: KIPPS FARMS, LLC

Owner(s) Name: JLR LAND HOLDINGS LLC

Applicant Address: 500 SOUTH MAIN ST.

Owner Address: 3822 COUNTRY LANE

BLACKSBURG, VA 24060

HAYS, KANSAS 67601

Applicant Name: KIPPS FARMS, LLC

Owner(s) Name: Virginia L Vaughan Rev Trust

Applicant Address: 500 SOUTH MAIN ST.

Owner Address: 3600 WOODRIDGE ROAD

BLACKSBURG, VA 24060

FORT COLLINS, CO 80524

Project Name: WESTHILL Property Description: FOUR PARCELS SOUTH OF PRICES FORK ROAD, EAST OF PHILLIPS ACRES SUBDIVISION, WEST OF NORTHSTAR CHURCH, VIRGINIA TECH PROPERTY & MONTGOMERY FARMS SUBDIVISION AND ALSO NORTH OF MONTGOMERY FARMS SUBDIVISION. CURRENTLY USED FOR AGRICULTURAL PURPOSES AND TWO VACANT HOUSES EXIST ON THE PROPERTY.

Magisterial District: PRICES FORK Parcel ID Number(s): 019364, 012091, 011177,

Current Zoning District: A1 020291

Requested Zoning District(s): PUD-RES

The applicants and owners voluntarily and without any requirement by or exaction from Montgomery County or its governing body, hereby proffer the following conditions, acknowledging that the proposed proffers are voluntary, reasonable, specifically attributable to the proposed new residential development or other residential use (including applications for new residential rezoning with a residential component of a mixed use zoning):

- 1) *Property shall be developed in general conformance with the master plan by Balzer and Associates, Inc. depicted on Sheet Z2 dated September 3, 2019 and revised October 21, 2019.*
- 2) *No private driveways shall be permitted to access directly to Prices Fork Road.*
- 3) *A community clubhouse and amenity area will be provided for the residents of Westhill. The applicant will determine final amenity package during the site plan process. This area will be provided and constructed during the first phase of development for the subdivision.*
- 4) *The Property shall be served by Montgomery County Public Service Authority public water and sanitary sewer.*
- 5) *A property management company and/or homeowner's association shall maintain all community owned grounds, including but not limited to landscaped areas, recreational areas, parking and paved areas, walking trails, and stormwater management areas.*
- 6) *Road improvements and roundabout will be designed per VDOT and/or County requirements. The main roads through the Property shall be built and dedicated as public roads. The alleys will be built and maintained as private roads. All public road cul-de-sacs shall be built with a minimum 45-ft. radius to the edge of pavement.*
- 7) *A public road connection to Old Fort Road shall be made upon the development of the proposed single-family lots adjacent to Montgomery Farms.*
- 8) *Several reservations of land have been shown on the Conceptual masterplan to provide future inter-parcel connections. These will be dedicated to the County at the time of Recordation of subdivision plats. These are provided for construction of future transportation needs such as vehicular, pedestrian, and bikeway needs.*
- 9) *Publicly dedicated right of way or an easement will be provided at no cost across the Prices Fork Road frontage of the property to allow the VITL trail network to be constructed generally parallel with Prices Fork Road and connect to the property pedestrian network.*
- 10) *Bus shelters constructed of durable, architecturally sound materials that will withstand continual exposure to the elements shall be provided at various locations within the subdivision roadway network. Specific locations, style, and size to be determined during site plan stage and coordinated with Montgomery County Public School staff.*

The applicants and owners hereby affirm and acknowledge the following:

- This proffer statement supersedes any and all previously submitted proffers.
- All such conditions are in conformity with the County's Comprehensive Plan.
- Neither the County staff, the Planning Commission, the Board of Supervisors, nor any of its officers, employees, or agents suggested, requested or accepted an unreasonable proffer as defined by state law.
- Montgomery County is in no way obligated to rezone the subject property; however, in the event the property is rezoned, the conditions proffered shall continue in full force and effect unless or until they are modified by subsequent amendment to the zoning ordinance; and that the applicants and owners, their heirs, personal representatives, assigns, grantees, and other successors in interest or title, shall not be released from the responsibility of fulfilling each of the enumerated conditions by virtue of any variance or other change in or to the zoning ordinance.
- If any proffer attached to this rezoning is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such proffer shall be deemed a separate, distinct and independent provision and such holding shall not affect the validity of the remaining proffers in this rezoning, it being the intent that this proffer statement shall stand, notwithstanding the invalidity of any proffer hereof.

WITNESS the following signature(s):

Applicant/Owner Name: _____

Title and/or Company: _____

Signature: _____

State of _____ County of _____

“The foregoing instrument was acknowledged before me this _____ day of _____, 2019 by _____.”

Notary Public

My Commission Expires: _____

Applicant/Owner Name: _____

Title and/or Company: _____

Signature: _____

State of _____ County of _____

“The foregoing instrument was acknowledged before me this _____ day of _____, 2019 by _____.”

Notary Public

My Commission Expires: _____

Applicant/Owner Name: _____

Title and/or Company: _____

Signature: _____

State of _____ County of _____

“The foregoing instrument was acknowledged before me this _____ day of _____, 2019 by _____.”

Notary Public

My Commission Expires:

Traffic Impact Analysis
Westhill Rezoning
Montgomery County, Virginia
October 2019



TRAFFIC IMPACT ANALYSIS
FOR
WESTHILL REZONING

LOCATED
IN
MONTGOMERY COUNTY, VIRGINIA

Prepared for:
Snyder & Associates
500 South Main Street
Blacksburg, Virginia 24060

Prepared by:
Ramey Kemp & Associates, Inc.
621 Jonestown Road
Suite 221
Winston-Salem, North Carolina 27103

October 2019

RKA Project – 19294

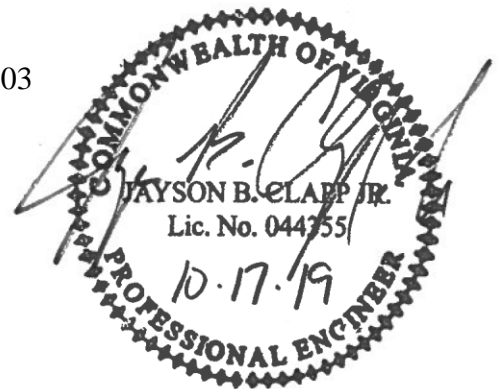


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Appendix E	Queuing Analysis Reports

TRAFFIC IMPACT ANALYSIS WESTHILL REZONING MONTGOMERY COUNTY, VIRGINIA

1. INTRODUCTION

This report summarizes the findings of the Traffic Impact Analysis (TIA) that was performed for the proposed rezoning of the Westhill property located at 3871 Prices Fork Road in Montgomery County, Virginia. The purpose of this study is to evaluate the future traffic conditions at the proposed site access location and determine what mitigation measures, if any, are needed to accommodate the projected traffic volumes.

1.1. Executive Summary

The proposed site is located on the south side of Prices Fork Road east of Prices Fork Elementary School in Montgomery County, Virginia. The development of the site is proposed to consist of 154 single-family homes and 262 townhomes. If approved, the residential development is anticipated to be fully built out by the year 2030. Full access to Prices Fork Road is to be provided via one (1) new connection located approximately 525 feet west of the Prices Fork Road/Stratford View Drive intersection. Distance is measured center-to-center.

Based on coordination with Virginia Department of Transportation (VDOT), it was determined that the weekday AM and PM peak hours would be analyzed at the future Preserve at Walnut Springs access under future (2030) ‘no-build’ and ‘build’ traffic conditions, and the proposed site access under future (2030) ‘build’ traffic conditions.

Based on the traffic capacity and queuing analysis results, the following improvements are expected to sufficiently accommodate the future (2030) ‘build’ traffic conditions with the residential development fully built out:

Prices Fork Road and Proposed Site Access:

- Construct a one-lane roundabout.
- Provide a two-lane cross-section for the proposed site access with one ingress lane and one egress lane.

While the previous TIA included an abbreviated signal warrant analysis, no analysis was needed in this TIA due to the modified development plan and the proposed construction of a roundabout at the site access.

1.2. Site Location and Study Area

The proposed site is located on the south side of Prices Fork Road [east of Prices Fork Elementary School] in Montgomery County, Virginia. The study area was developed through coordination with VDOT and consists of the future Preserve at Walnut Springs access and proposed site access location on Prices Fork Road. Refer to Appendix A for a copy of the Pre-Scope of Work Meeting Form.

Refer to Figure 1 for the site location map.

1.3. Existing Land Uses

The site is currently undeveloped.

1.4. Proposed Land Uses and Access

The development of the site is proposed to consist of 154 single-family homes and 262 townhomes. If approved, the residential development is anticipated to be fully built out by the year 2030. Full access to Prices Fork Road is to be provided via one (1) new connection located approximately 525 feet west of the Prices Fork Road/Stratford View Drive intersection. Distance is measured center-to-center. Refer to Figure 2 for a copy of the rezoning plan.

1.5. Existing Roadway Network

Prices Fork Road is a two-lane facility with a posted speed limit of 45 miles per hour (mph) within the study area. Based on 2017 VDOT Annual Average Daily Traffic (AADT) estimates, Prices Fork Road carries approximately 10,000 vehicles per day within the vicinity of the site.

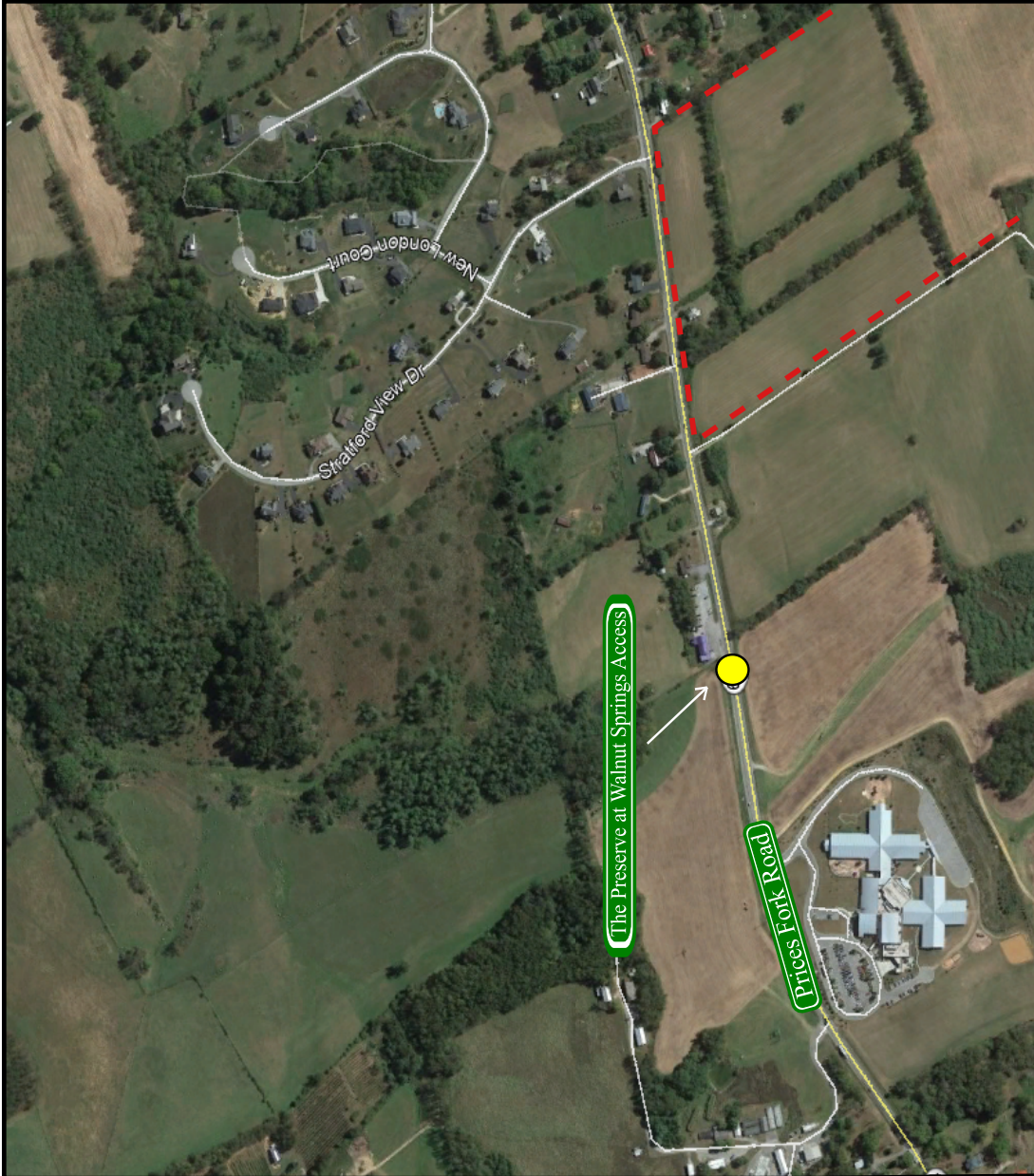
2. TRAFFIC ANALYSIS PROCEDURE

All study intersections were analyzed using the methodology outlined in the Highway Capacity Manual (HCM) published by the Transportation Research Board. The computer software package, Synchro (Version 10), was used to complete all analyses for the unsignalized



LEGEND

-  Proposed Site Location
-  Study Intersection



Site Location Map

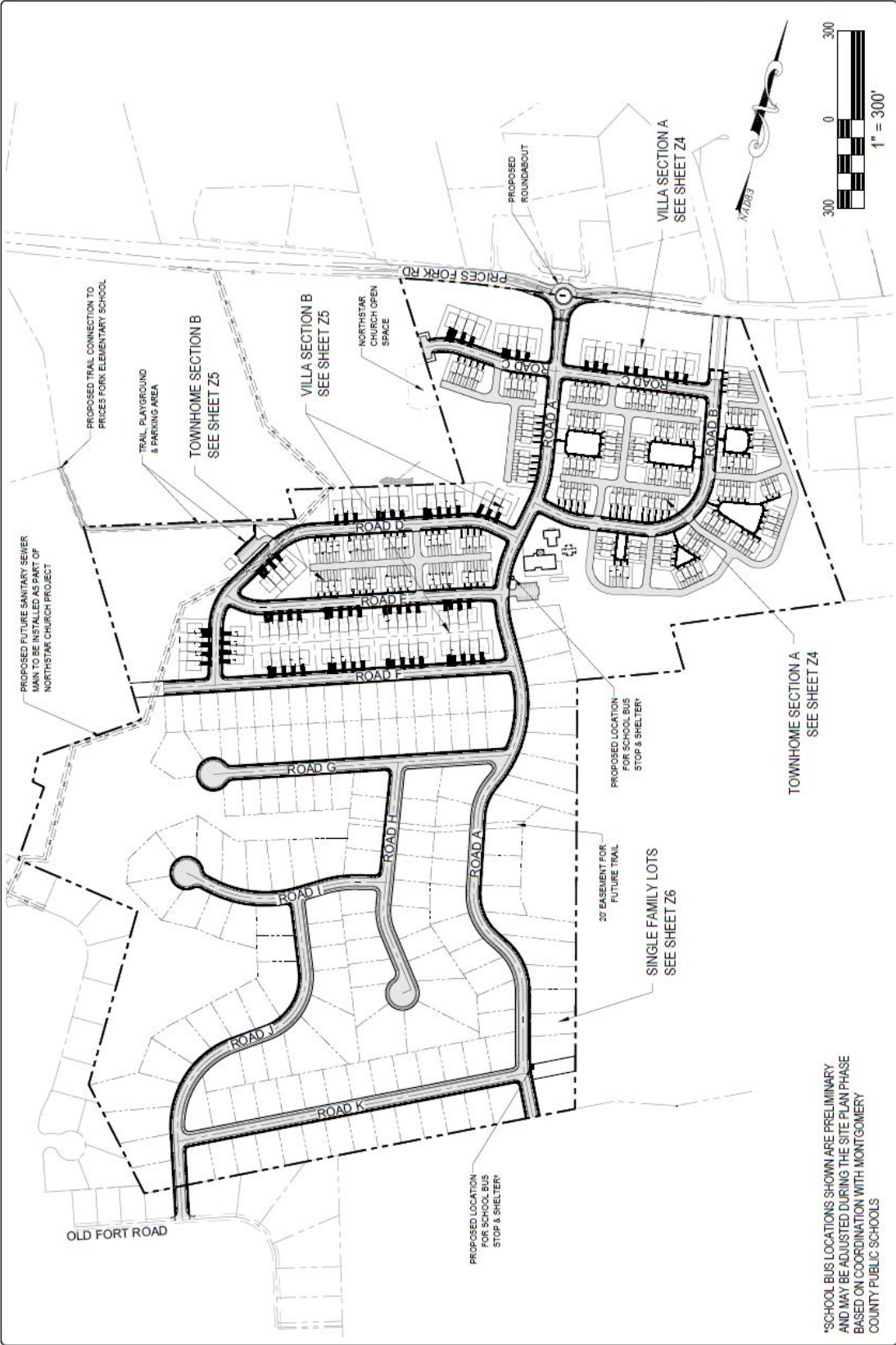
Scale: Not to Scale
Figure 1

Westhill Rezoning
Montgomery County, VA





WESTHILL SUBDIVISION
 CONCEPTUAL MASTER PLAN
 PROJECT NO. Z2



*SCHOOL BUS LOCATIONS SHOWN ARE PRELIMINARY AND MAY BE ADJUSTED DURING THE SITE PLAN PHASE BASED ON COORDINATION WITH MONTGOMERY COUNTY PUBLIC SCHOOLS

intersections. Synchro was developed by Trafficware Corporation and allows the user to input data into the Synchro software and calculate the output based on methodologies in the HCM. The software package SIDRA INTERSECTION 6.1 was utilized for all roundabout analysis.

The HCM defines capacity as “the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control condition.” Level of service (LOS) is a term used to represent different driving conditions and is defined as a “qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passenger.” Level of service varies from Level “A”, representing free flow, to Level “F”, where greater vehicle delays are evident.

For roundabout intersections, LOS calculations are provided for all approaches as well as the overall intersection. For unsignalized intersections, an overall LOS is not provided, but rather a LOS for movements that have a conflicting movement.

Refer to Table 1 for HCM levels of service and related average control delay per vehicle. Control delay as defined by the HCM includes “initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.” As shown in Table 1, an average control delay of 30 seconds at an unsignalized intersection results in LOS D operation.

TABLE 1
HIGHWAY CAPACITY MANUAL – LEVELS OF SERVICE AND DELAY

UNSIGNALIZED INTERSECTION		ROUNDBABOUT	
Level of Service	Average Control Delay Per Vehicle (Seconds)	Level of Service	Average Control Delay Per Vehicle (Seconds)
A	0-10	A	0-10
B	10-15	B	10-20
C	15-25	C	20-35
D	25-35	D	35-55
E	35-50	E	55-80
F	>50	F	>80

The queue lengths reported at the study intersections are the maximum queue lengths observed by SimTraffic, and are based on an average of ten (10) simulation runs.

3. EXISTING TRAFFIC CONDITIONS

Existing through volumes on Prices Fork Road at the study intersections were obtained from the Traffic Impact Analysis (TIA) that was completed for The Preserve at Walnut Springs [sealed on October 11, 2018]. Refer to Figure 3 for an illustration of the existing through traffic volumes at the future Preserve at Walnut Springs access. A copy of the traffic count data in can be found in Appendix B. While the counts that were collected at the Prices Fork Elementary School for The Preserve at Walnut Springs TIA were utilized to calculate the existing peak hour traffic volumes on Prices Fork Road at the future access points that intersection was not analyzed because it was not included in the TIA’s study area that was developed through coordination with VDOT.

4. ‘NO-BUILD’ TRAFFIC CONDITIONS

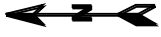
4.1. Background Traffic Growth

In order to account for the growth of traffic and subsequent traffic conditions at a future year, background traffic projections are needed. Background traffic is the component of traffic due to the growth of the community and surrounding area that is anticipated to occur regardless of whether the site is developed. A compounded annual growth rate of 0.5% [per VDOT] was applied to the existing traffic volumes on Prices Fork Road to project background traffic volumes for the future year 2030. Refer to Figure 4 for an illustration of the projected (2030) peak hour traffic volumes.

4.2. Adjacent Development Traffic

Based on coordination with VDOT, it is understood that there are three (3) adjacent developments in the vicinity of the site that should be accounted for in this TIA: Old Prices Fork Elementary School Rezoning [Taylor Hollow], The Preserve at Walnut Springs, and Northstar Ministry Center.

The Taylor Hollow traffic study [completed by Blazer and Associates on April 23, 2015] proposes a multi-use development located at the old Prices Fork Road Elementary School site between Brookfield Road and Thomas Lane [west of the proposed study area]. Upon completion, the development is expected to consist of 58 apartments, 36 [attached] senior adult housing units, a 4,900 square foot daycare, and 4,888 square feet of retail space. At full build out, Taylor Hollow is expected to generate 100 total trips (43 entering and 57 exiting) during the AM peak hour, and 121 total trips (65 entering and 56 exiting) during the PM peak hour.




Prices
Fork Rd.

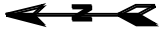
← 349/596

733/473 →

Prices
Fork Rd.

LEGEND
 X / Y → AM / PM Peak Hour Traffic
 (From the Preserve at
 Walnut Springs TIA)

	<p>Westhill Rezoning Montgomery County, VA</p>	<p>Projected (2030) Traffic Volumes</p>
<p>Scale: Not to Scale</p>		<p>Figure 4</p>




Prices
Fork Rd.

← 324/553

678/444 →

Prices
Fork Rd.

LEGEND
 X / Y → AM / PM Peak Hour Traffic
 (From the Preserve at
 Walnut Springs TIA)

Existing (2017) Traffic Volumes	Westhill Rezoning Montgomery County, VA	
Scale: Not to Scale		

The Preserve at Walnut Springs Traffic Study [completed by Ramey Kemp and Associates, Inc. on October 11, 2018] proposes a residential development located on Prices Fork Road [west of the proposed site]. Upon completion, the development is expected to consist of 131 single-family homes, 126 townhomes, and 84 apartments. At full build out, The Preserve at Walnut Springs is expected to generate 187 total trips (47 entering and 140 exiting) during the AM peak hour and 242 trips (152 entering and 90 exiting) during the PM peak hour.

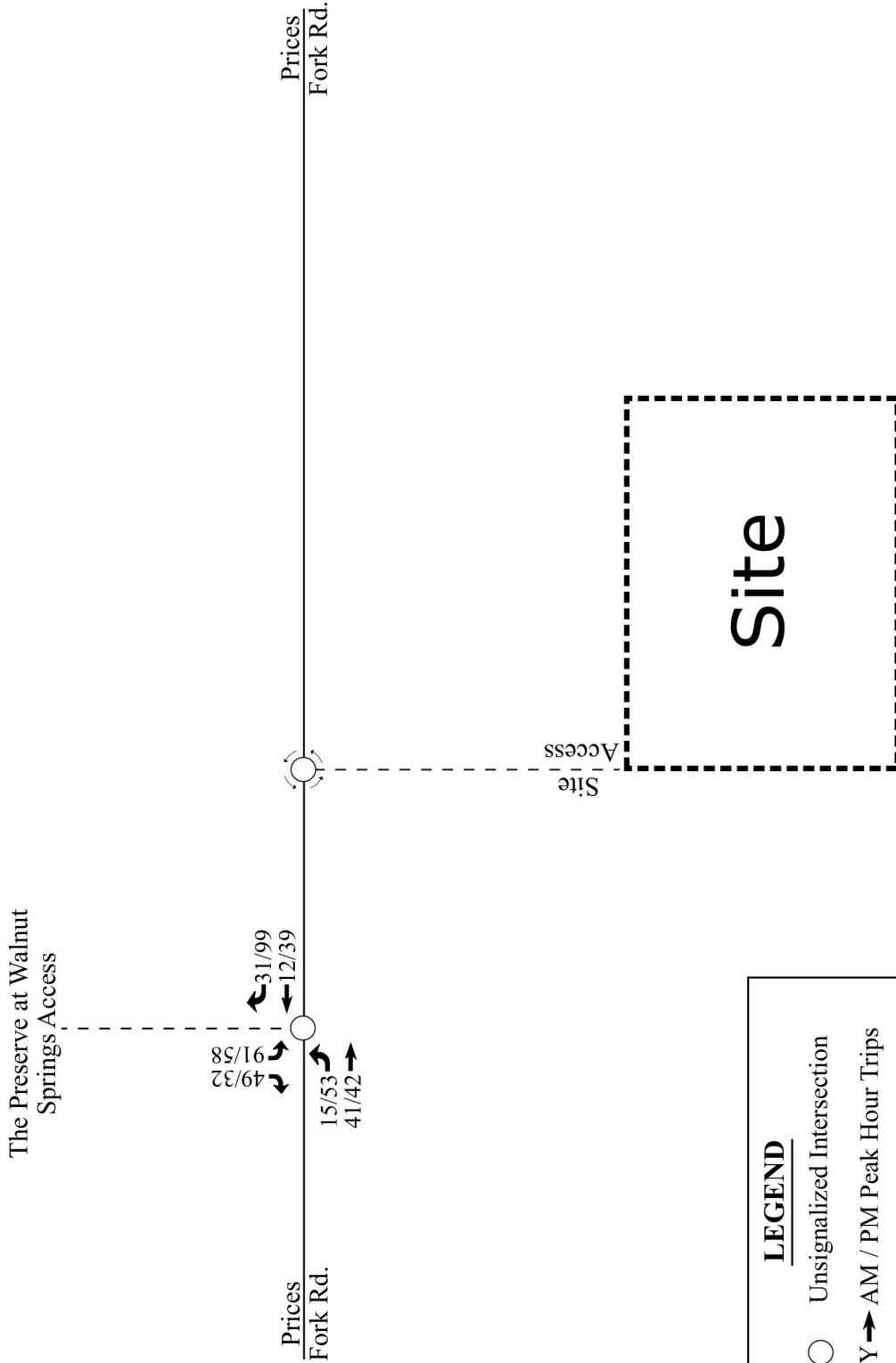
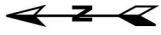
The Northstar Ministry Center Traffic Narrative [completed by Spectrum Design on June 21, 2019] proposes a church that will be utilized by members and the surrounding community for various events during the week. Based on a table indicating anticipated uses of the facility during the week, uses during the peak times of the adjacent roadway network include a coffee shop during the AM peak hour and small group/community organizational meetings occurring during the PM peak hour. Based on the information provided, the coffee shop could be expected to generate 4 total trips (2 entering and 2 exiting) during the AM peak hour, while the meetings could be expected to generate up to 43 total trips (all entering) during the PM peak hour. Refer to Figure 5 for an illustration of the total adjacent development traffic volumes. Refer to Appendix C for information related to each approved development.

4.3. Future (2030) ‘No-Build’ Peak Hour Traffic Conditions

The ‘no-build’ (2030) peak hour traffic volumes were determined by adding the adjacent development peak hour traffic volumes to the projected (2030) peak hour traffic volumes. Refer to Figure 6 for an illustration of the future (2030) ‘no-build’ traffic volumes.

4.4. Analysis of Future (2030) ‘No-Build’ Peak Hour Traffic Conditions

In order to estimate the future operating levels of service (LOS) at The Preserve at Walnut Springs access, the future (2030) ‘no-build’ traffic volumes were analyzed under future traffic control conditions, utilizing the truck percentages, PHF, and proposed lane configurations as shown in the TIA for The Preserve at Walnut Springs. Refer to Figure 7 for an illustration of the future lane geometrics and traffic control. Refer to Table 2 for a summary of the capacity analysis results for this unsignalized intersection. Please note that the capacity analysis results may differ from those reported in The Preserve at Walnut Springs TIA [sealed 10-11-18] due to the addition of traffic associated with the Northstar Ministry Center.



LEGEND

- Unsignalized Intersection
- X / Y → AM / PM Peak Hour Trips

	Westhill Rezoning Montgomery County, VA	Adjacent Development Traffic Volumes
	Scale: Not to Scale	Figure 5

Under future ‘no-build’ traffic conditions, capacity analysis indicates that the major street [eastbound] left turn movement on Prices Fork Road is expected to experience minor delays of less than 10.0 seconds per vehicle and operate at LOS A during the AM and PM peak hours. The stop-controlled [southbound] minor street movements of The Preserve at Walnut Springs Access is expected to experience minor to moderate delays of 46.0 seconds per vehicle or less and operate at LOS E or better during the peak hours.

TABLE 2
ANALYSIS SUMMARY OF
FUTURE (2030) ‘NO-BUILD’ PEAK HOUR TRAFFIC CONDITIONS

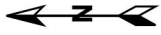
INTERSECTION	LANE GROUP	AM PEAK HOUR			PM PEAK HOUR		
		Lane LOS	Delay (s)	Lane Queue (ft)	Lane LOS	Delay (s)	Lane Queue (ft)
Prices Fork Road & The Preserve at Walnut Springs Access [Unsignalized]	EBL ²	A	8.2	33	A	9.7	61
	EBT ³	-	-	0	-	-	0
	WBT ³	-	-	0	-	-	2
	WBR ³	-	-	0	-	-	6
	SBL ¹	E	45.3	106	E	44.9	90
	SBR ¹	B	11.0	53	B	13.8	50

1. Level of service for minor approach
2. Level of service for major street left turn movement
3. HCM methodology does not provide lane group or overall LOS or delay for major street through movements or right turns at unsignalized intersections

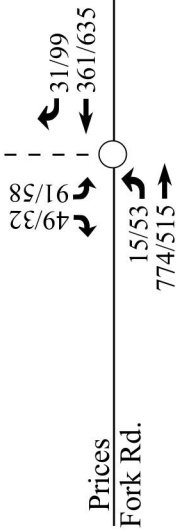
Expected delays were also evaluated based on the SimTraffic analysis that is based on an average of ten (10) traffic simulation runs. Based on the analysis results, the delays for the southbound [stop-controlled] left turn movement are not expected to exceed 24.5 seconds per vehicle, which would result in a LOS C.

Based on a review of the maximum [SimTraffic] queuing results, the queues are not expected to exceed the effective storage [full width plus half of bay taper] of the future 225 feet for the eastbound left turn lane or the 215 feet for the westbound turn lane [proposed under The Preserve at Walnut Springs TIA]. In addition, queues on the stop-controlled approach of The Preserve at Walnut Springs access are not expected to exceed 110 feet [or approximately 5 cars].

Refer to Appendices D and E for more detailed capacity and queuing analysis results, respectively.



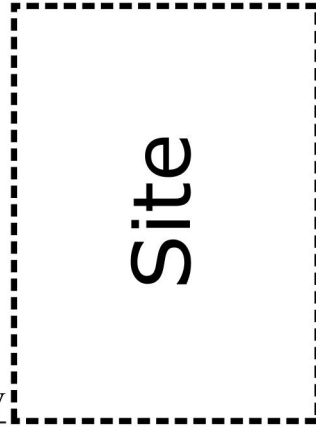
The Preserve at Walnut Springs Access



Prices Fork Rd.

Prices Fork Rd.

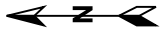
Site Access



LEGEND

- Unsignalized Intersection
- X / Y → AM / PM Peak Hour Traffic

	Westhill Rezoning Montgomery County, VA	
	No-Build (2030) Traffic Volumes	Figure 6



LEGEND

- Unsignalized Intersection
- ➔ Existing Lane
- X' Storage (In Feet)
- Posted Speed Limit
- ➔ Future Lane (Provided under the Preserve at Walnut Springs TIA)

	Westhill Rezoning Montgomery County, VA	
	Future Geometrics and Traffic Control Scale: Not to Scale	Figure 7

5. PROJECT TRAFFIC

5.1. Trip Generation

The proposed residential development is expected to consist of 154 single family homes and 262 townhomes. Average weekday daily as well as AM and PM peak hour site trips for this analysis were calculated utilizing methodology contained within the 10th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. Traffic was generated according to the peak hour of adjacent street traffic for the land uses of single-family detached (ITE Code 210) and low-rise multifamily housing (ITE Code 220) for the townhomes. Utilizing the number of dwelling units as the independent variable and equations, trips were generated for each of the proposed land uses. Table 3 provides a summary of the trip generation calculations.

TABLE 3
TRIP GENERATION

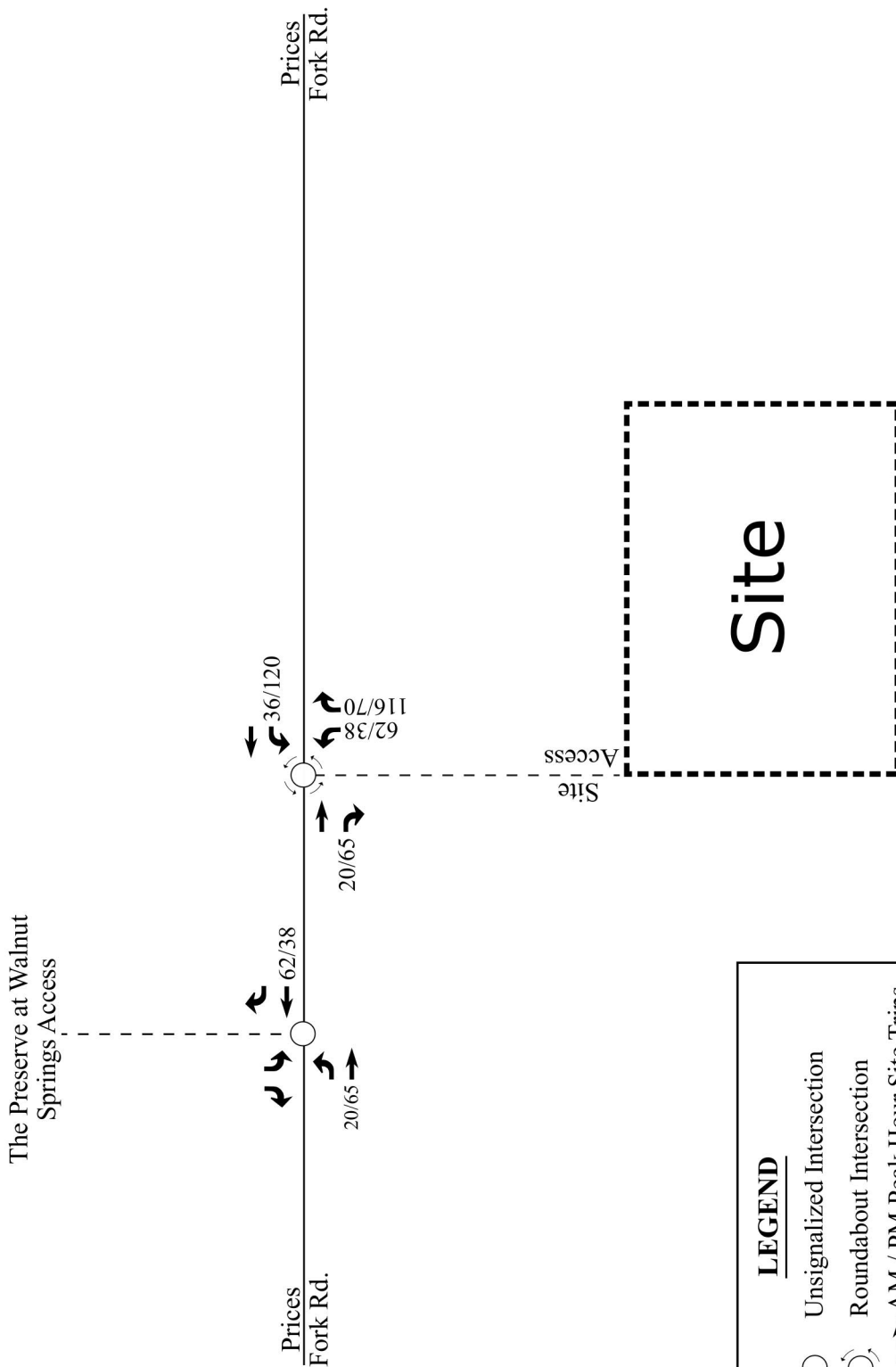
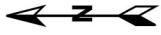
ITE Land Use (ITE Code)	Density	Average Daily Traffic (vpd)	AM Peak Hour (vph)		PM Peak Hour (vph)	
			Enter	Exit	Enter	Exit
Single-Family Detached Housing (210)	154 Dwelling Units	1,547	29	86	97	57
Multifamily Housing (Low-rise) (220)	262 Dwelling Units	1,940	27	92	88	51
Total		3,487	56	178	185	108

6. SITE TRIP DISTRIBUTION AND ASSIGNMENT

The primary site trip distribution for the proposed development was determined based on the previously prepared TIA for The Preserve at Walnut Springs and engineering judgment, and are summarized below:

- 65% to/from the east via Prices Fork Road
- 35% to/from the west via Prices Fork Road

Refer to Figures 8 and 9 for illustrations of the site trip distribution and the site trip assignment, respectively.

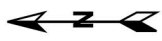


LEGEND

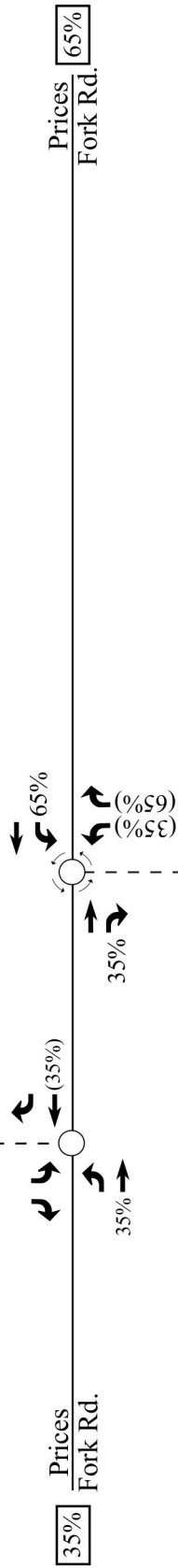
- Unsignalized Intersection
- Roundabout Intersection
- X / Y → AM / PM Peak Hour Site Trips

	Westhill Rezoning Montgomery County, VA	
	Site Trip Assignment	Figure 9

Scale: Not to Scale

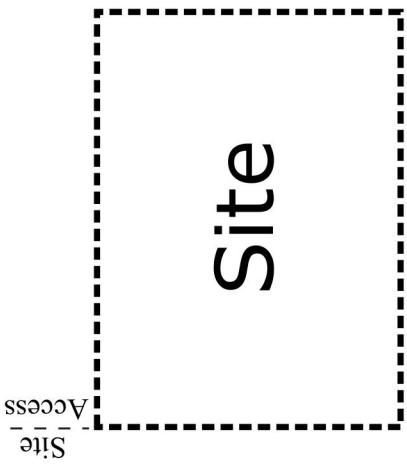


The Preserve at Walnut Springs Access



LEGEND

- Unsignalized Intersection
- ⊙ Roundabout Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- XX% Regional Trip Distribution



	Westhill Rezoning Montgomery County, VA	Site Trip Distribution
	Scale: Not to Scale	

Figure 8

7. 'BUILD' TRAFFIC CONDITIONS

With the construction of the proposed development, cross access is to be provided to the residential land uses located south of the site via Old Fort Road. In order to estimate the amount of [southern] residential traffic that would utilize the proposed development's roadway network to access Prices Fork Road, trips were generated for 100 single-family homes utilizing methodology contained within the 10th Edition ITE Trip Generation Manual. This portion of the residential development is expected to generate 76 total trips (19 entering and 57 exiting) during the AM peak hour and 102 trips (64 entering and 38 exiting) during the PM peak hour. It was assumed that approximately 50% [of the 65%] of the development traffic that is expected to travel to/from the east on Prices Fork Road would utilize the proposed development's roadway network. Refer to Figures 10 and 11 for illustrations of the [southern] residential traffic diversion, respectively.

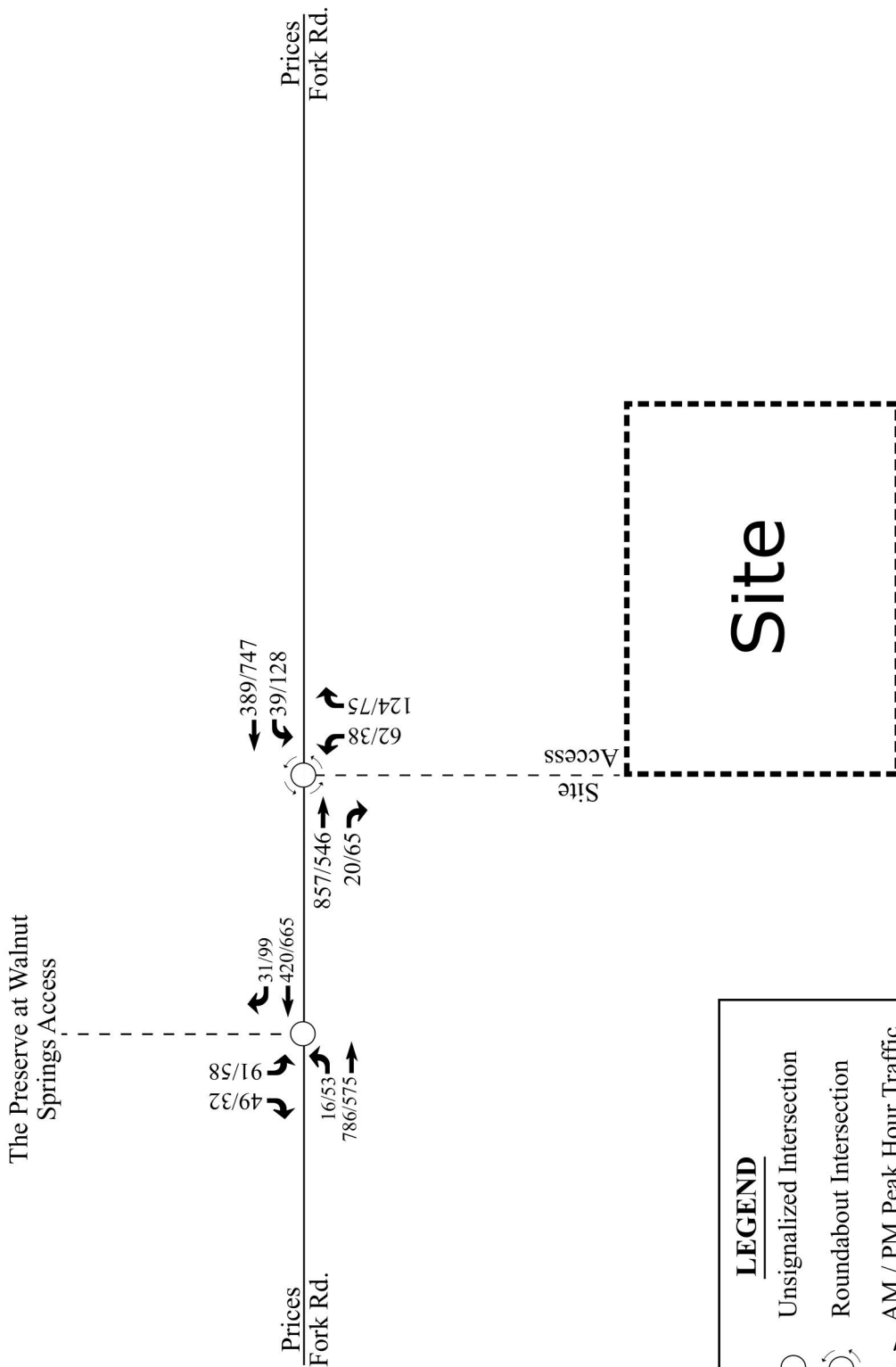
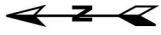
7.1. Future (2030) 'Build' Peak Hour Traffic Conditions

Future (2030) 'build' conditions were determined by adding the site-generated traffic volumes (Figure 9) and the southern residential traffic diversion (Figure 11) to the future (2030) 'no-build' traffic volumes (Figure 7). Refer to Figure 12 for an illustration of the future (2030) 'build' traffic volumes with the development fully built out.

7.2. Analysis of Future (2030) 'Build' Peak Hour Traffic Conditions

The study intersections were analyzed with the future (2030) 'build' traffic volumes (Figure 10) utilizing similar methodology as to those used to analyze the future 'no-build' traffic conditions. Refer to Table 4 for a summary of the capacity analysis results for each of the study intersections.

Under future 'build' traffic conditions, capacity analysis indicates that the major street [eastbound] left turn movement on Prices Fork Road is expected to experience minor delays of less than 10.0 seconds per vehicle and operate at LOS A during the AM and PM peak hours. While the stop-controlled [southbound] right turn movement of The Preserve at Walnut Springs access is expected to experience minor delays of less than 14.5 seconds per vehicle and operate at LOS B during the peak hours, the left turn movement is expected to experience heavier delays during the AM and PM peak hours. Greater delays and poorer levels of

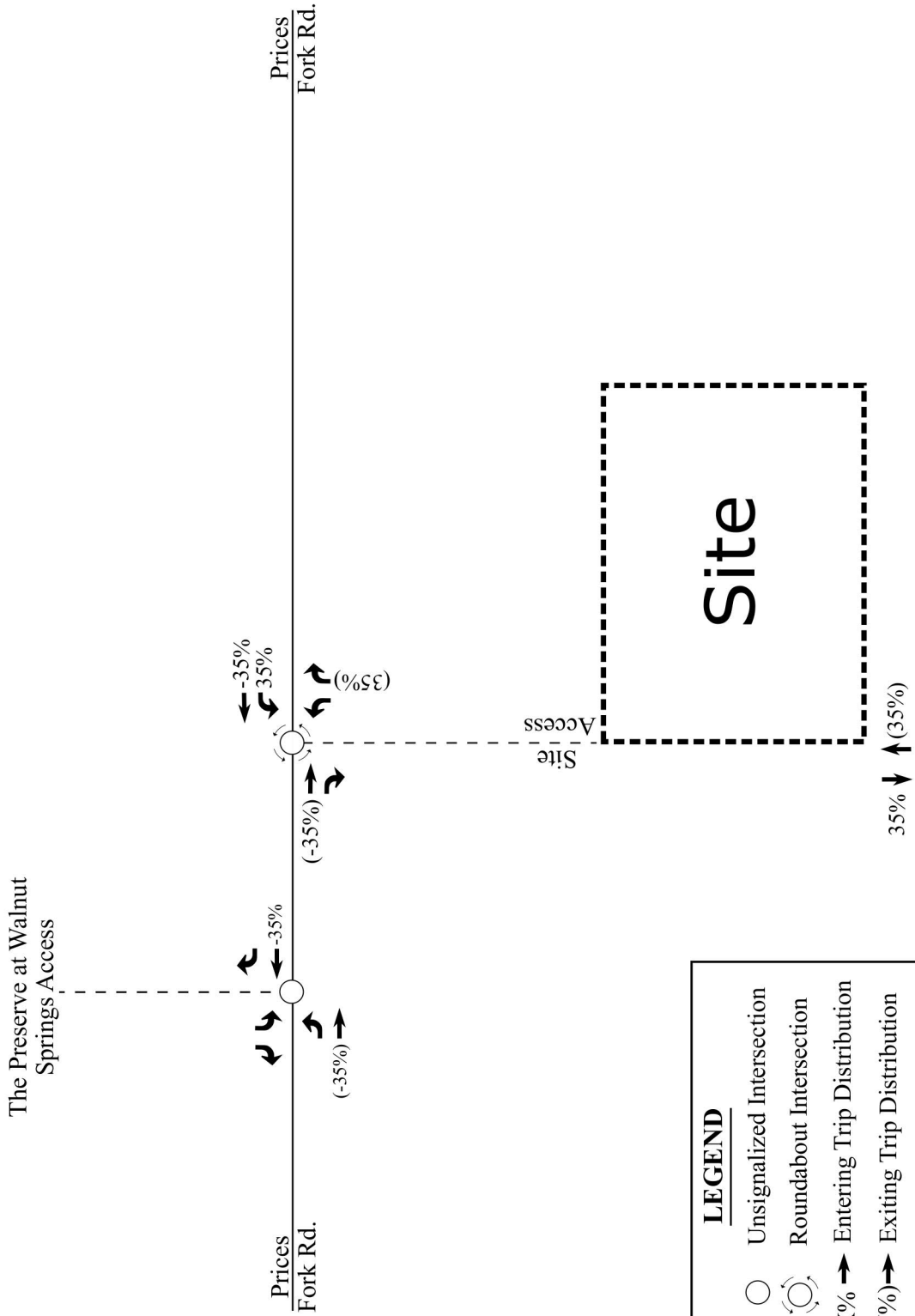
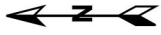


LEGEND

- Unsignalized Intersection
- ⊙ Roundabout Intersection
- X / Y → AM / PM Peak Hour Traffic

	Westhill Rezoning Montgomery County, VA	
	Build (2030) Traffic Volumes	Figure 12

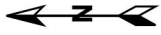
Scale: Not to Scale



LEGEND

- Unsignalized Intersection
- ⊙ Roundabout Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution

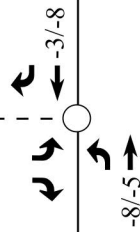
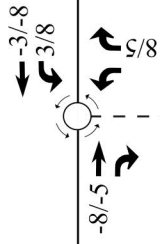
	Westhill Rezoning Montgomery County, VA	Old Fort Road Traffic Diversion Distribution
	Scale: Not to Scale	
		Figure 10



The Preserve at Walnut Springs Access

Prices Fork Rd.

Prices Fork Rd.



Site Access

Site

3/8 ↓ 8/5

LEGEND

- Unsignalized Intersection
- ⊙ Roundabout Intersection
- X / Y → AM / PM Peak Hour Trips



RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Westhill Rezoning
Montgomery County, VA

Old Fort Road Traffic
Diversion Assignment

Scale: Not to Scale

Figure 11

operation are not uncommon for stop-controlled approaches at unsignalized intersections, especially during peak times when mainline volumes are typically the heaviest. SimTraffic was utilized to develop a traffic simulation model to evaluate the stop-controlled conditions with the addition of the roundabout at the development access. Based on the analysis results, the delays for the southbound [stop-controlled] left turn movement are not expected to exceed 26.5 seconds per vehicle, which would result in a LOS D or better. When compared to the ‘no-build’ SimTraffic analysis, the roundabout is expected to help alleviate any impact associated with the proposed development when you consider the difference in delays is less than 2.5 seconds per vehicle for the southbound left turn movement as opposed to the anticipated increase based on Synchro analysis that does not account for adjacent traffic control conditions. A summary of the capacity analysis results is presented in Table 4. Refer to Appendix D for more detailed capacity analysis results and Appendix E for the SimTraffic performance reports.

TABLE 4
FUTURE (2030) ‘BUILD’ PEAK HOUR TRAFFIC CONDITIONS

INTERSECTION	LANE GROUP	AM PEAK HOUR					PM PEAK HOUR				
		Lane LOS	Delay (s)	Lane Queue (ft)	Overall LOS	Overall Delay (s)	Lane LOS	Delay (s)	Lane Queue (ft)	Overall LOS	Overall Delay (s)
Prices Fork Road & The Preserve at Walnut Springs Access [Unsignalized]	EBL ²	A	8.4	31			A	9.8	51		
	EBT ³	-	-	0			-	-	0		
	WBT ³	-	-	0	-	-	-	-	2	-	-
	WBR ³	-	-	0			-	-	21		
	SBL ¹	F	55.1	103			F	55.7	94		
	SBR ¹	B	11.5	57			B	14.2	58		
Prices Fork Road & Proposed Site Access [Roundabout]	EBTR	A	5.3	610	A	7.4	A	6.0	116	A	6.2
	WBLT	A	5.0	66			A	5.8	409		
	NBLR	C	22.9	105			B	10.2	69		

1. Level of service for minor approach
2. Level of service for major street left turn movement
3. HCM methodology does not provide lane group or overall LOS or delay for major street through movements or right turns at unsignalized intersections

Based on a review of the maximum [SimTraffic] queuing results, the queues are not expected to exceed the effective storage [full width plus half of bay taper] of the future 225 feet for the eastbound left turn lane or the 215 feet for the westbound turn lane [proposed under The Preserve at Walnut Springs TIA]. In addition, queues on the stop-controlled approach of The Preserve at Walnut Springs access are not expected to exceed 105 feet [or approximately 5

cars]. The queues at the proposed roundabout are not expected to extend back and block adjacent intersections. Projected queues on the northbound approach of the proposed site access are not expected to exceed 105 feet [or approximately 5 cars] during the AM and PM peak hours. Refer to Appendices D and E for more detailed capacity and queuing analysis results, respectively.

Based on the capacity and queuing analysis results, no further mitigation measures have been identified to accommodate the proposed development traffic at this intersection.

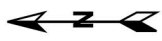
8. RECOMMENDATIONS

Based on the traffic capacity analysis, the following improvements are expected to accommodate the projected 2030 traffic conditions with the proposed development fully built out:

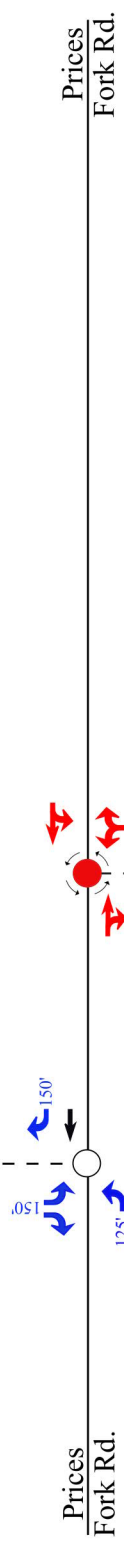
Prices Fork Road and Proposed Site Access:

- Construct a one-lane roundabout.
- Provide a two-lane cross-section for the proposed site access with one ingress lane and one egress lane.

Refer to Figure 13 for an illustration of the proposed lane geometrics and traffic control.



The Preserve at Walnut Springs Access



LEGEND

- Unsignalized Intersection
- ➔ Existing Lane
- X' Storage (In Feet)
- ➔ Future Lane (Provided under the Preserve at Walnut Springs TIA)
- Proposed Roundabout Intersection
- ➔ Proposed Lane Configuration



Westhill Rezoning
Montgomery County, VA

Proposed Lane Geometrics
and Traffic Control

Scale: Not to Scale

Figure 13

TECHNICAL APPENDIX

APPENDIX A

VDOT PRE-SCOPE OF WORK MEETING FORM

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:	Balzer and Associates, Inc. - Steve Semones, EVP 540-381-4290 ssemone@balzer.cc			
Developer/Owner Name: Tele: E-mail:	Snyder and Associates - Mike Snyder, EVP 540-552-3377 msdenhill@yahoo.com			
Project Information				
Project Name:	Westhill Rezoning - (Hemphill/Russell Property)	Locality/County:	Montgomery	
Project Location: <small>(Attach regional and site specific location map)</small>	3871 Prices Fork Road			
Submission Type	Comp Plan <input type="checkbox"/>	Rezoning <input checked="" type="checkbox"/>	Site Plan <input type="checkbox"/>	Subd Plat <input type="checkbox"/>
Project Description: <small>(Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary)</small>	Approximately 100 acres proposed for a mixed residential development including single family detached and single family attached homes. Two proposed access points to Prices Fork Road, new road connection to Old Fort Road and multiple future connection points. Project will be phased over approximately 5 years.			
Proposed Use(s): <small>(Check all that apply; attach additional pages as necessary)</small>	Residential <input checked="" type="checkbox"/>	Commercial <input type="checkbox"/>	Mixed Use <input type="checkbox"/>	Other <input type="checkbox"/>
	Residential Uses(s) Number of Units: 466 ITE LU Code(s): 210 - (145 units) 220 - (321 units) _____ 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 <input type="checkbox"/>	100 – 499 <input checked="" type="checkbox"/>	500 – 999 <input type="checkbox"/>	1,000 or more <input type="checkbox"/>

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: 2025	Design Year: 2020 at least 2030
Study Area Boundaries (Attach map)	North: Prices Fork Road	South: Old Fort Road	
	East: Stratford View Drive	West: Brookfield Road	
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	Site plan requirements for Turn Lanes on Prices Fork Road for the recently approved Northstar Church Project and The Preserve at Walnut Springs project.		
Consistency With Comprehensive Plan (Land use, transportation plan)	Montgomery County Comp Plan currently shows this area as Traditional Neighborhood Design. Current proposal supports the comp plan designation.		
Available Traffic Data (Historical, forecasts)	Two previous traffic studies required for now approved rezoning requests. VDOT historical data. NORTHSTAR CURRENT SUBMITTAL.		
Trip Distribution (Attach sketch)	Road Name: Prices Fork Road	Road Name: OLD FORT RE-DIRECTION	
	Road Name:	Road Name:	
Annual Vehicle Trip Growth Rate:	0.5% (+NORTHSTAR)	Peak Period for Study (check all that apply)	<input checked="" type="checkbox"/> AM <input checked="" type="checkbox"/> PM <input type="checkbox"/> SAT EXTENDED 3:00-6:00
		Peak Hour of the Generator	PM
Study Intersections and/or Road Segments (Attach additional sheets as necessary)	1. New west road connection and Prices Fork Road	6.	
	2. New east road connection and Prices Fork Road	7.	
	3. IF SIGNAL WARRANT - MAY NEED ANALYSIS ADDITION	8.	
	4. SEGMENTS	9.	
	5.	10.	
Trip Adjustment Factors	Internal allowance: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Reduction: _____% trips	Pass-by allowance: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Reduction: _____% trips	
	Software Methodology		
Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	<input checked="" type="checkbox"/> Synchro <input type="checkbox"/> HCS (v.2000/+) <input checked="" type="checkbox"/> aaSIDRA <input type="checkbox"/> CORSIM <input type="checkbox"/> Other _____ None at this time. CHECK FOR SIGNAL WARRANTS.		

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	1) Right and/or Left Turn lanes, 2) Right of way dedication, 3) grading for sight distance, 4) <u>ALTERNATIVE / INNOVATIVE INTERSECTIONS</u>
Background Traffic Studies Considered	Old Prices Fork Elementary Rezoning Traffic Study & The Preserve at Walnut Springs Traffic Study, <u>+ N. SEMSTAR</u>
Plan Submission	<input checked="" type="checkbox"/> Master Development Plan (MDP) <input type="checkbox"/> Generalized Development Plan (GDP) <input type="checkbox"/> Preliminary/Sketch Plan <input type="checkbox"/> Other Plan type (Final Site, Subd. Plan)
Additional Issues to be Addressed	<input checked="" type="checkbox"/> Queuing analysis <input type="checkbox"/> Actuation/Coordination <input type="checkbox"/> Weaving analysis <input type="checkbox"/> Merge analysis <input type="checkbox"/> Bike/Ped Accommodations <input checked="" type="checkbox"/> Intersection(s) <input type="checkbox"/> TDM Measures <input checked="" type="checkbox"/> Other <u>TRAFFIC SIGNAL WAIVER</u>

"T" SIGNAL OR ROUNDABOUT

NOTES on ASSUMPTIONS:

SIGNED: [Signature]
Applicant or Consultant

DATE: 7/8/19

PRINT NAME: JOVE SEMOVES
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

TRAFFIC COUNT DATA

Burns Service Inc.

1202Langdon Terrace Drive
Indian Trail, NC, 28079

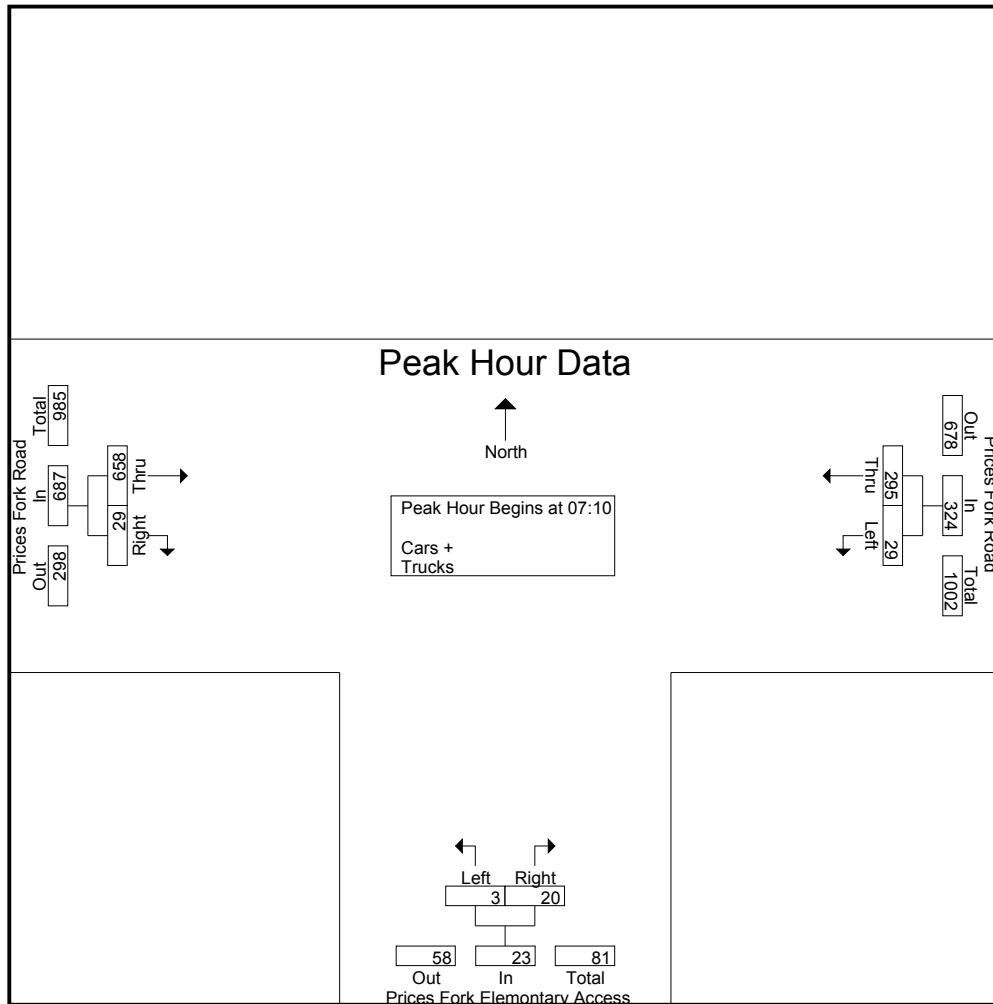
File Name : Blacksburg(Prices Fork and Elementary Access) AM Peak

Site Code :

Start Date : 11/29/2017

Page No : 2

Start Time	Prices Fork Road Westbound			Prices Fork Elementary Access Northbound			Prices Fork Road Eastbound			Int. Total
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	
Peak Hour Analysis From 07:00 to 09:30 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:10										
07:10	26	2	28	1	0	1	1	48	49	78
07:15	20	0	20	1	0	1	3	55	58	79
07:20	24	2	26	2	0	2	1	41	42	70
07:25	27	2	29	3	0	3	2	51	53	85
07:30	19	2	21	2	1	3	1	55	56	80
07:35	23	0	23	1	0	1	2	80	82	106
07:40	16	3	19	3	0	3	3	58	61	83
07:45	26	2	28	3	1	4	2	55	57	89
07:50	27	5	32	2	1	3	3	73	76	111
07:55	22	4	26	0	0	0	0	54	54	80
08:00	34	4	38	0	0	0	5	46	51	89
08:05	31	3	34	2	0	2	6	42	48	84
Total Volume	295	29	324	20	3	23	29	658	687	1034
% App. Total	91	9		87	13		4.2	95.8		



Burns Service Inc.

1202Langdon Terrace Drive
Indian Trail, NC, 28079

File Name : Blacksburg(Prices Fork and Elementary Access) PM Peak

Site Code :

Start Date : 11/29/2017

Page No : 1

Groups Printed- Cars + - Trucks

Start Time	Prices Fork Road Westbound			Prices Fork Elementary Access Northbound			Prices Fork Road Eastbound			Int. Total
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	
15:00	34	5	39	2	0	2	1	20	21	62
15:05	45	1	46	1	1	2	0	28	28	76
15:10	48	5	53	0	2	2	3	19	22	77
15:15	45	5	50	1	0	1	3	16	19	70
15:20	37	9	46	0	1	1	4	29	33	80
15:25	27	7	34	3	1	4	3	24	27	65
15:30	34	6	40	2	1	3	3	16	19	62
15:35	26	3	29	8	1	9	3	27	30	68
15:40	46	5	51	10	7	17	11	34	45	113
15:45	44	6	50	17	8	25	5	29	34	109
15:50	34	8	42	17	14	31	1	12	13	86
15:55	28	4	32	10	11	21	1	23	24	77
Total	448	64	512	71	47	118	38	277	315	945
16:00	32	1	33	8	1	9	1	29	30	72
16:05	45	0	45	12	3	15	1	38	39	99
16:10	57	3	60	2	2	4	0	23	23	87
16:15	45	1	46	6	3	9	1	32	33	88
16:20	48	0	48	3	1	4	2	38	40	92
16:25	44	1	45	2	1	3	0	30	30	78
16:30	51	4	55	2	3	5	2	33	35	95
16:35	43	3	46	5	3	8	0	29	29	83
16:40	44	0	44	8	1	9	0	33	33	86
16:45	50	1	51	2	1	3	1	29	30	84
16:50	50	0	50	2	0	2	0	30	30	82
16:55	52	1	53	0	1	1	1	29	30	84
Total	561	15	576	52	20	72	9	373	382	1030
17:00	48	1	49	0	0	0	2	43	45	94
17:05	35	1	36	2	1	3	1	36	37	76
17:10	54	2	56	2	1	3	0	32	32	91
17:15	80	0	80	2	0	2	0	24	24	106
17:20	64	1	65	1	1	2	2	36	38	105
17:25	51	2	53	1	2	3	1	33	34	90
17:30	52	0	52	2	1	3	2	26	28	83
17:35	52	1	53	1	1	2	0	39	39	94
17:40	46	0	46	2	0	2	0	38	38	86
17:45	42	1	43	0	0	0	0	34	34	77
17:50	45	0	45	0	1	1	0	26	26	72
17:55	37	1	38	2	0	2	0	23	23	63
Total	606	10	616	15	8	23	8	390	398	1037
Grand Total	1615	89	1704	138	75	213	55	1040	1095	3012
Apprch %	94.8	5.2		64.8	35.2		5	95		
Total %	53.6	3	56.6	4.6	2.5	7.1	1.8	34.5	36.4	
Cars +	1615	89	1704	138	75	213	55	1038	1093	3010
% Cars +	100	100	100	100	100	100	100	99.8	99.8	99.9
Trucks	0	0	0	0	0	0	0	2	2	2
% Trucks	0	0	0	0	0	0	0	0.2	0.2	0.1

Burns Service Inc.

1202 Langdon Terrace Drive
Indian Trail, NC, 28079

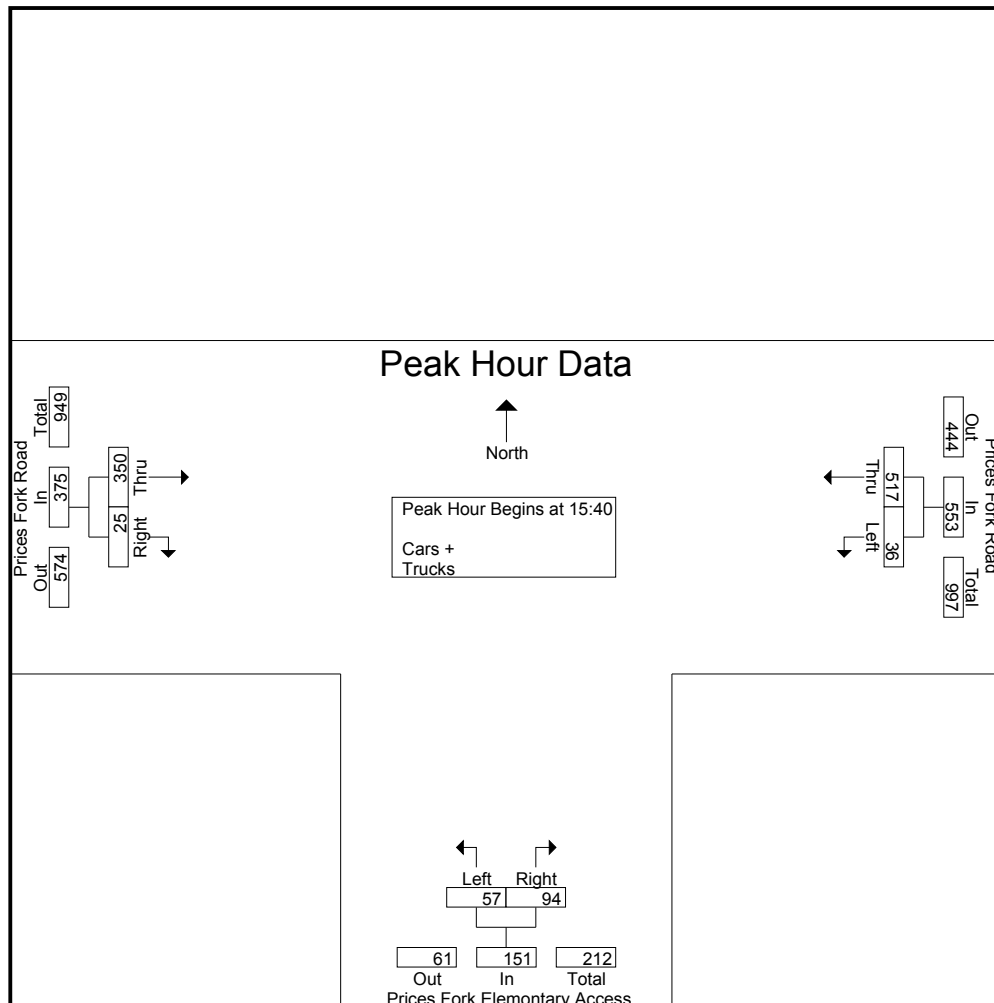
File Name : Blacksburg(Prices Fork and Elementary Access) PM Peak

Site Code :

Start Date : 11/29/2017

Page No : 2

Start Time	Prices Fork Road Westbound			Prices Fork Elementary Access Northbound			Prices Fork Road Eastbound			Int. Total
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	
Peak Hour Analysis From 15:00 to 17:55 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 15:40										
15:40	46	5	51	10	7	17	11	34	45	113
15:45	44	6	50	17	8	25	5	29	34	109
15:50	34	8	42	17	14	31	1	12	13	86
15:55	28	4	32	10	11	21	1	23	24	77
16:00	32	1	33	8	1	9	1	29	30	72
16:05	45	0	45	12	3	15	1	38	39	99
16:10	57	3	60	2	2	4	0	23	23	87
16:15	45	1	46	6	3	9	1	32	33	88
16:20	48	0	48	3	1	4	2	38	40	92
16:25	44	1	45	2	1	3	0	30	30	78
16:30	51	4	55	2	3	5	2	33	35	95
16:35	43	3	46	5	3	8	0	29	29	83
Total Volume	517	36	553	94	57	151	25	350	375	1079
% App. Total	93.5	6.5		62.3	37.7		6.7	93.3		



APPENDIX C

APPROVED DEVELOPMENT INFORMATION

TAYLOR HOLLOW

Traffic Study
For
Proposed Development

Taylor Hollow

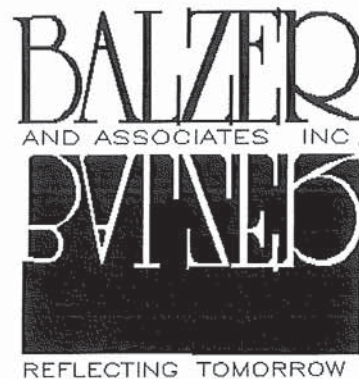
in

Montgomery County, Virginia

Date: February 21, 2014

Revised: April 23, 2015

~Job No. B1400003.00~



1208 Corporate Circle
Roanoke, VA 24018
540.772.9580
Fax: 540.772.8050

Time Period:

Average Rate:

% Entering / % Exiting:

Weekday
AM Peak Hr of Adj. Traffic
PM Peak Hr of Adj. Traffic

42.94 Trips / 1,000 s.f.
1.00 Trips / 1,000 s.f.
3.73 Trips / 1,000 s.f.

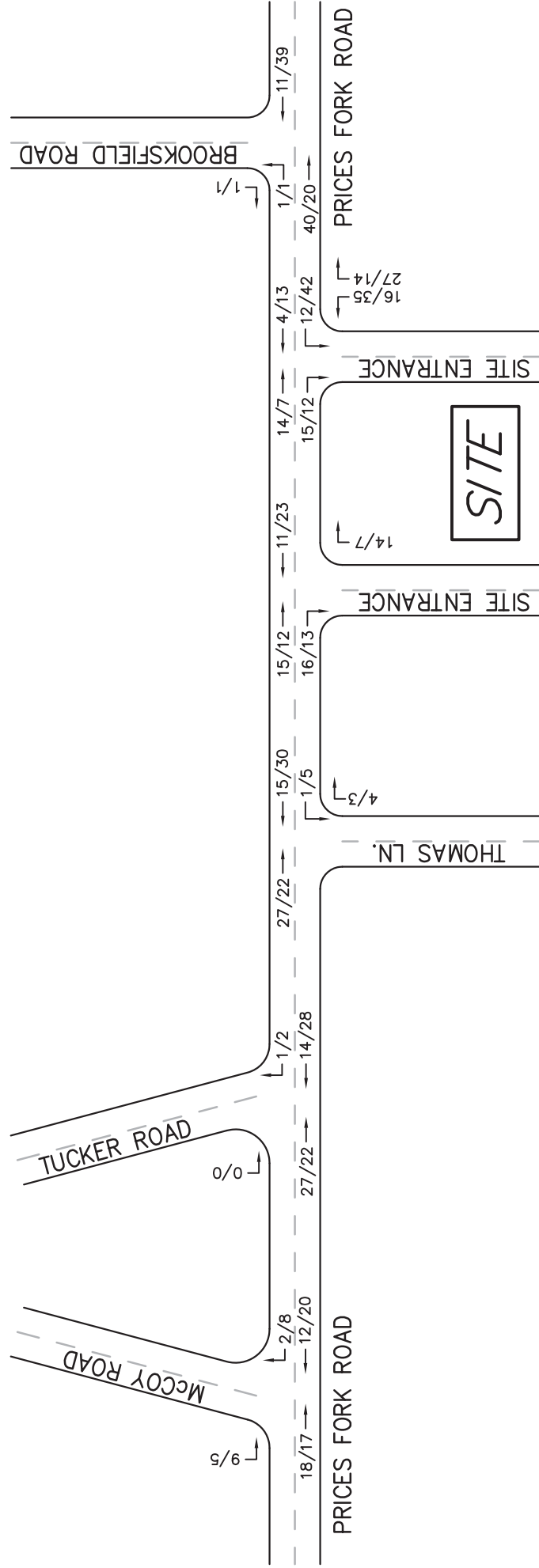
50% Enter / 50% Exit
61% Enter / 39% Exit
49% Enter / 51% Exit

Land Use			Trip Generation						
			AM Peak Hour			PM Peak Hour			Weekday
Proposed Development	ITE Code	Independent Variable	Enter	Exit	Total	Enter	Exit	Total	Total
Apartment	220	58 Dwelling Units	6	24	30	23	13	36	386
Senior Adult Housing – Attached	252	36 Dwelling Units	2	3	5	4	2	6	125
Daycare	565	4,900 s.f.	32	28	60	29	32	61	388
Shopping Center	820	4,888 s.f.	3	2	5	9	9	18	210
		Total	43	57	100	65	56	121	1,109

Table 4: Site-Generated Traffic

While it may be reasonable to apply a pass-by reduction to the daycare and/or shopping center uses, a pass-by reduction was not assumed for ease of analysis and to be conservative.

FIGURE 4: SITE GENERATED TRAFFIC



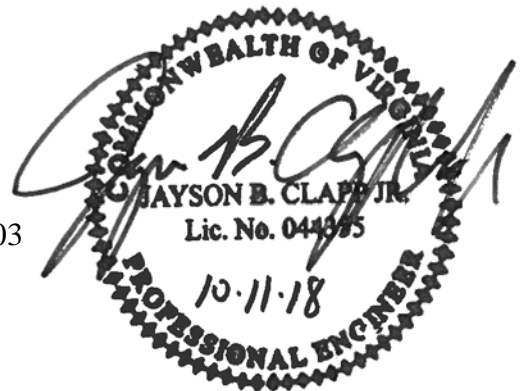
THE PRESERVE AT WALNUT SPRINGS

TRAFFIC IMPACT ANALYSIS
FOR
THE PRESERVE AT WALNUT SPRINGS

LOCATED
IN
MONTGOMERY COUNTY, VIRGINIA

Prepared for:
SHAH Development, LLC
Agent: Gay and Neel, Inc.
1260 Radford Street
Christiansburg, Virginia 24073

Prepared by:
Ramey Kemp & Associates, Inc.
621 Jonestown Road
Suite 221
Winston-Salem, North Carolina 27103



October 2018

RKA Project – 17352

4.4. Analysis of Future (2033) ‘No-Build’ Peak Hour Traffic Conditions

Utilizing the future (2033) ‘no-build’ traffic volumes (Figure 7), the study intersection was analyzed using the same methodology as previously noted for the existing traffic conditions with the only exception being the use of a PHF of 0.92. The results of the future (2033) ‘no-build’ analysis are presented in Section 9 of this report.

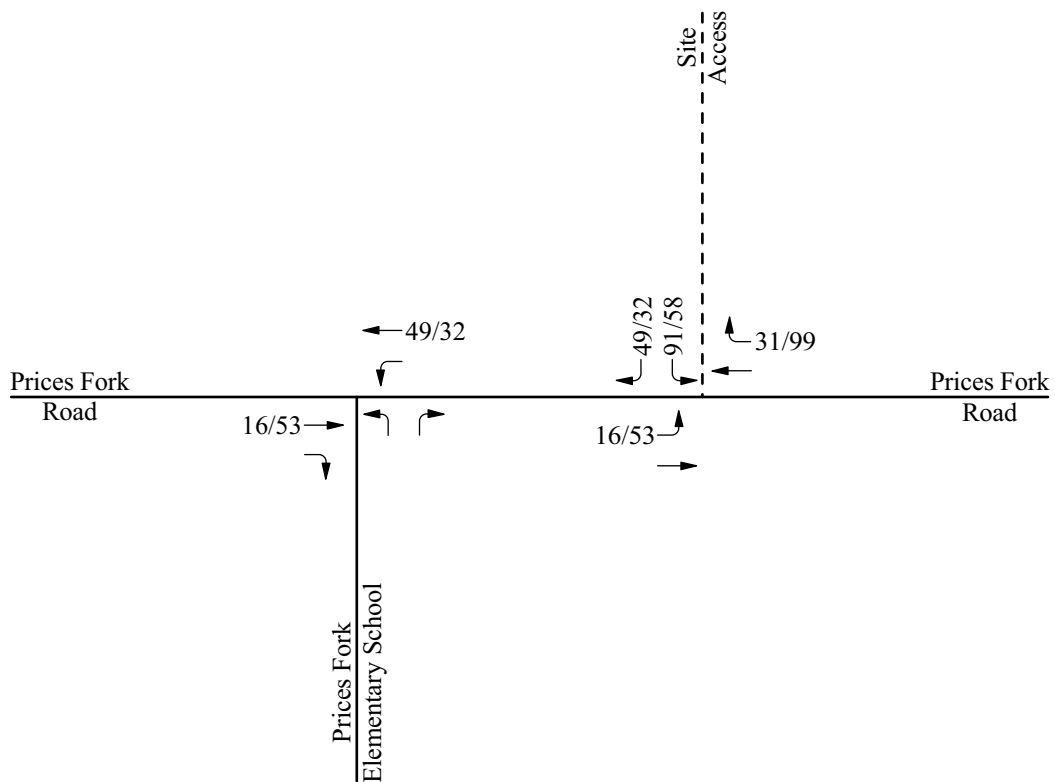
5. PROJECT TRAFFIC

5.1. Trip Generation

The proposed residential development is expected to consist of 131 single family homes, 126 townhomes, and 84 apartments. Average weekday daily as well as AM and PM peak hour site trips for this analysis were calculated utilizing methodology contained within the 10th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. Traffic was generated according to the peak hour of adjacent street traffic for the land uses of single-family detached (ITE Code 210), low-rise multifamily housing (ITE Code 220) for the townhomes, and mid-rise multifamily housing (ITE Code 221) for the apartments. Utilizing the number of dwelling units as the independent variable and equations, trips were generated for each of the proposed land uses. Table 2 provides a summary of the trip generation calculations.

TABLE 2
TRIP GENERATION


ITE Land Use (ITE Code)	Density	Average Daily Traffic (vpd)	AM Peak Hour (vph)		PM Peak Hour (vph)	
			Enter	Exit	Enter	Exit
Single-Family Detached Housing (210)	131 Dwelling Units	1,333	25	74	83	49
Multifamily Housing (Low-rise) (220)	126 Dwelling Units	912	14	45	46	27
Multifamily Housing (Mid-rise) (221)	84 Dwelling Units	456	8	21	23	14
Total		2,701	47	140	152	90



LEGEND

X/Y AM/PM Peak Hour Site Traffic



 RAMEY KEMP & ASSOCIATES <small>TRANSPORTATION ENGINEERS</small>	
<i>The Preserve at Walnut Springs Montgomery County, Virginia</i>	
<i>Site Trip Assignment</i>	
Not to Scale	Figure 9

NORTHSTAR MINISTRY CENTER



Traffic Narrative

FOR

NORTHSTAR MINISTRY CENTER

AND

PRICES FORK ROAD (ROUTE 685)

Tax Map# 052-(A)-127; 052-(A)-127A
3929 Prices Fork Road
Blacksburg, VA 24060

Montgomery County, Virginia

June 21, 2019



Project No. 16103



1.0 INTRODUCTION AND PROJECT BACKGROUND

This Narrative contains descriptions of data collected and utilized for determination of right and left turn treatment warrants for a proposed commercial entrance serving the proposed Northstar Ministry Center site from Prices Fork Road (Route 685) in Montgomery County, Virginia.

The project site is currently permitted for mass grading operations under Montgomery County permit number ES-2018-16816. A temporary construction entrance for mass grading operations is permitted under VDOT Land Use permit number 211-13964. The mass grading plans explicitly disallow the contractor from performing grading operations in the vicinity of Prices Fork Road right-of-way. The Phase 2 – Comprehensive Development Plan set for the project and this Narrative are intended to provide appropriate design information in order to obtain VDOT approval for work within the right-of-way.

This Narrative makes reference to Ramey Kemp & Associates, Inc.’s Traffic Impact Analysis (TIA) for The Preserve at Walnut Springs dated October 2018. The TIA will be referred to as the Walnut Springs TIA within this Narrative.

The Phase 2 – Comprehensive Development Plan set accompanies this report and may be used to reference the existing conditions as compared to the proposed conditions.

Right and left turn lane warrants are met for the site. Additional information is provided in the following sections.

2.0 DESIGN CRITERIA

Per VDOT, for the purposes of turn lane warrants, the site is considered to be located in an urban area.

3.0 EXISTING TRAFFIC

Traffic counts on Prices Fork Road were recorded on Sunday, November 11, 2018 during the hours of 9:00 AM – 2:00 PM. The data is included as an attachment.

The raw data was analyzed and the maximum peak hour is determined as 9:30 – 10:30 AM, where 479 vehicles were recorded heading toward Blacksburg (eastbound) and 409



vehicles were recorded heading toward Radford (westbound). Per VDOT 25 vehicles per hour are added to the toward Blacksburg trips in associated with an approved re-zoning of the old Prices Fork Elementary School.

The Walnut Springs TIA did not evaluate Sunday traffic. However, based on the AM weekday site trips generated by the Walnut Springs full buildout, this analysis will include an additional 90 eastbound trips and 30 westbound trips into the Sunday peak hour turn lane analysis.

Therefore, the baseline traffic on Prices Fork Road for this analysis is:

- 594 vehicles per hour (vph) eastbound (58%)
- 439 vph westbound (42%)

The Walnut Springs TIA established 2017 weekday AM and PM peak hour traffic on Prices Fork Road and 2033 No Build and Build weekday AM and PM peak hour traffic. The 2033 baseline traffic was determined from 2017 by applying a compounded annual growth rate of 0.5% (per VDOT). For the purposes of determining turn lane warrants and geometry with respect to weekday trips, this analysis will utilize the PM peak hour 2033 Build traffic volumes as shown on Figure 10 in the Walnut Springs TIA. Figure 10 is included in the Attachments. Refer to Section 4.1 for more information.

4.0 PROPOSED CONDITIONS TRAFFIC

Per the current ITE Trip Generation Manual Land Use Type 560 – Church, the site will generate 267 trips with 131 trips entering and 136 exiting during a Sunday, peak hour of the generator. These trips are considered new to the road network.

The analysis assumes a 50/50 site trip distribution for entering and exiting trips.

A schematic sketch of the of the trip breakdown is provided on sheet 2 of the Attachment B.

The Northstar site will also be utilized by members and the surrounding community on days other than Sunday. Northstar leadership has provided alternate uses of the facility as described in Section 4.1.



4.1 ALTERNATE TRAFFIC GENERATING USES

Northstar leadership provided a table indicating anticipated other semi-regular uses of the facility. See table below:

Day	Time Period	Event	Recurrence	Anticipated Traffic
Monday	6:00 PM -7:30 PM	Training Meeting	Weekly	15
Tuesday	6:00 PM -7:30 PM	Small Group	Weekly	18
Tuesday	6:00 PM -8:00 PM	Community Organizational meeting	Monthly	25
Wednesday	6:00 PM -8:00 PM	Discovering Northstar	Monthly	20
Thursday	6:00 PM -7:30 PM	Small Group	Weekly	6
Friday	6:00 PM -9:00 PM	Youth Group Event	Weekly	30
Saturday	3:00 PM - 6:00 PM	Wedding	Monthly	150
Weekend	6:00 PM -10:00 PM	Concert	Biannually	700
Weekdays	7:00 AM - 8:00 PM	Coffee Shop	Daily	4 to 5 per hour

The anticipated weekday (Monday – Friday) regularly recurring events all occur after 6:00 PM, with the exception of use of the coffee shop. For the purpose of evaluating turn lane warrants and geometry, this Narrative will consider a Tuesday evening where Small Group and a Community Organizational meeting is occurring at the same time. Summing the anticipated trips from each event yields 43 trips. The analysis will assume that all of these trips arrive in a single hour between 5:30 and 6:30 PM and all trips will be entering the site evenly from either direction. Tuesday evening was selected to derive the alternate site use generated traffic because it resulted in the greatest number of anticipated trips.

Weekday PM peak hour trips at the proposed entrance are combined with the Walnut Springs TIA 2033 build PM peak hour traffic. The resultant trips are evaluated for right turn lane and left turn lane warrants and geometry as described in Section 5.0 and 6.0 below. Additional information is provided in Attachment C.

The noted Wedding and Concert events are not considered in the turn lane warrant analysis. Northstar leadership has indicated that these events will be infrequent and will be coordinated with VDOT and local authorities as part of event planning. Utilization of public safety officials at the entrance to Prices Fork Road for traffic control may be utilized.



SPECTRUM DESIGN, P.C.

Plaza Suite 1
10 Church Avenue, SE
Roanoke, Virginia 24011-2104
PH: 540-342-6001
FAX: 540-342-6055

JOB 16103

SHEET NO. 1 OF 1

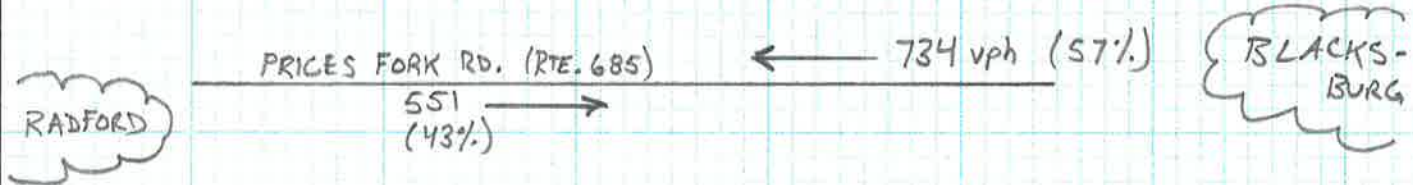
CALCULATED BY THL DATE 6/17/19

CHECKED BY _____ DATE _____

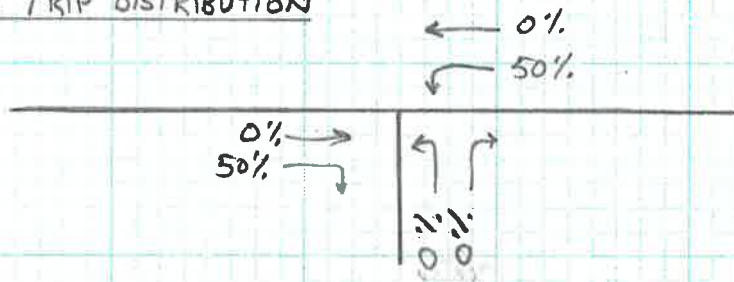
SCALE _____

ATTACHMENT C

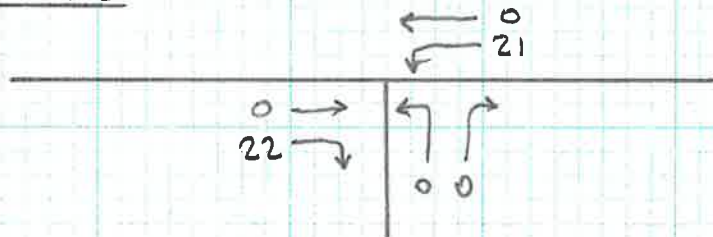
BASELINE TRAFFIC - PM PEAK HOUR WEEKDAY
FOR YEAR 2033 WITH FULL BUILDOUT
PER FIGURE 10 OF WALNUT SPRINGS TIA



SITE TRIP DISTRIBUTION

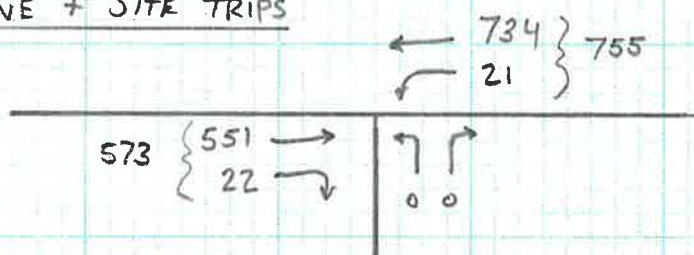


SITE TRIPS



TUESDAY PM
43 trips

BASELINE + SITE TRIPS



%L = 2.8% → USE 5%
Fig. 3-5

FIG. 3-26 - WARRANTS FOR RIGHT TURN TREATMENT (2-LANE)

TAPER ONLY IS WARRANTED

TABLE 3-1 - WARRANT FOR LEFT TURN LANES ON TWO-LANE HIGHWAYS

• ADV. Vol: 755 vph / % Left Turns: 2.8%
40 mph Speed
Opposing Vol: 573 vph

LEFT TURN LANE IS WARRANTED
AND PER FIG. 3-5, S = 100'

APPENDIX D

CAPACITY ANALYSIS REPORTS

Westhill Rezoning
 1: Prices Fork Road & The Preserve at Walnut Springs Access

No-Build (2030)
 Timing Plan: AM

Intersection

Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	15	774	361	31	91	49
Future Vol, veh/h	15	774	361	31	91	49
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	-	-	205	0	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	3	2	2	2
Mvmt Flow	16	841	392	34	99	53

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	426	0	0	1265	392
Stage 1	-	-	-	392	-
Stage 2	-	-	-	873	-
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	1133	-	-	187	657
Stage 1	-	-	-	683	-
Stage 2	-	-	-	409	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1133	-	-	184	657
Mov Cap-2 Maneuver	-	-	-	184	-
Stage 1	-	-	-	673	-
Stage 2	-	-	-	409	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	33.3
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1133	-	-	-	184	657
HCM Lane V/C Ratio	0.014	-	-	-	0.538	0.081
HCM Control Delay (s)	8.2	-	-	-	45.3	11
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0	-	-	-	2.8	0.3

Westhill Rezoning
 1: Prices Fork Road & The Preserve at Walnut Springs Access

No-Build (2030)
 Timing Plan: PM

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	53	515	635	99	58	32
Future Vol, veh/h	53	515	635	99	58	32
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	-	-	205	0	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	1	2	2	2
Mvmt Flow	58	560	690	108	63	35

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	798	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	824	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	824	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	33.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	824	-	-	-	151	445
HCM Lane V/C Ratio	0.07	-	-	-	0.418	0.078
HCM Control Delay (s)	9.7	-	-	-	44.9	13.8
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.8	0.3

Westhill Rezoning
 1: Prices Fork Road & The Preserve at Walnut Springs Access

Build (2030)
 Timing Plan: AM

Intersection

Int Delay, s/veh 4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↑	↗	↘	↗
Traffic Vol, veh/h	15	786	420	31	91	49
Future Vol, veh/h	15	786	420	31	91	49
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	-	-	205	0	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	3	2	2	2
Mvmt Flow	16	854	457	34	99	53

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	491	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1072	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1072	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	39.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1072	-	-	-	165	604
HCM Lane V/C Ratio	0.015	-	-	-	0.599	0.088
HCM Control Delay (s)	8.4	-	-	-	55.1	11.5
HCM Lane LOS	A	-	-	-	F	B
HCM 95th %tile Q(veh)	0	-	-	-	3.2	0.3

Westhill Rezoning
 1: Prices Fork Road & The Preserve at Walnut Springs Access

Build (2030)
 Timing Plan: PM

Intersection

Int Delay, s/veh 2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↑	↗	↘	↗
Traffic Vol, veh/h	53	575	665	99	58	32
Future Vol, veh/h	53	575	665	99	58	32
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	-	-	105	0	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	1	2	2	2
Mvmt Flow	58	625	723	108	63	35

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	831	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	801	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	801	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	40.9
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	801	-	-	-	131	426
HCM Lane V/C Ratio	0.072	-	-	-	0.481	0.082
HCM Control Delay (s)	9.8	-	-	-	55.7	14.2
HCM Lane LOS	A	-	-	-	F	B
HCM 95th %tile Q(veh)	0.2	-	-	-	2.2	0.3

Table 12: SIDRA Intersection Standard Input Parameters

SIDRA INTERSECTION INPUT PARAMETER	TYPICAL VALUE, ACCEPTABLE RANGES, and/or SPECIAL NOTES	
	Existing Conditions	Future Conditions
Geometric and Analysis Input Parameters		
Approach Cruise Speed/Exit Cruise Speed	<ul style="list-style-type: none"> Based on existing speed data OR Posted speed limit 	
Capacity Model	<ul style="list-style-type: none"> Select “SIDRA Standard” in the “Options” tab of the “Roundabouts” parameter dialog 	
Circulating Width	<ul style="list-style-type: none"> Use existing field measurements 	<ul style="list-style-type: none"> Based on existing field measurements or design plans OR Where full design has not yet been completed, use 16 to 20 feet for single-lane roundabouts and 28 to 32 feet for two-lane roundabouts
Current Model	<ul style="list-style-type: none"> Select “US HCM (Customary)” in the “Options” tab of the Ribbon 	
Entry Angle	<ul style="list-style-type: none"> Use existing field measurements 	<ul style="list-style-type: none"> Based on existing field measurements or design plans OR Where full design has not yet been completed, use between 20° and 40°.
Entry Radius	<ul style="list-style-type: none"> Use existing field measurements 	<ul style="list-style-type: none"> Based on existing field measurements or design plans OR Where full design has not yet been completed, use 50 to 100 feet for single-lane roundabouts and 65 to 120 feet for two-lane roundabouts
Environmental Factor	<ul style="list-style-type: none"> Use 1.1 in the Northern Virginia District OR Use 1.2 in all other districts 	<ul style="list-style-type: none"> Use 1.05 in the Northern Virginia District OR Use 1.1 in all other districts
Extra Bunching	<ul style="list-style-type: none"> Use the values recommended in the <i>Quick Guide to SIDRA Intersection 6</i> 	
Inscribed Diameter	<ul style="list-style-type: none"> Use existing field measurements 	<ul style="list-style-type: none"> Based on existing field measurements or design plans OR Where full design has not yet been completed, use 90 to 180 feet for single-lane roundabouts and 150 to 300 feet for two-lane roundabouts
Island Diameter	<ul style="list-style-type: none"> Calculate diameter using the equation: Island Diameter = Inscribed Diameter – 2 x Circulating Width 	
Level of Service Method	<ul style="list-style-type: none"> Select “Delay & v/c (HCM 2010)” in the “Options” tab of the “Model Settings” parameter dialog for all operational analyses. 	
Movement Classes	<ul style="list-style-type: none"> Based on the vehicle-type composition. 	

SIDRA INTERSECTION INPUT PARAMETER	TYPICAL VALUE, ACCEPTABLE RANGES, and/or SPECIAL NOTES	
	Existing Conditions	Future Conditions
Number of Circulating Lanes	<ul style="list-style-type: none"> ▪ Maximum of two circulating lanes 	
	<ul style="list-style-type: none"> ▪ Use existing field measurements 	<ul style="list-style-type: none"> ▪ Based on existing field measurements or design plans
Peak Flow Factor	<ul style="list-style-type: none"> ▪ Use overall intersection PHF (reported as a percentage) for all individual movements 	
	<ul style="list-style-type: none"> ▪ Use existing traffic count data 	<ul style="list-style-type: none"> ▪ Based on future land use, if known OR ▪ Higher of 0.92 or existing PHF (Urban) OR ▪ Higher of 0.88 or existing PHF (Rural)
Roundabout Level of Service (LOS) Method	<ul style="list-style-type: none"> ▪ Select “Same as Sign Control” in the “Options” tab of the “Roundabouts” parameter dialog when comparing the roundabout to an unsignalized intersection OR ▪ Select “Same as Signalized Intersection” in the “Options” tab of the “Roundabouts” parameter dialog for all other analyses 	
Sensitivity Analysis	<ul style="list-style-type: none"> ▪ Methodology should be approved by the VDOT project manager 	
Vehicle Percentages	<ul style="list-style-type: none"> ▪ Use existing count data 	<ul style="list-style-type: none"> ▪ Based on existing count data if future vehicle mix is projected to be similar to existing vehicle mix OR ▪ Based on projected future vehicle mix
Pedestrian Parameters		
Pedestrian Movement Definition	<ul style="list-style-type: none"> ▪ Select “Staged Crossing” on all approaches with a pedestrian movement. 	
Pedestrian Walking Speed	<ul style="list-style-type: none"> ▪ Use 3.5 ft/sec based on the current guidance in the MUTCD. 	

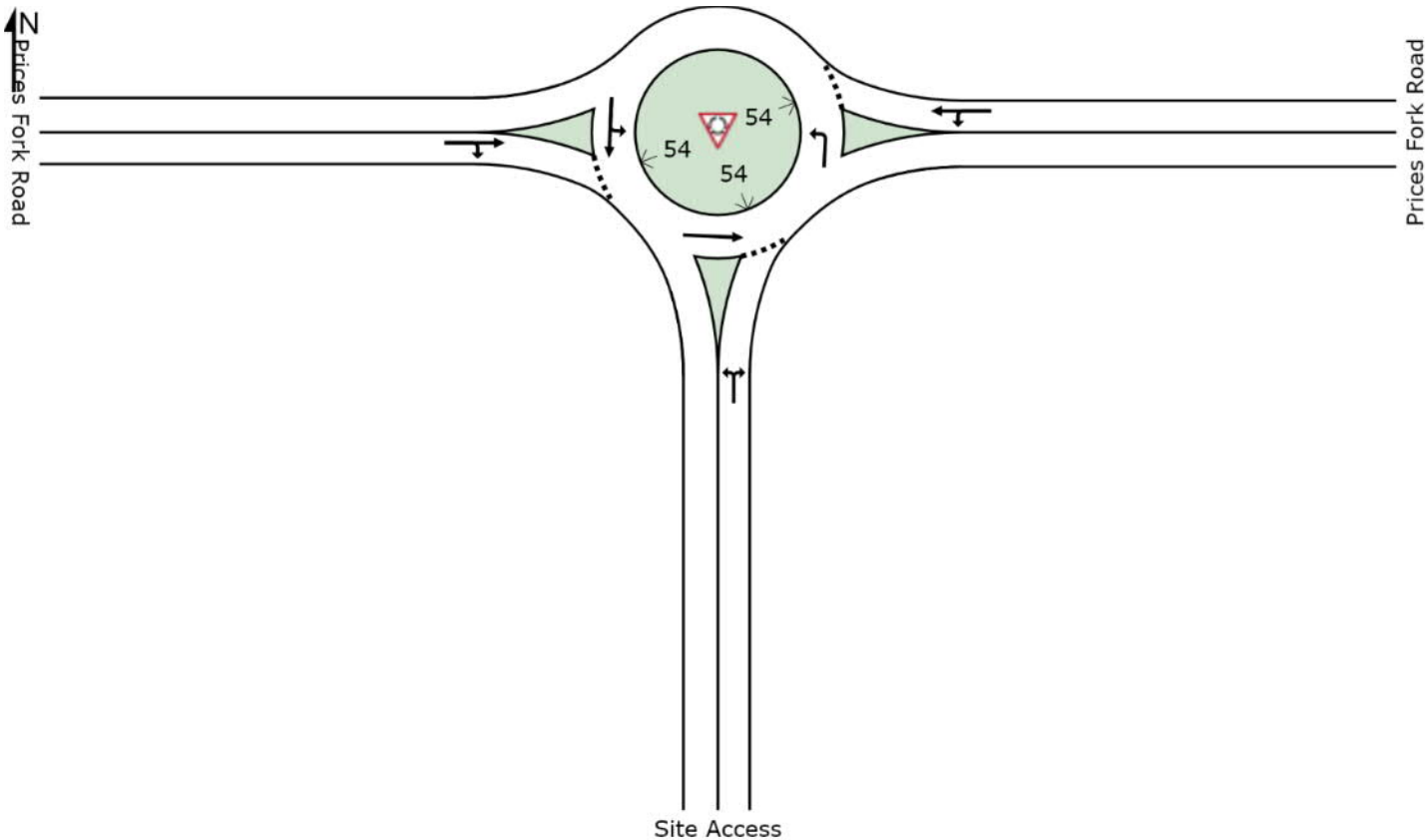
- **Current Model:** “US HCM (Customary)” should be selected in the “Options” tab of the Ribbon before a roundabout is created.
- **Entry Angle:** The entry angle should be obtained from existing field measurements or design plans. For future analyses where full design has not yet been completed, the entry radius should be between 20° and 40°, based on guidance from the NCHRP Report 672: Roundabouts: An Informational Guide (Second Edition).
- **Entry Radius:** The entry radius should be obtained from existing field measurements or design plans. For future analyses where full design has not yet been completed, the entry radius should be within the following ranges, based on guidance from the NCHRP Report 672: Roundabouts: An Informational Guide (Second Edition):
 - Single-lane roundabout: 50 to 100 feet
 - Two-lane roundabout: 65 to 120 feet

SITE LAYOUT

 Site: Build AM Revised

Prices Fork Road & Site Access

Roundabout



INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 Site: Build AM Revised

Prices Fork Road & Site Access

Roundabout

Volume Display Method: Total and %

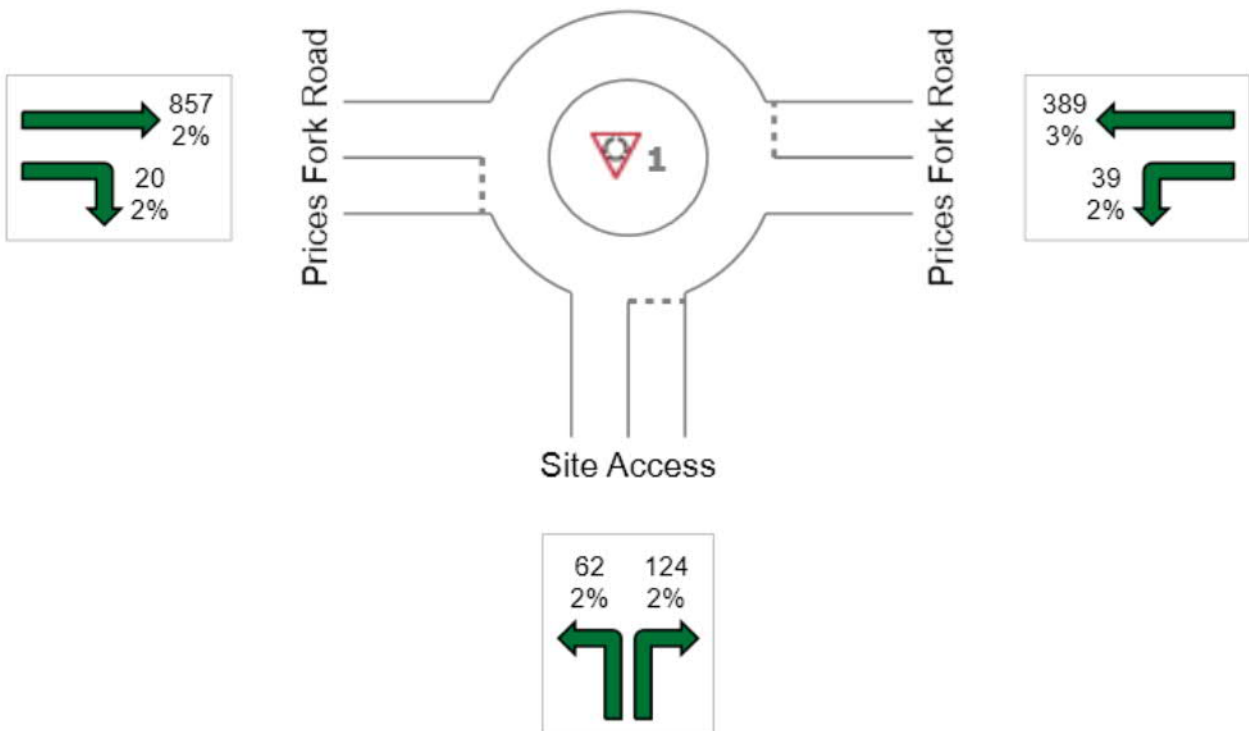
Volumes are shown for Movement Class(es): All Classes and Heavy Vehicles

Total Intersection Volumes (veh)

All Movement Classes: 1491

Light Vehicles (LV): 1457

Heavy Vehicles (HV): 34



LANE SUMMARY

 **Site: Build AM Revised**

Prices Fork Road & Site Access

Roundabout

Lane Use and Performance													
	Demand Total veh/h	Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Site Access													
Lane 1 ^d	202	2.0	356	0.567	100	22.9	LOS C	4.8	123.1	Full	1600	0.0	0.0
Approach	202	2.0		0.567		22.9	LOS C	4.8	123.1				
East: Prices Fork Road													
Lane 1 ^d	465	2.9	1060	0.439	100	5.0	LOS A	4.0	102.3	Full	1600	0.0	0.0
Approach	465	2.9		0.439		5.0	LOS A	4.0	102.3				
West: Prices Fork Road													
Lane 1 ^d	953	2.0	1120	0.851	100	5.3	LOS A	19.3	490.2	Full	1600	0.0	0.0
Approach	953	2.0		0.851		5.3	LOS A	19.3	490.2				
Intersection	1621	2.3		0.851		7.4	LOS A	19.3	490.2				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Signalised Intersections.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

^d Dominant lane on roundabout approach

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INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 Site: Build PM Revised

Prices Fork Road & Site Access

Roundabout

Volume Display Method: Total and %

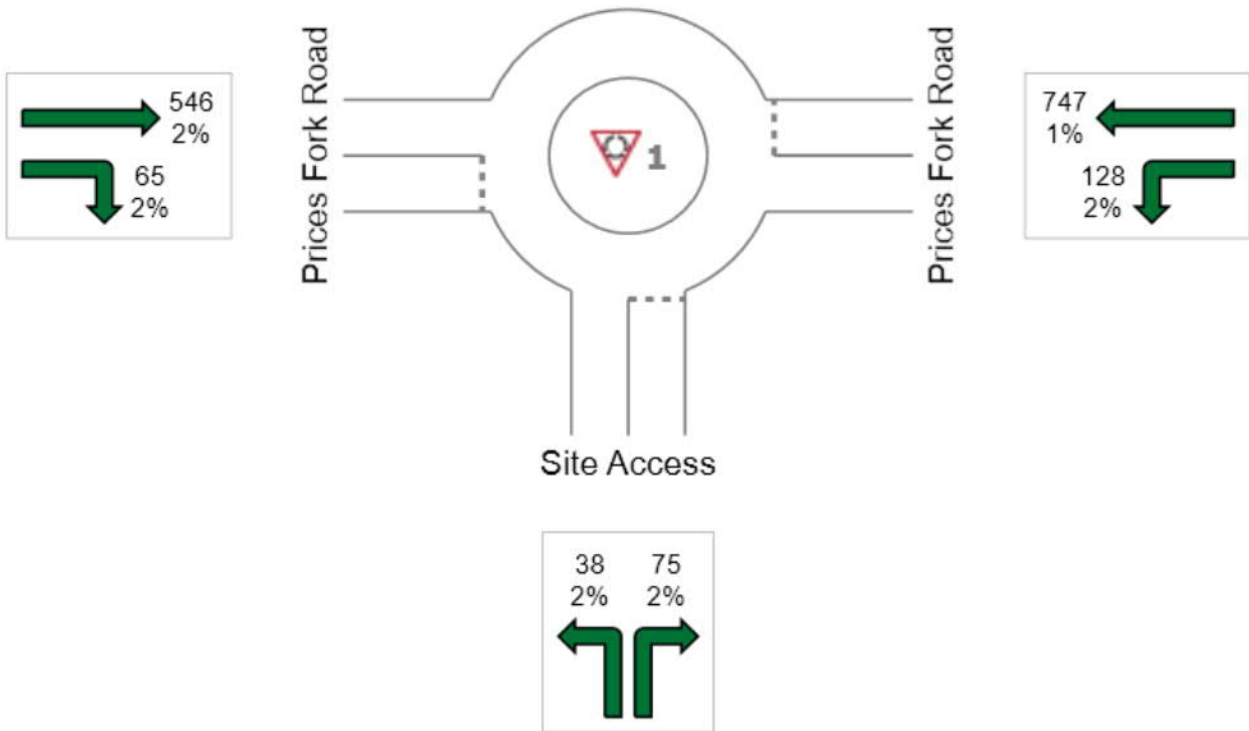
Volumes are shown for Movement Class(es): All Classes and Heavy Vehicles

Total Intersection Volumes (veh)

All Movement Classes: 1599

Light Vehicles (LV): 1574

Heavy Vehicles (HV): 25



LANE SUMMARY

 **Site: Build PM Revised**

Prices Fork Road & Site Access

Roundabout

Lane Use and Performance													
	Demand Total veh/h	Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Site Access													
Lane 1 ^d	123	2.0	582	0.211	100	10.2	LOS B	1.3	33.2	Full	1600	0.0	0.0
Approach	123	2.0		0.211		10.2	LOS B	1.3	33.2				
East: Prices Fork Road													
Lane 1 ^d	951	1.1	1126	0.845	100	5.8	LOS A	19.9	503.1	Full	1600	0.0	0.0
Approach	951	1.1		0.845		5.8	LOS A	19.9	503.1				
West: Prices Fork Road													
Lane 1 ^d	664	2.0	981	0.677	100	6.0	LOS A	7.6	193.5	Full	1600	0.0	0.0
Approach	664	2.0		0.677		6.0	LOS A	7.6	193.5				
Intersection	1738	1.5		0.845		6.2	LOS A	19.9	503.1				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Signalised Intersections.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

^d Dominant lane on roundabout approach

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APPENDIX E

QUEUING ANALYSIS REPORTS

1: Prices Fork Road & The Preserve at Walnut Springs Access Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	2.6	0.7	0.4	3.4	0.1	0.1	0.6
Total Del/Veh (s)	4.1	1.7	0.7	0.2	24.1	3.9	3.1

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	4.2

Intersection: 1: Prices Fork Road & The Preserve at Walnut Springs Access

Movement	EB	SB	SB
Directions Served	L	L	R
Maximum Queue (ft)	33	106	53
Average Queue (ft)	6	46	23
95th Queue (ft)	25	85	47
Link Distance (ft)		651	651
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	225		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

1: Prices Fork Road & The Preserve at Walnut Springs Access Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	2.6	0.5	0.8	3.0	0.1	0.1	0.9
Total Del/Veh (s)	6.3	1.2	1.1	0.7	24.1	5.5	2.4

Total Network Performance

Denied Del/Veh (s)			0.9				
Total Del/Veh (s)			3.5				

Intersection: 1: Prices Fork Road & The Preserve at Walnut Springs Access

Movement	EB	WB	WB	SB	SB
Directions Served	L	T	R	L	R
Maximum Queue (ft)	61	2	6	90	50
Average Queue (ft)	22	0	0	36	18
95th Queue (ft)	52	2	4	71	42
Link Distance (ft)		824		651	651
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	225		205		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 0

1: Prices Fork Road & The Preserve at Walnut Springs Access Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	2.6	0.7	0.0	0.0	0.1	0.1	0.4
Total Del/Veh (s)	4.1	1.6	1.0	0.6	22.0	4.0	2.7

2: Site Access & Prices Fork Road Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.3	0.3	0.2	0.2	0.1
Total Del/Veh (s)	31.1	29.2	4.7	7.5	6.8	6.7	21.3

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	23.8

Intersection: 1: Prices Fork Road & The Preserve at Walnut Springs Access

Movement	EB	SB	SB
Directions Served	L	L	R
Maximum Queue (ft)	31	103	57
Average Queue (ft)	7	41	22
95th Queue (ft)	27	80	46
Link Distance (ft)		580	580
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	225		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Site Access & Prices Fork Road

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	610	66	105
Average Queue (ft)	208	12	40
95th Queue (ft)	640	46	80
Link Distance (ft)	1170	1029	876
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

1: Prices Fork Road & The Preserve at Walnut Springs Access Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	2.8	0.5	0.0	0.0	0.2	0.1	0.3
Total Del/Veh (s)	5.7	1.1	1.6	1.4	26.4	5.3	2.6

2: Site Access & Prices Fork Road Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.8	0.8	0.1	0.1	0.5
Total Del/Veh (s)	9.2	6.3	16.4	19.0	4.3	4.2	13.9

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	16.2

Intersection: 1: Prices Fork Road & The Preserve at Walnut Springs Access

Movement	EB	WB	WB	SB	SB
Directions Served	L	T	R	L	R
Maximum Queue (ft)	51	2	21	94	58
Average Queue (ft)	21	0	1	35	19
95th Queue (ft)	48	2	9	75	44
Link Distance (ft)		1170		580	580
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	225		105		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Site Access & Prices Fork Road

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	116	409	69
Average Queue (ft)	41	105	24
95th Queue (ft)	93	369	55
Link Distance (ft)	1170	1029	876
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0



Charleston, SC - Charlotte, NC - Columbia, SC - Raleigh, NC - Richmond, VA - Winston-Salem, NC

