

Memorandum

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

From: Meredith Jones, P.E. V.P., Eden & Associates

Date: November 15, 2022

RE: Variances/Exceptions for Glade Spring Rezoning Application

Dear Kinsey,

Please accept this memorandum with variances and exceptions requested by the applicant, Glade Spring Crossing, for the rezoning application. While many of these have been discussed over the last 6 months, please advise if further information is needed for understanding. Thank you.

1. **Variance to Sec. 5-313. - Street design.** Street grades: Requirement is for 10% or less.
  - a. Applicant requests for a variance to this section for up to 15% slope on Road A which adheres to VDOT and AASHTO standards.
  - b. Reason: It has been requested by Town Planning a connection be made to Village Way South (VWS). This is a fixed point and is steep descent to the property line at Glade Spring Crossing. Not enough right-of-way exists to provide wider fill slopes that would be required for 10% slopes. In addition, the steeper slopes are necessary to drop from VWS into the site off a landing included for safety. No driveways are located in the portion of roadway that is at 15% and therefore those conflicts will not be present. SEE THE ATTACHED PROFILES
  - c. As a comparison, Walnut Drive where it ties into Primrose Drive is approximately 14% slope, very similar to ours. Highland Circle between Eckel and Cupp is similar in slope though portions of the road closer to Cupp exceed 16%. Our section of road at 15% does not contain driveways and is less than that section of Highland Circle.
2. **Variance to Sect. 5-313- Street design** Street intersections shall provide landings of not more than 5% grade for a distance of not less than 100 feet.
  - a. Applicant requests a variance to allow a landing of not more than 5% grade for a distance of not less than 50 feet at the intersection of Street A with Village Way South.
  - b. Reason: It has been requested by Town Planning a connection be made to Village Way South through existing 50' right-of-way. Connection to VWS, which is a fixed point, is steep. A full landing of 100' would push Street A higher out of the ground, necessitating much wider fill slopes that will not fit within the existing right-of-way, affecting existing residents on either side of the connection. Residents adjacent to this area were approached regarding easements but were hesitant to commit to anything. It is possible that during design, easement can be obtained, which would increase the length of the landing variance. However, at this time, this is unknown.

Trip generation models indicate that peaks of 94 and 64 vehicles will be exiting the entire development during the AM and PM peak hours respectively. The traffic consultant applied a factor of 15% to estimate the amount of traffic exiting via the

Street A/Village Way South intersection. This means that a total of 14 and 9 vehicles will be utilizing the landing during the AM and PM peak hours. This is not a lot of traffic spread over the hour and it's unlikely that there will be stacking or queueing of traffic beyond the landing waiting to turn.

Landings are typically provided in case there are icy conditions and the 100' is to provide for queueing of stopped traffic before turning. The traffic trip generation supports that the volume of traffic is minimal during the peak hour, meaning that queues utilizing the full length of the landing are unlikely. As such, a reduced landing length is justified. In case of poor weather resulting in the landing feeling unsafe to a driver, alternative more direct routes exist. Most drivers will be aware of this condition as the travelers of these roads will be those living in the vicinity. SEE THE ATTACHED PROFILES

- c. As a comparison, Walnut Drive, the entrance to the new Givens Farm, is at a 15% slope within the first 50 and 100 feet of its connection to existing Primrose Dr., well outside any landing requirement. This road is similar to our Road A connection to Village Way South in that it is a new development tying into an existing road. However, our variance will still leave a safer situation than this intersection because it provides more of a landing that this road doesn't have.

3. **Variance for type of Curb & Gutter (Sec. 5-313. - Street design).** All streets shall be designed and constructed with VDOT standard CG-6 curb and gutter and be a minimum of 30 feet in width or greater as required by VDOT subdivision street standards, based upon projected traffic generated by the development, except in the Rural Residential I, and Rural Residential II zoning districts **or as expressly approved by Town Council as part of a planned residential or planned commercial zoning.**
  - a. Applicant requests express approval through rezoning for no curb and gutter in the North Area (portions of Street A and all of Street E) where ditch section will be used for conveyance and infiltration of stormwater.
  - b. Reason: In order to maintain affordable housing in the development, only critical infrastructure can be included. Curb and gutter along these areas, with an estimated cost of approximately \$160,000, is unneeded from an engineering standpoint to convey water safely and effectively. While it is a luxury many homeowners expect because they don't want to see water traversing their lot, it is not always required from an engineering standpoint. The underlying zoning RR-1 does not require curb and gutter for more rural area uses. This is because larger lots do not necessarily need it for proper engineering conveyance of stormwater. It is a sustainable benefit to the development to allow stormwater to flow over lawns as opposed to immediately capturing it in a curb/gutter and storm drain. The proposed development on Streets A (North side) and E is similar in density and character as the existing adjacent development on Village Way South, which does not utilize curb and gutter. Street drainage running perpendicular to lots can be diverted across lots as overland flow or diverted between lots in gradual swales, encouraging some infiltration. Flow running parallel to the fronts of lots can be contained in ditch sections with 15" culverts under driveways where needed. Storm inlets can be provided to divert flow across the street where needed for engineering. Elimination of curb/gutter will also allow for guest parking in a reinforced grass shoulder off the side of the road, allowing for more room to pass vehicles in the street.

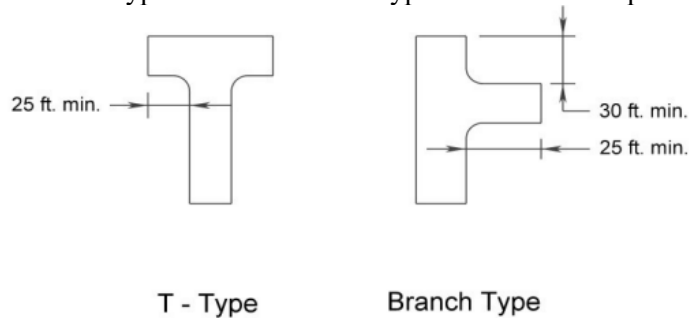
- c. Applicant requests the use of continuous rolled curb and gutter throughout the remainder of the development without entrances.
- d. Reason: In order to maintain affordable housing in the development, only critical infrastructure can be included and rolled curb achieves the same intent as CG-6 but for a lot less cost given the processes the Town requires for certificate of occupancy. The proposed development South area is extremely dense and driveway entrances will comprise over 50% of the street frontage. Since the Town requires curb and gutter to be completely installed prior to issuing building permits, 50% of the curb and gutter will be removed to replace it with entrances. This is the reason for selection of Rolled curb, it does not practically require an entrance. It is mountable. Brookfield Village contains this type of curbing and a majority of affordable development communities in Christiansburg use them. Because it can be installed and left alone, this eliminates costly removal of brand-new curb and gutter and replacement of entrances once a building is constructed. Concrete entrances cost approximately \$270,000 for 134 entrances (approx. \$2000 each) using current concrete prices. Rolled curb costs approximately \$5 more per foot resulting in an increase of \$31,200 for 6240 LF in the development. So the increased cost of using CG-6 and ripping it out to install entrances vs. using a rolled curb with no entrances is \$270,000-\$31,200 for a total of \$238,800. (Note that pulling out CG-6 curb and gutter across 18' wide entrances for 134 lots on the South area would equal approximately 2412 LF at \$35/LF for a total of \$84,420 of money spent wasted) SEE THE ATTACHED TYPICAL SECTIONS SHOWING ROLLED CURB.

4. **Variance for sidewalk on portions of Street A (North and South areas), all of Street D and all of Street E (Sec. 5-401 Sidewalks required.; Sec. 5-403 Sidewalk variance).**

- a. Applicant requests a variance to sidewalk on Streets A, D, and E and to construct trail in lieu of sidewalk in select locations throughout the subdivision.
- b. Reason: Since the developer has to evaluate the cost effectiveness of each infrastructure item to maintain affordability in the overall development, it was determined that sidewalks on the North Area were not critical to the pedestrian circulation to be cost-effective to install. Residents along Street A have direct access to the public paved greenway trail behind their homes, and residents along Street E have a connection to the North/South connector public paved trail at the end of their cul-de-sac. This North area was modeled from the Village at Tom's Creek adjacent development area which does not include sidewalks on Village Way South. Therefore, there is no "expected" external sidewalk "connection" on the north end of the development. Pedestrians passing through the development may choose to use the North/South connector greenway trail to reach Glade Road, which connects to the Village at the end of Poplar Ridge Dr. Alternatively, they may use the grass trail a short distance from the Glade Spring Crossing property boundary on Street A to access the Tom's Creek Greenway Trail through the site. Ditch section for stormwater management makes sidewalk challenging on Street E and curb/gutter was eliminated as it is not needed from an engineering standpoint in this area of the development. In order to connect Street A to Village Way South within the existing right-of-way, the typical road section has to be narrow, and sidewalk simply doesn't fit. It is estimated sidewalk through Street A and E would cost in excess of \$120,000. It should be noted that this does not include the additional cost for grading or

widening of the road section which increases the cut/fill required for Street A and Street E and steepens the resulting lots. SEE THE ATTACHED TYPICAL SECTION

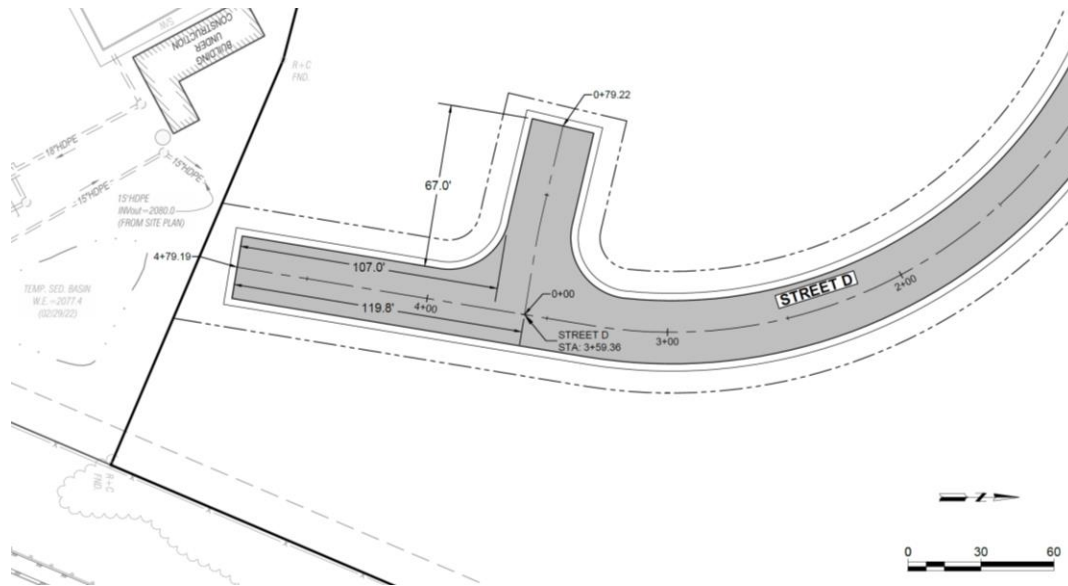
5. **Variance for sidewalk on portions of Street A, B, C, D (Section 5-401 b.)** 4' grass strip is required between sidewalk and road.
  - a. Applicant requests 3' grass strip
  - b. Since street trees are not being installed in the grass strip, this would allow for more space behind the sidewalk to plant a street tree. Grass strips do not generally serve a purpose other than to separate pedestrians from the street, and 3' is adequate to do that. SEE THE ATTACHED TYPICAL SECTIONS FOR ROAD A,E
6. **Variance for Cul-de-sac (Sec. 5-310).** Sec. 5310 – Cul-de-sacs states that the agent or Planning Commission may permit a “T” or a “Y” cul-de-sac. VDOT Appendix B(1) Section 4G addresses the permissible cul-de-sac and turnaround designs for new subdivision streets. This section of Appendix B(1) specifically describes the permissible types of “alternative turnarounds” permitted. The two alternatives are the “T-type” and the “branch type” turnarounds depicted below.



### Alternative Turnaround

#### **FIGURE B(1)-12 CULS-DE-SAC AND TURNAROUND DETAILS**

The engineer aims to apply the minimum dimensions described in Sec. 5-310(b) to the “branch type” turnaround to meet the requirements of Sec. 5-310(a). The engineer notes that the Town of Blacksburg Subdivision Ordinance does not specify a maximum length of the turnaround legs. Appendix B(1) Section 4G(d) states the following regarding stub streets: “A turnaround should be provided for any temporary or stub street longer than 150’ from the point of intersection to the end of pavement.” As such, the maximum length of any leg of a T or branch type turnaround is 150’ from the point of intersection. As shown in the exhibit below, the proposed turnaround meets the minimum requirements of Sec. 5-310(b) and Figure B(1)-12, while not exceeding the maximum stub length of Section 4G(d). Furthermore, by exceeding the minimum leg lengths, the branch facilitates turnaround movements by the design vehicle, the single unit truck (e.g., a garbage/recycling pickup truck), or larger vehicles such as a school bus.

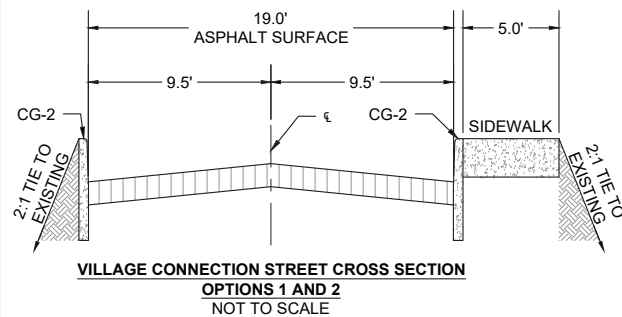


Beyond the design requirements for a branch turnaround, the design is needed in this location to maintain development density, and thus affordability, in the development. The existing trail constructed as part of “The Farm at Blacksburg” development terminates at the shared property line near this location. Given the configuration of “The Farm” site and the existing topography, minimal modification to the existing trail can occur while extending the trail into the proposed Glade Spring Crossing development. All proposed trails in the Town of Blacksburg have a maximum slope of 8% while streets have a maximum slope of 10%. These two maximum slopes restrict the ability of the engineer to either: a) raise the proposed features to meet the trail or b) rapidly descend from the existing trail into the development. The proposed branch turnaround enables Street D to: a) extend to the maximum possible elevation thus flattening the trail entering the site and b) maximize grading flexibility and buildable areas. Other turnaround designs, such as the T or bulb would required a shorter length of street to be constructed and thus less available frontage for proposed dwelling units.

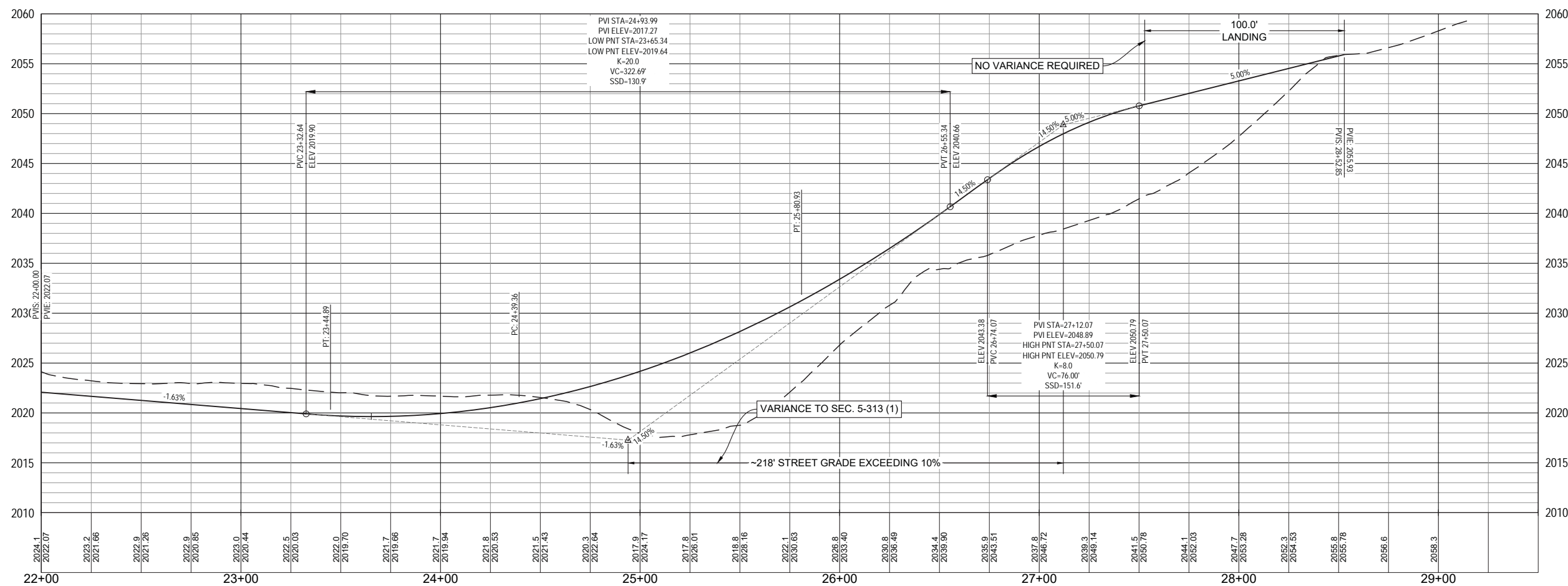
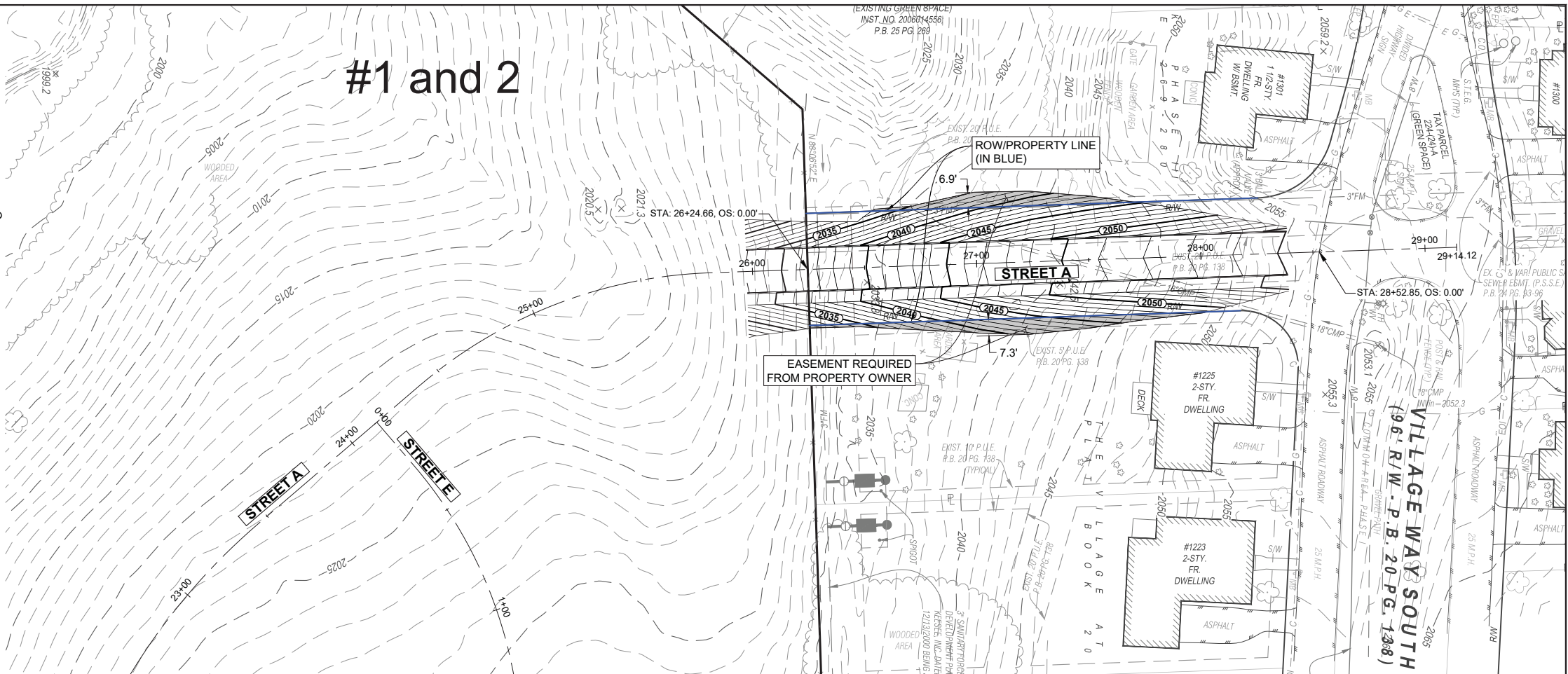
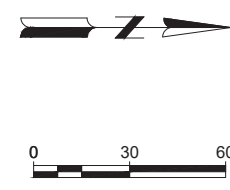
7. **Variance for blocks (Sec 5-317).** (1) Length: The length of blocks shall be determined by public safety, traffic flow, and natural topography considerations. Where streets are approximately parallel, connecting streets shall be provided between the parallel streets at reasonable intervals as established by application of the criteria in the preceding sentence. In general, residential blocks should be between five hundred feet (500') and twelve hundred feet (1200') in length.
  - a. Applicant request a variance to forgo a connection between the following streets: Shadow Lake Road-Street B, Street B-Street C, and Street A-Street E.
  - b. Reason:
    - i. Shadow Lake Road-Street B: Inadequate right-of-way width and challenging topography restricts the ability of the developer to provide a street connection between the two streets. Community feedback from surrounding neighbors indicated opposition to the connection.
    - ii. Street B-Street C: The Street B cul-de-sac bulb is approximately 50' in elevation above the Street C bulb. Existing topography slopes between the two streets ranges from 20%-25%. Given these factors, a connection is impractical.

- iii. Street A-Street E: The existing topography falls from north (near Street E) to south (near Street A). The Street E bulb is approximately 17' in elevation above the nearest point on Street A. Existing topography prevents the construction of a street connection with an adequate landing and slope.
    - c. Applicant requests a variance to the minimum block length to 200'.
    - d. Reason: Site topography restricts the plausible street locations.
- 8. **Variance for Driveways and Yards (Sec. 5-318. Driveways. Sec. 5790 - Yards. Sec. 5204 - Driveways.)** The requirement is for a driveway to be no closer than 3' to a property line.
  - a. Applicant requests a variance to all of these sections for a reduction of the minimum distance to a side property line of zero (0) feet.
  - b. Reason: Attached units are 18' wide and the driveway will need to reach to the side property lines to allow 2 parking spaces per unit.
- 9. **Variance for Sec. 5-318. - Driveways.** (d)On local and collector streets, driveways shall be no closer than fifty (50) feet to an intersection with a public street measured according to diagram.
  - a. Applicant requests a variance to this requirement for a minimum of 20 feet for select lots.
  - b. Reason: Where smaller units abut an intersection, the lot width is only 27 feet (18' unit with 8.5' side setback). In order to achieve higher densities, driveways will have to be closer to the intersection than this requirement allows. This neighborhood is requesting 15mph speed limits which will help with potential turning conflicts. Of course these will try to be minimized in design, but inevitably a 50 foot requirement will cause loss of multiple units that are critical for development mass and the affordability. SEE THE ATTACHED SKETCH BELOW
- 10. **Variance for Sec. 5-901. - Public utility easements.** Requirement asks for 15' PUE's shared on interior lot lines and 15' interior to all lots bordering exterior property boundaries.
  - a. Applicant Request to reduce the minimum easement width interior to some perimeter lot lines to 7.5 feet where easements already exist on the exterior perimeter. Applicant also requests a variance from the 15' P.U.E. on the front lot line to 7.5'.
  - b. Reason: Easements already exist along some perimeter lot lines interior and exterior to the property. Where easements do not currently exist on either side of the perimeter, the applicant will dedicate 15'. However, where easements already exist on the outside of the perimeter, applicant requests 7.5' interior. The resulting easement for the P.U.E's on the perimeter would be a total minimum of 15' and in some cases 22.5' or 27.5'. Due to the reduced setbacks, density, street trees, and front yard driveways, private utilities will likely have to be contained in close proximity to the right of way or on shared lot lines where a 15' shared easement will exist. This is the reason behind requesting a 7.5' easement instead of 15' at the front lot line.

# Sketches



VILLAGE CONNECTION STREET CROSS SECTION  
 OPTIONS 1 AND 2  
 NOT TO SCALE



OPTION 1 - 100' LANDING AT 5% (20 MPH DESIGN SPEED)  
 SCALE: 1"=30' HORIZ.; 1"=6' VERT.

**EDEN & ASSOCIATES**  
 engineering • planning • development  
 1700 KRAFT DRIVE, SUITE 2350  
 BLACKSBURG, VIRGINIA 24060  
 VOIC E 276-632-6231  
 FAX: 276-632-3648

No.	Revision / Issue	Date

**PRELIMINARY**

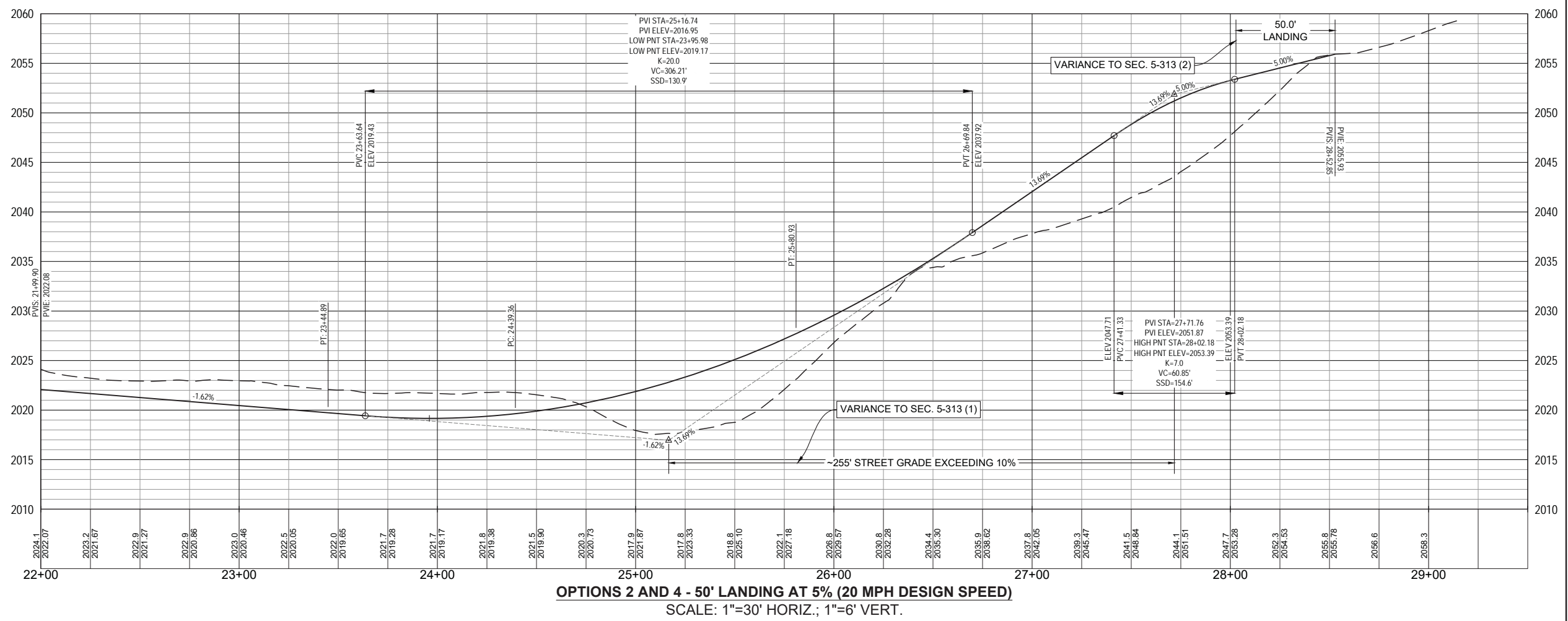
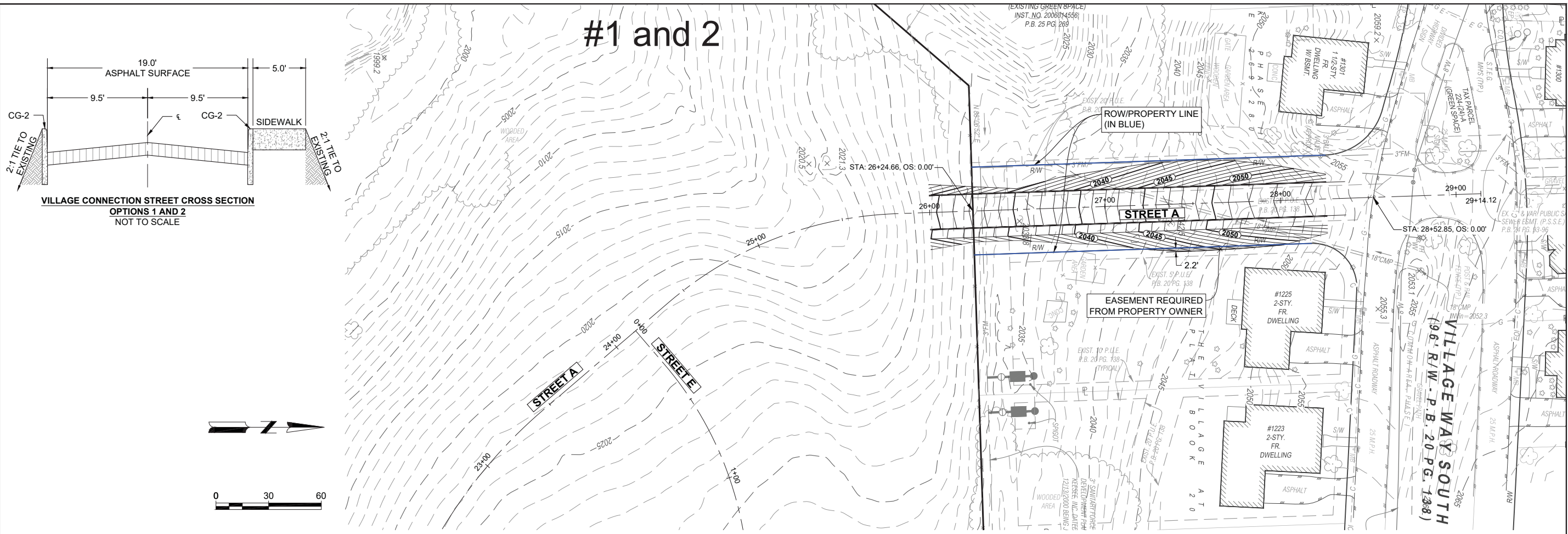
**STREET A - VILLAGE WAY S.  
 INTERSECTION EXHIBIT  
 (OPTION 1)**

PROPOSED DEVELOPMENT OF  
**GLADE SPRING CROSSING**  
 PROPERTY OF GLADE HGTS, LLC - TAX PARCELS  
 225-(A)-3, 225-(A)-4, & 224-(A)-57; 45,0976 AC.  
 TOWN OF BLACKSBURG - PRICES FORK DISTRICT  
 MONTGOMERY COUNTY, VIRGINIA

Drawn By: MSF	Scale: AS SHOWN
Checked By: -	Date: 10/18/2022
Sheet No. 1 of 4	<b>EX1</b>



C:\DROPOBOX\EA\CARY\_HOPPER\GLADE SPRING\CAD\REZONING CAD\RZ-STREET VARIANCE EXHIBITS-VILLAGE CONNECT ALTS.DWG  
10/18/2022 11:51:06 AM



**EDEN & ASSOCIATES**  
engineering • planning • development  
1700 KRAFT DRIVE, SUITE 2350  
BLACKSBURG, VIRGINIA 24060  
VOICE 276-632-6231  
FAX 276-632-3648

**E&A**

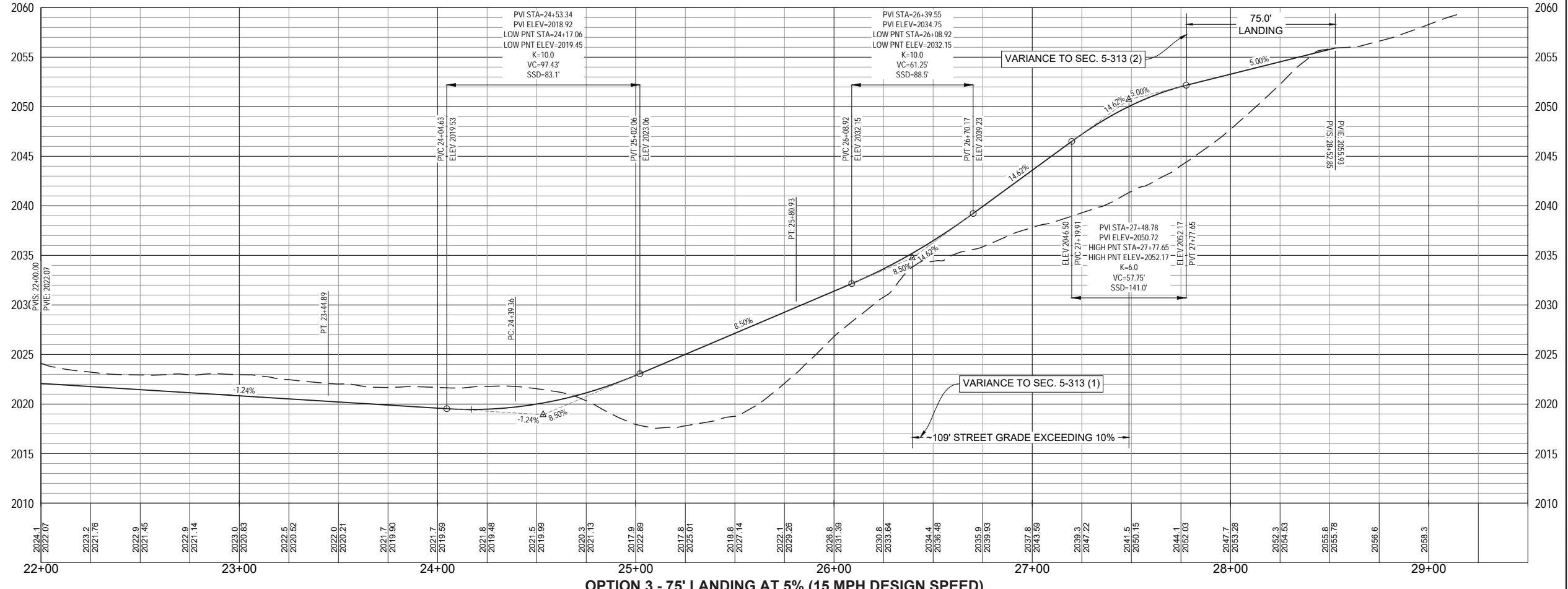
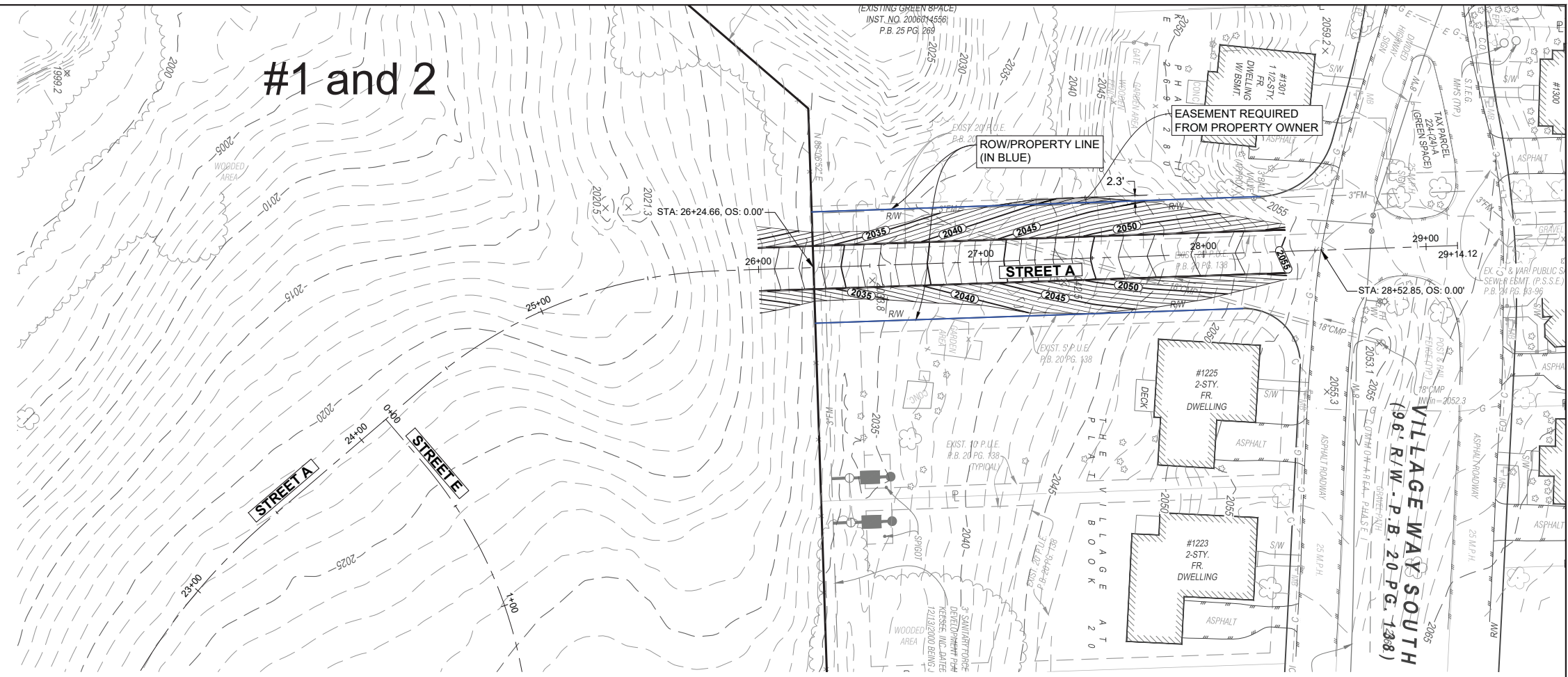
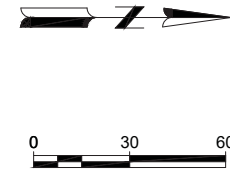
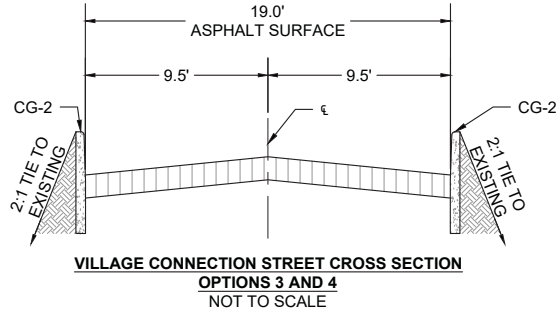
No.	Revision / Issue	Date

**PRELIMINARY**

**STREET A - VILLAGE WAY S.  
INTERSECTION EXHIBIT  
(OPTION 2)**

PROPOSED DEVELOPMENT OF  
**GLADE SPRING CROSSING**  
PROPERTY OF GLADE HGTS, LLC - TAX PARCELS  
225-(A)-3, 225-(A)-4, & 224-(A)-57; 45.0976 AC.  
TOWN OF BLACKSBURG - PRICES FORK DISTRICT  
MONTGOMERY COUNTY, VIRGINIA

Drawn By: MSF	Scale: AS SHOWN
Checked By: -	Date: 10/18/2022
Sheet No. 2 of 4	<b>EX2</b>



**OPTION 3 - 75' LANDING AT 5% (15 MPH DESIGN SPEED)**  
 SCALE: 1"=30' HORIZ.; 1"=6' VERT.

**EDEN & ASSOCIATES**  
 engineering • planning • development  
 1700 KRAFT DRIVE, SUITE 2350  
 BLACKSBURG, VIRGINIA 24060  
 VOICE 276-632-6231  
 FAX 276-632-3648

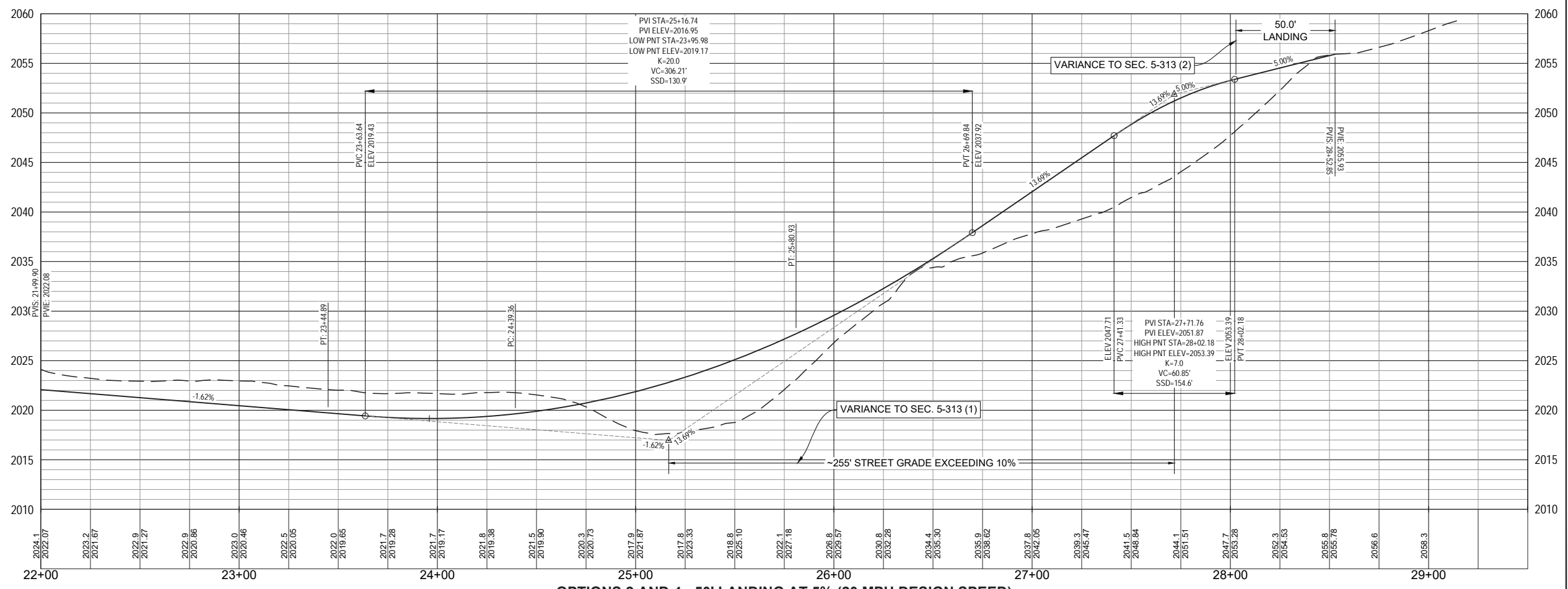
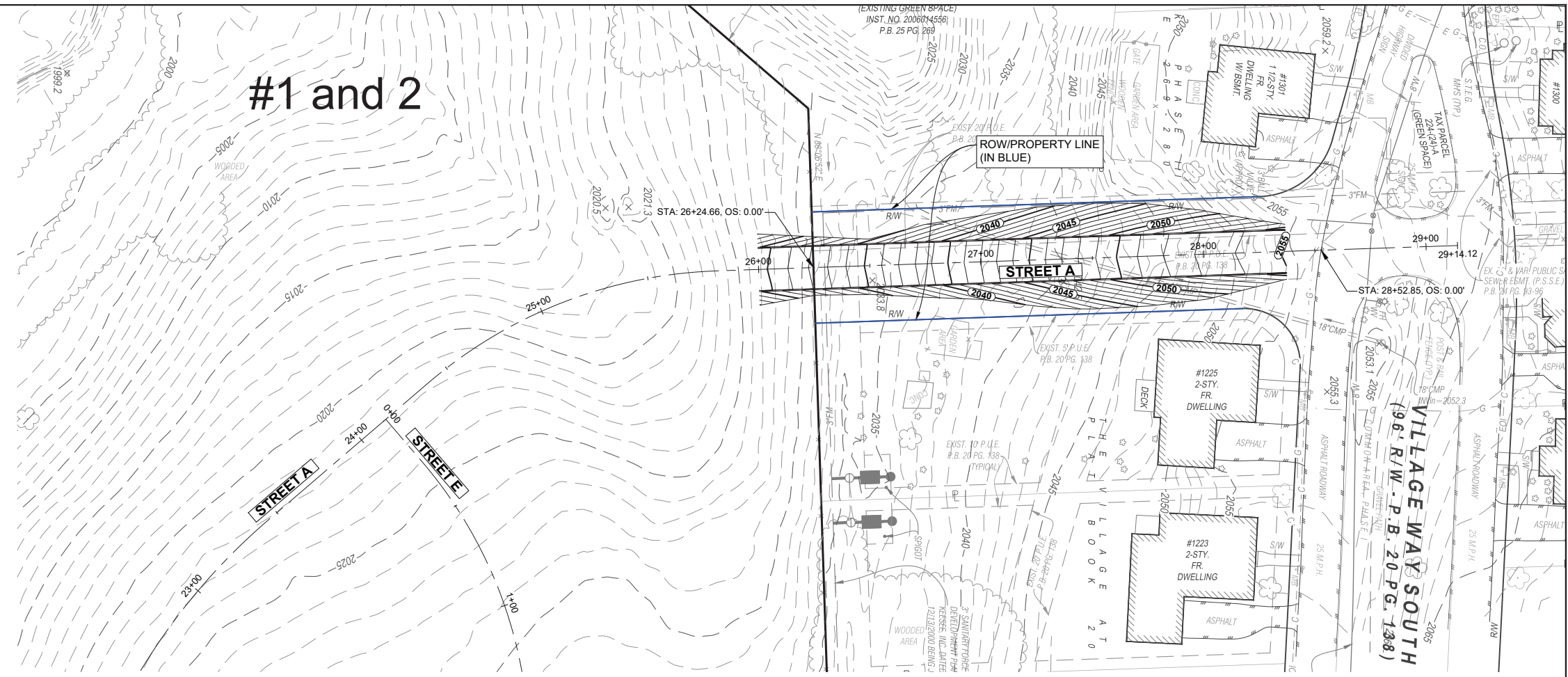
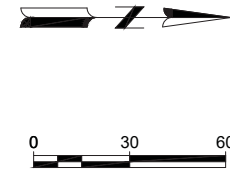
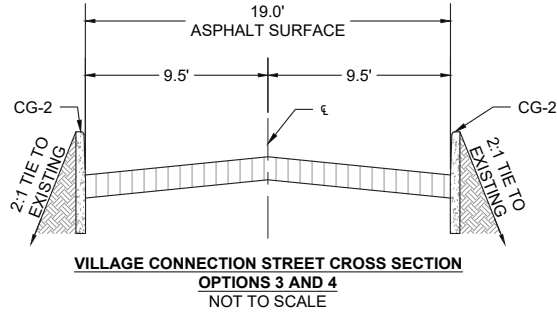
No.	Revision / Issue	Date

**PRELIMINARY**

**STREET A - VILLAGE WAY S.  
 INTERSECTION EXHIBIT  
 (OPTION 3)**

PROPOSED DEVELOPMENT OF  
**GLADE SPRING CROSSING**  
 PROPERTY OF GLADE HGTS, LLC - TAX PARCELS  
 225-(A)-3, 225-(A)-4, & 224-(A)-57; 45,0976 AC.  
 TOWN OF BLACKSBURG - PRICES FORK DISTRICT  
 MONTGOMERY COUNTY, VIRGINIA

Drawn By: MSF	Scale: AS SHOWN
Checked By: -	Date: 10/18/2022
Sheet No. 3 of 4	<b>EX3</b>



C:\DROPO\EA\CARY\_HOPPER\GLADE SPRING\CAD\REZONING CAD\RZ-STREET VARIANCE EXHIBITS-VILLAGE CONNECT ALTS.DWG 10/18/2022 11:51:17 AM

**EDEN & ASSOCIATES**  
 engineering • planning • development  
 1700 KRAFT DRIVE, SUITE 2350  
 BLACKSBURG, VIRGINIA 24060  
 VOIC E 276-632-6231  
 FAX 276-632-3648

No.	Revision / Issue	Date

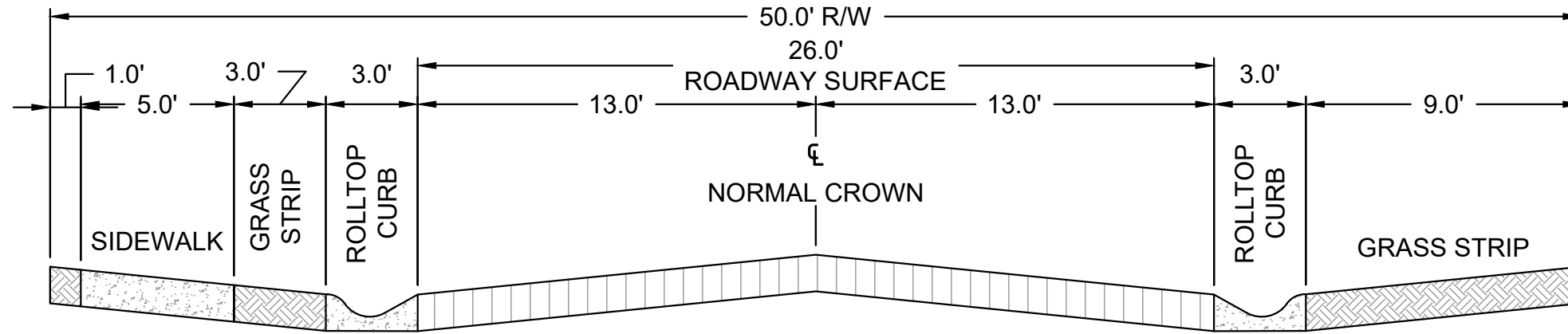
**PRELIMINARY**

**STREET A - VILLAGE WAY S.  
 INTERSECTION EXHIBIT  
 (OPTION 4)**

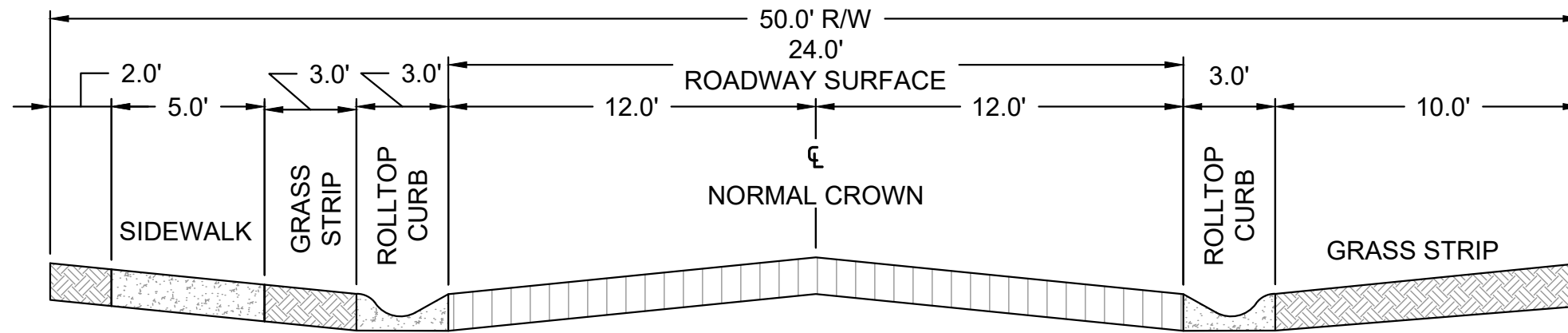
PROPOSED DEVELOPMENT OF  
**GLADE SPRING CROSSING**  
 PROPERTY OF GLADE HGTS, LLC - TAX PARCELS  
 225-(A)-3, 225-(A)-4, & 224-(A)-57; 45.0976 AC.  
 TOWN OF BLACKSBURG - PRICES FORK DISTRICT  
 MONTGOMERY COUNTY, VIRGINIA

Drawn By: MSF	Scale: AS SHOWN
Checked By: -	Date: 10/18/2022
Sheet No. 4 of 4	<b>EX4</b>

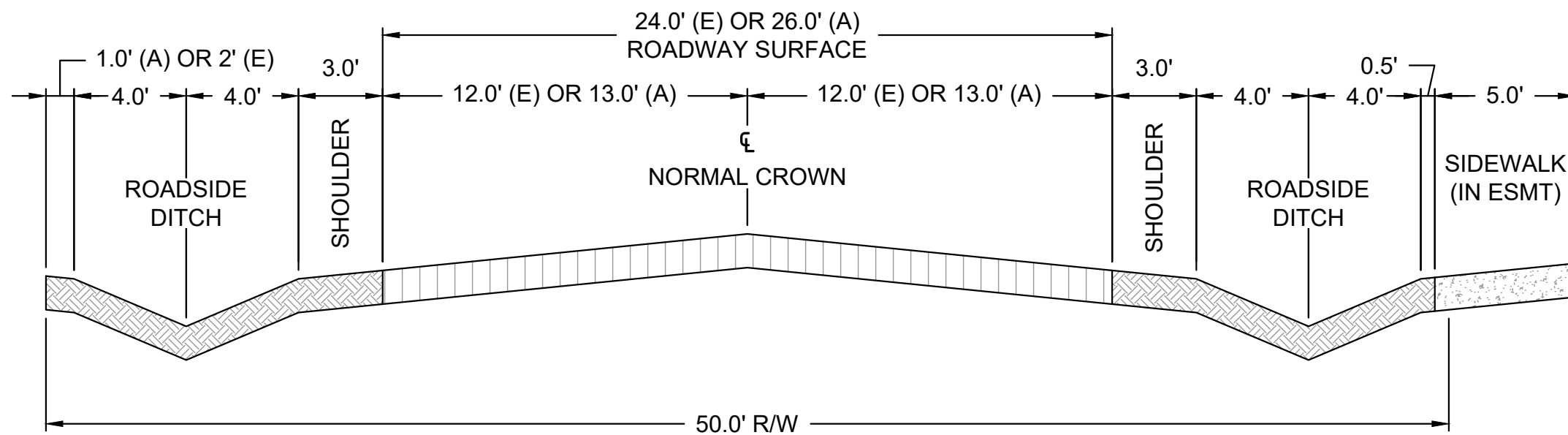
#3, #4 and #5



**TYPICAL ROAD CROSS SECTION  
FOR STREETS A (STA 0+50 TO STA 16+50) AND B**  
(NOT TO SCALE)



**TYPICAL ROAD CROSS SECTION  
FOR STREETS C AND D**  
(NOT TO SCALE)

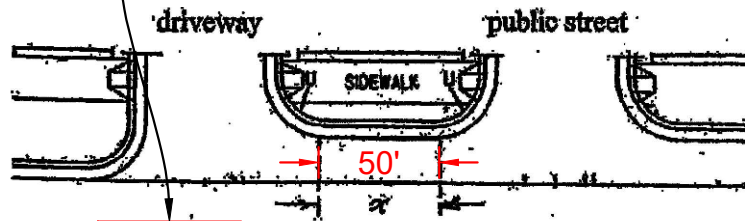


**TYPICAL ROAD CROSS SECTION  
FOR STREET A (STA 16+50 TO STA 24+00) AND  
STREET E**  
(NOT TO SCALE)

NOTE: THE STREET IN PARENTHESES (A OR E)  
DEFINES THE STREET TO WHICH THE DIMENSION  
APPLIES.

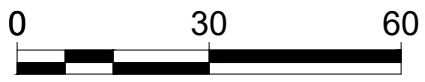
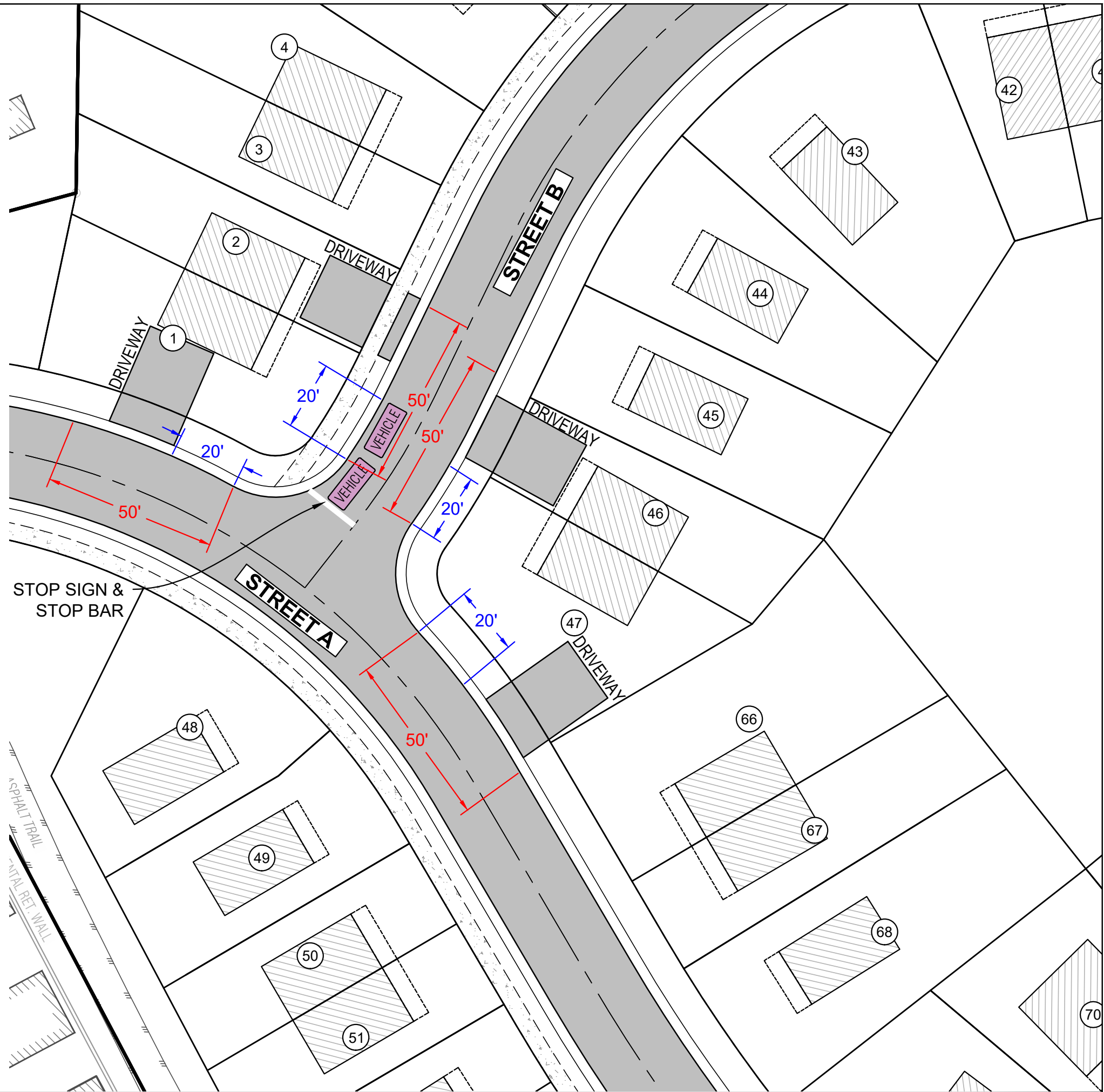
# #9 Driveways

PROPOSED REDUCTION FROM 50' TO 20'



x = 50 feet = driveways on local or collector street  
 x = 75 feet = driveways on arterial street

"DRIVEWAY MEASUREMENTS DIAGRAM"  
 PER SEC.5-318(d) OF SUBDIVISION  
 ORDINANCE



EDEN & ASSOCIATES  
 engineering • planning • development  
 1700 KRAFT DRIVE, SUITE 2350  
 BLACKSBURG, VIRGINIA 24060  
 VOICE 276-632-6231  
 FAX 276-632-3648

No.	Revision / Issue	Date

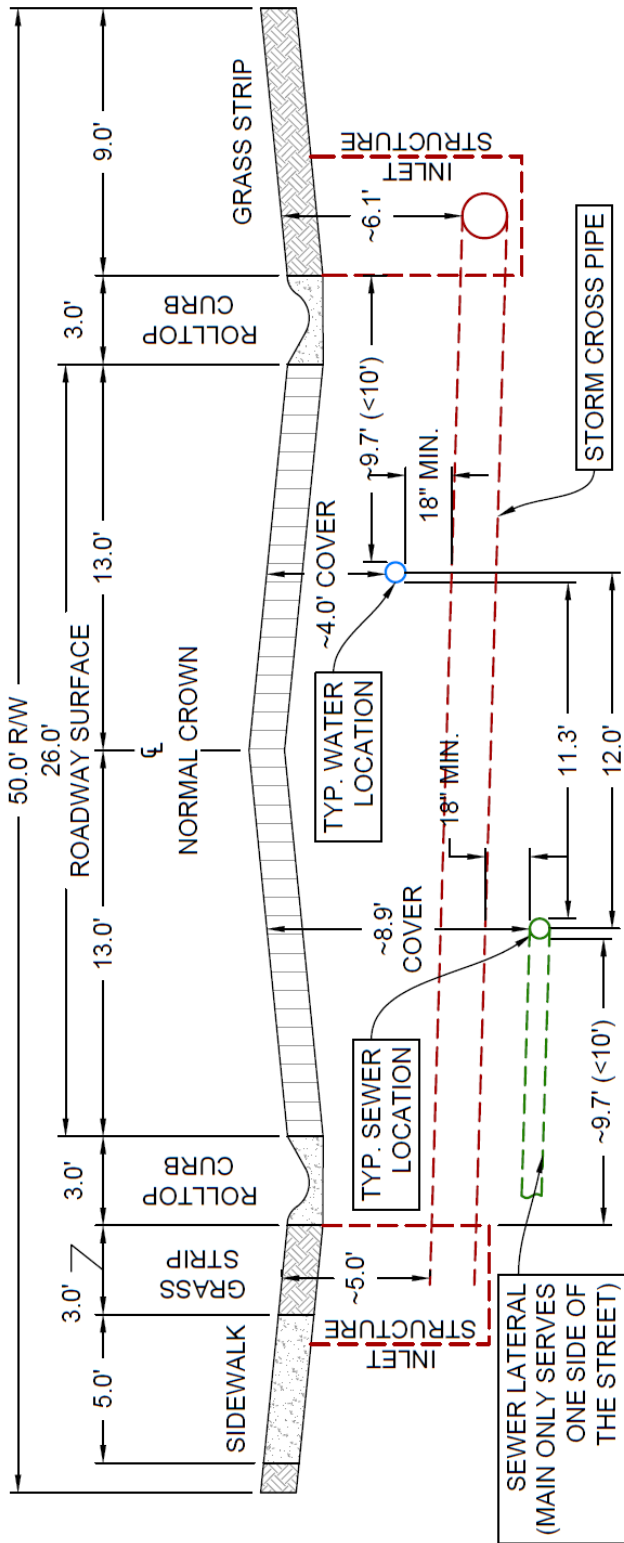
**PRELIMINARY**

DRIVEWAY VARIANCE EXHIBIT

PROPOSED DEVELOPMENT OF  
**GLADE SPRING CROSSING**  
 PROPERTY OF GLADE HGTS, LLC - TAX PARCELS  
 225-(A)-3, 225-(A)-4, & 224-(A)-57: 45.0976 AC.  
 TOWN OF BLACKSBURG, PRICES FORK DISTRICT  
 MONTGOMERY COUNTY, VIRGINIA

Drawn By: MSF	Scale: AS SHOWN
Checked By: MTJ	Date: 11/15/2022
Sheet No. 1 of 1	EX1

C:\DROPOBOX\EA\CARY\_HOPPER\GLADE\_SPRING\CAD\MISC\_COORDINATION\_EXHIBITS\2022.11.29\_DRIVEWAY\_VARIANCE\_EXHIBIT.DWG  
 11/29/2022 11:52:27 AM



**TYPICAL ROAD CROSS SECTION  
AND UTILITIES SEPARATION**  
(NOT TO SCALE)

NOTE: ROAD CROSS SECTION APPLIES TO STREET  
A (STA 0+50 TO STA 16+50) AND STREET B.