REPORT
PRESENTATION

Port Republic and Bluestone Drive
Bicycle-Pedestrian Bridge Feasibility Study-Phase 2

AMT

February 2021

TABLE OF CONTENTS

INTRODUCTION & OBJECTIVE

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Background

On November 2, 2020, AMT presented the final version of the Port Republic and Bluestone Drive Bicycle-Pedestrian Bridge Feasibility Study – Phase 1 to the HRMPO Pedestrian-Bicycle Bridge Study Team (Project Panel). This study evaluated three (3) Port Republic Road grade-separated crossing alternatives based upon the cost of the project; user convenience; impact to utilities and properties; impact to the traveling public during construction; and impact to the viewshed. After reviewing the results of the study, the Project Panel agreed with the results, but determined that a grade-separated alternative would be cost-prohibitive and have relatively less benefit to traffic operations than originally anticipated. Consequently, an additional alternative, which consolidated and improved existing crosswalks, was studied in terms of cost and benefit to traffic operations. The "Consolidated Grade-Crossing" concept was recommended by the Panel to be forwarded to Phase 2 of the Port Republic and Bluestone Drive Bicycle-Pedestrian Bridge Feasibility Study.

Phase 2 Study Objective

It is anticipated that with the elimination of the southern crosswalk on Port Republic Road, thereby consolidating the east/west pedestrian movement to the northern crosswalk, the overall vehicular and pedestrian safety of the intersection will be improved by reducing the disruption caused by the pedestrian calls to the signal operations along the Port Republic Road corridor during peak hour operations. In this phase of the study, we have reviewed/analyzed the re-routing of all east/west pedestrian volume to a single (north) crosswalk on Port Republic Road and verified that the "Consolidated Grade-Crossing" concept will reduce the disruption caused by the pedestrian calls to the signal operations along the Port Republic Road corridor during peak hour operations. Our analysis and the results are documented in Section 5 of this report, "Consolidated Grade-Crossing Analysis".

Along with this analysis, we have evaluated the existing conditions of the intersection associated with the "Consolidated Grade-Crossing" concept. This evaluation was conducted with the use of a field topographic survey of portions of the southwest and northeast intersection quadrants. With the development of this concept, we looked at various methods of crossing deterrents and their benefits and drawbacks, project challenges, and the associated construction costs.

CONSOLIDATED GRADE-CROSSING CONCEPT

CONSOLIDATED GRADE-CROSSING CONCEPT

Elements of the Consolidated Grade-Crossing Concept

Figure 1 depicts the elements associated with the implementation of "Consolidated Grade-Crossing" concept, as described in the following:

1. The existing curb ramp on the southeast corner of the intersection providing access to the southern crosswalk will be removed and replaced with VDOT CG-6 curb and gutter and sidewalk. Existing sidewalk on each side of the existing curb ramp will be removed to facilitate installation of new sidewalk and crossing deterrents. The pedestrian signal will be removed and signage providing crossing information to the pedestrians via the northern crosswalk will be installed.
2. The existing southern crosswalk markings will be eradicated.
3. The existing curb ramp on the southwest corner of the intersection providing access to the southern crosswalk will be removed. Existing sidewalk and curb and gutter to the south of this curb ramp and along a portion of Hillside Avenue will also be removed to facilitate installation of VDOT CG-6 curb and gutter, sidewalk, and crossing deterrents. The pedestrian signal will be re-located and signage providing crossing information to the pedestrians via the northern crosswalk will be installed.
4. The existing crosswalk on Hillside Avenue will be eradicated and a new crosswalk will be installed further back from the intersection to provide a shorter crossing distance.
5. A new curb ramp will be installed on the northern side of Hillside Avenue to connect to the Blue Stone Trail.
6. Existing sidewalk and curb ramp at the northwest corner of the intersection will be removed. Pedestrian signals will be re-located at the new curb ramps.
7. Existing curb ramp providing access to the northern crosswalk of Port Republic Road will be modified with a curb to direct west bound pedestrians to the Blue Stone Trail.

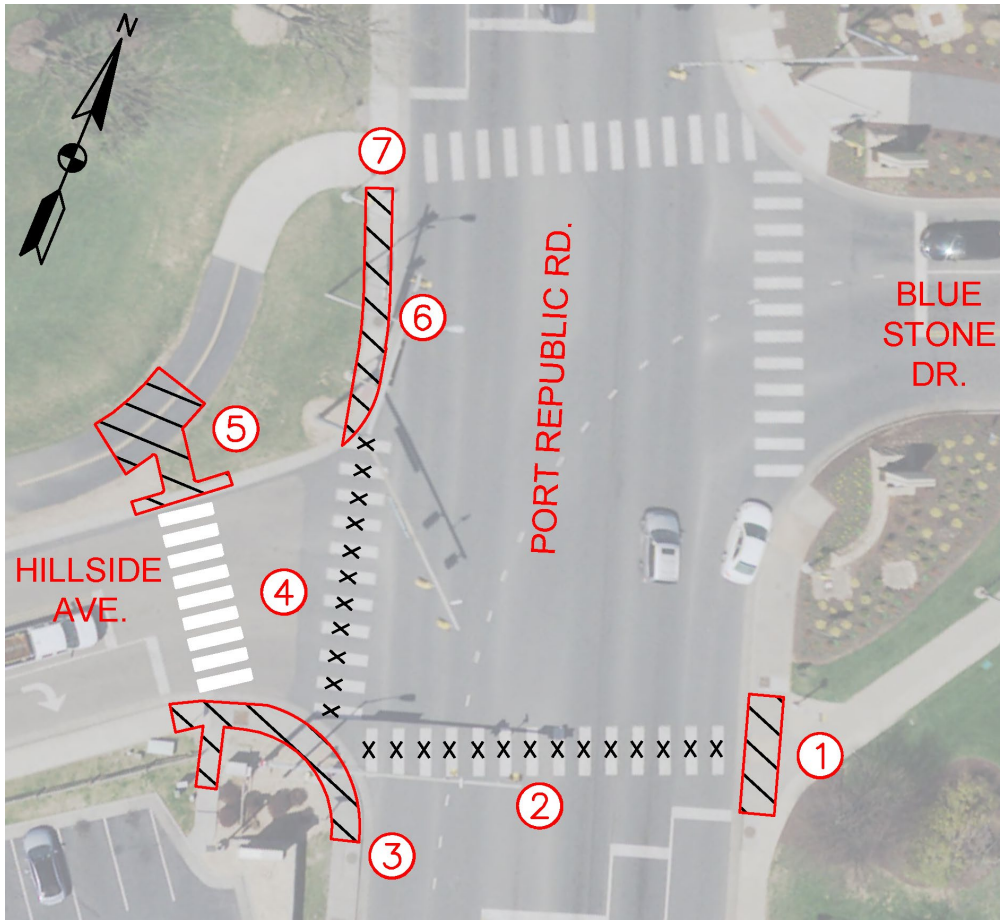


Figure 1 – Consolidated Grade-Crossing Concept

CONSOLIDATED GRADE-CROSSING CONCEPT

Elements of the Consolidated Grade-Crossing Concept cont.

With the removal of the southern crosswalk on Port Republic Road there was a concern from the Project Panel that there would need to be some method of deterring pedestrians from crossing after removal of the crosswalk and curb ramps. From the discussions with the Project Panel, it was our understanding that there was a desire for some type of vertical barrier that would be used as the deterrent.

Port Republic Road being maintained/controlled by the City is subject to AASHTO design guidelines. In most roadway design standards there is the concept of “clear zone”. Clear zone is an area beyond the edge of travel way that is unobstructed and traversable by an errant vehicle. This clear zone is typically established using the AASHTO Roadside Design Guide. However, according to the AASHTO Roadside Design Guide, on most low-volume, urban, or low speed facilities, the typical 30-feet of clear distance is considered excessive and seldom could be justified for engineering, environmental, or economic reasons. Historically, according to AASHTO, the lateral distance of 1.5-feet (3-feet at intersections) has been considered a minimum lateral offset distance for placing the edge of objects from the curb face. It is not the intent of AASHTO for this lateral distance of 1.5-feet to be an acceptable design criteria but in constrained urban environments there is still the need to position rigid objects as far away from the active travelled way as possible.

There has been mention by the Project Panel concerning the use of fencing/railing as a means of deterring pedestrians from crossing Port Republic to the south. Through our research and discussions with the Project Panel we have reviewed the use of the following types of determents. These include, Wood Post/Chain Fencing (Figure 2), Metal Railing (Figure 3), low height vegetative barrier (Figure 4), or Flexible Barrier (Figure 5).

Figure 2 – Wood Post/Chain Fencing

Figure 3 – Metal Railing

CONSOLIDATED GRADE-CROSSING CONCEPT

Elements of the Consolidated Grade-Crossing Concept cont.

Because the space is limited and there are considerable traffic control infrastructure in-place the location of the deterrent will not satisfy the recommended lateral distance of 3-feet. All of the considered deterrents will be placed adjacent to the sidewalk, with the exception of the vegetative barrier, in order to provide as much lateral distance between the back of curb and deterrent, as possible. Although there does not appear to be evidence of vehicle tracking across the existing curb and gutter, it is anticipated the vegetative barrier would occupy the entire width of the lateral distance leaving no room for encroachment.

Aesthetically, the metal railing and vegetative buffer will fit best with the project's surroundings and provide the most effective deterrent while the wooden post/chain fence and flexible barrier providing the least effective deterrent. The flexible barrier and the wooden post/chain fence both will have low initial and future costs, the vegetative barrier will have a low initial costs but will require yearly maintenance, and the metal railing will have a high initial costs but low future costs. The impact to safety of the intersection would be a considerable consideration in the choosing of a determent. The flexible barrier and vegetative barrier would have the least impacts followed by the wooden post/chain fence and then the metal railing. Each of the rigid determents (wooden post/chain fence and metal railing) would have an approved breakaway design.

It is our understanding the City would prefer the use of wooden post/chain fence deterrent. In the design of this deterrent we recommend the use of supports that have been issued an Eligibility Letter by FHWA Project Panel (FHWA Sign Support, Mailbox & Delineators Archive) including Virginia's 5x5 unmodified single wood post in soil-cement foundation or Montana's Round Wood Posts. In addition to the deterrent there would be signage directing pedestrians to the Hillside Avenue crossing (Figure 6).

Figure 4 – Vegetative Barrier

Figure 5 – Flexible Barrier

Figure 6 – Signage

CONSOLIDATED GRADE-CROSSING CONCEPT DRAWING

CONSOLIDATED GRADE-CROSSING CONCEPT DRAWING

Concept Drawing

The base mapping for the Concept Drawing is from a topographic survey completed by AMT on December 1, 2020. The property lines shown on this base mapping are based on existing record information and best fit to field found evidence and does not represent a boundary survey. Utilities shown are based on field investigation visible field evidence, available records and Miss Utility markings.

In the development of the Concept Drawing shown in Figure 7 on the Page 11, we evaluated a crosswalk location further along Hillside Drive. However, the elevation difference between the Blue Stone Trail and Hillside Avenue presented some grades which we felt were in excess of desirable. This resulted in a crosswalk location somewhere between this location and the existing location. This location allowed for the creation of a buffer space between the back of curb and the sidewalk for the placement of the crossing deterrent, provided a curb ramp which provided the user with a direction in the crossing of Hillside Avenue, and provided a shorter and thus safer crosswalk.

In the existing conditions, the grades for this intersection corner are greater than desirable and makes satisfying ADA requirements infeasible. Therefore, the design of the project should follow the Public Rights-of-Way Accessibility Guidelines (PROWAG) that are proposed guidelines for the currently recommended best practices when planning, designing and constructing within the rights-of-way. These guidelines cover pedestrian facilities in new or altered public rights-of-way, including sidewalks and other pedestrian ways. Chapter R3 of PROWAG contains the technical requirements for pedestrian routes, curb ramps, detectable warning surfaces, pedestrian street crossings, accessible pedestrian signals and pedestrian pushbuttons, transit stops and transit shelters, on-street parking, and passenger loading zones. These guidelines provide provisions that when compliance is not practicable due to existing terrain or infrastructure, right-of-way availability, a notable natural feature, or similar existing physical constraints, then compliance is to the extent practicable.

To reflect the challenges associated with the intersection's topography Figure 8 depicts the slopes for Existing Conditions and Figure 9 depicts slopes for Conceptual Conditions, on the following pages.

CONSOLIDATED GRADE-CROSSING CONCEPT DRAWING

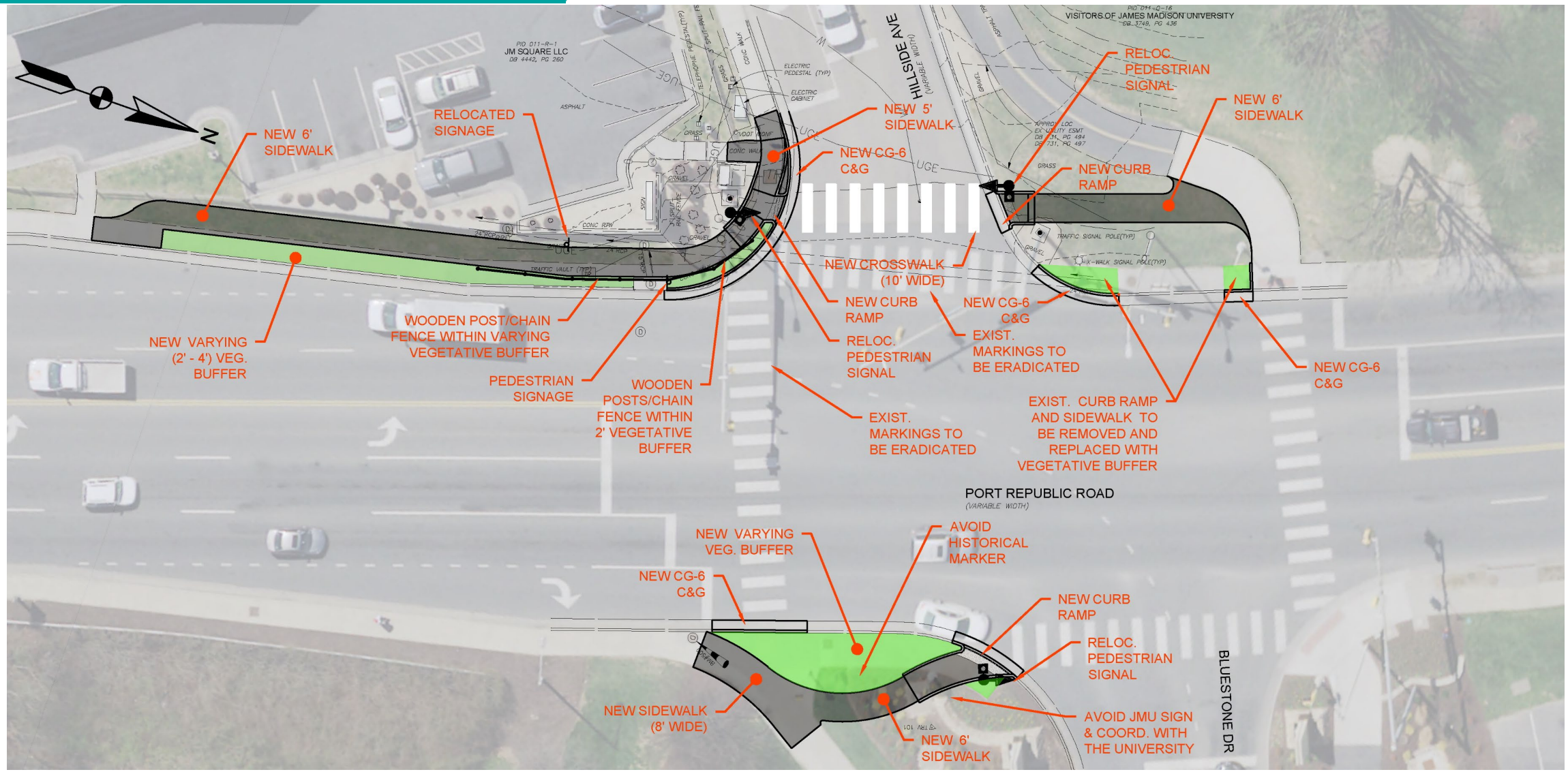


Figure 7 – Concept Drawing

CONSOLIDATED GRADE-CROSSING CONCEPT DRAWING

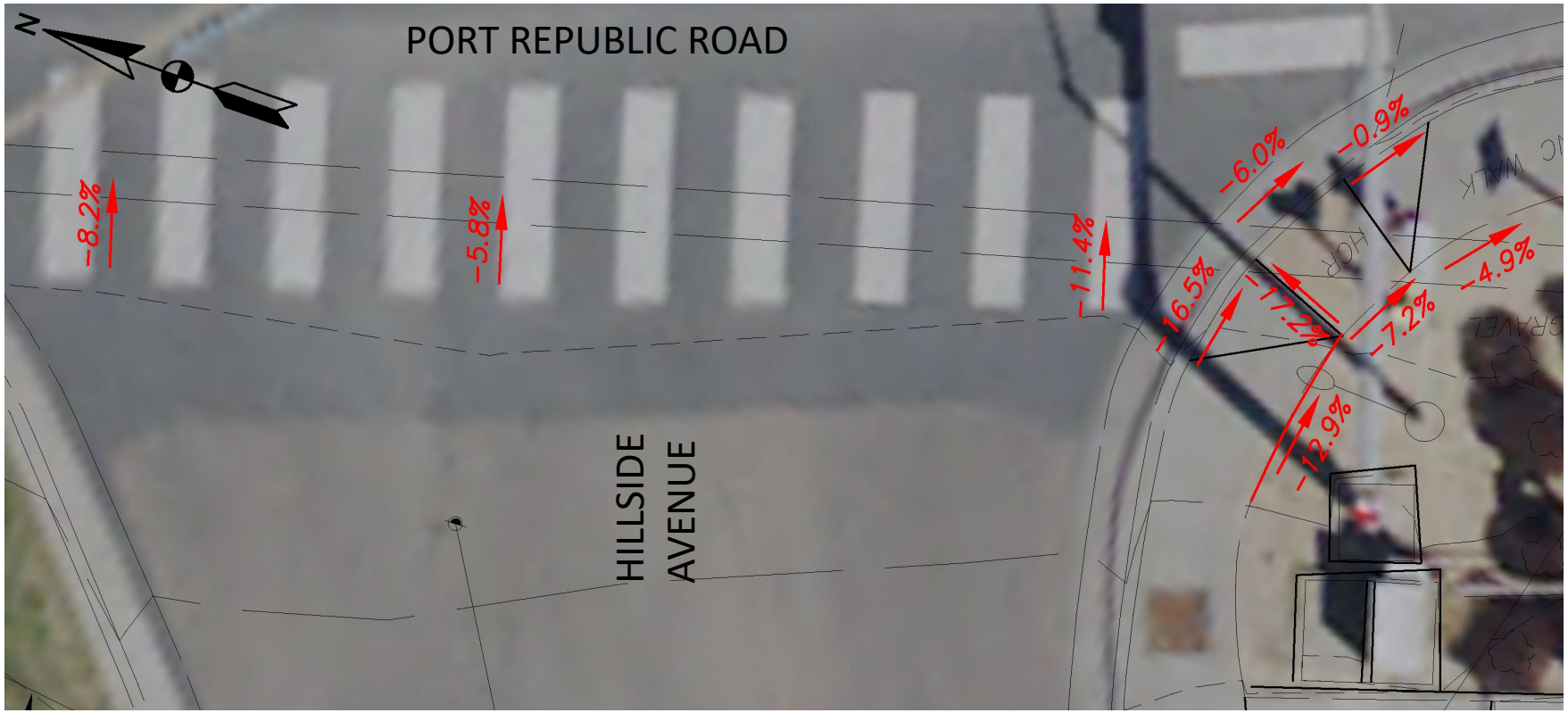


Figure 8 – Existing Conditions

CONSOLIDATED GRADE-CROSSING CONCEPT DRAWING

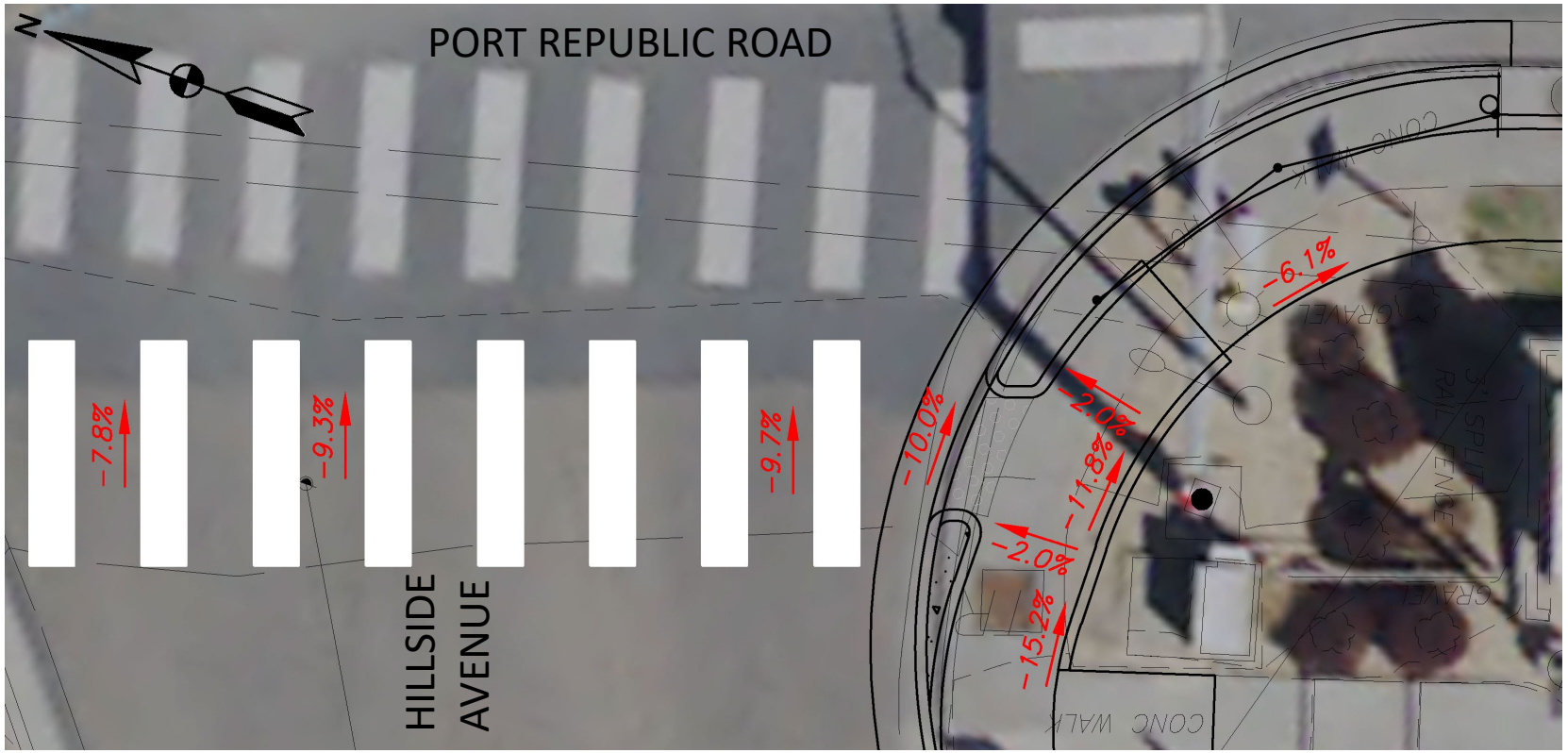


Figure 9 – Conceptual Conditions

CONSOLIDATED GRADE-CROSSING PROJECT COST ESTIMATE

CONSOLIDATED GRADE-CROSSING PROJECT COST ESTIMATE

Port Republic and Bluestone Drive Bicycle-Pedestrian Bridge Feasibility Study – Phase 2
HRMPO Pedestrian-Bicycle Bridge Study Team
"Consolidated Grade-Crossing" Conceptual Submittal (02-18-21)
City of Harrisonburg, VA

CONSTRUCTION

Line Item #	Pay Item #	Spec. #	Description	Unit	Quantity	Unit Price	Total Price
0010	00100	513	Mobilization	LS	1	$14,540.00	$14,540.00
0020	00101	517	Construction Surveying (Constr.)	LS	1	$4,240.00	$4,240.00
0030	00120	303	Regular Excavation	CY	15	$150.00	$2,222.22
0040	10099	308	Aggr. Matl. No. 21A or 21B	TON	63	$100.00	$6,328.13
0050	11070	315	NS Saw Cut Asph Conc	LF	175	$6.00	$1,050.00
0060	12020	502	Std. Curb CG-2	LF	25	$40.00	$1,000.00
0070	12022	502	Radial Curb CG-2	LF	80	$45.00	$3,600.00
0080	12600	502	Std. Comb. Curb & Gutter CG-6	LF	40	$45.00	$1,800.00
0090	12601	508	Radial Comb. Curb & Gutter CG-6	LF	100	$50.00	$5,000.00
0100	13108	504	CG-12 Detectable Warning Surface	SY	5	$500.00	$2,500.00
0110	13220	504	Hydraulic Cement Conc. Sidewalk 4"	SY	200	$90.00	$18,000.00
0120	14100	510	Remove Sidewalk and Entrance	SY	200	$50.00	$10,000.00
0130	14451	502	NS Saw Cut Hydraulic Cement Concrete Items	LF	65	$10.00	$650.00
0140	16249	310	Nontracking Tack Coat	GAL	5	$100.00	$450.00
0150	16335	315	Asphalt Conc. TY. SM-9.5A	TON	4	$500.00	$1,890.00
0160	16390	315	Asphalt Conc. Ty. BM-25.0A	TON	15	$500.00	$7,560.00
0170	23600	ATTD	NS Fence	LF	60	$30.00	$1,800.00
0180	24160	512	Temporary (Construction) Sign	SF	154	$30.00	$4,612.50
0190	24265	512	NS Maintenance of Traffic	LS	1	$20,000.00	$20,000.00
0200	24281	512	Electronic Arrow Board	LS	1	$5,000.00	$5,000.00
0210	24430	508	Demolition of Pavement (Flexible)	SY	45	$50.00	$2,250.00
0210	24535	510	NS Adjust Exist. Junction Box	EA	5	$1,000.00	$5,000.00
0220	27013	602	Topsoil Class A	CY	12	$150.00	$1,800.00
0230	27221	603	Fertilizer 10-10-10	LB	13	$20.00	$260.00
0240	27300	604	Sod	SY	210	$16.00	$3,360.00
0250	27461	303	Inlet Protection, Type B	EA	1	$600.00	$600.00
0260	27505	303	Temp. Silt Fence Type A	LF	50	$15.00	$750.00
0270	41104	510	Adjust Exist. Valve Box	EA	2	$500.00	$1,000.00
0280	41977	510	Adjust Exist. Water Meter Box	EA	1	$600.00	$600.00
0290	50108	701	Sign Panel	SF	4	$50.00	$200.00
0300	50340	700	Relocate Existing 1 Post Ground Mounted Sign Panel	EA	2	$260.00	$520.00
0310	50430	700	Sign Post STP-1, 2", 14 GAGE	LF	9	$30.00	$270.00

Port Republic and Bluestone Drive Bicycle-Pedestrian Bridge Feasibility Study – Phase 2
HRMPO Pedestrian-Bicycle Bridge Study Team
"Consolidated Grade-Crossing" Conceptual Submittal (02-18-21)
City of Harrisonburg, VA

CONSTRUCTION

Line Item #	Pay Item #	Spec. #	Description	Unit	Quantity	Unit Price	Total Price
0320	50488	700	Concrete Sign Foundation, STP-1, Type F	EA	1	$600.00	$600.00
0330	51198	703	Pedestrian Actuation PA-2	EA	3	$2,200.00	$6,600.00
0340	51208	700	Pedestal Pole PF-2 8'	EA	3	$2,000.00	$6,000.00
0350	51240	700	Concrete Foundation PF-2	EA	3	$2,000.00	$6,000.00
0360	51602	700	14/4 Conductor Cable	LF	330	$5.00	$1,650.00
0370	51930	700	NS Remove Existing Sign Structure	EA	4	$1,000.00	$4,000.00
0380	54054	704	Type B Class II Pvmt Line Marking 24"	LF	80	$20.00	$1,600.00
0390	54105	512	Eradicate of Exist. Linear Pvmt Marking	LF	250	$4.00	$1,000.00
0400	56053	700	2" PVC Conduit	LF	120	$15.00	$1,800.00
0410	56200	700	Trench Excavation ECI-1	LF	60	$30.00	$1,800.00
						Construction Total =	**$159,902.85**

PRELIMINARY ENGINEERING PHASE

Description	Unit	Quantity	Unit Price	Total Price
Engineering/Design	LS	1	$32,000.00	$32,000.00
VDOT Expenses	LS	1	$7,000.00	$7,000.00
			Preliminary Engineering Phase Total =	**$39,000.00**

ROW PHASE

Description	Unit	Quantity	Unit Price	Total Price
ROW	LS	1	$27,500.00	$27,500.00
Utility Relocation	LS	1	$27,500.00	$27,500.00
VDOT Expenses	LS	1	$5,000.00	$5,000.00
			ROW Phase Total =	**$60,000.00**

CONSTRUCTION PHASE

Description	Unit	Quantity	Unit Price	Total Price
Construction Management/Inspection	LS	1	$26,815.70	$26,815.70
VDOT Expenses	LS	1	$9,500.00	$9,500.00
Construction				$159,902.85
Construction Contingency (25%)				$39,975.71
			Construction Phase Total =	**$236,194.26**
			Total Project Costs =	**$335,194.26**

CONSOLIDATED GRADE-CROSSING ANALYSIS

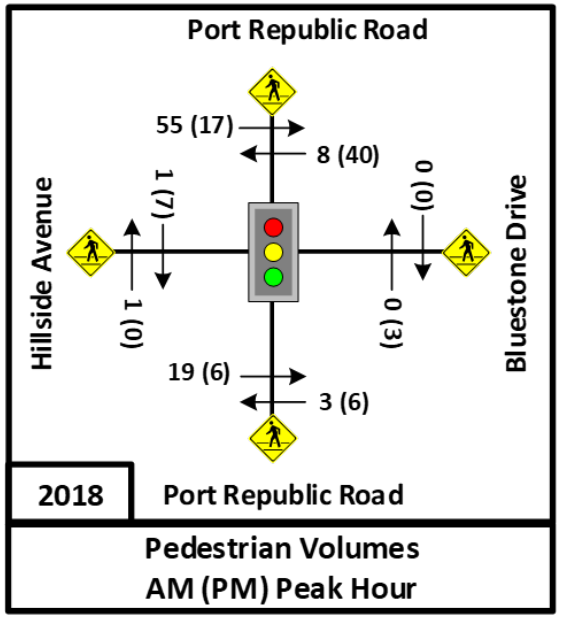
CONSOLIDATED GRADE-CROSSING ANALYSIS

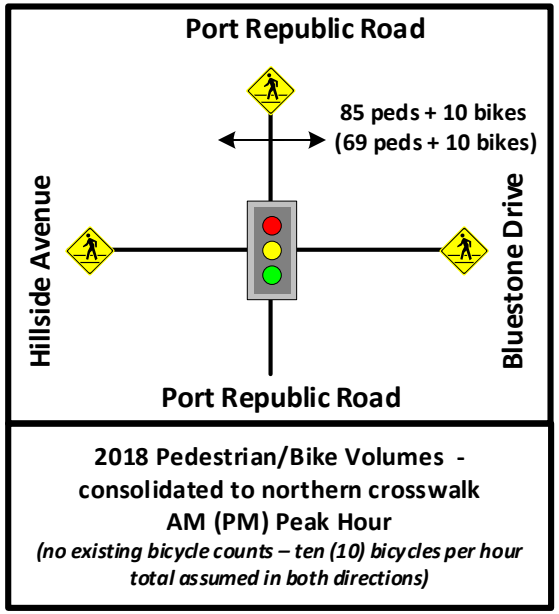
Pedestrian Impacts when Consolidating Crosswalks

For Phase 2 of this study, it is assumed that all pedestrian crossings on the southern crosswalk of the intersection will be re-routed and consolidated to the northern crosswalk. Based on the existing data collection from the year 2018 and after consolidating the crosswalks, it is estimated that approximately 85 pedestrians will use the crosswalk during the morning (AM) rush hour, and approximately 69 pedestrians will use the crosswalk during the afternoon (PM) rush hour.

Evaluating the PLOS (a pedestrian's level of safety and comfort when crossing a particular intersection leg) before and after the consolidation of the crosswalks is not feasible, due to the fact that the HCM 6th Edition methodology is not dependent on the pedestrian volumes. The PLOS methodology is dependent on the volume of vehicles crossing the crosswalk, the number of right turn on red vehicles, the number of lanes crossed, the speed of the traveling vehicles, etc. Increasing or decreasing the pedestrian volume crossing the intersection leg does not impact the PLOS calculations.

As far as pedestrian delay, the PLOS calculations take this into consideration as well. Pedestrian delay is based on the signal cycle length and the pedestrian walk interval – neither of which will be modified when the southern crosswalk is consolidated (see slide 18 - VDOT District Planning Office Traffic Analysis section). Pedestrian delay calculations are not impacted by an increase or decrease in the pedestrian volume.





CONSOLIDATED GRADE-CROSSING ANALYSIS

Pedestrian Travel Time Impacts

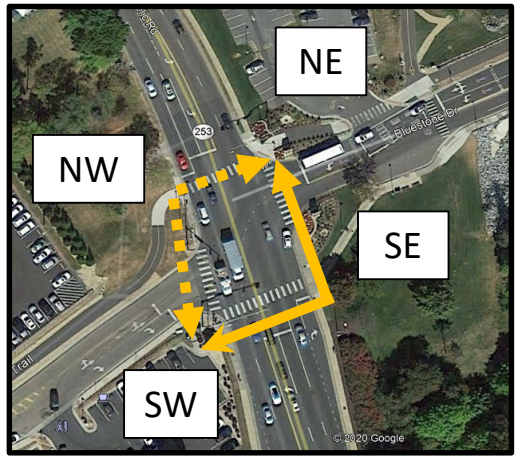
A pedestrian travel time comparison study was conducted at the study intersection to determine the approximate impacts of eliminating the southern crosswalk. The study looked at various crossing movements at the intersection itself – with the southern crosswalk in place and without. The calculated travel time was estimated based on a walking speed of 3.5 feet/second (MUTCD).

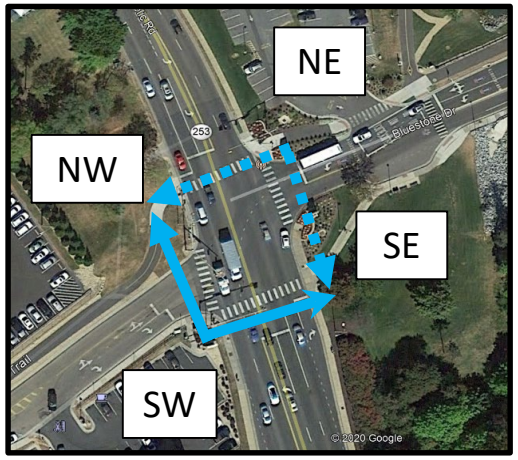
Scenario	Approx. Pedestrian Travel Time[1] w/ Existing Southern Crosswalk	Approx. Pedestrian Travel Time[1] w/ Elimination of Southern Crosswalk
NE -> SW SW -> NE	175 sec[2]	171 sec[2, 3]
NW -> SE SE -> NW	173 sec[2]	174 sec[2]
SW -> SE SE -> SW	84 sec[2]	263 sec[2, 3]

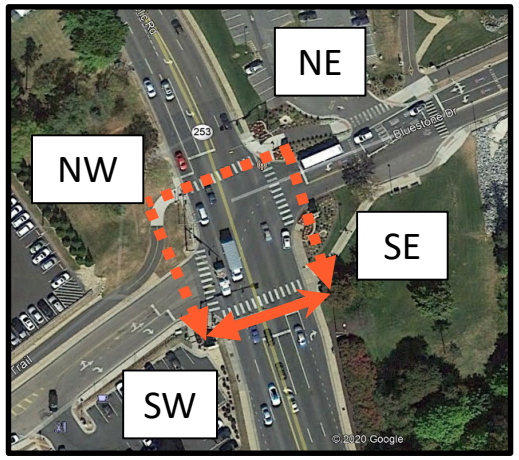
[1] 3.5 ft/sec walking speed assumed for calculations

[2] Includes signalized intersection delay (calculated separately using $d_{p,d} = \frac{(C - gwalk_{mi})^2}{2C}$*)*

[3] Includes the proposed re-alignment of the western crosswalk







Pedestrian Travel Time Impacts (cont.)

Based on the travel time comparison shown above, the only significant impact of eliminating the southern crosswalk pertains to the crossings from the SE corner to the SW corner (and vice versa). However, this is offset by the fact that the removal of the southern crosswalk increases benefits related to the safety and comfort of all roadway users (pedestrians, bicyclists, vehicular, etc.) and also from a vehicular operations standpoint. The trade-off between these benefits and the greatly increased pedestrian travel time for the one crossing in question was thoroughly assessed by the study team, and determined to be further justified because of the comparatively small number of pedestrians making the south/west-south/east movements. Few pedestrians make this movement because there are few destinations on the south/east side of Bluestone Drive to be reached by using the south/east crosswalk. Additionally, there are other crosswalks to use, internal to campus, to get from the Bluestone Trail on the north/west side of Bluestone Drive to the parking lots and Duke Dog Alley on the east side and vice versa, between Port Republic Road and Carrier Drive.

There are no pedestrian origins or destinations between the Bluestone Drive/Hillside Avenue and Forest Hill Road intersections, and no pedestrian crossing of Port Republic Road is necessary or safe on this segment, as it is comprised of interstate ramps. The signalized crosswalks at Forest Hill Road safely accommodate pedestrians seeking destinations along Port Republic Road, as well as points north and south. If pedestrians can anticipate the most convenient path to their destination, without using the crosswalk proposed for removal, and travel accordingly through the Forest Hill Road intersection, the Forest Hill Road crossing of Port Republic Road can facilitate the south/west-south/east movement across Port Republic Road, on the east side of the Bluestone Drive/Hillside Avenue intersection. The Forest Hill Road crosswalks would essentially serve the function of the crosswalk proposed for removal, at a displaced location. This option for pedestrians originating or destined for points east of the study intersection provides another mitigation for the increased travel time that would be experienced by the small number of pedestrians that previously used the crosswalk proposed for removal.

CONSOLIDATED GRADE-CROSSING ANALYSIS

VDOT District Planning Traffic Analysis

Vehicular operational analyses were conducted by VDOT using both PTV VISSIM and Trafficware's Synchro software to compare the Year 2030 1) No-Build and 2) Build with Consolidated Crosswalks scenarios. The peak hour volumes and intersection geometry at all key intersections remained similar for both scenarios. The No-Build models include the southern crosswalk and associated pedestrian calls, while the Build with Consolidated Crosswalks models eliminate the southern crosswalk and associated pedestrian calls (and relocate these pedestrian calls to the northern crosswalk).

AMT reviewed the Synchro traffic analyses for No-Build and Build with Consolidated Crosswalks and found that the pedestrian phase for the southern crosswalk was eliminated for the Build with Consolidated Crosswalks scenario. Based on the existing pedestrian counts, the Synchro models were also updated to reflect increased pedestrian calls for the northern crosswalk during both the AM and PM peak hours. All pedestrian timings are comparable to the timings in operation during Existing conditions as well, indicating that no additional time is provided for the pedestrians on the northern crosswalk in the No-Build and Build with Consolidated Crosswalks models .

Pedestrian Change Interval Determination

Adequate time to safely cross a leg of an intersection must be provided for all pedestrians. Pedestrian timings (Walk and Flashing Don't Walk displays) are provided for the northern crosswalk. The Walk time is 5 seconds (typically ranges from 4 to 7 seconds) and the Flashing Don't Walk time (or pedestrian change interval) is calculated based on the curb-to-curb distance and a typical pedestrian walking speed. Based on the length of the northern crosswalk (approx. 66 feet) and a walking speed of 3.5 feet per second, the current pedestrian change interval of 22 seconds is deemed acceptable. Therefore, no modifications to the pedestrian timings for the northern crosswalk are required.

Pedestrian Signal Timing								
Route Number	Route Name	Phase	Direction	Crossing Distance	Walking Speed	Walk Time	Pedestrian Change Interval Required	Pedestrian Change Interval Provided / **Sufficient ✓** / **Insufficient ✗**
	Hillside Drive	2	EB	57	3.5	7	16	**21** ✓
	Bluestone Drive	6	WB	67	3.5	7	19	**22** ✓
Route 253	Port Republic Road	8	SB	66	3.5	5	19	**22** ✓

CONSOLIDATED GRADE-CROSSING ANALYSIS

Based on the VDOT analysis results, consolidating all east/west pedestrian crossings to the northern crosswalk provides added benefits for vehicular traffic operations at both this intersection, and along the Port Republic corridor as a whole.

As noted in the Phase 1 study, consolidating the crosswalks reduces corridor travel times significantly in both the eastbound and westbound directions compared to the No-Build scenario (by 6 secs eastbound and 51 secs westbound during the AM peak hour, and by 37 secs eastbound and 58 secs westbound during the PM peak hour).

Peak hour delays will also be reduced at the intersection – by three (3) seconds during the AM peak hour and by six (6) seconds during the PM peak hour.

2030 AM	No Build			Build Consolidated Crosswalks				
Port Rep Road Intersection	Intersection Delay	Max Queue Major Street	Max Queue Minor Street	Intersection Delay	Max Queue Major Street	*Major St Queue vs. No Build (ft)*	Max Queue Minor Street	*Minor St Queue vs. No Build (ft)*
Bluestone Dr/ Hillside Ave	**27.4 (C)**	623 (WB)	171 (NB)	**24.4 (C)**	453 (WB)	-170	180 (NB)	9

2030 PM	No Build			Build Consolidated Crosswalks				
Port Rep Road Intersection	Intersection Delay	Max Queue Major Street	Max Queue Minor Street	Intersection Delay	Max Queue Major Street	*Major St Queue vs. No Build (ft)*	Max Queue Minor Street	*Minor St Queue vs. No Build (ft)*
Bluestone Dr/ Hillside Ave	**42.5 (D)**	1611 (EB)	1100 (SB)	**36.2 (D)**	977 (EB)	-634	1150 (SB)	50

2030 AM	No Build	Build Consolidated Crosswalks	
Travel Time Segment	Simulated Travel Time (M:SS)	Simulated Travel Time (M:SS)	*vs. No Build (sec)*
Port Republic Rd Eastbound	3:55	3:49	-6
Port Republic Rd Westbound	4:39	3:48	-51
Port Republic Rd EB from S Main St to I-81 NB Ramps	2:49	2:45	-4
Port Republic Rd WB from Devon Ln to I-81 SB Ramps	3:09	2:24	-45

2030 PM	No Build	Build Consolidated Crosswalks	
Travel Time Segment	Simulated Travel Time (M:SS)	Simulated Travel Time (M:SS)	*vs. No Build (sec)*
Port Republic Rd Eastbound	4:30	3:53	-37
Port Republic Rd Westbound	5:52	4:54	-58
Port Republic Rd EB from S Main St to I-81 NB Ramps	3:11	2:34	-37
Port Republic Rd WB from Devon Ln to I-81 SB Ramps	3:58	3:07	-51