

Memorandum

TO: Randy Formica, P.E. Engineering Director

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

Date: 2/1/23

RE: Glade Spring Crossing Engineering Responses

Dear Randy,

Please accept this memorandum as responses from the applicant of Glade Spring Crossing to staff and neighborhood comments received in the staff reports and via email in the last few weeks.

1. **Request of applicant for further study regarding Glade/Old Glade intersection and a 3-way stop.** A summary below is provided and costs attached.

Glade Road is considered a Major Collector and should take precedence over Old Glade Road. The inclusion of an "All Way Stop" at this intersection could lead to negative future possibilities where other developments want to connect to a Major Collector and stop all traffic. 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.

Placement of stop signs should meet the regulations specified in the Manual on Uniform Traffic Control Devices (MUTCD), specifically Part 2A and 2B. The lateral offset from edge of traffic to edge of sign shall be at least 2' (lateral offset). A 6' lateral offset is preferred. With the retrofit to current conditions, the 2' lateral offset will be difficult and may require bicycle lane adjustments or sidewalk adjustments.

This specific situation considered the following to achieve the placement of stop signs:

1. In the westbound direction, create an island in the existing bicycle lane to place a stop sign and stop bar.
2. In the eastbound direction, create an island to separate thru lanes and place two stop signs and associated stop bar.
3. Provide an advance warning sign at the Citgo Deli Mart to address visibility and potential traffic queues.
4. Without additional parameters outlined, a working budget of \$50,000 to \$65,000 should be utilized to place concrete islands for sign posts, modify the existing dedicated bicycle lane, provide adequate traffic control measures during construction. The work scope is small in nature leading to higher unit costs.
5. These measures do not address any existing pedestrian crossing problems such as lack of landing along Old Glade Road.

- 6. Other alternatives were evaluated, but this scenario appears to be the most direct, least intrusive measures.

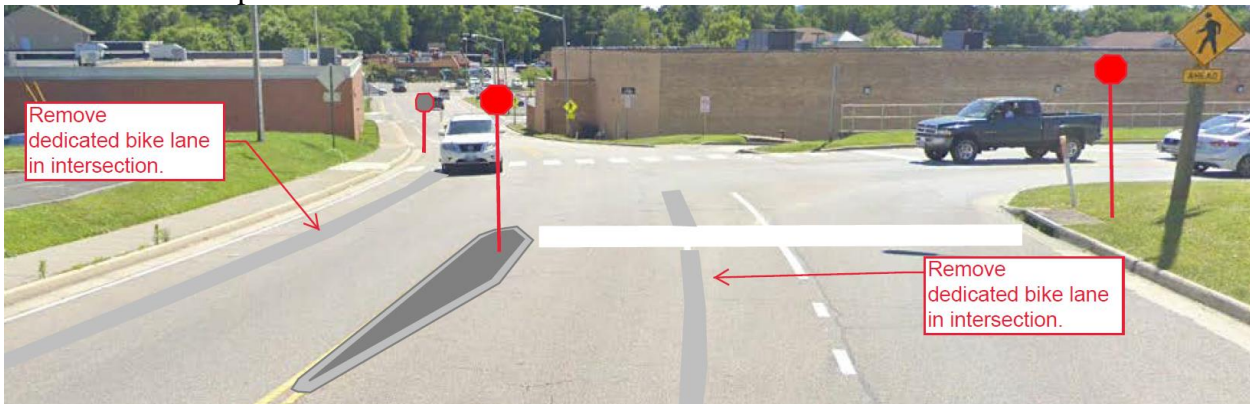


Potential image in the westbound direction.

Visibility concerns in the eastbound direction.



Recommended improvements in the eastbound direction.



- Close Proximity Entrance Concerns: With the placement of an all-stop condition,
- a. The commercial entrance to the rear of Volume II Bookstore is within the functional area of the intersection. Special considerations should be made. Options exist:

- i. Consideration should be made to close the connection completely. This option may be difficult as multiple parking spaces exist.
- ii. Consideration to make the exit movement a “right-out” only should strongly be considered. There is major concern that vehicles turning left out of this access would never be in the “queue” at the stop sign and may be considered to violate the stop condition of the intersection.
- b. The access to the loading dock to Kroger will be impacted. The peak hour anticipated queue would extend past the loading dock connection, as the connection is only 96’ from the intersection. General use of the loading dock does not occur during peak hour traffic; however, the potential exists.
- c. Cost estimate:

Westbound Improvements						
SCHEDULE OF UNIT PRICES (Glade/Old Glade All-way stop)						
ITEM	SPEC. SECTION	ITEM DESCRIPTION	UNIT	QUANTITY	ENGINEER'S ESTIMATE	
					UNIT PRICE	TOTAL COST
1	VDOT-512.06.1	Temporary Traffic Control	Days	5	\$ 1,500.00	\$ 7,500.00
2		Pavement Removal	SY	12	\$ 100.00	\$ 1,200.00
3	VDOT-502-05.1	MS-1A Concrete Island	SY	12	\$ 450.00	\$ 5,400.00
4	VDOT-701.05.1	Stop Sign R1-1 30"x30"	EA	1	\$ 350.00	\$ 350.00
5	VDOT-701.05.3	Stop Ahead Sign W3-1 30"x30"	EA	-	\$ 350.00	\$ -
6	VDOT-701.05.9	Single Square Tube Sign Post, Rural Area, Type A Foundation w/ Appurtenances per Section 1321 (STP-1)	EA	1	\$ 500.00	\$ 500.00
7	VDOT-704.04.3	2' Solid White Stop Bar, Type B, Class IV Thermoplastic	LF	12	\$ 25.00	\$ 300.00
8	VDOT-704.04.1	4" Solid White Stripe, Type A	LF	30	\$ 2.50	\$ 75.00
					Known Subtotal:	\$ 15,325.00
9	C-105-6.1	Mobilization/Demobilization, Permitting (Percentage)	LS	1	\$ 3,065.00	\$ 3,065.00
					Construction Subtotal:	\$ 18,390.00
					Unknowns (25%):	\$ 4,600.00
					Design / Review / Traffic Control Review (25%):	\$ 4,600.00
					Item Working Budget:	\$ 27,590.00
Eastbound Improvements						
SCHEDULE OF UNIT PRICES (Glade/Old Glade all-way stop)						
ITEM	SPEC. SECTION	ITEM DESCRIPTION	UNIT	QUANTITY	ENGINEER'S ESTIMATE	
					UNIT PRICE	TOTAL COST
11	VDOT-512.06.1	Temporary Traffic Control	Days	6	\$ 1,500.00	\$ 9,000.00
12		Pavement Removal	SY	12	\$ 100.00	\$ 1,200.00
13	VDOT-502-05.1	MS-1A Concrete Island	SY	12	\$ 450.00	\$ 5,400.00
14	VDOT-701.05.1	Stop Sign R1-1 30"x30"	EA	2	\$ 350.00	\$ 700.00
15	VDOT-701.05.3	Stop Ahead Sign W3-1 30"x30"	EA	1	\$ 350.00	\$ 350.00
16	VDOT-701.05.9	Single Square Tube Sign Post, Rural Area, Type A Foundation w/ Appurtenances per Section 1321 (STP-1)	EA	3	\$ 500.00	\$ 1,500.00
17	VDOT-704.04.3	2' Solid White Stop Bar, Type B, Class IV Thermoplastic	LF	24	\$ 25.00	\$ 600.00
18	VDOT-704.04.1	4" Solid White Stripe, Type A	LF	30	\$ 2.50	\$ 75.00
					Known Subtotal:	\$ 18,825.00
19	C-105-6.1	Mobilization/Demobilization, Permitting (Percentage)	LS	1	\$ 3,765.00	\$ 3,765.00
					Construction Subtotal:	\$ 22,590.00
					Unknowns (25%):	\$ 5,650.00
					Design / Review / Traffic Control Review (25%):	\$ 5,650.00
					Item Working Budget:	\$ 33,890.00
					Total Working Budget:	\$ 61,480.00

2. **Response of applicant to sewer comments from January 10, 2023 in staff sewer memorandum and to an email dated 1/30/23:**

- a. Town comment: Force main under the bridge across 460 is in poor condition and will need to be replaced by the applicant at 6" or 8".
 - i. Response: Applicant believes that this is an existing poor condition that is the Town's responsibility to resolve. Given a working force main at this location, it was our understanding that the Karr Heights improvements to the pumps would alleviate Town concerns.
- b. Town comment: Karr Heights pumps were recently replaced, but the motor, impellers and starters will need to be upgraded.
 - i. Response: Applicant agrees that this expense is partly our responsibility. However, since "The Farm" has its flow currently utilizing Karr Heights station with no conflict, we feel that proportion of the flow from our site should be removed from the cost of that upgrade. We should not be penalized financially for "removing their flow" from Karr Heights, but then adding back in to our site. Therefore, we would propose that 40% of their flow contribution (117/293) be Town's proportional contributions to the Karr heights pump station upgrade, the developer would contribute 60%.
- c. Redirection of the force main discharge to University City Boulevard will need to occur to Glade Rd. through the installation of approximately 1100' of new gravity sewer line.
 - i. Response: It is unfortunate that this wasn't found earlier in the process, so that proper planning could have found funding or ARPA money could have been used or applied for. It is not just to penalize the first development in who "tips the scale" for capacity in UCB when the Town has known about this potential capacity issue for years. However, the developer is willing to take some responsibility. Similar to the above statements, we would propose a cost-sharing mechanism with the Town. Again, "The Farm" was approved with downstream capacity, so we do not feel it is fair to be penalized for removing their flow from the system, then adding it back in with our pump station flows. Furthermore, the Town may prefer a larger line to be installed for future development than the typical 8" main we would be required to install. In either case, whether 8" or 10", future development in this basin area will benefit from this replacement line and betterment should be borne by the Town. It is also "freeing up" capacity in University City Boulevard that will be enjoyed by future developers of that area. This new main will benefit many to come in Town from a housing and economic development standpoint. This is a more complicated calculation for cost sharing. Both Westover Hills and Karr Heights sewersheds will feed into this line, alleviating a large portion of flow in the UCB Line. At a minimum, our responsibility would be the proportion of our units as compared to the other units already utilizing the force main to Glade. For instance, if there are 1000 units in these existing sewersheds, our proportion would be 176/1000 or 17.6% of the responsibility. This does not however include the additional future users of Tom's Creek that would be able to use the line, nor those on UCB sewer line that are otherwise not going to be

approved because of capacity. That can be back-calculated into equivalent units based on the flow available in the new line and that “freed up” in the UCB line. These should also be considered as the Town is benefiting from this new line in multiple ways.

d. GSC force main will likely need to be sized at 6” in order to overcome the head pressure into the Town force Main in Glade Rd.

i. Response: Applicant has revised the narrative to reflect a 6”.

3. Response of applicant to Creek Valley Overlay comments from Planning Commission Meeting January 31, 2023.

a. A potential wetland at the old Farm Pond was not originally shown contiguous to the Creek Valley overlay and was not included in its limits because the engineer determined that it was separated by an embankment and did not touch the 50’ required buffer line within the CVO. Further, the wetland is preliminary and the location and validation of it cannot be determined until approved by USACE in the preliminary plat stage. At this time they are located as flagged by the applicant’s environmental consultant. If the old Farm pond wetland area is determined to be a wetland, it will be mitigated with the USACE in the permitting process. The developer will likely have to purchase wetland bank credits in order to mitigate the wetlands prior to building a new stormwater management wet pond facility. The wet pond will provide a much larger, more prosperous and beneficial wetland than the farm pond currently offers. The resulting new BMP would provide regional water quality benefits much larger than that of the farm pond.

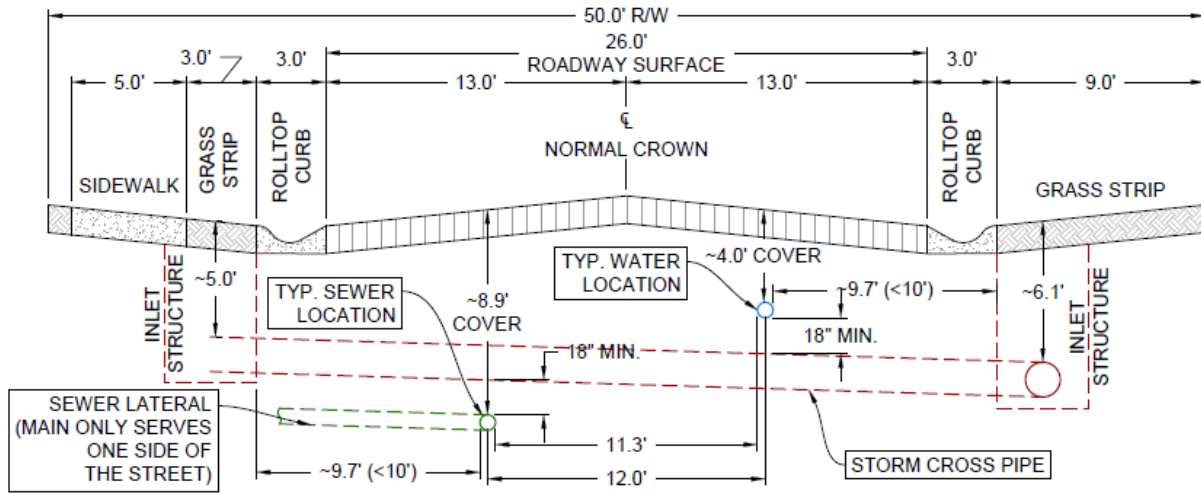
b. In discussion, staff prefers the wetland be shown as contiguous to the Creek Valley overlay as it is contained in “backwater” from the 100-year floodplain elevations. While the applicant agrees that the wetland is contiguous to the backwater, the creek valley overlay ordinance wording does not support this methodology and should likely be examined if this is the way the Town plans to enforce it. Regardless, the applicant has agreed to show the wetland contiguous to the CVO. This has been updated in the application mapping and in the calculations where it originally resided.

c. The result of showing this contiguous to the creek valley overlay, is that permission must now be sought to disturb within the CVO. The stormwater quality wet pond embankment must be located within the CVO in order to be installed. The footprint of the new Wet Pond is fixed in order to provide the required DEQ settling and pond areas that promote pollutant reduction. The upstream water quantity storm management facility and road crossing also squeeze the wet pond into the position as shown. The CVO disturbance request has been made to the Zoning Administrator under a separate memorandum. If the request is unable to be approved, the project will be unable to achieve on-site water quality and credits will likely have to be purchased. Furthermore, the project will be unable to provide regional pollutant reduction above that required for the project.

4. **Applicant requests a 15mph speed limit in the neighborhood.** Staff has suggested that it would be a staff action rather than a variance request. Our understanding is this is a staff initiated action with Council that would have to occur.

5. **Staff Sanitary Sewer and Water Separation issue:** Staff recommended additional information regarding the water and sewer separation issue that was not a variance, rather a sewer and water specification. The separation from line to line is met. The applicant desires to have a waiver for the separation between the storm structures and the water and sewer lines. Since the storm structures are at the back of curb, they are closer to the mains. The applicant would still meet the requirement from centerline of storm drain to centerline of water or sewer main. But recently, the edge of inlet

structures have been required to remain outside of a 10' separation, and this is unable to be met on this development due to the road widths.



**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.