Blacksburg TOWN OF VIRGINIA

DEPARTMENT OF
PLANNING AND BUILDING

planningandbuilding@blacksburg.gov

MEMORANDUM

To: Planning Commission

From: Kinsey O'Shea, AICP, Senior Town Planner KO

Date: February 10, 2023

Subject: RZN22-0004 Glade Spring Crossing

Planning Commission held three prior work sessions on December 20, 2022, January 17, 2023, and January 31, 2023 to discuss the November 30, 2022 rezoning application for Glade Spring Crossing. The staff report for this request was provided to the Planning Commission on January 13, 2023. The subsequent January 27, 2023 packet contained the staff proffer evaluation and memos related to the floodplain and creek valley overlay from Planning and Engineering staff. After the work sessions, the applicant submitted an updated application package with a revision date of February 6, 2023, in response to issues raised at the work sessions and in the staff report.

This memo covers the changes provided by the applicant and provides accompanying staff analysis. Also included is additional correspondence received since January 31, 2023 through February 10, 2023.

The public hearing for this request is scheduled for March 7, 2023.

The applicant's memo "Response and Changes to staff report" dated February 6, 2023, outlines all of the intended changes based on the feedback in the staff report, Planning Commission work sessions, and community input. The memo covers the changes that are proposed as part of the application, proffers, variance requests, as well as providing additional information on specific topics. The applicant updated the variance requests to reflect additional information requested by staff, including the additional variances needed as identified in the staff report. The applicant also submitted additional information regarding the Glade Road/Old Glade Road intersection and possible improvements. The updated materials also included more information regarding sanitary sewer; the applicant's discussion regarding removing the connectivity to Village Way South; additional information regarding Creek Valley Overlay; and additional engineering items. The applicant included a revised application dated February 6, 2023, ***however there are a number of changes covered in the applicant's memo that were not reflected in the revised application and proffer statement. The applicant will have to provide a revised application and proffer statement that address this and provides the actual proposed conditions.*** Please see the attached staff inconsistencies memo outlining these items. This staff update memo will cover analysis for the applicant's revised materials topically, as opposed to the order presented in the applicant's memo. Other items from the applicant's memo such as additional clarifying language are not discussed in this staff memo if no analysis is needed.

Site development regulations generally

The applicant's memo covers a number of changes generally related to site regulations for individual lots. Several of these pertain to variances, and are discussed as such. Consideration of the rezoning request should take into account these proposed changes and whether or not they are appropriate for the development when

combined with the overall proposed standards. The following analysis is provided in consideration of the proposed changes.

- Limiting FAR for detached units in the South area to 0.7 (previously 1.0)

The revised proposed FAR of 0.7 for detached units in the South area limits structure size on the lots. Dense, small-lot development will result in a higher FAR than traditional single-family development. The average lot size in the South area is approximately 3,100 square feet, which could result in a home (cumulatively with any accessory structures such as sheds) up to 2,170 square feet, when calculated with FAR of 0.7. Considering that some homes may have basements while others may not, the FAR is more reasonable to accommodate moderately-sized homes on some lots, or to allow home additions and accessory structures to be added. The applicant may wish to consider including conceptual graphics that depict examples of the maximum FAR to aid in consideration of this proposed standard. ***There are references to FAR of 1.0 in the application text, Sample Lot Schematics graphics, and pattern book that have not been changed.***

- Prohibition of accessory apartments

The cover memo indicates that the applicant does not intend to allow accessory dwelling units (ADUs) as a use in the development. ***The proffer statement and application have not been updated to reflect this change.***

- Changes to side setbacks in the South area to accommodate variations in driveway width and location

The application indicates that the non-corner side setbacks for the South area are now a minimum of 5', rather than 8.5' previously; and that the minimum building separation is proposed to be no less than 17'. These proposed changes help implement the new proposed driveway location restrictions (described below) by providing flexibility for where the house sits on the lot, allowing it to be closer to one property line than another. The previous setback of 8.5' on both sides does result in a minimum building separation of 17', but may not provide the flexibility needed to accommodate as many side-oriented driveways for the driveway location restriction proposed by the applicant. The added restriction of minimum building separation ensures that even if a home is located 5' from a property line, the neighboring building would have to be a minimum of 12' from the property line (which would accommodate a side-oriented driveway). ***The applicant will have to change the setbacks in the Pattern Book Development Standards Southern Area.***

- Restriction added prohibiting more than two double-width driveways adjacent to one another

The applicant indicates in the cover memo, that driveways will be restricted in the South area of the development such that there would not be more than two adjacent 18-foot-wide (double-width) driveways next to one another. This restriction was in response to staff and Planning Commission concerns that driveways for townhomes and attached units could result in significant portions of pavement in front of the buildings if all the parking is located in the front, and none along the sides of units. The "paved front yards" as seen in the November 30, 2022 application on page 37 and 38 of the application, and the A100 and A101 sheets, were specifically mentioned as a concern among Planning Commissioners. The proposed restriction results in additional greenspace in front of blocks of attached units and can be seen in the graphic provided in the applicant's Variance request memo on page 11 and 12.

As an example, a block of four attached units will be flanked on each end with side-oriented driveways, while the interior units would have double-width front driveways. The end units would have greenspace in the front yard. This does provide some relief from having so many units with pavement in the front yard, but it is still more pavement than would be typically allowed for these uses. Some increase in pavement is expected with smaller lot development. The applicant has provided a graphic in the Variance request memo exhibits

demonstrating this restriction. ***The graphics in the application will have to be updated to reflect the revised driveway location restriction.***

- Minimum driveway depth and measurement methodology

The minimum depth of driveways were not clearly provided as a standard in the original application. The application now provides standards for minimum driveway depth of 20' as measured from the back of the sidewalk; the back of the curb; or the edge of the pavement, depending on the street section. The application does not specify where the other dimension will be taken from, but it is typically from the face of the building, which will be the face of the front porch for the units in the South area. This depth is larger than the required parking space minimum, which is 18'. However, full-size pickup trucks average nearly 20' in length, and many mid- to full-size SUVs and minivans approach 17' in length. The minimum driveway length of 20' leaves little room for error to keep the sidewalk and building face clear. The limited driveway space provided may make it difficult for people to maneuver around parked vehicles in adequate clear zones.

- Exception requests for parking in front of the building line and backing/maneuvering into the street (§4231(b)(6); §4241(a)(2); §5206(c))

The staff report identified that exceptions are required for parking in front of the building line for townhomes and two-family dwellings, as well as to allow vehicles to back into or out of the street to access parking spaces. This may be inherent in some forms of small lot development. The applicant has provided the appropriate requests and justification in the updated variance memo. The analysis for these conditions is found in the January 13, 2023 staff report. Planning Commission should consider if the exceptions for parking in front of the building line, and backing into the street are appropriate for the development.

Building Construction

There were several changes proposed by the applicant pertaining to building construction.

- Providing floor plans

The applicant has provided conceptual floor plans as a part of their pattern book. The floor plans provided indicate that two- and three-bedroom units are options in the South area. However, the proffer statement indicates that the south area homes will all be three-bedroom units. ***The floor plans or the proffer statement will need to be revised to be consistent and reflect the actual proposed conditions.***

- Committing to maximum HERS ratings and removing references to Pearl certification and EarthCraft certification

The memo indicates that the EarthCraft and Pearl certification references have been removed, and instead, the applicant proposes a maximum HERS rating for proposed homes. The applicant proposes that the 10 units for households earning up to 80% of AMI will achieve a maximum HERS rating of 65, while all other units will achieve a maximum HERS rating of 75. HERS is a metric used for measuring energy efficiency of a home which not only includes sustainable building practices, but will also provide a benefit to the homeowner in the form of reduced energy costs. Homes built to minimum building code standard typically achieve a rating of 100, with lower numbers being more efficient. It should be noted that as building codes change, requirements for energy efficiency are often strengthened, and over time, may reflect a lower HERS rating. Other recent developments have included HERS as a commitment to energy efficiency including Whipple Drive Townhome PRD, and Berewick PRD. In the Berewick PRD, the applicant anticipated that homes may be constructed in the future with more stringent minimum building standards, and proffered a minimum HERS rating, or 10% better efficiency

than the current building code would require. This does provide assurance that over time, the new homes in the development will continue to be built to achieve a higher-than-minimum standard. This development does not include the same language. ***The proffers have been updated to reflect the change to HERS rating, but the application Affordable Unit Regulations will need to be revised to remove the reference to EarthCraft certification.***

- Modification request to Use & Design Standard §4231(b)(15) to not require front façade articulation for townhomes

The intent of this standard is to provide for variability and individual unit appearance, even if all other factors such as materials and color are uniform. The original application did not include floor plans, so it could not be determined if the standard was met or not. The staff report indicated that the standard would have to be met, or a modification would have to be requested and approved through the rezoning. The applicant's variance request memo has been updated to include a modification to the Use & Design Standard for Townhomes that requires front façade articulation. The application includes language that adjacent units will not be required to vary front façade, which could result in a block of four attached units with no front façade articulation except porch coverings. The revised application text requires that no two adjacent and attached townhome units can be identical. The standard states that differentiation may be achieved by color, materials, fenestration, architectural details, and/or porch details. The pattern book includes several variations for home facades achieved by these architectural details: window placement varies; roofline varies; porch design varies; and materials vary. As written, the proposed standard could be met by varying only one of the different features listed. In order to better meet the intent of the requirement in the Use & Design Standards, additional variety could be required to ensure that attached units maintain an individual unit appearance. The wording could be changed to include only "and" as opposed to "and/or". In considering these elements, when no building articulation is provided, the roofline and gable or dormer elements; porch design; and color can have a significant impact in making attached residential units look like a monolithic building, or breaking up massing to reflect individual units. At a minimum staff suggests that no two adjacent units shall be the same color or have the same roofline, and shall contain variations such as materials, fenestration…etc. In order to ensure individuality across all units, attached and detached, the applicant may wish to also apply this standard to all unit types in the development.

Landscaping

The applicant's memo covers a number of changes related to landscaping:

- Modification request for street tree ratio to be 1 per 80' frontage in the North area and 1 per 100' frontage in the South Area now includes justification

The applicant's updated variance request memo indicates that the density of the development necessitates small lot frontages. The applicant indicates that parking, utilities, and sidewalks will limit the amount of space in front of the homes for planting street trees. This is more of a constraint in the South area than the North area due to the small lot sizes, attached units, and parking in front of the buildings. The "Yard Landscaping" required for the North area as proposed includes at least one tree in the front yard of every lot, to include street trees. As discussed in the staff report, the application of this variance results in fewer trees overall in the front yards of homes in the South area. The application does have a provision that each lot must have at least one tree. This is more than what is required elsewhere in Town for individual unit lots, however it is less than the requirement of 1 tree per every 30' of frontage for townhome uses.

- Additional proffer language regarding timing of planting in order to begin establishment of canopy in managed successional areas

Proffer #3 has been updated to include timing mechanisms for planting trees and calculating canopy in the first years of the development's growth. The proffer states that within 3 years of the first certificate of occupancy (CO) in Phase 1, at least 5% of the total canopy required for the entire development will be established by counting existing woodlands, and planting new trees. The proffer goes on to say that within 3 years of the first CO in Phase 2, at least 7% of the total canopy required has to have been established. At this point, the existing woodlands, as well as any new plantings including the managed successional areas would be included in the calculation. Lastly, the proffer states that the HOA will plant and maintain the managed successional areas within 1 year after Phase 2 infrastructure acceptance by the Town.

These timing mechanisms address concerns raised by staff and the Planning Commission that there was no metric of success to ensure that the managed successional areas would be on target to reach required canopy by 20 years. While it is unknown how long Phase 2 will take to complete, Phase 1 certificates of occupancy will be delivered on or before July 1, 2026. The revised language is consistent with the Town's typical calculation metrics, and can be enforced as written. However, as noted below in the next section, and as discussed in the January 13, 2023 staff report, the overall success of this method of landscaping to achieve required tree canopy is unknown.

As written, however, the language "a minimum of 5% (or 7%) of the total canopy required" results in a very small percentage of overall canopy. As proposed, 20% of the total site will ultimately be canopy, which equates to nearly 393,000 square feet, or 9 acres. As proposed, 5% of the total canopy required is approximately 19,000 square feet, or less than 1% of the total site. This is the amount of canopy that would be required to be provided (in either pre-existing woods, or newly-planted trees) within 3 years of the first CO. For reference, 19,000 square feet of canopy can be achieved by approximately 100 medium-sized trees (150-250 square foot canopy each).

If the intent is that 5% (or 7%) of the entire site have canopy coverage at the specified times, then the language should be re-written: "a minimum of 5% (or 7%) of the *total site shall be canopy and shall be achieved*…"

- Additional proffer language regarding the HOA to record the management of the managed successional areas

The revised Proffer #2(d) contains language that requires the HOA to keep a log or record of the managed successional area recommendations, results, and actions taken by the HOA to follow recommendations.

The proffer is intended to provide a measurement and enforcement tool for ensuring the success of the proposed landscape, which is a very different approach than what has been taken by developers in Town before. However, this language in the proffer does not require or commit the HOA to take action to aid in implementation of the new landscape concept for this development. Maintenance will be needed over the long term to ensure that the development is compliant with the standards over time.

It is suggested by the applicant that this method will result in cost-savings to the HOA over time, in reduced mowing and treatment costs, but it is unknown how well this approach may function, or if it will achieve either the desired results or cost-savings over time. As noted in the January 13, 2023 staff report, and at the Planning Commission work sessions, there are concerns regarding proof of concept, cost to maintain (money and/or people-power), and overall functionality of these spaces and the methods suggested for maintaining them. Planning Commission should consider the overall landscaping approach proposed by the applicant, as well as the

real-world variables that apply when evaluating the adequacy of the proposed landscaping for this development.

- Perimeter buffers

In the January 13, 2023 staff report, staff suggested that vegetative buffers could help mitigate impact between the proposed development and the adjoining residential properties on all sides. The applicant's memo includes a justification for why the choice was made to not include buffering between this development and adjacent neighbors along Village Way South. The applicant states that the required grading and shallow depth of the proposed lots that are adjacent to the Village at Toms Creek do not allow for buffering. The applicant further states that the buffer would be ineffective due to the grade difference between the property and the homes along Village Way South (VWS), which sit above the proposed development. The applicant has not provided any reasoning for the design choice to not include buffers along the Glade Road or Shadowlake Road properties. Planning Commission should evaluate the three buffer areas (VWS, Glade Road, Shadowlake Road) individually based on the characteristics of the proposed lots adjacent to existing development. The Planning Commission should consider the overall neighborhood compatibility of the proposed development with the consideration that no perimeter buffers are included in the development.

Trails, Sidewalk, & Recreation

The applicant's memo covers changes related to trails, sidewalks, and recreation areas, including phasing:

- Variance request to allow grass trails instead of paved or gravel trails to provide access to open space

It was noted in the staff report that Subdivision Ordinance §5-402 requires that access to open space will be paved or gravel surface. The applicant proposes grass trails to access the open spaces in some locations. Other locations include paved access. The revised proffer statement also includes a provision for trail signage to be posted at these locations at the entrance to the trail. The January 13, 2023 staff report discussed access to open space and the importance of paved trails. Planning Commission should determine if the variance to allow grass trails as access to open space is appropriate for the development.

- Included clarity in phasing exhibits regarding trail and recreation amenity construction

The revised proffer #13 does provide additional clarity for when improvements will be constructed. The phasing exhibit has been changed to reflect the open space between the development and The Farm to be constructed with Phase 2, along with Street D.

Phase 1 would consist of:

- Street A
- Lots fronting on Street A
- Sanitary pump station, force main, gravity mains and individual unit laterals to support Phase 1 lots
- Water mains and laterals to support Phase 1 lots; required waterline replacement
- All three stormwater management facilities; storm systems required for Street A
- The portion of the public trail between Road A and the pump station, and along Street A from Street D to the North area homes
- Passive recreation area along Street A

Phase 2 would consist of:

- All remaining streets, lots, and supporting infrastructure including mains and laterals

- Remainder of public trails to connect to the Village at Toms Creek trail near Poplar Ridge and to The Farm
- Both active recreation areas

It should be noted that the proposed phasing plan does not include any active recreation or playground structures in Phase 1. Portions of the trail will be constructed, but there will not be a connection to the existing trails at The Farm and The Village at Toms Creek until Phase 2. Planning Commission should determine if the proposed phasing plan is appropriate for the development as it is a proffered condition.

- Additional easement provided toward adjacent neighbor to connect to Toms Creek Greenway in the future

The applicant's memo indicates that the trail has been realigned away from the adjacent pond, and that a "trail access easement" will be provided adjacent to the Quinones property to the northwest in order to provide adequate space for grading or realignment if needed for making the connection in the future. ***However, there are no graphics included in the application that show the location of the realigned trail or the easement.*** Staff cannot comment until further information is provided.

Additional Items

- Public Utility Easement Variance

The applicant's memo and Variance request have been updated to reflect that PUE easement variances are only requested where there are existing easements abutting on adjacent properties. The applicant states that the required 15' front PUE will be provided for all lots. The applicant included an exhibit in the Variance memo showing the locations and width of existing and proposed perimeter easements. Planning Commission should determine if a variance to reduce perimeter PUE as proposed is appropriate.

- Branch Turnaround

The applicant provided additional information in the Variance memo regarding the constructability of a bulb cul-de-sac in lieu of the proposed branch turnaround on page 5 of the variance memo. Analysis for this layout was provided in the January 13, 2023 staff report.

- 15 mph speed limit

The applicant is proffering that the speed limit in the development will be posted 15 as mph. This was mentioned at the work sessions. Further review of this proposed speed limit with respect to street design is needed.

- Additional Engineering Responses

The applicant also included responses to several specific engineering items including stormwater, floodplain, transportation, and sanitary sewer. Please see the attached engineering memos for analysis of the submitted information.

Attachments

- Staff engineering memos for Stormwater, Floodplain, Sanitary Sewer, and Transportation
- Correspondence received 01/31/2023 through 02/10/2023
- Inconsistencies memo

Blacksburg TOWN OF VIRGINIA

DEPARTMENT OF
ENGINEERING AND GIS

engineeringandgis@blacksburg.gov

MEMORANDUM

TO: Kinsey O'Shea, Town Planner/Current Development

FROM: Kafi Howard, Town Engineer

DATE: February 9, 2023

SUBJECT: RZN 22-0004-Glade Spring Crossing - 1006 Glade Road – Stormwater Concept Plan Memo (*updated to February 7th revision*)

This memo addresses the applicant's Stormwater Concept Plan as revised on February 7, 2023. Per Chapter 18-605 of the Town code, a concept plan should be prepared at the time of the preliminary plan of subdivision, rezoning application, or special use permit application or other early step in the development process to identify the type of stormwater management measures necessary for the proposed project. The Town's review of this concept plan is to confirm that the stormwater management measures are capable of controlling the site runoff in compliance with the Virginia DEQ Regulations and BMP Clearinghouse website.

This memo summarizes Staff's review of the submitted stormwater management concept plan as revised on February 7, 2023.

Methodology for Stormwater Management - The purpose of this project is to develop a residential subdivision off Glade Road. This approximately 41-acre site sits just west of the 460 bypass between Glade Road and Village Way South. Components of this subdivision include 5 new public roads and the public infrastructure needed to support a 176 dwelling units. These units will be a mix of attached and single family detached homes. This site also is proposing to install a network of three stormwater facilities that are to provide a regional stormwater quality and quantity reduction benefit. The Town is evaluating entering into a partnership with this developer to support this regional stormwater benefit.

This site is proposing to construct one new dry detention pond, a new wet detention pond and retro-fit an existing Town-maintained detention pond located on this site to provide regional stormwater benefits. A fourth small stormwater facility is proposed to be installed to address water quality along the Shadow Lake side of the subdivision. An individual analysis of the facilities has not been provided, but below is a table illustrating their cumulative stormwater benefit:

Preliminary Stormwater Improvement Summary*

Water Quantity

Point of Analysis		Allowable peak flow rate (Q_{allow})	Postdev. Actual peak flow rate (Q_{post})	Regulations met?
A	1-year peak flow rate	75.45 cfs	24.83 cfs	$Q_{post}<Q_{allow}$ ∴ Yes
	10-year peak flow rate	175.77 cfs	90.38 cfs	$Q_{post}<Q_{allow}$ ∴ Yes
B	1-year peak flow rate	1.43 cfs	1.08 cfs	$Q_{post}<Q_{allow}$ ∴ Yes
	10-year peak flow rate	5.66 cfs	4.30 cfs	$Q_{post}<Q_{allow}$ ∴ Yes

Water Quality

Target TP load reduction	TP load reduction achieved (after SWM improvements)	Excess TP load reduction relative to target
26.53 lb/yr	39.02 lb/yr	+12.49 lb/yr

***Note: All numbers are preliminary and subject to change during preliminary plat and site plan engineering design.**

As shown in the table above, this network will reduce the stormwater flows far below the regulatory requirement for both the 1-year, Channel Protection requirement, and for the 10-year Flood Protection requirement. Additionally, the water quality benefit provided far exceeds the regulatory requirement.

Limitations of State Regulatory Framework – This Stormwater Concept plan addresses items regulated by the Virginia Stormwater Management Regulations. A few citizens have mentioned that the water quality benefits illustrated in the Applicant's SWM Concept Plan do not address the specific needs of the Toms Creek Watershed. In many ways, this is true. Phosphorus is the nutrient that the state of Virginia has determined to regulate to represent a development projects' impact to the quality of runoff. Toms Creek and other smaller tributaries, are experiencing different water quality stressors at this time, both bacteria (E. coli) which was identified in 2014 and high temperature which was identified in 2008.

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MEMORANDUM

TO: Kinsey O'Shea, Town Planner/Current Development

FROM: Kafi Howard, Town Engineer

DATE: February 8, 2023

SUBJECT: RZN 22-0004-Glade Spring Crossing - 1006 Glade Road – Preliminary Floodplain Study

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This memo addresses the applicant's Floodplain Calculations for a establishing the 100-year floodplain across this proposed subdivision parcel. Per Division 24 of the Zoning Ordinance Section §3243(b), any tributary with a drainage area of 100 acres or more must have the 100-year floodplain area determined, as these areas are not already mapped by FEMA. The primary basis for delineation of these areas shall be submitted by the applicant, as established by a professional engineer using acceptable methods of study. This memo summarizes Staff's review of the *revised* floodplain study submitted on February 6, 2023.

1) **Methodology for Calculations** - Staff has reviewed the methodology for calculations and is satisfied with the methodology at this preliminary stage of development, primarily for how the upstream drainage areas have been analyzed. Further analysis will be required to address how the proposed developed condition will change the elevations within floodplain areas. Insufficient information is available at this time to confirm appropriate methodology for the on-site flood impacts.

2) **Evaluation of Impacts of the Subdivision** - Part of the methodology of a floodplain study is to confirm that this proposed project can be constructed in compliance with Division 24 of the Zoning Ordinance Section §3247 which states, "*no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in the 100-year flood elevation*."

   a. Proposed improvements that are critical components of the masterplan of this project (public trail and public sanitary sewer pump station) are shown to be located within the 100-year floodplain as represented on page 28 of the Revised Rezoning Application (*February 6, 2023*) and page 8 of the Revised Stormwater Concept Plan (*February 6, 2023*). These items are not reflected in the Preliminary Floodplain Study and compliance cannot be confirmed at this time.
   b. The applicant has submitted a proffer (#15) to analyze the complete post development 100-year floodplain impacts at the preliminary plat stage, and if compliance with the Floodplain Hazard Overlay district cannot be achieved, the owner will **remove the pump station and trail from the 100-year floodplain.** This is acceptable to support compliance at this time.

3) **General Requirements of future Infrastructure within 100-year Floodplain** - Notwithstanding the missing analysis action items presented above, all prosed trails, grading and public sanitary sewer pump station must comply with all articles of the Floodplain Hazard Overlay, in addition to any more stringent requirements for the pump station that would be referenced in Building Code or the Virginia Scat Regulations.

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MEMORANDUM

TO: Randy Formica

FROM: Shawn Veltman, Town Engineer

DATE: February 9, 2023

SUBJECT: Glade Spring Crossing Sewer Connection

This memo discusses the developer's plan to provide sanitary sewer service for the proposed Glade Spring Crossing subdivision and Town of Blacksburg staff concerns with that plan as well as an alternative technical solution that would include Town cost sharing.

Background

The proposed Glade Spring Crossing subdivision is located on 44.855 acres of land to the north of Glade Road and along the US Route 460 bypass. The current development plan calls for the construction of 176 attached and detached single family homes with lots of varying size. The projected buildout peak flow for the development is 247,780 gpd, or approximately 172 gpm.

Given the proposed development density, the developer has requested a variance from the Town's STEP/STEG ordinance and instead has proposed to service the development with gravity sanitary sewers that will flow to a new pump station near the lowest point on the property (Elevation 2000). The wastewater will then be pumped at a rate of approximately 172 gpm through a 4-inch force main to Glade Road, and then continue along Glade Road a distance of approximately 250 feet, before connecting to the 6" force main servicing the Town's Karr Heights pump station (Elevation 2104). The combined flows from the Glade Spring Crossing pump station and the Karr Heights pump station would then transit through the remaining 450 feet of force main along Glade Road and across the 460 Bypass to a discharge manhole located in Glade Road on the east side of US 460.

This plan would have allowed the developer to avoid the expense of a separate new crossing of US Route 460, but an analysis of the proposed plan by the Town of Blacksburg staff has uncovered a number of potential issues that are described below.

Issues Associated with the Developer's Proposed Plan

There are a several issues with the plan by the developer of the Glade Spring Crossing project to connect to the Town sanitary sewers. These include:

1) The Karr Heights Pump was originally designed to deliver 180 gpm with a single pump in service but aging of the force main has increased friction losses and there is possible air binding in the force main at its crest along Glade Road; these two conditions have reduced the discharge rate of the pump station to approximately 140 gpm. Near continuous operation of both pumps is now required during wet weather due to groundwater infiltration and inflow, and overflows from the pump station have occurred. Replacement of the pumps with the same pumps approximately three years ago did little to remedy this problem and overflows are still likely to occur. Notwithstanding the developer's proposal, an increase in the pumping capacity of this station to 200 gpm is recommended.

2) The developer's proposal to discharge to the Karr Heights force main at a point approximately 450 feet from its discharge would exacerbate the existing problems at the Karr Heights pump station. Assuming the common section of 6-inch force main was in acceptable condition and could carry the combined flow, the added flow of 180 gpm to this section of force main would increase the head on the Karr Heights pump station and decrease the discharge rate of its pumps by approximately 25 gpm when both stations were operating together. Increasing the size of the pump impellers and motors could offset this loss and appears to be a practical solution to the problem. Limiting the discharge from the proposed Glade Springs Crossing pump station during wet weather events is not a practical solution to this problem because both Karr Heights pumps operate almost continuously for extended periods during wet weather and a large volume of equalization storage at the proposed Glade Springs Crossing pump station would be required.

3) The plan to combine flows in portion of the Karr Heights force main is necessarily dependent on the condition of the force main. This section of force main was installed around 1985 and it is now approximately 40 years. On January 19, 2023, Town engineering and public works staff used a push camera to inspect the pipeline. The camera was inserted in the force main at the point of discharge while the pump station was off, and approximately 20 feet of the pipe was viewed. The internal condition can best be described as poor and significant tuberculation was observed and this has reduced the effective diameter of the pipe. Because this section of the force main drains after each pump cycle, the conditions are conducive to crown corrosion and the integrity of the pipe is suspect. Increasing the flow through this section of force main would increase operating pressures and this could lead to failure. Replacement of this section of pipe is warranted regardless of the proposed Glade Springs Crossing connection.

4) The force main from Karr heights currently discharges to a gravity sewer on the east side of US 460 bypass. The discharge then flows by gravity through an 8" sewer that passes between Kroger's and the Blacksburg Post Office before entering the University City Boulevard (UCB) sewer. That sewer is also 8 inches in diameter and it flows south along UCB before it ultimately discharges to a large 24" diameter sewer owned and operated by the BVPISA. In addition to serving the properties fronting the sewer along UCB, the UCB receives approximately 400 gpm of flow from the Sturbridge pump station at a point just upstream of where the flow from Karr Heights enters.

   Analysis of the UCB sewer using the Town's sewer model indicates that the UCB sewer is already at or slightly above capacity during a 2-year 24 hour storm event. Town engineering and Public works staff confirmed this finding on January 13, 2023 by forcing both the Sturbridge and Karr Heights pump stations to operate simultaneously, then observed the flow in the sewer just downstream of the discharges. We observed, on a dry weather day, that the sewer was operating at a full pipe and thus concluded that the addition of 180 gpm of pumped flow from the proposed Glade Spring Crossing pump station to the UCB sewer would not be permissible.

5) The static head that the developer's pump station must overcome is approximately 115 feet and friction losses in the proposed 4" force main will add an additional 60 feet which would require, based upon the Town's standards, series pumping (two sets of two pumps operating in series) to overcome the head. This design is more expensive and would require more long-term maintenance than a standard duplex pump arrangement.

Alternative to the Developer's Proposal

Given the issues described above, Town staff have developed a workable technical alternative to the developer's proposal that would include:

1) Upgrading the Karr heights pump station by replacing the 11-inch impellers in the pumps with new larger 12-inch impellers that would enable the pumps to overcome the added head caused by discharge through 450 feet of common force main and increase the stations capacity to 200 gpm. Increasing the size of the impellers would also require increasing the motors from 15 HP to 25 HP and replacing the motor starters. The estimated cost of this work is $100,000 (labor and materials).

2) Replacing the 450 LF of common force main along Glade Road with a new larger 8" diameter force main as shown on the attached figure. Approximately 200 feet of this force main is suspended beneath the bridge over US 460 and replacement of this section of pipe will require VDOT approval. The estimated cost of this replacement is $140,000 and it includes a new manhole with an air/vacuum release valve near Olive Drive.

3) Redirecting the discharge from the proposed new force main to new 10" gravity sewers that would run along Glade Road to the intersection with Old Glade Road and then down Old Glade Road to a 15" sewer behind the University City mill parking garage. Two existing sections of 8" pipe along Glade Road would be reused. Preliminary plans and profiles for this work are attached. The estimated cost of the work is $800,000.

4) Increase the diameter of the proposed developer force main to 6" and the pump discharge rate to 180 gpm. This will still allow acceptable cleansing velocity (2.04 ft/sec) and reduce the head enough to allow the use of a standard duplex pump arrangement. The difference in cost between the 4 and 6 inch pipe is more than likely to be offset by the reduced costs of the pumps and related controls.

Benefits of the Proposed Alternative

Aside from providing a workable technical solution that will allow the Town to accommodate the discharge from the developer's proposed pump station, the proposed alternative technical solution has several benefits including:

1) Redirecting both the Karr heights and proposed Glade Springs pump station flows to the new sewers on Old Glade road will free approximately 140 gpm of capacity in the UCB sewers for other redevelopment projects. It will certainly extend the service life of the UCB sewer.

2) The proposed new 8" force main with the combined pump station flows will add no additional head on the Karr heights pump Station and prevent the loss of capacity that would otherwise occur. It may actually increase the capacity of the pump station by eliminating possible air binding.

3) The capacity issues with the Karr Heights pump station have been brought to light by the developer's proposal. Replacement of the pump impellers, motors, and starters, and the addition of an air release valve, will increase the pump station capacity to at least 200 gpm and greatly reduce the potential for future overflows.

4) Replacement of the 450 feet of deteriorated force main with new pipe will eliminate a potential Town liability; the remainder of the force main serving Karr Heights is likely to be in better condition because it does not drain after each pump cycle.

5) The proposed 10" sewer that would redirect the pump station flows down Old Glade Road would operate half full and have significant capacity that would be available for redevelopment of the University City Mall property or future development of the Virginia Tech property on the west side of Old Glade Road.

Possible Cost Sharing

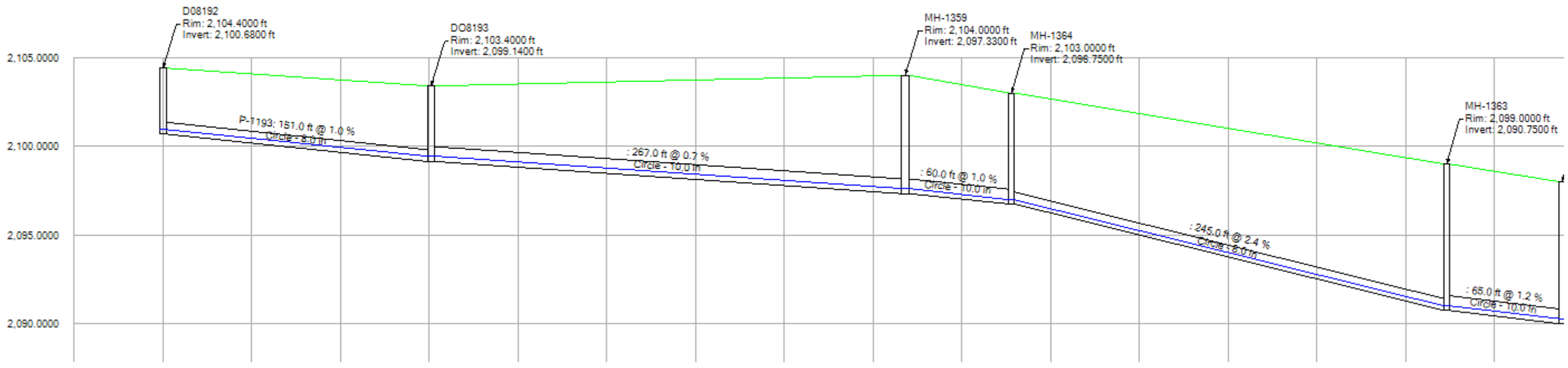
Given the benefits that would accrue to the Town under the proposed alternative plan, cost sharing with the developer to complete the improvements is recommended. Suggested cost sharing is presented below.

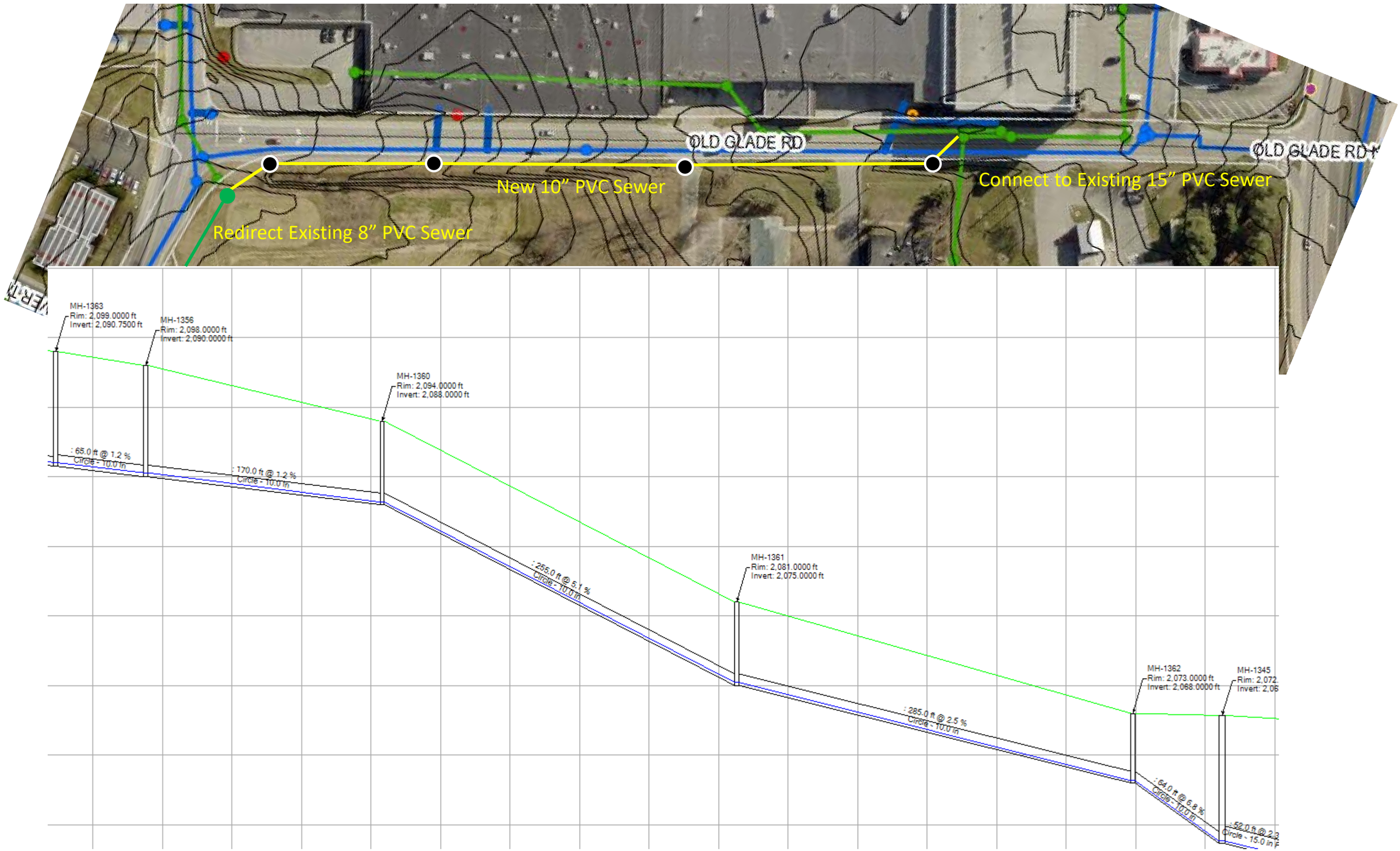
Cost Sharing Proposal

Cost Item	Proposed Town Cost	Proposed Developer Cost	Total Cost
Karr Heights Pump Station Upgrade	$100,000	0	$100,000
Force main Replacement (450 LF)	$121,900	$108,100	$230,000
New Gravity Sewers (Glade & Old Glade)	$424,000	$376,000	$800,000
Downgrade Series to Duplex Pump Station (Glade Springs Crossing Pump Station)	0	Decrease	0
Upgrade Glade Springs force main from 4" to 6"	0	Increase	0
Totals	$645,900	$484,100	$1,130,000

Notes: Cost sharing on the Glade Road Force main replacement and the new Glade Road and Old Glade Road Gravity sewers is based upon the flow proportion where the Town = 200 gpm (53%) and the Developer = 180 gpm (47%), of the total (380 gpm)


New ARV
Replace 6" DI FM
with 8" C900 PVC
Existing 8" PVC Sewer
New 10" PVC Sewer
Existing 8" PVC Sewer
STEADING LN
NEWPORT TER
CLAYTOR SQ
CASCADE CT
NEW RIVER TER
GLADE RD
EB 460 BYPASS
WB 460 BYPASS


D08192
Rim: 2,104.4000 ft
Invert: 2,100.6800 ft
DO8193
Rim: 2,103.4000 ft
Invert: 2,099.1400 ft
MH-1359
Rim: 2,104.0000 ft
Invert: 2,097.3300 ft
MH-1364
Rim: 2,103.0000 ft
Invert: 2,096.7500 ft
MH-1363
Rim: 2,099.0000 ft
Invert: 2,090.7500 ft
P-7193: 151.0 ft @ 1.0 %
Circle - 8.0 in
: 267.0 ft @ 0.7 %
Circle - 10.0 in
: 60.0 ft @ 1.0 %
Circle - 10.0 in
: 245.0 ft @ 2.4 %
Circle - 8.0 in
: 65.0 ft @ 1.2 %
Circle - 10.0 in
2,105.0000
2,100.0000
2,095.0000
2,090.0000


OLD GLADE RD
OLD GLADE RD
New 10” PVC Sewer
Redirect Existing 8” PVC Sewer
Connect to Existing 15” PVC Sewer
MH-1363
Rim: 2,099.0000 ft
Invert: 2,090.7500 ft
MH-1356
Rim: 2,098.0000 ft
Invert: 2,090.0000 ft
MH-1360
Rim: 2,094.0000 ft
Invert: 2,088.0000 ft
: 65.0 ft @ 1.2 %
Circle - 10.0 in
: 170.0 ft @ 1.2 %
Circle - 10.0 in
: 255.0 ft @ 5.1 %
Circle - 10.0 in
MH-1361
Rim: 2,081.0000 ft
Invert: 2,075.0000 ft
: 285.0 ft @ 2.5 %
Circle - 10.0 in
MH-1362
Rim: 2,073.0000 ft
Invert: 2,068.0000 ft
: 64.0 ft @ 5.8 %
Circle - 10.0 in
MH-1345
Rim: 2,072.
Invert: 2,06
: 52.0 ft @ 2.3
Circle - 15.0 in F

Glade Road Force Main Replacement
Town of Blacksburg Blacksburg Plan

Construction Costs

Item	Units	Quantity	Unit Cost	Total Cost	Notes
Bonds, Mobilization & Insurances	LS	1	$25,000	$10,000	
8" Epoxy-lined DIP, Beneath Bridge	LF	200	$300	$60,000	
8" PVC C900 Pipe, Pavement	LF	250	$150	$37,500	Minimum Cover = 3 feet
Select Granular Fill (Place & Compact)	CY	100	$50	$5,000	
ARV Valve & Vault	LS	1	$5,000	$5,000	
Asphalt Pavement Removal & Replacement	SY	110	$275	$30,250	
Mill & Overlay	SY	1,000	$25	$25,000	Assumes 40 foot width
Erosion & Sediment Control	LS	1	$2,500	$2,500	
Traffic Control	Days	10	$960	$9,600	
Bypass Pumping	Days	25	$1,000	$25,000	
Connection to Existing MH	EA	1	$1,000	$1,000	
Subtotal				**$210,850**	
General Conditions				$0	Included in unit prices
Contractors O&P				$0	Included in unit prices
Engineering (10%)				$21,100	
Subtotal				**$231,950**	
Contingency				$0	
TOTAL CAPEX				**$231,950**	**SAY $230,000**

Glade Road/Old Glade Road Gravity Sewer
Town of Blacksburg Blacksburg Plan

Construction Costs

Item	Units	Quantity	Unit Cost	Total Cost	Notes
Bonds, Mobilization & Insurances	LS	1	$25,000	$25,000	
10" Gravity Sewer Pipe, Public Right of Way	LF	65	$175	$11,375	
10" Gravity Sewer Pipe, Pavement	LF	1,252	$210	$262,920	Worst Case Assumption
Select Granular Fill (Place & Compact)	CY	800	$50	$40,000	
4' Diameter Sanitary Sewer Manhole	VF	112	$650	$72,800	
Manhole Lining	VF	4	$250	$1,000	
Standard manhole Frame & Cover	EA	7	$550	$3,850	
Asphalt Pavement Removal & Replacement	SY	556	$275	$152,900	
Mill & Overlay	SY	5,500	$25	$137,500	Assumes 40 foot width
Erosion & Sediment Control	LS	1	$2,500	$2,500	
Traffic Control	Days	25	$960	$24,000	
Bypass Pumping	Days	1	$1,000	$1,000	
Connection to Existing MH	EA	1	$1,000	$1,000	
Subtotal				**$735,845**	
General Conditions				$0	Included in unit prices
Contractors O&P				$0	Included in unit prices
Engineering (10%)				73,600	
Subtotal				**809,445**	
Contingency				$0	
TOTAL CAPEX				**$809,445**	**SAY $800,000**

Smith & Loveless, Inc.
14040 Santa Fe Trail Drive
Lenexa, KS 66215
USA
913-888-5201

SALES AGREEMENT

NAME AND ADDRESS:

QUOTATION DATE:	JANUARY 26, 2023
INQUIRY NUMBER:	CS-34078
ENGINEER:	
JOB LOCATION:	BLACKSBURG, VA
SERIAL NUMBER:	15-3602

SMITH & LOVELESS®, INC. having an office at 14040 Santa Fe Trail Drive, Lenexa, Kansas 66215 (hereinafter referred to as "Seller"), hereby agrees to sell to the buyer designated below (hereinafter referred to as "Buyer"), the following equipment is subject to all provisions set forth in this Sales Agreement. ***The Sales Representative is not an agent or employee of Seller and is not authorized to enter into any agreement on Seller's behalf or bind Seller in any way.***

SMITH & LOVELESS®, INC. is pleased to offer our quotation for the following:

OPTION №1:

TWO **SMITH & LOVELESS®** Model 4C3B **STAR ONE®** Vacuum Primed Rotating Assemblies

- 25 HP, 1800 RPM, 3/60/230 V, ODP motors.
- The pump motor shall be inverter ready.
- Impeller trimmed to 12" for 200 GPM @ 160' TDH.
- The rotating assembly includes the motor, bronze seal housing, mechanical seal assembly, motor adapter, and impeller.
- **WAVESTART®** vacuum priming system, with probe and 2-way solenoid valve/dome assembly, time delay relay, **WAVESTART®** operating module, and 24 VDC power supply
- Includes touch-up paint kit and installation hardware for attaching the motor adapter to the volute.

ONE Quick-ship Control Panel in a NEMA 12 Enclosure for WWMPS

- Stock Control Panel in a NEMA 12 Enclosure for 25 HP, 1800 RPM, 3/60/460 V motors.
- Standard panel includes breakers, NEMA starters, overload coils.
- Manual reset operators, environmental controls, blower thermostat, control panel heater, circuit breakers and relays for vacuum pumps and solenoids, **WAVESTART®** relays, solenoid valve time delay relays, constant prime on/demand priming system, automatic alternator with manual switch, float switch controls circuit breaker (OFF, LOW LEVEL, HIGH LEVEL, & HIGH WATER alarm), running time meters, and HOA switches.
- **WAVESTART ®** components for the control panel.
- Wiring diagram

OPTION №2:

TWO **SMITH & LOVELESS®** Model 4C3B **STAR ONE®** Vacuum Primed Rotating Assemblies

- 30 HP, 1800 RPM, 3/60/230 V, ODP motors.
- The pump motor shall be inverter ready.
- Impeller trimmed to 12" for 200 GPM @ 160' TDH.
- The rotating assembly includes the motor, bronze seal housing, mechanical seal assembly, motor adapter, and impeller.
- **WAVESTART®** vacuum priming system, with probe and 2-way solenoid valve/dome assembly, time delay relay, **WAVESTART®** Operating Module, and 24 VDC power supply.
- Includes touch-up paint kit and installation hardware for attaching the motor adapter to the volute.

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- Includes **WAVESTART®** components for the control panel.
- Includes wiring diagram.

SPECIFICALLY EXCLUDED ITEMS

- Unloading/hauling from nearest unloading area and storage
- Field assembly/erection or installation
- Field paint or painting
- Field testing (if required)

Seller will provide Buyer with four hard copies of the O&M Manual, also on CD (.pdf format). Additional copies can be provided for $50 per copy.

PRICE, SUBMITTAL DATA, AND DELIVERY

$ 72,849 **OPTION №1: 25 HP**

$ 75,309 **OPTION №2: 30 HP**

We are currently experiencing large increases in the price of materials and components with very little advance notice. Therefore, the sales price of the equipment quoted herein is subject to an escalation in price. Escalation shall be based upon the increase incurred by **SMITH & LOVELESS®, INC.** for the material or components in excess of 5% from the time of quote. The escalation shall be calculated as the percent (%) of increase over 5% of the material/component item and shall include material handling factor and overhead. Such escalation shall be verified through quotes, invoices, or receipts from suppliers to **SMITH & LOVELESS®, INC.**

F.O.B. factory plus any taxes, which may apply. Truck/Rail freight allowed to the job site, rail siding or nearest unloading area-unloading to be by Buyer. Due to the spike in gas prices, which is beyond the control of Seller at the time of our quotation/bid, a fuel surcharge may need to be assessed at time of shipment.

Payment is 100% prior to shipment, or with continuing credit approval, 100% Net 30 days from date of shipment or at time of start-up, whichever occurs first.

Quote is valid for 30 days from date of this agreement.

Seller will provide two (2) days (one [1] trip) of supervision by a factory-trained technician over initial operation, start-up of equipment, and operator training (if required). If additional days are required, Seller will furnish a factory-trained supervisor for $950 per day including travel time plus actual travel expenses.

Seller will provide a one-year standard warranty from date of shipment.

Seller to send Submittal Data for approval 4 to 6 weeks after receipt of complete details at Seller's factory.

Manufacturing completion is estimated at 16 to 18 weeks after receipt in Seller's office of approved Submittal Data and/or after all notations or comments have been clarified, approved, and inserted into the manufacturing documents by the Seller. Variations in the time Submittal Data is returned to Seller and/or Submittal Data marked approved, but which contain contingencies or variations may impact the completion time of the equipment.

If the equipment **SMITH & LOVELESS®** is providing is associated with the retrofit or modification of existing equipment, then field adjustments to the existing and/or new equipment may be required for correct installation. Such adjustments may include but are not limited to, piping modifications, grouting, shimming, control panel or electrical changes, etc. **SMITH & LOVELESS®** is relying on information provided by the customer, the installing contractor, or others regarding the measurement, model or part numbers, drawings, and descriptions of existing equipment in the design and manufacturing of the new equipment for this project. As a result, **SMITH & LOVELESS®** shall not be responsible for any problems or difficulties encountered when fitting-up new equipment with existing equipment.

ADDITIONAL TERMS AND CONDITIONS

1. GENERAL A. Buyer's execution of this Agreement constitutes Buyer's offer to purchase, on the terms and conditions set forth herein, the equipment described in this agreement, and such offer is irrevocable for thirty (30) days after Buyer executes and delivers to Seller this Agreement together with all necessary engineering data and information. Prices are firm for thirty (30) days after the bid date provided a firm order is received at the factory within that time period and provided approved Submittal Data is received at the factory within forty-five (45) days from the date submittals are forwarded from the factory. In the event firm orders and Submittal Data are not received by Seller within the times set forth above, then price and delivery estimates may change due to changes in the costs of material and labor and/or factory capacity at the time when the firm orders or approved Submittal Data is received by Seller. Seller reserves the right to amend this Sales Agreement if not signed and returned within thirty (30) days from the quotation date. In the event we are unable to ship within estimated period for reasons beyond our control, including a request by the Buyer to defer shipment, the prices are subject to adjustment to those prevailing at the time of shipment.
B. THIS AGREEMENT IS NOT BINDING ON SELLER UNLESS SIGNED ON SELLER'S BEHALF BY AN OFFICER OR MANAGER OF SELLER.
C. This Agreement constitutes the entire contract between the parties with respect to said equipment (any prior agreement, representation, covenant or warranty, written or oral, being superseded hereby) and may not be amended or modified except by a written instrument duly executed by both parties, the provisions of any purchase order or other document submitted by or on behalf of Buyer to the contrary notwithstanding.

D. All notices hereunder are to be in writing and mailed postage prepaid to the party being notified at the address indicated in this agreement or at such other address as may be designated in writing.
E. Remedies provided for herein are cumulative and are in addition to all other remedies as may be available at law or in equity.
F. This Agreement is governed by and subject to the laws of the State of Kansas and the Buyer by executing this agreement agrees to submit to the Jurisdiction of the State of Kansas and the venue for any disputes between the parties will be in the District Court of Johnson County, Kansas, or the Federal District Court of Kansas.

2. NOTICE TO PROCEED- Return to Seller of approved Submittal Data or notification to Seller that the submission of submittals will be waived, constitutes notice to Seller to proceed with manufacture. In the event Seller does not receive approved Submittal Data within forty-five (45) days after Seller's submission of submittal data for approval, then Seller reserves the right to amend price and delivery of the equipment being sold. Final approved Submittal Data means approval by Buyer (or Buyer's representative) of Seller's Submittal Data and/or after all notations or comments have been clarified, approved and inserted into Seller's manufacturing documents at which point Sellers estimated completion schedule commences. Variations in the time Submittal Data is returned to Seller and/or Submittal Data marked approved but which contain contingencies or variations may impact the completion time of the equipment. Seller agrees to furnish only the equipment included in Seller's quotation and/or as described and modified in the Submittal Data. Approval of the Submittal Data constitutes acceptance of the equipment in the configuration described therein. If Seller is directed to change the scope of the equipment after notice to proceed to manufacture, then Seller reserves the right to amend the price and delivery of the equipment.

3. EXCUSED PERFORMANCE- Seller is not liable for any failure or delay in performance hereof, with respect to delivery or otherwise, if such failure or delay is due to any cause beyond Seller's control including, but not limited to, any Act of God, war, civil disturbance, riot, labor difficulty, factory capacity, fire, other casualty, accident or supplier's failure or inability to perform.

4. CREDIT APPROVAL- The credit terms specified herein are subject to Seller's continuing approval of Buyer's credit and if, in Seller's sole judgment, Buyer's credit or financial standing is impaired as to cause Seller to deem itself insecure, Seller may withdraw the extension of credit and require other payment terms.

5. PAYMENT- Subject only to any credit terms, which Seller may extend, the total purchase price hereunder is due at such time, within or after the estimated shipment period specified herein, as said equipment is ready to be shipped. Buyer shall pay in full all invoices within the time for payment specified therein and Buyer's payment obligation is in no way dependent or contingent upon Buyer's receipt of payment from any other party. Any balance owed by Buyer for thirty (30) days or more after the same becomes due is subject to a 2% per month delinquency charge until paid. In addition to all other amounts due hereunder, Buyer shall reimburse Seller in full for all damages, costs and expenses, including reasonable attorneys' fees, which Seller may incur with respect to Buyer's breach of this Sales Agreement or the collection of past due amounts from Buyer. If Buyer is in default under this or any other agreement with Seller, Seller may, at its option, defer performance hereunder until such default is cured.

6. SECURITY INTEREST- Until all amounts due hereunder have been paid in full, Seller has a security interest in said equipment and has all rights of a secured party under the Uniform Commercial Code including, without limitation, the right to take possession of said equipment without legal process and the right to require Buyer to assemble said equipment and make it available to Seller at a place reasonably convenient to both parties. At Seller's request, Buyer shall execute any financing statement or statements submitted by Seller in order that Seller's security interest in said equipment may be perfected.

7. WARRANTY & LIABILITY- Seller warrants only that said equipment is free from defects in materials and workmanship as set forth in Seller's standard Certificate of Warranty furnished to Buyer at the time of final shipment. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR DESIGN AND WHICH ARE EXPRESSLY DISCLAIMED BY SELLER. Seller's sole responsibility with respect to any equipment which proves to be defective as to materials or workmanship is either to replace or to repair the same as is set forth in said Certificate of Warranty. Unless authorized in writing by Seller, Seller is not responsible for any charge or expense incurred for the modification, servicing or adjusting of said equipment after the same has been delivered to Buyer. Seller is not liable in association with its warranty or in any other capacity for any consequential, incidental or liquidated damages, late fees/damages or penalties.

8. CLAIM PERIOD- Buyer shall immediately inspect said equipment upon receipt thereof and immediately notify the carrier of any damage, shortage or other nonconformance. Seller is not obligated to consider any claim for damages, shortages or non-conformance unless notified by Buyer within ten (10) days after Buyer's receipt of said equipment.

9. CANCELLATION- Should Buyer cancel this agreement without Seller's prior written consent, Seller may, at its option, recover from Buyer a cancellation charge of not less than 20% of the purchase price hereunder. This cancellation charge is intended to compensate Seller for difficult-to-calculate economic losses, including but not limited to, material and labor costs, as well as loss of anticipated profits suffered due to cancellation.

10. SEVERABILITY – If any provision or provisions of this Agreement shall be held to be invalid, illegal, unenforceable or in conflict with the law of any jurisdiction, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

11. STORAGE- If at such time, within or after the estimated shipment period specified herein, as Seller notifies Buyer that said equipment is ready to be shipped Buyer requests a delay in shipment, Seller may, at its option, agree to store said equipment for a period of time determined by Seller, provided that such agreement will not affect Buyer's obligation to pay in full all invoices as they become due, and provided further that for each month, or portion thereof, said equipment is so stored by Seller, Buyer shall pay to Seller as a storage fee an amount equal to 2% of the purchase price.

12. DRAWINGS, ILLUSTRATIONS AND MANUALS- Catalog and proposal drawings, bulletins, and other accompanying literature are solely for purpose of general style, arrangement and approximate dimensions. Seller may make any changes Seller deems necessary or desirable. Submittal for approval, if required, will be made after receipt of complete information from Buyer. Unless otherwise specified at the time of quotation, six sets will be furnished. Additional sets are at $25.00 per set. Installation, maintenance and operation manuals will be furnished in the number of copies specified at the time of quotation. If none specified, four will be provided at no added cost, with additional copies at $50.00 each.

13. PERMITS, LICENSES- Buyer at its sole cost and expense shall obtain all building or other permits or licenses with respect to the installation and operation of said equipment required by any federal, state or local governmental body.

14. PATENT INDEMNIFICATION- Seller shall, at its own expense, defend any suit instituted against Buyer, based on any claim that equipment furnished hereunder infringes any Letters Patent of the United States, and Seller shall pay any damages assessed against Buyer in any such suit, provided that Buyer, upon service of process upon Buyer, gives to Seller notice in writing of the institution of such suit, and permits Seller, through counsel chosen by Seller, to defend the same, and gives Seller all information in Buyer's possession and reasonable assistance and authority to enable Seller so to do. Seller shall have no liability or obligation to Buyer for patent infringement resulting from compliance by Seller with written instructions or specifications of Buyer concerning the structure, operation, material, or method of making equipment furnished hereunder.

SIGNATURES:

Agreed to this _____ **day of** _____, _____

_____
Buyer

By *(Print Name)*

By *(Authorized Signature)*

Address

Is this purchase tax exempt? **YES** ____ **NO** ____
If YES, attach Sales Tax Exemption Certificate. Failure to provide tax exempt certificate prior to shipment will result in Buyer being responsible for all applicable taxes.

Agreed to this _____ **day of** _____, _____
At Lenexa, KS.

SMITH & LOVELESS®, INC.
Seller

By *(Authorized Signature)*

Prepared by *(Sales Representative)*

NOTE: The Sales Representative is not an agent or employee of Seller and is not authorized to enter into any agreement on Seller's behalf or to bind Seller in any way.

Blacksburg TOWN OF VIRGINIA

DEPARTMENT OF
ENGINEERING AND GIS

engineeringandgis@blacksburg.gov

MEMORANDUM

TO: Kinsey O'Shea, Development Administrator

FROM: Randy Formica, Director, Engineering and GIS

DATE: February 10, 2023

SUBJECT: Glade Spring Crossing – Transportation Comments-February 6, 2023 Re-submittal

---

An all-way stop intersection was presented as a potential mitigation measure for the decrease in the Level of Service at the Glade Road/Old Glade Road intersection that results from the projected future background traffic and the traffic due to the proposed development. Additional discussion on this measure is provided below.

All-way Stop Level of Service Analysis at Glade Road and Old Glade Road-

The updated Traffic Impact Analysis provided to the Town on January 11, 2023 included a level of service analysis at this intersection based on an all-way stop condition. The engineering response memo dated February 1, 2023 includes additional discussion on the Glade Road/Old Glade Road intersection under the all-way stop conditions.

The table of the results of that analysis is provided below:

Table 5: Level-of-Service Summary for Old Glade Road & Glade Road

CONDITION	LANE GROUP	AM PEAK HOUR				PM PEAK HOUR			
		Lane LOS	Lane Delay (sec)	Lane Queue (ft)	Overall LOS (Delay)	Lane LOS	Lane Delay (sec)	Lane Queue (ft)	Overall LOS (Delay)
Existing (2022) Conditions	EBT	--	--	--	N/A[3]	--	--	--	N/A[3]
	EBR	--	--	--		--	--	--	
	WBL/T[2]	A	9	10		A	8	10	
	NBL[1]	B	15	20		D	28	103	
	NBR[1]	A	10	13		A	10	15	
No-Build (2026) Conditions	EBT	--	--	--	N/A[3]	--	--	--	N/A[3]
	EBR	--	--	--		--	--	--	
	WBL/T[2]	A	9	10		A	8	10	
	NBL[1]	B	15	20		E	37	135	
	NBR	A	10	13		A	10	15	
Build (2026) Conditions	EBT	--	--	--	N/A[3]	--	--	--	N/A[3]
	EBR	--	--	--		--	--	--	
	WBL/T[2]	A	9	10		A	8	13	
	NBL[1]	C	17	33		F	133	378	
	NBR	B	10	13		B	10	15	
Build (2026) Conditions (All-Way Stop)	EBT	B	11	40	B (11)	B	13	40	C (20)
	EBR	B	10	40		B	11	28	
	WBL/T	B	11	30		C	24	145	
	NBL	B	12	25		D	27	148	
	NBR	A	10	15		B	11	25	

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, delay, and queue lengths for major street through movements or right turns at unsignalized intersections.

The engineering response memo letter states:

“Based on our analysis, the inclusion of an all-way stop will increase the queue lengths in all directions along Glade Road. In the no-build condition, queue lengths could increase to 100’ or more. In the Build 2026 condition, queue lengths could increase to 225’ in the WBL/T direction toward the Kroger / Volume II access points.”

The queue lengths provided in Table 5 of the TIA dated January 11, 2023 are different from the lengths stated in the engineering response memo. For example, the queue length in the Build condition, all-way stop, WBL/T is 145 feet in the Table and the memo states it could increase to 225 feet. Staff requests that the applicant explain the differences in the data. Has another analysis been performed that revises the analysis in the TIA?

The applicant also presents some possible disadvantages of implementing the all-way stop condition at this intersection. Staff has provided this response to our consultant and are awaiting their comments.

All-way Stop Implementation Scenario-

The applicant has presented additional details for one conceptual scenario showing the implementation of this mitigation measure. Staff recognizes that, should this application for rezoning be approved, any potential implementation plan will require additional investigation and detailed design. In addition, other possible options should be explored at that time. The scenario presented in the applicant’s memo only provides one option and shows that it is possible to install this mitigation measure. Staff feels that the option presented in the applicant’s memo would merit additional discussion including items such as:

1. Is there a scenario where the all-way stop condition can be installed and the bicycle lanes remain and not be eliminated?
2. The possibility of re-configuring the existing vehicle travel lanes should be explored.

NOTE-The Town hired a third party consultant to provide a review of the Traffic Impact Analysis and the applicant’s February 6, 2023 response memo. This Staff memo *does not* reflect comments from the consultant. Those comments will be provided in a separate memo once the consultant has reviewed.

Inconsistencies Memo

February 6, 2023 Application

KJO

- Proffer statement Proffer #9(g) indicates that all units will be 3-bedroom units. The provided floor plans indicate that 2-bedroom units are also available.
    - The proffer or floor plans will need to be updated.
- Response and Changes to Staff Report memo #1(e) indicates that the trail has been realigned and an easement is provided adjacent to the Quinones property
    - PED exhibit shows original alignment
    - Conceptual Development Plan (DEV sheets) do not show additional easements
- Response and Changes to Staff Report memo #1(f)(i) states that the FAR will be 0.7
    - "Sample Lot Schematics" sketch (p34 of the application PDF) indicates that FAR for detached structures will be 1.0
    - Compatibility with surrounding Neighborhood Zoning chart (p40 of the application PDF) identifies FAR for the South area as 1.0-1.3
    - Pattern Book Development Standards Southern Area indicates FAR as 1.0-1.3
- Response and Changes to Staff Report memo #1(f)(ii) states that ADUs will no longer be allowed as a use
    - Remove proffer #5
    - Remove reference to ADUs in the Permitted Uses section of the application (p28 of the application PDF)
    - Remove reference to ADUs in the Occupancy section of the application (p29 of the application PDF)
    - Remove reference to ADUs in the Pattern Book Development Standards Southern Area
- Response and Changes to Staff Report memo #1(f)(iii) indicates that the non-corner side setbacks for the South area are now a minimum of 5' with minimum building separation of 17'
    - Pattern Book Development Standards Southern Area indicates side setback of 7.5'
- Response and Changes to Staff Report memo #1(f)(iv) states that no more than two contiguous 18' wide driveways adjacent
    - Graphics in the application Example Streetscape (p38-39 of the application PDF) and A100-A101 will need to be revised to reflect the restriction
- Response and Changes to Staff Report memo #1(j) and Proffer Changes #3(a) indicates that units will be built to achieve HERs certification, and that Pearl and EarthCraft will not be used.
    - The application Affordable Unit Regulations (p36 of the application PDF) will need to be revised to remove the reference to EarthCraft certification
- Response and Changes to Staff Report memo #2(e) Variance comments/changes states that the request to reduce PUE widths is now only applicable on perimeter PUEs and only where there are adjacent easements. The applicant indicates that 15' front yard PUEs will be provided.
    - Graphic DEV sheets in the application do not show any front PUEs