# CITY OF CHARLES TOWN
## PLANNING COMMISSION
## AGENDA • MAY 22, 2023

**Committee Meeting** **CITY HALL** **7:00 PM**
**101 E Washington Street, Charles Town, WV 25414**

**1. CALL TO ORDER**

**2. APPROVAL OF MINUTES**

2.1 : February 27 minutes
Draft February 27 Planning Commission Minutes.docx

2.2 : March 27 minutes
Draft March 27 Planning Commission Minutes.docx

2.3 : April 24 minutes
Draft April 24 Planning Commission Minutes.docx

**3. UNFINISHED BUSINESS**

**4. NEW BUSINESS**

4.1 :

**(Public Hearing)** WV-2023-03: A waiver request by *Stanley Martin Homes LLC*. Applicant is requesting three waivers for the Stone Spring Subdivision. The three waiver requests are for:

1. Relief from Subdivision Ordinance Section 1333.07.C, requiring driveways be at least 40 feet from an intersection.
2. Relief from Subdivision Ordinance Section 1333.15.B, requiring a buffer between townhomes and single-family detached units.
3. Relief from Subdivision Ordinance Section 1333.20.K, requiring electric meters for townhomes be located in the rear of units.

1. Staff Report.pdf
2. Driveway Waiver.pdf
3. Electric meter Waiver.pdf
4. Buffer Waiver.pdf

4.2 : **(Public Hearing)** BR2023-01: *MDHI Charles Town LLC* is seeking to establish a bond for work to be performed for the Huyett Rd Storage Facility. Estimated bond value is $1,492,269.65

1. Staff report.pdf
2. Bond Reuqest Application.pdf
3. Kimley-Horn Comment Response Letter.pdf
4. Bond Estimate.pdf

4.3 :

**(Public Hearing)** TXA2023-05 *Parking and Loading Standards*: A text amendment to Subdivision and Land Development Ordinance Section 1333.23.J, to exempt properties within the Historic Overlay District from on-site parking requirements.

1. Staff Report.pdf

4.4 : SLD2023-06 Tri-State Daycare - Completeness Review
1. Staff Report.pdf
2. Application.pdf
3. Plans.pdf

4.5 : Staff Update: Hillside major subdivision and land development - traffic impart
1. Staff Report.pdf
2. Email correspondence.pdf
3. 2022_06_01 Jefferson County Kings Crossing TIS, Final Revised.pdf

**5. ADJOURNMENT**

**6. NOTICE: The Public May View the Meeting Live by Clicking on the Event Link at: https://www.charlestownwv.us/government/agendas-and-minutes/**

**Planning Commission**
101 East Washington Street
Charles Town, WV 25414

Meeting: 05/22/23
Department: Planning Commission
Category: Report
Initiator:

**SCHEDULED**

**AGENDA ITEM (ID # )**

## February 27 minutes

**ATTACHMENTS:**

- Draft February 27 Planning Commission Minutes.docx

# CITY OF CHARLES TOWN

**PLANNING COMMISSION**

**MINUTES • February 27, 2023**

**Regular Meeting** **Council Chambers** **7:00 PM**

**101 East Washington Street, Charles Town, WV 25414**

## 1) CALL TO ORDER

**Present:** Ann Paonessa
Angie Cummings
Jessica Derr
Jeff Hynes
Kevin Long

**Absent:** None

## 2) APPROVAL OF MINUTES

2022-247: Approval of Planning Commission Meeting Minutes - November 28, 2022

Approval of Planning Commission Meeting Minutes - December 27, 2022

Note - November 28, 2022 approved with slight changes to correct typos.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Kevin Long, Jeff Hynes |

## 3) UNFINISHED BUSINESS

None

## 4) NEW BUSINESS

SLD2023-01 Flowing Springs Subdivision - COMPLETION CHECK

Flowing Springs Subdivision. One 6.5 acre parcel subdivided to two parcels. Lot 1 is 1.7 acres and Lot 2 is 4.8 acres. No proposed development. Requirements deemed complete. Public hearing set for March 27th.

Discussion: Asked applicant about reason for dividing parcel. Applicant stated the property is divided by the road, just has not been officially subdivided. Pending offer on Lot 1 and to sell, it must be subdivided. The proposed use was questioned and apartment building was mentioned. A site plan will probably be submitted for Lot 1.

| | |
|---|---|
| **RESULT:** | **APPROVED** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Jessica Derr, Jeff Hynes, Kevin Long<br>**NAY:** Angie Cummings |

SLD2022-04 Hillside - COMPLETION CHECK

Hillside. 13.7 acre parcel. 128 townhomes. Zoned Residential medium / high density R15. Will ask for waiver regarding electrical meters. Application meets requirements to be deemed complete.

Questions: Will there be Dept. of Housing and Urban Development managed or affordable workforce housing? Application shows zoned as neighborhood residential, needs to corrected for record. Medium High density is what allows townhouses.

Applicant: No HUD managed/affordable workforce housing proposed – units to be market rate. Traffic study was discussed as well as entrances to development, sidewalks and garages.

Discussion: Concerns voiced over traffic, infrastructure, growth and planning. Application being deemed complete allows for continued discussion and public comment.

Motion to deem application complete.

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| **RESULT:** | **APPROVED** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Jessica Derr, Jeff Hynes<br>**NAY:** Kevin Long, Angie Cummings |

SLD2022-02 Norborne-Glebe Phase 15 - Preliminary Plan

Norborne-Glebe Phase 15. Preliminary plan. Sketch plan approved 6/27/2022. Reviewed by city engineering firm and determined complete and conforms with zoning and city ordinances.

Applicant: No deviation to plans. Discussion regarding driveways at intersections. T-sections are the issue. No driveways allowed within 40’ of an intersection. Applicant will seek a waiver.

Discussion: Waiver included in 3/27 meeting. Erosion control at this site brought up by commissioner, who told the complainant to file a formal complaint. Applicant unaware of erosion issues, and will take care of it.

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| **RESULT:** | **APPROVED** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Kevin Long |
| **AYES:** | Ann Paonessa, Jessica Derr, Kevin Long, Jeff Hynes |
| | **NAY:** Angie Cummings |

**5) ADJOURNMENT**

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Kevin Long, Jeff Hynes |

**6) NOTICE: The Public May View the Meeting Live by Clicking on the Event Link at:**

**https://www.charlestownwv.us/government/agendas-and-minutes/**

**Planning Commission**
101 East Washington Street
Charles Town, WV 25414

Meeting: 05/22/23
Department: Planning Commission
Category: Report
Initiator:

**SCHEDULED**

## AGENDA ITEM (ID # )

### March 27 minutes

**ATTACHMENTS:**

- Draft March 27 Planning Commission Minutes.docx

# CITY OF CHARLES TOWN

**PLANNING COMMISSION MEETING**

**MINUTES • March 27, 2023**

**Regular Meeting** **Council Chambers** **7:00 PM**

**101 East Washington Street, Charles Town, WV 25414**

## 1) CALL TO ORDER

**Present:** Ann Paonessa
Angie Cummings
Jessica Derr
Jeff Hynes

**Absent:** Kevin Long

Meeting started at 7:00 pm. Kevin Long was not in attendance. Angie Cummings arrived at 7:20 pm.

## 2) APPROVAL OF MINUTES

No minutes to approve.

## 3) UNFINISHED BUSINESS

No unfinished business.

## 4) NEW BUSINESS

### 4.1 SLD2022-04 Hillside Sketch Plan & Waiver - Public Hearing

Application for major subdivision located at Sternway Dr and Hillside Dr. Zoned Residential medium high density, R15. Site is 13.71 acres, to be developed as 128 townhomes. Townhouse electric meter location waiver requested.

Staff gave a presentation on the proposal.

Applicant handed out revised plans. Will have a 6' buffer of landscaping between proposed townhomes and existing single-family dwellings. Will have an HOA. Sternway Dr connection – bus shelter added. Fee-in-lieu of parkland dedication. Sidewalks will be kept in development. In communication with the State Division of Highways (DoH) regarding roundabout. Traffic study not required as they are not hitting the peak amount per hour.

Discussion: Discussed open space and in lieu of payment / donation of land. Discussed lot sizes and sidewalks, bus shelter and traffic study details. 128

townhomes down to 120 – question was asked if these changes needs to be seen by the public, as they were not provided to staff to include in the packet. This is why the recommendation of tabling until next meeting was made.

Motion to open public hearing.

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Public comments: Five residents spoke of their concerns with traffic and the need for a roundabout (to assist with the dangerous and accident-prone intersection when leaving the community), overcrowding of schools, issues with sidewalks, lack of visitor parking spots, storm water management and responsible use of the land.

Motion to close public hearing.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

The applicant spoke in response to public comments. DoH says roundabout is funded and in design and about 24 months out. Pump station - the applicant has to pay for improvements and then Charles Town Utility Board (CTUB) takes over. Storm water management will be satisfied as it is a requirement of ordinance.

Further questions for staff: Clarify concerns buffers, 30% open space not met, net buildable land area requirements – not to exceed 128 units which they would have to meet to approve plans. Sidewalks and HOA concerns clarified.

Discussed actions to take next.

Electric meter request waiver. Motion to approve. Short discussion that this has happened previously with waivers and there is a need to update ordinance for the future.

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Jessica Derr, Jeff Hynes |
| | **NAYS:** Angie Cummings |

Motion to approve sketch plan by Hynes with conditions: Must be in conformance with coder requirements for buffers, net buildable area, and not to exceed house units / 128 units. Second by Derr with amendments to require traffic impact study. Following discussion about traffic study, Derr withdrew amendments second to Hynes motion. Motion dies.

New motion to table action to April 24.

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|---|---|
| **RESULT:** | **APPROVED** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Angie Cummings |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr<br>**NAYS:** Jeff Hynes |

### 4.2 WAV2023-01 Norborne Glebe Waiver Request - Public Hearing

Waiver request for a driveway standard to apply to the remaining development of Norborne Glebe housing development.

Staff gave presentation. Code requirement is that no driveway shall be constructed closer than 40' to the nearest intersection. Previous sections of development not built to this standard as interpreted differently. Waiver for remaining phases 10B-13, 15, 16. Diagrams shared of intersections, both 4 way and "T" intersection. No negative impact with previous pattern of development. Explained waiver criteria. Commissioner's questions answered.

Applicant: Had 11 plan approvals previous to this one. Midstream change has an adverse impact. Sketch plan approved before, and this Code interpretation would cause 22 houses to be non-conforming. Studied maps throughout the city and this design occurs everywhere. In every "T" intersection in Huntfield, it occurs. Only speaking of "T" intersections.

Discussed diagrams. Questions asked of applicant – speed limit discussed. Has stop signs at "T" intersections. This condition has been allowed previously.

Motion to open public hearing.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Public comments: An engineer spoke regarding waivers shouldn't be required and that it should be the same as previously allowed throughout the city. Would be a drastic change with new interpretation. Second speaker has

adjacent property to development asked about the waiver and what it would do to the community.

Motion to close public hearing.

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Motion to approve waiver as requested for phases 10B-13, 15, 16.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

### 4.3 SLD2023-01 Flowing Springs Subdivision - Public Hearing

Flowing Springs Subdivision. Subdivision of a 6.5 acre parcel into two separate parcels. Lot 1 would be 1.7 acres and Lot 2 would be 4.8 acres. Has been divided before. Zoning is General Commercial. Potential for apartment buildings. No proposed plans received for development.

Applicant was asked if they wanted to speak. They were present on Zoom electronic meeting platform. Applicant did not respond.

Motion to open public hearing.

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

No public comment.

Motion to close public hearing.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Motion to approve Flowing Springs Subdivision.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

### 4.4 SLD2022-01 Stone Spring Subdivision – PC Workshop Discussion

Stone Spring Major Subdivision Preliminary Plan. 98.85 Acres. 77 townhomes and 248 single family homes. Three commercial pads.

Staff gave presentation.

Sketch plan previously approved. Zoned Neighborhood Commercial. Conditions of Annexation specify 325 residential units be developed on site. Further discussed annexation, density and parking. Buffer required to be 6' between townhomes and single family dwellings. Further details shared. 40' driveway interpretation will pertain to this development as well.

Discussion: 40' driveway ordinance and required buffer discussed. Dedication of park land discussed and will need to check with Parks and Recreation. Discussed traffic study.

Applicant spoke: Asking for approval contingent on requesting the driveway waiver, or waiting for text amendment before having the final plan recorded. Buffering discussed and could add fence if necessary. Park land will change to open space if not wanted as park land, and will work with Parks and Rec. Spoke about the traffic study. No plan for commercial at this time and will be handled as that occurs (buffer will be required for commercial). Not sure about townhome electrical meters currently.

Discussion: Most requirements met. Still need waivers. Approve item contingent with conditions as waivers not heard until later. Discussed tabling item. Would like a response from Parks and Rec on this matter. Annexation and park lands already approved by Council and dedicated. May be deeded. Land for use is part of resolution

and annexation, not subject to change. Discussed infrastructure, appeals and authority.

Motion to approve the preliminary plan, with condition that applicant applies for waivers from: location of electric meters on townhomes, location of driveways, and buffer requirements for townhomes

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|---|---|
| **RESULT:** | **APPROVED** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Jessica Derr, Jeff Hynes<br>**NAYS**: Angie Cummings |

### 4.5 SLD2022-05 Huyett Rd Storage Facility - PC Workshop Discussion

Preliminary Plan. Property is just under 5 ½ acres- 5 storage buildings and office building. Sketch plan approved. Zoned General Commercial.

Staff gave presentation.

Applicant: Mentioned existing trail and they have been asked to extend it. They have met all requirements.

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|---|---|
| **RESULT:** | **APPROVED** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Jessica Derr, Jeff Hynes<br>**NAYS:** Angie Cummings |

### 4.6 BR - Norborne Glebe Phase 14B Bond Reduction - PC Technical Review

Existing Performance bond for Norborne Glebe Phase 14B in amount of $1,961,538.69 and Land Disturbance bond for $293,866.83. Requesting a reduction in Performance Bond to $819,035.74 and reduction in Land Disturbance to $123,437.57. Reviewed by Kimley Horn and bond committee.

Discussed reduction in bonds.

Recommendation to approve bond reduction.

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| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

### 4.7 SLD2023-02 Westover Holdings Land Development – Completeness Review

Somerset Blvd. To be developed as a dental lab. Staff states the application meets requirements to be deemed complete.

Discussion: Commissioner asked if the site connects to adjacent commercial properties. Applicant confirmed it does.

Applicant: Mentioned it fits in with other businesses in that area. Building will be 5,000 sq feet dental facility.

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| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Angie Cummings |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

### 4.8 SLD2023-03 Ali Hadavand Casino – Completeness Review

Development of property into casino with the merger of two parcels into one. Note – BZA must approve for casino use as exception. If not allowed, can still proceed with merger. Zoned general commercial. 1.4 acres. Meets all requirements.

Applicant: No questions.

Discussed sidewalks and applicant is aware of the issue with sidewalks.

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

### 4.9 Election of Officers:

-Chair
-Co-Chair
-Secretary

Chair – Nominated: Ann Paonessa.

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |

| | |
|---|---|
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Vice Chair – Nominated: Jessica Derr.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Angie Cummings |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Secretary – Nominated: Angie Cummings.

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

## 5) ADJOURNMENT

Meeting adjourned by Ann Paonessa.

**Planning Commission**
101 East Washington Street
Charles Town, WV 25414

Meeting: 05/22/23
Department: Planning Commission
Category: Report
Initiator:

**SCHEDULED**

## AGENDA ITEM (ID # )

### April 24 minutes

**ATTACHMENTS:**

- Draft April 24 Planning Commission Minutes.docx

# CITY OF CHARLES TOWN

**PLANNING COMMISSION MEETING**

**MINUTES • April 24, 2023**

**Regular Meeting** **Council Chambers** **7:00 PM**

**101 East Washington Street, Charles Town, WV 25414**

## .1) CALL TO ORDER

| Attendee Name | Title | Status | Arrived |
|---|---|---|---|
| Ann Paonessa | Chair | Present | |
| Kevin Long | Commissioner | Absent | |
| Jeff Hynes | Councilmember | Present | |
| Angie Cummings | Commissioner | Present | |
| Jessica Derr | Commissioner | Present | |

James Newman was also in attendance.

## 2) APPROVAL OF MINUTES

### 2.1 Minutes of March 27, 2023

Motion to table March minutes until next meeting.

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

## 3) UNFINISHED BUSINESS

### 3.1 SLD2022-04 Hillside Sketch Plan

Hillside Sketch Plan: Major subdivision and land development request. 13.71 acres. 128 townhomes proposed.

Staff gave a presentation on updates to the plans.

Proposed buffers and bus stop added to plans. Discussed open space and where it was located, park land vs. payment. Recommendation for approval.

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Applicant spoke: Market rate townhomes. New bus shelter will help proposed and existing neighborhoods. Commented on the open space requirement.

The Chair recognized two members of the public. Traffic concerns were brought up as well as schools, buffers, entrances and storm management. Concerned about traffic and safety impacts at intersection of Hillside Drive and Charles Town Road.

Motion to approve sketch plan, subject to two conditions:

1. Plans must meet the 30% open space requirements of townhome development.
2. Respectfully, that Council reach out to WV Division of Highways about traffic mitigation possibilities, including a right turn only lane, at the intersection of Hillside Drive and Charles Town Road.

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

## 4) NEW BUSINESS

### 4.1 TXA2023-01 - Text Amendment regarding Mobile Food Vendors - Public Hearing

Text Amendment - Mobile Food Vendors.

Staff gave a presentation. Definition of mobile food vendor. The proposed hours are 7 AM to 7 PM on Monday, Wednesday and Sunday. Locations - Three: 1. public right of way. Parking spots on 100 block of N Charles St., 100 block of N Samuel St. and 100 block of S Samuel St. 2. On private property - commercial zoned. 3. Other: Special activity permit. Would have a $20 fee. Fire Marshall reviewed and approved the draft regulations.

Discussion about parking space use, parking meters, licensing requirements, operating on private property, days of operation, customer seating and trash management, and safety issues.

Motion to open public hearing:

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Public hearing: No speakers signed up. Two food truck vendors did come forward to speak. Taste of Greece food truck vendor shared he is all for this and mentioned needing a parking solution. Fried Rite food truck vendor shared that he is in

compliance. That his trailer is self-sufficient and he has purchased a generator that is quiet.

Motion to close public hearing:

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Motion to advance text amendment change to allow food truck vendors in Charles Town and to forward list of questions to Ordinance Committee for consideration.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

### 4.2 TXA 2023-02 Text Amendment regarding Buffer Standards - Public Hearing

Staff gave a presentation. Staff shared current ordinance. While the current regulations are suitable for placing a buffer between existing single family and newly proposed townhomes, it does not make sense when the townhomes and single family homes are part of a planned development.

Motion to open public hearing.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Public hearing: One speaker – Mentioned agenda items 4.2 - 4.4 and that all know the history and discussion of previous meetings. Will come up again. Appreciate staff and commission.

Motion to close public hearing.

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| **RESULT:** | **APPROVED [UNANIMOUS]** |

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|---|---|
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Motion to recommend text change to Council for adoption with adjustment of "except where such units are part of **the same** planned development".

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

### 4.3 TXA2023-03 Text Amendment regarding Driveway Standards - Public Hearing

Staff gave a presentation. New language clarifies where driveways can be placed and how distances measured.

Discussion – staff may need to modify the language for flow, but this amendment helps add clarity for staff and developers.

Motion to open public hearing.

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Public hearing: No speakers for public hearing.

Motion to close public hearing.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Motion to advance text amendments.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

### 4.4 TXA2023-04 Text Amendment regarding Townhouse Standards - Public Hearing

Staff gave a presentation Waivers are usually required and electric utilities do not support providing meters in the rear of townhomes

Motion to open public hearing.

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|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Public hearing: No public speakers.

Motion to close public hearing.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Motion to advance text amendments.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

### 4.5 SLD2022-06 Norborne-Glebe Phases 10B,11,12, and 13 Sketch Plan - Public Hearing

Staff gave a presentation. Project occupies 43.5 acres. 156 townhomes and 78 single family dwelling units. 3.3 acre for pool. Zoned - Neighborhood Residential. Meets open space - 10%.

Applicant spoke: The current plan is to start pool construction in September 2023 and finish in May 2024. They start work on the pool when there are around 350-400 residents. Haven't discussed pool passes for non-residents, thought the pool is Olympic size and Can host private swim meets.

Motion to open public hearing.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Public hearing: One Speaker. She discussed storm water management and concern about increasing runoff and flood impact. The water and silt is currently extremely bad. The bridge to their property has sustained damage and will need to be rebuilt at some point. Use neighboring properties to feed animals when can't access their bridge. Brought photos from 2018.

Commissioners discussed there is no storm water management on current sketch plan to see at this time; this element is not due until further in the process.

Motion to close public hearing.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Motion to approve sketch plan. Discussion.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

### 4.6 SLD2023-02 Westover Dental - Sketch Plan - Public Hearing

Staff gave a presentation. Project is for a Dental lab. Opaque buffer with residential property and landscaping. Dumpster pad will need landscaping. Lighting will be two light poles.

Discussion: Connection of properties.

Applicant spoke: Regarding parking there will be 34 spaces - very large dental office with room for multiple patients and staff at one time.

Motion to open public hearing.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Public hearing: No speakers signed up. Council member Michael George spoke in favor of the project.

Motion to close public hearing.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Motion to approve sketch plan.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

### 4.7 SLD2023-03 Alla Willa Drive Casino Sketch Plan - Public Hearing

Staff gave a presentation. Zoned general commercial. 1.4 acres made up of two .7 acre parcels will need to be merged. The Board of Zoning Appeals had approved special exception to allow casino at their April 18, 2023 meeting. The reduced number of parking spaces will need a waiver.

Applicant spoke: Talked about the term casino (considers this a slot machine parlor), having one employee and a shift change that will only take one additional parking space for maybe 15 minutes. Will have alcohol and food. No more than 10 machines, low impact and most customers are middle-aged to senior citizens. Will file for parking waiver.

Motion to open public hearing.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Angie Cummings |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Council member Michael George spoke in favor of the project.

Motion to close public hearing.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jeff Hynes |
| **SECONDER:** | Jessica Derr |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

Motion to approve sketch plan.

| | |
|---|---|
| **RESULT:** | **APPROVED** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Jessica Derr, Jeff Hynes |
| | **NAYS:** Angie Cummings |

### 4.8 SLD2023-04 Fairview - Completeness Review

Staff gave a presentation. 113.65 acres. Zoned neighborhood residential. 184 townhomes, 266 single family dwelling units.

Applicant spoke: Annexation - met with Mayor and City Manager. The central park is 3.42 acres could be used for community space, and they are working on amenities now.

Staff went over open space and park land requirements.

Following discussion, the Commission required that applicant discuss this project further with staff prior to a future Commission meeting for completeness review, with a specific emphasis on ensuring the sketch plan meets all requirements of the Conditions of Annexation which apply to the property.

Motion to table, with the condition that the applicant discuss their plans with the City's Director of the Department of Community Development..

| | |
|---|---|
| **RESULT:** | **APPROVED** |
| **MOVER:** | Jeff Hynes |

| | |
|---|---|
| **SECONDER:** | Jessica Derr |
| **AYES:** | Angie Cummings, Jessica Derr, Jeff Hynes<br>**NAYS**: Ann Paonessa |

**5) ADJOURNMENT**

Motion to adjourn.

| | |
|---|---|
| **RESULT:** | **APPROVED [UNANIMOUS]** |
| **MOVER:** | Jessica Derr |
| **SECONDER:** | Jeff Hynes |
| **AYES:** | Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes |

**6) NOTICE: The Public May View the Meeting Live by Clicking on the Event Link at:**

**https://www.charlestownwv.us/government/agendas-and-minutes/**

**Planning Commission**
101 East Washington Street
Charles Town, WV 25414

Meeting: 05/22/23
Department: Planning Commission
Category: Report
Initiator:

**SCHEDULED**

**AGENDA ITEM (ID # )**

**(Public Hearing) WV-2023-03: A waiver request by *Stanley Martin Homes LLC*. Applicant is requesting three waivers for the Stone Spring Subdivision. The three waiver requests are for:**

1. **Relief from Subdivision Ordinance Section 1333.07.C, requiring driveways be at least 40 feet from an intersection.**
2. **Relief from Subdivision Ordinance Section 1333.15.B, requiring a buffer between townhomes and single-family detached units.**
3. **Relief from Subdivision Ordinance Section 1333.20.K, requiring electric meters for townhomes be located in the rear of units.**

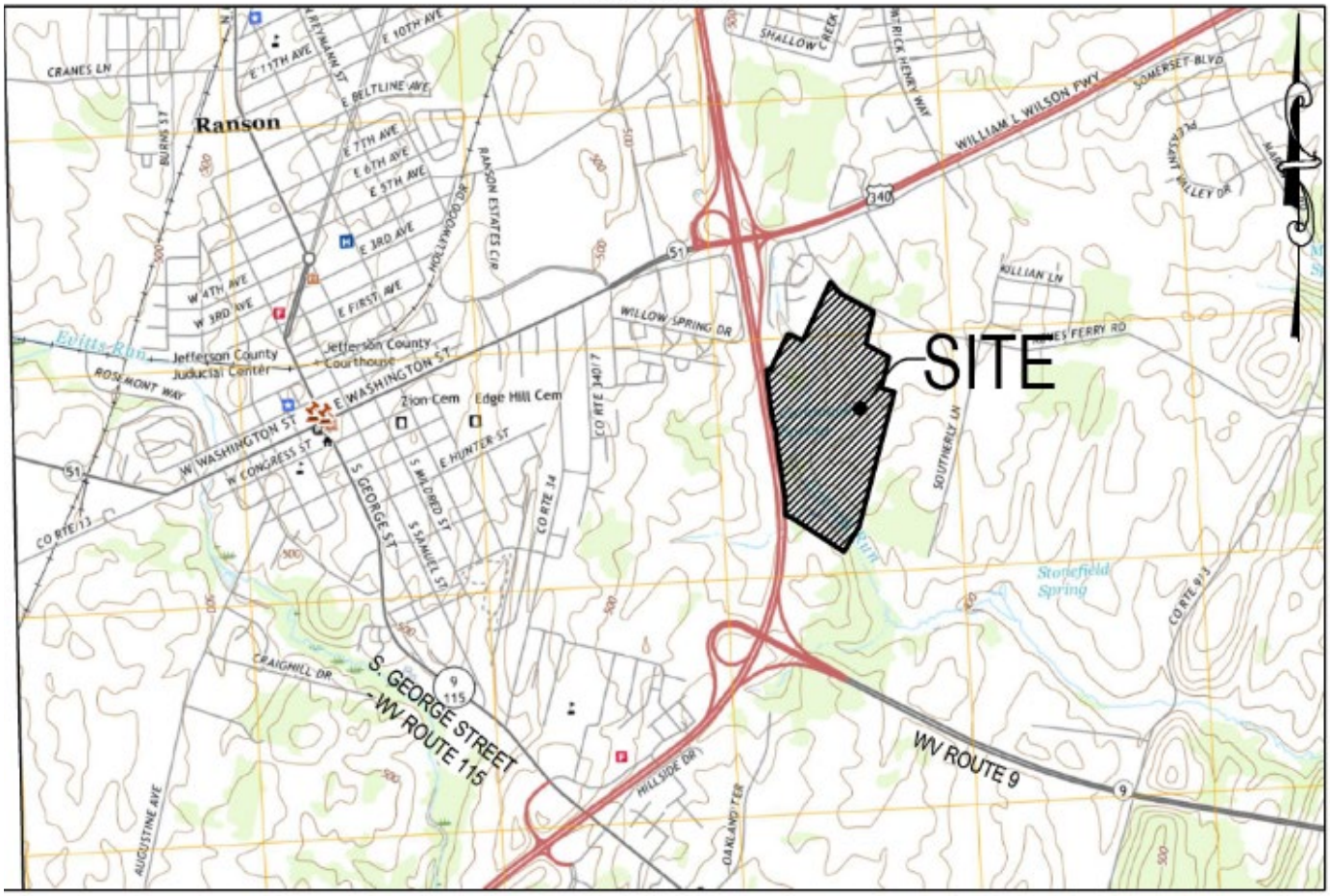
**ATTACHMENTS:**

- 1. Staff Report.pdf
- 2. Driveway Waiver.pdf
- 3. Electric meter Waiver.pdf
- 4. Buffer Waiver.pdf

Waiver Request
**Waiver2023-03**

**Date:** For the May 22nd, 2023 Planning Commission meeting
**Applicant**: Stanley Martin Homes LLC
**Property Owner:** Springfield Partners LLC
**Report by**: James Newman, City Planner, Zoning/Subdivision Administrator.
**Proposal:** Major Subdivision and Land Development
**Property Location:** Adjacent to Berryville Pike and Keyes Ferry Road (see outline below).
**Current Zoning:** Neighborhood Residential.

VICINITY MAP
SCALE:1"=2,000'




**REQUEST**

On March 27th, 2023, the Planning Commission voted to approve the preliminary plan for Stone Spring subdivision, subject to the condition that the applicant also apply for waivers from electric meters on townhomes, driveway standards, and buffering standards.

The applicant is therefore requesting three waivers:

1. Waiver from Subdivision Ordinance Section 1333.07.C, requiring driveways be at least 40 feet from an intersection.
2. Waiver from Subdivision Ordinance Section 1333.15.B, requiring a buffer between townhomes and single-family detached units.
3. Waiver from Subdivision Ordinance Section 1333.20.K, requiring electric meters for townhomes be located in the rear of units.

**WAIVER CRITERIA**

Section 1331.12.B covers waivers, and states:

1. *Adjustments that may be made to the requirements of this Ordinance to unusual site conditions in order to achieve a better design. Waivers may not be used to circumvent the process requirements of this Ordinance. The Planning Commission shall have the authority to grant a waiver to allow a modification, change, or an alternative solution to a requirement of this Ordinance. Please note that economic hardship along is not sufficient reason to grant an exception from the requirements.*

2. *Waivers from the minimum standards in this Ordinance may be granted by the Planning Commission only when the Planning Commission finds that granting a waiver will be consistent with all of the following criteria and the exception is the minimum necessary to afford relief:*

   *a. That the design of the project will provide public benefit such as a reduction in City maintenance cost, greater open space, parkland consistent with the City parks plan, or benefits of a similar nature;*

   *b. The waiver, if granted, will not adversely affect the public health, safety or welfare, or the rights of adjacent property owners or residents;*

   *c. That the waiver, if granted, will be in keeping with the intent and purpose of this Ordinance; and*

   *d. That the waiver, if granted, will result in a project of better quality and/or character. No process or procedural waivers will be granted*

**WAIVER 1. CRITERIA REVIEW – DRIVEWAYS, SUBDIVISION ORDINANCE SECTION 1333.07.C**

While the request does not meet the 'unusual site conditions' under subsection 1 above, it is fairly debatable as to whether or not it meets the requirements of subsection 2, outlined here:

*a. That the design of the project will provide public benefit such as a reduction in City maintenance cost, greater open space, parkland consistent with the City parks plan, or benefits of a similar nature;*

The waiver would continue a pattern of development that was approved in the sketch plan. While no specific driveways are shown in the sketch plan, there are parcels near intersections that would not be able to have driveways based on Code requirements. The sketch plan was approved by the Planning Commission on May 23, 2022.

*b. The waiver, if granted, will not adversely affect the public health, safety or welfare, or the rights of adjacent property owners or residents;*

The project has not yet been built; it would not negatively impact the proposed development, and would not cause any impact on adjacent properties.

*c. That the waiver, if granted, will be in keeping with the intent and purpose of this Ordinance;*

The purpose of the Ordinance is to regulate physical development of land for the improvement of the health, safety, comfort, morals, and general public welfare of our citizens. The applicant's waiver request does not appear to lead to undue harm, and text amendment to correct this issue is working its way through the public hearing process.

*d. That the waiver, if granted, will result in a project of better quality and/or character. No process or procedural waivers will be granted*

If granted, the waiver would permit a style of development which is commonly built in the City. Per the applicant's narrative, the waiver is only for T-intersections. The T-intersections will have stop-signs; driveway users with 40 ft. of the intersection would not be impeding traffic at intersections as other traffic would be halted by stop-signs.

**WAIVER 2. CRITERIA REVIEW – TOWNHOME BUFFER, SUBDIVISION ORDINANCE SECTION 1333.15.B**

While the request does not meet the 'unusual site conditions' under subsection 1 above, it is fairly debatable as to whether or not it meets the requirements of subsection 2, outlined here:

*a. That the design of the project will provide public benefit such as a reduction in City maintenance cost, greater open space, parkland consistent with the City parks plan, or benefits of a similar nature;*

Greater open space would be provided as the land that would be developed for a buffer would be left as open space instead.

*b. The waiver, if granted, will not adversely affect the public health, safety or welfare, or the rights of adjacent property owners or residents;*

The waiver would provide for an aesthetically pleasing community by not splitting up a residential development into separate components.

*c. That the waiver, if granted, will be in keeping with the intent and purpose of this Ordinance;*

The purpose of the Ordinance is to regulate physical development of land for the improvement of the health, safety, comfort, morals, and general public welfare of our citizens. The applicant's waiver request does not appear to lead to undue harm, and text amendment to correct this issue is working its way through the public hearing process.

*d. That the waiver, if granted, will result in a project of better quality and/or character. No process or procedural waivers will be granted*

If granted, the waiver would permit in a development of improved aesthetic design and community cohesion, as residential uses would not be split from one another by a buffer. Additionally, the buffering would be located adjacent to stormwater management ponds. Removing the buffer allows for easier maintenance of the ponds.

**WAIVER 3. CRITERIA REVIEW – ELECTRIC METERS, SUBDIVISION ORDINANCE SECTION 1333.20.K**

While the request does not meet the 'unusual site conditions' under subsection 1 above, it is fairly debatable as to whether or not it meets the requirements of subsection 2, outlined here:

*a. That the design of the project will provide public benefit such as a reduction in City maintenance cost, greater open space, parkland consistent with the City parks plan, or benefits of a similar nature;*

This Code requirement does not meet the reality of electrical meter installation requirements of private utility providers, and is a hindrance to development within the City.

*b. The waiver, if granted, will not adversely affect the public health, safety or welfare, or the rights of adjacent property owners or residents;*

This waiver will not result in harm to future residents of this develop, nr cause harm to adjacent property owners. It will provide access and safety benefits for electric utility staff.

*c. That the waiver, if granted, will be in keeping with the intent and purpose of this Ordinance;*

The purpose of the Ordinance is to regulate physical development of land for the improvement of the health, safety, comfort, morals, and general public welfare of our citizens. The applicant's waiver request does not appear to lead to undue harm, and text amendment to correct this issue is working its way through the public hearing process.

*d. That the waiver, if granted, will result in a project of better quality and/or character. No process or procedural waivers will be granted*

If granted, the waiver would permit a style of development which is already in place throughout the City, and for which other developments have also received a waiver.

**CONCLUSION**

The applicant has requested three waivers, per the request of the Planning Commission. These waivers are common request, and text amendments to address all three of these requirements are in the public hearing process. The waiver requests are reasonable, and staff recommends **approval**.

**Waiver Application No.**_____

# WAIVER APPLICATION

## SUBDIVISION AND LAND DEVELOPMENT ORDINANCE
## SECTION 1331.12, (V) REQUIREMENTS

**To assist staff in the review of a waiver application to the Planning Commission (PC), the applicant must supply all of the information contained in this application form. This application must be signed by all owners of the real estate which is the subject of the application. The owners may designate one or more professional agents to represent them in the application process using the spaces provided on this form.**

**Incomplete applications will be subject to scheduling delay. Applicants are encouraged to meet with staff prior to filing. A public hearing will be scheduled within 45 days of the receipt of a completed application.**

Approval of a waiver by the Planning Commission does not relieve the applicant from other requirements including, but not limited to, signs(s), building, zoning and use permits or site plans.

***As part of this application, the following must be provided:***

1. $150.00 Application Fee.
2. A Completed Application.
3. As applicable, supporting documents included, but not limited to site plan or depiction of the requested Waiver.

It is the applicant's responsibility to make a good-faith effort to provide the Subdivision Administrator, as applicable, with a current list containing the accurate names and mailing addresses of all interested parties. For purposes of this provision, "interested parties" shall mean Landowners of Adjacent Property. The applicant shall provide the addresses in order to comply with Section 1331.12.B of the Subdivision Ordinance

**Legal Notices**

The following shall occur at least 15 days prior to the Public Hearing: notice of the hearing shall be advertised by the Planning Commission as a Class I legal advertisement in the local newspaper, posting of a sign upon the property, and letters to adjacent and confronting land owners within 100 feet of the subject property.

**Definition of a Waiver**

Adjustments that may be made to the requirements of this Ordinance to unusual site conditions in order to achieve a better design. Waivers may not be used to circumvent the process requirements of this Ordinance.

**The Charles Town Subdivision Ordinance**

To grant a Waiver as permitted in the Subdivision Ordinance, the Planning Commission makes findings as specified in Section 1331.12(B)(2).

In order to issue a Waiver, the Commission must make the following written findings regarding the Waiver sought and all of the following can be met:

**A waiver request may be granted by the Planning Commission only when it shall be determined that:**

1. That the design of the project will provide public benefit such as a reduction in City maintenance cost, greater open space, parkland consistent with the City parks plan, or benefits of a similar nature;

2. The waiver, if granted, will not adversely affect the public health, safety or welfare, or the rights of adjacent property owners or residents;

3. That the waiver, if granted, will be in keeping with the intent and purpose of this Ordinance; and

4. That the waiver, if granted, will result in a project of better quality and/or character.

*Note:*

*Additional exhibits may be required by the Subdivision Administrator or Planning Commission such as a lot location survey or site plan showing existing and proposed Structures, easements, watercourses, curb cuts and description of the uses of adjacent property that are necessary to describe existing or proposed conditions.*

1. DATE March 28, 20 23

2. APPLICANT'S NAME* Stanley Martin Homes, LLC

Address: 14200 Park Meadow Drive, Suite 100N, Chantilly, VA 20151

Telephone Number (703)636-9232 Fax Number ( )

Email Address webersj@stanleymartin.com

3. PROPERTY OWNER'S NAME Springfield Partners, LLC

Address: 59 Franklin Street, Annapolis, MD 21401

Telephone Number (301)758-4541 Fax Number ( )

Email Address tbaum@conduitstpartners.com

4. LEGAL DESCRIPTION OF THE SUBJECT PROPERTY (list all parcels that apply)

Property Address: 412 Keyes Ferry Rd., Charles Town, WV 25414

Tax Map # and Parcel: Tax Map 15, Parcel 01

Deed Book and Page #: Deed Book 451, Page 745

Property Area in Square Feet or Acres: 98.88 Acres

5. DESCRIPTION OF THE EXISTING (OR FORMER) USE(S) OF THE PROPERTY AND CURRENT ZONING:

The site is currently a working farm, and the current zoning is Neighborhood Residential.

6. DESCRIPTION OF PROJECT AND PROPOSED USE(S) OF THE PROPERTY:

The proposed site improvements for Stone Spring Subdivision include the construction of 248 Single Family Detached units, 77 Townhouse units, 3 Commercial Lots, drive aisles, and parking areas with associated drainage structures, SWM Facilities, and public utilities.

*Applicants include: Property owner(s), Engineer(s), Surveyor(s), or Consultant(s)

7. DESCRIPTION OF ANY PROPOSED WORK TO BE DONE TO THE PROPERTY:

Develop the site into a residential subdivision with associated access, parking, utilities, and stormwater management.

8. DESCRIPTION OF THE WAIVER REQUEST:

Waive the requirement for unit driveways to be 40' from proposed intersections, excluding through intersections. The waiver is at the request of the Planning Commission, dated March 27, 2023.

9. LIST THE APPLICABLE SECTION(S) OF THE SUBDIVISION ORDINANCE FROM WHICH THE WAIVER IS REQUESTED:

Section 1333.07(C): "No Driveway shall be constructed closer than 40 feet to the nearest street intersection."

10. JUSTIFICATION FOR THE REQUEST:

A) Explain how the design of the project will provide public benefit such as a reduction in City maintenance costs, greater open space, parkland consistent with the City Parks Plan or benefits of a similar nature;

The design would remain consistent with the approved sketch plan, preserving the open space and parkland areas.

B) Explain how the waiver, if granted, will not adversely affect the public health, safety, welfare or the rights of adjacent property owners or residents;

The requirement, if waived, would still remain consistent with previous City of Charles Town developments without affecting the health, safety, and welfare of the public or the rights of adjacent property owners.

C) Explain how the waiver, if granted, will be in keeping with the intent and purpose of this Ordinance; and;

The waiver would allow the design to remain consistent with the previously approved sketch plan, and previous developments of similar nature while meeting other ordinance requirements.

D) Explain how the waiver, if granted, will result in a project of better quality and/or character.

The waiver would allow for a more uniform design throughout residential develop ments, resulting in a more aesthetically pleasing layout consistent with previous City of Charles Town developments.

11. INTERESTED PARTY ADDRESSES, FOR PUBLIC NOTICE (including across street) (Interested parties are defined as adjacent properties within 100 feet).

| Owner | # and Street | City, State, Zip |
|---|---|---|
| SEE ATTACHED LIST. | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

12. PARCEL HISTORY (List all pending or previously approved applications on the subject parcels inventoried above, including previous site plan applications if this application is a site plan amendment)

| Application No. | Project Name and Phase | Status | Approval Date |
|---|---|---|---|
| SLD-2022-01-SP | Sketch Plan | Approved | May 23, 2022 |
| 2022-003 | Conditions of Annexation Repeal and Replace | Approved | Fed. 07, 2022 |

13. HAS THE PROPERTY BEEN THE SUBJECT OF ANY COURT ACTION?

☐ Yes (Please specify nature of all proceedings and current status and attach any documents showing court decisions, etc.)

_____

_____

_____

_____

_____

☒ No

DocuSign Envelope ID: AB9A0D15-0623-4251-917C-DB96986B7ED7

## APPLICANT CERTIFICATION

I certify that, to the best of my knowledge, the submitted information and statements are true and correct. I also certify that I have received and read Section 1331.12 of the Charles Town S/LD Ordinance and relevant provisions of the Charles Town City Code.

Signature of Applicant DocuSigned by: FFBCE476F7D8420... Date 4/3/2023 | 10:59 AM EDT

Signature of Property Owner (If different than Applicant)

_____ Date _____

Please submit an original completed Application and specified number of Site Plan copies to the following:

Subdivision Administrator
City of Charles Town
101 E. Washington Street
Charles Town, WV 25414

---

***FOR CITY USE ONLY***

Application Number:_____ Date Application Received:_____

Fee: $_____ Paid:$_____ Check No._____

Receipt No._____

Subdivision Administrator Approval:_____ Date:_____

Planning Commission Approval:_____ Date:_____

Comments/Conditions:_____

INTEGRITY
FEDERAL SERVICES

March 28, 2023

James Newman
City Planner, Zoning/Subdivision Administration, AICP
City of Charles Town
101 E. Washington Street
Charles Town, WV 25414

Re: Stone Spring Subdivision Waiver Request – Driveways
Ordinance Code Reference: Section 1333.07(C)

Dear Mr. Newman:

On behalf of Stanley Martin Homes, LLC (Applicant) we are requesting a waiver for the Stone Spring Subdivision Preliminary Subdivision/Land Development Plat to allow driveways to be closer than 40 feet to street intersections, excluding any four-way intersections. This waiver is at the request of the Planning Commission from their committee meeting on March 27, 2023, and the approval of the Stone Spring Preliminary Subdivision/ Land Development Plat is contingent on the submittal and approval of this waiver.

Section 1333.07(C) from the *Subdivision and Land Development Ordinance of the City of Charles Town, West Virginia Part 13, Articles 1331-1336, of the Charles Town Code* is as follows:

*No Driveway shall be constructed closer than 40 feet to the nearest street intersection.*

The purpose of the request is to maintain consistency from the approved sketch plan (SLD-2022-01-SP). It is also consistent with previous City of Charles Town Developments without having any adverse effects on the safety and wellbeing of the public.

The driveways this waiver would apply to T-intersection and does not apply to street intersections considered through intersections (four-way intersections). The roads for this subdivision are designed at low speeds with stopped conditions at the intersections. Driveway users at these intersections would not be impeding traffic, as traffic would be stopped at the intersection in any case.

We are respectfully requesting waiver approval. Thank you for your time and consideration of this waiver request. Please contact me if you have any questions or concerns.

Sincerely,

Jason Gerhart, P.E.
Principal
Integrity Federal Services

| ADJACENT PROPERTY OWNER INFORMATION | | | | | | |
|---|---|---|---|---|---|---|
| Reference # | Owner Name | Owner Address | District | Tax Map | Parcel | Zoning District |
| 1 | FK PARSONS LLC | PO BOX 783, MARTINSBURG, WV 25402 | 2 | 9 | 8.10 | RESIDENTIAL-LIGHT INDUSTRIAL-COMMERCIAL (COUNTY) |
| 2 | CITY OF CHARLES TOWN | CITY OF CHARLES TOWN | 2 | 9 | 8.6 | RESIDENTIAL-LIGHT INDUSTRIAL-COMMERCIAL (COUNTY) |
| 3 | JEFFREY W & TIFFANY M CRAZE | 476 KEYES FERRY RD, CHARLES TOWN, WV 25414 | 2 | 9 | 1.5 | RURAL (COUNTY) |
| 4 | ROBERT L & TRICIA D FLUHARTY | 522 KEYES FERRY RD, CHARLES TOWN, WV 25414 | 2 | 9 | 1.4 | RURAL (COUNTY) |
| 5 | MATTHEW J & DANIELLE M THOMAS | 560 KEYES FERRY RD, CHARLES TOWN, WV 25414 | 2 | 9 | 1.2 | RURAL (COUNTY) |
| 6 | MARY L GAHR | 120 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.9 | RURAL (COUNTY) |
| 7 | JAMES KOSKI | 282 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.10 | RURAL (COUNTY) |
| 8 | PATRICK H WALLACE & CHRISTINA M SMITH | 330 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.18 | RURAL (COUNTY) |
| 9 | FREDERICK H & PATRICIA L ROLL | 344 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.15 | RURAL (COUNTY) |
| 10 | HUBERT R JR & ELIZABETH H KEEL | 116 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.16 | RURAL (COUNTY) |
| 11 | TENA L MILLS | 470 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.20 | RURAL (COUNTY) |
| 12 | MARK F LANGLET TR | 544 LEGO DR, CHARLOTTESVILLE, VA 22911 | 3 | 15 | 4.8 | NEIGHBORHOOD RESIDENTIAL |
| 13 | MARK F LANGLET TR | 544 LEGO DR, CHARLOTTESVILLE, VA 22911 | 3 | 15 | 7.4 | NEIGHBORHOOD RESIDENTIAL |
| 14 | UNIVERSITY HEALTHCARE FOUNDATION INC | 2500 HOSPITAL DR, MARTINSBURG, WV 25401 | 3 | 15 | 8 | NEIGHBORHOOD RESIDENTIAL |
| 15 | FIRST CHARLES TOWN GROUP INC | PO BOX 183, CHARLES TOWN, WV 25414 | 3 | 15 | 1.6 | GENERAL COMMERCIAL |
| 16 | CAROL F KABLE ET AL | 336 ROSEMONT WAY, CHARLES TOWN, WV 25414 | 3 | 15 | 1.7 | GENERAL COMMERCIAL |
| 17 | CITY OF CHARLES TOWN | CITY OF CHARLES TOWN | 3 | 15 | 9.7 | GENERAL COMMERCIAL |
| 18 | WILLOWBROOK PROPERTY OWNERS ASSOC INC | PO BOX 814, CHARLES TOWN, WV 25414 | 2 | 10E | 55.1 | RESIDENTIAL-LIGHT INDUSTRIAL-COMMERCIAL (COUNTY) |
| 19 | GATESTONE INC | 153 VENICE WAY, SHEPHERDSTOWN, WV 25443 | 2 | 9 | 1.1 | RESIDENTIAL-LIGHT INDUSTRIAL-COMMERCIAL (COUNTY) |

**Waiver Application No.**_____

# WAIVER APPLICATION

## SUBDIVISION AND LAND DEVELOPMENT ORDINANCE
## SECTION 1331.12, (V) REQUIREMENTS

**To assist staff in the review of a waiver application to the Planning Commission (PC), the applicant must supply all of the information contained in this application form. This application must be signed by all owners of the real estate which is the subject of the application. The owners may designate one or more professional agents to represent them in the application process using the spaces provided on this form.**

**Incomplete applications will be subject to scheduling delay. Applicants are encouraged to meet with staff prior to filing. A public hearing will be scheduled within 45 days of the receipt of a completed application.**

Approval of a waiver by the Planning Commission does not relieve the applicant from other requirements including, but not limited to, signs(s), building, zoning and use permits or site plans.

***As part of this application, the following must be provided:***

1. $150.00 Application Fee.
2. A Completed Application.
3. As applicable, supporting documents included, but not limited to site plan or depiction of the requested Waiver.

It is the applicant's responsibility to make a good-faith effort to provide the Subdivision Administrator, as applicable, with a current list containing the accurate names and mailing addresses of all interested parties. For purposes of this provision, "interested parties" shall mean Landowners of Adjacent Property. The applicant shall provide the addresses in order to comply with Section 1331.12.B of the Subdivision Ordinance

**Legal Notices**

The following shall occur at least 15 days prior to the Public Hearing: notice of the hearing shall be advertised by the Planning Commission as a Class I legal advertisement in the local newspaper, posting of a sign upon the property, and letters to adjacent and confronting land owners within 100 feet of the subject property.

**Definition of a Waiver**

Adjustments that may be made to the requirements of this Ordinance to unusual site conditions in order to achieve a better design. Waivers may not be used to circumvent the process requirements of this Ordinance.

**The Charles Town Subdivision Ordinance**

To grant a Waiver as permitted in the Subdivision Ordinance, the Planning Commission makes findings as specified in Section 1331.12(B)(2).

In order to issue a Waiver, the Commission must make the following written findings regarding the Waiver sought and all of the following can be met:

**A waiver request may be granted by the Planning Commission only when it shall be determined that:**

1. That the design of the project will provide public benefit such as a reduction in City maintenance cost, greater open space, parkland consistent with the City parks plan, or benefits of a similar nature;

2. The waiver, if granted, will not adversely affect the public health, safety or welfare, or the rights of adjacent property owners or residents;

3. That the waiver, if granted, will be in keeping with the intent and purpose of this Ordinance; and

4. That the waiver, if granted, will result in a project of better quality and/or character.

*Note:*

*Additional exhibits may be required by the Subdivision Administrator or Planning Commission such as a lot location survey or site plan showing existing and proposed Structures, easements, watercourses, curb cuts and description of the uses of adjacent property that are necessary to describe existing or proposed conditions.*

1. DATE March 28, 20 23

2. APPLICANT'S NAME* Stanley Martin Homes, LLC

Address: 14200 Park Meadow Drive, Suite 100N, Chantilly, VA 20151

Telephone Number (703)636-9232 Fax Number ( )

Email Address webersj@stanleymartin.com

3. PROPERTY OWNER'S NAME Springfield Partners, LLC

Address: 59 Franklin Street, Annapolis, MD 21401

Telephone Number (301)758-4541 Fax Number ( )

Email Address tbaum@conduitstpartners.com

4. LEGAL DESCRIPTION OF THE SUBJECT PROPERTY (list all parcels that apply)

Property Address: 412 Keyes Ferry Rd., Charles Town, WV 25414

Tax Map # and Parcel: Tax Map 15, Parcel 01

Deed Book and Page #: Deed Book 451, Page 745

Property Area in Square Feet or Acres: 98.88 Acres

5. DESCRIPTION OF THE EXISTING (OR FORMER) USE(S) OF THE PROPERTY AND CURRENT ZONING:

The site is currently a working farm, and the current zoning is Neighborhood Residential.

6. DESCRIPTION OF PROJECT AND PROPOSED USE(S) OF THE PROPERTY:

The proposed site improvements for Stone Spring Subdivision include the construc--tion of 248 Single Family Detached units, 77 Townhouse units, 3 Commercial Lots, drive aisles, and parking areas with associated drainage structures, SWM Facilities, and public utilities.

*Applicants include: Property owner(s), Engineer(s), Surveyor(s), or Consultant(s)

7. DESCRIPTION OF ANY PROPOSED WORK TO BE DONE TO THE PROPERTY:

Develop the site into a residential subdivision with associated access, parking, utilities, and stormwater management.

8. DESCRIPTION OF THE WAIVER REQUEST:

Waive the requirement for electric meters to be located in the rear of townhouse units.

The waiver is at the request of the Planning Commission, dated March 27, 2023.

9. LIST THE APPLICABLE SECTION(S) OF THE SUBDIVISION ORDINANCE FROM WHICH THE WAIVER IS REQUESTED:

Section 1333.20(K): "All electric meters shall be located in the rear of dwelling units, except where a waiver may be granted by the Planning Commission."

10. JUSTIFICATION FOR THE REQUEST:

A) Explain how the design of the project will provide public benefit such as a reduction in City maintenance costs, greater open space, parkland consistent with the City Parks Plan or benefits of a similar nature;

The waiver would increase the ease of access which would reduce the need for potential utility easements, and allow for easier maintenance and meter readings for utility companies.

B) Explain how the waiver, if granted, will not adversely affect the public health, safety, welfare or the rights of adjacent property owners or residents;

The waiver would not adversely affect the public health, safety, welfare or the rights of adjacent property owners. The increased ease of access from the waiver could potentially reduce safety conflicts from maintenance, and safety conflicts between home owner pets and utility provider employees.

C) Explain how the waiver, if granted, will be in keeping with the intent and purpose of this Ordinance; and;

The benefits of the waiver would meet the intent and purpose of the Ordinance by continuing to allow fencing in the rear of units while allowing access to meters.

D) Explain how the waiver, if granted, will result in a project of better quality and/or character.

The waiver would allow for easier access for utility companies for maintenance, and allow for more homeowner amenities (i.e. decks). This waiver is to comply with previous requests by utility companies who do not allow electric meters in the rear of lots.

11. INTERESTED PARTY ADDRESSES, FOR PUBLIC NOTICE (including across street) (Interested parties are defined as adjacent properties within 100 feet).

| Owner | # and Street | City, State, Zip |
|---|---|---|
| SEE ATTACHED LIST. | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

12. PARCEL HISTORY (List all pending or previously approved applications on the subject parcels inventoried above, including previous site plan applications if this application is a site plan amendment)

| Application No. | Project Name and Phase | Status | Approval Date |
|---|---|---|---|
| SLD-2022-01-SP | Sketch Plan | Approved | May 23, 2022 |
| 2022-003 | Conditions of Annexation Repeal and Replace | Approved | Fed. 07, 2022 |

13. HAS THE PROPERTY BEEN THE SUBJECT OF ANY COURT ACTION?

☐ Yes (Please specify nature of all proceedings and current status and attach any documents showing court decisions, etc.)

_____

_____

_____

_____

_____

☒ No

DocuSign Envelope ID: 47B41D98-7359-443A-97C1-26680809D8BF

## APPLICANT CERTIFICATION

I certify that, to the best of my knowledge, the submitted information and statements are true and correct. I also certify that I have received and read Section 1331.12 of the Charles Town S/LD Ordinance and relevant provisions of the Charles Town City Code.

Signature of Applicant DocuSigned by: FEBCE476E7D8420 Date 4/3/2023 | 10:58 AM EDT

Signature of Property Owner (If different than Applicant)

_____ Date _____

Please submit an original completed Application and specified number of Site Plan copies to the following:

Subdivision Administrator
City of Charles Town
101 E. Washington Street
Charles Town, WV 25414

---

***FOR CITY USE ONLY***

Application Number:_____ Date Application Received:_____

Fee: $_____ Paid:$_____ Check No._____

Receipt No._____

Subdivision Administrator Approval:_____ Date:_____

Planning Commission Approval:_____ Date:_____

Comments/Conditions:_____

INTEGRITY
FEDERAL SERVICES

March 28, 2023

James Newman
City Planner, Zoning/Subdivision Administration, AICP
City of Charles Town
101 E. Washington Street
Charles Town, WV 25414

Re: Stone Spring Subdivision Waiver Request – Electric Meters
Ordinance Code Reference: Section 1333.20(K)

Dear Mr. Newman:

On behalf of Stanley Martin Homes, LLC (Applicant) we are requesting a waiver for the Stone Spring Subdivision Preliminary Subdivision/Land Development Plat to allow electric meters to be placed on the front of townhome units. This waiver is at the request of the Planning Commission from their committee meeting on March 27, 2023, and the approval of the Stone Spring Preliminary Subdivision/ Land Development Plat is contingent on the submittal and approval of this waiver.

Section 1333.20(K) from the *Subdivision and Land Development Ordinance of the City of Charles Town, West Virginia Part 13, Articles 1331-1336, of the Charles Town Code* is as follows:

*All electric meters shall be located in the rear of dwelling units, except where a waiver may be granted by the Planning Commission.*

The purpose of the request is to increase ease of access and safety as required by the utility provider, reduce the need for potential utility easements, continue to allow fencing at the rear of townhome units while allowing access to meters, and allow homeowners to add amenities (i.e. decks) without utility or easement conflicts.

We are respectfully requesting waiver approval. Thank you for your time and consideration of this waiver request. Please contact me if you have any questions or concerns.

Sincerely,

Jason Gerhart, P.E.
Principal
Integrity Federal Services

| ADJACENT PROPERTY OWNER INFORMATION | | | | | | |
|---|---|---|---|---|---|---|
| Reference # | Owner Name | Owner Address | District | Tax Map | Parcel | Zoning District |
| 1 | FK PARSONS LLC | PO BOX 783, MARTINSBURG, WV 25402 | 2 | 9 | 8.10 | RESIDENTIAL-LIGHT INDUSTRIAL-COMMERCIAL (COUNTY) |
| 2 | CITY OF CHARLES TOWN | CITY OF CHARLES TOWN | 2 | 9 | 8.6 | RESIDENTIAL-LIGHT INDUSTRIAL-COMMERCIAL (COUNTY) |
| 3 | JEFFREY W & TIFFANY M CRAZE | 476 KEYES FERRY RD, CHARLES TOWN, WV 25414 | 2 | 9 | 1.5 | RURAL (COUNTY) |
| 4 | ROBERT L & TRICIA D FLUHARTY | 522 KEYES FERRY RD, CHARLES TOWN, WV 25414 | 2 | 9 | 1.4 | RURAL (COUNTY) |
| 5 | MATTHEW J & DANIELLE M THOMAS | 560 KEYES FERRY RD, CHARLES TOWN, WV 25414 | 2 | 9 | 1.2 | RURAL (COUNTY) |
| 6 | MARY L GAHR | 120 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.9 | RURAL (COUNTY) |
| 7 | JAMES KOSKI | 282 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.10 | RURAL (COUNTY) |
| 8 | PATRICK H WALLACE & CHRISTINA M SMITH | 330 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.18 | RURAL (COUNTY) |
| 9 | FREDERICK H & PATRICIA L ROLL | 344 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.15 | RURAL (COUNTY) |
| 10 | HUBERT R JR & ELIZABETH H KEEL | 116 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.16 | RURAL (COUNTY) |
| 11 | TENA L MILLS | 470 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.20 | RURAL (COUNTY) |
| 12 | MARK F LANGLET TR | 544 LEGO DR, CHARLOTTESVILLE, VA 22911 | 3 | 15 | 4.8 | NEIGHBORHOOD RESIDENTIAL |
| 13 | MARK F LANGLET TR | 544 LEGO DR, CHARLOTTESVILLE, VA 22911 | 3 | 15 | 7.4 | NEIGHBORHOOD RESIDENTIAL |
| 14 | UNIVERSITY HEALTHCARE FOUNDATION INC | 2500 HOSPITAL DR, MARTINSBURG, WV 25401 | 3 | 15 | 8 | NEIGHBORHOOD RESIDENTIAL |
| 15 | FIRST CHARLES TOWN GROUP INC | PO BOX 183, CHARLES TOWN, WV 25414 | 3 | 15 | 1.6 | GENERAL COMMERCIAL |
| 16 | CAROL F KABLE ET AL | 336 ROSEMONT WAY, CHARLES TOWN, WV 25414 | 3 | 15 | 1.7 | GENERAL COMMERCIAL |
| 17 | CITY OF CHARLES TOWN | CITY OF CHARLES TOWN | 3 | 15 | 9.7 | GENERAL COMMERCIAL |
| 18 | WILLOWBROOK PROPERTY OWNERS ASSOC INC | PO BOX 814, CHARLES TOWN, WV 25414 | 2 | 10E | 55.1 | RESIDENTIAL-LIGHT INDUSTRIAL-COMMERCIAL (COUNTY) |
| 19 | GATESTONE INC | 153 VENICE WAY, SHEPHERDSTOWN, WV 25443 | 2 | 9 | 1.1 | RESIDENTIAL-LIGHT INDUSTRIAL-COMMERCIAL (COUNTY) |

**Waiver Application No.**_____

# WAIVER APPLICATION

## SUBDIVISION AND LAND DEVELOPMENT ORDINANCE
## SECTION 1331.12, (V) REQUIREMENTS

**To assist staff in the review of a waiver application to the Planning Commission (PC), the applicant must supply all of the information contained in this application form. This application must be signed by all owners of the real estate which is the subject of the application. The owners may designate one or more professional agents to represent them in the application process using the spaces provided on this form.**

**Incomplete applications will be subject to scheduling delay. Applicants are encouraged to meet with staff prior to filing. A public hearing will be scheduled within 45 days of the receipt of a completed application.**

Approval of a waiver by the Planning Commission does not relieve the applicant from other requirements including, but not limited to, signs(s), building, zoning and use permits or site plans.

***As part of this application, the following must be provided:***

1. $150.00 Application Fee.
2. A Completed Application.
3. As applicable, supporting documents included, but not limited to site plan or depiction of the requested Waiver.

It is the applicant's responsibility to make a good-faith effort to provide the Subdivision Administrator, as applicable, with a current list containing the accurate names and mailing addresses of all interested parties. For purposes of this provision, "interested parties" shall mean Landowners of Adjacent Property. The applicant shall provide the addresses in order to comply with Section 1331.12.B of the Subdivision Ordinance

**Legal Notices**

The following shall occur at least 15 days prior to the Public Hearing: notice of the hearing shall be advertised by the Planning Commission as a Class I legal advertisement in the local newspaper, posting of a sign upon the property, and letters to adjacent and confronting land owners within 100 feet of the subject property.

**Definition of a Waiver**

Adjustments that may be made to the requirements of this Ordinance to unusual site conditions in order to achieve a better design. Waivers may not be used to circumvent the process requirements of this Ordinance.

**The Charles Town Subdivision Ordinance**

To grant a Waiver as permitted in the Subdivision Ordinance, the Planning Commission makes findings as specified in Section 1331.12(B)(2).

In order to issue a Waiver, the Commission must make the following written findings regarding the Waiver sought and all of the following can be met:

**A waiver request may be granted by the Planning Commission only when it shall be determined that:**

1. That the design of the project will provide public benefit such as a reduction in City maintenance cost, greater open space, parkland consistent with the City parks plan, or benefits of a similar nature;

2. The waiver, if granted, will not adversely affect the public health, safety or welfare, or the rights of adjacent property owners or residents;

3. That the waiver, if granted, will be in keeping with the intent and purpose of this Ordinance; and

4. That the waiver, if granted, will result in a project of better quality and/or character.

*Note:*

*Additional exhibits may be required by the Subdivision Administrator or Planning Commission such as a lot location survey or site plan showing existing and proposed Structures, easements, watercourses, curb cuts and description of the uses of adjacent property that are necessary to describe existing or proposed conditions.*

1. DATE March 28, 20 23

2. APPLICANT'S NAME* Stanley Martin Homes, LLC

Address: 14200 Park Meadow Drive, Suite 100N, Chantilly, VA 20151

Telephone Number (703)636-9232 Fax Number ( )

Email Address webersj@stanleymartin.com

3. PROPERTY OWNER'S NAME Springfield Partners, LLC

Address: 59 Franklin Street, Annapolis, MD 21401

Telephone Number (301)758-4541 Fax Number ( )

Email Address tbaum@conduitstpartners.com

4. LEGAL DESCRIPTION OF THE SUBJECT PROPERTY (list all parcels that apply)

Property Address: 412 Keyes Ferry Rd., Charles Town, WV 25414

Tax Map # and Parcel: Tax Map 15, Parcel 01

Deed Book and Page #: Deed Book 451, Page 745

Property Area in Square Feet or Acres: 98.88 Acres

5. DESCRIPTION OF THE EXISTING (OR FORMER) USE(S) OF THE PROPERTY AND CURRENT ZONING:

The site is currently a working farm, and the current zoning is Neighborhood Residential.

6. DESCRIPTION OF PROJECT AND PROPOSED USE(S) OF THE PROPERTY:

The proposed site improvements for Stone Spring Subdivision include the construc--tion of 248 Single Family Detached units, 77 Townhouse units, 3 Commercial Lots, drive aisles, and parking areas with associated drainage structures, SWM Facilities, and public utilities.

*Applicants include: Property owner(s), Engineer(s), Surveyor(s), or Consultant(s)

7. DESCRIPTION OF ANY PROPOSED WORK TO BE DONE TO THE PROPERTY:

Develop the site into a residential subdivision with associated access, parking, utilities, and stormwater management.

8. DESCRIPTION OF THE WAIVER REQUEST:

To waive the requirement for a 6-FT opaque buffer between townhomes and single family detached housing. The waiver is at the request of the Planning Commission, dated March 27, 2023.

9. LIST THE APPLICABLE SECTION(S) OF THE SUBDIVISION ORDINANCE FROM WHICH THE WAIVER IS REQUESTED:

Section 1333.15(B): "Opaque screening to a minimum of six (6) feet shall be required around the perimeter of all mini-storage warehousing facilities, recreation and commercial vehicle parking areas, and loading areas, and also between single-family detached and multi-family or townhouse dwelling units, and where elsewhere specified in this Ordinance."

10. JUSTIFICATION FOR THE REQUEST:

A) Explain how the design of the project will provide public benefit such as a reduction in City maintenance costs, greater open space, parkland consistent with the City Parks Plan or benefits of a similar nature;

The waiver would allow for easier access for pond maintenance, and would allow for better viewing of the open space and pond.

B) Explain how the waiver, if granted, will not adversely affect the public health, safety, welfare or the rights of adjacent property owners or residents;

The waiver does not adversely affect the public health, safety, welfare, or the rights of adjacent property owners. The waiver is intended to improve the aesthetics of the development.

C) Explain how the waiver, if granted, will be in keeping with the intent and purpose of this Ordinance; and;

The townhomes and single-family homes are not directly adjacent. There is open space and a pond with vegetative cover directly between the townhome lots and single family home lots which acts as a buffer.

D) Explain how the waiver, if granted, will result in a project of better quality and/or character.

The waiver would grant easier access to the proposed pond for maintenance, and allow homeowners to have better viewing of the pond and open space directly between single-family home lots and townhome lots.

11. INTERESTED PARTY ADDRESSES, FOR PUBLIC NOTICE (including across street) (Interested parties are defined as adjacent properties within 100 feet).

| Owner | # and Street | City, State, Zip |
|---|---|---|
| SEE ATTACHED LIST. | | |
| | | |
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| | | |
| | | |
| | | |

12. PARCEL HISTORY (List all pending or previously approved applications on the subject parcels inventoried above, including previous site plan applications if this application is a site plan amendment)

| Application No. | Project Name and Phase | Status | Approval Date |
|---|---|---|---|
| SLD-2022-01-SP | Sketch Plan | Approved | May 23, 2022 |
| 2022-003 | Conditions of Annexation Repeal and Replace | Approved | Fed. 07, 2022 |

13. HAS THE PROPERTY BEEN THE SUBJECT OF ANY COURT ACTION?

☐ Yes (Please specify nature of all proceedings and current status and attach any documents showing court decisions, etc.)

☒ No

DocuSign Envelope ID: 17E0F077-5C80-402A-A4AD-2EEEC156AFC5

## APPLICANT CERTIFICATION

I certify that, to the best of my knowledge, the submitted information and statements are true and correct. I also certify that I have received and read Section 1331.12 of the Charles Town S/LD Ordinance and relevant provisions of the Charles Town City Code.

Signature of Applicant DocuSigned by: FFBCE476F7D8420... Date 4/3/2023 | 10:59 AM EDT

Signature of Property Owner (If different than Applicant)

_____ Date _____

Please submit an original completed Application and specified number of Site Plan copies to the following:

Subdivision Administrator
City of Charles Town
101 E. Washington Street
Charles Town, WV 25414

---

***FOR CITY USE ONLY***

Application Number:_____ Date Application Received:_____

Fee: $_____ Paid:$_____ Check No._____

Receipt No._____

Subdivision Administrator Approval:_____ Date:_____

Planning Commission Approval:_____ Date:_____

Comments/Conditions:_____

INTEGRITY
FEDERAL SERVICES

March 28, 2023

James Newman
City Planner, Zoning/Subdivision Administration, AICP
City of Charles Town
101 E. Washington Street
Charles Town, WV 25414

Re: Stone Spring Subdivision Waiver Request – Townhome & Single-Family Buffer
Ordinance Code Reference: Section 1333.15(B)

Dear Mr. Newman:

On behalf of Stanley Martin Homes, LLC (Applicant) we are requesting a waiver for the Stone Spring Subdivision Preliminary Subdivision/Land Development Plat to remove the buffer requirement between townhome lots and single-family home lots. This waiver is at the request of the Planning Commission from their committee meeting on March 27, 2023, and the approval of the Stone Spring Preliminary Subdivision/ Land Development Plat is contingent on the submittal and approval of this waiver.

Section 1333.15(B) from the *Subdivision and Land Development Ordinance of the City of Charles Town, West Virginia Part 13, Articles 1331-1336, of the Charles Town Code* is as follows:

*Opaque screening to a minimum of six (6) feet shall be required around the perimeter of all mini-storage warehousing facilities, recreation and commercial vehicle parking areas, and loading areas, and also between single-family detached and multi-family or townhouse dwelling units, and where elsewhere specified in this Ordinance.*

The purpose of this request is to allow for easier access for pond maintenance, and provides for a more cohesive development typical of a master planned community. The single-family units and townhome units are not directly adjacent, separated by the open space and pond with vegetative cover acts, which acts as a buffer and is more aesthetically pleasing to the residents.

We are respectfully requesting waiver approval. Thank you for your time and consideration of this waiver request. Please contact me if you have any questions or concerns.

Sincerely,

Jason Gerhart, P.E.
Principal
Integrity Federal Services

| ADJACENT PROPERTY OWNER INFORMATION | | | | | | |
|---|---|---|---|---|---|---|
| Reference # | Owner Name | Owner Address | District | Tax Map | Parcel | Zoning District |
| 1 | FK PARSONS LLC | PO BOX 783, MARTINSBURG, WV 25402 | 2 | 9 | 8.10 | RESIDENTIAL-LIGHT INDUSTRIAL-COMMERCIAL (COUNTY) |
| 2 | CITY OF CHARLES TOWN | CITY OF CHARLES TOWN | 2 | 9 | 8.6 | RESIDENTIAL-LIGHT INDUSTRIAL-COMMERCIAL (COUNTY) |
| 3 | JEFFREY W & TIFFANY M CRAZE | 476 KEYES FERRY RD, CHARLES TOWN, WV 25414 | 2 | 9 | 1.5 | RURAL (COUNTY) |
| 4 | ROBERT L & TRICIA D FLUHARTY | 522 KEYES FERRY RD, CHARLES TOWN, WV 25414 | 2 | 9 | 1.4 | RURAL (COUNTY) |
| 5 | MATTHEW J & DANIELLE M THOMAS | 560 KEYES FERRY RD, CHARLES TOWN, WV 25414 | 2 | 9 | 1.2 | RURAL (COUNTY) |
| 6 | MARY L GAHR | 120 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.9 | RURAL (COUNTY) |
| 7 | JAMES KOSKI | 282 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.10 | RURAL (COUNTY) |
| 8 | PATRICK H WALLACE & CHRISTINA M SMITH | 330 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.18 | RURAL (COUNTY) |
| 9 | FREDERICK H & PATRICIA L ROLL | 344 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.15 | RURAL (COUNTY) |
| 10 | HUBERT R JR & ELIZABETH H KEEL | 116 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.16 | RURAL (COUNTY) |
| 11 | TENA L MILLS | 470 SOUTHERLY LN, CHARLES TOWN, WV 25414 | 2 | 9 | 4.20 | RURAL (COUNTY) |
| 12 | MARK F LANGLET TR | 544 LEGO DR, CHARLOTTESVILLE, VA 22911 | 3 | 15 | 4.8 | NEIGHBORHOOD RESIDENTIAL |
| 13 | MARK F LANGLET TR | 544 LEGO DR, CHARLOTTESVILLE, VA 22911 | 3 | 15 | 7.4 | NEIGHBORHOOD RESIDENTIAL |
| 14 | UNIVERSITY HEALTHCARE FOUNDATION INC | 2500 HOSPITAL DR, MARTINSBURG, WV 25401 | 3 | 15 | 8 | NEIGHBORHOOD RESIDENTIAL |
| 15 | FIRST CHARLES TOWN GROUP INC | PO BOX 183, CHARLES TOWN, WV 25414 | 3 | 15 | 1.6 | GENERAL COMMERCIAL |
| 16 | CAROL F KABLE ET AL | 336 ROSEMONT WAY, CHARLES TOWN, WV 25414 | 3 | 15 | 1.7 | GENERAL COMMERCIAL |
| 17 | CITY OF CHARLES TOWN | CITY OF CHARLES TOWN | 3 | 15 | 9.7 | GENERAL COMMERCIAL |
| 18 | WILLOWBROOK PROPERTY OWNERS ASSOC INC | PO BOX 814, CHARLES TOWN, WV 25414 | 2 | 10E | 55.1 | RESIDENTIAL-LIGHT INDUSTRIAL-COMMERCIAL (COUNTY) |
| 19 | GATESTONE INC | 153 VENICE WAY, SHEPHERDSTOWN, WV 25443 | 2 | 9 | 1.1 | RESIDENTIAL-LIGHT INDUSTRIAL-COMMERCIAL (COUNTY) |

**Planning Commission**
101 East Washington Street
Charles Town, WV 25414

Meeting: 05/22/23
Department: Planning Commission
Category: Report
Initiator:

**SCHEDULED**

**AGENDA ITEM (ID # )**

---

## (Public Hearing) BR2023-01: *MDHI Charles Town LLC* is seeking to establish a bond for work to be performed for the Huyett Rd Storage Facility. Estimated bond value is $1,492,269.65

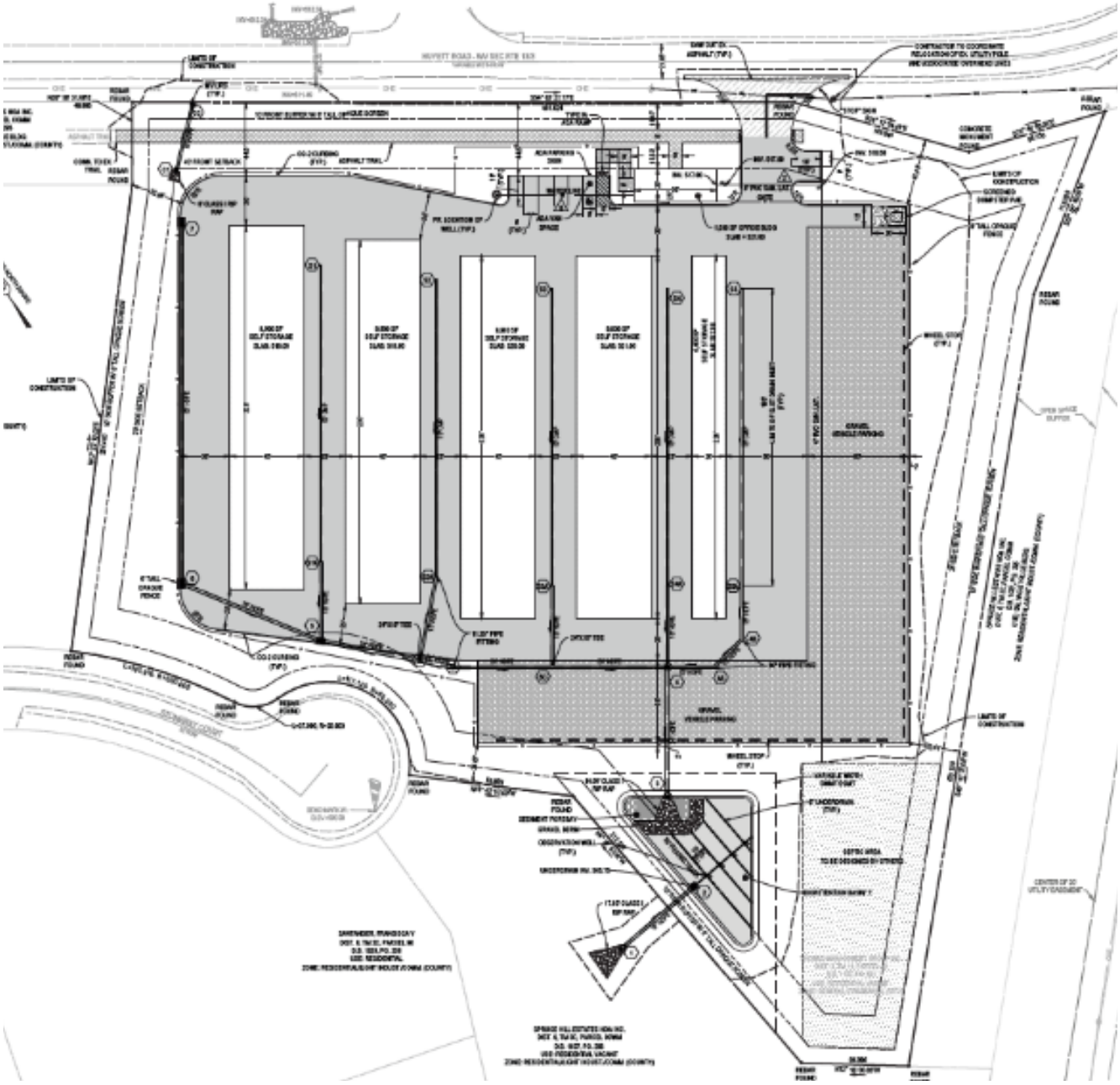
**ATTACHMENTS:**

- 1. Staff report.pdf
- 2. Bond Reuqest Application.pdf
- 3. Kimley-Horn Comment Response Letter.pdf
- 4. Bond Estimate.pdf

**Bond Initiation Request**

**Date:** For the May 22nd, 2023 Planning Commission meeting
**Applicant:** MDHI Charles Town LLC
**Report by:** James Newman, City Planner, Zoning/Subdivision Administrator.
**Proposal:** A bond initiation in the amount of $1,492,269.65

**Huyett Road Storage Facility**



**BACKGROUND**

The applicant, MDHI Charles Town LLC, has submitted a bond initiation request for the Huyett Road Storage Facility. The applicant is requesting a bond initiation in the amount of **$1,492,269.65**. This amount will cover both performance bond issues (road paving, street lights, etc.) and land disturbance requirements (such as silt fencing)

Upon review of the request the City Engineer, Kimley-Horn, has determined that the bond initiation amount is a reasonable request, and the applicant modified their request based on comments from Kimley-Horn.

**BOND COMMITTEE**

At their May 4, 2023 meeting, the City's Bond Committee discussed the application and recommend approval of the Performance Bond and Land Disturbance bonds as presented.

**RECOMMENDATION**

The City Engineer and City Staff have reviewed the bond reduction request and recommend the bond initiation request be **approved**.

Bond Request No._____

RECEIVED
APR 18 2023
BY:_____

# BOND REQUEST AND REDUCTION

**To assist the Subdivision Administrator in the review of a Bond Request Application, the Applicant must utilize this form to supply the City with the information prescribed under Article 1335 and Section 1332 of the Subdivision and Land Development Ordinance. The submission of this form, along with the prescribed information and required fees, shall serve as the Applicant's Bond Request Application as required by Ordinance Article 1335.**

1. DATE April 17, 2023

2. APPLICATION TYPE ☒ Bond | Initiation ☐ Bond | Reduction

☐ Bond | Reallocation ☐ Bond | Release**

3. PROJECT NAME Huyett Road Storage

Address Huyett Road

4. APPLICANT'S NAME* MDHI Charles Town LLC

Address 786 Spruce Hill Way; Charles Town, WV 25414

Telephone Number (609) 414-3702 Fax Number ( )

Email Address andrew@matadorinvestmentgroup.com

5. PROPERTY OWNER'S NAME MDHI Charles Town LLC

Address 786 Spruce Hill Way; Charles Town, WV 25414

Telephone Number (609) 414-3702 Fax Number ( )

Email Address andrew@matadorinvestmentgroup.com

*Applicants include: Property owner(s), Engineer(s), Surveyor(s), or Consultant(s)

**Requires a Public Hearing and landscaping surety for one year after release

**Bond Request No.**_____

6. DESCRIPTION OF REQUETED INITIATION, REDUCTION, OR RELEASE:

Initiation for bond to construct self storage development on 5.5 acres per Site Plan #2022-05.

7. A) CURRENT BOND AMOUNT $0

B) PROPOSED BOND AMOUNT $1,371,312.22

8. PARCEL INVENTORY: (List all parcels that are part of this application):

| Tax Map No. | Parcel No. | Deed Book | Page No. | Zoning District |
|---|---|---|---|---|
| 11 | 10 | 1102 | 631 | General Commercial |

9. PARCEL HISTORY: (List all pending or previously approved applications on the subject parcels inventoried above, including previous plat applications if this application is an amendment)

| Application No. | Project Name and Phase | Status | Approval Date |
|---|---|---|---|
| Site Plan #2202-05 | Huyett Road Storage | Approved by Planning Commission | 3/27/2023 |

**Bond Request No.**_____

10. BOND RELEASE ATTACHMENTS.

The following shall be included with this request:

A. To the extent not previously submitted pursuant to bond reduction request, copies of inspection and test reports if work was inspected and tested by a third-party inspector.

B. Certification that all bonded Improvements, other than Improvements accepted by West Virginia Department of Highways (WVDOH), have been completed in accordance with the approved plans, profiles, and specifications and the requirements of any applicable manual. For Improvements to be accepted for maintenance by WVDOH, such Certification shall state that the Improvements have been installed and inspected in accordance with WVDOH's requirements.

C. A copy of the City-approved As-Built Drawings as required for facilities within public rights-of-way or Easements submitted pursuant to Section 1332.10 of this Ordinance.

Date of As-Builts _____ Prepared By _____

D. A letter from a Professional Engineer or Professional Land Surveyor certifying that property corners and Monuments have been set as required under this Ordinance.

E. Documentation of acceptance by WVDOH for public roadways and rights-of-way, or a maintenance and indemnification agreement and bond approved by the Planning Commission for public roadways that have been completed in accordance with WVDOH standards but which, due to factors other than their quality of construction, are not eligible for acceptance by WVDOH.

F. For private roadways, a letter of acceptance by the entity responsible for maintenance and a Latent Defects Indemnification Agreement and Bond in accordance with this Section.

G. Private Roadway Maintenance Bonds. Before a Performance Agreement and surety for private roadway construction shall be released, a Latent Defects Indemnification Agreement and Bond shall be provided by the applicant/Developer and approved by the Planning Commission. The guarantee provided by such Agreement and Bond must be for a period of two (2) years following the date of performance bond release, and must be in an amount equal to no less than 5% of the original performance bond estimate in accordance with Section 1335.07 (F) of the Subdivision Ordinance.

H. Landscaping Surety. Surety is required to ensure the landscaping shown on the Major S/LD plans is maintained for one (1) year. The one (1) year shall start from the date at which the surety for the site has been released, with the exception of this landscaping surety. The landscaping surety amount shall not be less than $5,000.00 or 10% of the total landscaping cost for the project, which every is greater.

**Bond Request No.**_____

APPLICANT CERTIFICATION

I certify that, to the best of my knowledge, the submitted information and statements are true and correct. I also certify that I have received and read Article 1335 of the S/LD Ordinance.

Signature of Applicant _____ Date 4-17-2023

Signature of Property Owner (If different than Applicant)

_____ Date _____

Please submit an original completed Application, 1 digital copy and 1 paper copy of the As-Built Plans (if applicable) to the following:

Subdivision Administrator
City of Charles Town
101 E. Washington Street
Charles Town, WV 25414

Please also send a copy of the completed Application as well as the As-Builts to the following:

Hatch/Chester Engineers
Attn: Elizabeth Adamowicz
705 Quince Orchard Road, Suite 310
Gaithersburg, MD 20878

***FOR CITY USE ONLY***

Application Number:_____ Date Application Received:_____

Fee: $_____ Check No._____

Receipt No._____

Site Inspection Date:_____ Inspector:_____

Subdivision Administrator Approval:_____ Date:_____

Engineer Approval:_____ Date:_____

Planning Commission Approval:_____ Date:_____

City Council Approval:_____ Date:_____

Comments:_____

_____

_____

_____

_____

INTEGRITY
FEDERAL SERVICES

May 4, 2023

James Newman
City Planner
City of Charles Town
101 E. Washington St.
Charles Town, WV 25414

Re: Project Name: Huyett Road Storage
INTEGRITY Project: 5222-0101
County/Town File Number: 2022-05

Dear Mr. Newman:

The following is in response to Kimley-Horn's letter dated May 3, 2023.

Comment 1: We request that the Applicant provide the cost of the detectable warning surfaces (CG-12) that will be installed.

**Response: Detectable warning surfaces have been added to the bond estimate.**

Comment 2: We request that the Applicant provide the cost of the CG-2 curb instead of CG-6 curb.

**Response: The cost of CG-2 does not have a designated item and has been estimated as CG-6.**

Comment 3: We request that the revise the quantity of Rip Rap, our review does not match the provided quantity

**Response: Rip Rap quantity has been revised.**

Comment 4 We request that the revise the quantities for stormwater pipes to be installed on the site, our review does not match the provided quantities

**Response: Storm Sewer pipe quantities have been revised (15" CMP Pipe has been estimated as 15" HDPE because it does not have a designated item).**

Comment 5: We request that the Applicant provide quantities for the gravel vehicle parking.

**Response: Gravel Vehicle parking has been included as Base Type I (4" Thickness).**

***Revisions have also been made to Excavation Items and Pavement items due to found errors.**

Please feel free to contact me at 304-725-8456 or by email at cwallen@ifs-ae.com if you should have any further questions.

Sincerely,

Integrity Federal Services, Inc. (INTEGRITY)

Chad Wallen
Principal

**CITY OF CHARLES TOWN**
**PUBLIC IMPROVEMENT BOND UNIT COST LIST AND BOND REDUCTION FORM**

PROJECT NAME: Huyett Storage | PROJECT NUMBER: 5022-0101

PREPARED BY: Chris Weitnauer | FIRM: Integrity Federal Services | DATE: 05/04/2023

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| **MOBILIZATION GENERAL** | | | | | | | |
| Mobilization | LS | $6,250.00 | 1 | $6,250.00 | | | |
| Field Office | EA | $3,000.00 | | | | | |
| Job Sign | EA | $1,150.00 | | | | | |
| **SURVEYING** | | | | | | | |
| Steel Pipe Property Corner Marker Incl. Survey | EA | $275.00 | | | | | |
| **R.O.W. Monuments Surveyed In Place** | | | | | | | |
| RM -- 1 | EA | $825.00 | | | | | |
| RM -- 2 | EA | $575.00 | | | | | |
| **EARTHWORK EXCAVATION** | | | | | | | |
| Regular Bulk used as Fill | CY | $3.86 | 7,315 | $28,235.90 | | | |
| Rock, Rip | CY | $17.30 | | | | | |
| Rock, Blast | CY | $38.48 | | | | | |
| **BORROW MATERIAL** | | | | | | | |
| Buy, Load, Haul 10 Mi. Select | CY | $28.90 | 23075 | $666,867.50 | | | |
| Fill and Compaction of On-site Borrow | CY | $5.95 | 7,315 | $43,524.25 | | | |
| **UNSUITABLE MATERIAL** | | | | | | | |
| Load and Haul, 20 mi R/T | CY | $21.95 | | | | | |
| Dump Charge | CY | $37.50 | | | | | |
| Site Grading | SY | $0.75 | | | | | |
| **CLEAR & GRUB** | | | | | | | |
| Light | AC | $6,675.00 | 4.78 | $31,906.50 | | | |
| Moderate | AC | $9,750.00 | | | | | |
| Heavy | AC | $12,250.00 | | | | | |
| Very Heavy | AC | $14,250.00 | | | | | |
| **LANDSCAPING** | | | | | | | |
| Seeding | SY | $0.77 | 6,968 | $5,365.36 | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| Sodding | SY | $3.64 | | | | | |
| **PLANTING SHRUBS** | | | | | | | |
| 18” | EA | $40.00 | | | | | |
| 24” | EA | $70.00 | | | | | |
| **TREES** | | | | | | | |
| 6’ – 8’ (1-2 in. Caliper) | EA | $400.00 | 169 | $67,600.00 | | | |
| 8’ – 10’ (2.5-3 in. Caliper) | EA | $700.00 | | | | | |
| Tree Protection | LF | $9.00 | | | | | |
| **MISCELLANEOUS SITE IMPROVEMENTS** | | | | | | | |
| **Retaining Walls** | | | | | | | |
| Timber Wall (Less Than 6 ft) | LF | $325.00 | | | | | |
| Dry Rubble RW-1 (H=6') | LF | $450.00 | | | | | |
| Mortared Rubble RW-1A (H=6') | LF | $535.00 | | | | | |
| Concrete Gravity RW-2 (H=6') | LF | $339.00 | | | | | |
| Concrete Gravity RW-3 (H=6') | LF | $378.00 | | | | | |
| **FENCING** | | | | | | | |
| Std. Fence (H=5’) FR-5 | LF | $9.31 | | | | | |
| Farm Fence (H=5’) FR-3A | LF | $10.90 | | | | | |
| Chain Link Fence (H=6’)FR 2-B | LF | $14.52 | | | | | |
| Board Fence (H=6’) | LF | $19.35 | 1652 | $31,966.20 | | | |
| **TOT LOTS** | | | | | | | |
| Tot Lot | EA | $16,495.00 | | | | | |
| **STORM DRAINAGE** | | | | | | | |
| **STORM SEWER** | | | | | | | |
| **NOTE: All pipe unit prices include trench, excavation, bedding, pipe, & backfill** | | | | | | | |
| **Rock Excavation for All Pipe Types** | | | | | | | |
| Less than 1,500 CY (Blasting) | CY | $110.00 | | | | | |
| More than 1,500 CY (Blasting) | CY | $90.00 | | | | | |
| Less than 1,500 CY (Hoe Ram) | CY | $135.00 | | | | | |
| More than 1,500 CY (Hoe Ram) | CY | $110.00 | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| **Trench De-watering** | | | | | | | |
| Trench De-watering | LF | $2.95 | | | | | |
| **RCP CLASS III ROUND T & G W/MASTIC** | | | | | | | |
| **12" Pipe (RCP III)** | | | | | | | |
| 0' – 8' Cut | LF | $44.50 | | | | | |
| 8' – 14' Cut | LF | $62.50 | | | | | |
| Add cost for Class IV | LF | $0.85 | | | | | |
| O-Ring | LF | $5.50 | | | | | |
| **15" Pipe (RCP III)** | | | | | | | |
| 0' – 10' Cut | LF | $49.75 | | | | | |
| 10' – 16' | LF | $77.50 | | | | | |
| Add Cost for Class IV | LF | $0.95 | | | | | |
| O-Ring | LF | $5.50 | | | | | |
| **18" Pipe (RCP III)** | | | | | | | |
| 0' – 10' Cut | LF | $50.00 | | | | | |
| 10' – 16' Cut | LF | $80.00 | | | | | |
| Add Cost for Class IV | LF | $2.00 | | | | | |
| O-Ring | LF | $7.00 | | | | | |
| **21" Pipe (RCP III)** | | | | | | | |
| 0' – 10' Cut | LF | $57.50 | | | | | |
| 10' – 16' Cut | LF | $87.50 | | | | | |
| Add Cost for Class IV | LF | $2.75 | | | | | |
| O-Ring | LF | $13.00 | | | | | |
| **24" Pipe (RCP III)** | | | | | | | |
| 0' – 10' Cut | LF | $67.50 | | | | | |
| 10' – 16' Cut | LF | $95.00 | | | | | |
| Add Cost for Class IV | LF | $3.15 | | | | | |
| O-Ring | LF | $14.00 | | | | | |
| **27" Pipe (RCP III)** | | | | | | | |
| 0' – 10' Cut | LF | $60.00 | | | | | |
| 10' – 16' Cut | LF | $95.00 | | | | | |
| Add Cost for Class IV | LF | $4.00 | | | | | |
| O-Ring | LF | $15.00 | | | | | |
| **30" Pipe (RCP III)** | | | | | | | |
| 0' – 10' Cut | LF | $82.50 | | | | | |
| 10' – 16' Cut | LF | $125.00 | | | | | |
| Add Cost for Class IV | LF | $6.00 | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| O-Ring | LF | $17.25 | | | | | |
| **33" Pipe (RCP III)** | | | | | | | |
| 0' – 12' Cut | LF | $115.00 | | | | | |
| 10' – 18' Cut | LF | $160.00 | | | | | |
| Add Cost for Class IV | LF | $6.50 | | | | | |
| O-Ring | LF | $21.95 | | | | | |
| **36" Pipe (RCP III)** | | | | | | | |
| 0' – 12' Cut | LF | $120.00 | | | | | |
| 12' – 18' Cut | LF | $175.00 | | | | | |
| Add Cost for Class IV | LF | $7.75 | | | | | |
| O-Ring | LF | $22.75 | | | | | |
| **42" Pipe (RCP III)** | | | | | | | |
| 0' – 12' Cut | LF | $140.00 | | | | | |
| 12' – 18' Cut | LF | $200.00 | | | | | |
| Add Cost for Class IV | LF | $12.00 | | | | | |
| O-Ring | LF | $35.45 | | | | | |
| **48" Pipe (RCP III)** | | | | | | | |
| 0' – 12' Cut | LF | $155.00 | | | | | |
| 12' – 18' Cut | LF | $215.00 | | | | | |
| Add Cost for Class IV | LF | $12.50 | | | | | |
| O-Ring | LF | $43.35 | | | | | |
| **54" Pipe (RCP III)** | | | | | | | |
| 0' – 12' Cut | LF | $190.00 | | | | | |
| 12' – 18' Cut | LF | $275.00 | | | | | |
| Add Cost for Class IV | LF | $18.75 | | | | | |
| O-Ring | LF | $44.45 | | | | | |
| **60" Pipe (RCP III)** | | | | | | | |
| 0' – 12' Cut | LF | $225.00 | | | | | |
| 12' – 18' Cut | LF | $335.00 | | | | | |
| Add Cost for Class IV | LF | $22.50 | | | | | |
| O-Ring | LF | $48.65 | | | | | |
| **ELLIPTICAL PIPE – RCP CLASS III** | | | | | | | |
| **23" X 14" (18" Equiv-RCP III)** | | | | | | | |
| 0' – 10' Cut | LF | $75.00 | | | | | |
| 10' – 16' Cut | LF | $110.00 | | | | | |
| Add Cost for Class IV | LF | $16.45 | | | | | |
| O-Ring | LF | $43.35 | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| **30" X 19" (24" Equiv-RCP III)** | | | | | | | |
| 0' – 10' Cut | LF | $90.00 | | | | | |
| 10' – 16' Cut | LF | $130.00 | | | | | |
| Add Cost for Class IV | LF | $5.95 | | | | | |
| O-Ring | LF | $43.35 | | | | | |
| **38" X 24" (30" Equiv-RCP III)** | | | | | | | |
| 0' – 10' Cut | LF | $120.00 | | | | | |
| 10' – 16' Cut | LF | $167.50 | | | | | |
| Add Cost for Class IV | LF | $8.45 | | | | | |
| O-Ring | LF | $51.35 | | | | | |
| **45" X 29" (36" Equiv-RCP III)** | | | | | | | |
| 0' – 10' Cut | LF | $165.00 | | | | | |
| 10' – 16' Cut | LF | $235.00 | | | | | |
| Add Cost for Class IV | LF | $11.35 | | | | | |
| O-Ring | LF | $53.35 | | | | | |
| **53" X 34" (42" Equiv-RCP III)** | | | | | | | |
| 0' – 12' Cut | LF | $210.00 | | | | | |
| 10' – 18' Cut | LF | $300.00 | | | | | |
| Add Cost for Class IV | LF | $15.35 | | | | | |
| O-Ring | LF | $58.95 | | | | | |
| **60" X 38" (48" Equiv-RCP III)** | | | | | | | |
| 0' – 12' Cut | LF | $255.00 | | | | | |
| 10' – 18' Cut | LF | $375.00 | | | | | |
| Add Cost for Class IV | LF | $18.35 | | | | | |
| O-Ring | LF | $69.95 | | | | | |
| **HDPE PIPE** | | | | | | | |
| **8" Pipe** | | | | | | | |
| 0'-8' Cut | LF | $28.65 | | | | | |
| 8'-14' Cut | LF | $43.15 | | | | | |
| **12" Pipe** | | | | | | | |
| 0'-8' Cut | LF | $38.95 | | | | | |
| 8'-14' Cut | LF | $57.75 | | | | | |
| **15" Pipe** | | | | | | | |
| 0'-8' Cut | LF | $50.25 | 1444 | $72,561.00 | | | |
| 8'-16' Cut | LF | $74.85 | | | | | |
| **18" Pipe** | | | | | | | |
| 0'-8' Cut | LF | $66.00 | 150 | $9,900.00 | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| 8'-16' Cut | LF | $98.55 | | | | | |
| **24" Pipe** | | | | | | | |
| 0'-8' Cut | LF | $76.90 | 291 | $22,377.90 | | | |
| 8'-16' Cut | LF | $115.25 | | | | | |
| **30" Pipe** | | | | | | | |
| 0'-8' Cut | LF | $91.33 | | | | | |
| 8'-16' Cut | LF | $137.27 | | | | | |
| **36" Pipe** | | | | | | | |
| 0'-8' Cut | LF | $101.68 | | | | | |
| 8'-16' Cut | LF | $152.33 | | | | | |
| **42" Pipe** | | | | | | | |
| 0'-8' Cut | LF | $113.99 | | | | | |
| 8'-16' Cut | LF | $171.00 | | | | | |
| **48" Pipe** | | | | | | | |
| 0'-8' Cut | LF | $129.55 | | | | | |
| 8'-16' Cut | LF | $195.66 | | | | | |
| **STORM STRUCTURES** | | | | | | | |
| **END SECTIONS** | | | | | | | |
| **End Section (ES-1), Concrete Pipe Size** | | | | | | | |
| 15” | EA | $485.00 | 2 | $970.00 | | | |
| 18” | EA | $565.00 | 1 | $565.00 | | | |
| 21” | EA | $645.00 | | | | | |
| 24” | EA | $755.00 | 1 | $755.00 | | | |
| 27” | EA | $1,065.00 | | | | | |
| 30” | EA | $1,195.00 | | | | | |
| 36” | EA | $1,765.00 | | | | | |
| 42” | EA | $1,795.00 | | | | | |
| 48” | EA | $2,135.00 | | | | | |
| 54” | EA | $2,795.00 | | | | | |
| 60” | EA | $3,455.00 | | | | | |
| **ENDWALLS** | | | | | | | |
| **EW-1(Pre-cast) Round Pipe Size** | | | | | | | |
| 15” | EA | $800.00 | | | | | |
| 18” | EA | $1,337.00 | | | | | |
| 24” | EA | $2,021.00 | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| 30” | EA | $2,133.00 | | | | | |
| 36” | EA | $2,366.00 | | | | | |
| **EW-1 Cast in Place [Round Pipe Size]** | | | | | | | |
| 15” | EA | $852.00 | | | | | |
| 18” | EA | $1,053.00 | | | | | |
| 24” | EA | $1,495.00 | | | | | |
| 30” | EA | $2,144.00 | | | | | |
| 36” | EA | $2,383.00 | | | | | |
| **EW-1A (Pre-Cast) Elliptical Pipe Size** | | | | | | | |
| 23” X 14” (18”) | EA | $695.00 | | | | | |
| 30” X 19” (24”) | EA | $969.00 | | | | | |
| 38” X 24” (30”) | EA | $1,165.00 | | | | | |
| 45” X 29” (36”) | EA | $1,445.00 | | | | | |
| 53” X 34” (42”) | EA | $1,840.00 | | | | | |
| **EW-1A (Cast in Place) Elliptical Pipe Size** | | | | | | | |
| 23” X 14” (18”) | EA | $667.00 | | | | | |
| 30” X 19” (24”) | EA | $939.00 | | | | | |
| 38” X 24” (30”) | EA | $1,247.00 | | | | | |
| 45” X 29” (36”) | EA | $1,618.00 | | | | | |
| 53” X 34” (42”) | EA | $2,109.00 | | | | | |
| **EW-2 (PreCast) Round Pipe Size** | | | | | | | |
| 42” | EA | $5,445.00 | | | | | |
| 48” | EA | $5,695.00 | | | | | |
| 54” | EA | $6,660.00 | | | | | |
| 60” | EA | $7,140.00 | | | | | |
| 72” | EA | $7,990.00 | | | | | |
| 84” | EA | $9,490.00 | | | | | |
| **EW-2 (Cast in Place) Round Pipe Size** | | | | | | | |
| 42” | EA | $4,723.00 | | | | | |
| 48” | EA | $6,039.00 | | | | | |
| 54” | EA | $6,972.00 | | | | | |
| 60” | EA | $8,179.00 | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| 72” | EA | $10,713.00 | | | | | |
| 84” | EA | $12,288.00 | | | | | |
| **(EW-6PC) [Double Pipe] Pipe Size** | | | | | | | |
| 2-15” | EA | $999.00 | | | | | |
| 2-18” | EA | $1,235.00 | | | | | |
| 2-24” | EA | $1,510.00 | | | | | |
| 2-30” | EA | $2,165.00 | | | | | |
| 2-36” | EA | $2,647.00 | | | | | |
| **MANHOLES** | | | | | | | |
| **Standard Brick Manhole Std Frame & Cover (MH-1)** | | | | | | | |
| 6’ Depth | EA | $3,750.00 | | | | | |
| Depth below 6’ | VF | $163.00 | | | | | |
| **Standard Precast Manhole Std Frame & Cover (MH-2)** | | | | | | | |
| 6’ Depth | EA | $3,100.00 | 1 | $3,100.00 | | | |
| Depth below 6’ | VF | $177.00 | 4 | $708.00 | | | |
| **Additional Cost (Amounts in parentheses to be added to the above unit costs)** | | | | | | | |
| Watertight Fr/Cover (Add 110) | EA | $579.00 | | | | | |
| Heavy Duty Fr/Cover (Add 82) | EA | $599.00 | | | | | |
| **DROP INLETS** | | | | | | | |
| **Cast in Place 48”** | | | | | | | |
| Drop Inlet (DI-1) 12” – 24” Pipe 0-10 VF | EA | $3,697.00 | | | | | |
| Drop Inlet (DI-1A) 12” – 24” Pipe 10-20 VF | EA | $5,593.00 | | | | | |
| Drop Inlet (DI-2) 12” – 24” Pipe 0-10 VF, 10’ throat | EA | $6,911.00 | | | | | |
| Drop Inlet (DI-2A) 12” – 24” Pipe 10-20 VF, 10’ throat | EA | $8,833.00 | | | | | |
| **CURB DROP INLETS** | | | | | | | |
| **Curb Drop Inlet (DI-3A)** | | | | | | | |
| 12”-30” Pipe (Invert Depth (H) =0’-8’) Inlet Length 2’-6” | EA | $4,088.00 | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| **Curb Drop Inlet (DI-3AA)** | | | | | | | |
| 12”-30” Pipe (Invert Depth (H) =8’-20’) Inlet Length 2’-6” | EA | $5,357.00 | | | | | |
| **Curb Drop Inlet (DI-3B & DI-12) 12”-30” Pipe (Invert Depth (H) =0’-8’) Inlet Length** | | | | | | | |
| 4’ | EA | $4,279.00 | | | | | |
| 6’ | EA | $4,573.00 | | | | | |
| 8’ | EA | $4,889.00 | | | | | |
| 10' | EA | $5,052.00 | | | | | |
| 12’ | EA | $5,227.00 | | | | | |
| 16’ | EA | $5,543.00 | | | | | |
| 20’ | EA | $5,859.00 | | | | | |
| **Curb Drop Inlet (DI-3BB) 12”-30” Pipe (Invert Depth (H) =8’-20’) Inlet Length** | | | | | | | |
| 4’ | EA | $4,276.00 | | | | | |
| 6’ | EA | $4,848.00 | | | | | |
| 8’ | EA | $5,429.00 | | | | | |
| 10' | EA | $5,732.00 | | | | | |
| 12’ | EA | $6,011.00 | | | | | |
| 16’ | EA | $6,296.00 | | | | | |
| 20’ | EA | $6,599.00 | | | | | |
| **Curb Drop Inlet (DI-3C) 12”-30” Pipe (Invert Depth (H) =0’-8’) Inlet Length** | | | | | | | |
| 6’ | EA | $4,013.00 | | | | | |
| 8’ | EA | $4,588.00 | | | | | |
| 10' | EA | $4,893.00 | | | | | |
| 12’ | EA | $5,178.00 | | | | | |
| 16’ | EA | $5,766.00 | | | | | |
| 20’ | EA | $6,339.00 | | | | | |
| **Curb Drop Inlet (DI-3CC) 12”-30” Pipe (Invert Depth (H) =8’-20’) Inlet Length** | | | | | | | |
| 6’ | EA | $4,746.00 | | | | | |
| 8’ | EA | $5,293.00 | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| 10' | EA | $5,627.00 | | | | | |
| 12’ | EA | $5,988.00 | | | | | |
| 16’ | EA | $6,772.00 | | | | | |
| 20’ | EA | $7,465.00 | | | | | |
| **Curb Drop Inlet (DI-3D)** | | | | | | | |
| 12”-30” Pipe (Invert Depth (H) =0’-8’) Inlet Length 2’-6” | EA | $3,633.00 | | | | | |
| **Curb Drop Inlet (DI-3DD)** | | | | | | | |
| 12”-30” Pipe (Invert Depth (H) =8’-20’) Inlet Length 2’-6” | EA | $4,367.00 | | | | | |
| **Curb Drop Inlet (DI-3E) 12”-30” Pipe (Invert Depth (H) =0’-8’) Inlet Length** | | | | | | | |
| 4’ | EA | $4,093.00 | | | | | |
| 8’ | EA | $4,756.00 | | | | | |
| 10' | EA | $5,724.00 | | | | | |
| 12' | EA | $5,833.00 | | | | | |
| 16’ | EA | $6,072.00 | | | | | |
| 20’ | EA | $6,709.00 | | | | | |
| **Curb Drop Inlet (DI-3EE) 12”-30” Pipe (Invert Depth (H) =8’-20’) Inlet Length** | | | | | | | |
| 6’ | EA | $7,562.00 | | | | | |
| 8’ | EA | $7,869.00 | | | | | |
| 10' | EA | $7,999.00 | | | | | |
| 12’ | EA | $8,166.00 | | | | | |
| 16’ | EA | $8,471.00 | | | | | |
| 20’ | EA | $8,767.00 | | | | | |
| **Curb Drop Inlet (DI-3F) 12”-30” Pipe Inlet Length (Invert Depth (H)=0’-8’)** | | | | | | | |
| 6’ | EA | $3,765.00 | | | | | |
| 8’ | EA | $4,419.00 | | | | | |
| 10' | EA | $4,749.00 | | | | | |
| 12’ | EA | $5,085.00 | | | | | |
| 16’ | EA | $5,742.00 | | | | | |
| 20’ | EA | $6,395.00 | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| **Curb Drop Inlet (DI-3FF) 12"-30" Pipe (Invert Depth (H) =8'-20') Inlet Length** | | | | | | | |
| 6' | EA | $8,077.00 | | | | | |
| 8' | EA | $8,288.00 | | | | | |
| 10' | EA | $8,480.00 | | | | | |
| 12' | EA | $8,669.00 | | | | | |
| 16' | EA | $9,047.00 | | | | | |
| 20' | EA | $9,446.00 | | | | | |
| **Curb Drop Inlet (DI-4A) 36"–48" Pipe (Invert Depth (H)=0'-8') Inlet Length** | | | | | | | |
| 4' | EA | $4,868.00 | | | | | |
| **Curb Drop Inlet (DI-4AA) 36"–48" Pipe (Invert Depth (H)=0'-8') Inlet Length** | | | | | | | |
| 4' | EA | $6,817.00 | | | | | |
| **Curb Drop Inlet (DI-4B) 36"-48" Pipe (Invert Depth (H) =0'-8') Inlet Length** | | | | | | | |
| 6' | EA | $5,172.00 | | | | | |
| 8' | EA | $5,499.00 | | | | | |
| 10' | EA | $5,698.00 | | | | | |
| 12' | EA | $5,870.00 | | | | | |
| 16' | EA | $6,221.00 | | | | | |
| 20' | EA | $6,571.00 | | | | | |
| **Curb Drop Inlet (DI-4BB) 36"-48" Pipe (Invert Depth (H) =8'-20') Inlet Length** | | | | | | | |
| 6' | EA | $10,292.00 | | | | | |
| 8' | EA | $10,643.00 | | | | | |
| 10' | EA | $10,810.00 | | | | | |
| 12' | EA | $10,974.00 | | | | | |
| 16' | EA | $11,309.00 | | | | | |
| 20' | EA | $11,669.00 | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| **Curb Drop Inlet (DI-4C) 36"-48" Pipe (Invert Depth (H) =0'-8') Inlet Length** | | | | | | | |
| 8' | EA | $5,612.00 | | | | | |
| 10' | EA | $5,794.00 | | | | | |
| 12' | EA | $5,968.00 | | | | | |
| 16' | EA | $6,315.00 | | | | | |
| 20' | EA | $6,657.00 | | | | | |
| **Curb Drop Inlet (DI-4CC) 36"-48" Pipe (Invert Depth (H) =8'-20') Inlet Length** | | | | | | | |
| 8' | EA | $13,371.00 | | | | | |
| 10' | EA | $13,693.00 | | | | | |
| 12' | EA | $14,097.00 | | | | | |
| 16' | EA | $14,712.00 | | | | | |
| 20' | EA | $15,365.00 | | | | | |
| **Curb Drop Inlet (DI-4D)** | | | | | | | |
| 36"-48" Pipe (Invert Depth (H) =0'-8') Inlet Length 4' | EA | $4,933.00 | | | | | |
| **Curb Drop Inlet (DI-4DD)** | | | | | | | |
| 36"-48" Pipe (Invert Depth (H) =8'-16') Inlet Length 4' | EA | $9,455.00 | | | | | |
| **Curb Drop Inlet (DI-4E) 36"-48" Pipe (Invert Depth (H) =0'-8') Inlet Length** | | | | | | | |
| 6' | EA | $5,267.00 | | | | | |
| 8' | EA | $5,605.00 | | | | | |
| 10' | EA | $5,896.00 | | | | | |
| 12' | EA | $6,233.00 | | | | | |
| 16' | EA | $6,996.00 | | | | | |
| 20' | EA | $7,695.00 | | | | | |
| **Curb Drop Inlet (DI-4EE) 36"-48" Pipe (Invert Depth (H) =8'-16') Inlet Length** | | | | | | | |
| 6' | EA | $9,165.00 | | | | | |
| 8' | EA | $9,495.00 | | | | | |
| 10' | EA | $9,839.00 | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| 12’ | EA | $10,167.00 | | | | | |
| 16’ | EA | $10,838.00 | | | | | |
| 20’ | EA | $11,483.00 | | | | | |
| **Curb Drop Inlet (DI-4F) 36”-48" Pipe Inlet Length (Invert Depth (H)=0’-8’)** | | | | | | | |
| 8’ | EA | $5,877.00 | | | | | |
| 10' | EA | $6,209.00 | | | | | |
| 12’ | EA | $6,568.00 | | | | | |
| 16’ | EA | $7,259.00 | | | | | |
| 20’ | EA | $7,963.00 | | | | | |
| **Curb Drop Inlet (DI-4FF) 36”-48” Pipe (Invert Depth (H) =8’-16’) Inlet Length** | | | | | | | |
| 8’ | EA | $8,866.00 | | | | | |
| 10' | EA | $9,147.00 | | | | | |
| 12’ | EA | $9,435.00 | | | | | |
| 16’ | EA | $9,997.00 | | | | | |
| 20’ | EA | $10,584.00 | | | | | |
| **Median Drop Inlets - CIP** | | | | | | | |
| Median Drop Inlet **(DI-6A)** 12”-24” Pipe Inlet (H=8’) | EA | $4,205.00 | | | | | |
| Median Drop Inlet **(DI-6B)** 12”-24” Pipe Inlet (H=8’) | EA | $4,267.00 | | | | | |
| Median Drop Inlet **(DI-6C)** 30”-48” Pipe Inlet (H=10’) | EA | $5,589.00 | | | | | |
| Median Drop Inlet **(DI-6D)** 30”-48” Pipe Inlet (H=10’) | EA | $5,692.00 | | | | | |
| Median Drop Inlet **(DI-7)** Type III Top 12”-42” Pipe Inlet (H=10’) | EA | $5,748.00 | | | | | |
| Median Drop Inlet **(DI-7A)** Type III Top 12”-42” Pipe Inlet (H=10’) | EA | $6,338.00 | | | | | |
| Median Drop Inlet **(DI-7B)** Type III Top 12”-42” Pipe Inlet (H=10’) | EA | $6,797.00 | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| **MISCELLANEOUS INLETS** | | | | | | | |
| Ditch Drop Inlet, **(DI-5)** Type III Tip 12"-42" Pipe Inlet (H=8') | EA | $5,226.00 | | | | | |
| Standard Yard Inlet **(YI-1)** 12"-48" Pipe (Invert Depth (H)=0'-8') Inlet Length 4'(No Aprons) | EA | $4,749.00 | | | | | |
| Add Yard Inlet Apron | THROAT | $255.00 | | | | | |
| Standard Yard Inlet **(YI-3)** 12"-48" Pipe (Invert Depth (H)=0'-8') Inlet Length 4'(No Aprons) | EA | $5,127.00 | | | | | |
| Add Yard Inlet Apron | THROAT | $255.00 | | | | | |
| **CULVERTS** | | | | | | | |
| **Single Box Culvert (BC-1A) Fills to 25'** | | | | | | | |
| 4' X 4' | LF | $336.00 | | | | | |
| 5' x 5" | LF | $410.00 | | | | | |
| 6' X 6' | LF | $498.00 | | | | | |
| 8' X 8' | LF | $699.00 | | | | | |
| 10' X 10' | LF | $845.00 | | | | | |
| **Double Box Culvert (BC-2b) Fills to 25'** | | | | | | | |
| 4' X 4' | LF | $566.00 | | | | | |
| 5' x 5" | LF | $705.00 | | | | | |
| 6' X 6' | LF | $854.00 | | | | | |
| 8' X 8' | LF | $1,148.00 | | | | | |
| 10' X 10' | LF | $1,411.00 | | | | | |
| **Oversized Single Box Culvert (BBC-1) Fills to 25'** | | | | | | | |
| 12' X 6' | LF | $1,026.00 | | | | | |
| 12' X 8' | LF | $1,144.00 | | | | | |
| 12' X 10' | LF | $1,239.00 | | | | | |
| 12' X 12' | LF | $1,348.00 | | | | | |
| **Triple Box Culvert (BC-3B) Fills to 25'** | | | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| 4' X 4' | LF | $779.00 | | | | | |
| 5' x 5" | LF | $965.00 | | | | | |
| 6' X 6' | LF | $1,211.00 | | | | | |
| 8' X 8' | LF | $1,633.00 | | | | | |
| 10' X 10' | LF | $2,488.00 | | | | | |
| **Quadruple Box Culvert (BC-4B) Fills to 25'** | | | | | | | |
| 4' X 4' | LF | $987.00 | | | | | |
| 5' x 5" | LF | $1,225.00 | | | | | |
| 6' X 6' | LF | $1,523.00 | | | | | |
| 8' X 8' | LF | $1,497.00 | | | | | |
| 10' X 10' | LF | $2,835.00 | | | | | |
| **Standard Wing for Box Culvert (1 Side Only) Height of Box** | | | | | | | |
| 4' | EA | $675.00 | | | | | |
| 5' | EA | $995.00 | | | | | |
| 6' | EA | $1,337.00 | | | | | |
| 8' | EA | $2,489.00 | | | | | |
| 10' | EA | $3,315.00 | | | | | |
| **Standard Wing for Oversized Box Culvert(BBC-W) Height of Box** | | | | | | | |
| 6' | EA | $1,351.00 | | | | | |
| 8' | EA | $2,189.00 | | | | | |
| 10' | EA | $3,269.00 | | | | | |
| 12' | EA | $4,763.00 | | | | | |
| **MISCELLANEOUS STORM** | | | | | | | |
| **Connection to Existing Structure** | | | | | | | |
| 15"-36" Pipe | EA | $735.00 | | | | | |
| 42"- 60" Pipe | EA | $1,125.00 | | | | | |
| **Casing Pipe, Bore and Jack (3/8" wall)** | | | | | | | |
| 22" ID (6"-8" Carrier Pipe) | LF | $411.00 | | | | | |
| 24" ID (10" Carrier Pipe) | LF | $451.00 | | | | | |
| 30" ID (12" Carrier Pipe) | LF | $569.00 | | | | | |
| **Plug Pipe** | | | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| 6" –12" Pipe | EA | $142.00 | | | | | |
| 15"-36" Pipe | EA | $323.00 | | | | | |
| 42"- 60" Pipe | EA | $522.00 | | | | | |
| **Pavement Edge Pipe** | | | | | | | |
| Standard Pipe Underdrain | LF | $19.00 | | | | | |
| **Riprap** | | | | | | | |
| Dry, Class I, 18" | SY | $47.87 | 43 | $2,058.41 | | | |
| Dry, Class II, 18" | SY | $51.46 | | | | | |
| Grouted, Class I, 18" | SY | $69.97 | | | | | |
| **Filter Fabric** | | | | | | | |
| Class I | SY | $3.50 | | | | | |
| Class II | SY | $3.00 | | | | | |
| Class III | SY | $2.25 | | | | | |
| **Gabions (No excavation)** | | | | | | | |
| Mattress | CY | $130.00 | | | | | |
| Revetment | CY | $164.33 | | | | | |
| Wall | CY | $212.25 | | | | | |
| **Paved Ditch (4" Thick)** | | | | | | | |
| Concrete (Non-reinforced) | SY | $62.00 | | | | | |
| Bituminous Concrete(4") | SY | $30.00 | | | | | |
| **Sodded Ditch** | | | | | | | |
| Sodded Ditch (Incl Fine Grading) | SY | $9.86 | | | | | |
| **STREET CONSTRUCTION** | | | | | | | |
| **ROADS AND PARKING** | | | | | | | |
| **Soil Stabilization** | **Inches** | | | | | | |
| Cement 6% | SY/Inch Depth | $2.70 | | | | | |
| Depth (in Inches): | | | | | | | |
| Lime 6% | SY/Inch Depth | $1.89 | | | | | |
| Depth (in Inches): | | | | | | | |
| **Subbase, Aggregated Material** | | | | | | | |
| Base Type I | SY/Inch Depth | $1.75 | 7151 | $75,085.50 | | | |
| Depth (in Inches): | 6 | | | | | | |
| Base Type I | SY/Inch Depth | $1.75 | 3192 | $22,344.00 | | | |

PROJECT NAME: Huyett Storage PROJECT NUMBER: 5022-0101

PREPARED BY: Chris Weitnauer FIRM: Integrity Federal Services DATE: 05/04/2023

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| Depth (in Inches): | 4 | | | | | | |
| **Bituminous Concrete** | | | | | | | |
| Base Course | SY/Inch Depth | $5.59 | 7151 | $99,935.23 | | | |
| Depth (in Inches): | 2.5 | | | | | | |
| Intermediate Course | SY/Inch Depth | $5.49 | | | | | |
| Depth (in Inches): | | | | | | | |
| Top Course | SY/Inch Depth | $5.49 | 7151 | $58,888.49 | | | |
| Depth (in Inches): | 1.5 | | | | | | |
| Prime Coat | SY | $1.10 | | | | | |
| Tack Coat | SY | $1.10 | | | | | |
| **Driveway Restoration** | | | | | | | |
| 4” Concrete & 4” Gravel | SY | $79.95 | | | | | |
| 2” S-5 & 7 6” Gravel | SY | $31.96 | | | | | |
| **Shoulders, Type I** | | | | | | | |
| Aggregated Base, 4” | SY | $11.50 | | | | | |
| **Concrete Curbing** | | | | | | | |
| Curb & Gutter CG6 & CG7 | LF | $22.50 | 963 | $21,667.50 | | | |
| Curb Cut, CG-12 Detectable Surf. | EA | $569.00 | 3 | $1,707.00 | | | |
| **Entrances/Driveways** | | | | | | | |
| Commercial Entrance CG-11 | SY | $52.88 | 197 | $10,417.36 | | | |
| Commercial Entrance CG-13 | SY | $64.67 | | | | | |
| Residential Driveway Apron | SY | $51.79 | | | | | |
| **Guardrails** | | | | | | | |
| Std. Blocked-out W beam (GR2) | LF | $42.50 | | | | | |
| Std. W beam, Weak Post GR8 | LF | $28.50 | | | | | |
| Terminal, GR-6 (L=12’-6”) | EA | $2,929.00 | | | | | |
| Terminal, GR-7 (L=6’-3”) | EA | $2,659.00 | | | | | |
| Type I, GR-8 Terminal (L=25’) | EA | $1,399.00 | | | | | |
| Type II, GR-8 Terminal (L=13’-6”) | EA | $695.00 | | | | | |
| Terminal, MB-4 (L=37’-6”) | EA | $3,495.00 | | | | | |
| Type I, MB-5 Terminal (L=27’-1) | EA | $2,925.00 | | | | | |
| Type II, MB-5 Terminal (L=13’-6) | EA | $1,675.00 | | | | | |
| **Miscellaneous** | | | | | | | |
| Trash enclosure - Brick 6' high | LF | $325.00 | | | | | |

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| Reinforced Concrete Pad 6" to 8" | SY | $62.00 | 273 | $16,926.00 | | | |
| Striping 4" width (VDOT Type B) | LF | $2.25 | | | | | |
| Concrete Wheel Stops | EA | $70.00 | 50 | $3,500.00 | | | |
| Parking Lot Striping | EA | $50.00 | 10 | $500.00 | | | |
| Sign Island | EA | $850.00 | | | | | |
| Traffic Barricade | LF | $43.45 | | | | | |
| Street Name Signs | EA | $435.00 | | | | | |
| Traffic Control Signs | EA | $375.00 | 2 | $750.00 | | | |
| Street Light (pole, bracket, light) | EA | $4,285.00 | | | | | |
| **SIDEWALKS AND TRAILS** | | | | | | | |
| **Sidewalk** | | | | | | | |
| Concrete 4” w/WWF, No base | SY | $45.23 | 41 | $1,854.43 | | | |
| Bitum. Conc, 2” w/4” Base | SY | $30.00 | | | | | |
| 4” Conc, No Reinf., No Base | SY | $41.00 | | | | | |
| **HANDRAIL** | | | | | | | |
| Handrail 3 Rail 1-1/4” #4 Finish | LF | $96.50 | | | | | |
| **Wood Chip Trail** | | | | | | | |
| Trails(Incl Excavation & Grading) Wood chip, 4’ wide | SY | $17.69 | | | | | |
| **Bituminous Trail** | | | | | | | |
| 6’ to 10' wide | SY | $49.25 | 357 | $17,582.25 | | | |
| **CRITICAL SLOPE STABILIZATION** | | | | | | | |
| Paved Flume | SY | $67.00 | | | | | |
| Stmwtr Conc Channel-Excav | SY | $7.75 | | | | | |
| ADD Grass Lined-seeded | SY | $5.37 | | | | | |
| ADD Grass Lined-sodded | SY | $10.89 | | | | | |
| **Outlet Protection** | | | | | | | |
| Non-grouted Riprap 18” | SY | $52.00 | | | | | |
| Concrete 4” | SY | $53.50 | | | | | |
| Level Spreader | SY | $4.44 | | | | | |
| **Struc Streambank Protection** | | | | | | | |
| Non-grouted Riprap 18” | SY | $58.00 | | | | | |
| Gabions | CY | $147.00 | | | | | |
| **Vegetative Erosion Control** | | | | | | | |
| Sodding incl Fertilizing – Banks | SY | $7.77 | | | | | |
| Sodding incl Fertilizing – Flat | SY | $5.36 | | | | | |
| Seeding incl Fertilizing | SY | $2.44 | | | | | |

PROJECT NAME: Huyett Storage | PROJECT NUMBER: 5022-0101

PREPARED BY: Chris Weitnauer | FIRM: Integrity Federal Services | DATE: 05/04/2023

| | | BOND ESTIMATE | | | BOND REDUCTION | | |
|---|---|---|---|---|---|---|---|
| ITEM | UNIT | UNIT COST | QUANTITY | EXTENSION | QUANTITY | EXTENSION | %COMPLETE |
| Soding W/Soil Treat & Watering | SY | $3.25 | | | | | |
| Seeding W/Soil Treat & Watering | SY | $6.46 | | | | | |
| Straw Mulch w/Tack | SY | $1.40 | | | | | |
| Jute Mesh | SY | $1.77 | | | | | |
| **Special Items** | | | | | | | |
| FEMA Processing LOMR/CLOMR | EA | $7,500.00 | | | | | |
| As Built (Record Drawings) | EA | $9,500.00 | 1 | $9,500.00 | | | |
| SWM/BMP POND | LS | See Note 1 | 1 | $21,240.00 | | | |
| SIGNALIZATION | LS | See Note 2 | | | | | |
| **Subtotal** | | | | $1,356,608.77 | | | |

TOTAL ESTIMATE OF COMPLETED WORK:

| | |
|---|---|
| TOTAL: | $1,356,608.77 |
| + 10% CONTINGENCIES: | $135,660.88 |
| GRAND TOTAL: | $1,492,269.65 |

**Planning Commission**
101 East Washington Street
Charles Town, WV 25414

Meeting: 05/22/23
Department: Planning Commission
Category: Report
Initiator:

**SCHEDULED**

**AGENDA ITEM (ID # )**

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**(Public Hearing) TXA2023-05 *Parking and Loading Standards*: A text amendment to Subdivision and Land Development Ordinance Section 1333.23.J, to exempt properties within the Historic Overlay District from on-site parking requirements.**

**ATTACHMENTS:**

- 1. Staff Report.pdf

Text Amendment Staff Report

**Parking Requirements in the Historic District**

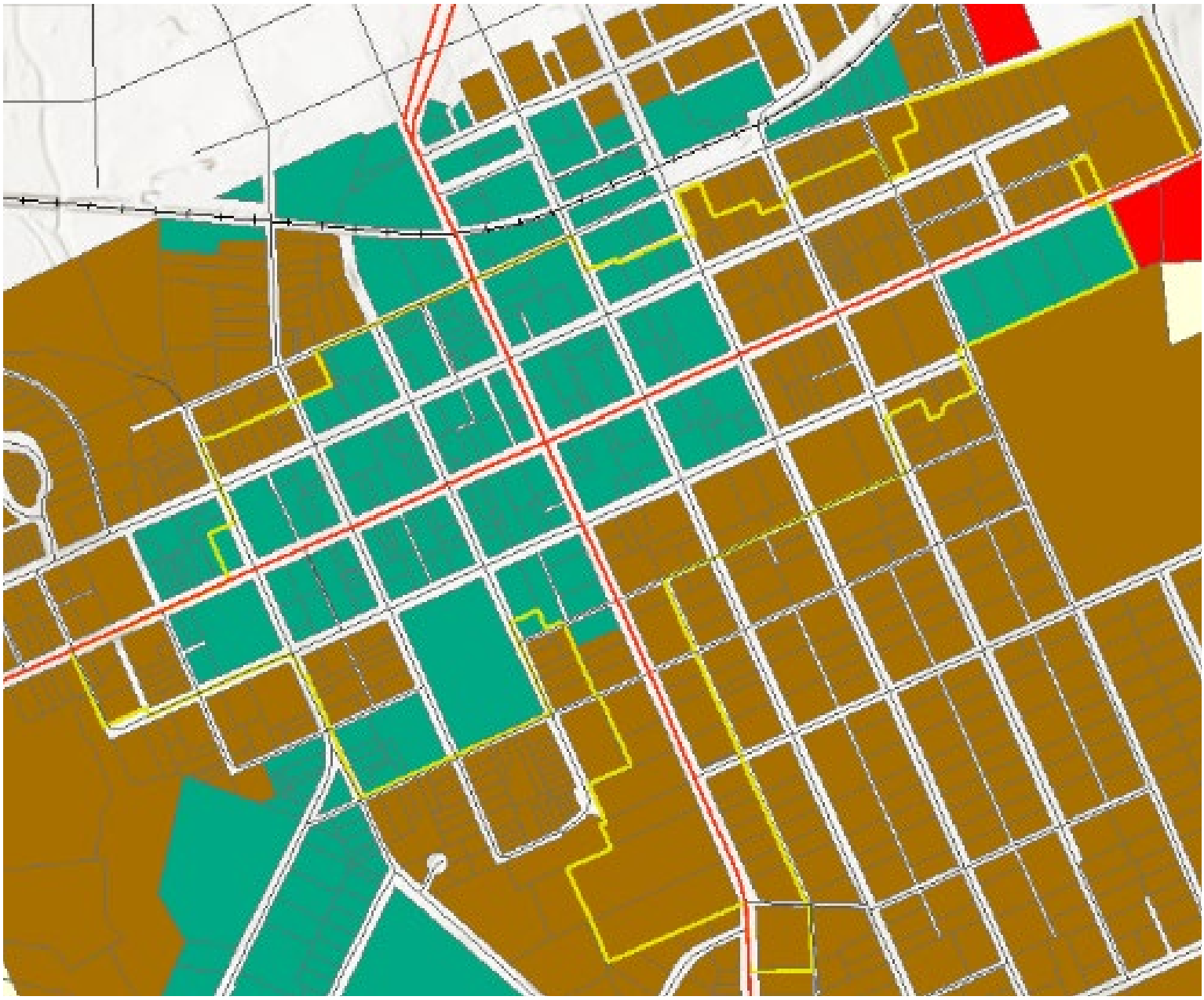
*TXA2023-05*

**Date:** For the May 22nd 2023 Planning Commission meeting

**Applicant**: City of Charles Town

**Report by**: James Newman, City Planner, Zoning/Subdivision Administrator.

**Proposal:** Subdivision and Land Development Ordinance Text Amendment



***Key: Yellow line = Historic District. Green =OT-MUC Zoning. Brown=OTR Zoning.***

**CODE SECTION**

***1333.23, Parking and Loading Standards***

***A.*** *Purpose*
*In order to decrease congestion in the Streets, permanent off-street automobile parking spaces shall be provided for:*
*(1) all new Structures or uses of land,*
*(2) existing Structures or uses of land that are increased in size by 20 percent or more after the adoption of this Ordinance, and*
*(3) a change of use of land after the adoption of this Ordinance.*

*Structures and uses of land in existence or under construction on the date this Ordinance becomes effective shall not be subject to these parking requirements; provided that, any parking facilities existing at the time of adoption of this Ordinance shall not, in the future, be reduced, diminished, or modified to a lesser standard that is not fully compliant with these standards.*
*…*
***J****. In all districts, space for parking and storage of vehicles shall be provided in accordance with Table 1333.23(J). The Planning Commission will consider an applicant's proposed alternative parking program requirements as a substitute to the requirements specified in Table 1333.23(J). The applicant's proposed parking program requirements must be reviewed by the City's Engineer and a determination be made that the alternative parking program sufficiently meets the land development's parking needs.*

**ISSUE**

Within the Historic District, there are many lots where buildings either take up the majority of the lot or area situated such that adding on-site parking is not feasible. A strict reading of the Code would prevent reuse or rehabilitation of any vacant structure that did not have sufficient lot area to permit off-street parking, due to the change of use language. The proposed language would exempt the Historic District from on-site parking requirement.

**PROPOSED LANGUAGE**

Proposed language is in red and **bold** below:

*J. In all districts, space for parking and storage of vehicles shall be provided in accordance with Table 1333.23(J). The Planning Commission will consider an applicant's proposed alternative parking program requirements as a substitute to the requirements specified in Table 1333.23(J). The applicant's proposed parking program requirements must be reviewed by the City's Engineer and a determination be made that the alternative parking program sufficiently meets the land development's parking needs.*
**Properties located within the Historic Overlay District shall be exempt from all requirements to provide on-site parking.**

**RECOMMENDATION**

The Planning Commission should **approve** the text amendment.

**Planning Commission**
101 East Washington Street
Charles Town, WV 25414

**SCHEDULED**

Meeting: 05/22/23
Department: Planning Commission
Category: Report
Initiator:

**AGENDA ITEM (ID # )**

## SLD2023-06 Tri-State Daycare - Completeness Review

**ATTACHMENTS:**

- 1. Staff Report.pdf
- 2. Application.pdf
- 3. Plans.pdf

Sketch Plan Completeness Report

**SLD2023-06**

**Applicant**: Christopher Hill

**Property Owner:** Tri-State Investment Properties LLC

**Report by**: James Newman, City Planner, Zoning/Subdivision Administrator.

**Proposal:** Expansion of an existing daycare center

**Property Location:** TD 02 / Map: 10 / Pcl: 9.002, located on Cherry Tree Drive

**Current Zoning:** Property lies on the County/City boundary. Portion in the City is zoned General Commercial.




**PROJECT OVERVIEW**

The property is 1.6 acres in size. The applicant has an existing day-care on site, and is seeking to expand the use.

**HISTORY**

On December 27, 2022, the Planning Commission approved a waiver to allow a boundary line adjustment to be reviewed by staff as a minor subdivision application. The boundary line adjustment was subsequently approved by the Zoning Administrator on January 9, 2023.

The Jefferson County Geographic Information Systems (GIS) website has not yet been updated to reflect the approved boundary line adjustment.

**ZONING REVIEW**

The property is zoned General Commercial. The proposed use of the property as a day care is permitted by-right.

There is no required minimum lot size. The proposed structure expansion conforms to the Zoning setback requirements. No open space is required. Density requirements are non-applicable. Up to 90% of the lot may be developed; this proposal would cover 45% of the lot. Maximum permitted building height is 55 feet/5 stories; this will be a one-story structure. For buffering, the applicant is proposing a 6ft. tall fence between the daycare an adjacent residences.

**ADJACENT USES AND ZONING**

Adjacent uses comprise multifamily dwelling units, and fields. All adjacent properties located within the City are zoned General Commercial. Adjacent properties in Jefferson County are zoned Residential Growth and Residential/Commercial/Light Industrial.

**SKETCH PLAN COMPLETENESS**

The sketch plan meets the requirement of being a complete application as stated in Subdivision Ordinance Section 1332.03.C.2.C. This does not mean the subdivision application meets the criteria for approval; it merely means that the application is deemed complete by staff, per the technical requirements of the Ordinance.

**CONCLUSION**

Staff deems the application complete; the Planning Commission should vote to determine the application is complete. If deemed complete, a public hearing would be scheduled for June 26, 2023.

**Sketch Plan Application No.**_____

# SKETCH PLAN APPLICATION

## SUBDIVISION AND LAND DEVELOPMENT ORDINANCE
## ARTICLE 1332, SUBDIVISION AND LAND DEVELOPMENT APPLICATION & APPROVAL REQUIREMENTS

**To assist the Subdivision Administrator in the review of a Sketch Plan Application, the Applicant must utilize this form to supply the City with the information prescribed under Section 1332.03 of the Charles Town S/LD Ordinance. The submission of this form, along with the prescribed information and required fees, shall serve as the Applicant's Sketch Plan Application as required by Ordinance Section 1332.03. Applicant is responsible to ensure the standards of Ordinance Section 1332.04, Sketch Plan Requirements, are met and provided herein is a checklist of the Sketch Plan requirements.**

1. DATE April 21, 20 23

2. APPLICATION TYPE*

☒ Zoning Use Permit, Special Exception Use and Sketch Plan requirements found in the Supplemental Regulations of the Zoning Ordinance

- Submit Three (3) 11" x 17" copies of the Sketch Plan shall be submitted and in Adobe PDF format

☐ Major S/LD Development

- Submit Three (3) 18" x 24" copies of the Sketch Plan shall be submitted and in Adobe PDF format

*There are two types of Sketch Plan submissions:

1. For Zoning Use Permit, Special Exception Use and Sketch Plan requirements found in the Supplemental Regulations of the Zoning Ordinance. Submission standards are found in Section 1332.04(D).
2. For a Sketch Plan for a Major S/LD application, submission standards are found in Section 1332.04(E)

3. APPLICANT'S NAME* Christopher Hill

Address: 248 CHERRY TREE DRIVE CHARLES TOWN, WV 25414

Telephone Number (410)206-4791 Fax Number (___)

Email Address chris@tristatewv.com

4. PROPERTY OWNER'S NAME Tri-State Investment Properties, LLC.

Address: PO Box 1 Kearneysville, WV 25430

Telephone Number (410)206-4791 Fax Number (___)

Email Address chris@tristatewv.com

5. LEGAL DESCRIPTION OF THE SUBJECT PROPERTY (list all parcels that apply)

Property Address: 248 CHERRY TREE DRIVE CHARLES TOWN, WV 25414

Tax Map # and Parcel: Map 10 Parcel 9.20

Deed Book and Page #: 1228/138

Property Area in Square Feet or Acres: 1.6674 acres

6. DESCRIPTION OF PROJECT AND PROPOSED USE(S) OF THE PROPERTY:

Current property located in county is zoned as Residential Growth, and is operating as an approved daycare facility providing care for 46 children aged 6 weeks to 5 years old and employing 9 staff. Due to high demand and lack of childcare in the area, we propose to construct an addition to be licensed for an additional 59 children. The center will care for a total 105 children and propvide 23 staff positions.

7. DESCRIPTION OF THE EXISTING (OR FORMER) USE(S) OF THE PROPERTY AND CURRENT ZONING:

Currently the existing center is in county jurisdiction. The addition will span into the city jurisdiction that is zoned as general commercial.

*Applicants include: Property owner(s), Engineer(s), Surveyor(s), or Consultant(s)

8. ARE THERE ANY ANTICIPATED WAIVERS OR VARIANCES? IF YES, PROVIDE DETAILS.

No

9. HAS THE PROPERTY BEEN THE SUBJECT OF ANY COURT ACTION?

☐ Yes (Please specify nature of all proceedings and current status and attach any documents showing court decisions, etc.)

☒ No

10. PARCEL HISTORY (List all pending or previously approved applications on the subject parcels inventoried above, including previous site plan applications if this application is a site plan amendment)

| Application No. | Project Name and Phase | Status | Approval Date |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

11. INTERESTED PARTY ADDRESSES, FOR PUBLIC NOTICE (including across street) (Interested parties are defined as adjacent properties within 100 feet).

| Owner | # and Street | City, State, Zip |
|---|---|---|
| First Charles Town Group | PO Box 183 | Charles Town, WV 25414 |
| Charles Town Limited Partnership | PO Box 547 | Charles Town, WV 25414 |
| Charles Town LTD III | PO Box 547 | Charles Town, WV 25414 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

APPLICANT CERTIFICATION

I certify that, to the best of my knowledge, the submitted information and statements are true and correct. I also certify that I have received and read Section 1332.02 of the Charles Town S/LD Ordinance and relevant provisions of the Charles Town City Code.

Signature of Applicant

_____ Date 04/20/2023

Signature of Property Owner (If different than Applicant)

_____ Date _____

Please submit an original completed Application and specified number of Site Plan copies to the following:

Subdivision Administrator
City of Charles Town
101 E. Washington Street
Charles Town, WV 25414

---

***FOR CITY USE ONLY***

Application Number:_____ Date Application Received:_____

Fee: $_____ Paid:$_____ Check No._____

Receipt No._____

Subdivision Administrator Approval:_____ Date:_____

Planning Commission Approval:_____ Date:_____

Comments:_____

_____

_____

_____

_____

_____

# CHARLES TOWN, WEST VIRGINIA
## Department of Community Development
Division of Planning and Zoning
**101 East Washington Street, P.O. Box 14**
**Charles Town, West Virginia 25414**

**Phone: (304) 725-2311**

**Fax (304) 725-1014**


**File Number:** _____
**Staff Initials:** _____
**Fees Paid:** _____

https://goo.gl/KGzDMZ

# Sketch Plan Review Checklist
### Amended 2017 Subdivsion Ordinance

(please check one) _____**Major S/LD Application** or
_____**Zoning Use Permit, Special Exception Use, or Sketch Plan (requirements found in the Supplemental Regulations of the Zoning Ordinance)**

**Project Name:** Daycare Expansion

| ***Property Owner Information*** | | | | | |
|---|---|---|---|---|---|
| Property Owner: | | | | | |
| Mailing Address: | | | | | |
| City: | | State: | | Zip Code: | |
| Phone Number: | | Email: | | | |
| Signature: | | | | Date: | |

| ***Applicant's Registered Engineer or Surveyor or Design Consultant*** | | | | | |
|---|---|---|---|---|---|
| Name: | | | | | |
| Mailing Address: | | | | | |
| City: | | State: | | Zip Code: | |
| Phone Number: | | Email: | | | |

| ***Physical Property Details*** | | | | | |
|---|---|---|---|---|---|
| Physical Address: | | | | | |
| City: | | State: | | Zip Code: | |
| Tax District: | | Map No: | | Parcel No: | |
| Parcel Size: | | Deed Book: | | Page No: | |

| **Zoning of Subject Property** | | | **Is the Project to Be:** | **Is Property In:** |
|---|---|---|---|---|
| Urban Reserve (UR) | Residential Medium-High Density (R-15) | Neighborhood Commercial (NC) | Planned Unit Development (PUD) | Historic Overlay District (HOD) |
| General Commercial (GC) | Old Town Residential (OT-R) | | | Floodplain Overlay District (FOD) |
| Old Town Mixed Use Commercial (OT-MUC) | Neighborhood Residential (NR) | | | |

| City Use Only | 1st Review | 2nd Review | 3rd Review | 4th Review |
|---|---|---|---|---|
| Submittal Date | | | | |
| Zoning Administrator | | | | |
| City Planner | | | | |
| GIS/Addressing | | | | |
| Return Date | | | | |

## *Conditions of Approval (Attach Additional Comments As Needed)*

## *Instructions*

1. This checklist is provided as a quick reference guide only. The Consultant/Developer is responsible for reading the regulations and fully complying with all the requirements. All references to the Subdivision Ordinance and Zoning Ordinance are cited for informational purposes only.

2. The checklist shall be completed by the Engineer/Surveyor or Design Consultant and attached to the Sketch Plan review submission.

## *Requried Submittal Information*

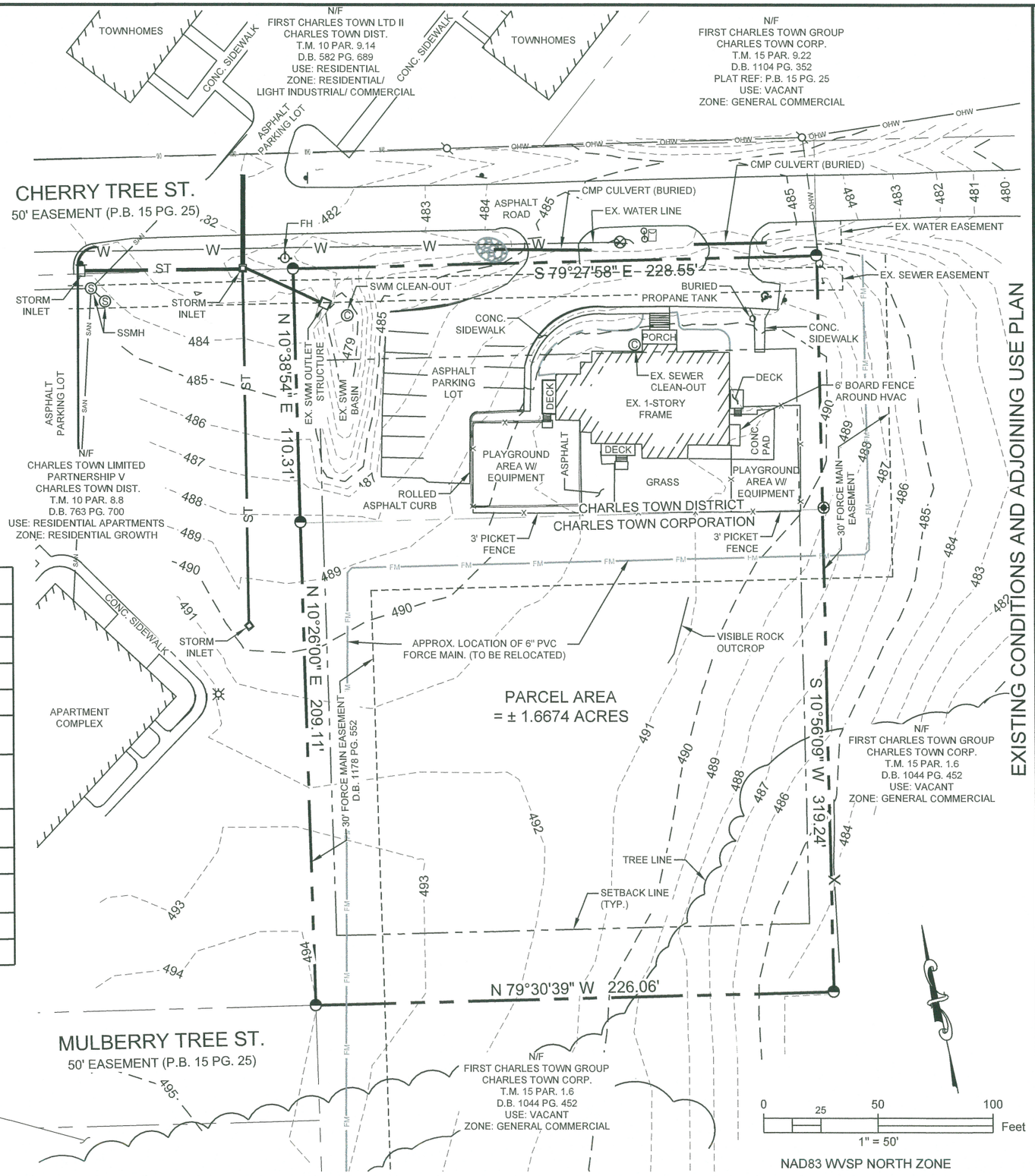
_____ 1 Check for Applciation Fees

_____ 1 Completed Application and Checklist (Signed by owner)

_____ 3 Sets of Sketch Plans and Adobe PDF Format

| | *Ordinance Requirements:*<br>*(See instructions on page 2)* | Engineer /Surveyor | 1st Review | 2nd Review | 3rd Review | 4th Review | Review Key | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | ✓ | Ok |
| | | | | | | | O | Incomplete |
| | | | | | | | N/A | Not Applicable |
| | | | | | | | X | Unacceptable |
| **Sub-Section** | **SUBDIVISION ORDINANCE**<br>**Section 1332.04, Sketch Plan Requirements** | | | | | | | |
| A | **THERE ARE TWO TYPES OF SKETCH PLAN SUBMISSIONS:**<br>**Sections in Red and Blue are depict the different types.** | | | | | | | |
| A1 and D | For:<br>**• Zoning Use Permit**<br>**• Special Exception Use**<br>**• Sketch Plan requirements found in the Supplemental Regulations of the Zoning Ordinance**<br>The following information shall be provided for Sketch Plan review: | | | | | | | |
| D1 | Three (3) 11" x 17" copies of the Sketch Plan shall be submitted and in Adobe PDF format. | | | | | | | |
| D2 | The Sketch Plan shall be drawn to a 1"=50' scale | | | | | | | |
| D2 | The Sketch Plan must illustrate the following elements in such a way that the Subdivision Administrator or authorized designee can determine if the proposed Subdivision or Land Development meets the criteria of this Ordinance, **as applicable:** | | | | | | | |
| D2a | Existing conditions, including boundary lines of the property | | | | | | | |
| D2b | A land use plan, showing the location, arrangement and approximate boundaries of all proposed land uses | | | | | | | |
| D2c | Vicinity map, north arrow, scale (written and graphic) and date | | | | | | | |
| D2d | Name of proposed project or other identifying title and date plan was prepared. Name and address of the Engineer, Surveyor, Architect, Landscape Architect, Land Planner or Property Owner who prepared the plan | | | | | | | |
| D2e | Current zoning and total area of the property | | | | | | | |
| D2f | Maximum and proposed density | | | | | | | |
| D2g | Available utilities | | | | | | | |
| D2h | All existing sanitary sewer facilities and combined sewer facilities | | | | | | | |
| D2i | Depict location or statement of proposed water and sewer supply and other utility improvements | | | | | | | |
| D2j | Existing covenants | | | | | | | |
| D2k | General layout of any proposed number of Lots, average Lot sizes and any proposed commercial uses, including any associated parking. Include proposed height of structures | | | | | | | |
| D2l | Statement of total acreage of the tract being subdivided or developed | | | | | | | |
| D2m | Location of proposed Street layout, including connections to adjoining streets or vacant lots | | | | | | | |
| D2n | The location of sidewalks, trails and crosswalks | | | | | | | |
| D2o | Proposed open space and/or recreation areas, including notes on the plan describing the proposed use, activity area and/or improvement | | | | | | | |
| D2p | Any other information requested by the Subdivision Administrator in order for the Subdivision Administrator to make an accurate determination. | | | | | | | |
| A2 and E | For a **Major S/LD Application.** The following information shall be provided for Sketch Plan review: | | | | | | | |
| E1 | Three (3) 18" x 24" copies of the Sketch Plan shall be submitted and in Adobe PDF format. | | | | | | | |
| E2 | The Sketch Plan shall be drawn to a 1"=50' scale | | | | | | | |
| E2 | The Sketch Plan must illustrate the following elements in such a way that the Subdivision Administrator or authorized designee can determine if the proposed Subdivision or Land Development meets the criteria of this Ordinance: | | | | | | | |
| E2a | Existing conditions, including boundary lines of the property | | | | | | | |
| E2b | A land use plan, showing the location, arrangement and approximate boundaries of all proposed land uses | | | | | | | |

| | *Ordinance Requirements: (See instructions on page 2)* | Engineer /Surveyor | 1st Review | 2nd Review | 3rd Review | 4th Review | Review Key | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | ✓ | Ok |
| | | | | | | | O | Incomplete |
| | | | | | | | N/A | Not Applicable |
| | | | | | | | X | Unacceptable |
| E2c | Vicinity Map, North arrow, scale (written and graphic) and date | | | | | | | |
| E2d | Names of the abutting owners, adjoining lot lines and structures on abutting lots within 100 feet of the property | | | | | | | |
| E2e | Title of the proposed project; the date, month and year the plan was prepared or revised; the name of the applicant(s), owner(s), and contract owner(s) and the name and address of the Engineer, Surveyor, Architect, Landscape Architect, or Land Planner who prepared the plan, including firm name | | | | | | | |
| E2f | Current zoning and total area of the property | | | | | | | |
| E2g | Maximum and proposed density based on the Net Buildable Land Area | | | | | | | |
| E2h | Available utilities | | | | | | | |
| E2i | All existing sanitary sewer facilities and combined sewer facilities | | | | | | | |
| E2j | Depict location or statement of proposed water and sewer supply and other utility improvements | | | | | | | |
| E2k | Existing covenants | | | | | | | |
| E2l | General layout of any proposed number of Lots, average Lot sizes and any proposed commercial uses, including any associated parking. Include proposed height of structures | | | | | | | |
| E2m | Statement of total acreage of the tract being subdivided or developed, including the Net Buildable Land Area | | | | | | | |
| E2n | The approximate acreage in common open space, in each use and housing type and in roads, streets or rights-of-way for the total development | | | | | | | |
| E2o | The proposed number of dwelling units of each type in each in the total development | | | | | | | |
| E2p | Location of proposed Street layout, including connections to adjoining streets or vacant lots | | | | | | | |
| E2q | The location of sidewalks, trails and crosswalks, as may be applicable | | | | | | | |
| E2r | Proposed open space and/or recreation areas, including notes on the plan describing the proposed use, activity area and/or improvement. The amount, approximate boundaries and location of common open space, with the percentage of the total acreage of the site to be placed in common open space | | | | | | | |
| E2s | The location of environmental sensitive land to be included in common open space | | | | | | | |
| E2t | Notes indicating any modifications, waivers, variances, special exceptions and/or conditional uses that are required | | | | | | | |
| E2u | The location and extent of proposed buffers | | | | | | | |
| E2v | The proposed location, arrangement, and right-of-way widths of roads and streets, including roads and streets providing access to adjoining parcels. The location and arrangement of street entrances, driveways and parking areas | | | | | | | |
| E2w | Calculations describing all proposed bonus factors with the location of and specifications for bonus improvements, when proposed | | | | | | | |
| E2x | Any other information requested by the Subdivision Administrator in order for the Subdivision Administrator to make an accurate determination | | | | | | | |
| **Sub-Section** | **SUBDIVISION ORDINANCE Section 1333.01, General Site Planning and Design Specifications** | | | | | | | |
| D1d | There is **no** requirement that a Sketch Plan or Preliminary Plat show phasing. | | | | | | | |




| TABLE 1322.10, GC DISTRICT BULK AND AREA REGULATIONS | | |
|---|---|---|
| | REQUIRED | PROVIDED |
| MAXIMUM DENSITY | NO REQUIREMENT | N/A |
| MINIMUM LOT SIZE | NO REQUIREMENT | 1.6674 ACRES |
| MINIMUM LOT WIDTH | NO REQUIREMENT | 226.06' |
| MINIMUM FRONT YARD SETBACK | 40 FEET | 40 FEET |
| MINIMUM SIDE YARD SETBACK | 10 FEET (25 FEET WHEN ADJOINING RESIDENTIAL DISTRICT | NON-RESIDENTIAL: 40' RESIDENTIAL: 106' |
| MINIMUM REAR YARD SETBACK | 30 FEET | 82 FEET |
| MAXIMUM LOT COVERAGE | 90% | 45% |
| MINIMUM REQUIRED OPEN SPACE | NO REQUIREMENT | 0 |
| MAXIMUM BUILDING HEIGHT | 55 FEET | 30 FEET |
| MAXIMUM STORIES | 5 STORIES | 1 STORY |

RICHARD WM. KLEIN
REGISTERED
7624
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER

5/10/23


ALPHA ASSOCIATES, INC.
535 W. KING STREET
MARTINSBURG, WV 25401
PHONE: 304-264-0051
TOLLFREE: 877-264-0051
www.thinkALPHAfirst.com


# SKETCH PLAN

FOR

## TINY TREASURES DAYCARE AND LEARNING CENTER BUILDING EXPANSION

CITY OF CHARLES TOWN T.M. 10 PAR. 9.20 D.B. 1228 PG. 138
JEFFERSON COUNTY, WEST VIRGINIA

OWNER/DEVELOPER:
TRI-STATE, LLC

ADDRESS:
PO BOX 1
KEARNEYSVILLE, WV 25430

PHONE:
410-206-4791

ATTN:
CHRISTOPHER HILL

| | |
|---|---|
| PROJ. NO.: | 2304028.00 |
| DATE: | 5/10/2023 |
| SHEET NO.: | 1 OF 2 |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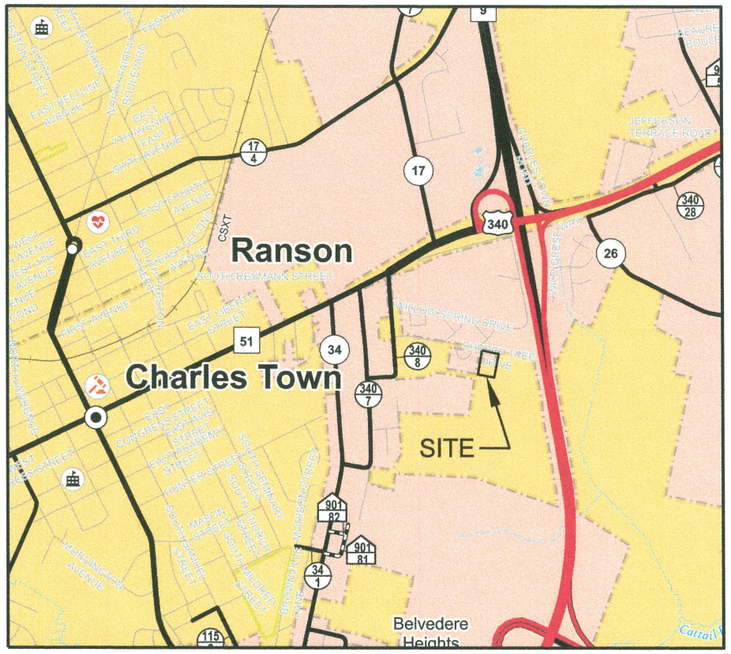
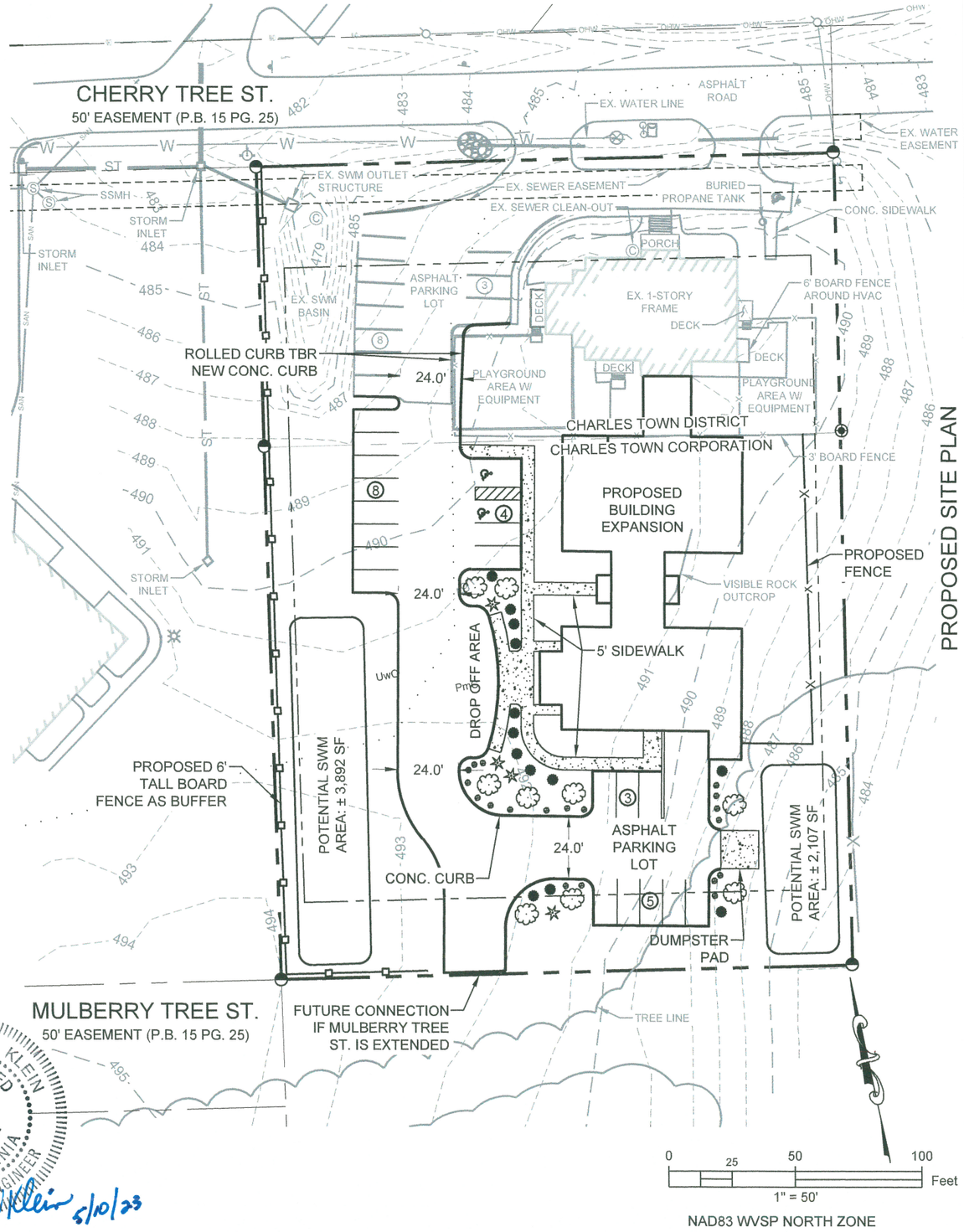



VICINITY / ZONING MAP SCALE: 1" = 2000'

NOTES:

1. THIS PLAN WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND MAY BE SUBJECT TO RECORDED OR UNRECORDED RIGHT-OF-WAYS, EASEMENTS, RESTRICTIONS OR EXEMPTIONS NOT SHOWN HEREON.
2. THIS PROPERTY IS DESIGNATED TO BE IN FLOOD ZONE X, AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD, PER FEMA MAP PANEL 54037C0137E, EFFECTIVE DATE 12/18/2009.
3. SOURCE OF CONTOURS: TOPOGRAPHY SURVEY BY ALPHA ASSOCIATES, APRIL 2023.
4. SOURCE OF BOUNDARY: PLAT OF BOUNDARY LINE ADJUSTMENT DATED SEPT. 7, 2022 RECORDED IN THE OFFICE OF THE COUNTY CLERK OF JEFFERSON COUNTY IN P.B. 26 PG. 158.
5. SITE SPANS JEFFERSON COUNTY AND CHARLES TOWN JURISDICTIONAL LINES. PORTION TO BE DEVELOPED IN CHARLES TOWN CORP. IS ZONED GENERAL COMMERCIAL.
6. PUBLIC WATER AND SEWER CURRENTLY SERVE THE EXISTING STRUCTURE AND ARE PROVIDED BY CHARLES TOWN UTILITY BOARD.
7. IT IS THE INTENT OF THE DEVELOPER TO EXPAND THE EXISTING SWM BASIN TO ACCOMMODATE THE BUILDING EXPANSION.
8. PARKING TABULATION
   REQUIRED: 0.24 SPACES PER STUDENT
   0.24 X 105 = 25.2 SPACES REQUIRED
   EXISTING: 12 SPACES (1 OF WHICH IS HANDICAP)
   PROPOSED: 20 SPACES (2 OF WHICH ARE HANDICAP, 1 BEING VAN ACCESSIBLE)
   TOTAL POST CONSTRUCTION: 32 SPACES, 3 OF WHICH ARE HANDICAP
9. THE EXISTING USE OF THE PROPERTY IS A DAY CARE CENTER. THIS PLAN PROPOSES AN ADDITION / EXPANSION OF THE DAY CARE CENTER. NO OPEN SPACE OR PUBLIC RECREATION AREAS ARE PROPOSED WITH THIS PROJECT.
10. THERE ARE NO PUBLIC TRAILS OR CROSSWALKS REQUIRED OR PROPOSED
11. SWM ESTIMATED - 6,000 SF
    SENSITIVE ENVIRONMENTAL AREA - 0
    PUBLIC R/W - 0
12. FOR COVENANTS, RESTRICTIONS, EASEMENTS, ETC. THAT MAY APPLY, SEE PLAT RECORDED IN PLAT BOOK 15, PAGE 25.
13. AS CHERRY TREE STREET IS A COUNTY ROAD, WHICH IS BUILT AS AN OPEN SECTION STREET WITH OPEN DITCHES FOR DRAINAGE, IN ORDER TO ADD A SIDEWALK, THE STREET WOULD NEED TO BE COMPLETELY REBUILT WITH STORM DRAINS, CURB & GUTTER, AND SIDEWALK. THEREFORE, THE DEVELOPER IS NOT PROPOSING A SIDEWALK.




RICHARD WM. KLEIN REGISTERED 7624 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Richard W Klein 5/10/23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# SKETCH PLAN

FOR

## TINY TREASURES DAYCARE AND LEARNING CENTER BUILDING EXPANSION

CITY OF CHARLES TOWN T.M. 10 PAR. 9.20 D.B. 1228 PG. 138
JEFFERSON COUNTY, WEST VIRGINIA

OWNER/DEVELOPER:
TRI-STATE, LLC

ADDRESS:
PO BOX 1
KEARNEYSVILLE, WV 25430

PHONE:
410-206-4791

ATTN:
CHRISTOPHER HILL

| | |
|---|---|
| PROJ. NO.: | 2304028.00 |
| DATE: | 5/10/2023 |
| SHEET NO.: | 2 OF 2 |


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**Planning Commission**
101 East Washington Street
Charles Town, WV 25414

**SCHEDULED**

Meeting: 05/22/23
Department: Planning Commission
Category: Report
Initiator:

## AGENDA ITEM (ID # )

### Staff Update: Hillside major subdivision and land development - traffic impart

**ATTACHMENTS:**

- 1. Staff Report.pdf
- 2. Email correspondence.pdf
- 3. 2022_06_01 Jefferson County Kings Crossing TIS, Final Revised.pdf

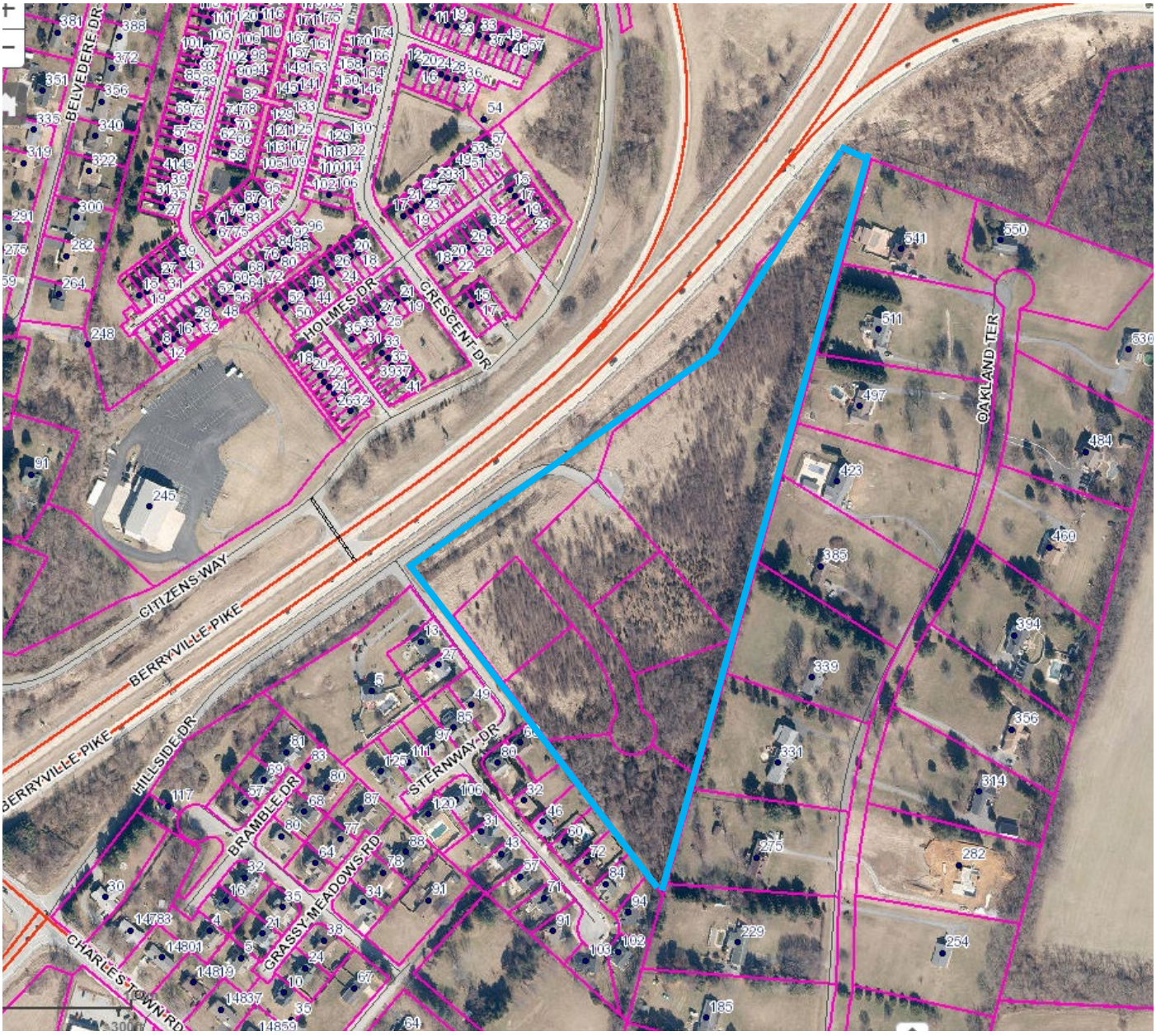
Traffic Study Update

**SLD2022-04**

**Date:** For the May 22nd, 2023 Planning Commission meeting

**Report by**: James Newman, City Planner, Zoning/Subdivision Administrator.

**Issue:** An update on traffic conditions at the intersection of Hillside Drive and Charles Town Road.



**REVIEW TIMELINE - 2023**

**January**

On January 30 the City received the *Hillside* subdivision application.

**February**

On February 8, I contacted Kenneth Clohan and Kevin McDonald of the West Virginia Division of Highways (DoH). I had been informed by then City Operations Manager Todd Wilt that they were the contact points for plans review. I informed them I had three subdivision applications for review, but never received a response.

On February 15, I sent a follow up email.

On February 24, I received a response from Kevin McDonald, and was told any connection to a WVDoH maintained road requires an entrance permit.

On February 27, I responded and informed him I had subdivision plans for technical review. I did not receive a response.

**March**

March 27, 2023*:* Following staff recommendation, the Planning Commission tabled action on the sketch plan. The Commission did approved an electric meter townhome waiver request. The Commission closed the public hearing.

**April**

April 24, 2023: Following staff recommendation, the Commission approved the sketch plan.

At a meeting with DoH on April 26th, I brought up Hillside again, and asked about technical review. I was told that a traffic study had been done for the nearby Kings Crossing, and was offered the traffic impact study for that development.

**May**

On May 1st, Ken Clohan sent me the Kings Crossing traffic study.

I sent a response same day with questions about the existing level of service at Hillside Drive/Charles Town Road intersection.

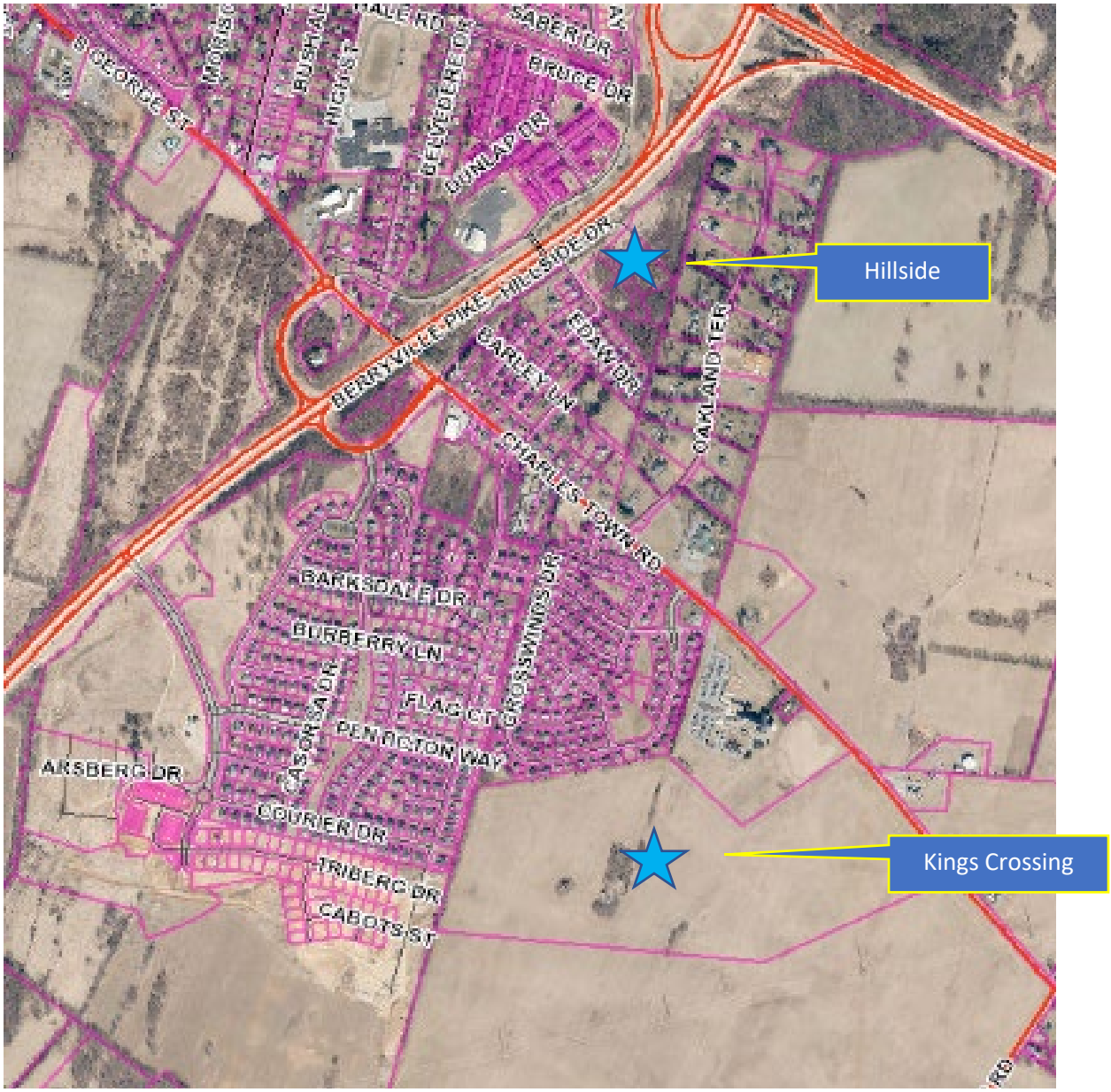
On May 5, I received a response from Ken Clohan, "*that based on the projected trip generation for a development of this size,* ***combined with the projected operation of the currently programmed roundabout*****"**, they did not see a need for a traffic study for this development. (emphasis added) The roundabout is planned to be built by 2025.

On May 9, I sent the Kings Crossing information over to Kimley-Horn for analysis. They responded the same day.

On May 16, Ken Clohan emailed me twice. The first email described the southbound traffic conditions for the intersection of Hillside Drive and Charles Town Road. The second email stated that the overall Level of Service for Hillside Drive/Charles Town Road is D, which is the City's threshold for requiring a traffic study.

**KINGS CROSSING**

Kings Crossing is a nearby residential development in Jefferson County for 175 single-family detached and 229 attached dwelling units:




**CITY SUBDIVISION ORDINANCE TRAFFIC STUDY REQUIREMENTS**

*Section 1333.06, Traffic Management Standards*

*(A) Internal circulation. A complete system of internal traffic circulation shall be provided to serve all uses in any shopping center, industrial park or other integrated-use development included in an S/LD Application. In such Subdivisions/Land Developments, internal access shall be provided in a fashion so that all uses can be mutually accessed without entering onto Primary or Major Collector Streets.*

*(B) Traffic Impact Study (TIS).*

*1. West Virginia DOH Traffic Engineering Directive 106-1, Procedures for Traffic Impact Studies (or the most recent published version), shall be followed to conduct traffic impact studies, which are required under any of the following conditions:*

*a. When the proposed Subdivision/Land Development is projected to generate 100 or more trips per hour during the peak generating time for the Subdivision/Land Development.*

*b. For smaller Subdivisions/Land Developments, under one of the following three conditions:*

*(1) When the proposed new approach is to an intersection already operating at level of service (LOS) "D" or worse.*

*(2) When the applicant or Developer is requesting a new traffic signal.*

*(3) When modification of an existing traffic signal is being requested. c. An older TIS may need to be updated when the data is more than two years old.*

*2. A traffic impact study may not be required in situations where the West Virginia DOH is agreeable to the proposed mitigation measures without conducting a TIS.*

**KIMLEY-HORN REVIEW OF KINGS CROSSING TRAFFIC STUDY**

On May 9th, I sent Kimley-Horn the King's Crossing traffic study, and had three questions. The questions are in bold, with responses following:

**"1. What is the current level of service for the intersection of Hillside Drive/Charles Town Road?**

a. Based upon the Traffic Study completed by AMT Dated June 1, 2022 for the Kings Crossing Residential Development **the current LOS** for the subject intersection by approach is as follows (Page 52 Table 4 – 2021 Existing Conditions Analysis):
   i. Eastbound Charles Town Road (AM/PM) – LOS A/LOS A (Free Flow Condition)
   ii. Westbound Charles Town Road (AM/PM) – LOS A/LOS A (Free Flow Condition)
   iii. Northbound Approach from US 340/Norborne Glebe (AM/PM) – LOS D / **LOS E** (Stop-Controlled)
   iv. Southbound Approach from Hillside Drive (AM/PM) – LOS B/LOS C (Stop Controlled)
   v.

**2. How will Kings Crossing impact that intersection?**

a. Based upon the Traffic Study completed by AMT Dated June 1, 2022 for the Kings Crossing Residential Development the 2025 Full Build and Full Build With Improvements LOS for the subject intersection by approach is as follows (Page 52 Table 4 – 2021 Existing Conditions Analysis):
   i. 2025 Full-Build (Kings Crossing) w/ no improvements:
      1. Eastbound Charles Town Road (AM/PM) – LOS A/LOS A (Free Flow Condition)

2. Westbound Charles Town Road (AM/PM) – LOS A/LOS A (Free Flow Condition)
3. Northbound Approach from US 340/Norborne Glebe (AM/PM) – LOS F / LOS F (Stop-Controlled)
4. Southbound Approach from Hillside Drive (AM/PM) – LOS C/LOS E (Stop Controlled)

ii. 2025 Full-Build (Kings Crossing) w/ improvement of Roundabout as recommended in the study:
1. Eastbound Charles Town Road (AM/PM) – LOS B/LOS C (Roundabout)
2. Westbound Charles Town Road (AM/PM) – LOS A/LOS A (Roundabout)
3. Northbound Approach from US 340/Norborne Glebe (AM/PM) – LOS A / LOS A (Roundabout)
4. Southbound Approach from Hillside Drive (AM/PM) – LOS A/LOS A (Roundabout)

**3. Based on those two attachments, what traffic impact can we expect from Hillside? (Since we don't have a traffic study by Hillside yet, this question may not be able to be answered).**

a. I cannot fully answer this question however I can mention the number of additional trips that will be generated using the ITE Trip Generation guidance which is the reference for all traffic analyses.
   i. The Hillside Development Proposed 127 Townhouse units per the Sketch Plan Provided. Per the ITE 10th Edition Trip Gen Manual Land Use Code 220 each Townhouse unit will develop the following trips per period specified:
      1. AM Peak – 0.56 Trips/Dwelling Unit, PM Peak – 0.67 Trips/Dwelling Unit, Daily Trips – 7.32 Trips/Dwelling Unit
   ii. These numbers multiplied by the 127 Townhouse Units would equate to the following number of trips:
      a. AM Peak – 72 AM Peak Hour Trips
      b. PM Peak – 86 PM Peak Hour Trips
      c. Weekday – 930 Total Daily Trips

b. Based on the additional trips those numbers could be modeled into an additional traffic study to derive the impact to the intersection of Hillside Drive and Charles Town Road. Based upon the existing and proposed Hillside Development Roadway Network it could be assumed that all trips will enter the intersection at the Southbound Hillside Drive approach to Charles Town Road and "split" based upon assumed origin-destination data and Trip Distribution variables,

*Please let me know if you have any further questions or need anything else. I derived as much as I could but the key goes back to my comments regarding Kings Crossing and ensuring they implement the Roundabout ASAP in their development program. With the Roundabout in place at Hillside Drive and Charles Town Road the traffic impacts are mitigated and LOS improved. Without the roundabout one can assume that the failing LOS would only exacerbated and made worse by the additional trips associated with the Hillside Development."* – Kimley-Horn.

**CONDITIONS OF APPROVAL**

The Planning Commission approved the sketch plan for Hillside, on two conditions:

1. Plans must meet the 30% open space requirement of townhome developments.
2. Respectfully, that Council reach out to WV Division of Highways about traffic mitigation possibilities, including a right-turn only lane, at the intersection of Hillside Drive and Charles Town Road.

The applicant is working on amending their plans to conform to Condition 1. I have not yet put anything on the Council agenda for action on Condition 2.

I informed the applicant's engineer on May 2 that it was my determination that, based on the fact that the existing Level of Service is 'E' at peak evening hours, that a traffic study is required. They have acknowledged the requirement.

**SUMMARY**

The City now has new information that the level of service at the Hillside Drive/Charles Town Road meets the requirements for a mandated traffic study. The level of service is 'E' for north-bound during peak evening hours. Additional traffic from Hillside will deteriorate that level of service; however, how large that impact will be is undetermined until the traffic study is complete.

The DoH states that based on the projected trip generation for a development of this size, combined with the projected operation of the currently programmed roundabout, they do not see a need for a traffic study for this development. The construction of a roundabout at that intersection would ameliorate traffic problems, as pointed out by WVDoH and Kimley-Horn. The roundabout is mentioned in the Kings Crossing traffic study as having a completion date of 2025; the

**PLANNING COMMISSION ACTIONS**

When the preliminary plan comes to the Planning Commission, the Commission will have the following options:

1. Approve the plan.
2. Approve the plan with conditions.
3. Table action.
4. Deny the plan.

Preliminary plans which are approved are vested the right to develop for 5 years from the date of approval. Approval of final plans, bonds, and subsequent building permits are still required.

**From:** James Newman
**To:** Kevin A McDonald
**Cc:** Clohan, Kenneth L
**Subject:** Charles Town Plan Review Inquiry
**Date:** Wednesday, February 8, 2023 4:57:00 PM

---

Good afternoon Kevin and Ken,

My names is James Newman and I am the Zoning Administrator for the City of Charles Town. I was told you're the point of contact for plans review for project in the City.

I've got three large subdivision applications and a storage facility application. Are you the correct folks to send the plans to? Do y'all review for the movement of fire apparatus on streets as well? I was told the State Fire Marshal's Office does not do that review. I want to ensure the proposed roads are designed to support emergency vehicles.

Thank you for your time.

James Newman
City Planner, Zoning/Subdivision Administrator, AICP
City of Charles Town, WV
304-724-3251

Disclaimer: This email does NOT constitute a zoning or subdivision determination. To obtain an official determination, please contact the Zoning Administrator.

**From:** James Newman
**To:** Clohan, Kenneth L; Kevin A McDonald
**Subject:** Charles Town Plan Review Inquiry
**Date:** Wednesday, February 15, 2023 10:07:00 AM

---

Good morning Kevin and Ken,

My names is James Newman and I am the Zoning Administrator for the City of Charles Town. I was told you're the point of contact for plans review for project in the City.

I've got three large subdivision applications and a storage facility application. Are you the correct folks to send the plans to? Do y'all review for the movement of fire apparatus on streets as well? I was told the State Fire Marshal's Office does not do that review. I want to ensure the proposed roads are designed to support emergency vehicles.

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City Planner, Zoning/Subdivision Administrator, AICP
City of Charles Town, WV
304-724-3251

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**From:** McDonald, Kevin A
**To:** James Newman
**Cc:** Clohan, Kenneth L
**Subject:** Re: Charles Town Plan Review Inquiry
**Date:** Friday, February 24, 2023 7:59:42 AM

---

Good morning James. Any connection to a WVDOH maintained road requires an entrance permit so they're reviewed/permitted, below is a link to our manual that provides details:

https://transportation.wv.gov/highways/engineering/Manuals/Traffic/Driveway.pdf

If you have any specific traffic related questions then Ken is probably the best contact.

On Wed, Feb 15, 2023 at 10:07 AM James Newman <JNewman@charlestownwv.us> wrote:

> Good morning Kevin and Ken,
>
> My names is James Newman and I am the Zoning Administrator for the City of Charles Town. I was told you're the point of contact for plans review for project in the City.
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> City of Charles Town, WV
>
> 304-724-3251
>
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Beware - This email comes from outside the City of Charles Town.

**From:** James Newman
**To:** McDonald, Kevin A
**Cc:** Clohan, Kenneth L
**Subject:** RE: Charles Town Plan Review Inquiry
**Date:** Monday, February 27, 2023 8:32:00 AM

---

Good morning,

Thank you. I have some subdivision plans, and they require a technical review to ensure roads are designed to DOH standards, and that the roads can carry the proposed amount of traffic, and that the proposed # of entrances is suitable. Who is the best point of contact to get that review completed? I'm new to the City of Charles Town and trying to get this all figured out.

James Newman
City Planner, Zoning/Subdivision Administrator, AICP
City of Charles Town, WV
304-724-3251

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---

**From:** McDonald, Kevin A <kevin.a.mcdonald@wv.gov>
**Sent:** Friday, February 24, 2023 7:59 AM
**To:** James Newman <JNewman@charlestownwv.us>
**Cc:** Clohan, Kenneth L <kenneth.l.clohan@wv.gov>
**Subject:** Re: Charles Town Plan Review Inquiry

Good morning James. Any connection to a WVDOH maintained road requires an entrance permit so they're reviewed/permitted, below is a link to our manual that provides details:

https://transportation.wv.gov/highways/engineering/Manuals/Traffic/Driveway.pdf

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Thank you for your time.

James Newman
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City of Charles Town, WV
304-724-3251

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Beware - This email comes from outside the City of Charles Town.

**From:** James Newman
**To:** Kevin A McDonald; P. E. Ken Clohan - DOT (kenneth.l.clohan@wv.gov)
**Subject:** Charles Town -Traffic Impact Inquiry
**Date:** Wednesday, April 26, 2023 9:02:00 AM

---

Good morning,

I'm following up on plans for a development known as Hillside. It's located at the intersection of Hillside Drive and Sternway Drive. Neighbors are concerned about the impact of additional traffic from the proposed 128 Townhomes. Residents are concerned about traffic impact and decreased levels of service. I'm under the impression that the developer has reached out to WVDoH about their plans. Have y'all been able to review them?

If you need the plans they submitted, let me know.

I want to ensure a more coordinated review process between the City and DoH. Let me know what I can do to help.

James Newman
City Planner, Zoning/Subdivision Administrator, AICP
City of Charles Town, WV
304-724-3251

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**From:** Clohan, Kenneth L
**To:** James Newman
**Cc:** Kevin A McDonald; Greg Ayers; Donald R Meadows; Perry J Keller
**Subject:** Re: Charles Town -Traffic Impact Inquiry
**Date:** Monday, May 1, 2023 10:48:40 AM
**Attachments:** 2022_06_01 Jefferson County Kings Crossing TIS, Final Revised.pdf

---

Good morning James,

As discussed in the meeting last week, I don't believe that we have received any formal information regarding a development on Hillside Dr. but would suggest that any information be provided to those copied in this email so that the information can be reviewed and comments provided.

Also, as requested, a copy of the approved TIS for Kings Crossing is attached since it contains more recent information regarding the intersection of Charles Town Rd. and Hillside Dr.

*Ken*
Kenneth L. Clohan, Jr., P.E.
District Five Traffic Engineer - WVDOH
304-260-4392

On Wed, Apr 26, 2023 at 9:03 AM James Newman <JNewman@charlestownwv.us> wrote:

> Good morning,
>
> I'm following up on plans for a development known as Hillside. It's located at the intersection of Hillside Drive and Sternway Drive. Neighbors are concerned about the impact of additional traffic from the proposed 128 Townhomes. Residents are concerned about traffic impact and decreased levels of service. I'm under the impression that the developer has reached out to WVDoH about their plans. Have y'all been able to review them?
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**From:** James Newman
**To:** Clohan, Kenneth L
**Cc:** Kevin A McDonald; Greg Ayers; Donald R Meadows; Perry J Keller
**Subject:** RE: Charles Town -Traffic Impact Inquiry
**Date:** Monday, May 1, 2023 11:23:00 AM
**Attachments:** 2023-04-14 Plans Revised.pdf

Good morning,

Thank you Ken. I see that on page 9 the Level of Service at Hillside/Charles Town Rd is 'E' during PM Peak Hours. Is there a general LOS that is experienced during non-peak times at that intersection? I ask because our Oridnance requires a Traffic Impact Study "When the proposed new approach is to an intersection already operating at level of service (LOS) "D" or worse", but that langue is vague and doesn't specify if that only applies to peak hours tor to how the intersection operates on average.

For the review process: we require that applicants obtain a WVDoH permit and provide that information on their plans prior to us approving those plans. When would WVDoH like to have plans? Just as we get the sketch plan (which is subject to change), or at preliminary or final plan stages when more details are provided?

I've attached a copy of the sketch plan that we have for Hillside.

James Newman
City Planner, Zoning/Subdivision Administrator, AICP
City of Charles Town, WV
304-724-3251

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**From:** Clohan, Kenneth L <kenneth.l.clohan@wv.gov>
**Sent:** Monday, May 1, 2023 10:47 AM
**To:** James Newman <JNewman@charlestownwv.us>
**Cc:** Kevin A McDonald <kevin.a.mcdonald@wv.gov>; Greg Ayers <greg.a.ayers@wv.gov>; Donald R Meadows <donald.r.meadows@wv.gov>; Perry J Keller <perry.j.keller@wv.gov>
**Subject:** Re: Charles Town -Traffic Impact Inquiry

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As discussed in the meeting last week, I don't believe that we have received any formal information regarding a development on Hillside Dr. but would suggest that any information be provided to those copied in this email so that the information can be reviewed and comments provided.

Also, as requested, a copy of the approved TIS for Kings Crossing is attached since it contains more recent information regarding the intersection of Charles Town Rd. and Hillside Dr.

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District Five Traffic Engineer - WVDOH
304-260-4392

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> If you need the plans they submitted, let me know.
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> I want to ensure a more coordinated review process between the City and DoH. Let me know what I can do to help.
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> City of Charles Town, WV
> 304-724-3251
>
> Disclaimer: This email does NOT constitute a zoning or subdivision determination. To obtain an official determination, please contact the Zoning Administrator.

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**From:** Clohan, Kenneth L
**To:** James Newman
**Cc:** Kevin A McDonald; Greg Ayers; Donald R Meadows; Perry J Keller
**Subject:** Re: Charles Town -Traffic Impact Inquiry
**Date:** Friday, May 5, 2023 3:00:34 PM
**Attachments:** 2023-04-14 Plans Revised.pdf

---

James,

Thank you for the information.

Based on the projected trip generation for a development of this size, combined with the projected operation of the currently programmed roundabout, we do not see a need for a TIS for this development.

The City requirement for a TIS seems to be the same as the Division of Highways. If the City requires the developer to complete the TIS, we can review it, but we just ask that the developer contact us to approve the scope before moving forward.

Regarding plan review, it is generally helpful to be able to review the plans at all stages since the need for a TIS or roadway improvements should be able to be determined with the sketch plan. If the developer finds that road improvements will be too costly, they may decide to change the size of the development before spending money on detailed plans.

Ken Clohan

On Mon, May 1, 2023 at 11:23 AM James Newman <JNewman@charlestownwv.us> wrote:

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>
> Thank you Ken. I see that on page 9 the Level of Service at Hillside/Charles Town Rd is 'E' during PM Peak Hours. Is there a general LOS that is experienced during non-peak times at that intersection? I ask because our Oridnance requires a Traffic Impact Study "When the proposed new approach is to an intersection already operating at level of service (LOS) "D" or worse", but that langue is vague and doesn't specify if that only applies to peak hours tor to how the intersection operates on average.
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City of Charles Town, WV

304-724-3251

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---

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**Sent:** Monday, May 1, 2023 10:47 AM
**To:** James Newman <JNewman@charlestownwv.us>
**Cc:** Kevin A McDonald <kevin.a.mcdonald@wv.gov>; Greg Ayers <greg.a.ayers@wv.gov>; Donald R Meadows <donald.r.meadows@wv.gov>; Perry J Keller <perry.j.keller@wv.gov>
**Subject:** Re: Charles Town -Traffic Impact Inquiry

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Beware - This email comes from outside the City of Charles Town.

Beware - This email comes from outside the City of Charles Town.

**From:** Phillips, Mark
**To:** James Newman
**Subject:** RE: Traffic Study
**Date:** Tuesday, May 9, 2023 2:44:29 PM

---

Hey James,

Happy to help. Please see the following responses

1. What is the current level of service for the intersection of Hillside Drive/Charles Town Road?
    a. Based upon the Traffic Study completed by AMT Dated June 1, 2022 for the Kings Crossing Residential Development the current LOS for the subject intersection by approach is as follows (Page 52 Table 4 – 2021 Existing Conditions Analysis):
        i. Eastbound Charles Town Road (AM/PM) – LOS A/LOS A (Free Flow Condition)
        ii. Westbound Charles Town Road (AM/PM) – LOS A/LOS A (Free Flow Condition)
        iii. Northbound Approach from US 340/Norborne Glebe (AM/PM) – LOS D / LOS E (Stop-Controlled)
        iv. Southbound Approach from Hillside Drive (AM/PM) – LOS B/LOS C (Stop Controlled)
2. How will Kings Crossing impact that intersection?
    a. Based upon the Traffic Study completed by AMT Dated June 1, 2022 for the Kings Crossing Residential Development the 2025 Full Build and Full Build With Improvements LOS for the subject intersection by approach is as follows (Page 52 Table 4 – 2021 Existing Conditions Analysis):
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        4. Southbound Approach from Hillside Drive (AM/PM) – LOS C/LOS E (Stop Controlled)
        ii. 2025 Full-Build (Kings Crossing) w/ improvement of Roundabout as recommended in the study:
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        2. Westbound Charles Town Road (AM/PM) – LOS A/LOS A (Roundabout)
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    a. I cannot fully answer this question however I can mention the number of additional trips that will be generated using the ITE Trip Generation guidance which is the

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i. The Hillside Development Proposed 127 Townhouse units per the Sketch Plan Provided. Per the ITE 10th Edition Trip Gen Manual Land Use Code 220 each Townhouse unit will develop the following trips per period specified:
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   a. AM Peak – 72 AM Peak Hour Trips
   b. PM Peak – 86 PM Peak Hour Trips
   c. Weekday – 930 Total Daily Trips

a. Based on the additional trips those numbers could be modeled into an additional traffic study to derive the impact to the intersection of Hillside Drive and Charles Town Road. Based upon the existing and proposed Hillside Development Roadway Network it could be assumed that al trips will enter the intersection at the Southbound Hillside Drive Approach to Charles Town Road and "split" based upon assumed origin-destination data and Trip Distribution variables,

Please let me know if you have any further questions or need anything else. I derived as much as I could but the key goes back to my comments regarding Kings Crossing and ensuring they implement the Roundabout ASAP in their development program. With the Roundabout in place at Hillside Drive and Charles Town Road the traffic impacts are mitigated and LOS improved. Without the roundabout one can assume that the failing LOS would only exacerbated and made worse by the additional trips associated with the Hillside Development.

Thanks,

**Mark R Phillips, P.E. (VA,WV)**
**Kimley-Horn** | 11400 Commerce Park Dr, Reston, VA 20191
Direct: 703-870-3631 | Mobile: 540-454-6294
*Connect with us*: Twitter | LinkedIn | Facebook | Instagram | Kimley-Horn.com

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---

**From:** James Newman <JNewman@charlestownwv.us>
**Sent:** Tuesday, May 9, 2023 2:17 PM
**To:** Phillips, Mark <Mark.Phillips@kimley-horn.com>
**Subject:** Traffic Study

Hi Mark,

Our Planning Commission will be delving into the Hillside Development (see attached) on May 22nd. They'd like to know, based on the TIA for Kings Crossing (see attached), answers to the following:

1. What is the current level of service for the intersection of Hillside Drive/Charles Town Road?

2. How will Kings Crossing impact that intersection?
3. Based on those two attachments, what traffic impact can we expect from Hillside? (Since we don't have a traffic study by Hillside yet, this question may not be able to be answered).

James Newman
City Planner, Zoning/Subdivision Administrator, AICP
City of Charles Town, WV
304-724-3251

Disclaimer: This email does NOT constitute a zoning or subdivision determination. To obtain an official determination, please contact the Zoning Administrator.

Beware - This email comes from outside the City of Charles Town.

**From:** Clohan, Kenneth L
**To:** James Newman
**Cc:** Kevin A McDonald; Greg Ayers; Donald R Meadows; Perry J Keller
**Subject:** Re: Charles Town -Traffic Impact Inquiry
**Date:** Tuesday, May 16, 2023 12:53:39 PM

---

James,

To clarify our conversation this afternoon, the TIS completed by AMT for King Crossing shows an existing LOS "B" in the AM and LOS "C" in the PM for the Hillside Dr. southbound approach to WV 115. This is listed on page 37 and graphically shown on page 54 of the TIS.

Ken

On Fri, May 5, 2023 at 2:59 PM Clohan, Kenneth L <kenneth.l.clohan@wv.gov> wrote:

> James,
>
> Thank you for the information.
>
> Based on the projected trip generation for a development of this size, combined with the projected operation of the currently programmed roundabout, we do not see a need for a TIS for this development.
>
> The City requirement for a TIS seems to be the same as the Division of Highways. If the City requires the developer to complete the TIS, we can review it, but we just ask that the developer contact us to approve the scope before moving forward.
>
> Regarding plan review, it is generally helpful to be able to review the plans at all stages since the need for a TIS or roadway improvements should be able to be determined with the sketch plan. If the developer finds that road improvements will be too costly, they may decide to change the size of the development before spending money on detailed plans.
>
> Ken Clohan
>
> On Mon, May 1, 2023 at 11:23 AM James Newman <JNewman@charlestownwv.us> wrote:
>
> > Good morning,
> >
> > Thank you Ken. I see that on page 9 the Level of Service at Hillside/Charles Town Rd is 'E' during PM Peak Hours. Is there a general LOS that is experienced during non-peak times at that intersection? I ask because our Oridnance requires a Traffic Impact Study "When the proposed new approach is to an intersection already operating at level of service (LOS) "D" or worse", but that langue is vague and doesn't specify if that only applies to peak hours tor to how the intersection operates on average.
> >
> > For the review process: we require that applicants obtain a WVDoH permit and provide

that information on their plans prior to us approving those plans. When would WVDoH like to have plans? Just as we get the sketch plan (which is subject to change), or at preliminary or final plan stages when more details are provided?

I've attached a copy of the sketch plan that we have for Hillside.

James Newman

City Planner, Zoning/Subdivision Administrator, AICP

City of Charles Town, WV

304-724-3251

Disclaimer: This email does NOT constitute a zoning or subdivision determination. To obtain an official determination, please contact the Zoning Administrator.

---

**From:** Clohan, Kenneth L <kenneth.l.clohan@wv.gov>
**Sent:** Monday, May 1, 2023 10:47 AM
**To:** James Newman <JNewman@charlestownwv.us>
**Cc:** Kevin A McDonald <kevin.a.mcdonald@wv.gov>; Greg Ayers <greg.a.ayers@wv.gov>; Donald R Meadows <donald.r.meadows@wv.gov>; Perry J Keller <perry.j.keller@wv.gov>
**Subject:** Re: Charles Town -Traffic Impact Inquiry

Good morning James,

As discussed in the meeting last week, I don't believe that we have received any formal information regarding a development on Hillside Dr. but would suggest that any information be provided to those copied in this email so that the information can be reviewed and comments provided.

Also, as requested, a copy of the approved TIS for Kings Crossing is attached since it

contains more recent information regarding the intersection of Charles Town Rd. and Hillside Dr.

*Ken*

Kenneth L. Clohan, Jr., P.E.

District Five Traffic Engineer - WVDOH

304-260-4392

On Wed, Apr 26, 2023 at 9:03 AM James Newman <JNewman@charlestownwv.us> wrote:

> Good morning,
>
> I'm following up on plans for a development known as Hillside. It's located at the intersection of Hillside Drive and Sternway Drive. Neighbors are concerned about the impact of additional traffic from the proposed 128 Townhomes. Residents are concerned about traffic impact and decreased levels of service. I'm under the impression that the developer has reached out to WVDoH about their plans. Have y'all been able to review them?
>
> If you need the plans they submitted, let me know.
>
> I want to ensure a more coordinated review process between the City and DoH. Let me know what I can do to help.
>
> James Newman
>
> City Planner, Zoning/Subdivision Administrator, AICP
>
> City of Charles Town, WV
>
> 304-724-3251
>
> Disclaimer: This email does NOT constitute a zoning or subdivision determination. To obtain an official determination, please contact the Zoning Administrator.

> Beware - This email comes from outside the City of Charles Town.

Beware - This email comes from outside the City of Charles Town.

**From:** Clohan, Kenneth L
**To:** seth@myateamagent.com
**Cc:** Donald R Meadows; Perry J Keller; James Newman; Joshua L Leatherman; Kevin A McDonald
**Subject:** Re: LOS at Hillside Drive and Rt115
**Date:** Tuesday, May 16, 2023 12:42:44 PM
**Attachments:** image001.png
2022_06_01 Jefferson County Kings Crossing TIS, Final Revised.pdf

---

Hi Seth,

Please see attached the most recent TIS completed in the area which shows a LOS of "D" for the Hillside Dr. approach to the intersection with Charles Town Rd.

I'm copying Mr. Newman with the City of Charles Town since this information was previously provided to him.

*Ken*
Kenneth L. Clohan, Jr., P.E.
District Five Traffic Engineer - WVDOH
304-260-4392

On Tue, May 16, 2023 at 10:25 AM Seth Rivard <seth@myateamagent.com> wrote:

> Good morning, Ken,
>
> Have you had an opportunity to review this request?
>
> Thank you,
>
> Seth
>
> Get Outlook for Android
>
> ---
>
> **From:** Seth Rivard
> **Sent:** Wednesday, May 10, 2023 8:26:52 AM
> **To:** Clohan, Kenneth L <kenneth.l.clohan@wv.gov>
> **Subject:** LOS at Hillside Drive and Rt115
>
> Good morning, Ken,
>
> Hope you are doing well. I want to confirm the LOS at Hillside Drive and Rt115. Appreciate your time on this.
>
> Take Care,
>
> Seth




Beware - This email comes from outside the City of Charles Town.

**From:** Phillips, Mark
**To:** James Newman
**Subject:** RE: Charles Town -Traffic Impact Inquiry
**Date:** Wednesday, May 17, 2023 3:12:40 PM

---

Yes for the northbound approach. So we could try to put them on the line to do one for that. But it may be a tough sell since their contribution to that movement may not be much.

-Mark

**Mark R Phillips, P.E. (VA,WV)**
**Kimley-Horn** | 11400 Commerce Park Dr, Reston, VA 20191
Direct: 703-870-3631 | Mobile: 540-454-6294
*Connect with us*: Twitter | LinkedIn | Facebook | Instagram | Kimley-Horn.com

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---

**From:** James Newman <JNewman@charlestownwv.us>
**Sent:** Wednesday, May 17, 2023 3:11 PM
**To:** Phillips, Mark <Mark.Phillips@kimley-horn.com>
**Subject:** RE: Charles Town -Traffic Impact Inquiry

I apologize for any confusion I caused. I just want to know what the current level of service is at Hillside/Charles Town Road.

One of the requirements for requiring a traffic study is:

"When the proposed new approach is to an intersection already operating at level of service (LOS) "D" or worse."

I just want to know if the current Level of Service is at D or worse. I thought the text meant it is currently at E during peak evening hours.

---

**From:** Phillips, Mark <Mark.Phillips@kimley-horn.com>
**Sent:** Wednesday, May 17, 2023 3:07 PM
**To:** James Newman <JNewman@charlestownwv.us>
**Subject:** RE: Charles Town -Traffic Impact Inquiry

James that is the northbound approach. I though the specific ask was regarding the southbound approach? Regarding Hillside which is to the north.

**Mark R Phillips, P.E. (VA,WV)**
**Kimley-Horn** | 11400 Commerce Park Dr, Reston, VA 20191
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**From:** James Newman <JNewman@charlestownwv.us>
**Sent:** Wednesday, May 17, 2023 2:34 PM
**To:** Phillips, Mark <Mark.Phillips@kimley-horn.com>
**Subject:** RE: Charles Town -Traffic Impact Inquiry

Thank you. What about point a.3. showing LOS E?

> i. Northbound Approach from US 340/Norborne Glebe (AM/PM) – LOS D / LOS E (Stop-Controlled)

---

**From:** Phillips, Mark <Mark.Phillips@kimley-horn.com>
**Sent:** Tuesday, May 16, 2023 12:59 PM
**To:** James Newman <JNewman@charlestownwv.us>
**Subject:** RE: Charles Town -Traffic Impact Inquiry

Yes correct. If you reference my email to you dated 5/9, my answer to question 1 a.iv. the existing southbound approach did not operate at an LOS D or worse.

**Mark R Phillips, P.E. (VA,WV)**
**Kimley-Horn** | 11400 Commerce Park Dr, Reston, VA 20191
Direct: 703-870-3631 | Mobile: 540-454-6294
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---

**From:** James Newman <JNewman@charlestownwv.us>
**Sent:** Tuesday, May 16, 2023 12:56 PM
**To:** Phillips, Mark <Mark.Phillips@kimley-horn.com>
**Subject:** FW: Charles Town -Traffic Impact Inquiry

Hi Mark,

Would you be able to confirm that the Kings Crossing TIA shows that the existing level of service on Hillside Drive is not at LOS D or worse?

James Newman
City Planner, Zoning/Subdivision Administrator, AICP
City of Charles Town, WV
304-724-3251

Disclaimer: This email does NOT constitute a zoning or subdivision determination. To obtain an official determination, please contact the Zoning Administrator.

---

**From:** Clohan, Kenneth L <kenneth.l.clohan@wv.gov>
**Sent:** Tuesday, May 16, 2023 12:53 PM
**To:** James Newman <JNewman@charlestownwv.us>
**Cc:** Kevin A McDonald <kevin.a.mcdonald@wv.gov>; Greg Ayers <greg.a.ayers@wv.gov>; Donald R Meadows <donald.r.meadows@wv.gov>; Perry J Keller <perry.j.keller@wv.gov>
**Subject:** Re: Charles Town -Traffic Impact Inquiry

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*Ken*

Kenneth L. Clohan, Jr., P.E.
District Five Traffic Engineer - WVDOH
304-260-4392

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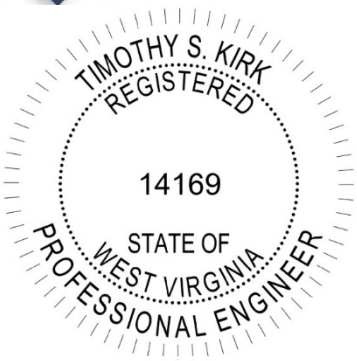
# Kings Crossing Residential Traffic Impact Study
# Charles Town, Jefferson County, WV

**AMT Project File 21-0261.001 | June 1, 2022** **REVISED**

**PREPARED FOR:**

Mr. Matt Stare
Land Acquisition & Developer Manager
DR Acquisitions
10212 Governor Lane Blvd, Suite 1006
Williamsport, MD 21795

A. MORTON THOMAS AND ASSOCIATES, INC.




**PREPARED BY:**

Timothy Kirk, PE, PTOE
A. Morton Thomas and Associates, Inc.
417 Grand Park Drive, Suite 104
Parkersburg, WV 26105
(304) 400-4952

Signature: _____ Date: 06/01/2022

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# EXECUTIVE SUMMARY

This report summarizes existing and future traffic analyses conducted in support of the proposed Kings Crossing Residential Development. The proposed residential development is to be located south of WV 115 (Charles Town Road) and east of US 340 (Berryville Pike) near Charles Town, Jefferson County, West Virginia. The proposed site plan includes 177 single-family homes and 227 townhomes and is expected to be built and completed by the year 2025. The development will be constructed in three phases. Phase 1 will include 43 single-family homes and 72 townhomes and is planned to be completed in 2022. Phase 2 includes an additional 81 single-family homes and 83 townhomes and is planned to be completed in 2024. Phase 3 includes an additional 53 single-family homes and 72 townhomes and is planned to be completed in 2025.

The proposed residential development is anticipated to be served by two site driveways intersecting directly with WV 115. Site Drive #1 and Site Drive #2 intersect with WV 115. Site Drive #1 (addressed as Road 1 on the site plan) is proposed to be located approximately 2,000 feet east of Crosswinds Drive approaching WV 115 from the south and will operate as a full movement approach utilizing two-way stop-control (TWSC). Site Drive #2 (addressed as Road 12 on the site plan) will approach WV 115 from the south approximately 2,600 feet east of Crosswinds Drive and will operate as a full movement approach utilizing TWSC.

Traffic analyses will consider future conditions at the anticipated milestone years of 2022, 2024, and 2025. This report summarizes the analyses of 2021 Existing conditions, 2022 No-Build conditions (without proposed development in place), 2022 Phase 1 Build conditions (with phase 1 of proposed development in place), 2024 Partial Build, 2024 Phase 2 Build (with phase 1 and 2 of the proposed development in place), 2025 Partial Build, 2025 Full Build (with complete development in place), and 2025 Build Improved conditions (with the proposed development and proposed improvements in place) during weekday AM and PM peak hours. An annual growth rate of 1.20% was obtained from the WVDOH.

Two approved traffic impact studies have been included in the future peak hour forecasts as pending developments that will be complete by the Full Build Year of 2025. These developments are the Tate Manor and Magnolia Springs residential developments. Both developments are located north of Crescent Drive/High Street and east of Jefferson Avenue in Charles Town and are anticipated to be completed by the year 2024. Estimated traffic generated by the two developments are included in the background traffic volumes beginning in the 2024 Partial Build conditions. Information regarding both developments is located in **Appendix F**.

AMT (A. Morton Thomas and Associates, Inc.) was retained to determine the projected traffic impacts of the proposed development in accordance with the guidelines set forth by WVDOH in Traffic Engineering Directive (TED) 106-2. The intent of the study is to fully examine the impacts of the traffic generated by the development on the existing transportation system and identify potential mitigation measures. This report presents trip generation, trip distribution, intersection on capacity analysis, queuing analysis, signal warrant analysis, auxiliary lane analysis, and recommendations for transportation improvements necessary to meet the anticipated traffic demands.

Based upon a review of the site plan and adjacent transportation network and following scope of work coordination with WVDOH, the following seven (7) existing and two (2) proposed intersections are

included within the scope of the Traffic Impact Study (TIS) for the proposed Kings Crossing residential development:

1) US 340 (Berryville Pike) with Candlewood Drive *(TWSC "T" type intersection)*
2) WV 115 (S. George Street) with Jefferson Avenue (CR 34) *(TWSC "T" type intersection)*
3) WV 115 with Citizens Way (CR 115/4)/US 340 SB *(Single-lane Roundabout Plus intersection)*
4) WV 115 with Hillside Drive (CR 9/69)/US 340 NB *(TWSC Plus type intersection)*
5) WV 115 with Fairleigh Drive/Bailey Brooks Way *(TWSC Plus type intersection)*
6) WV 115 with Crosswinds Drive *(TWSC "T" type intersection)*
7) WV 115 with Kabletown Road (CR 25) *(TWSC "T" type intersection)*
8) WV 115 with Site Drive #1 *(Proposed TWSC "T" type intersection)*
9) WV 115 with Site Drive #2 *(Proposed TWSC "T" type intersection)*

**Peak Hour Traffic Volumes**

Peak hour turning movement counts were collected for six (6) of the seven (7) existing intersections within the study area by AMT on Friday April 23, 2021 between the hours of 7-9 AM and 3-6 PM. Following submission of the Scope of Work document, WVDOH requested that the intersection of WV 115 with Jefferson Avenue intersection be included as part of the study area. Peak hour turning movement counts were collected for the additional intersection on May 4, 2018 by Quality Counts, in support of the Magnolia Springs TIS prepared by Kittelson & Associates Inc. The peak hour turning movement counts conducted by Quality Counts were balanced into the existing system. It was assumed that the additional trips produced from balancing the counts would proceed to enter and exit the system via US 340. On both May 4, 2018 and April 23, 2021, Jefferson County Schools were fully operational with in-classroom instruction for all students. The turning movement counts were compared with existing AADT and determined to be reasonable as a check and calibration for COVID-19 impacts.

The first phase of the proposed development is expected to be complete by the year 2022. The 2022 No-Build peak hour traffic volumes include: existing 2021 peak hour traffic and an annual traffic growth prior to the year 2022. The growth rate of 1.20% was applied to the existing peak hour traffic counts and compounded annually.

The 2022 Phase 1 Build traffic volumes include: the existing peak hour traffic volume, annual traffic growth until 2022, and new trips generated by phase 1 of the proposed development.

The 2024 Partial Build volumes include: the existing peak hour traffic volumes, annual traffic growth until 2024, anticipated traffic generated by the Tate Manor development, anticipated traffic generated by the Magnolia Springs development, and new trips generated by phase 1 of the proposed development.

The 2024 Phase 2 Build Volumes include: the existing peak hour traffic volumes, annual traffic growth until 2024, anticipated traffic generated by the Tate Manor development, anticipated traffic generated by the Magnolia Springs development, and new trips generated by phase 1 and phase 2 of the proposed development.

The 2025 Partial Build Volumes include: the existing peak hour traffic volumes, annual traffic growth until 2025, anticipated traffic generated by the Tate Manor development, anticipated traffic generated by the Magnolia Springs development, and new trips generated by phase 1 and phase 2 of the proposed development.

The 2025 Full Build Conditions include: existing 2021 peak hour traffic volume, anticipated traffic generated by the Tate Manor development, anticipated traffic generated by the Magnolia Springs development, an annual traffic growth prior to the year 2025, and the new peak hour trips to be generated by the full build out of Kings Crossing development. Site generated traffic was distributed onto the transportation network based upon existing traffic patterns and anticipated origin and destination of the newly generated site trips.

**Site Trip Generation and Distribution**

The proposed Kings Crossing residential development includes 177 single-family homes and 227 townhomes. The development will be constructed in three phases. Trip generation "Peak Hour of Generator" rates from ITE Trip Generation Manual, 10th Edition, were utilized for Single-Family Detached Housing (LUC 210) and Multifamily Housing (LUC 220). Phase 1 will include 43 single-family homes and 72 townhomes. Trip generation analysis indicates that Phase 1 will generate a total of 933 trips which includes 73 AM peak hour trips and 91 PM peak hour trips. Phase 2 includes an additional 81 single-family homes and 83 townhomes. Phase 2 will generate a total of 1,373 additional trips which includes 108 AM peak hour trips and 137 PM peak hour trips. Phase 3 will include 53 single-family homes and 72 townhomes. Phase 3 will generate a total of 1,027 additional trips which includes 80 AM peak hour trips and 101 PM peak hour trips. Trip generation analysis indicates that a total of 3,333 new daily trips will be generated including 261 AM peak hour trips and 329 PM peak hour trips at full build out in 2025.

The AM and PM peak hour trips to/from the proposed site were distributed based upon interpolation from current traffic patterns with all trips entering the development via WV 115. Distribution of the new external trips are as follows:

- 35% to/from the north on US 340
- 25% to/from the south on US 340
- 30% to/from the west on WV 115
- 10% to/from the east on WV 115

**2021 Existing Conditions Analysis**

The results of the 2021 existing conditions capacity analyses indicate that three (3) traffic movements currently operate worse than LOS D, which is considered the minimum tolerable level. Traffic movements that are expected to operate worse than LOS D include the following:

- ***Candlewood Drive westbound shared left-turn to US 340 LOS E during the PM peak hour***
- ***Jefferson Avenue southbound shared left/right lane to WV 115 LOS E during the PM peak hour***
- ***US 340 NB Ramp northbound shared left/through lane to WV 115 LOS F during the PM peak hour***

**2022 No-Build Conditions Analysis**

The results of the 2028 No-Build Conditions capacity analyses indicate that traffic movements that operate worse than LOS D during 2021 Existing Conditions are anticipated to continue. Traffic movements that are expected to operate worse than LOS D include the following:

- *Candlewood Drive westbound shared left/through lane to US 340 LOS E during the PM peak hour*

- *Jefferson Avenue southbound shared left/right lane to WV 115 LOS F during the PM peak hour*
- *US 340 NB Ramp northbound shared left/through lane to WV 115 LOS F during both the AM and PM peak hours*

**2022 Phase 1 Build Conditions Analysis**

Geometric improvements included in the Phase 1 2022 Build Conditions include the construction of Site Drive #1 and Site Drive #2. Site Drive #1 is a full movement approach connecting to WV 115 creating a "T" type intersection approximately 2,000 feet east of Crosswinds Drive and will operate under stop control. Site Drive #2 is a full movement approach connecting to WV 115 creating a "T" type intersection approximately 2,600 feet east of Crosswinds Drive and will operate under stop control.

The results of the Phase 1 2022 Build Conditions capacity analyses indicate that traffic movements that operate worse than LOS D during 2022 No-Build Conditions are anticipated to continue with no additional movements expected to operate worse than LOS D. Traffic movements that are expected to operate worse than LOS D include the following:

- *Candlewood Drive westbound shared left/through lane to US 340 LOS E during PM peak hour*
- *Jefferson Avenue southbound shared left/right lane to WV 115 LOS F during PM peak hour*
- *US 340 NB Ramp northbound shared left/through lane to WV 115 LOS E during the AM peak hour and LOS F during the PM peak hour*

**2024 Partial Build Conditions Analysis**

The results of the 2022 Phase 1 Build Conditions capacity analyses indicate that traffic movements that operate worse than LOS D during 2021 Existing Conditions are anticipated to continue with no additional traffic movements operating worse than LOS D. Traffic movements that are expected to operate worse than LOS D include the following:

- *Candlewood Drive westbound shared left/through lane to US 340 LOS E during the PM peak hour*
- *Jefferson Avenue southbound shared left/right lane to WV 115 LOS F during the PM peak hour*
- *US 340 NB Ramp northbound shared left/through lane to WV 115 LOS F during both the AM and PM peak hours*

**2024 Phase 2 Build Conditions Analysis**

The results of the Phase 2 2024 Build Conditions capacity analyses indicate that traffic movements that operate worse than LOS D during 2024 Partial Build Conditions are anticipated to continue with no additional movements expected to operate worse than LOS D. Traffic movements that are expected to operate worse than LOS D include the following:

- *Candlewood Drive westbound shared left/through lane to US 340 LOS E during PM peak hour*
- *Jefferson Avenue southbound shared left/right lane to WV 115 LOS F during PM peak hour*
- *US 340 NB Ramp northbound shared left/through lane to WV 115 LOS F during both the AM and PM peak hours*

**2025 Partial Build Conditions Analysis**

The results of the 2024 Phase 2 Build Conditions capacity analyses indicate that traffic movements that operate worse than LOS D during 2021 Existing Conditions are anticipated to continue with no additional movements operating at LOS worse than D. Traffic movements that are expected to operate worse than LOS D include the following:

- *Candlewood Drive westbound shared left/through lane to US 340 LOS E during the PM peak hour*
- *Jefferson Avenue southbound shared left/right lane to WV 115 LOS F during the PM peak hour*
- *US 340 NB Ramp northbound shared left/through lane to WV 115 LOS F during both the AM and PM peak hours*

**2025 Full Build Conditions Analysis**

The results of the Phase 3 2025 Full Build Conditions capacity analyses indicate that traffic movements that operate worse than LOS D during 2025 Partial Build Conditions are anticipated to continue with two additional movements expected to operate worse than LOS D. Traffic movements that are expected to operate worse than LOS D include the following:

- *Candlewood Drive westbound shared left/through lane to US 340 LOS E during PM peak hour*
- *Jefferson Avenue southbound shared left/right lane to WV 115 LOS F during PM peak hour*
- ***US 340 SB Ramp northbound shared left/through/right lane to WV 115 LOS E during the PM peak hour***
- *US 340 NB Ramp northbound shared left/through lane to WV 115 LOS F during both the AM and PM peak hours*
- ***Hillside Drive southbound shared left/through/right lane to WV 115 LOS E during the PM peak hour***

**2025 Full Build Improved Conditions Analysis**

Geometric improvements included in the Phase 3 2028 Build Improved Conditions include:

1. Construction of an exclusive left-turn lane on WV 115 westbound approach to Site Drive #1.
2. Construction of a roundabout at the WV 115 with US 340 Northbound Ramp/Hillside Drive intersection.
3. Construction of a right turn slip lane at WV 115 with US 340 Southbound Ramp/Citizen Way.
4. Installation of a traffic signal at WV 115 with Jefferson Avenue.
5. Construction of an exclusive left turn lane on WV 115 eastbound at Jefferson Avenue identified in the Tate Manor TIS.

The results of the Phase 3 2025 Full Build Improved Conditions capacity analyses indicate that no traffic movements will operate worse than LOS D, which is considered the minimum tolerable level, except for Candlewood Drive to US 340 and US 340 SB Ramp to WV 115.

- *Candlewood Drive westbound shared left-turn movement to US 340 LOS E during the PM peak hour.*

**Conclusions/Recommendations**

Based on the findings of this study, the following infrastructure improvements are recommended to address existing capacity issues and maintain operation of the existing transportation network:

**US 340 with Candlewood Drive**

- Install pavement markings on the Candlewood Drive approach to US 340. Previous pavement markings are no longer visible and need to be reinstalled to delineate separate left and right turn lanes.

**WV 115 with Jefferson Avenue**

- As part of the Tate Manor TIS, it was recommended that a traffic signal be installed at the intersection of WV 115 and Jefferson Avenue. Intersection conditions previously met the MUTCD warranting criteria. Additionally, the 2021 Existing Conditions and 2022 No-Build analysis indicates that the intersection LOS will currently operates at LOS E during the PM peak hour under Two Way Stop Control. The previously completed signal warrant is located in **Appendix G**.

- In conjunction with installation of a traffic signal identified in previous studies, widening WV 115 to construct an exclusive left-turn lane on the eastbound approach is recommended. The left-turn lane should be constructed to provide a minimum of 125 feet of full-width storage with an appropriate taper.

**WV 115 with Hillside Drive/ US 340 Northbound Ramps**

- Proceed with the DOH planned conversion of the intersection to a single lane roundabout. The 2021 Existing Conditions analysis indicates that the northbound movement currently operates at LOS E during the PM peak hour. Under roundabout yield control, this intersection would operate at an overall LOS C during the PM peak hour for 2025 Full Build Conditions, with the northbound movement operating at LOS A.

Based on the finding of this study, the following improvements are recommended for Phase 1 of the Kings Crossing Residential Development:

**WV 115 with Site Drive #1**

- Construct Site Drive #1 as a full movement approach intersecting with WV 115 creating a "T" type intersection approximately 2,000 feet east of Crosswinds Drive. The site driveway is recommended to include one ingress and two egress lanes to provide separate left and right turn lanes exiting the development. Site Drive #1 will operate under stop-control, while WV 115 operates as free-flow.

**WV 115 with Site Drive #2**

- Construct Site Drive #2 as a full movement approach intersecting with WV 115 creating a "T" type intersection approximately 2,600 feet east of Crosswinds Drive. The site driveway is recommended to include one ingress and two egress lanes to provide separate left and right turn

lanes exiting the development. Site Drive #2 will operate under stop-control, while WV 115 operates as free-flow.

Based on the finding of this study, the following geometric improvements are recommended to mitigate the impacts of the Kings Crossing residential development and maintain acceptable traffic operations along the existing transportation network at the build completion of Phase 2 in 2025 prior to starting Phase 3 of Kings Crossing Residential development:

**WV 115 with Citizen Way/US 340 Southbound Ramps**

- Construct a low angle right turn slip lane on for the US 340 northbound ramp approach to WV 115 eastbound. The 2025 Partial Build analysis indicates that the ramp approach will deteriorate to LOS C during the PM peak hour with the overall intersection operating LOS B. The 2025 Build analysis indicates that the US 340 southbound ramp approach will deteriorate to LOS E during the PM peak hour with the overall intersection operating at LOS C. The addition of the right turn slip lane improves the ramp to LOS B during the PM peak hour and the overall intersection to LOS B. This measure is needed at the conclusion of Phase 2 and prior to beginning Phase 3.

**WV 115 with Site Drive #1**

- Construct an exclusive left-turn lane on the WV 115 westbound approach to Site Drive #1. Peak hour volumes are projected to meet the AASHTO guidelines following 2025 Build Conditions PM peak hour. The left-turn should be constructed to provide a minimum of 125 feet of full-width storage with appropriate taper. This measure is needed at the conclusion of Phase 2 and prior to beginning Phase 3.

# INTRODUCTION

This report summarizes existing and future traffic analyses conducted in support of the proposed Kings Crossing Residential Development. The proposed residential development is to be located south of WV 115 (Charles Town Road) and east of US 340 (Berryville Pike) near Charles Town, Jefferson County, West Virginia. The proposed site plan includes 177 single-family homes and 227 townhomes and is expected to be built and completed by the year 2025. The development will be constructed in three phases. Phase 1 will include 43 single-family homes and 72 townhomes and is planned to be completed in 2022. Phase 2 includes an additional 81 single-family homes and 83 townhomes and is planned to be completed in 2024. Phase 3 includes an additional 53 single-family homes and 72 townhomes and is planned to be completed in 2025.

The proposed residential development is anticipated to be served by two site driveways intersecting directly with WV 115. Site Drive #1 and Site Drive #2 intersect with WV 115. Site Drive #1 (addressed as Road 1 on the site plan) is proposed to be located approximately 2,000 feet east of Crosswinds Drive approaching WV 115 from the south and will operate as a full movement approach utilizing two-way stop-control (TWSC). Site Drive #2 (addressed as Road 12 on the site plan) will approach WV 115 from the south approximately 2,600 feet east of Crosswinds Drive and will operate as a full movement approach utilizing TWSC.

Traffic analyses will consider future conditions at the anticipated milestone years of 2022, 2024, and 2025. This report summarizes the analyses of 2021 Existing conditions, 2022 No-Build conditions (without proposed development in place), 2022 Phase 1 Build conditions (with phase 1 of proposed development in place), 2024 Partial Build, 2024 Phase 2 Build (with phase 1 and 2 of the proposed development in place), 2025 Partial Build, 2025 Full Build (with complete development in place), and 2025 Build Improved conditions (with the proposed development and proposed improvements in place) during weekday AM and PM peak hours. An annual growth rate of 1.20% was obtained from the WVDOH.

Two approved traffic impact studies have been included in the future peak hour forecasts as pending developments that will be complete by the Full Build Year of 2025. These developments are the Tate Manor and Magnolia Springs residential developments. Both developments are located north of Crescent Drive/High Street and east of Jefferson Avenue in Charles Town and are anticipated to be completed by the year 2024. Estimated traffic generated by the two developments are included in the background traffic volumes beginning in the 2024 Partial Build conditions. Information regarding both developments is located in **Appendix F**.

AMT (A. Morton Thomas and Associates, Inc.) was retained to determine the projected traffic impacts of the proposed development in accordance with the guidelines set forth by WVDOH in Traffic Engineering Directive (TED) 106-2. The intent of the study is to fully examine the impacts of the traffic generated by the development on the existing transportation system and identify potential mitigation measures. This report presents trip generation, trip distribution, intersection capacity analysis, queuing analysis, signal warrant analysis, auxiliary lane analysis, and recommendations for transportation improvements necessary to meet the anticipated traffic demands.

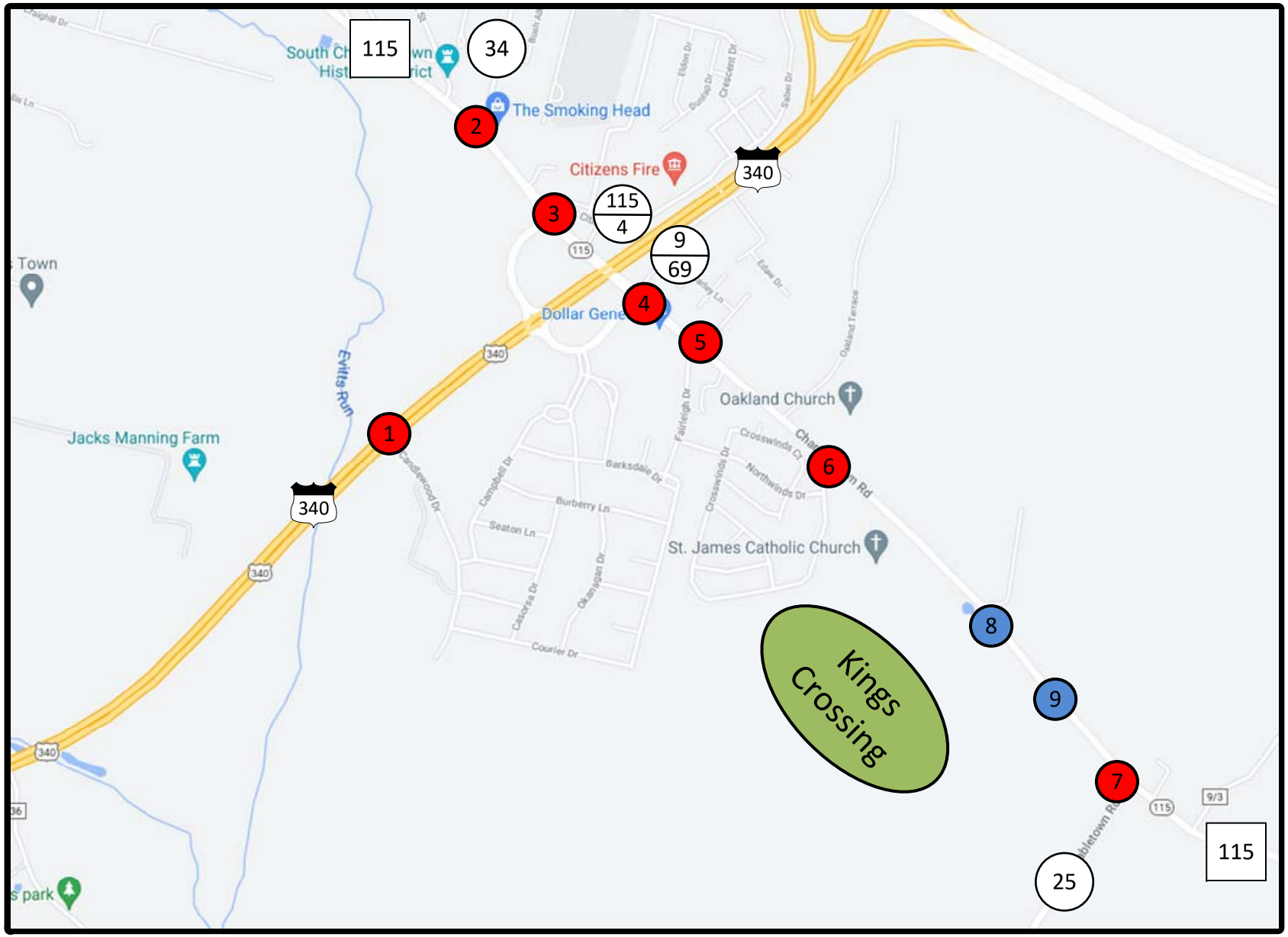
AMT coordinated with WVDOH to determine the intersections to be studied within the scope of work, preliminary trip generation, distribution, and study methodology for this Traffic Impact Study (TIS).

## STUDY AREA DESCRIPTION

Based upon a review of the site plan and adjacent transportation network and following scope of work coordination with WVDOH, the following seven (7) existing and two (2) proposed intersections are included within the scope of the Traffic Impact Study (TIS) for the proposed Kings Crossing residential development:

1) US 340 (Berryville Pike) with Candlewood Drive *(TWSC "T" type intersection)*
2) WV 115 (S. George St.) with Jefferson Avenue (CR 34) (*TWSC "T" type intersection)*
3) WV 115 with Citizens Way (CR 115/4)/US 340 SB (*Single-lane Roundabout Plus intersection)*
4) WV 115 with Hillside Drive (CR 9/69)/US 340 NB (*TWSC Plus type intersection)*
5) WV 115 with Fairleigh Drive/Bailey Brooks Way *(TWSC Plus type intersection)*
6) WV 115 with Crosswinds Drive *(TWSC "T" type intersection)*
7) WV 115 with Kabletown Road (CR 25) *(TWSC "T" type intersection)*
8) WV 115 with Site Drive #1 *(Proposed TWSC "T" type intersection)*
9) WV 115 with Site Drive #2 *(Proposed TWSC "T" type intersection)*

The study area and key intersections are shown on **Figure 1**, while the proposed site plan is shown on **Figure 2**.




## LEGEND

= Development

= Existing Intersection

= Proposed Intersection

AMT

N

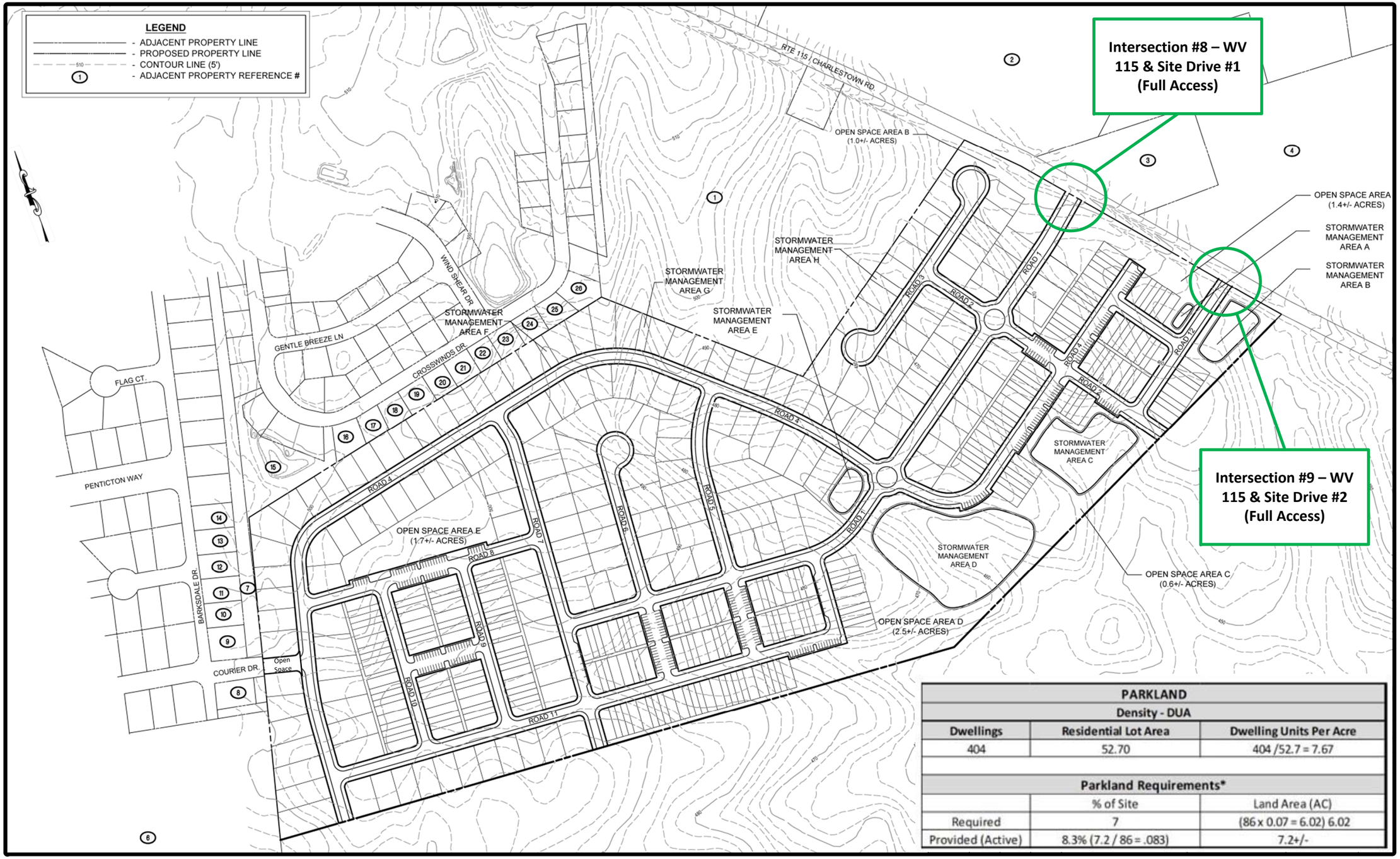
NOT TO SCALE

# Kings Crossing Residential TIS

Site Location Map

**DATE:** May 2022

**FIGURE 1**




| PARKLAND | | |
|---|---|---|
| Density - DUA | | |
| Dwellings | Residential Lot Area | Dwelling Units Per Acre |
| 404 | 52.70 | 404 /52.7 = 7.67 |
| | | |
| Parkland Requirements* | | |
| | % of Site | Land Area (AC) |
| Required | 7 | (86 x 0.07 = 6.02) 6.02 |
| Provided (Active) | 8.3% (7.2 / 86 = .083) | 7.2+/- |

AMT

NOT TO SCALE

**Kings Crossing Residential TIS**

Site Plan

**DATE:** May 2022

**FIGURE 2**

# EXISTING ROADWAY CONDITIONS

A detailed description of the existing study area roadway network is provided in this section of the report. AADT (Annual Average Daily Traffic) volume information was obtained from the WVDOH GIS website.

US 340 is a north-south four-lane two way-controlled access divided highway within the project area. US 340 is part of the National Highway System (NHS). US 340 forms a grade separated modified trumpet interchange with WV 115 south of the project site, with the ramps intersecting with surface streets to the north. The posted speed limit on this section of US 340 is 60 miles per hour (mph). The AADT along US 340 is 21,213 vehicles per day (vpd) just north of the US 340 interchange with WV 115.

WV 115 is a north-south two-lane urban major collector within the project area. The posted speed limit on this section of WV 115 is 45 mph east of Kabletown Road, before increasing to 55 mph just before Kabletown Road. The AADT along WV 115 in the project area is 4,542 vpd. WV 115 provides a direct connection to Downtown Charles Town, located approximately one-mile northwest of Citizens Way.

Jefferson Avenue (CR 34) is a two-lane two-way essential arterial state and local service (SLS) route within the project area. Jefferson Avenue provides access to mostly residential properties and is the only means of access to High Street. High Street connects directly to Charles Town Middle School. The posted speed limit on the section of Jefferson Avenue being analyzed is 35 mph. The AADT in the project area is 4,373.

Kabletown Road (CR 25) is a two-lane two-way collector, state and local service roadway within the project area. Kabletown Road provides access to residential properties while providing a direct connection to WV 115. The posted speed limit on this section of Kabletown Road is 40 mph and the AADT is 1,630 vpd.

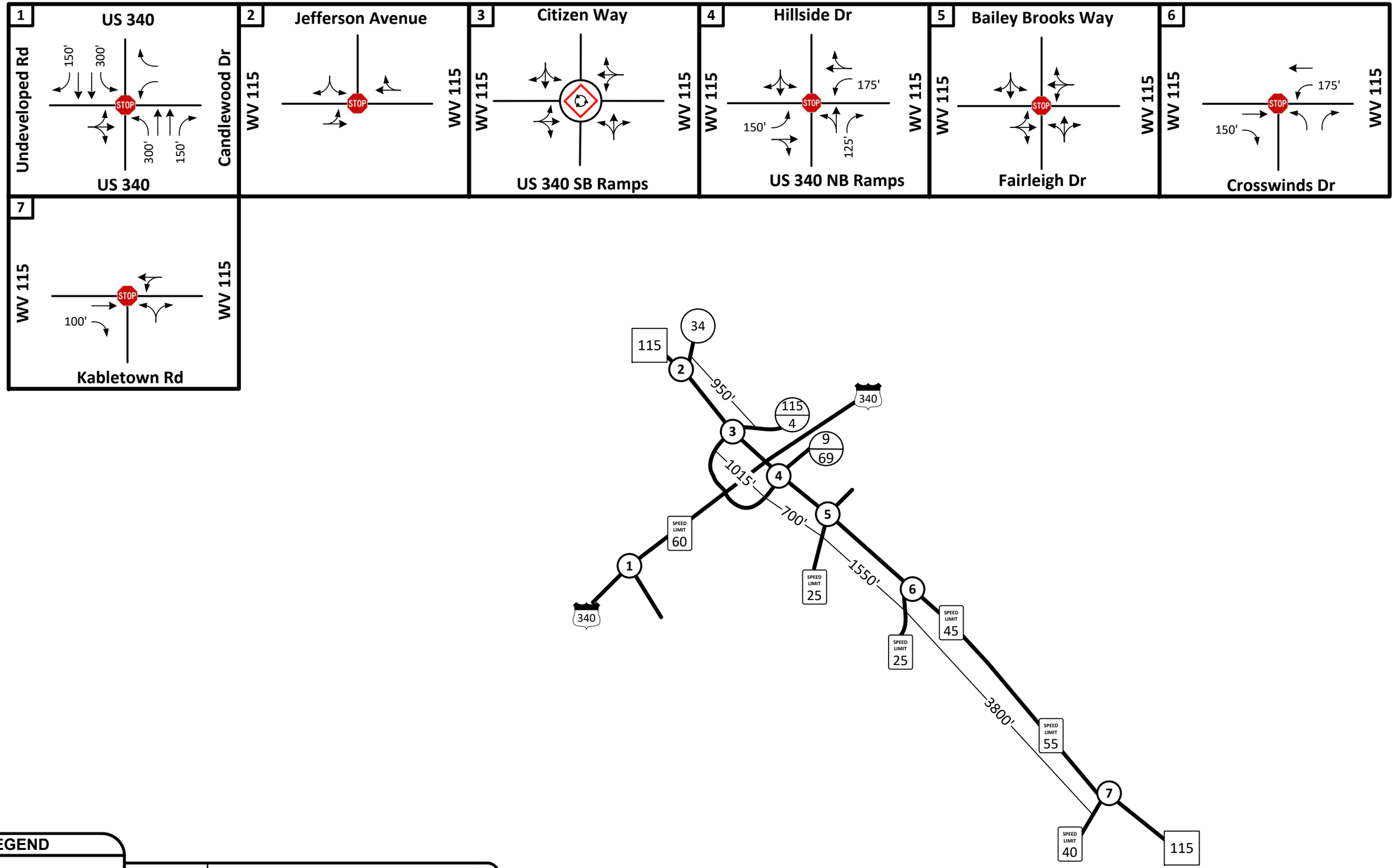
Citizens Way (CR 115/4) is a two-lane two-way state and local service roadway within the project area. Citizens Way provides access to the residential neighborhood north of WV 115 and east of Jefferson Avenue. Citizens Way intersects with WV 115 opposite US 340 Southbound Ramps at a four-leg roundabout intersection. The posted speed limit on this section of Citizens Way is 35 mph and the AADT along Citizens Way in the project area is 750 vpd. The AADT for Citizens Way was not available on WVDOH GIS website, therefore, was calculated based on collected turning movement counts.

Hillside Drive (CR 9/69) is a two-lane two-way state and local service roadway within the project area. Hillside Drive provides access to residential properties while providing a direct connection to WV 115 opposite US 340 Northbound Ramps. The posted speed limit on this section of Hillside Drive is 35 mph and the AADT is 120 vpd. The AADT for Hillside Drive was not available on WVDOH GIS website, therefore, was calculated based on collected turning movement counts.

**Table 1** provides a detailed description of the existing study area roadway network. In addition, Estimated Build Year AADT is included in the table which contains Existing volume, Kings Crossing trips, approved background trips (Tate Manor and Magnolia Springs), and traffic inflation to 2025. The 2021 existing intersection lane configurations and intersections control are shown on **Figure 3.**

## Table 1: Roadway Facility Summary

| Name | Code | State Functional Classification | Area | Direction | Speed Limit | AADT | Year | **Estimated Build AADT (2025)** | Description |
|---|---|---|---|---|---|---|---|---|---|
| Williamsport Pike | US 340 | Trunkline | Jefferson County | N-S | 60 | 16,115 | 2017 | 19,330 | N-S Trunkline that forms and interchange with WV 115 west of the proposed development |
| Charles Town Road | WV 115 | Trunkline | Jefferson County | N-S | 45/55 | 4,542 | 2017 | 10,360 | E-W Trunkline that runs perpendicular with US 340 through study area & is main access to development |
| Jefferson Avenue | CR 34 | Essential Arterial | Jefferson County | N-S | 35 | 4,373 | 2017 | 4,530 | N-S SLS Route that intersect with WV 115 |
| Kabletown Road | CR 25 | Collector (SLS) | Jefferson County | N-S | 40 | 1630 | 2017 | 1730 | N-S SLS Route that intersects with WV 115 |
| Citizens Way | CR 115/4 | *Collector (SLS)* | Jefferson County | N-S | 35 | 750 | 2021 | 750 | N-S SLS Route that intersects with WV 115 directly opposite US 340 SB Ramps |
| Hillside Drive | CR 9/69 | Collector (SLS) | Jefferson County | N-S | 35 | 120 | 2021 | 120 | N-S SLS Route that intersects with WV 115 directly opposite US 340 NB Ramps |




**LEGEND**

- Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- XXX' Storage Bay Length
- Existing Posted Speed

N

NOT TO SCALE

**Kings Crossing Residential TIS**

2021 Existing Lane Configuration

**DATE:** May 2022

**FIGURE 3**

# EXISTING & NO-BUILD PROJECT TRAFFIC VOLUMES

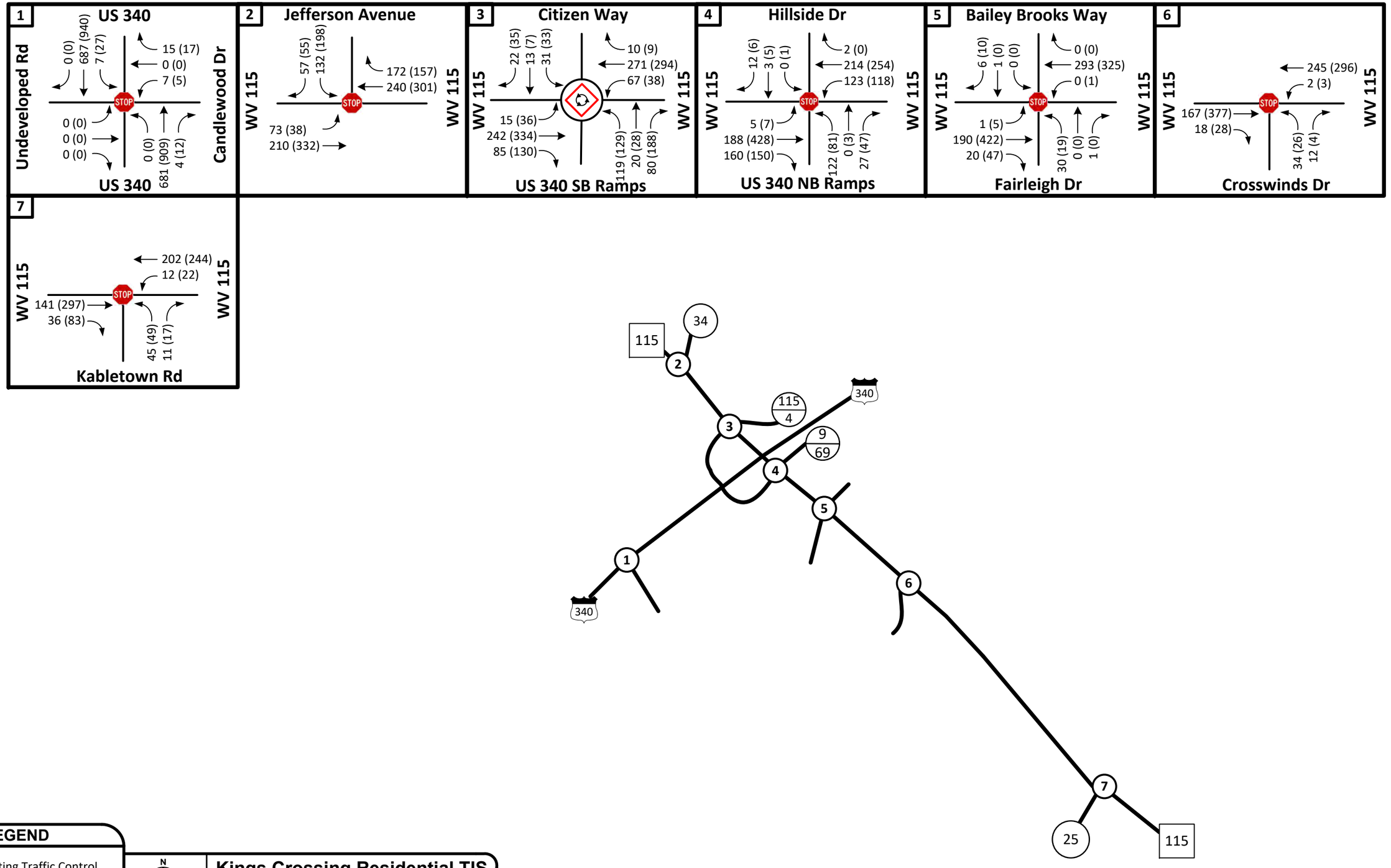
## 2021 Existing Conditions

Peak hour turning movement counts were collected for six (6) of the seven (7) existing intersections within the study area by AMT on Friday April 23, 2021 between the hours of 7-9 AM and 3-6 PM. Following submission of the Scope of Work document, WVDOH requested that the intersection of WV 115 with Jefferson Avenue intersection be included as part of the study area. Peak hour turning movement counts were collected for the additional intersection on May 4, 2018 by Quality Counts, in support of the Magnolia Springs TIS prepared by Kittelson & Associates Inc. The peak hour turning movement counts conducted by Quality Counts were balanced into the existing system. It was assumed that the additional trips produced from balancing the counts would proceed to enter and exit the system via US 340. On both May 4, 2018 and April 23, 2021, Jefferson County Schools were fully operational with in-classroom instruction for all students. The turning movement counts were compared with existing AADT and determined to be reasonable as a check and calibration for COVID-19 impacts. The traffic count data is located in **Appendix B** and the 2021 Existing Traffic Volumes for the weekday AM and PM peak hour volumes are shown on **Figure 4**.

## 2022 No-Build Conditions

The first phase of the proposed development is expected to be complete by the year 2022. The 2022 No-Build peak hour traffic volumes include: existing 2021 peak hour traffic and an annual traffic growth prior to the year 2022. The growth rate of 1.20% was applied to the existing peak hour traffic counts and compounded annually.

The total background development trips (Tate Manor and Magnolia Springs TIS) for the weekday AM and PM peak hours are shown on **Figure 5** to illustrate the increase in traffic volume resulting from adjacent projects included within this study. The 2025 No-Build peak hour volumes for the weekday AM and PM peak hour volumes are shown on **Figure 6**.




**LEGEND**

- Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

N

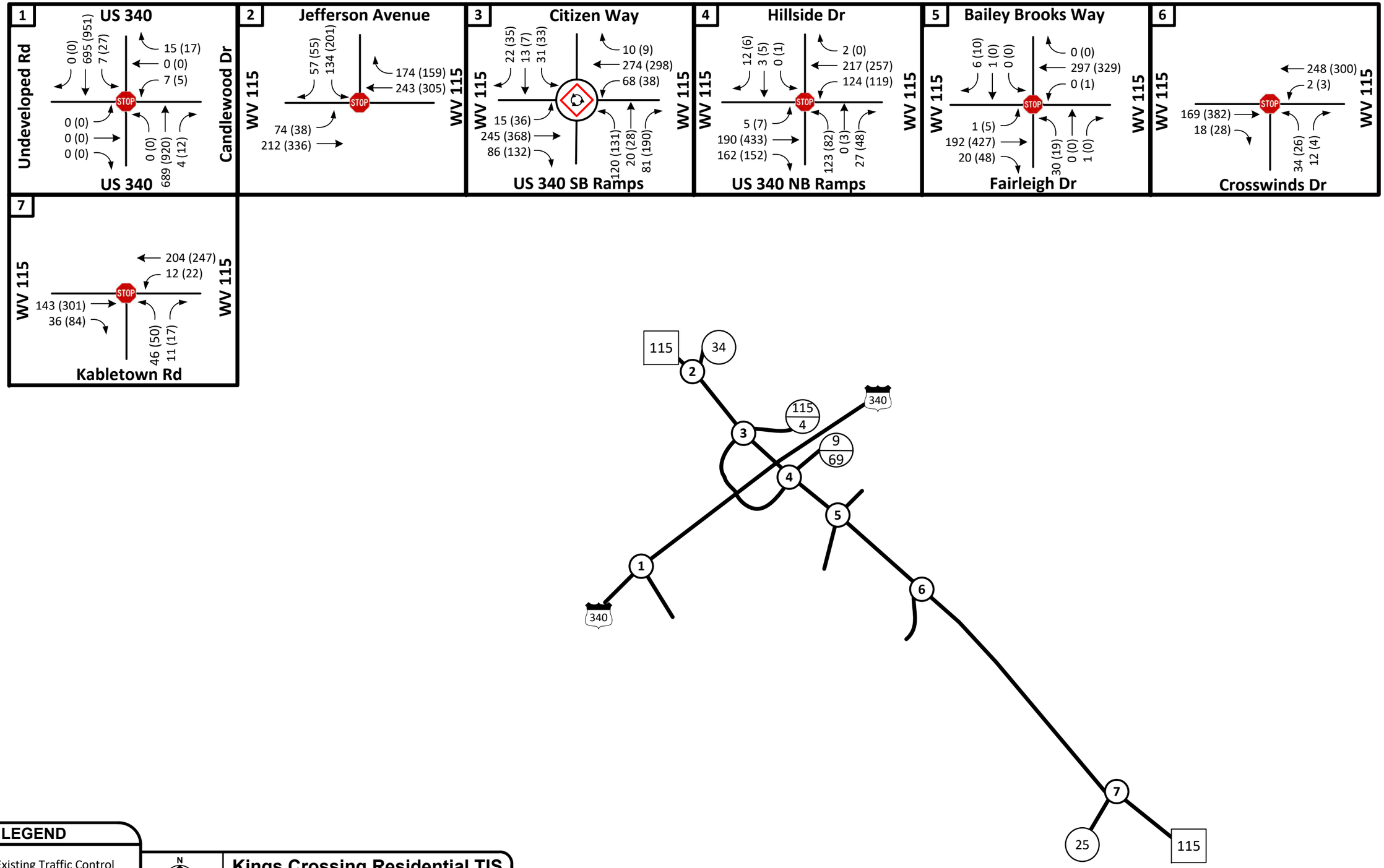
NOT TO SCALE

**Kings Crossing Residential TIS**

2021 Existing Traffic Volumes

**DATE:** May 2022

**FIGURE 4**




**LEGEND**

- Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

N

NOT TO SCALE

**Kings Crossing Residential TIS**

2022 No-Build Traffic Volumes

**DATE:** May 2022

**FIGURE 5**

# TRIP GENERATION

The proposed Kings Crossing residential development includes 177 single-family homes and 227 townhomes. The development will be constructed in three phases. Trip generation "Peak Hour of Generator" rates from ITE Trip Generation Manual, 10th Edition, were utilized for Single-Family Detached Housing (LUC 210) and Multifamily Housing (LUC 220). Phase 1 will include 43 single-family homes and 72 townhomes. Trip generation analysis indicates that Phase 1 will generate a total of 933 trips which includes 73 AM peak hour trips and 91 PM peak hour trips. Phase 2 includes an additional 81 single-family homes and 83 townhomes. Phase 2 will generate a total of 1,373 additional trips which includes 108 AM peak hour trips and 137 PM peak hour trips. Phase 3 will include 53 single-family homes and 72 townhomes. Phase 3 will generate a total of 1,027 additional trips which includes 80 AM peak hour trips and 101 PM peak hour trips. Trip generation analysis indicates that a total of 3,333 new daily trips will be generated including 261 AM peak hour trips and 329 PM peak hour trips at full build out in 2025.

**Table 2** shows the summary of the Trip Generation for all three phases of Kings Crossing.

## Table 2: Trip Generation Summary

**Phase 1**

| Description | LUC | Density | Daily Trips | AM Peak | | | PM Peak | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Enter | Exit | Total | Enter | Exit | Total |
| Single-Family Homes | 210 | 43 Units | 406 | 9 | 24 | 33 | 28 | 15 | 43 |
| Townhomes | 220 | 72 Units | 527 | 11 | 29 | 40 | 28 | 20 | 48 |
| **Total Net New External Trips** | | | **933** | **20** | **53** | **73** | **56** | **35** | **91** |

**Phase 2**

| Description | LUC | Density | Daily Trips | AM Peak | | | PM Peak | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Enter | Exit | Total | Enter | Exit | Total |
| Single-Family Homes | 210 | 81 Units | 765 | 16 | 46 | 62 | 52 | 29 | 81 |
| Townhomes | 220 | 83 Units | 608 | 13 | 33 | 46 | 33 | 23 | 56 |
| **Total Net New External Trips** | | | **1,373** | **29** | **79** | **108** | **85** | **52** | **137** |

**Phase 3**

| Description | LUC | Density | Daily Trips | AM Peak | | | PM Peak | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Enter | Exit | Total | Enter | Exit | Total |
| Single-Family Homes | 210 | 53 Units | 500 | 10 | 30 | 40 | 34 | 19 | 53 |
| Townhomes | 220 | 72 Units | 527 | 11 | 29 | 40 | 28 | 20 | 48 |
| **Total Net New External Trips** | | | **1,027** | **21** | **59** | **80** | **62** | **39** | **101** |

**Full Build (Summary)**

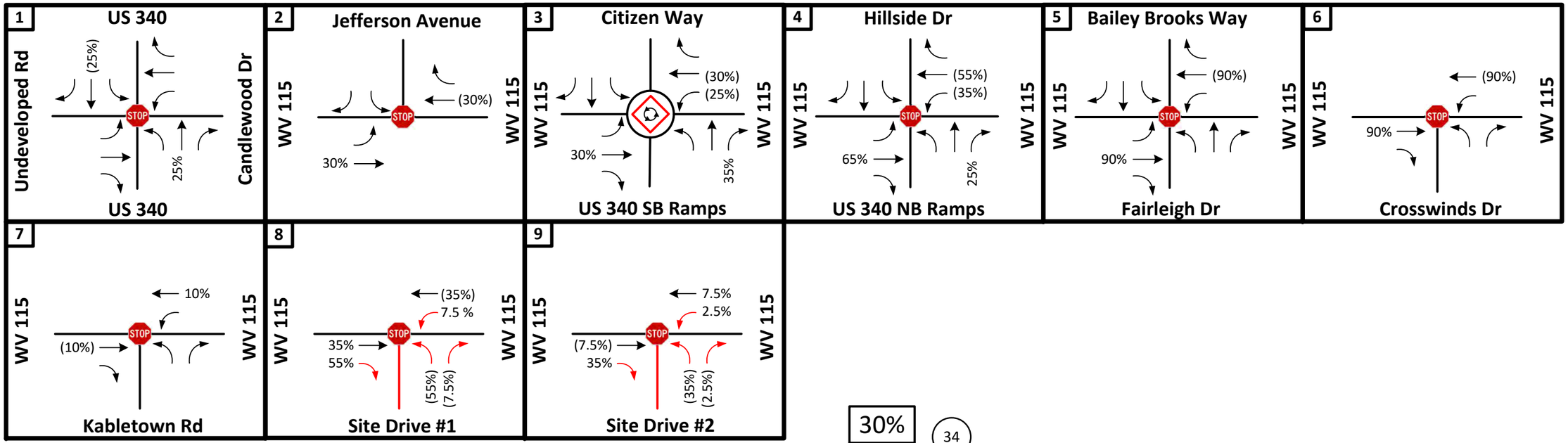
| Description | LUC | Density | Daily Trips | AM Peak | | | PM Peak | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Enter | Exit | Total | Enter | Exit | Total |
| Single-Family Homes | 210 | 177 Units | 1,671 | 35 | 100 | 135 | 114 | 63 | 177 |
| Townhomes | 220 | 227 Units | 1,662 | 35 | 91 | 126 | 89 | 63 | 152 |
| **Total Net New External Trips** | | | **3,333** | **70** | **191** | **261** | **203** | **126** | **329** |

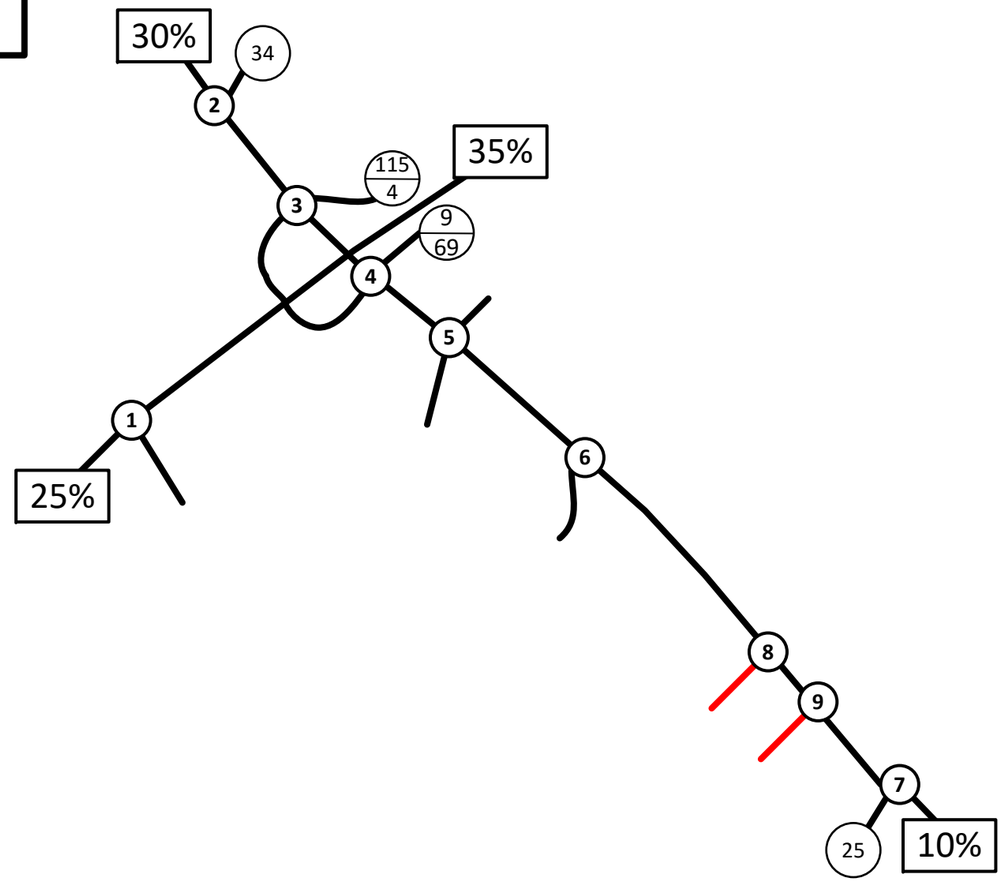
## TRIP DISTRIBUTION

The AM and PM peak hour trips to/from the proposed site were distributed based upon interpolation from current traffic patterns with all trips entering the development via WV 115. Distribution of the new external trips are as follows:

- 35% to/from the north on US 340
- 25% to/from the south on US 340
- 30% to/from the west on WV 115
- 10% to/from the east on WV 115

The external trip distribution percentages are shown on **Figure 6** and the AM and PM peak hour new site trip assignments are shown on **Figure 7** through **9**.




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- XX% Entering Trip Percentage
- (X%) Exiting Trip Percentage

N

NOT TO SCALE

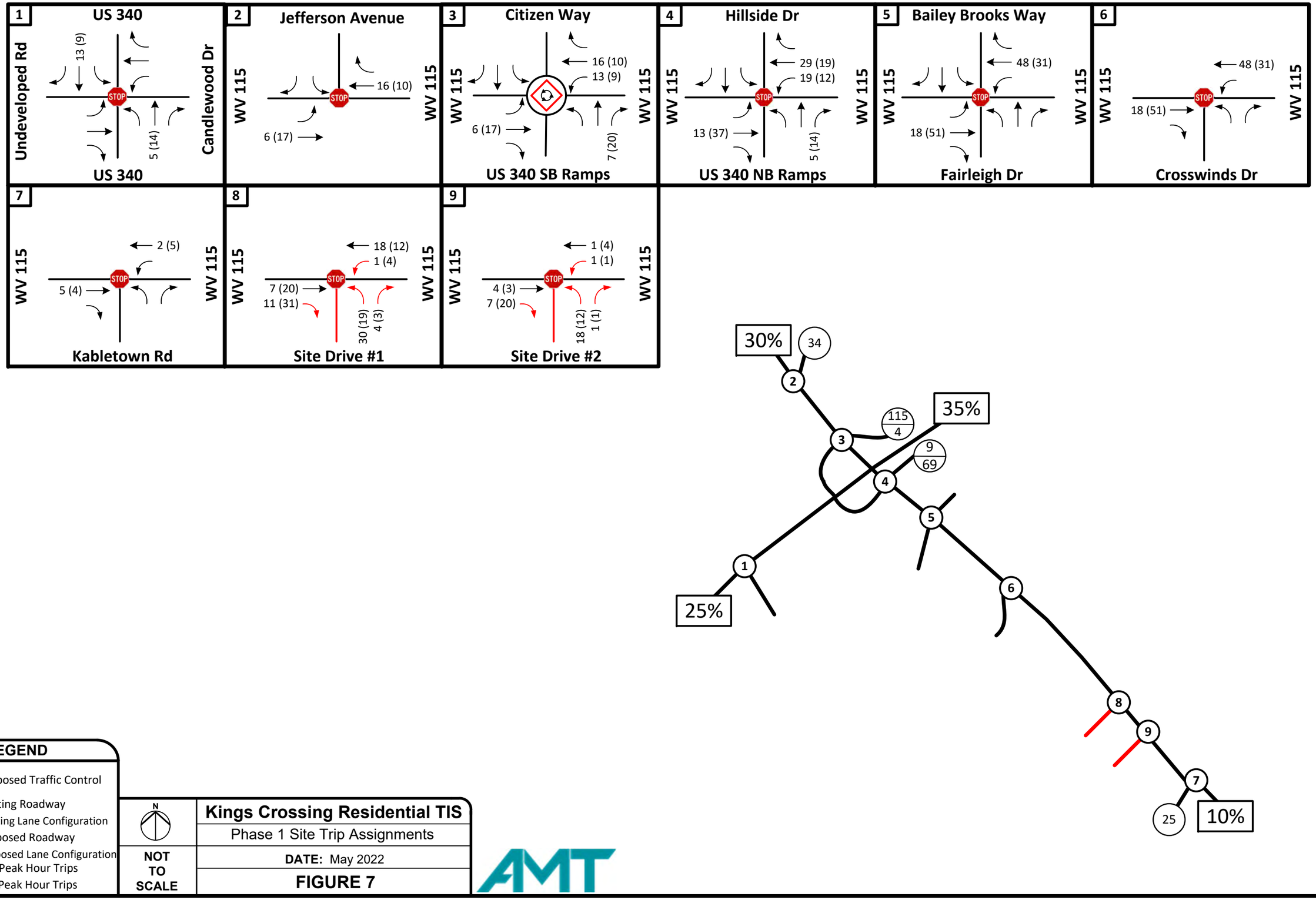
**Kings Crossing Residential TIS**

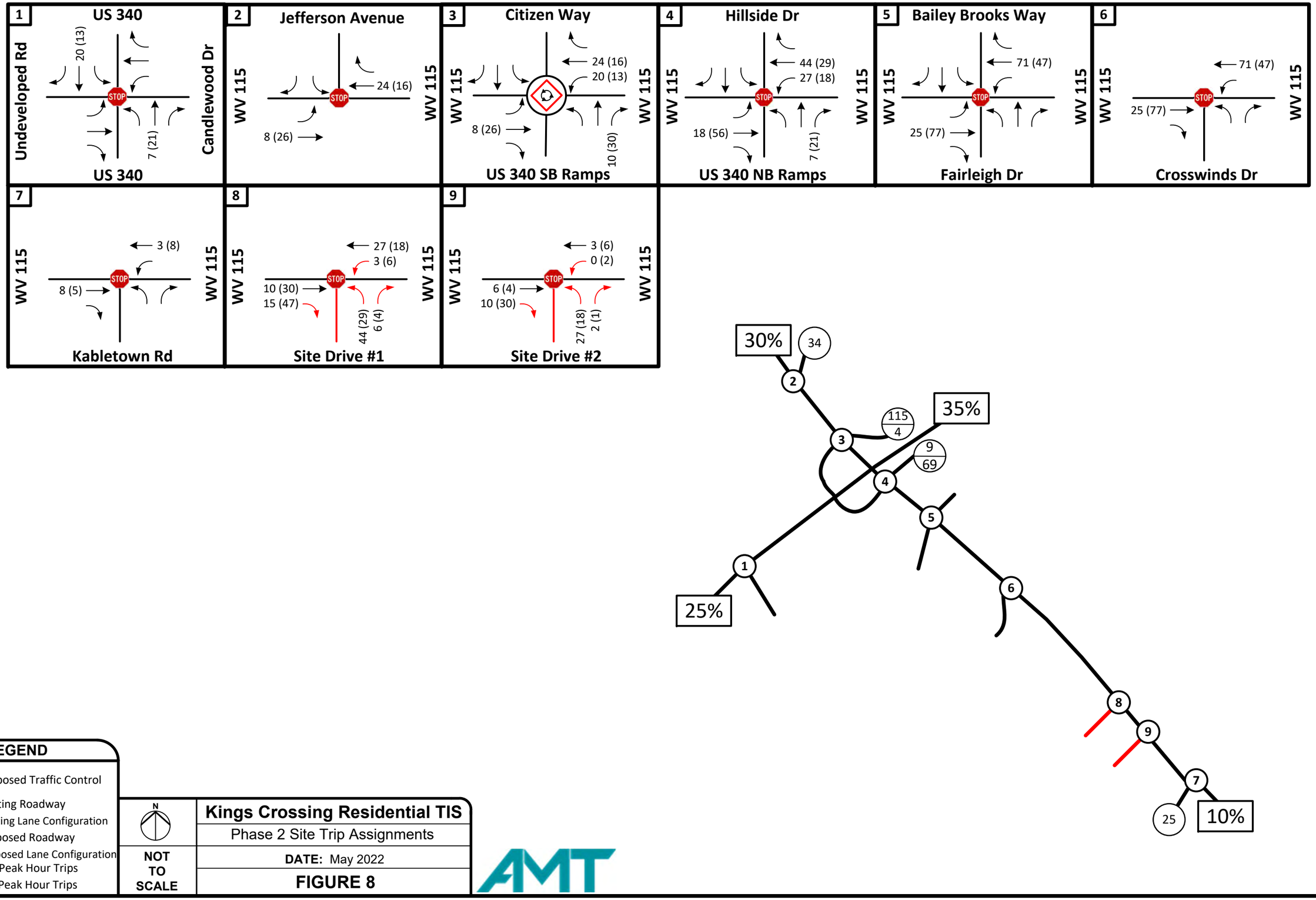
New Trip Distribution

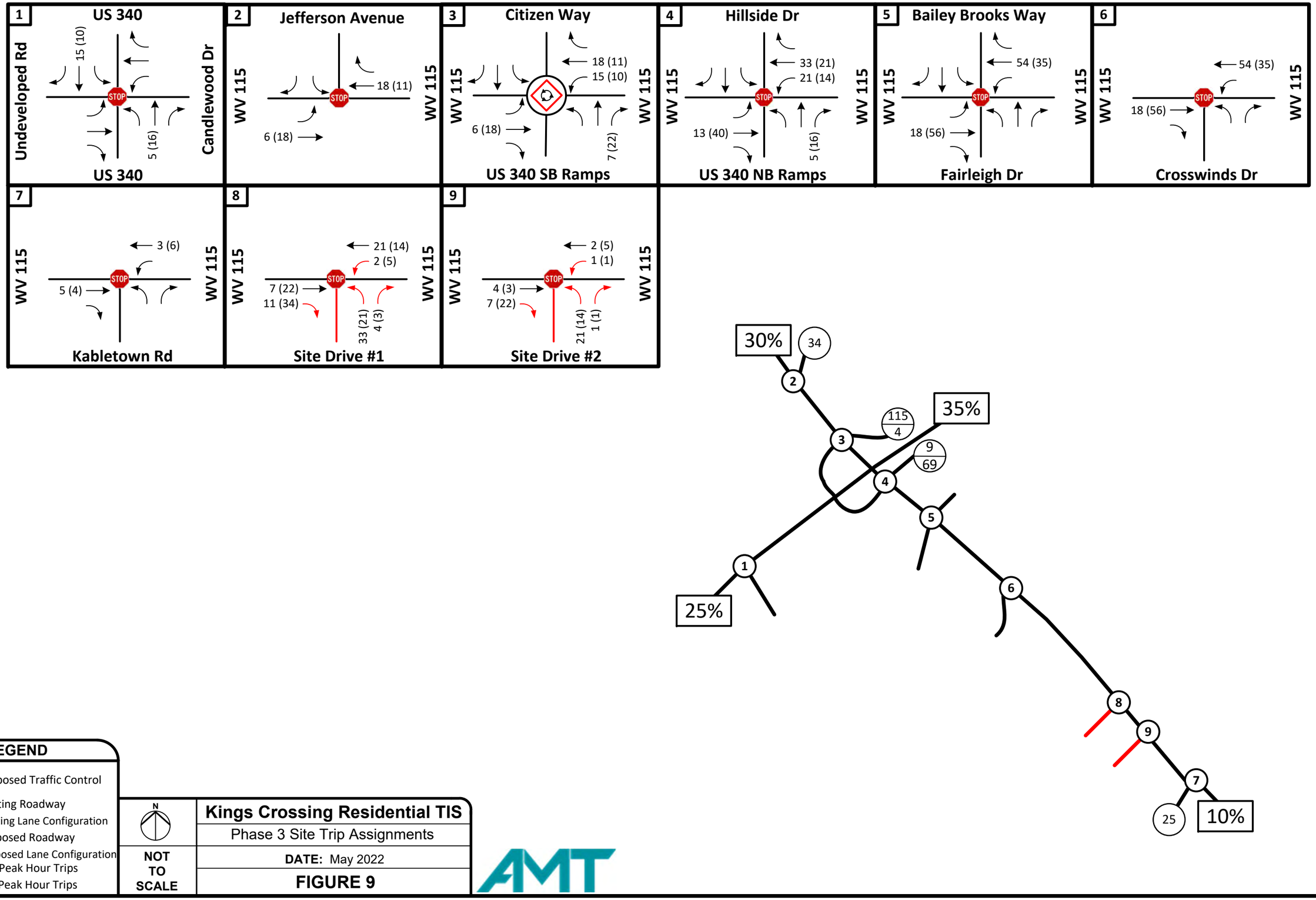
**DATE:** May 2022

**FIGURE 6**

AMT


1
US 340
Undeveloped Rd
Candlewood Dr
US 340
13 (9)
5 (14)
2
Jefferson Avenue
WV 115
WV 115
16 (10)
6 (17)
3
Citizen Way
WV 115
WV 115
16 (10)
13 (9)
6 (17)
7 (20)
US 340 SB Ramps
4
Hillside Dr
WV 115
WV 115
29 (19)
19 (12)
13 (37)
5 (14)
US 340 NB Ramps
5
Bailey Brooks Way
WV 115
WV 115
48 (31)
18 (51)
Fairleigh Dr
6
WV 115
WV 115
48 (31)
18 (51)
Crosswinds Dr
7
WV 115
WV 115
2 (5)
5 (4)
Kabletown Rd
8
WV 115
WV 115
18 (12)
1 (4)
7 (20)
11 (31)
30 (19)
4 (3)
Site Drive #1
9
WV 115
WV 115
1 (4)
1 (1)
4 (3)
7 (20)
18 (12)
1 (1)
Site Drive #2
30%
34
2
3
115
4
35%
9
69
4
5
1
25%
6
8
9
7
25
10%
LEGEND
Proposed Traffic Control
Existing Roadway
Existing Lane Configuration
Proposed Roadway
Proposed Lane Configuration
XX AM Peak Hour Trips
(XX) PM Peak Hour Trips
N
NOT TO SCALE
Kings Crossing Residential TIS
Phase 1 Site Trip Assignments
DATE: May 2022
FIGURE 7
AMT


1
US 340
Undeveloped Rd
Candlewood Dr
US 340
20 (13)
7 (21)
2
Jefferson Avenue
WV 115
WV 115
24 (16)
8 (26)
3
Citizen Way
WV 115
WV 115
24 (16)
20 (13)
8 (26)
10 (30)
US 340 SB Ramps
4
Hillside Dr
WV 115
WV 115
44 (29)
27 (18)
18 (56)
7 (21)
US 340 NB Ramps
5
Bailey Brooks Way
WV 115
WV 115
71 (47)
25 (77)
Fairleigh Dr
6
WV 115
WV 115
71 (47)
25 (77)
Crosswinds Dr
7
WV 115
WV 115
3 (8)
8 (5)
Kabletown Rd
8
WV 115
WV 115
27 (18)
3 (6)
10 (30)
15 (47)
44 (29)
6 (4)
Site Drive #1
9
WV 115
WV 115
3 (6)
0 (2)
6 (4)
10 (30)
27 (18)
2 (1)
Site Drive #2
30%
34
2
3
115
4
35%
9
69
4
5
1
25%
6
8
9
7
25
10%
LEGEND
Proposed Traffic Control
Existing Roadway
Existing Lane Configuration
Proposed Roadway
Proposed Lane Configuration
XX AM Peak Hour Trips
(XX) PM Peak Hour Trips
N
NOT TO SCALE
Kings Crossing Residential TIS
Phase 2 Site Trip Assignments
DATE: May 2022
FIGURE 8
AMT


1
US 340
Undeveloped Rd
15 (10)
5 (16)
Candlewood Dr
US 340
2
Jefferson Avenue
WV 115
18 (11)
6 (18)
WV 115
3
Citizen Way
WV 115
18 (11)
15 (10)
6 (18)
7 (22)
WV 115
US 340 SB Ramps
4
Hillside Dr
WV 115
33 (21)
21 (14)
13 (40)
5 (16)
WV 115
US 340 NB Ramps
5
Bailey Brooks Way
WV 115
54 (35)
18 (56)
WV 115
Fairleigh Dr
6
WV 115
54 (35)
18 (56)
WV 115
Crosswinds Dr
7
WV 115
3 (6)
5 (4)
WV 115
Kabletown Rd
8
WV 115
21 (14)
2 (5)
7 (22)
11 (34)
33 (21)
4 (3)
WV 115
Site Drive #1
9
WV 115
2 (5)
1 (1)
4 (3)
7 (22)
21 (14)
1 (1)
WV 115
Site Drive #2
30%
34
2
3
115
4
35%
9
69
4
5
1
25%
6
8
9
7
25
10%
LEGEND
Proposed Traffic Control
Existing Roadway
Existing Lane Configuration
Proposed Roadway
Proposed Lane Configuration
XX AM Peak Hour Trips
(XX) PM Peak Hour Trips
N
NOT TO SCALE
Kings Crossing Residential TIS
Phase 3 Site Trip Assignments
DATE: May 2022
FIGURE 9
AMT

# BUILD PROJECT TRAFFIC VOLUMES

## 2022 Phase 1 Build Conditions

The 2022 Phase 1 Build traffic volumes include the existing peak hour traffic volume, annual traffic growth until 2022, and new trips generated by phase 1 of the proposed development. Site generated traffic was distributed onto the transportation network based upon existing traffic patterns and anticipated origin and destination of the newly generated site trips (see **Figure 6** and **7**). The 2022 Phase 1 Build Traffic Volumes for the weekday AM and PM peak hour are shown on **Figure 10**

## 2024 Partial Build Conditions

The 2024 Partial Build volumes include the existing peak hour traffic volumes, annual traffic growth until 2024, anticipated traffic generated by the Tate Manor development, anticipated traffic generated by the Magnolia Springs development, and new trips generated by phase 1 of the proposed development. Site generated traffic was distributed onto the transportation network based upon existing traffic patterns and anticipated origin and destination of the newly generated site trips (see **Figure 6** and **7**). Background trips generated from Tate Manor and the Magnolia Springs development are shown in **Figure 11.** The 2024 Partial Build Traffic Volumes for the weekday AM and PM peak hour are shown on **Figure 12**.

## 2024 Phase 2 Build Conditions

The 2024 Phase 2 Build Volumes include the existing peak hour traffic volumes, annual traffic growth until 2024, anticipated traffic generated by the Tate Manor development, anticipated traffic generated by the Magnolia Springs development, and new trips generated by phase 1 and phase 2 of the proposed development. Site generated traffic was distributed onto the transportation network based upon existing traffic patterns and anticipated origin and destination of the newly generated site trips (see **Figure 6** and **8**). The 2024 Phase 2 Build Traffic Volumes for the weekday AM and PM peak hour are shown on **Figure 13**.

## 2025 Partial Build Conditions

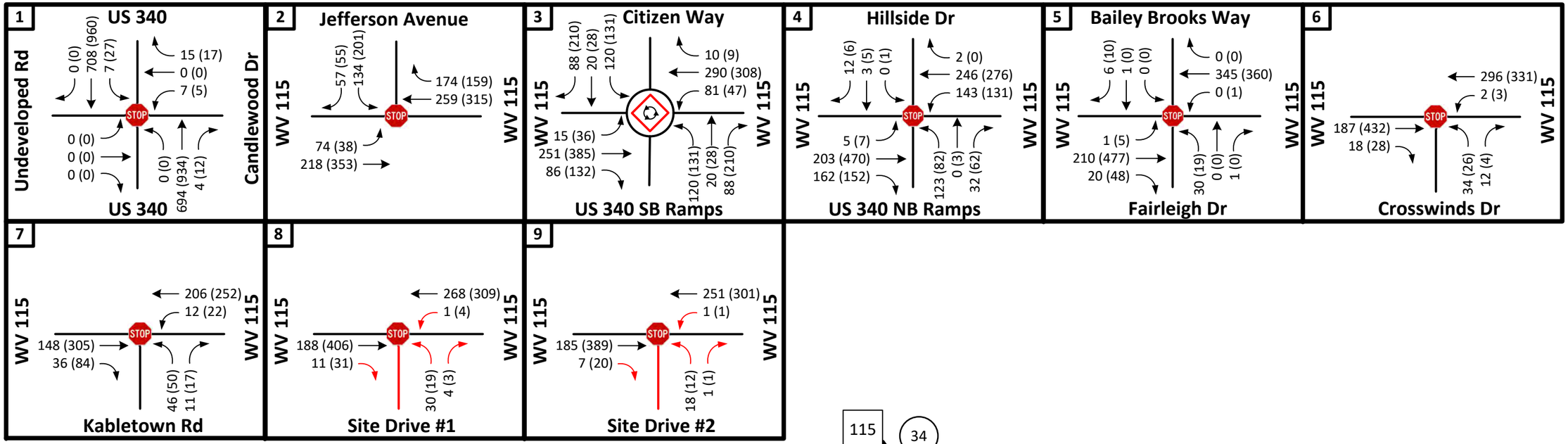
The 2025 Partial Build Volumes include the existing peak hour traffic volumes, annual traffic growth until 2025, anticipated traffic generated by the Tate Manor development, anticipated traffic generated by the Magnolia Springs development, and new trips generated by phase 1 and phase 2 of the proposed development. Site generated traffic was distributed onto the transportation network based upon existing traffic patterns and anticipated origin and destination of the newly generated site trips (see **Figure 6** and **8**). The 2025 Partial Build Traffic Volumes for the weekday AM and PM peak hour are shown on **Figure 14**.

## 2025 Full Build Conditions

The 2025 Full Build Conditions include existing 2021 peak hour traffic volume, anticipated traffic generated by the Tate Manor development, anticipated traffic generated by the Magnolia Springs development, an annual traffic growth prior to the year 2025, and the new peak hour trips to be generated by the full build out of Kings Crossing development. Site generated traffic was distributed onto the

transportation network based upon existing traffic patterns and anticipated origin and destination of the newly generated site trips (see **Figure 6** and **9**). The 2025 Full Build Traffic Volumes for the weekday AM and PM peak hour are shown on **Figure 15**.

The peak hour traffic forecast calculations spreadsheet is included in **Appendix B**.




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

N

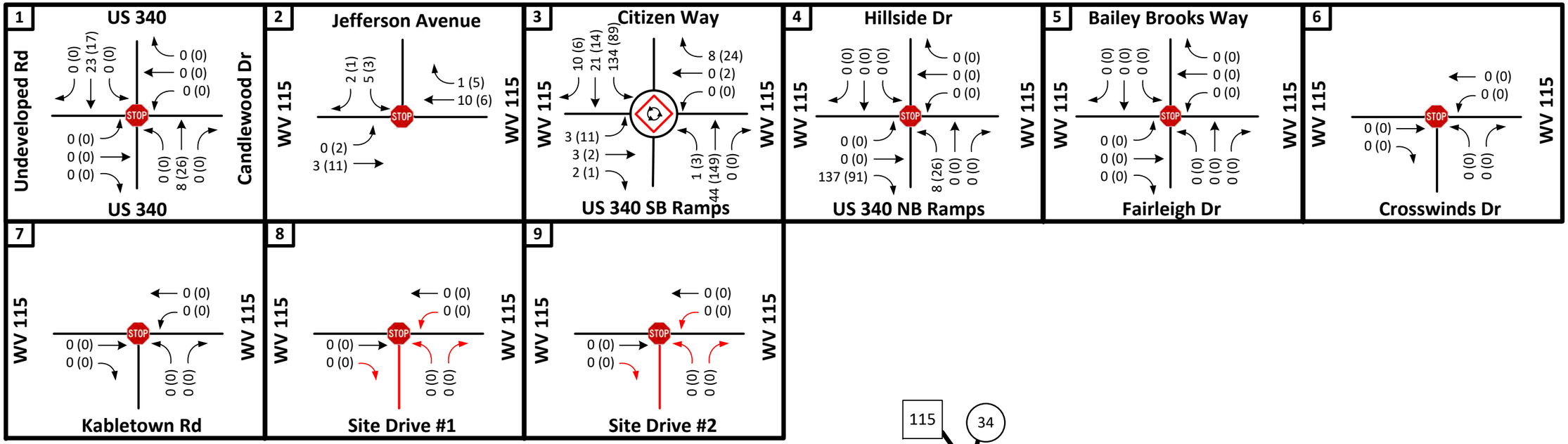
NOT TO SCALE

**Kings Crossing Residential TIS**

2022 Phase 1 Build Traffic Volumes

**DATE:** May 2022

**FIGURE 10**




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

N

NOT TO SCALE

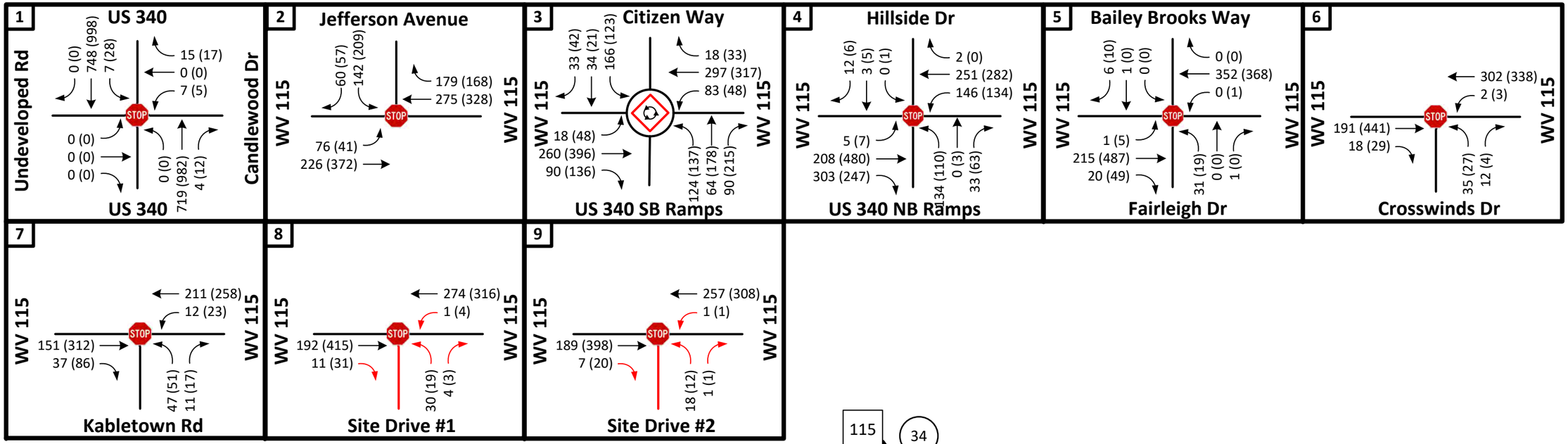
**Kings Crossing Residential TIS**

Total Background Development Trips

**DATE:** May 2022

**FIGURE 11**

AMT




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

N

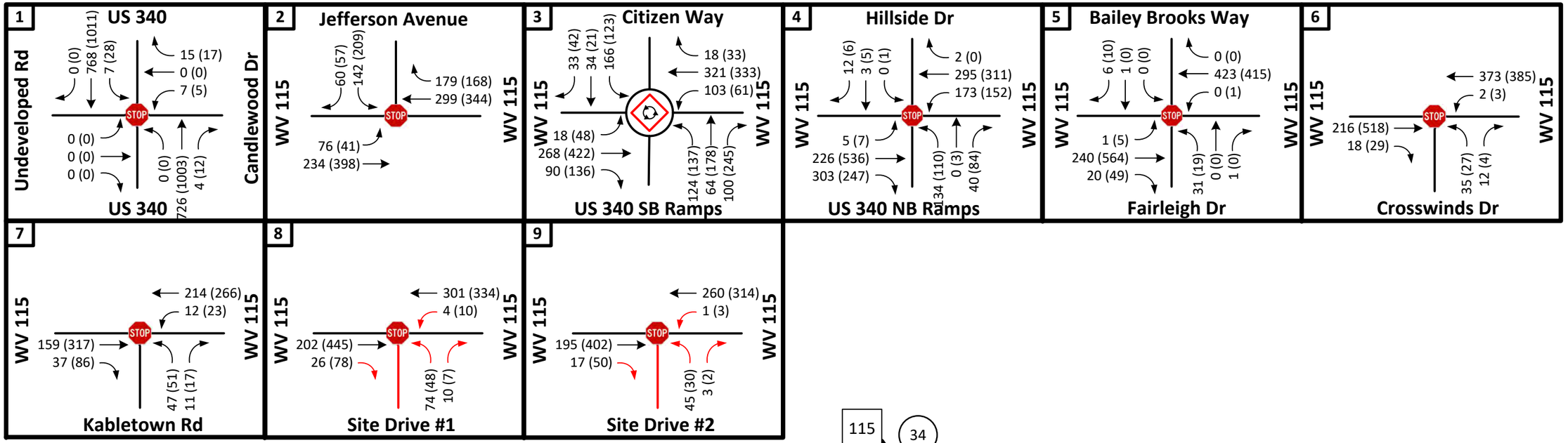
NOT TO SCALE

**Kings Crossing Residential TIS**

2024 Partial Build Traffic Volumes

**DATE:** May 2022

**FIGURE 12**




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

N

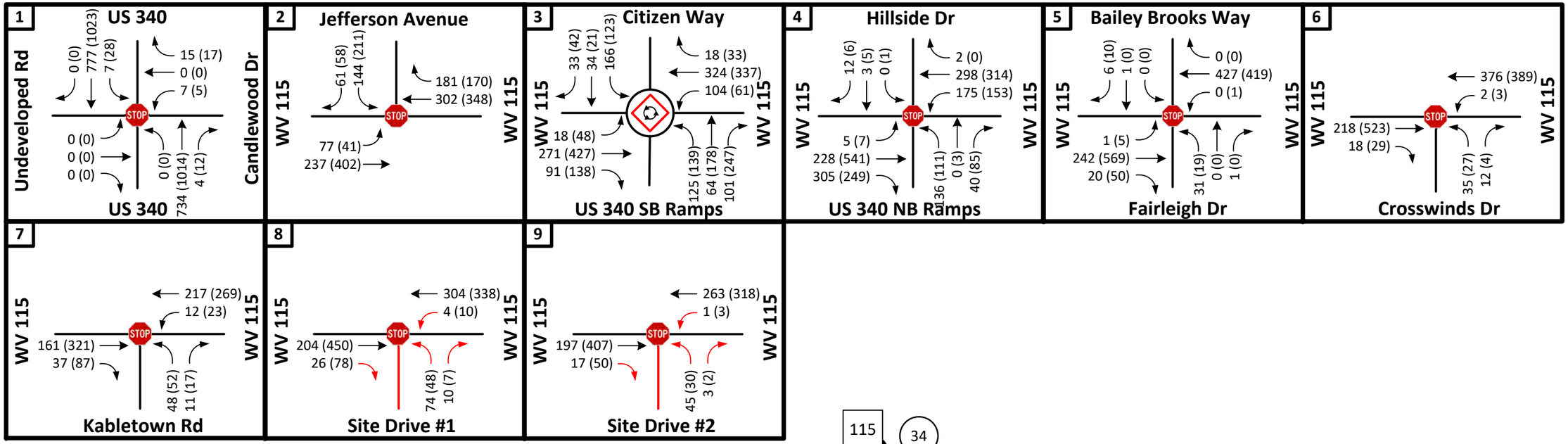
NOT TO SCALE

**Kings Crossing Residential TIS**

2024 Phase 2 Build Traffic Volumes

**DATE:** May 2022

**FIGURE 13**




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

N

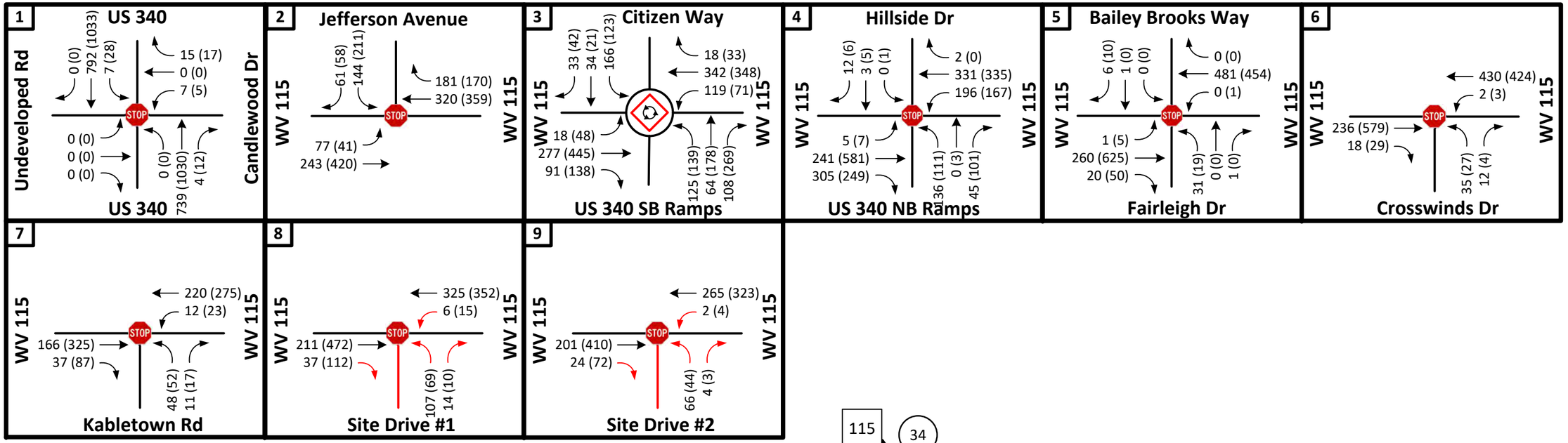
NOT TO SCALE

**Kings Crossing Residential TIS**

2025 Partial Build Traffic Volumes

**DATE:** May 2022

**FIGURE 14**




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

N

NOT TO SCALE

**Kings Crossing Residential TIS**

2025 Build Traffic Volumes

**DATE:** May 2022

**FIGURE 15**

# CAPACITY ANALYSIS

The Highway Capacity Manual defines capacity as the maximum suitable flow rate at which vehicles reasonably can be expected to traverse a point during a specified time period. Capacity uses the measure of efficiency, Level-of-Service (LOS), to describe the traffic performance at intersections. LOS is defined for the overall intersection delay for signalized intersections. An acceptable LOS for a signalized intersection is considered to be LOS D or better (i.e. A, B, C or D).

At unsignalized intersections, the LOS is defined by the control delay for the movement that must yield right-of-way. It may be typical for stop-controlled minor streets to experience long delays during peak periods, while the majority of the traffic flows through the intersection on the major street travel unimpeded.

The procedures outlined in the Highway Capacity Manual; 6th Edition were used as guidelines for the analysis of the study area intersections. This manual provides procedures for the analysis of both signalized and unsignalized intersections. LOS categories range from LOS "A" (best) to "F" (worst) as shown in **Table 3**.

**Table 3: Level of Service Criteria**

| Level of Service | SIGNALIZED Intersection Control Delay (sec/veh) | UNSIGNALIZED Intersection Control Delay (sec/veh) | Intersection LOS Description |
|---|---|---|---|
| A | ≤ 10.0 | ≤ 10.0 | Free flow, insignificant delays. |
| B | 10.1-20.0 | 10.1-15.0 | Stable operation, minimal delays. |
| C | 20.1-35.0 | 15.1-25.0 | Stable operation, acceptable delays. |
| D | 35.1-55.0 | 25.1-35.0 | Restricted flow, common delays. |
| E | 55.1-80.0 | 35.1-50.0 | Maximum capacity, extended delays. Volumes at or near capacity. Long queues form upstream from intersection. |
| F | > 80.0 | > 50.0 | Forced flow, excessive delays. Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections. |

LOS analysis was completed through the use of Synchro, version 10.3 and Sidra, version 9.0. The software package categorizes the LOS based on HCM methodology and criteria. According to industry standards, any signalized intersection or any approach of an unsignalized intersection is considered acceptable if the average delay is at LOS D or better with LOS A representing little or no delay. Any signalized intersection or approach with a LOS of E or F is considered substandard and may need solutions to improve the operational performance. Copies of the Synchro analyses outputs for each analysis year/scenario are shown in **Appendix C**. Copies of the Sidra analyses outputs for each analysis year/scenario are shown in **Appendix E.**

## 2021 Existing Conditions Analysis

Since WV 115 and US 340 are both designated as N-S routes, establishment of approach directions utilized throughout the capacity analysis are based on WVDOH cardinal route direction of US 340. While maintaining US 340 as the north-south route through the study area, WV 115 was established as east-west. The bearing direction for WV 115 is east west through the project area with WV 115 Northbound running west and WV southbound running east.

**US 340 with Candlewood Drive**

Capacity analysis indicates that the Candlewood Drive westbound left-turn movement to US 340 operates at LOS D during the AM weekday peak hour and LOS E during the PM weekday peak hour, while the right-turn movement operates at LOS B during both the AM and PM weekday peak hour under stop control. The US 340 northbound through movement operates as free flow traveling unimpeded through the intersection, while the right-turn movement to Candlewood Drive operates as free flow traveling unimpeded through the intersection. The US 340 southbound left-turn movement operates at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour to Candlewood Drive, while the through movement operates as free flow traveling unimpeded through the intersection.

**WV 115 with Jefferson Avenue**

The WV 115 (S George St.) eastbound left-turn movement to Jefferson Avenue currently operates at LOS A during both the AM and PM peak hours. The WV 115 westbound approach to Jefferson Avenue currently operates as free flow traveling unimpeded through the intersection. Capacity analysis indicates the Jefferson Avenue southbound approach operates at LOS C during the AM weekday peak hour and LOS E during the PM weekday peak hour under stop control.

**WV 115 with US 340 Southbound and Citizens Way**

Capacity analysis indicates that the WV 115 eastbound approach to US 340 Southbound/Citizen Way approach operates at LOS A during both the AM and PM weekday peak hours under yield control (roundabout). The WV 115 westbound approach to US 340 Southbound/Citizen Way operates at LOS A during both the AM and PM weekday peak hours under yield control. The US 340 Southbound Ramp northbound approach to WV 115 operates at LOS A during both the AM and PM weekday peak hours under yield control. The Citizens Way southbound approach to WV 115 operates at LOS A during both AM and PM weekday peak hours under yield control. The roundabout is anticipated to operate at an overall LOS A during both the AM and PM weekday peak hours.

**WV 115 with US 340 Northbound and Hillside Drive**

Capacity analysis indicates the WV 115 eastbound left-turn movement to US 340 Northbound/Hillside Drive operates at LOS A both the AM and PM weekday peak hours, while the through/right turn movement operates as free-flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to US 340 Northbound/Citizen Way operates at LOS A during both the AM and PM weekday peak hours, while the through/right turn movement operates as free flow moving unimpeded through the intersection. The US 340 Northbound Ramp northbound left/through movement to WV 115 operates at LOS D during the AM weekday peak hour and LOS F during the PM weekday peak hour, while the right-turn movement operates at LOS A during the AM weekday peak hour and LOS B during PM

weekday peak hour under stop control. The Hillside Drive southbound approach to WV 115 operates at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hours under stop control.

**WV 115 with Fairleigh Drive and Bailey Brooks Way**

Capacity analysis indicates the WV 115 (Charles Town Road) eastbound left-turn movement to Bailey Brooks Way currently operates at LOS A during both the AM and PM peak hours. The WV 115 westbound left-turn movement to Fairleigh Drive currently operates at LOS A during both the AM and PM peak hours. The Fairleigh Drive northbound approach to WV 115 operates at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour under stop control. The Bailey Brooks Way southbound approach to WV 115 operates at LOS B during both the AM and PM weekday peak hours under stop control.

**WV 115 with Crosswinds Drive**

The WV 115 eastbound through movement to Crosswinds Drive operates as free flow traveling unimpeded through the intersection, while the right turn movement operates as free flow traveling unimpeded through the intersection. Capacity analysis indicates that the WV 115 westbound left-turn movement to Cross Wind Drive operates at LOS A during both the AM and PM weekday peak hours, while the through movement operates as free flow traveling unimpeded through the intersection. The Crosswinds Drive northbound left-turn movement to WV 115 operates at LOS B during both the AM and PM weekday peak hours, while the right-turn movement operates at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**WV 115 with Kabletown Road**

The WV 115 eastbound approach to Kabletown Road operates as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Kabletown Road currently operates at LOS A during both the AM and PM peak hours. Capacity analysis indicates that the Kabletown Road northbound approach to WV 115 approach operates at LOS B during both the AM and PM weekday peak hours under stop control.

**Figure 16** shows the LOS during the weekday AM and PM peak hours for the 2021 Existing Conditions for each lane group movement at each study intersection.

## 2022 No-Build Conditions Analysis

**US 340 with Candlewood Drive**

Capacity analysis indicates that the Candlewood Drive westbound left-turn movement to US 340 is expected to continue to operate at LOS D during the AM weekday peak hour and LOS E during the PM weekday peak hour, while the right-turn movement is expected to continue to operate at LOS B during both the AM and PM peak hours under stop control. The US 340 northbound through movement will continue to operate as free flow traveling unimpeded through the intersection, while the right-turn movement will continue to operate as free flow traveling unimpeded through the intersection. The US 340 southbound left-turn movement will continue to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour to Candlewood Drive, while the through-movement will continue to operate as free flow traveling unimpeded through the intersection.

**WV 115 with Jefferson Avenue**

The WV 115 (S George St.) eastbound left-turn movement to Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The WV 115 westbound approach to Jefferson Avenue will continue to operate as free flow traveling unimpeded through the intersection. Capacity analysis indicates the Jefferson Avenue southbound approach will continue to operate at LOS D during the AM weekday peak hour and LOS E during the PM weekday peak hour under stop control.

**WV 115 with US 340 Southbound and Citizens Way**

Capacity analysis indicates that the WV 115 eastbound approach to US 340 Southbound/Citizen Way will continue to operate at a LOS A during the AM weekday and PM peak hours under yield control (roundabout). The WV 115 westbound approach to US 340 Southbound/Citizen Way will continue to operate at LOS A during both the AM and PM weekday peak hours under yield control. The US 340 Southbound Ramp northbound approach to WV 115 is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under yield control. The Citizens Way southbound approach to WV 115 will continue to operate at LOS A during both AM and PM weekday peak hours under yield control. The roundabout is anticipated to operate at an overall LOS A during the AM and PM weekday peak hours.

**WV 115 with US 340 Northbound and Hillside Drive**

Capacity analysis indicates the WV 115 (Charles Town Road) eastbound left-turn movement to US 340 Northbound/Hillside Drive will continue to operate at LOS A during both the AM and PM weekday peak hours, while the through/right turn movements will continue to operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to US 340 Northbound/Citizen Way will continue to operate at LOS A during the AM and PM weekday peak hours, while the through/right turn movements will continue to operate as free flow traveling unimpeded through the intersection. The US 340 Northbound Ramp northbound left/through movement to WV 115 will continue to operate at LOS D during the AM weekday peak hour and LOS F during the PM weekday peak hour, while the right-turn movement operates at LOS B during both the AM and PM weekday peak hours under stop control. The Hillside Drive southbound approach to WV 115 will continue to operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hours under stop control.

**WV 115 with Fairleigh Drive and Bailey Brooks Way**

Capacity analysis indicates the WV 115 (Charles Town Road) eastbound left-turn movement to Bailey Brooks Way will continue to operate at LOS A during both the AM and PM peak hours. The WV 115 westbound left-turn movement to Fairleigh Drive will continue to operate at LOS A during both the AM and PM peak hours. The Fairleigh Drive northbound approach to WV 115 will continue operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour under stop control. The Bailey Brooks Way southbound approach to WV 115 will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control.

**WV 115 with Crosswinds Drive**

The WV 115 eastbound through movement to Crosswinds Drive will continue to operate as free flow traveling unimpeded through the intersection, while the right-turn movement will continue to operate as free flow traveling unimpeded through the intersection. Capacity analysis indicates that the WV 115 westbound left-turn movement to Cross Wind Drive will continue to operate at LOS A during both the AM and PM weekday peak hours, while the through movement will continue to operate as free flow traveling unimpeded through the intersection. The Crosswinds Drive northbound left-turn movement to WV 115 expected to operate at LOS B during the AM weekday peak hour and at LOS C during the PM weekday peak hour, while the right-turn movement is expected to continue to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**WV 115 with Kabletown Road**

The WV 115 eastbound approach to Kabletown Road will continue to operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Kabletown Road will continue to operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that the Kabletown Road northbound approach to WV 115 will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control.

**Figure 17** shows the LOS during the weekday AM and PM peak hours for the 2022 No-Build Conditions for each lane group movement at each study intersection.

## 2022 Phase 1 Build Conditions Analysis

Geometric improvements included in the Phase 1 2022 Build Conditions include construction of Site Drive #1 and Site Drive #2. Site Drive #1 is a full movement approach connecting to WV 115 creating “T” type intersection approximately 2,000 feet east of Crosswinds Drive and will operate under stop control. Site Drive #2 is a full movement approach connecting to WV 115 creating “T” type intersection approximately 2,600 feet east of Crosswinds Drive and will operate under stop control.

**US 340 with Candlewood Drive**

Capacity analysis indicates that the Candlewood Drive westbound left-turn movement to US 340 will continue to operate at LOS D during the AM weekday peak hour and LOS E during the PM weekday peak hour, while the right-turn movement will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control. The US 340 northbound through movement to Candlewood Drive will continue to operate as free flow traveling unimpeded through the intersection, while the right-turn movement will continue to operate as free flow traveling unimpeded through the intersection. The US 340 southbound left-turn movement to Candlewood Drive will continue to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour, while the through-movement will continue to operate as free flow traveling unimpeded through the intersection.

**WV 115 with Jefferson Avenue**

The WV 115 (S George St.) eastbound left-turn movement to Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The WV 115 westbound approach to Jefferson Avenue will continue to operate as free flow traveling unimpeded through the intersection. Capacity analysis indicates

the Jefferson Avenue southbound approach is expected to operate at LOS C during the AM weekday peak hour and deteriorate to LOS F during the PM weekday peak hour under stop control.

**WV 115 with US 340 Southbound and Citizens Way**

Capacity analysis indicates that the WV 115 (Charles Town Road) eastbound approach to US 340 Southbound/Citizen Way will continue to operate at a LOS A during the AM and PM weekday peak hours under yield control (roundabout). The WV 115 westbound approach to US 340 Southbound/Citizen Way approach will continue to operate at LOS A during the AM and PM weekday peak hours under yield control. The US 340 Southbound Ramp northbound approach to WV 115 is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under yield control. The Citizens Way southbound approach to WV 115 will continue to operate at LOS A during the AM and PM weekday peak hours under yield control. The roundabout is anticipated to operate at an overall LOS A during the AM and PM weekday peak hours.

**WV 115 with US 340 Northbound and Hillside Drive**

Capacity analysis indicates the WV 115 eastbound left-turn movement to US 340 Northbound/Hillside Drive left-turn movement will continue to operate at LOS A both the AM and PM weekday peak hours, while the through/right turn movements will continue to operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to US 340 Northbound/Citizen Way will continue to operate at LOS A during the AM and PM weekday peak hours, while the through/right turn movement will continue to operate as free flow traveling unimpeded through the intersection. The US 340 Northbound Ramp northbound left/through movement to WV 115 is expected to operate at LOS E during the AM weekday peak hour and LOS F during the PM weekday peak hour, while the right-turn movement will continue to operate at LOS B during the AM and PM weekday peak hours under stop control. The Hillside Drive southbound approach to WV 115 will continue to operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hours under stop control.

**WV 115 with Fairleigh Drive and Bailey Brooks Way**

Capacity analysis indicates the WV 115 (Charles Town Road) eastbound left-turn movement to Bailey Brooks Way will continue to operate at LOS A during both the AM and PM peak hours. The WV 115 westbound left-turn movement to Fairleigh Drive will continue to operate at LOS A during both the AM and PM peak hours. The Fairleigh Drive northbound approach to WV 115 is expected to operate at LOS C during the AM and PM weekday peak hours under stop control. The Bailey Brooks Way southbound approach to WV 115 will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control.

**WV 115 with Crosswinds Drive**

The WV 115 eastbound through movement to Crosswinds Drive will continue to operate as free flow traveling unimpeded through the intersection, while the right-turn movement will continue to operate as free flow traveling unimpeded through the intersection. Capacity analysis indicates that the WV 115 westbound left-turn movement to Cross Wind Drive will continue to operate at LOS A during both the AM and PM weekday peak hours, while the through movement will continue to operate as free flow traveling unimpeded through the intersection. The Crosswinds Drive northbound left-turn movement to WV 115 expected to operate at LOS B during the AM weekday peak hour and at LOS C during the PM weekday

peak hour, while the right-turn movement is expected to continue to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**WV 115 with Kabletown Road**

The WV 115 eastbound approach to Kabletown Road will continue to operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Kabletown Road will continue to operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that the Kabletown Road northbound approach to WV 115 will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control.

**WV 115 with Site Drive #1**

The WV 115 eastbound approach to Site Drive #1 will operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Site Drive #1 will operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that Site Drive #1 northbound left-turn movement to WV 115 is expected to operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour, while the right-turn movement is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**WV 115 with Site Drive #2**

The WV 115 eastbound approach to Site Drive #2 will operate as free flow traveling unimpeded through the intersection. The WV 115 westbound approach to Site Drive #2 will operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that Site Drive #2 northbound left-turn movement to WV is expected to operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour, while the right turn movement is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**Figure 18** shows the LOS during the weekday AM and PM peak hours for the 2022 Phase 1 Build Conditions for each lane group movement at each study intersection.

## 2024 Partial Build Conditions Analysis

**US 340 with Candlewood Drive**

Capacity analysis indicates that the Candlewood Drive westbound left-turn movement to US 340 will continue to operate at LOS D during the AM weekday peak hour and LOS E during the PM weekday peak hour, while the right-turn movement will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control. The US 340 northbound through movement to Candlewood Drive will continue to operate as free flow traveling unimpeded through the intersection, while the right-turn movement will continue to operate as free flow traveling unimpeded through the intersection. The US 340 southbound left-turn movement to Candlewood Drive will continue to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour, while the through-movement will continue to operate as free flow traveling unimpeded through the intersection.

**WV 115 with Jefferson Avenue**

The WV 115 (S George St.) eastbound left-turn movement to Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The WV 115 westbound approach to Jefferson Avenue will continue to operate as free flow traveling unimpeded through the intersection. Capacity analysis indicates the Jefferson Avenue southbound approach is expected to operate at LOS D during the AM weekday peak hour and LOS F during the PM weekday peak hour under stop control.

**WV 115 with US 340 Southbound and Citizens Way**

Capacity analysis indicates that the WV 115 (Charles Town Road) eastbound approach to US 340 Southbound/Citizen Way is expected to operate at a LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under yield control (roundabout). The WV 115 westbound approach to US 340 Southbound/Citizen Way approach will continue to operate at LOS A during the AM and PM weekday peak hours under yield control. The US 340 Southbound Ramp northbound approach to WV 115 is expected to operate at LOS A during the AM weekday peak hour and LOS D during the PM weekday peak hour under yield control. The Citizens Way southbound approach to WV 115 will continue to operate at LOS A during both the AM and PM weekday peak hours under yield control. The roundabout is anticipated to operate at an overall LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour.

**WV 115 with US 340 Northbound and Hillside Drive**

Capacity analysis indicates the WV 115 eastbound left-turn movement to US 340 Northbound/Hillside Drive left-turn movement will continue to operate at LOS A both the AM and PM weekday peak hours, while the through/right turn movements will continue to operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to US 340 Northbound/Citizen Way is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour, while the through/right turn movement will continue to operate as free flow traveling unimpeded through the intersection. The US 340 Northbound Ramp northbound left/through movement to WV 115 is expected to operate at LOS F during both the AM and PM weekday peak hours, while the right-turn movement will continue to operate at LOS B during the AM and PM weekday peak hours under stop control. The Hillside Drive southbound approach to WV 115 is expected to operate at LOS B during the AM weekday peak hour and LOS D during the PM weekday peak hours under stop control.

**WV 115 with Fairleigh Drive and Bailey Brooks Way**

Capacity analysis indicates the WV 115 (Charles Town Road) eastbound left-turn movement to Bailey Brooks Way will continue to operate at LOS A during both the AM and PM peak hours. The WV 115 westbound left-turn movement to Fairleigh Drive will continue to operate at LOS A during both the AM and PM peak hours. The Fairleigh Drive northbound approach to WV 115 is expected to operate at LOS C during the AM and PM weekday peak hours under stop control. The Bailey Brooks Way southbound approach to WV 115 will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control.

**WV 115 with Crosswinds Drive**

The WV 115 eastbound through movement to Crosswinds Drive will continue to operate as free flow traveling unimpeded through the intersection, while the right-turn movement will continue to operate as free flow traveling unimpeded through the intersection. Capacity analysis indicates that the WV 115 westbound left-turn movement to Cross Wind Drive will continue to operate at LOS A during both the AM and PM weekday peak hours, while the through movement will continue to operate as free flow traveling unimpeded through the intersection. The Crosswinds Drive northbound left-turn movement to WV 115 expected to operate at LOS B during the AM weekday peak hour and at LOS C during the PM weekday peak hour, while the right-turn movement is expected to continue to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**WV 115 with Kabletown Road**

The WV 115 eastbound approach to Kabletown Road will continue to operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Kabletown Road will continue to operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that the Kabletown Road northbound approach to WV 115 will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control.

**WV 115 with Site Drive #1**

The WV 115 eastbound approach to Site Drive #1 will operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Site Drive #1 will operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that Site Drive #1 northbound left-turn movement to WV 115 is expected to operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour, while the right-turn movement is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**WV 115 with Site Drive #2**

The WV 115 eastbound approach to Site Drive #2 will operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Site Drive #2 will operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that Site Drive #2 northbound left-turn movement to WV is expected to operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour, while the right turn movement is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**Figure 19** shows the LOS during the weekday AM and PM peak hours for the 2024 Partial Build Conditions for each lane group movement at each study intersection.

## 2024 Phase 2 Build Conditions Analysis

**US 340 with Candlewood Drive**

Capacity analysis indicates that the Candlewood Drive westbound left-turn movement to US 340 will continue to operate at LOS D during the AM weekday peak hour and LOS E during the PM weekday peak hour, while the right-turn movement will continue to operate at LOS B during both the AM and PM

weekday peak hours under stop control. The US 340 northbound through movement to Candlewood Drive will continue to operate as free flow traveling unimpeded through the intersection, while the right-turn movement will continue to operate as free flow traveling unimpeded through the intersection. The US 340 southbound left-turn movement to Candlewood Drive will continue to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour, while the through-movement will continue to operate as free flow traveling unimpeded through the intersection.

**WV 115 with Jefferson Avenue**

The WV 115 (S George St.) eastbound left-turn movement to Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The WV 115 westbound approach to Jefferson Avenue will continue to operate as free flow traveling unimpeded through the intersection. Capacity analysis indicates the Jefferson Avenue southbound approach is expected to operate at LOS D during the AM weekday peak hour and LOS F during the PM weekday peak hour under stop control.

**WV 115 with US 340 Southbound and Citizens Way**

Capacity analysis indicates that the WV 115 (Charles Town Road) eastbound approach to US 340 Southbound/Citizen Way is expected to operate at a LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under yield control (roundabout). The WV 115 westbound approach to US 340 Southbound/Citizen Way approach is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under yield control. The US 340 Southbound Ramp northbound approach to WV 115 is expected to operate at LOS B during the AM weekday peak hour and LOS D during the PM weekday peak hour under yield control. The Citizens Way southbound approach to WV 115 is expected to operate at LOS B during the AM weekday peak hour and at LOS A during the PM weekday peak hour under yield control. The roundabout is anticipated to operate at an overall LOS A during the AM weekday peak hour and LOS C during the PM weekday peak hour.

**WV 115 with US 340 Northbound and Hillside Drive**

Capacity analysis indicates the WV 115 eastbound left-turn movement to US 340 Northbound/Hillside Drive left-turn movement will continue to operate at LOS A both the AM and PM weekday peak hours, while the through/right turn movements will continue to operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to US 340 Northbound/Citizen Way is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour, while the through/right turn movement will continue to operate as free flow traveling unimpeded through the intersection. The US 340 Northbound Ramp northbound left/through movement to WV 115 is expected to operate at LOS F during both the AM and PM weekday peak hours, while the right-turn movement is expected to operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour under stop control. The Hillside Drive southbound approach to WV 115 will continue to operate at LOS B during the AM weekday peak hour and LOS D during the PM weekday peak hours under stop control.

**WV 115 with Fairleigh Drive and Bailey Brooks Way**

Capacity analysis indicates the WV 115 (Charles Town Road) eastbound left-turn movement to Bailey Brooks Way will continue to operate at LOS A during both the AM and PM peak hours. The WV 115 westbound left-turn movement to Fairleigh Drive will continue to operate at LOS A during both the AM

and PM peak hours. The Fairleigh Drive northbound approach to WV 115 is expected to operate at LOS C during the AM weekday peak hour and LOS D during the PM weekday peak hour under stop control. The Bailey Brooks Way southbound approach to WV 115 will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control.

**WV 115 with Crosswinds Drive**

The WV 115 eastbound through movement to Crosswinds Drive will continue to operate as free flow traveling unimpeded through the intersection, while the right-turn movement will continue to operate as free flow traveling unimpeded through the intersection. Capacity analysis indicates that the WV 115 westbound left-turn movement to Cross Wind Drive will continue to operate at LOS A during both the AM and PM weekday peak hours, while the through movement will continue to operate as free flow traveling unimpeded through the intersection. The Crosswinds Drive northbound left-turn movement to WV 115 expected to operate at LOS C during both the AM and PM weekday peak hours, while the right-turn movement is expected to continue to operate at LOS B during both the AM and PM weekday peak hours under stop control.

**WV 115 with Kabletown Road**

The WV 115 eastbound approach to Kabletown Road will continue to operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Kabletown Road will continue to operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that the Kabletown Road northbound approach to WV 115 will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control.

**WV 115 with Site Drive #1**

The WV 115 eastbound approach to Site Drive #1 will operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Site Drive #1 will operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that Site Drive #1 northbound left-turn movement to WV 115 is expected to operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour, while the right-turn movement is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**WV 115 with Site Drive #2**

The WV 115 eastbound approach to Site Drive #2 will operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Site Drive #2 will operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that Site Drive #2 northbound left-turn movement to WV is expected to operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour, while the right turn movement is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**Figure 20** shows the LOS during the weekday AM and PM peak hours for the 2024 Phase 2 Build Conditions for each lane group movement at each study intersection.

## 2025 Partial Build Conditions Analysis

**US 340 with Candlewood Drive**

Capacity analysis indicates that the Candlewood Drive westbound left-turn movement to US 340 will continue to operate at LOS D during the AM weekday peak hour and LOS E during the PM weekday peak hour, while the right-turn movement will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control. The US 340 northbound through movement to Candlewood Drive will continue to operate as free flow traveling unimpeded through the intersection, while the right-turn movement will continue to operate as free flow traveling unimpeded through the intersection. The US 340 southbound left-turn movement to Candlewood Drive will continue to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour, while the through-movement will continue to operate as free flow traveling unimpeded through the intersection.

**WV 115 with Jefferson Avenue**

The WV 115 (S George St.) eastbound left-turn movement to Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The WV 115 westbound approach to Jefferson Avenue will continue to operate as free flow traveling unimpeded through the intersection. Capacity analysis indicates the Jefferson Avenue southbound approach is expected to operate at LOS D during the AM weekday peak hour and LOS F during the PM weekday peak hour under stop control.

**WV 115 with US 340 Southbound and Citizens Way**

Capacity analysis indicates that the WV 115 (Charles Town Road) eastbound approach to US 340 Southbound/Citizen Way is expected to operate at a LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under yield control (roundabout). The WV 115 westbound approach to US 340 Southbound/Citizen Way approach is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under yield control. The US 340 Southbound Ramp northbound approach to WV 115 is expected to operate at LOS B during the AM weekday peak hour and LOS D during the PM weekday peak hour under yield control. The Citizens Way southbound approach to WV 115 will operate at LOS B during the AM weekday peak hour and LOS A during the PM weekday peak hour under yield control. The roundabout is anticipated to operate at an overall LOS A during the AM weekday peak hour and LOS C during the PM weekday peak hour.

**WV 115 with US 340 Northbound and Hillside Drive**

Capacity analysis indicates the WV 115 eastbound left-turn movement to US 340 Northbound/Hillside Drive left-turn movement will continue to operate at LOS A both the AM and PM weekday peak hours, while the through/right turn movements will continue to operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to US 340 Northbound/Citizen Way is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour, while the through/right turn movement will continue to operate as free flow traveling unimpeded through the intersection. The US 340 Northbound Ramp northbound left/through movement to WV 115 is expected to operate at LOS F during both the AM and PM weekday peak hours, while the right-turn movement will continue to operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour under stop control. The Hillside Drive southbound approach to WV 115

is expected to operate at LOS C during the AM weekday peak hour and LOS D during the PM weekday peak hours under stop control.

**WV 115 with Fairleigh Drive and Bailey Brooks Way**

Capacity analysis indicates the WV 115 (Charles Town Road) eastbound left-turn movement to Bailey Brooks Way will continue to operate at LOS A during both the AM and PM peak hours. The WV 115 westbound left-turn movement to Fairleigh Drive will continue to operate at LOS A during both the AM and PM peak hours. The Fairleigh Drive northbound approach to WV 115 is expected to operate at LOS C during the AM weekday peak hour and LOS D during the PM weekday peak hour under stop control. The Bailey Brooks Way southbound approach to WV 115 will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control.

**WV 115 with Crosswinds Drive**

The WV 115 eastbound through movement to Crosswinds Drive will continue to operate as free flow traveling unimpeded through the intersection, while the right-turn movement will continue to operate as free flow traveling unimpeded through the intersection. Capacity analysis indicates that the WV 115 westbound left-turn movement to Cross Wind Drive will continue to operate at LOS A during both the AM and PM weekday peak hours, while the through movement will continue to operate as free flow traveling unimpeded through the intersection. The Crosswinds Drive northbound left-turn movement to WV 115 expected to operate at LOS B during the AM weekday peak hour and at LOS C during the PM weekday peak hour, while the right-turn movement is expected to continue to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**WV 115 with Kabletown Road**

The WV 115 eastbound approach to Kabletown Road will continue to operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Kabletown Road will continue to operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that the Kabletown Road northbound approach to WV 115 will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control.

**WV 115 with Site Drive #1**

The WV 115 eastbound approach to Site Drive #1 will operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Site Drive #1 will operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that Site Drive #1 northbound left-turn movement to WV 115 is expected to operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour, while the right-turn movement is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**WV 115 with Site Drive #2**

The WV 115 eastbound approach to Site Drive #2 will operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Site Drive #2 will operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that Site Drive #2 northbound left-turn movement to WV is expected to operate at LOS B during the AM weekday peak hour and LOS C during

the PM weekday peak hour, while the right turn movement is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**Figure 21** shows the LOS during the weekday AM and PM peak hours for the 2025 Partial Build Conditions for each lane group movement at each study intersection.

## 2025 Full Build Conditions Analysis

**US 340 with Candlewood Drive**

Capacity analysis indicates that the Candlewood Drive westbound left-turn movement to US 340 is expected to operate at LOS D during the AM weekday peak hour and LOS F during the PM weekday peak hour, while the right-turn movement will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control. The US 340 northbound through movement to Candlewood Drive will continue to operate as free flow traveling unimpeded through the intersection, while the right-turn movement will continue to operate as free flow traveling unimpeded through the intersection. The US 340 southbound left-turn movement to Candlewood Drive will continue to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour, while the through-movement will continue to operate as free flow traveling unimpeded through the intersection.

**WV 115 with Jefferson Avenue**

The WV 115 (S George St.) eastbound left-turn movement to Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The WV 115 westbound approach to Jefferson Avenue will continue to operate as free flow traveling unimpeded through the intersection. Capacity analysis indicates the Jefferson Avenue southbound approach is expected to operate at LOS D during the AM weekday peak hour and LOS F during the PM weekday peak hour under stop control.

**WV 115 with US 340 Southbound and Citizens Way**

Capacity analysis indicates that the WV 115 (Charles Town Road) eastbound approach to US 340 Southbound/Citizen Way is expected to operate at LOS B during both the AM and PM weekday peak hours under yield control (roundabout). The WV 115 westbound approach to US 340 Southbound/Citizen Way approach is expected to operate at LOS B during both the AM and PM weekday peak hours under yield control. The US 340 Southbound Ramp northbound approach to WV 115 is expected to operate at LOS B during the AM weekday peak hour and LOS E during the PM weekday peak hour under yield control. The Citizens Way southbound approach to WV 115 will operate at LOS B during the AM weekday peak hour and at LOS A during the PM weekday peak hour under yield control. The roundabout is anticipated to operate at an overall LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour.

**WV 115 with US 340 Northbound and Hillside Drive**

Capacity analysis indicates the WV 115 eastbound left-turn movement to US 340 Northbound/Hillside Drive left-turn movement will continue to operate at LOS A both the AM and PM weekday peak hours, while the through/right turn movements will continue to operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to US 340 Northbound/Citizen Way is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday

peak hour, while the through/right turn movement will continue to operate as free flow traveling unimpeded through the intersection. The US 340 Northbound Ramp northbound left/through movement to WV 115 is expected to operate at LOS F during both the AM and PM weekday peak hours, while the right-turn movement is expected to operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour under stop control. The Hillside Drive southbound approach to WV 115 is expected to operate at LOS C during the AM weekday peak hour and LOS E during the PM weekday peak hours under stop control.

**WV 115 with Fairleigh Drive and Bailey Brooks Way**

Capacity analysis indicates the WV 115 (Charles Town Road) eastbound left-turn movement to Bailey Brooks Way will continue to operate at LOS A during both the AM and PM peak hours. The WV 115 westbound left-turn movement to Fairleigh Drive will continue to operate at LOS A during both the AM and PM peak hours. The Fairleigh Drive northbound approach to WV 115 is expected to operate at LOS C during the AM weekday peak hour and LOS D during the PM weekday peak hour under stop control. The Bailey Brooks Way southbound approach to WV 115 will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control.

**WV 115 with Crosswinds Drive**

The WV 115 eastbound through movement to Crosswinds Drive approach will continue to operate as free flow traveling unimpeded through the intersection, while the right-turn movement will continue to operate as free flow traveling unimpeded through the intersection. Capacity analysis indicates that the WV 115 westbound left-turn movement to Cross Wind Drive will continue to operate at LOS A during both the AM and PM weekday peak hours, while the through movement will continue to operate as free flow traveling unimpeded through the intersection. The Crosswinds Drive northbound left-turn movement to WV 115 is expected to operate at LOS C during both the AM and PM weekday peak hours, while the right-turn movement will continue to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**WV 115 with Kabletown Road**

The WV 115 eastbound approach to Kabletown Road will continue to operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Kabletown Road will continue to operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that the Kabletown Road northbound approach to WV 115 will continue to operate at LOS B during both the AM and PM weekday peak hours under stop control.

**WV 115 with Site Drive #1**

The WV 115 eastbound approach to Site Drive #1 will operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Site Drive #1 will operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that Site Drive #1 northbound left-turn movement to WV 115 is expected to operate at LOS C during both the AM and PM weekday peak hours, while the right-turn movement is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**WV 115 with Site Drive #2**

The WV 115 eastbound approach to Site Drive #2 will operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Site Drive #2 will operate at LOS A during both the AM and PM peak hours. Capacity analysis indicates that Site Drive #2 northbound left-turn movement to WV is expected to operate at LOS B during the AM weekday peak hour and LOS C during the PM weekday peak hour, while the right turn movement is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**Figure 22** shows the LOS during the weekday AM and PM peak hours for the 2025 Full Build Conditions for each lane group movement at each study intersection.

## 2025 Full Build Improved Conditions Analysis

The 2025 Full Build Improved Conditions include: existing 2021 peak hour traffic volume, anticipated traffic generated by the Tate Manor development, anticipated traffic generated by the Magnolia Springs development, an annual traffic growth prior to the year 2025, and the new peak hour trips to be generated by the proposed Kings Crossing development.

Improvements included in the 2025 Build Improved Conditions include:

1. Construction of an exclusive left-turn lane on WV 115 westbound approach to Site Drive #1.
2. Construction of a roundabout at the WV 115 with US 340 Northbound Ramp/Hillside Drive intersection.
3. Construction of a right turn slip lane at WV 115 with US 340 Southbound Ramp/Citizen Way.
4. Installation of a traffic signal at WV 115 with Jefferson Avenue.
5. Construction of an exclusive left turn lane on WV 115 eastbound at Jefferson Avenue identified in the Tate Manor TIS.

Additional analysis is provided for the intersections with proposed improvements implemented. Remaining intersections will operate as described in 2025 Full Build Conditions and do not necessitate physical improvements.

**WV 115 with Jefferson Avenue**

Following installation of a traffic signal and construction of an eastbound exclusive left-turn lane, capacity analysis indicates that the WV 115 (S George St.) eastbound left-turn movement to Jefferson Avenue is expected to operate at LOS A during both the AM and PM weekday peak hours, while the through movement is expected to operate at LOS A during both the AM and PM weekday peak hours under signal control. The WV 115 (S George St.) westbound approach to Jefferson Avenue is expected to operate at LOS A during both the AM and PM weekday peak hours. The Jefferson Avenue southbound approach to WV 115 is expected to operate at LOS A during both the AM and PM weekday peak hours. The overall intersection is anticipated to operate at LOS A during both the AM and PM weekday peak hours.

**WV 115 with US 340 Southbound and Citizens Way**

Following construction of a northbound exclusive right-turn lane, capacity analysis indicates that the WV 115 eastbound approach to US 340 Southbound/Citizen Way will continue to operate at LOS B during both the AM and PM weekday peak hours under yield control (roundabout). The WV 115 westbound approach to US 340 Southbound/Citizens Way will continue to operate at LOS B during both the AM and PM weekday peak hours under yield control. The US 340 Southbound Ramps northbound left/through movement to WV 115 is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour, while the right-turn movement is expected to operate at LOS A during both the AM and PM peak hours under yield control. The Citizens Way southbound approach to WV 115 will continue to operate at LOS B during the AM weekday peak hour and LOS A during the PM weekday peak hour under yield control. The roundabout is anticipated to operate at an overall LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour.

**WV 115 with US 340 Northbound and Hillside Drive**

Following construction of a single-lane roundabout, capacity analysis indicates that the WV 115 eastbound approach to US 340 Northbound/Hillside Drive is expected to operate at LOS B during the AM weekday peak hour and at LOS C during the PM weekday peak hour under yield control. The WV 115 westbound approach to US 340 Northbound/Citizen Way is expected to operate at LOS A during both the AM and PM weekday peak hours under yield control. The US 340 Northbound Ramp northbound approach to WV 115 is expected to operate at LOS A during both the AM and PM weekday peak hours under yield control. The Hillside Drive southbound approach to WV 115 is expected to operate at LOS A during both the AM and PM weekday peak hours under yield control. The roundabout is anticipated to operate at an overall LOS A during the AM weekday peak hour and LOS C during the PM peak hour.

**WV 115 with Site Drive #1**

Following construction of a westbound exclusive left-turn lane, the WV 115 eastbound approach to Site Drive #1 will continue to operate as free flow traveling unimpeded through the intersection. The WV 115 westbound left-turn movement to Site Drive #1 will operate at LOS A during both the AM and PM peak hours, while the through movement operates as unimpeded through the intersection. Capacity analysis indicates that Site Drive #1 northbound left-turn movement to WV 115 will continue to operate at LOS C during both the AM and PM weekday peak hours, while the right-turn movement is expected to operate at LOS A during the AM weekday peak hour and LOS B during the PM weekday peak hour under stop control.

**Figure 23** shows the LOS during the weekday AM and PM peak hours for the 2025 Full Build Improved Conditions for each lane group movement at each study intersection.

**Table 4** shows the LOS results for the intersections within the study area during the weekday AM and PM peak hours for the 2021 Existing Conditions, 2022 No-Build Conditions, Phase 1 2022 Build Conditions, 2024 Partial Build Conditions, 2024 Phase 2 Build Conditions, 2025 Partial Build Conditions, and 2025 Full Build Conditions and 2025 Build Improved Conditions.

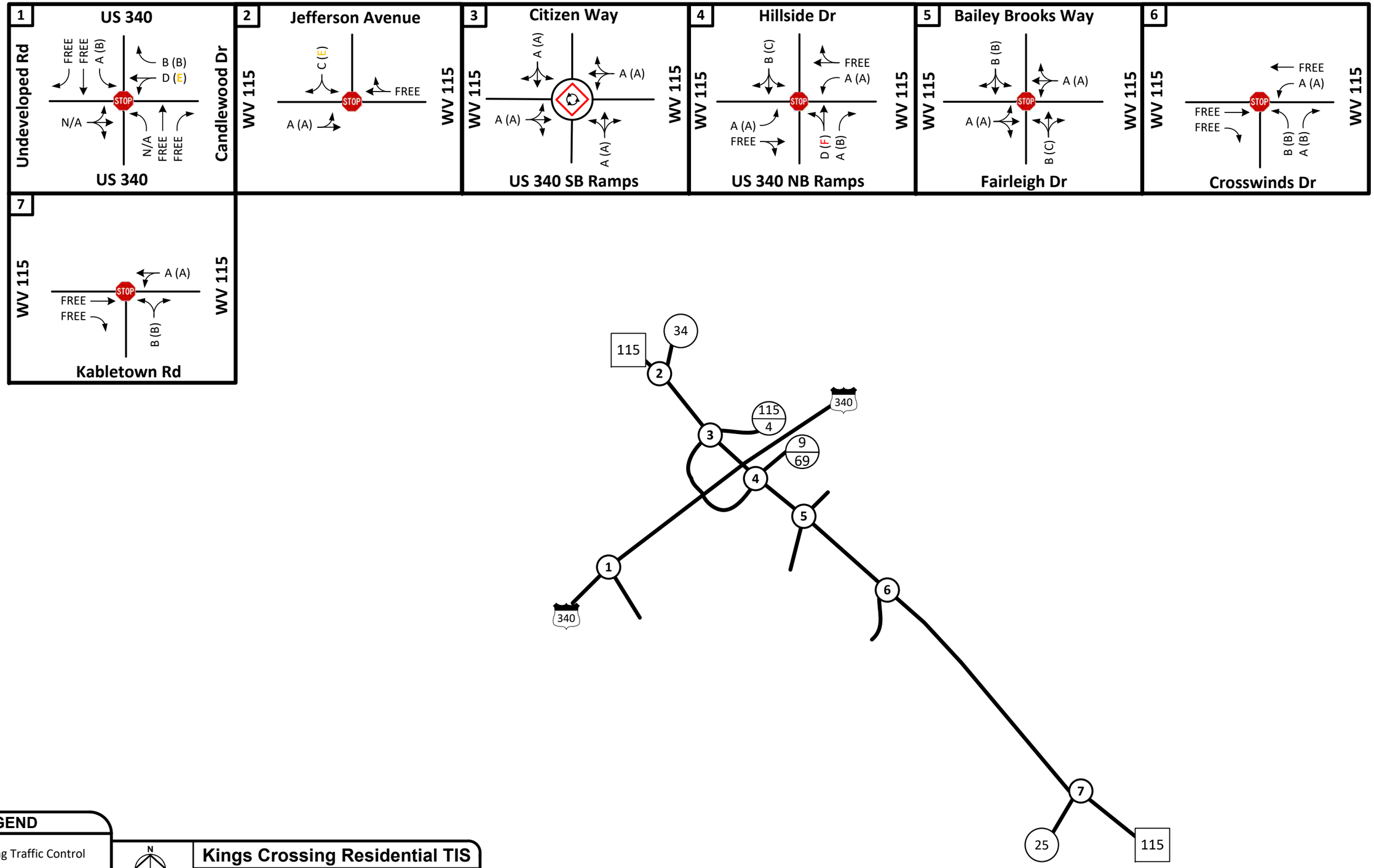
## Table 4: Level of Service Analysis Summary

| Intersection | Movement | 2021 Existing Conditions | | | | 2022 No-Build Conditions | | | | 2022 Phase 1 Build Conditions | | | | 2024 Partial Build Conditions | | | | 2024 Phase 2 Build Conditions | | | | 2025 Partial Build Conditions | | | | 2025 Full Build Conditions | | | | 2025 Full Build-Improved Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay |
| **Intersection 1 - US 340 (Williamsport Pike) with Candlewood Drive** | EB Left/Thru/Right | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A |
| | EB Approach | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A |
| | WB Left-Turn | D | 25.3 | **E** | **38.7** | D | 25.8 | **E** | **39.3** | D | 26.3 | **E** | **40.7** | D | 28.1 | **E** | **45.1** | D | 28.8 | **E** | **46.9** | D | 29.3 | **E** | **48.4** | D | 29.8 | **F** | **50.1** | D | 29.8 | **F** | **50.1** |
| | WB Right-Turn | B | 11.0 | B | 11.9 | B | 11.1 | B | 11.9 | B | 11.1 | B | 12.0 | B | 11.2 | B | 12.3 | B | 11.2 | B | 12.4 | B | 11.3 | B | 12.5 | B | 11.3 | B | 12.6 | B | 11.3 | B | 12.6 |
| | WB Approach | C | 15.5 | C | 18.0 | C | 15.8 | C | 18.1 | C | 15.9 | C | 18.5 | C | 16.6 | C | 19.8 | C | 16.8 | C | 20.2 | C | 17.0 | C | 20.7 | C | 17.2 | C | 21.1 | C | 17.2 | C | 21.1 |
| | NB Left-Turn | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A |
| | NB Thru | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE |
| | NB Right-Turn | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE |
| | NB Approach | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 |
| | SB Left-Turn | A | 9.3 | B | 10.2 | A | 9.4 | B | 10.3 | A | 9.4 | B | 10.3 | A | 9.5 | B | 10.6 | A | 9.5 | B | 10.7 | A | 9.6 | B | 10.7 | A | 9.6 | B | 10.8 | A | 9.6 | B | 10.8 |
| | SB Thru | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE |
| | SB Right-Turn | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A | NO VOL | N/A |
| | SB Approach | N/A | 0.1 | N/A | 0.3 | N/A | 0.1 | N/A | 0.3 | N/A | 0.1 | N/A | 0.3 | N/A | 0.1 | N/A | 0.3 | N/A | 0.1 | N/A | 0.3 | N/A | 0.1 | N/A | 0.3 | N/A | 0.0 | N/A | 0.3 | N/A | 0.0 | N/A | 0.3 |
| Existing Four-Leg Unsignalized Intersection (TWSC) | Overall | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Intersection 2 - WV 115 (Charles Town Road) with Jefferson Avenue** | EB Left-Turn | A | 8.5 | A | 8.5 | A | 8.5 | A | 8.5 | A | 8.6 | A | 8.6 | A | 8.6 | A | 8.7 | A | 8.7 | A | 8.7 | A | 8.8 | A | 8.7 | A | 8.8 | A | 8.8 | A | 8.3 | A | 8.0 |
| | EB Thru | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | A | 4.1 | A | 4.8 |
| | EB Approach | N/A | 2.2 | N/A | 0.9 | N/A | 2.2 | N/A | 0.9 | N/A | 2.2 | N/A | 0.8 | N/A | 2.2 | N/A | 0.9 | N/A | 2.1 | N/A | 0.8 | N/A | 2.1 | N/A | 0.8 | N/A | 2.1 | N/A | 0.8 | A | 5.1 | A | 5.1 |
| | WB Thru/Right | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | A | 5.9 | A | 6.0 |
| Proposed Three-Leg Signalized Intersection | WB Approach | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | A | 5.9 | A | 6.0 |
| | SB Left/Right | C | 22.0 | **E** | **43.9** | C | 22.6 | **E** | **46.9** | C | 23.8 | **F** | **52.5** | D | 27.2 | **F** | **71.3** | D | 29.8 | **F** | **87.2** | D | 31.0 | **F** | **94.3** | D | 33.4 | **F** | **108.7** | A | 8.5 | A | 9.5 |
| | SB Approach | C | 22.0 | **E** | **43.9** | C | 22.6 | **E** | **46.9** | C | 23.8 | **F** | **52.5** | D | 27.2 | **F** | **71.3** | D | 29.8 | **F** | **87,2** | D | 31.0 | **F** | **94.3** | D | 33.4 | **F** | **108.7** | A | 8.5 | A | 9.5 |
| Existing Three-Leg Unsignalized Intersection (TWSC) | Overall | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | A | 6.2 | A | 6.4 |
| **Intersection 3 - WV 115 (Charles Town Road) with US 340 Southbound/Citizens Way** | EB Left/Thru/Right | A | 6.3 | A | 7.6 | A | 6.4 | A | 7.7 | A | 6.6 | A | 9.9 | A | 9.1 | B | 10.5 | A | 9.6 | B | 11.4 | A | 9.7 | B | 11.6 | B | 10.2 | B | 12.3 | B | 10.2 | B | 12.3 |
| | EB Approach | A | 6.3 | A | 7.6 | A | 6.4 | A | 7.7 | A | 6.6 | A | 9.9 | A | 9.1 | B | 10.5 | A | 9.6 | B | 11.4 | A | 9.7 | B | 11.6 | B | 10.2 | B | 12.3 | B | 10.2 | B | 12.3 |
| | WB Left/Thru/Right | A | 6.9 | A | 6.6 | A | 6.9 | A | 6.7 | A | 7.4 | A | 7.0 | A | 8.4 | A | 9.9 | A | 9.2 | B | 10.6 | A | 9.2 | B | 10.8 | B | 10.0 | B | 11.3 | B | 10.0 | B | 11.3 |
| | WB Approach | A | 6.9 | A | 6.6 | A | 6.9 | A | 6.7 | A | 7.4 | A | 7.0 | A | 8.4 | A | 9.9 | A | 9.2 | B | 10.6 | A | 9.2 | B | 10.8 | B | 10.0 | B | 11.3 | B | 10.0 | B | 11.3 |
| | NB Left/Thru | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | A | 7.1 | B | 10.9 |
| | NB Right-Turn | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | A | 5.7 | A | 9.0 |
| | NB Left/Thru/Right | A | 6.5 | A | 10.0 | A | 6.6 | B | 10.1 | A | 6.8 | B | 13.2 | A | 9.9 | D | 25.4 | B | 10.6 | D | 33.2 | B | 10.6 | D | 34.7 | B | 10.8 | **E** | **43.4** | N/A | N/A | N/A | N/A |
| | NB Approach | A | 6.5 | A | 10.0 | A | 6.6 | B | 10.1 | A | 6.8 | B | 13.2 | A | 9.9 | D | 25.4 | B | 10.6 | D | 33.2 | B | 10.6 | D | 34.7 | B | 10.8 | **E** | **43.4** | A | 6.6 | B | 10.1 |
| | SB Left/Thru/Right | A | 5.7 | A | 5.4 | A | 5.7 | A | 5.5 | A | 5.9 | A | 7.4 | A | 9.7 | A | 7.6 | B | 10.3 | A | 7.9 | B | 10.4 | A | 8.0 | B | 11.3 | A | 8.2 | B | 11.3 | A | 8.2 |
| | SB Approach | A | 5.7 | A | 5.4 | A | 5.7 | A | 5.5 | A | 5.9 | A | 7.4 | A | 9.7 | A | 7.6 | B | 10.3 | A | 7.9 | B | 10.4 | A | 8.0 | B | 11.3 | A | 8.2 | B | 11.3 | A | 8.2 |
| Existing Four-Leg Roundabout Intersection | Overall | A | 6.5 | A | 7.9 | A | 6.6 | A | 8.0 | A | 6.9 | A | 9.7 | A | 9.2 | B | 14.7 | A | 9.8 | C | 17.7 | A | 9.8 | C | 14.9 | B | 10.5 | C | 21.5 | A | 9.6 | B | 11.0 |
| **Intersection 4 - WV 115 (Charles Town Road) with US 340 Northbound/Hillside Drive** | EB Left-Turn | A | 7.7 | A | 7.8 | A | 7.7 | A | 7.8 | A | 7.8 | A | 7.9 | A | 7.8 | A | 7.9 | A | 7.9 | A | 8.0 | A | 7.9 | A | 8.0 | A | 8.0 | A | 8.1 | N/A | N/A | N/A | N/A |
| | EB Thru/Right | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | N/A | N/A | N/A |
| | EB Left/Thru/Right | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | B | 10.2 | C | 22.7 |
| | EB Approach | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | B | 10.2 | C | 22.7 |
| | WB Left-Turn | A | 8.4 | A | 9.5 | A | 8.5 | A | 9.6 | A | 8.6 | A | 9.8 | A | 9.2 | B | 10.4 | A | 9.4 | B | 11.0 | A | 9.5 | B | 11.1 | A | 9.7 | B | 11.6 | N/A | N/A | N/A | N/A |
| | WB Thru/Right | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | N/A | N/A | N/A |
| | WB Left/Thru/Right | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | A | 8.7 | A | 8.3 |
| | WB Approach | N/A | 3.1 | N/A | 2.9 | N/A | 3.1 | N/A | 3.0 | N/A | 3.1 | N/A | 3.2 | N/A | 3.4 | N/A | 3.4 | N/A | 3.5 | N/A | 3.6 | N/A | 3.5 | N/A | 3.6 | N/A | 3.6 | N/A | 3.9 | A | 8.7 | A | 8.3 |
| | NB Left/Thru | D | 31.6 | **F** | **60.5** | D | 32.6 | **F** | **66.3** | **E** | **42.4** | **F** | **88.7** | **F** | **68.7** | **F** | ** | **F** | **125.1** | **F** | ** | **F** | **136.0** | **F** | ** | **F** | ** | **F** | ** | N/A | N/A | N/A | N/A |
| | NB Right-Turn | A | 10.0 | B | 12.6 | B | 10.0 | B | 12.9 | B | 10.2 | B | 13.5 | B | 10.8 | B | 14.4 | B | 11.0 | C | 15.5 | B | 11.1 | C | 16.4 | B | 11.2 | C | 18.0 | N/A | N/A | N/A | N/A |
| Proposed Four-Leg Roundabout Intersection | NB Left/Thru/Right | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | A | 5.3 | A | 10.0 |
| | NB Approach | D | 27.7 | **E** | **43.3** | D | 28.5 | **E** | **47.0** | **E** | **35.8** | **F** | **57.0** | **F** | **57.3** | **F** | **141.1** | **F** | **98.9** | **F** | ** | **F** | **107.6** | **F** | ** | **F** | **163.1** | **F** | ** | A | 5.3 | A | 10.0 |
| | SB Left/Thru/Right | B | 11.7 | C | 20.0 | B | 11.7 | C | 20.5 | B | 12.3 | C | 22.8 | B | 13.4 | D | 26.5 | B | 14.8 | D | 32.4 | C | 15.0 | D | 33.2 | C | 16.2 | **E** | **39.7** | A | 5.9 | A | 5.7 |
| | SB Approach | B | 11.7 | C | 20.0 | B | 11.7 | C | 20.5 | B | 12.3 | C | 22.8 | B | 13.4 | D | 26.5 | B | 14.8 | D | 32.4 | C | 15.0 | D | 33.2 | C | 16.2 | **E** | **39.7** | A | 5.9 | A | 5.7 |
| Existing Four-Leg Unsignalized Intersection (TWSC) | Overall | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | A | 8.8 | C | 16.2 |
| **Intersection 5 - WV 115 (Charles Town Road) with Fairleigh Drive/Bailey Brooks Way** | EB Left-Turn | A | 7.9 | A | 8.0 | A | 8.0 | A | 8.0 | A | 8.1 | A | 8.1 | A | 8.1 | A | 8.1 | A | 8.3 | A | 8.2 | A | 8.3 | A | 8.2 | A | 8.5 | A | 8.3 | A | 8.5 | A | 8.3 |
| | EB Approach | N/A | 0.0 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 |
| | WB Left-Turn | NO VOL | N/A | A | 8.4 | NO VOL | N/A | A | 8.4 | NO VOL | N/A | A | 8.5 | NO VOL | N/A | A | 8.6 | NO VOL | N/A | A | 8.8 | NO VOL | N/A | A | 8.8 | NO VOL | N/A | A | 9.0 | NO VOL | N/A | A | 9.0 |
| | WB Approach | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 |
| | NB Left/Thru/Right | B | 14.0 | C | 18.5 | B | 14.1 | C | 18.7 | C | 15.3 | C | 20.7 | C | 15.6 | C | 21.2 | C | 17.9 | D | 25.4 | C | 17.9 | D | 25.8 | C | 20.0 | D | 29.4 | C | 20.0 | D | 29.4 |
| | NB Approach | B | 14.0 | C | 18.5 | B | 14.1 | C | 18.7 | C | 15.3 | C | 20.7 | C | 15.6 | C | 21.2 | C | 17.9 | D | 25.4 | C | 17.9 | D | 25.8 | C | 20.0 | D | 29.4 | C | 20.0 | D | 29.4 |
| | SB Left/Thru/Right | B | 10.6 | B | 10.2 | B | 10.7 | B | 10.2 | B | 11.1 | B | 10.5 | B | 11.2 | B | 10.5 | B | 12.0 | B | 10.9 | B | 12.0 | B | 10.9 | B | 12.6 | B | 11.2 | B | 12.6 | B | 11.2 |
| | SB Approach | B | 10.6 | B | 10.2 | B | 10.7 | B | 10.2 | B | 11.1 | B | 10.5 | B | 11.2 | B | 10.5 | B | 12.0 | B | 10.9 | B | 12.0 | B | 10.9 | B | 12.6 | B | 11.2 | B | 12.6 | B | 11.2 |
| Existing Four-Leg Unsignalized Intersection (TWSC) | Overall | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

## Table 4: Level of Service Analysis Summary Continued

| Intersection | Movement | 2021 Existing Conditions | | | | 2022 No-Build Conditions | | | | 2022 Phase 1 Build Conditions | | | | 2024 Partial Build Conditions | | | | 2024 Phase 2 Build Conditions | | | | 2025 Partial Build Conditions | | | | 2025 Full Build Conditions | | | | 2025 Full Build-Improved Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay |
| **Intersection 6 - WV 115 (Charles Town Road) with Crosswinds Drive** | EB Thru | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE |
| | EB Right-Turn | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE |
| | EB Approach | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 |
| | WB Left-Turn | A | 7.7 | A | 8.2 | A | 7.7 | A | 8.2 | A | 7.7 | A | 8.4 | A | 7.7 | A | 8.4 | A | 8.0 | A | 8.6 | A | 7.8 | A | 8.7 | A | 7.8 | A | 8.8 | A | 7.8 | A | 8.8 |
| | WB Thru | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE |
| | WB Approach | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 |
| | NB Left-Turn | B | 12.1 | B | 14.9 | B | 12.2 | C | 15.0 | B | 13.0 | C | 16.3 | B | 13.2 | C | 16.7 | C | 15.7 | C | 19.3 | B | 14.7 | C | 19.4 | C | 16.0 | C | 21.8 | C | 16.0 | C | 21.8 |
| | NB Right-Turn | A | 9.3 | B | 10.6 | A | 9.3 | B | 10.6 | A | 9.4 | B | 11.0 | A | 9.5 | B | 11.1 | B | 10.1 | B | 11.8 | A | 9.7 | B | 11.8 | A | 9.8 | B | 12.4 | A | 9.8 | B | 12.4 |
| | NB Approach | B | 11.4 | B | 14.3 | B | 11.4 | B | 14.4 | B | 12.1 | C | 15.6 | B | 12.3 | C | 16.0 | B | 14.3 | C | 18.3 | B | 13.4 | C | 18.4 | B | 14.4 | C | 20.6 | B | 14.4 | C | 20.6 |
| Existing Three-Leg Unsignalized Intersection (TWSC) | Overall | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Intersection 7 - WV 115 (Charles Town Road) with Kabletown Road (CR 25)** | EB Thru | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE |
| | EB Right-Turn | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE |
| | EB Approach | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 |
| | WB Left-Turn | A | 7.6 | A | 8.1 | A | 7.6 | A | 8.1 | A | 7.7 | A | 8.2 | A | 7.7 | A | 8.2 | A | 7.7 | A | 8.2 | A | 7.7 | A | 8.2 | A | 7.7 | A | 8.2 | A | 7.7 | A | 8.2 |
| | WB Approach | N/A | 0.4 | N/A | 0.7 | N/A | 0.4 | N/A | 0.7 | N/A | 0.4 | N/A | 0.7 | N/A | 0.4 | N/A | 0.7 | N/A | 0.4 | N/A | 0.7 | N/A | 0.4 | N/A | 0.6 | N/A | 0.4 | N/A | 0.6 | N/A | 0.4 | N/A | 0.6 |
| | NB Left/Right | B | 11.3 | B | 13.2 | B | 11.3 | B | 13.3 | B | 11.4 | B | 13.4 | B | 11.5 | B | 13.7 | B | 11.6 | B | 13.8 | B | 11.6 | B | 14.0 | B | 11.7 | B | 14.1 | B | 11.7 | B | 14.1 |
| | NB Approach | B | 11.3 | B | 13.2 | B | 11.3 | B | 13.3 | B | 11.4 | B | 13.4 | B | 11.5 | B | 13.7 | B | 11.6 | B | 13.8 | B | 11.6 | B | 14.0 | B | 11.7 | B | 14.1 | B | 11.7 | B | 14.1 |
| Existing Three-Leg Unsignalized Intersection (TWSC) | Overall | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Intersection 8 - WV 115 (Charles Town Road) with Site Drive #1 (Road 1)** | EB Thru/Right | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE |
| | EB Approach | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 |
| | WB Left-Turn | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | A | 7.7 | A | 8.4 | A | 7.7 | A | 8.4 | A | 7.8 | A | 8.7 | A | 7.8 | A | 8.7 | A | 7.8 | A | 8.9 | A | 7.8 | A | 8.9 |
| | WB Thru | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | FREE | N/A | FREE |
| | WB Approach | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 0.0 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 | N/A | 0.1 | N/A | 0.3 | N/A | 0.1 | N/A | 0.2 | N/A | 0.1 | N/A | 0.4 | N/A | 0.1 | N/A | 0.4 |
| | NB Left-Turn | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | B | 12.4 | C | 16.2 | B | 12.5 | C | 16.5 | B | 14.2 | C | 20.1 | B | 14.3 | C | 20.3 | C | 16.1 | C | 24.6 | C | 16.0 | C | 24.5 |
| | NB Right-Turn | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | A | 9.4 | B | 11.1 | A | 9.4 | B | 11.2 | A | 9.6 | B | 11.7 | A | 9.6 | B | 11.8 | A | 9.7 | B | 12.2 | A | 9.7 | B | 12.2 |
| | NB Approach | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | B | 12.0 | C | 15.5 | B | 12.1 | C | 15.8 | B | 13.7 | C | 19.0 | B | 13.7 | C | 19.2 | C | 15.4 | C | 23.0 | C | 15.3 | C | 22.9 |
| Proposed Three-Leg Unsignalized Intersection (TWSC) | Overall | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Intersection 9- WV 115 (Charles Town Road) with Site Drive #2 (Road 12)** | EB Thru/Right | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE | N/A | FREE |
| | EB Approach | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 |
| | WB Left-Turn | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | A | 7.7 | A | 8.3 | A | 7.7 | A | 8.3 | A | 7.7 | A | 8.4 | A | 7.7 | A | 8.4 | A | 7.7 | A | 8.5 | A | 7.7 | A | 8.5 |
| | WB Thru | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | WB Approach | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.0 | N/A | 0.1 | N/A | 0.0 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 | N/A | 0.1 |
| | NB Left-Turn | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | B | 12.0 | C | 15.3 | B | 12.1 | C | 15.5 | B | 12.7 | C | 16.8 | B | 12.8 | C | 16.9 | B | 13.3 | C | 18.1 | B | 13.3 | C | 18.1 |
| | NB Right-Turn | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | A | 9.3 | B | 10.9 | A | 9.4 | B | 10.9 | A | 9.5 | B | 11.1 | A | 9.5 | B | 11.2 | A | 9.5 | B | 11.3 | A | 9.5 | B | 11.3 |
| | NB Approach | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | B | 11.9 | C | 15.0 | B | 12.0 | C | 15.1 | B | 12.5 | C | 16.4 | B | 12.6 | C | 16.5 | B | 13.1 | C | 17.7 | B | 13.1 | C | 17.7 |
| Proposed Three-Leg Unsignalized Intersection (TWSC) | Overall | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

** = Delay exceeding 200 sec/veh




**LEGEND**

- STOP Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- A AM Level of Service
- (A) PM Level of Service

N

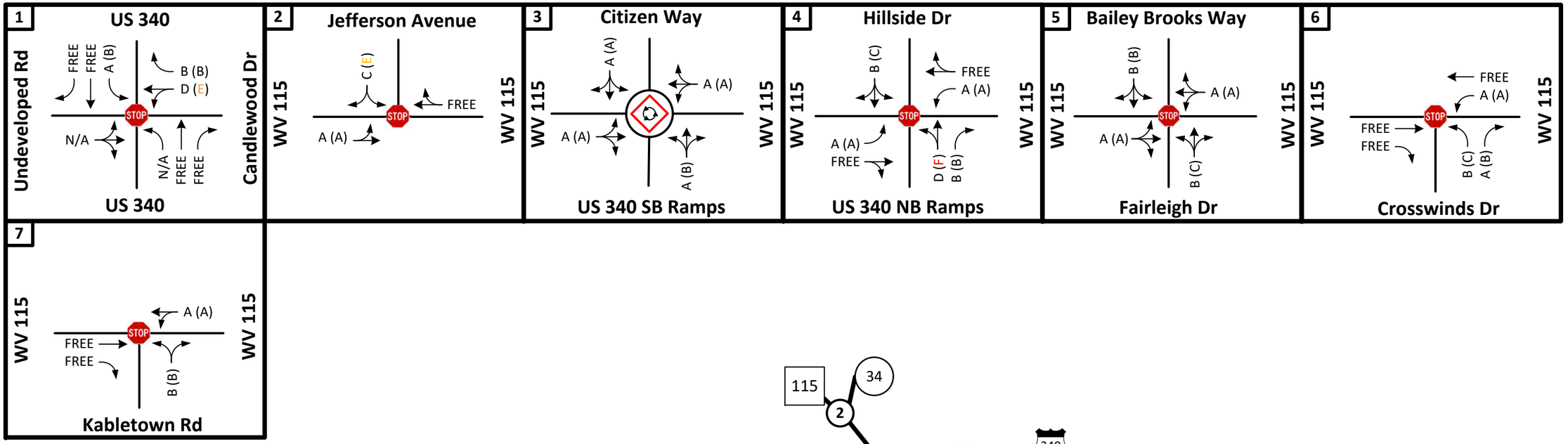
NOT TO SCALE

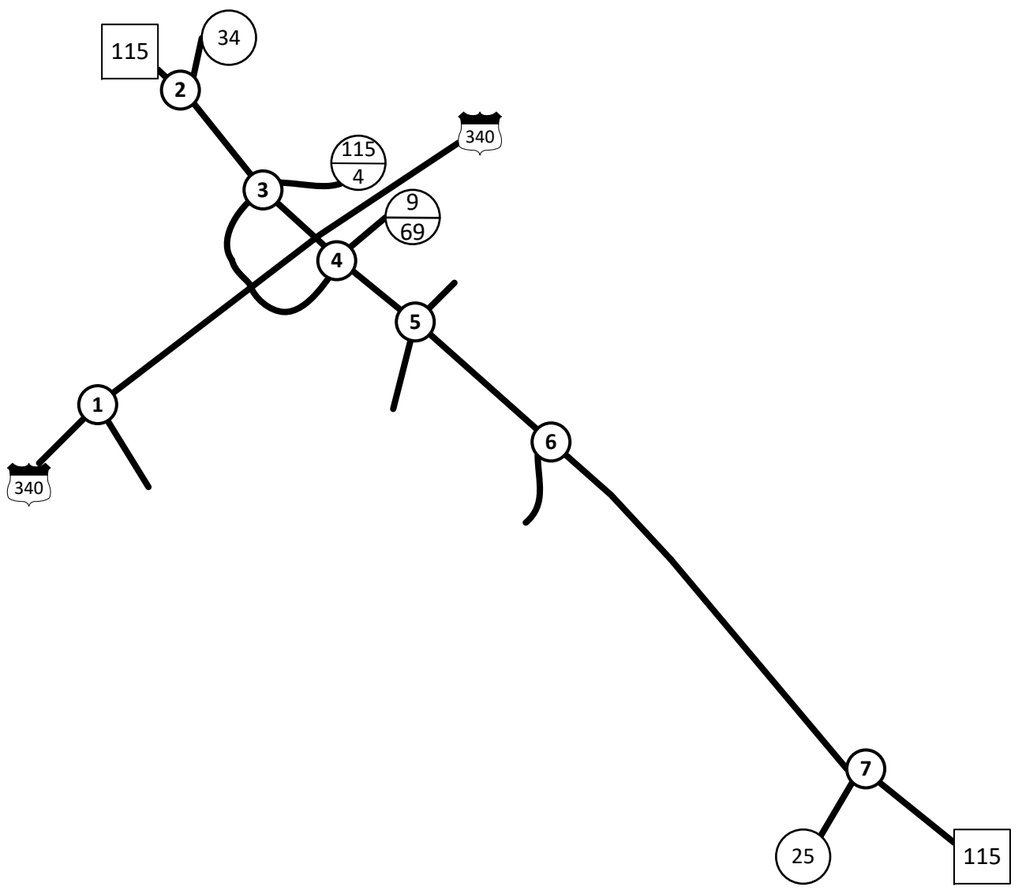
**Kings Crossing Residential TIS**

2021 Existing Level of Service

**DATE:** May 2022

**FIGURE 16**




**LEGEND**

- Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- A AM Level of Service
- (A) PM Level of Service

N

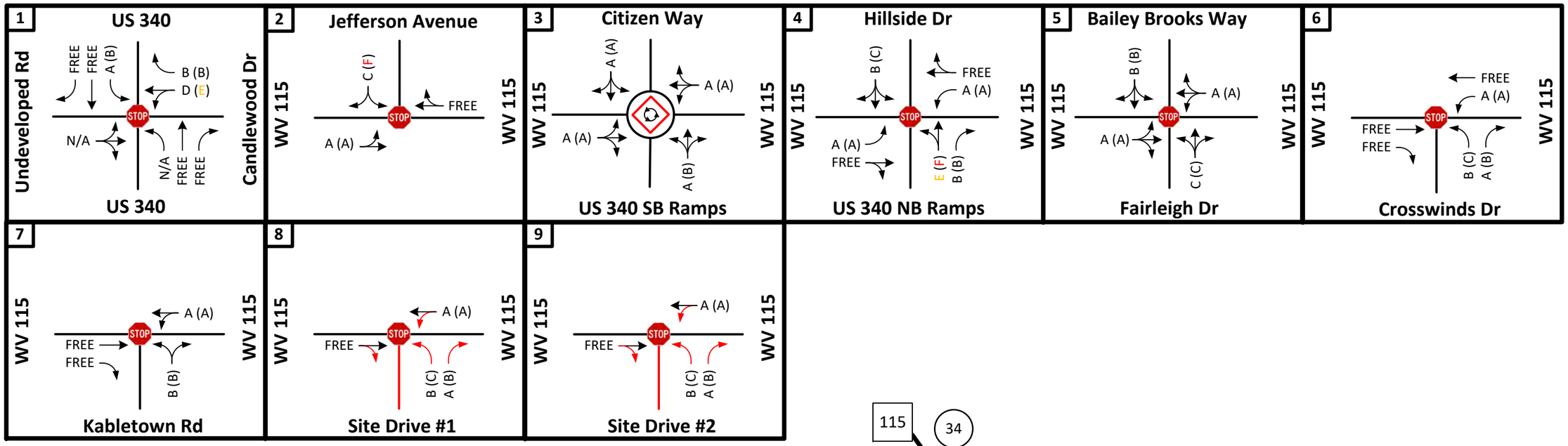
NOT TO SCALE

**Kings Crossing Residential TIS**

2022 No-Build Level of Service

**DATE:** May 2022

**FIGURE 17**




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- A — AM Level of Service
- (A) — PM Level of Service

N

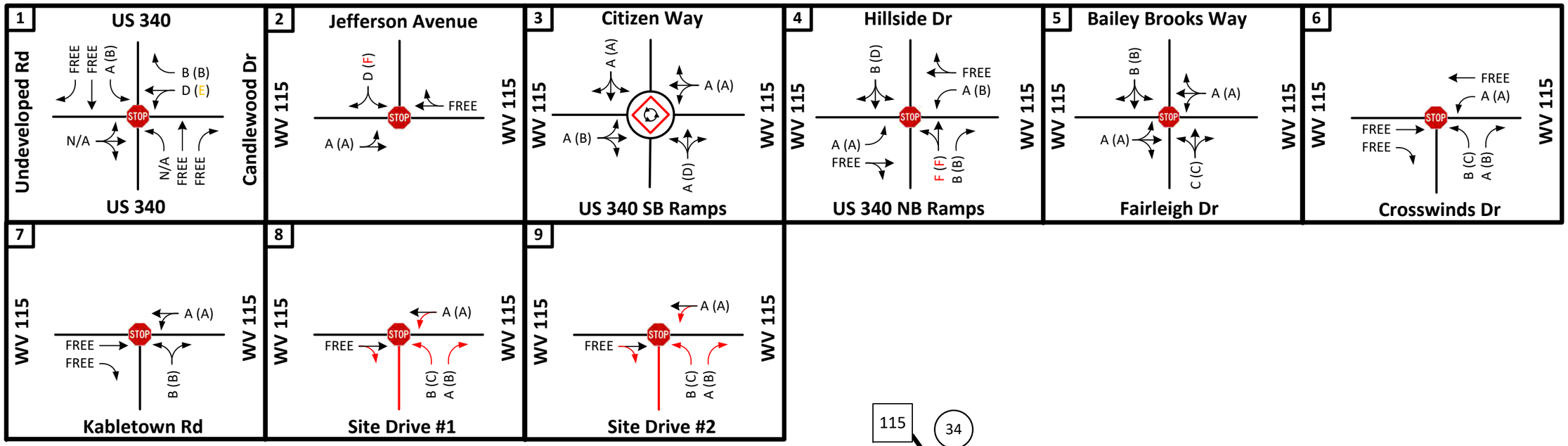
NOT TO SCALE

**Kings Crossing Residential TIS**

2022 Phase 1 Level of Service

**DATE:** May 2022

**FIGURE 18**




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- A — AM Level of Service
- (A) — PM Level of Service

N

NOT TO SCALE

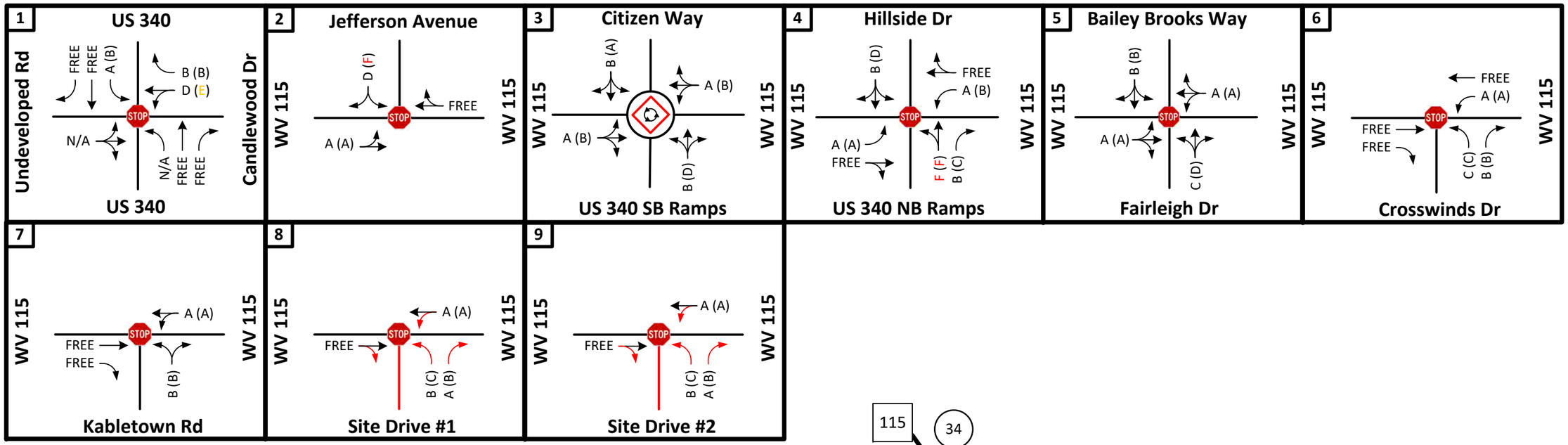
**Kings Crossing Residential TIS**

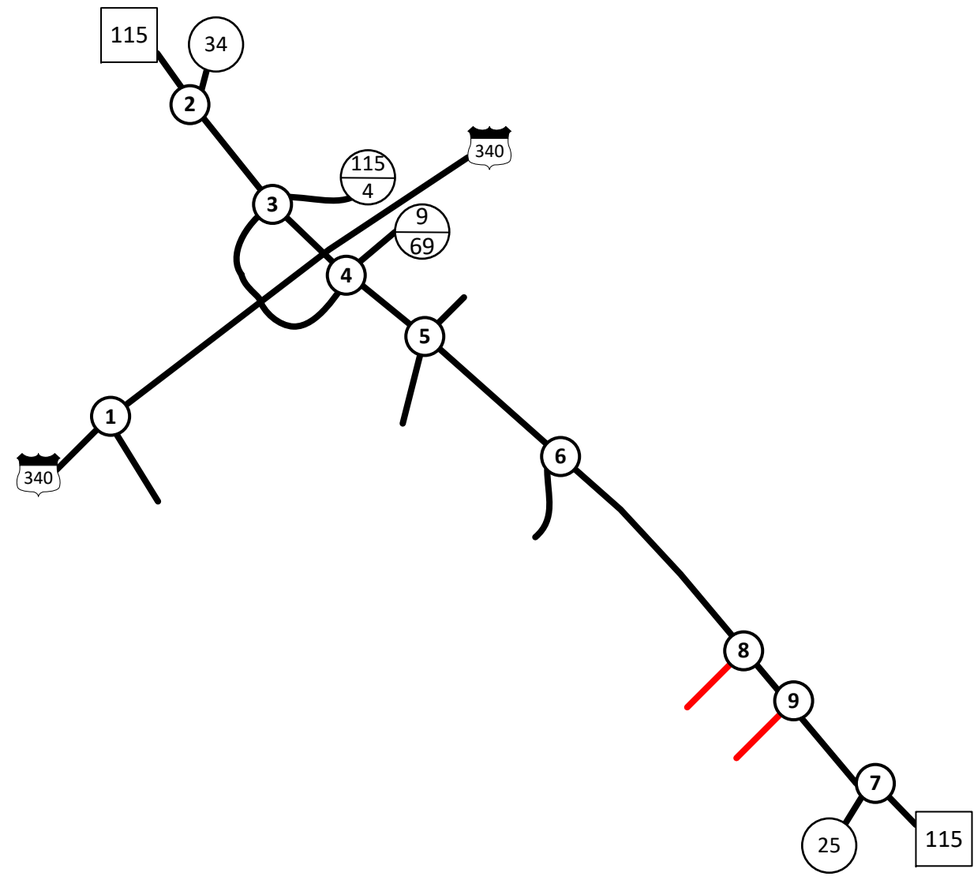
2024 Partial Build Level of Service

**DATE:** May 2022

**FIGURE 19**

AMT




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- A — AM Level of Service
- (A) — PM Level of Service

N

NOT TO SCALE

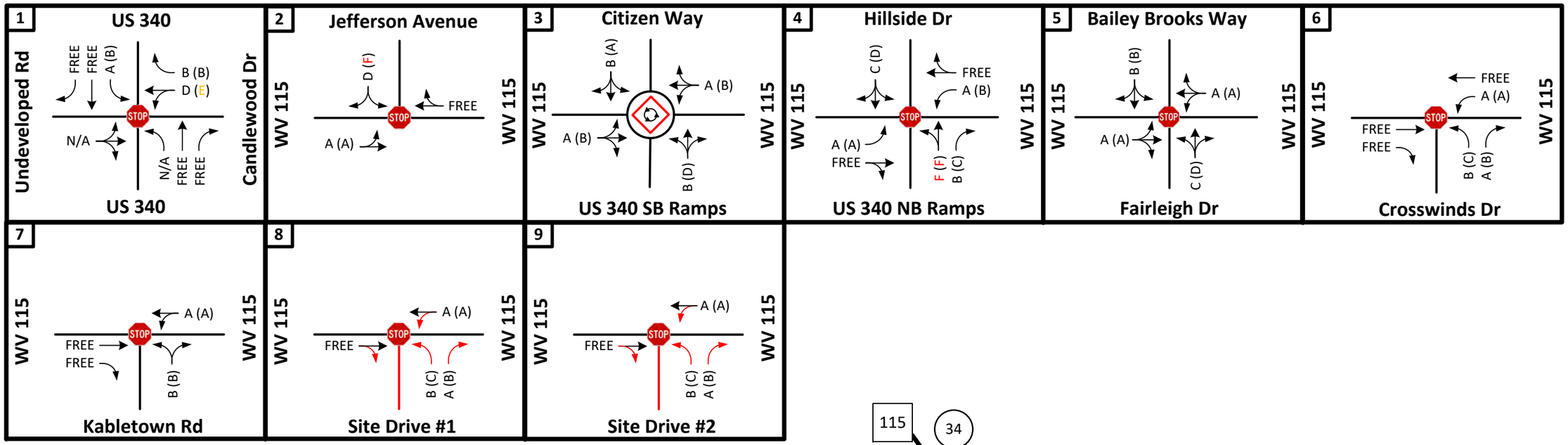
**Kings Crossing Residential TIS**

2024 Phase 2 Build Level of Service

**DATE:** May 2022

**FIGURE 20**

AMT




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- A — AM Level of Service
- (A) — PM Level of Service

N

NOT TO SCALE

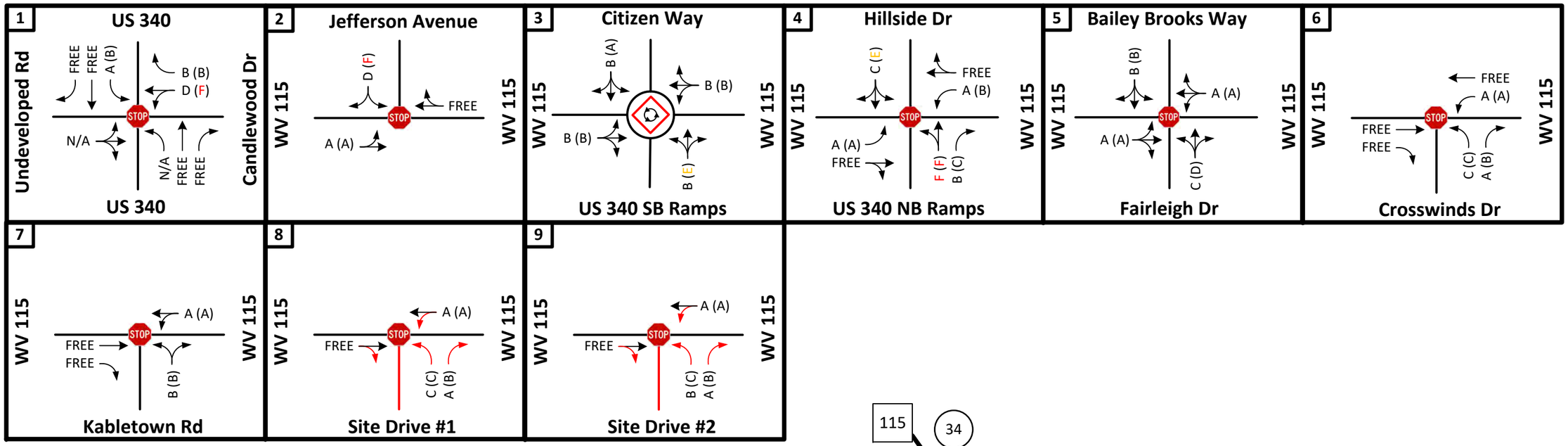
**Kings Crossing Residential TIS**

2025 Partial Build Level of Service

**DATE:** May 2022

**FIGURE 21**

AMT




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- A — AM Level of Service
- (A) — PM Level of Service

N

NOT TO SCALE

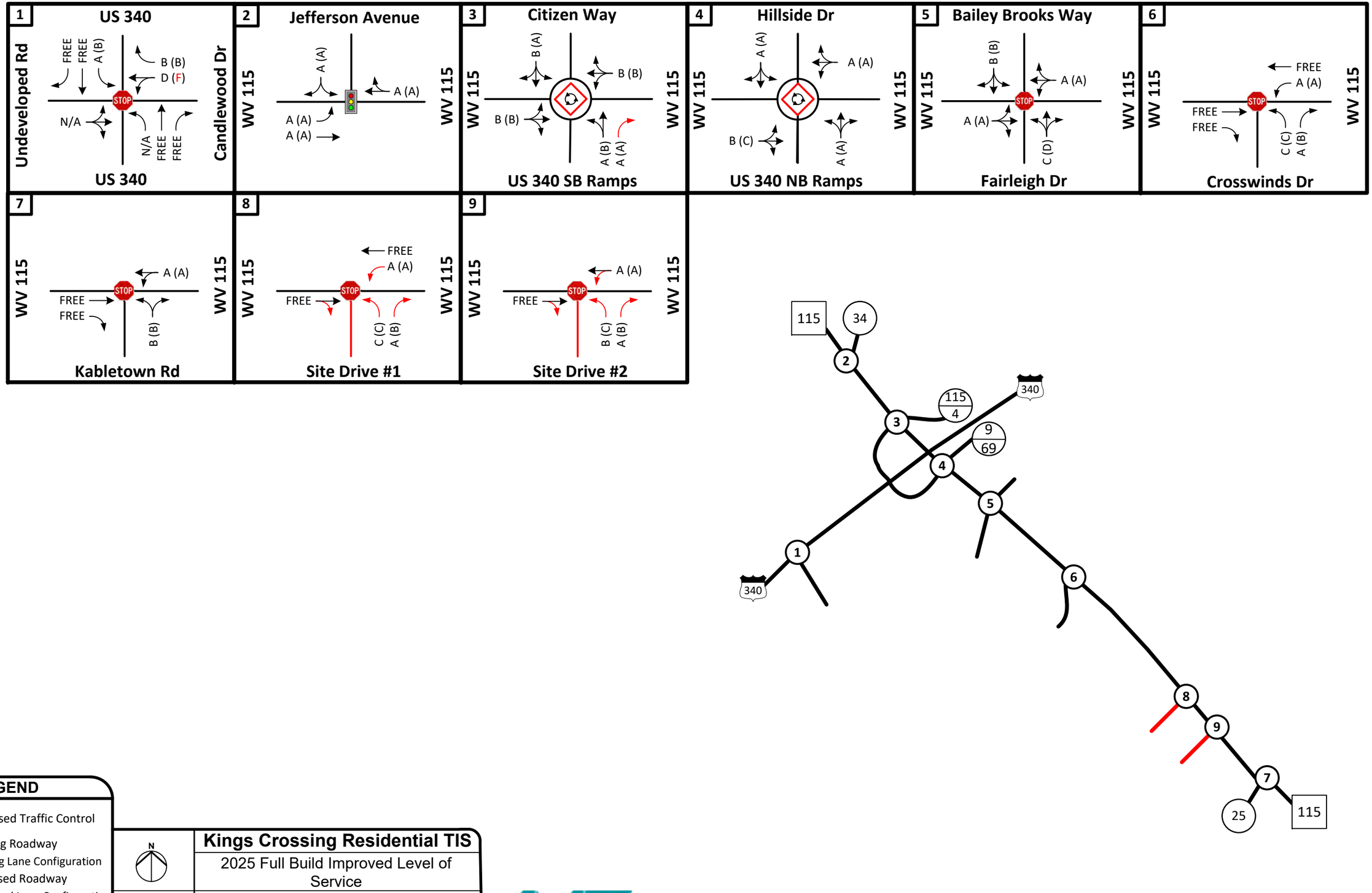
**Kings Crossing Residential TIS**

2025 Full Build Level of Service

**DATE:** May 2022

**FIGURE 22**

AMT




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- A — AM Level of Service
- (A) — PM Level of Service

N

NOT TO SCALE

**Kings Crossing Residential TIS**

2025 Full Build Improved Level of Service

**DATE:** May 2022

**FIGURE 23**

# QUEUING ANALYSIS

## 2021 Existing Conditions Analysis

Queuing analysis was performed for all study intersections during the weekday AM and PM peak hours using the SimTraffic micro-simulation model, which is a simulation complement to the Synchro traffic analysis models utilized for the capacity analysis. The queuing calculations produced by SimTraffic are acknowledged within the industry to be a realistic replication of actual conditions. Each simulation model was seeded for 10 minutes and recorded for 60 minutes. The simulation was run five times and then averaged to estimate the 95$^{th}$ percentile queuing for all scenarios. The queuing analysis for roundabout was performed using Sidra, version 9.0.

The queuing analysis indicates that there are no existing turning movements currently exceeding storage length during the peak periods analyzed.

**Figure 24** shows the 2021 Existing Conditions Queuing Analysis for the weekday AM and PM peak periods

## 2022 No-Build Conditions Analysis

Queuing analysis indicates that all conditions described in the 2021 Existing Conditions are expected to continue with similar queues with the increase in traffic due to regional growth in the study area.

**Figure 25** shows the 2022 No-Build Queuing Analysis for the weekday AM and PM peak periods

## 2022 Phase 1 Build Conditions Analysis

Queuing analysis indicates that all conditions described in the 2022 No-Build Conditions are expected to continue with similar queueing following build-out of Phase 1 of Kings Crossing residential development. Analysis indicates that no additional movements are expected to exceed storage length.

**Figure 26** shows the 2022 Phase 1 Build Queuing Analysis for the weekday AM and PM peak periods

## 2024 Partial Build Conditions Analysis

Queuing analysis indicates that all conditions described in the 2022 Phase 1 Build Conditions are expected to continue with similar queueing with the increase in traffic due to regional growth and the anticipated traffic generated by the Tate Manor and Magnolia Springs developments. Analysis indicates that no additional movements expected to exceed storage length.

**Figure 27** shows the 2024 Partial Build Queuing Analysis for the weekday AM and PM peak periods

## 2024 Phase 2 Build Conditions Analysis

Queuing analysis indicates that all conditions described in the 2024 Partial Build Conditions are expected to continue with similar queueing following build-out of Phase 2 of the Kings Crossing residential development. Analysis indicates that no additional movements are expected to exceed storage length.

**Figure 28** shows the 2024 Phase 2 Build Queuing Analysis for the weekday AM and PM peak periods

## 2025 Partial Build Conditions Analysis

Queuing analysis indicates that all conditions described in the 2025 Partial Build Conditions are expected to continue with similar queueing with the increase in traffic volume due to regional growth. Analysis indicates that no additional movements are expected to exceed storage length.

**Figure 29** shows the 2025 Partial Build Queuing Analysis for the weekday AM and PM peak periods

## 2025 Full Build Conditions Analysis

Queuing analysis indicates that all conditions described in the 2025 Partial Build Conditions are expected to continue with similar queueing following build-out of Phase 3 of the Kings Crossing residential development. Analysis indicates that no additional movements are expected to exceed storage length.

**Figure 30** shows the 2025 Full Build Improved Queuing Analysis for the weekday AM and PM peak periods

## 2025 Full Build Improved Conditions Analysis

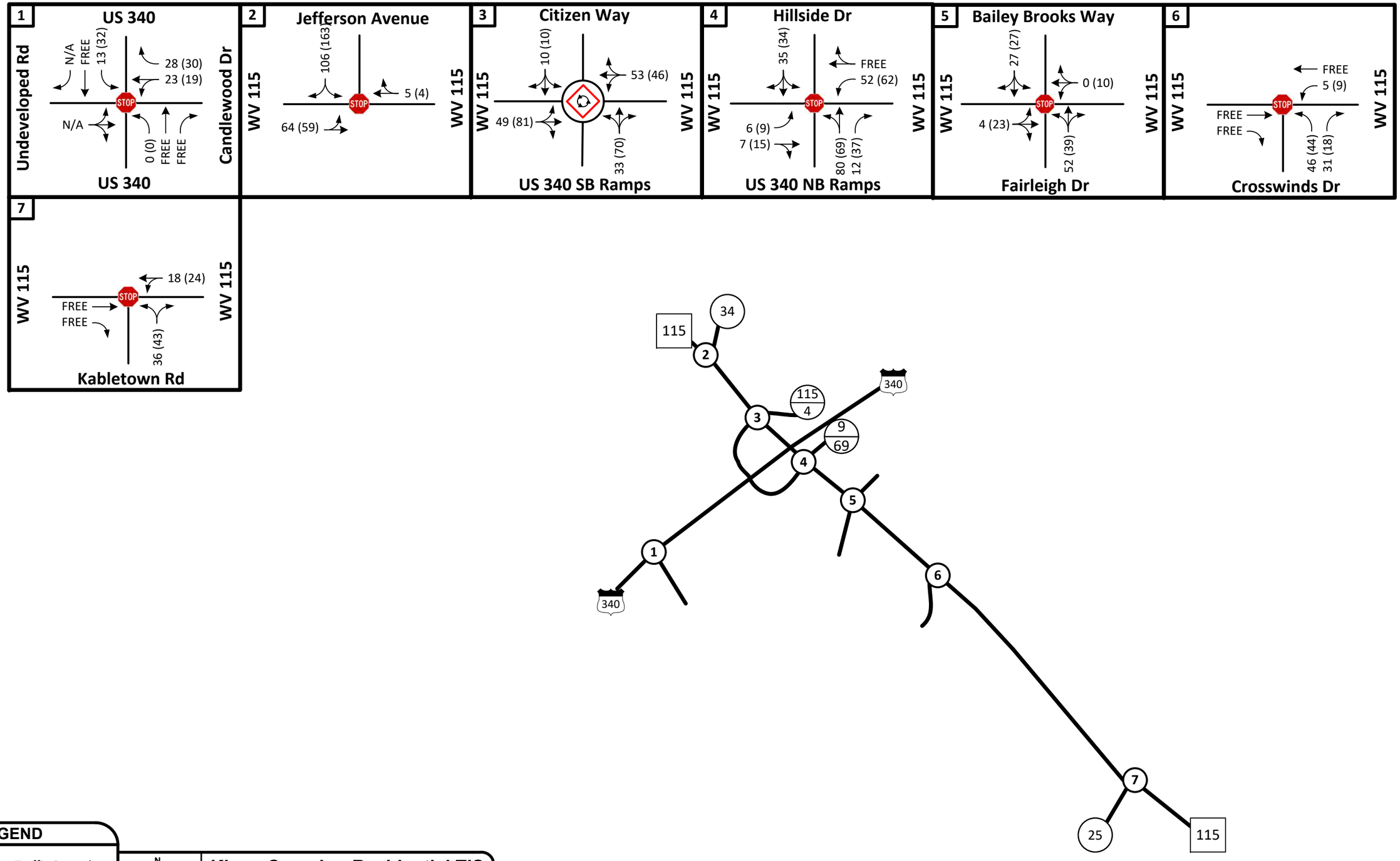
Queuing analysis indicates that all conditions described in the 2025 Full Build Conditions are expected to continue with similar queueing following build-out of Phase 3 of the Kings Crossing residential development with proposed improvements in place. Analysis indicates that no additional movements are expected to exceed storage length.

**Figure 31** shows the 2025 Full Build Improved Queuing Analysis for the weekday AM and PM peak periods

**Table 5** presents the 95% queuing results for the intersections within the study during the weekday AM and PM peak hours for the 2021 Existing Conditions, 2022 No-Build Conditions, 2022 Phase 1 Build Conditions, 2024 Partial Build Conditions, 2024 Phase 2 Build Conditions, 2025 Partial Build Conditions, 2025 Full Build Conditions, and 2025 Build Improved Conditions. Copies of the SimTraffic analyses outputs are included in **Appendix D**.

## Table 5: Queueing Analysis Summary

| Intersection | Movement | Existing Storage Length (ft) | 2021 Existing | | 2022 No-Build | | Proposed Storage Length (ft) | 2022 Phase 1 Build | | 2024 Partial Build | | 2024 Phase 2 Build | | 2025 Partial Build | | 2025 Full Build | | Proposed Storage Length (ft) | 2025 Build-Improved | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AM | PM | AM | PM | | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM | | AM | PM |
| **Intersection 1 - US 340 (Williamsport Pike) with Candlewood Drive** | EB Left/Thru/Right | -- | 0 | 0 | 0 | 0 | -- | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -- | 0 | 0 |
| | WB Left-Turn | -- | 23 | 19 | 24 | 18 | -- | 20 | 19 | 24 | 19 | 25 | 20 | 22 | 25 | 22 | 21 | -- | 17 | 18 |
| | WB Right-Turn | -- | 28 | 30 | 31 | 31 | -- | 27 | 30 | 32 | 31 | 32 | 29 | 30 | 32 | 29 | 32 | -- | 28 | 30 |
| | NB Left-Turn | 300 | 0 | 0 | 0 | 0 | 300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 300 | 0 | 0 |
| | NB Thru | -- | FREE | FREE | FREE | FREE | -- | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | -- | FREE | FREE |
| | NB Right-Turn | 150 | FREE | FREE | FREE | FREE | 150 | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | 150 | FREE | FREE |
| | SB Left-Turn | 300 | 13 | 32 | 14 | 31 | 300 | 13 | 35 | 12 | 36 | 14 | 31 | 12 | 33 | 15 | 34 | 300 | 11 | 31 |
| | SB Thru | -- | FREE | FREE | FREE | FREE | -- | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | -- | FREE | FREE |
| | SB Right-Turn | 150 | FREE | FREE | FREE | FREE | 150 | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | 150 | FREE | FREE |
| **Intersection 2 - WV 115 (Charles Town Road) with Jefferson Avenue** | EB Left/Thru | -- | 64 | 59 | 73 | 58 | -- | 68 | 71 | 87 | 61 | 79 | 73 | 87 | 84 | 83 | 74 | N/A | N/A | N/A |
| | EB Left-Turn | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 125 | 74 | 54 |
| | EB Thru | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | -- | 79 | 134 |
| | WB Thru/Right | -- | 5 | 4 | 9 | 5 | -- | 6 | 0 | 9 | 6 | 8 | 8 | 9 | 7 | 11 | 7 | -- | 117 | 138 |
| | SB Left/Right | -- | 106 | 163 | 107 | 169 | -- | 113 | 144 | 128 | 168 | 179 | 189 | 140 | 118 | 164 | 376 | -- | 118 | 143 |
| **Intersection 3 - WV 115 (Charles Town Road) with US 340 Southbound/Citizens Way** | EB Left/Thru/Right | -- | 49 | 81 | 50 | 82 | -- | 52 | 97 | 67 | 106 | 79 | 146 | 81 | 154 | 90 | 190 | -- | 90 | 190 |
| | WB Left/Thru/Right | -- | 53 | 46 | 54 | 47 | -- | 60 | 51 | 68 | 81 | 80 | 97 | 80 | 100 | 94 | 114 | -- | 94 | 114 |
| | NB Left/Thru | -- | N/A | N/A | N/A | N/A | -- | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | -- | 28 | 66 |
| | NB Right-Turn | -- | N/A | N/A | N/A | N/A | -- | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | -- | 15 | 44 |
| | NB Left/Thru/Right | -- | 33 | 70 | 34 | 72 | -- | 35 | 101 | 60 | 273 | 53 | 361 | 53 | 378 | 72 | 478 | -- | N/A | N/A |
| | SB Left/Thru/Right | -- | 10 | 10 | 10 | 10 | -- | 11 | 29 | 48 | 29 | 66 | 30 | 66 | 30 | 57 | 31 | -- | 57 | 31 |
| **Intersection 4 - WV 115 (Charles Town Road) with US 340 Northbound/Hillside Drive** | EB Left-Turn | -- | 6 | 9 | 10 | 13 | -- | 11 | 12 | 8 | 13 | 11 | 13 | 9 | 10 | 6 | 11 | -- | N/A | N/A |
| | EB Thru/Right | -- | 7 | 15 | 17 | 17 | -- | 7 | 17 | 28 | 34 | 31 | 34 | 37 | 36 | 40 | 36 | -- | N/A | N/A |
| | EB Left/Thru/Right | -- | N/A | N/A | N/A | N/A | -- | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | -- | 99 | 721 |
| | WB Left-Turn | -- | 52 | 62 | 57 | 56 | -- | 57 | 66 | 63 | 75 | 74 | 84 | 69 | 92 | 77 | 88 | -- | N/A | N/A |
| | WB Thru/Right | -- | FREE | FREE | FREE | FREE | -- | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | -- | N/A | N/A |
| | WB Left/Thru/Right | -- | N/A | N/A | N/A | N/A | -- | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | -- | 87 | 83 |
| | NB Left/Thru | -- | 80 | 69 | 78 | 77 | -- | 84 | 85 | 98 | 124 | 102 | 128 | 93 | 166 | 99 | 139 | -- | N/A | N/A |
| | NB Right-Turn | -- | 12 | 37 | 19 | 7 | -- | 20 | 51 | 16 | 58 | 27 | 55 | 22 | 120 | 27 | 69 | -- | N/A | N/A |
| | NB Left/Thru/Right | -- | N/A | N/A | N/A | N/A | -- | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | 23 | 43 |
| | SB Left/Thru/Right | -- | 36 | 32 | 36 | 32 | -- | 33 | 34 | 35 | 35 | 36 | 34 | 36 | 31 | 35 | 36 | -- | 3 | 2 |
| **Intersection 5 - WV 115 (Charles Town Road) with Fairleigh Drive/Bailey Brooks Way** | EB Left/Thru/Right | -- | 4 | 23 | 4 | 17 | -- | 4 | 32 | 0 | 16 | 9 | 26 | 4 | 24 | 0 | 25 | -- | 7 | 17 |
| | WB Left/Thru/Right | -- | 0 | 10 | 0 | 6 | -- | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 49 | 0 | 40 | -- | 0 | 6 |
| | NB Left/Thru/Right | -- | 52 | 39 | 50 | 39 | -- | 51 | 43 | 50 | 37 | 50 | 38 | 51 | 39 | 54 | 40 | -- | 48 | 43 |
| | SB Left/Thru/Right | -- | 27 | 27 | 26 | 30 | -- | 25 | 30 | 22 | 29 | 23 | 27 | 26 | 28 | 21 | 33 | -- | 26 | 32 |
| **Intersection 6 - WV 115 (Charles Town Road) with Crosswinds Drive** | EB Thru | -- | FREE | FREE | FREE | FREE | -- | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | -- | FREE | FREE |
| | EB Right-Turn | 150 | FREE | FREE | FREE | FREE | 150 | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | 150 | FREE | FREE |
| | WB Left-Turn | 175 | 5 | 9 | 6 | 5 | 175 | 4 | 9 | 3 | 10 | 4 | 10 | 5 | 12 | 5 | 10 | 175 | 4 | 9 |
| | WB Thru | -- | FREE | FREE | FREE | FREE | -- | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | -- | FREE | FREE |
| | NB Left-Turn | -- | 46 | 44 | 47 | 40 | -- | 47 | 42 | 44 | 44 | 45 | 43 | 46 | 46 | 50 | 45 | -- | 47 | 43 |
| | NB Right-Turn | -- | 31 | 18 | 30 | 18 | -- | 30 | 18 | 31 | 18 | 30 | 17 | 33 | 21 | 31 | 16 | -- | 28 | 18 |
| **Intersection 7 - WV 115 (Charles Town Road) with Kabletown Road (CR 25)** | EB Thru | -- | FREE | FREE | FREE | FREE | -- | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | -- | FREE | FREE |
| | EB Right-Turn | 100 | FREE | FREE | FREE | FREE | 100 | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | 100 | FREE | FREE |
| | WB Left/Thru | -- | 18 | 24 | 6 | 20 | -- | 10 | 24 | 9 | 23 | 10 | 26 | 15 | 27 | 11 | 29 | -- | 10 | 33 |
| | NB Left/Right | -- | 36 | 43 | 39 | 45 | -- | 42 | 47 | 39 | 44 | 40 | 44 | 45 | 48 | 41 | 44 | -- | 40 | 46 |
| **Intersection 8 - WV 115 (Charles Town Road) with Site Drive #1 (Road 1)** | EB Thru/Right | N/A | N/A | N/A | N/A | N/A | -- | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | -- | FREE | FREE |
| | WB Left/Thru | N/A | N/A | N/A | N/A | N/A | -- | 0 | 12 | 0 | 21 | 9 | 26 | 11 | 34 | 10 | 34 | N/A | N/A | N/A |
| | WB Left-Turn | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 125 | 9 | 25 |
| | WB Thru | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | -- | FREE | FREE |
| | NB Left-Turn | N/A | N/A | N/A | N/A | N/A | -- | 44 | 39 | 46 | 41 | 63 | 53 | 59 | 52 | 71 | 68 | -- | 72 | 72 |
| | NB Right-Turn | N/A | N/A | N/A | N/A | N/A | -- | 23 | 19 | 18 | 18 | 32 | 31 | 31 | 27 | 37 | 30 | -- | 36 | 27 |
| **Intersection 9 - WV 115 (Charles Town Road) with Site Drive #2 (Road 12)** | EB Thru/Right | N/A | N/A | N/A | N/A | N/A | -- | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | FREE | -- | FREE | FREE |
| | WB Left/Thru | N/A | N/A | N/A | N/A | N/A | -- | 3 | 4 | 3 | 0 | 0 | 6 | 0 | 9 | 5 | 12 | -- | 0 | 10 |
| | NB Left-Turn | N/A | N/A | N/A | N/A | N/A | -- | 38 | 31 | 37 | 31 | 50 | 47 | 49 | 43 | 51 | 49 | -- | 56 | 50 |
| | NB Right-Turn | N/A | N/A | N/A | N/A | N/A | -- | 10 | 11 | 9 | 15 | 20 | 17 | 18 | 14 | 17 | 19 | -- | 21 | 17 |




**LEGEND**

- Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- XX AM Queue (FT)
- (XX) PM Queue (FT)

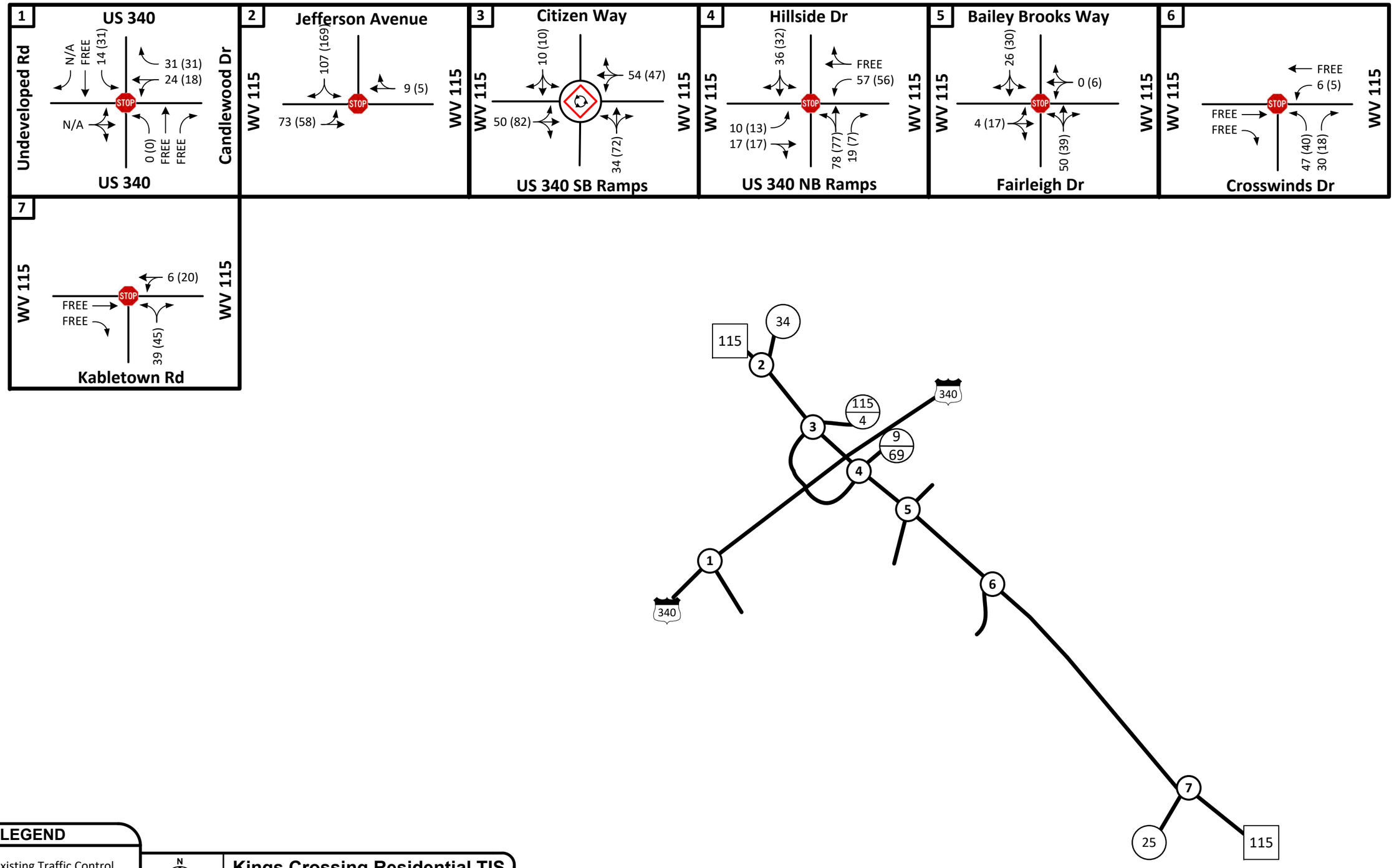
NOT TO SCALE

**Kings Crossing Residential TIS**

2021 Existing Queuing Analysis

**DATE:** May 2022

**FIGURE 24**




**LEGEND**

- Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- XX AM Queue (FT)
- (XX) PM Queue (FT)

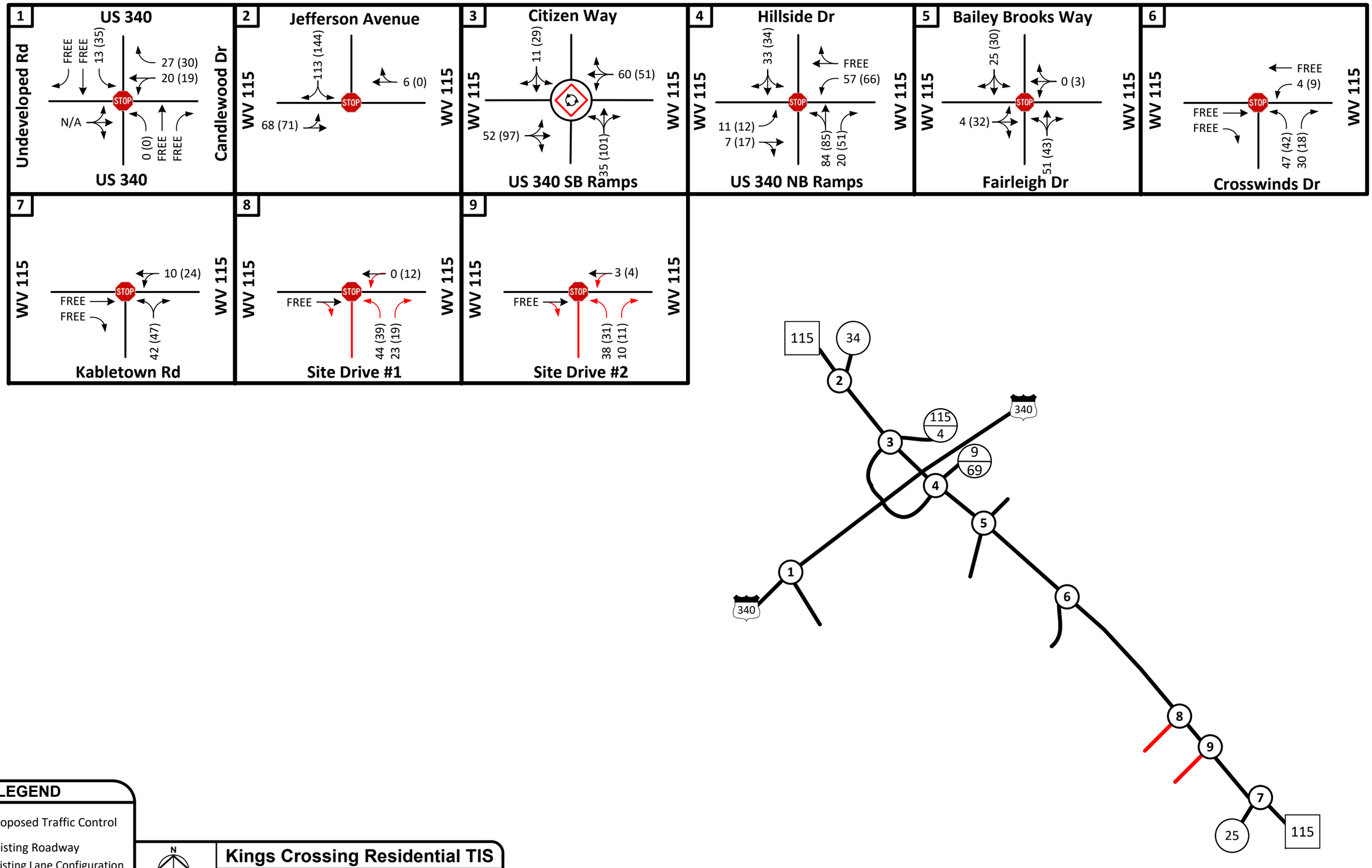
NOT TO SCALE

**Kings Crossing Residential TIS**

2022 No-Build Queuing Analysis

**DATE:** May 2022

**FIGURE 25**




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- XX AM Queue (FT)
- (XX) PM Queue (FT)

N

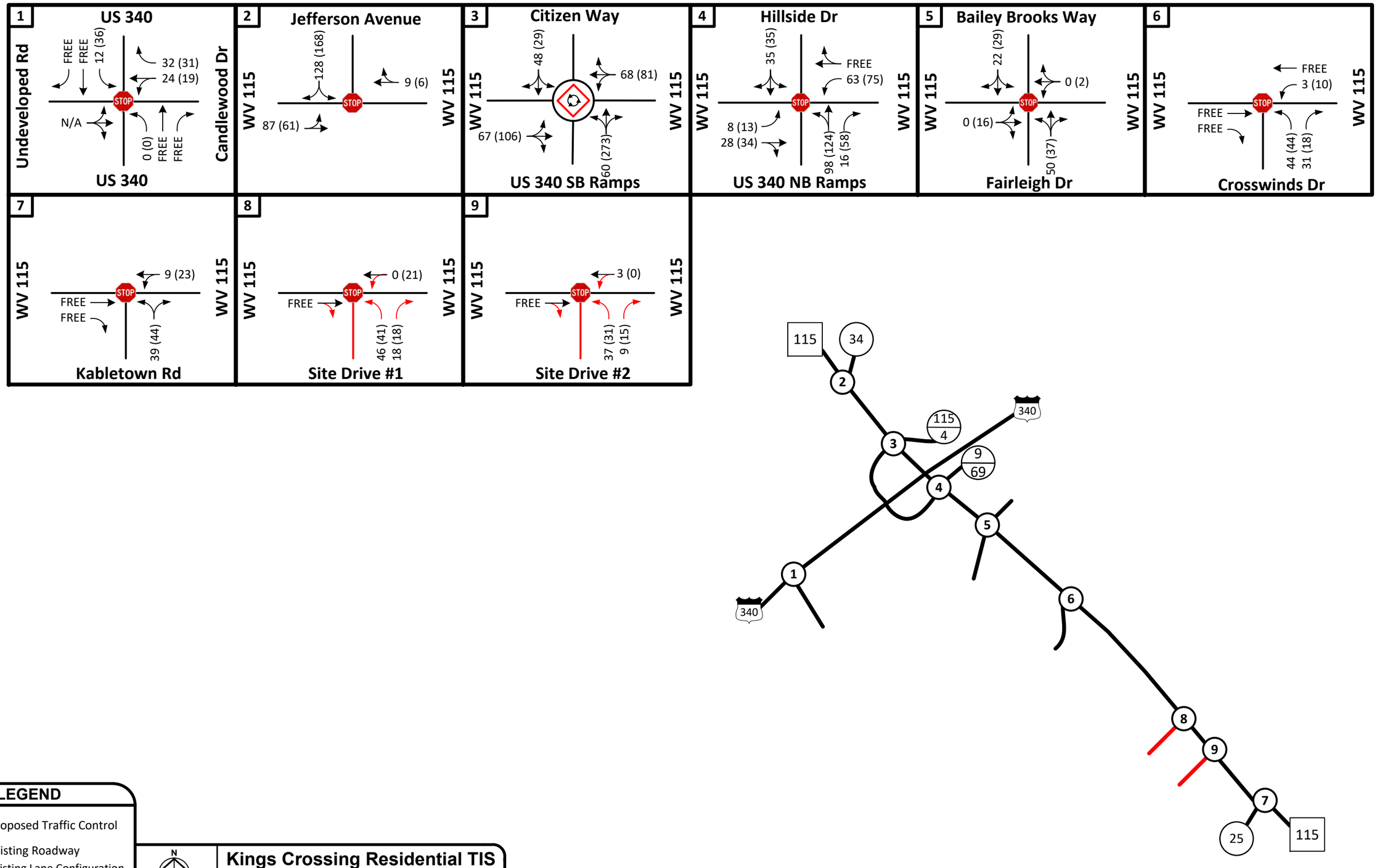
NOT TO SCALE

**Kings Crossing Residential TIS**

2022 Phase 1 Build Queuing Analysis

**DATE:** May 2022

**FIGURE 26**




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- XX AM Queue (FT)
- (XX) PM Queue (FT)

N

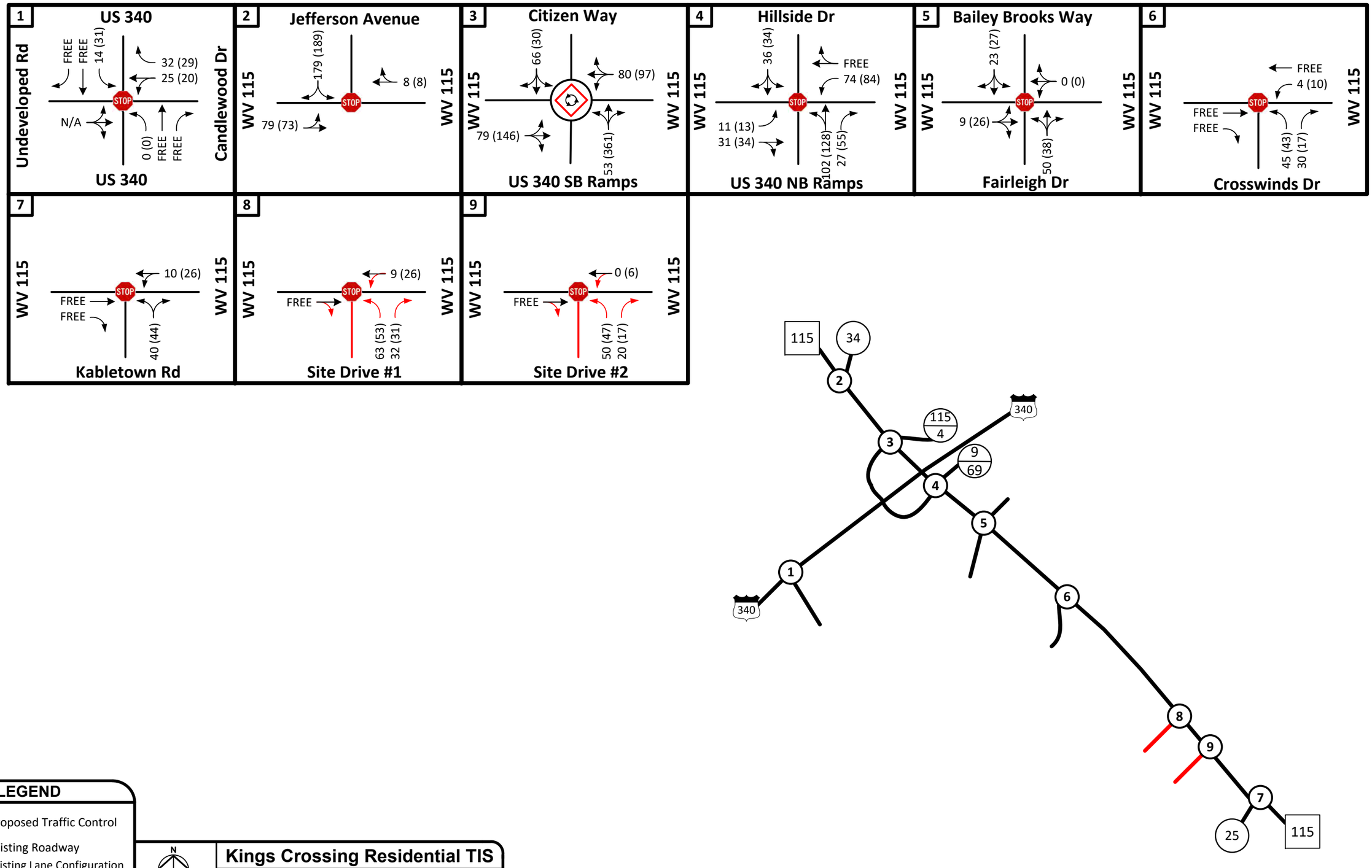
NOT TO SCALE

**Kings Crossing Residential TIS**

2024 Partial Build Queuing Analysis

**DATE:** May 2022

**FIGURE 27**




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- XX AM Queue (FT)
- (XX) PM Queue (FT)

N

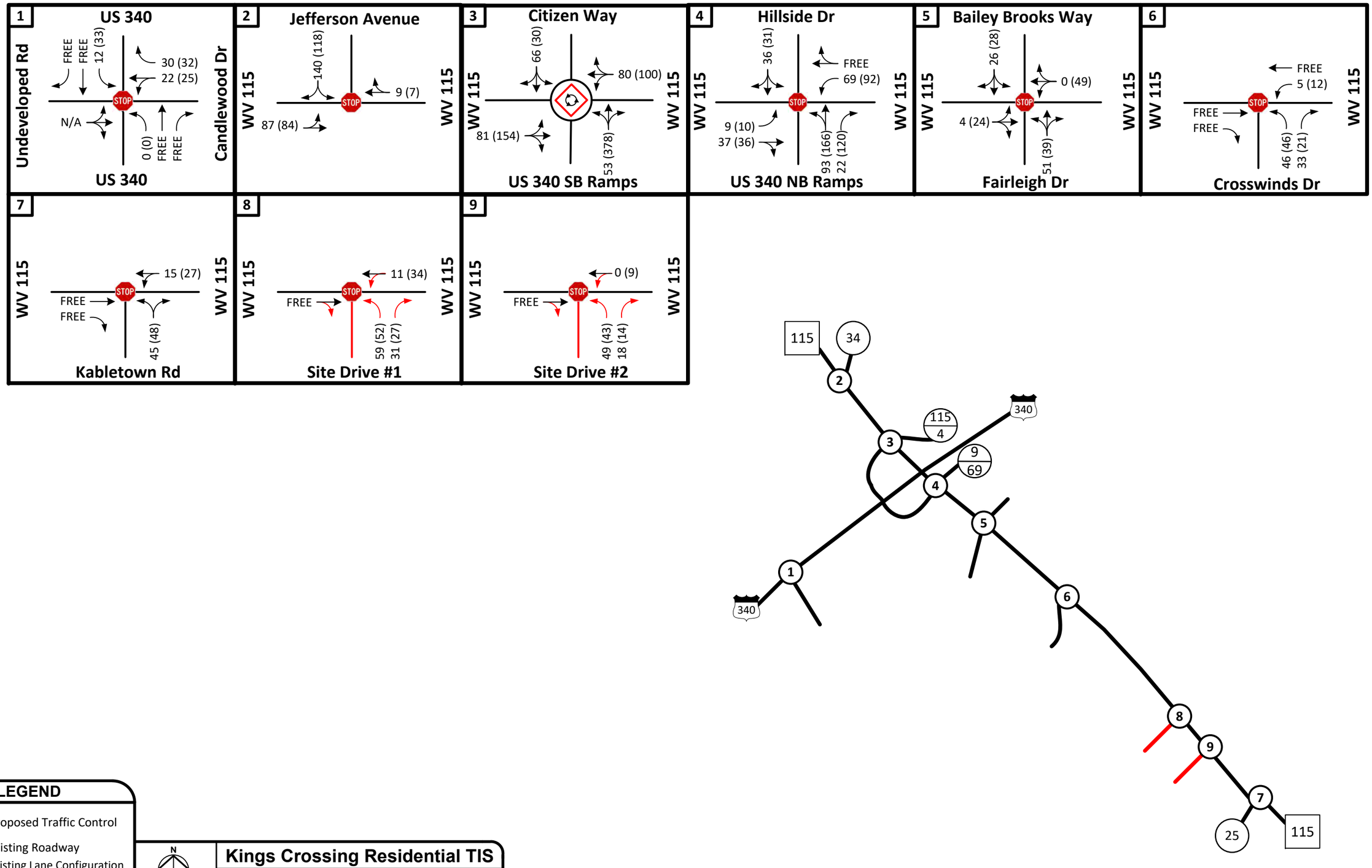
NOT TO SCALE

**Kings Crossing Residential TIS**

2024 Phase 2 Build Queuing Analysis

**DATE:** May 2022

**FIGURE 28**




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- XX AM Queue (FT)
- (XX) PM Queue (FT)

N

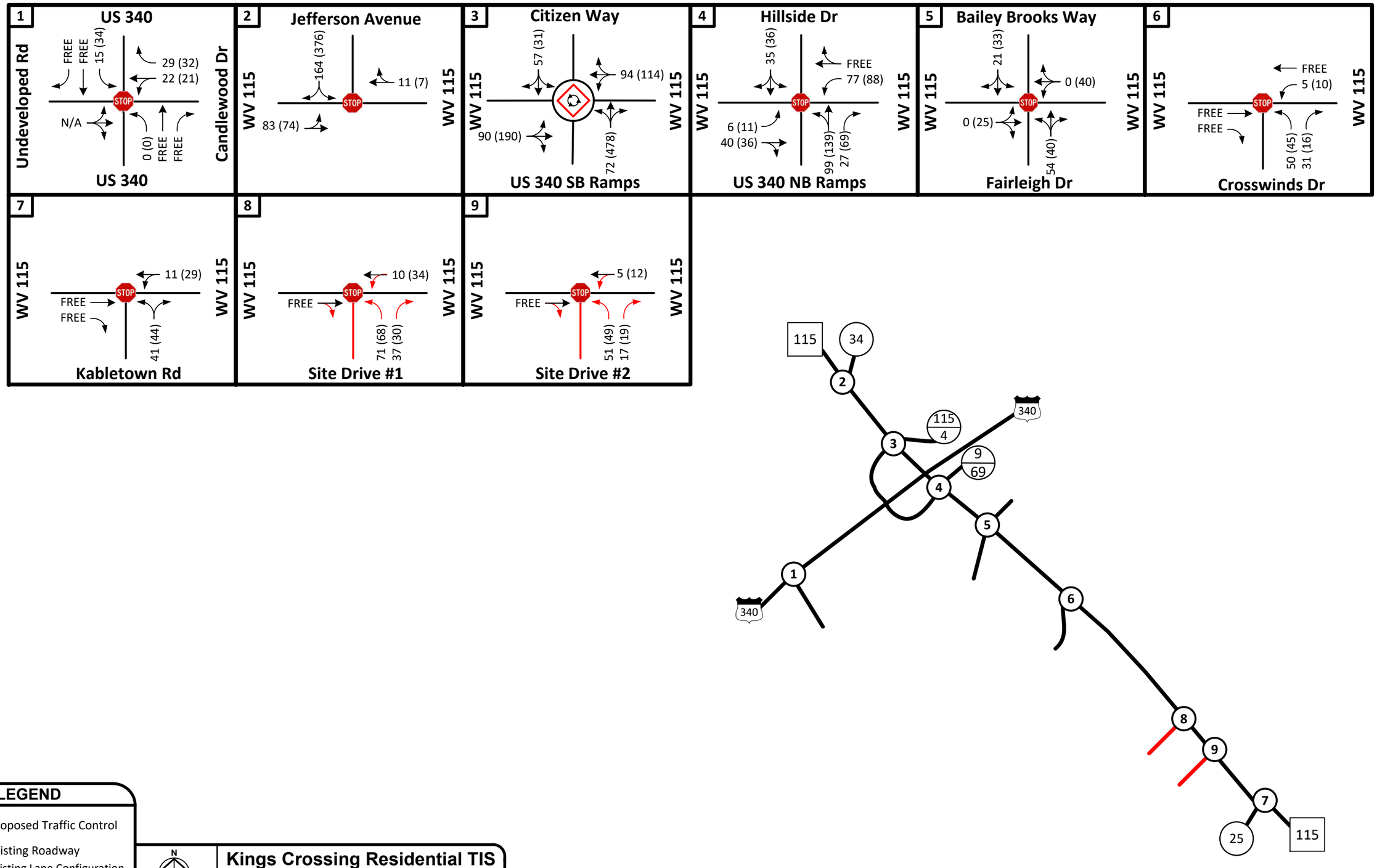
NOT TO SCALE

**Kings Crossing Residential TIS**

2025 Partial Build Queuing Analysis

**DATE:** May 2022

**FIGURE 29**




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- XX AM Queue (FT)
- (XX) PM Queue (FT)

N

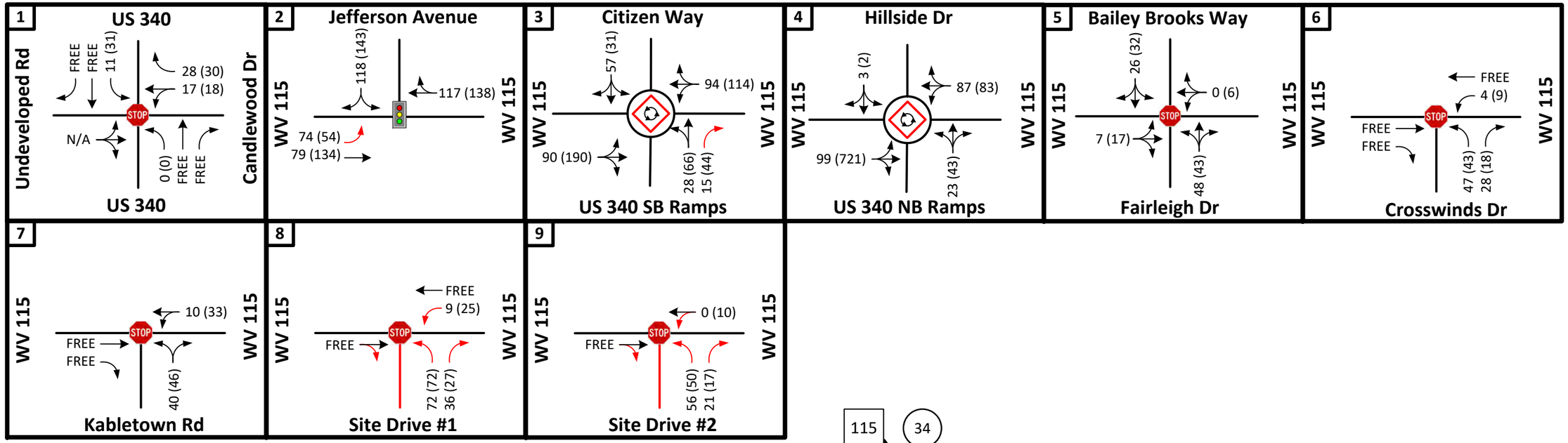
NOT TO SCALE

**Kings Crossing Residential TIS**

2025 Full Build Queuing Analysis

**DATE:** May 2022

**FIGURE 30**




**LEGEND**

- Proposed Traffic Control
- Existing Roadway
- Existing Lane Configuration
- Proposed Roadway
- Proposed Lane Configuration
- XX AM Queue (FT)
- (XX) PM Queue (FT)

N

NOT TO SCALE

**Kings Crossing Residential TIS**

2025 Full Build Improved Queuing Analysis

**DATE:** May 2022

**FIGURE 31**

# AASHTO LEFT TURN LANE ANALYSIS

In accordance with WVDOH procedures outlined in TED 106-2, analysis comparing intersection volumes with the AASHTO (American Association of State Highway Transportation Officials) guidelines for left turn lanes on two lane highways is provided as guide to identify potential need for left turn lanes. The guideline is outlined in Table 9-23 of the 2011 AASHTO Green Book and is intended for comparison of rural two-lane roadways where the subject approach is free flow. The need for auxiliary lanes on signalized approaches or low speed stop control approaches is typically based upon capacity analysis. Comparison with the AASHTO criteria is provided for the WV 115 westbound approach to Site Drive #1.

Comparison of the AASHTO guideline shows that the guideline criteria is are met for the WV 115 westbound approach to Site Drive #1 during the 2025 Full Build Conditions PM peak hour as shown in **Table 6**.

**Table 6: AASHTO Analysis Summary**

| Intersection | Approach | Analysis Results | |
|---|---|---|---|
| | | 2025 AM Peak | 2025 PM Peak |
| Intersection 8: WV 115 with Site Drive #1 | WB Approach (WV 115) | Guideline Not Met | Guideline Met |
| Intersection 9: WV 115 with Site Drive #2 | WB Approach (WV 115) | Guideline Not Met | Guideline Not Met |

Copies of the review of AASHTO Table 9-23 for each approach are contained in **Appendix B**.

# SIGNAL WARRANT ANALYSIS

The Manual on Uniform Traffic Control Devices (MUTCD) contains nine (9) warrants for investigating the need for a traffic signal at a particular intersection. The satisfaction of a signal warrant or warrants may indicate the need for the installation of a traffic signal. Three (3) of the warrants deal directly with traffic volumes; two (2) warrants focus on pedestrian issues; one (1) focuses on safety; one (1) on grade crossings; one (1) on traffic signal progression; and one (1) on a Planning level (non-data-based) analysis. For this instance, Warrant 2 was considered at the intersection of WV 115 with US 340 NB Ramp/Hillside Drive. Copies of the signal warrant analysis are contained in **Appendix E**.

## WV 115 with US 340 NB Ramp/ Hillside Drive

### Data Collection

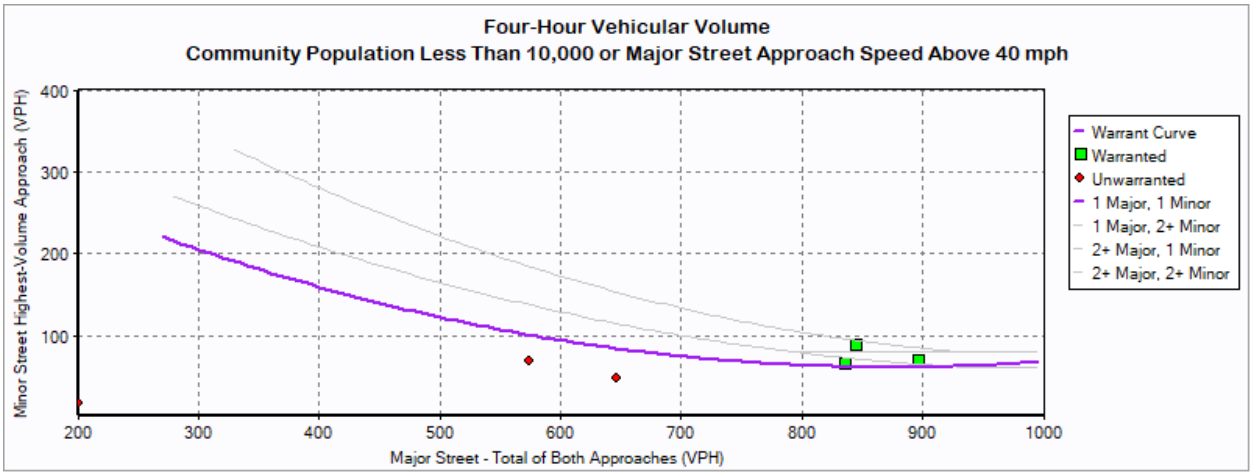
Peak hour turning movement counts were collected for the WV 115 with US 340 NB Ramp/Hillside Drive intersection by AMT on Friday April 23, 2021 between the hours of 7-9 AM and 3-6 PM. On this date, Jefferson County Schools were fully operational with in classroom instruction for all students. The traffic count data is located in **Appendix B.**

### MUTCD Warrant Evaluation

**Warrant 2 – Four Hour Vehicular Volumes**

This warrant is intended for locations where, for a brief period of the day, minor road traffic experiences excessive delays in attempting to enter or cross the major street. Warrant 2 requires that the combination of the major street traffic (total of both approaches) and minor street traffic (one direction only) reaches a designated minimum volume during any four hours of any average day. **Figure 32** illustrates the threshold values and results for Warrant 2.

**Figure 32: Warrant 2- Four-Hour Vehicular Volumes – Analysis Results**



After applying the warrant criteria for 2021 Existing Conditions three (3) of the five (5) hours meet the combined criteria for Warrant 2. A more in-depth count may be necessary to ensure that the intersection does not meet this warrant but based on the data collected during the 5 peak hours Warrant 2 does not meet based on the 2021 Existing Conditions.

Pagones Theorem was utilized to reduce the number of right turns included in the minor street approach volume. A detailed report containing the hourly volumes for Warrant 2 at the intersection of WV 115 with US 340 NB Ramp/Hillside Dr. can be found in **Appendix E**.

Warrant 2 is **Not Met**.

# CONCLUSIONS/RECOMMENDATIONS

This report summarizes existing and future traffic analyses conducted in support of the proposed Kings Crossing Residential Development. The proposed residential development is to be located south of WV 115 (Charles Town Road) and east of US 340 (Berryville Pike) near Charles Town, Jefferson County, West Virginia. The proposed site plan includes 177 single-family homes and 227 townhomes and is expected to be built and completed by the year 2025. The development will be constructed in three phases. Phase 1 will include 43 single-family homes and 72 townhomes and is planned to be completed in 2022. Phase 2 includes an additional 81 single-family homes and 83 townhomes and is planned to be completed in 2024. Phase 3 includes an additional 53 single-family homes and 72 townhomes and is planned to be completed in 2025.

The proposed residential development is anticipated to be served by two site driveways intersecting directly with WV 115. Site Drive #1 and Site Drive #2 intersect with WV 115. Site Drive #1 (addressed as Road 1 on the site plan) is proposed to be located approximately 2,000 feet east of Crosswinds Drive approaching WV 115 from the south and will operate as a full movement approach utilizing two-way stop-control (TWSC). Site Drive #2 (addressed as Road 12 on the site plan) will approach WV 115 from the south approximately 2,600 feet east of Crosswinds Drive and will operate as a full movement approach utilizing TWSC.

Based on the findings of this study, the following infrastructure improvements are recommended to address existing capacity issues and maintain operation of the existing transportation network:

**US 340 with Candlewood Drive**

- Install pavement markings on the Candlewood Drive approach to US 340. Previous pavement markings are no longer visible and need to be reinstalled to delineate separate left and right turn lanes.

**WV 115 with Jefferson Avenue**

- As part of the Tate Manor TIS, it was recommended that a traffic signal be installed at the intersection of WV 115 and Jefferson Avenue. Intersection conditions previously met the MUTCD warranting criteria. Additionally, the 2021 Existing Conditions and 2022 No-Build analysis indicates that the intersection LOS will currently operates at LOS E during the PM peak hour under Two Way Stop Control. The previously completed signal warrant is located in **Appendix G**.

- In conjunction with installation of a traffic signal identified in previous studies, widening WV 115 to construct an exclusive left-turn lane on the eastbound approach is recommended. The left-turn lane should be constructed to provide a minimum of 125 feet of full-width storage with an appropriate taper.

**WV 115 with Hillside Drive/ US 340 Northbound Ramps**

- Proceed with the DOH planned conversion of the intersection to a single lane roundabout. The 2021 Existing Conditions analysis indicates that the northbound movement currently operates at LOS E during the PM peak hour. Under roundabout yield control, this intersection would operate at an overall LOS C during the PM peak hour for 2025 Full Build Conditions, with the northbound movement operating at LOS A.

Based on the finding of this study, the following improvements are recommended for Phase 1 of the Kings Crossing Residential Development:

**WV 115 with Site Drive #1**

- Construct Site Drive #1 as a full movement approach intersecting with WV 115 creating a "T" type intersection approximately 2,000 feet east of Crosswinds Drive. The site driveway is recommended to include one ingress and two egress lanes to provide separate left and right turn lanes exiting the development. Site Drive #1 will operate under stop-control, while WV 115 operates as free-flow.

**WV 115 with Site Drive #2**

- Construct Site Drive #2 as a full movement approach intersecting with WV 115 creating a "T" type intersection approximately 2,600 feet east of Crosswinds Drive. The site driveway is recommended to include one ingress and two egress lanes to provide separate left and right turn lanes exiting the development. Site Drive #2 will operate under stop-control, while WV 115 operates as free-flow.

Based on the finding of this study, the following geometric improvements are recommended to mitigate the impacts of the Kings Crossing residential development and maintain acceptable traffic operations along the existing transportation network at the build completion of Phase 2 in 2025 prior to starting Phase 3 of Kings Crossing Residential development:

**WV 115 with Citizen Way/US 340 Southbound Ramps**

- Construct a low angle right turn slip lane on for the US 340 northbound ramp approach to WV 115 eastbound. The 2025 Partial Build analysis indicates that the ramp approach will deteriorate to LOS C during the PM peak hour with the overall intersection operating LOS B. The 2025 Build analysis indicates that the US 340 southbound ramp approach will deteriorate to LOS E during the PM peak hour with the overall intersection operating at LOS C. The addition of the right turn slip lane improves the ramp to LOS B during the PM peak hour and the overall intersection to LOS B. This measure is needed at the conclusion of Phase 2 and prior to beginning Phase 3.

**WV 115 with Site Drive #1**

- Construct an exclusive left-turn lane on the WV 115 westbound approach to Site Drive #1. Peak hour volumes are projected to meet the AASHTO guidelines following 2025 Build Conditions PM peak hour. The left-turn should be constructed to provide a minimum of 125 feet of full-width storage with appropriate taper. This measure is needed at the conclusion of Phase 2 and prior to beginning Phase 3.

# Appendix A

## Study Area Photos



**Undeveloped Road Eastbound Approach to US 340**




**Candlewood Drive Westbound Approach to US 340**



**US 340 Northbound Approach to Candlewood Dr/Undeveloped Rd**



**US 340 Southbound Approach to Candlewood Dr/Undeveloped Rd**



**WV 115 Eastbound Approach to US 340 SB Ramps/Citizen Way**




**WV 115 West Bound Approach to US 340 SB Ramps/Citizen Way**



**US 340 SB Off Ramp Northbound Approach to WV 115**



**Citizen Way Southbound Approach to WV 115**




**WV 115 Eastbound Approach to US 340 NB Ramp/Hillside Dr**



**WV 115 Westbound Approach to US 340 NB Ramp/Hillside Dr**




**US 340 NB Off Ramp Northbound Approach to WV 115**




**Hillside Dr Southbound Approach to WV 115**



**WV 115 Eastbound Approach to Fairleigh Dr/Bailey Brooks Way**



**WV 115 Westbound Approach to Fairleigh Dr/Bailey Brooks Way**




**Fairleigh Dr Northbound Approach to WV 115**




**Bailey Brooks Way Southbound Approach to WV 115**



**WV 115 Eastbound Approach to Crosswinds Dr**



**WV 115 Westbound Approach to Crosswinds Dr**




**Crosswinds Dr Northbound Approach to WV 115**



**WV 115 Eastbound Approach to Kabletown Rd**



**WV 115 Westbound Approach to Kabletown Rd**




**Kabletown Rd Northbound Approach to WV 115**

# Appendix B

## Traffic Data & Volume Calculations

**21-0261.001 - Kings Crossing Residential Development TIS - Traffic Volume Calculations**

| | Balanced Existing Traffic (2021) | | Historical Growth (2021-2022) | | Historical Growth (2022-2024) | | Historical Growth (2024-2025) | | No Build (2022) | | Phase 1 Site Trip Distribution | | Phase 1 Site Trip Assignment | | Phase 1 Build (2022) | | Magnolia Springs Site Trips (2024) | | Tate Manor Site Trips (2024) | | Partial Build (2024) | | Phase 2 Site Trip Distribution | | Phase 2 Site Trip Assignment | | Phase 2 Build (2024) | | Partial Build (2025) | | Full Build Site Trip Distribution | | Full Build Site Trip Assignment | | Full Build (2025) | | Site Impact | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM | Enter | Exit | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM | Enter | Exit | AM | PM | AM | PM | Enter | Exit | AM | PM | AM | PM | AM | PM |
| **Intersection 1 - US 340 (Williamsport Pike) with Candlewood Drive** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **EBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **EBT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0.0% | 0.0% |
| **EBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **WBL** | 7 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 5 | | | 0 | 0 | 7 | 5 | | | | | 7 | 5 | | | 0 | 0 | 7 | 5 | | | 0 | 0 | 7 | 5 | | |
| **WBT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0.0% | 0.0% |
| **WBR** | 15 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 17 | | | 0 | 0 | 15 | 17 | | | | | 15 | 17 | | | 0 | 0 | 15 | 17 | | | 0 | 0 | 15 | 17 | | |
| **NBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **NBT** | 681 | 909 | 59 | 38 | 17 | 22 | 8 | 11 | 689 | 920 | 25% | | 5 | 14 | 694 | 934 | 7 | 22 | 1 | 4 | 719 | 982 | 25% | | 7 | 21 | 726 | 1,003 | 734 | 1,014 | 25% | | 5 | 16 | 739 | 1,030 | 0.7% | 1.5% |
| **NBR** | 4 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 12 | | | 0 | 0 | 4 | 12 | | | | | 4 | 12 | | | 0 | 0 | 4 | 12 | 4 | 12 | | | 0 | 0 | 4 | 12 | | |
| **SBL** | 7 | 27 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 27 | | | 0 | 0 | 7 | 27 | | | | | 7 | 28 | | | 0 | 0 | 7 | 28 | 7 | 28 | | | 0 | 0 | 7 | 28 | | |
| **SBT** | 687 | 940 | 30 | 86 | 17 | 23 | 9 | 12 | 695 | 951 | | 25% | 13 | 9 | 708 | 960 | 19 | 13 | 4 | 2 | 748 | 998 | | 25% | 20 | 13 | 768 | 1,011 | 777 | 1,023 | | 25% | 15 | 10 | 792 | 1,033 | 1.8% | 0.9% |
| **SBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **Intersection 2 - WV 115 (Charlestown Road) with Jefferson Avenue** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **EBL** | 73 | 38 | 1 | 0 | 2 | 1 | 1 | 0 | 74 | 38 | | | 0 | 0 | 74 | 38 | | | 0 | 2 | 76 | 41 | | | 0 | 0 | 76 | 41 | 77 | 41 | | | 0 | 0 | 77 | 41 | | |
| **EBT** | 210 | 332 | 2 | 4 | 5 | 8 | 3 | 4 | 212 | 336 | 30% | | 6 | 17 | 218 | 353 | 3 | 11 | | | 226 | 372 | 30% | | 8 | 26 | 234 | 398 | 237 | 402 | 30% | | 6 | 18 | 243 | 420 | 2.1% | 4.3% |
| **EBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **WBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **WBT** | 240 | 301 | 3 | 4 | 6 | 7 | 3 | 4 | 243 | 305 | | 30% | 16 | 10 | 259 | 315 | 10 | 6 | | | 275 | 328 | | 30% | 24 | 16 | 299 | 344 | 302 | 348 | | 30% | 18 | 11 | 320 | 359 | 3.7% | 2.1% |
| **WBR** | 172 | 157 | 2 | 2 | 4 | 4 | 2 | 2 | 174 | 159 | | | 0 | 0 | 174 | 159 | | | 1 | 5 | 179 | 168 | | | 0 | 0 | 179 | 168 | 181 | 170 | | | 0 | 0 | 181 | 170 | | |
| **NBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **NBT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0.0% | 0.0% |
| **NBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **SBL** | 132 | 198 | 2 | 3 | 3 | 5 | 2 | 2 | 134 | 201 | | | 0 | 0 | 134 | 201 | | | 5 | 3 | 142 | 209 | | | 0 | 0 | 142 | 209 | 144 | 211 | | | 0 | 0 | 144 | 211 | | |
| **SBT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0.0% | 0.0% |
| **SBR** | 57 | 55 | 0 | 0 | 1 | 1 | 1 | 1 | 57 | 55 | | | 0 | 0 | 57 | 55 | | | 2 | 1 | 60 | 57 | | | 0 | 0 | 60 | 57 | 61 | 58 | | | 0 | 0 | 61 | 58 | | |
| **Intersection 3 - WV 115 (Charles Town Road) with US 340 Southbound/Citizens Way** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **EBL** | 15 | 36 | 0 | 0 | 0 | 1 | 0 | 0 | 15 | 36 | | | 0 | 0 | 15 | 36 | 3 | 11 | | | 18 | 48 | | | 0 | 0 | 18 | 48 | 18 | 48 | | | 0 | 0 | 18 | 48 | | |
| **EBT** | 242 | 364 | 36 | 54 | 6 | 9 | 3 | 5 | 245 | 368 | 30% | | 6 | 17 | 251 | 385 | | | 3 | 2 | 260 | 396 | 30% | | 8 | 26 | 268 | 422 | 271 | 427 | 30% | | 6 | 18 | 277 | 445 | 1.7% | 3.1% |
| **EBR** | 85 | 130 | 23 | 77 | 2 | 3 | 1 | 2 | 86 | 132 | | | 0 | 0 | 86 | 132 | | | 2 | 1 | 90 | 136 | | | 0 | 0 | 90 | 136 | 91 | 138 | | | 0 | 0 | 91 | 138 | | |
| **WBL** | 67 | 38 | 1 | 0 | 2 | 1 | 1 | 0 | 68 | 38 | | 25% | 13 | 9 | 81 | 47 | | | | | 83 | 48 | | 25% | 20 | 13 | 103 | 61 | 104 | 61 | | 25% | 15 | 10 | 119 | 71 | | |
| **WBT** | 271 | 294 | 54 | 40 | 7 | 7 | 3 | 4 | 274 | 298 | | 30% | 16 | 10 | 290 | 308 | | | 0 | 2 | 297 | 317 | | 30% | 24 | 16 | 321 | 333 | 324 | 337 | | 30% | 18 | 11 | 342 | 348 | 7.6% | 5.2% |
| **WBR** | 10 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 9 | | | 0 | 0 | 10 | 9 | 7 | 22 | 1 | 2 | 18 | 33 | | | 0 | 0 | 18 | 33 | 18 | 33 | | | 0 | 0 | 18 | 33 | | |
| **NBL** | 119 | 129 | 76 | 35 | 3 | 3 | 1 | 2 | 120 | 131 | | | 0 | 0 | 120 | 131 | | | 1 | 3 | 124 | 137 | | | 0 | 0 | 124 | 137 | 125 | 139 | | | 0 | 0 | 125 | 139 | | |
| **NBT** | 20 | 28 | 0 | 0 | 0 | 1 | 0 | 0 | 20 | 28 | | | 0 | 0 | 20 | 28 | 42 | 141 | 2 | 8 | 64 | 178 | | | 0 | 0 | 64 | 178 | 64 | 178 | | | 0 | 0 | 64 | 178 | 3.1% | |
| **NBR** | 80 | 188 | 1 | 2 | 2 | 5 | 1 | 2 | 81 | 190 | 35% | | 7 | 20 | 88 | 210 | | | | | 90 | 215 | 35% | | 10 | 30 | 100 | 245 | 101 | 247 | 35% | | 7 | 22 | 108 | 269 | | |
| **SBL** | 31 | 33 | 2 | 0 | 1 | 1 | 0 | 0 | 31 | 33 | | | 0 | 0 | 31 | 33 | 126 | 84 | 8 | 5 | 166 | 123 | | | 0 | 0 | 166 | 123 | 166 | 123 | | | 0 | 0 | 166 | 123 | | |
| **SBT** | 13 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 7 | | | 0 | 0 | 13 | 7 | 19 | 13 | 2 | 1 | 34 | 21 | | | 0 | 0 | 34 | 21 | 34 | 21 | | | 0 | 0 | 34 | 21 | 0.0% | 0.0% |
| **SBR** | 22 | 35 | 0 | 0 | 1 | 1 | 0 | 0 | 22 | 35 | | | 0 | 0 | 22 | 35 | 10 | 6 | | | 33 | 42 | | | 0 | 0 | 33 | 42 | 33 | 42 | | | 0 | 0 | 33 | 42 | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Intersection 4 - WV 115 (Charles Town Road) with US 340 Northbound/Hillside Drive** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **EBL** | 5 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 7 | | | 0 | 0 | 5 | 7 | | | | | 5 | 7 | | | 0 | 0 | 5 | 7 | 5 | 7 | | | 0 | 0 | 5 | 7 | | |
| **EBT** | 188 | 428 | 2 | 5 | 5 | 10 | 2 | 5 | 190 | 433 | 65% | | 13 | 37 | 203 | 470 | | | | | 208 | 480 | 65% | | 18 | 56 | 226 | 536 | 228 | 541 | 65% | | 13 | 40 | 241 | 581 | 3.5% | 5.9% |
| **EBR** | 160 | 150 | 35 | 52 | 4 | 4 | 2 | 2 | 162 | 152 | | | 0 | 0 | 162 | 152 | 126 | 84 | 11 | 7 | 303 | 247 | | | 0 | 0 | 303 | 247 | 305 | 249 | | | 0 | 0 | 305 | 249 | | |
| **WBL** | 123 | 118 | 1 | 1 | 3 | 3 | 2 | 1 | 124 | 119 | | 35% | 19 | 12 | 143 | 131 | | | | | 146 | 134 | | 35% | 27 | 18 | 173 | 152 | 175 | 153 | | 35% | 21 | 14 | 196 | 167 | | |
| **WBT** | 214 | 254 | 3 | 3 | 5 | 6 | 3 | 3 | 217 | 257 | | 55% | 29 | 19 | 246 | 276 | | | | | 251 | 282 | | 55% | 44 | 29 | 295 | 311 | 298 | 314 | | 55% | 33 | 21 | 331 | 335 | 12.3% | 7.6% |
| **WBR** | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | | | 0 | 0 | 2 | 0 | | | | | 2 | 0 | | | 0 | 0 | 2 | 0 | 2 | 0 | | | 0 | 0 | 2 | 0 | | |
| **NBL** | 122 | 81 | 52 | 28 | 3 | 2 | 2 | 1 | 123 | 82 | | | 0 | 0 | 123 | 82 | 7 | 22 | 1 | 4 | 134 | 110 | | | 0 | 0 | 134 | 110 | 136 | 111 | | | 0 | 0 | 136 | 111 | | |
| **NBT** | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | | | 0 | 0 | 0 | 3 | | | | | 0 | 3 | | | 0 | 0 | 0 | 3 | 0 | 3 | | | 0 | 0 | 0 | 3 | 3.2% | 9.5% |
| **NBR** | 27 | 47 | 0 | 1 | 1 | 1 | 0 | 1 | 27 | 48 | 25% | | 5 | 14 | 32 | 62 | | | | | 33 | 63 | 25% | | 7 | 21 | 40 | 84 | 40 | 85 | 25% | | 5 | 16 | 45 | 101 | | |
| **SBL** | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | | 0 | 0 | 0 | 1 | | | | | 0 | 1 | | | 0 | 0 | 0 | 1 | 0 | 1 | | | 0 | 0 | 0 | 1 | | |
| **SBT** | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | | | 0 | 0 | 3 | 5 | | | | | 3 | 5 | | | 0 | 0 | 3 | 5 | 3 | 5 | | | 0 | 0 | 3 | 5 | 0.0% | 0.0% |
| **SBR** | 12 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 12 | 6 | | | 0 | 0 | 12 | 6 | | | | | 12 | 6 | | | 0 | 0 | 12 | 6 | 12 | 6 | | | 0 | 0 | 12 | 6 | | |
| **Intersection 5 - WV 115 (Charles Town Road) with Fairleigh Drive/Bailey Brooks Way** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **EBL** | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | | | 0 | 0 | 1 | 5 | | | | | 1 | 5 | | | 0 | 0 | 1 | 5 | 1 | 5 | | | 0 | 0 | 1 | 5 | | |
| **EBT** | 190 | 422 | 2 | 5 | 5 | 10 | 2 | 5 | 192 | 427 | 90% | | 18 | 50 | 210 | 477 | | | | | 215 | 487 | 90% | | 25 | 77 | 240 | 564 | 242 | 569 | 90% | | 18 | 56 | 260 | 625 | 7.8% | 9.4% |
| **EBR** | 20 | 47 | 0 | 1 | 0 | 1 | 0 | 1 | 20 | 48 | | | 0 | 0 | 20 | 48 | | | | | 20 | 49 | | | 0 | 0 | 20 | 49 | 20 | 50 | | | 0 | 0 | 20 | 50 | | |
| **WBL** | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | | 0 | 0 | 0 | 1 | | | | | 0 | 1 | | | 0 | 0 | 0 | 1 | 0 | 1 | | | 0 | 0 | 0 | 1 | | |
| **WBT** | 293 | 325 | 4 | 4 | 7 | 8 | 4 | 4 | 297 | 329 | | 90% | 48 | 31 | 345 | 360 | | | | | 352 | 368 | | 90% | 71 | 47 | 423 | 415 | 427 | 419 | | 90% | 54 | 35 | 481 | 454 | 13.9% | 8.6% |
| **WBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **NBL** | 30 | 19 | 0 | 0 | 1 | 0 | 0 | 0 | 30 | 19 | | | 0 | 0 | 30 | 19 | | | | | 31 | 19 | | | 0 | 0 | 31 | 19 | 31 | 19 | | | 0 | 0 | 31 | 19 | | |
| **NBT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0.0% | 0.0% |
| **NBR** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | 0 | 0 | 1 | 0 | | | | | 1 | 0 | | | 0 | 0 | 1 | 0 | 1 | 0 | | | 0 | 0 | 1 | 0 | | |
| **SBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **SBT** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | 0 | 0 | 1 | 0 | | | | | 1 | 0 | | | 0 | 0 | 1 | 0 | 1 | 0 | | | 0 | 0 | 1 | 0 | 0.0% | 0.0% |
| **SBR** | 6 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 10 | | | 0 | 0 | 6 | 10 | | | | | 6 | 10 | | | 0 | 0 | 6 | 10 | 6 | 10 | | | 0 | 0 | 6 | 10 | | |

**Annual Growth Rate** 1.20%

**Existing Year** 2021

**Phase 1 Build Year** 2022

| | AM | | PM | |
|---|---|---|---|---|
| | Phase 1 | | Phase 1 | |
| | Enter | Exit | Enter | Exit |
| Net New Trips | 20 | 53 | 56 | 35 |
| Pass-By Trips | 0 | 0 | 0 | 0 |

**Phase 1 Build Year** 2022

**Phase 2 Build Year** 2024

| | AM | | PM | |
|---|---|---|---|---|
| | Phase 2 | | Phase 2 | |
| | Enter | Exit | Enter | Exit |
| Net New Trips | 29 | 79 | 85 | 52 |
| Pass-By Trips | 0 | 0 | 0 | 0 |

**Phase 2 Build Year** 2024

**Full Build Year** 2025

| | AM | | PM | |
|---|---|---|---|---|
| | Full Build | | Full Build | |
| | Enter | Exit | Enter | Exit |
| Net New Trips | 21 | 59 | 62 | 39 |
| Pass-By Trips | 0 | 0 | 0 | 0 |

| | Balanced Existing Traffic (2021) | | Historical Growth (2021-2022) | | Historical Growth (2022-2024) | | Historical Growth (2024-2025) | | No Build (2022) | | Phase 1 Site Trip Distribution | | Phase 1 Site Trip Assignment | | Phase 1 Build (2022) | | Magnolia Springs Site Trips (2024) | | Tate Manor Site Trips (2024) | | Partial Build (2024) | | Phase 2 Site Trip Distribution | | Phase 2 Site Trip Assignment | | Phase 2 Build (2024) | | Partial Build (2025) | | Full Build Site Trip Distribution | | Full Build Site Trip Assignment | | Full Build (2025) | | Site Impact | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM | Enter | Exit | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM | Enter | Exit | AM | PM | AM | PM | AM | PM | Enter | Exit | AM | PM | AM | PM | AM | PM |
| **Intersection 6 - WV 115 (Charles Town Road) with Crosswinds Drive** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **EBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **EBT** | 167 | 377 | 2 | 5 | 4 | 9 | 2 | 5 | 169 | 382 | 90% | | 18 | 50 | 187 | 432 | | | | | 191 | 441 | 90% | | 25 | 77 | 216 | 518 | 218 | 523 | 90% | | 18 | 56 | 236 | 579 | 8.8% | 10.9% |
| **EBR** | 18 | 28 | 0 | 0 | 0 | 1 | 0 | 0 | 18 | 28 | | | 0 | 0 | 18 | 28 | | | | | 18 | 29 | | | 0 | 0 | 18 | 29 | 18 | 29 | | | 0 | 0 | 18 | 29 | | |
| **WBL** | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | | | 0 | 0 | 2 | 3 | | | | | 2 | 3 | | | 0 | 0 | 2 | 3 | 2 | 3 | | | 0 | 0 | 2 | 3 | | |
| **WBT** | 245 | 296 | 3 | 4 | 6 | 7 | 3 | 4 | 248 | 300 | | 90% | 48 | 31 | 296 | 331 | | | | | 302 | 338 | | 90% | 71 | 47 | 373 | 385 | 376 | 389 | | 90% | 54 | 35 | 430 | 424 | 16.1% | 9.3% |
| **WBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **NBL** | 34 | 26 | 0 | 0 | 1 | 1 | 0 | 0 | 34 | 26 | | | 0 | 0 | 34 | 26 | | | | | 35 | 27 | | | 0 | 0 | 35 | 27 | 35 | 27 | | | 0 | 0 | 35 | 27 | | |
| **NBT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0.0% | 0.0% |
| **NBR** | 12 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 4 | | | 0 | 0 | 12 | 4 | | | | | 12 | 4 | | | 0 | 0 | 12 | 4 | 12 | 4 | | | 0 | 0 | 12 | 4 | | |
| **SBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **SBT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0.0% | 0.0% |
| **SBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **Intersection 7 - WV 115 (Charles Town Road) with Kabletown Road (CR 25)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **EBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **EBT** | 141 | 297 | 2 | 4 | 3 | 7 | 2 | 4 | 143 | 301 | | 10% | 5 | 4 | 148 | 305 | | | | | 151 | 312 | | 10% | 8 | 5 | 159 | 317 | 161 | 321 | | 10% | 5 | 4 | 166 | 325 | 2.7% | 1.0% |
| **EBR** | 36 | 83 | 0 | 1 | 1 | 2 | 0 | 1 | 36 | 84 | | | 0 | 0 | 36 | 84 | | | | | 37 | 86 | | | 0 | 0 | 37 | 86 | 37 | 87 | | | 0 | 0 | 37 | 87 | | |
| **WBL** | 12 | 22 | 0 | 0 | 0 | 1 | 0 | 0 | 12 | 22 | | | 0 | 0 | 12 | 22 | | | | | 12 | 23 | | | 0 | 0 | 12 | 23 | 12 | 23 | | | 0 | 0 | 12 | 23 | | |
| **WBT** | 202 | 244 | 2 | 3 | 5 | 6 | 3 | 3 | 204 | 247 | 10% | | 2 | 5 | 206 | 252 | | | | | 211 | 258 | 10% | | 3 | 8 | 214 | 266 | 217 | 269 | 10% | | 3 | 6 | 220 | 275 | 0.9% | 1.8% |
| **WBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **NBL** | 45 | 49 | 1 | 1 | 1 | 1 | 1 | 1 | 46 | 50 | | | 0 | 0 | 46 | 50 | | | | | 47 | 51 | | | 0 | 0 | 47 | 51 | 48 | 52 | | | 0 | 0 | 48 | 52 | | |
| **NBT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0.0% | 0.0% |
| **NBR** | 11 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 17 | | | 0 | 0 | 11 | 17 | | | | | 11 | 17 | | | 0 | 0 | 11 | 17 | 11 | 17 | | | 0 | 0 | 11 | 17 | | |
| **SBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **SBT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0.0% | 0.0% |
| **SBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **Intersection 8 - WV 115 (Charles Town Road) with Site Drive #1** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **EBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **EBT** | 179 | 381 | 2 | 5 | 4 | 9 | 2 | 5 | 181 | 386 | 35% | | 7 | 20 | 188 | 406 | | | | | 192 | 415 | 35% | | 10 | 30 | 202 | 445 | 204 | 450 | 35% | | 7 | 22 | 211 | 472 | 9.0% | 11.7% |
| **EBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 55% | | 11 | 31 | 11 | 31 | | | | | 11 | 31 | 55% | | 15 | 47 | 26 | 78 | 26 | 78 | 55% | | 11 | 34 | 37 | 112 | | |
| **WBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7.5% | | 1 | 4 | 1 | 4 | | | | | 1 | 4 | 7.5% | | 3 | 6 | 4 | 10 | 4 | 10 | 7.5% | | 2 | 5 | 6 | 15 | | |
| **WBT** | 247 | 293 | 3 | 4 | 6 | 7 | 3 | 4 | 250 | 297 | | 35% | 18 | 12 | 268 | 309 | | | | | 274 | 316 | | 35% | 27 | 18 | 301 | 334 | 304 | 338 | | 35% | 21 | 14 | 325 | 352 | 7.1% | 5.1% |
| **WBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **NBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 55% | 30 | 19 | 30 | 19 | | | | | 30 | 19 | | 55% | 44 | 29 | 74 | 48 | 74 | 48 | | 55% | 33 | 21 | 107 | 69 | | |
| **NBT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 100.0% | 100.0% |
| **NBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 7.5% | 4 | 3 | 4 | 3 | | | | | 4 | 3 | | 7.5% | 6 | 4 | 10 | 7 | 10 | 7 | | 7.5% | 4 | 3 | 14 | 10 | | |
| **SBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **SBT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0.0% | 0.0% |
| **SBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **Intersection 9 - WV 115 (Charles Town Road) with Site Drive #2** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **EBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **EBT** | 179 | 381 | 2 | 5 | 4 | 9 | 2 | 5 | 181 | 386 | | 7.5% | 4 | 3 | 185 | 389 | | | | | 189 | 398 | | 7.5% | 6 | 4 | 195 | 402 | 197 | 407 | | 7.5% | 4 | 3 | 201 | 410 | 5.7% | 5.6% |
| **EBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35% | | 7 | 20 | 7 | 20 | | | | | 7 | 20 | 35% | | 10 | 30 | 17 | 50 | 17 | 50 | 35% | | 7 | 22 | 24 | 72 | | |
| **WBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.5% | | 1 | 1 | 1 | 1 | | | | | 1 | 1 | 2.5% | | 0 | 2 | 1 | 3 | 1 | 3 | 2.5% | | 1 | 1 | 2 | 4 | | |
| **WBT** | 247 | 293 | 3 | 4 | 6 | 7 | 3 | 4 | 250 | 297 | 7.5% | | 1 | 4 | 251 | 301 | | | | | 257 | 308 | 7.5% | | 3 | 6 | 260 | 314 | 263 | 318 | 7.5% | | 2 | 5 | 265 | 323 | 0.8% | 1.7% |
| **WBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **NBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 35% | 18 | 12 | 18 | 12 | | | | | 18 | 12 | | 35% | 27 | 18 | 45 | 30 | 45 | 30 | | 35% | 21 | 14 | 66 | 44 | | |
| **NBT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 100.0% | 100.0% |
| **NBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 2.5% | 1 | 1 | 1 | 1 | | | | | 1 | 1 | | 2.5% | 2 | 1 | 3 | 2 | 3 | 2 | | 2.5% | 1 | 1 | 4 | 3 | | |
| **SBL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |
| **SBT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0.0% | 0.0% |
| **SBR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | | | | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | |

# VEHICLE AND PEDESTRIAN VOLUME SUMMARY

| COUNT LOCATION | |
|---|---|
| CITY | Charles Town |
| STATE | WV |
| DATE | 4/23/2021 |
| INTERSECTION | Int 1: WV 115 @ Candlewood Drive |
| COUNT BY | AMT |

Friday

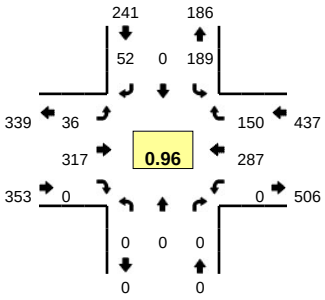
| STREET | US 340 | | | | US 340 | | | | Candlewood Dr | | | | | | | | Total | | | PEAK HR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | From North | | | | From South | | | | From East | | | | From West | | | | | | | |
| TIME | L | T | R | TOT | L | T | R | TOT | L | T | R | TOT | L | T | R | TOT | N-S | E-W | ALL | |
| 0700 - 0715 | 0 | 128 | 0 | 128 | 0 | 110 | 0 | 110 | 4 | 0 | 3 | 7 | 0 | 0 | 0 | 0 | 238 | 7 | 245 | 245 |
| 0715 - 0730 | 0 | 166 | 0 | 166 | 0 | 106 | 0 | 106 | 2 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 272 | 4 | 276 | 521 |
| **0730 - 0745** | **1** | **175** | **0** | **176** | **0** | **170** | **1** | **171** | **1** | **0** | **3** | **4** | **0** | **0** | **0** | **0** | **347** | **4** | **351** | 872 |
| **0745 - 0800** | **1** | **198** | **0** | **199** | **0** | **166** | **1** | **167** | **4** | **0** | **3** | **7** | **0** | **0** | **0** | **0** | **366** | **7** | **373** | 1245 |
| **0800 - 0815** | **3** | **156** | **0** | **159** | **0** | **150** | **1** | **151** | **0** | **0** | **5** | **5** | **0** | **0** | **0** | **0** | **310** | **5** | **315** | 1315 |
| **0815 - 0830** | **2** | **136** | **0** | **138** | **0** | **144** | **1** | **145** | **2** | **0** | **4** | **6** | **0** | **0** | **0** | **0** | **283** | **6** | **289** | ***1328*** |
| 0830 - 0845 | 7 | 160 | 0 | 167 | 0 | 129 | 1 | 130 | 3 | 0 | 3 | 6 | 0 | 0 | 0 | 0 | 297 | 6 | 303 | 1280 |
| 0845 - 0900 | 4 | 150 | 0 | 154 | 0 | 155 | 5 | 160 | 5 | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 314 | 7 | 321 | 1228 |
| 1500 - 1515 | 6 | 208 | 0 | 214 | 0 | 205 | 2 | 207 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 421 | 2 | 423 | 423 |
| **1515 - 1530** | **4** | **228** | **0** | **232** | **0** | **198** | **3** | **201** | **0** | **0** | **3** | **3** | **0** | **0** | **0** | **0** | **433** | **3** | **436** | 859 |
| **1530 - 1545** | **12** | **206** | **0** | **218** | **0** | **226** | **0** | **226** | **1** | **0** | **6** | **7** | **0** | **0** | **0** | **0** | **444** | **7** | **451** | 1310 |
| **1545 - 1600** | **7** | **224** | **0** | **231** | **0** | **217** | **3** | **220** | **1** | **0** | **3** | **4** | **0** | **0** | **0** | **0** | **451** | **4** | **455** | 1765 |
| **1600 - 1615** | **4** | **207** | **0** | **211** | **0** | **241** | **6** | **247** | **3** | **0** | **5** | **8** | **0** | **0** | **0** | **0** | **458** | **8** | **466** | ***1808*** |
| 1615 - 1630 | 8 | 245 | 0 | 253 | 0 | 219 | 8 | 227 | 2 | 0 | 3 | 5 | 0 | 0 | 0 | 0 | 480 | 5 | 485 | 1857 |
| 1630 - 1645 | 8 | 198 | 0 | 206 | 0 | 200 | 2 | 202 | 2 | 0 | 4 | 6 | 0 | 0 | 0 | 0 | 408 | 6 | 414 | 1820 |
| 1645 - 1700 | 5 | 187 | 0 | 192 | 0 | 251 | 3 | 254 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 446 | 0 | 446 | 1811 |
| 1700 - 1715 | 8 | 196 | 0 | 204 | 0 | 229 | 1 | 230 | 2 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 434 | 3 | 437 | 1782 |
| 1715 - 1730 | 7 | 207 | 0 | 214 | 0 | 218 | 1 | 219 | 5 | 0 | 4 | 9 | 0 | 0 | 0 | 0 | 433 | 9 | 442 | 1739 |
| 1730 - 1745 | 8 | 181 | 0 | 189 | 0 | 190 | 2 | 192 | 2 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 381 | 4 | 385 | 1710 |
| 1745 - 1800 | 7 | 206 | 0 | 213 | 0 | 180 | 2 | 182 | 1 | 0 | 4 | 5 | 0 | 0 | 0 | 0 | 395 | 5 | 400 | 1664 |
| | | | | | | | | | | | | | | | | | | | | |
| Peak HR AM | | | | | | | | | | | | | | | | | | | | |
| 0730 - 0830 | ***7*** | ***665*** | ***0*** | ***672*** | ***0*** | ***630*** | ***4*** | ***634*** | ***7*** | ***0*** | ***15*** | ***22*** | ***0*** | ***0*** | ***0*** | ***0*** | ***1306*** | ***22*** | ***1328*** | |
| | | | | | | | | | | | | | | | | | | | | |
| Peak HR PM | | | | | | | | | | | | | | | | | | | | |
| 1515 - 1615 | ***27*** | ***865*** | ***0*** | ***892*** | ***0*** | ***882*** | ***12*** | ***894*** | ***5*** | ***0*** | ***17*** | ***22*** | ***0*** | ***0*** | ***0*** | ***0*** | ***1786*** | ***22*** | ***1808*** | |

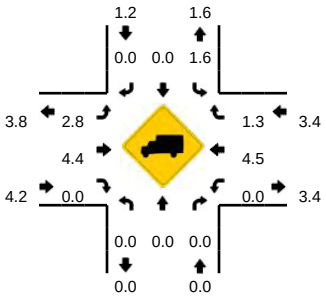
| | | | | |
|---|---|---|---|---|
| **AM PHF** | **0.844** | **0.927** | **0.786** | **0.000** | **0.890** |
| **PM PHF** | **0.961** | **0.905** | **0.688** | **0.000** | **0.970** |

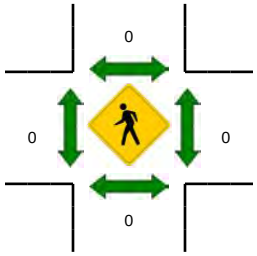
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

**LOCATION:** Jefferson Ave -- WV 115 | **QC JOB #:** 14691606
**CITY/STATE:** Charles Town, WV | **DATE:** Fri, May 04 2018

**Peak-Hour: 4:00 PM -- 5:00 PM**
**Peak 15-Min: 4:45 PM -- 5:00 PM**

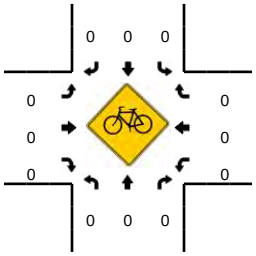


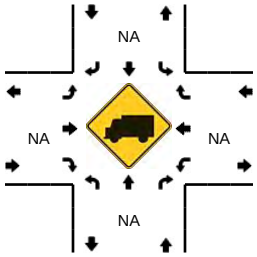





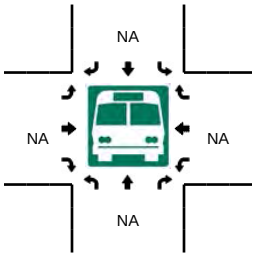











| 15-Min Count Period Beginning At | Jefferson Ave (Northbound) | | | | Jefferson Ave (Southbound) | | | | WV 115 (Eastbound) | | | | WV 115 (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 46 | 0 | 12 | 0 | 14 | 80 | 0 | 0 | 0 | 69 | 41 | 0 | 262 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 41 | 0 | 14 | 0 | 10 | 74 | 0 | 0 | 0 | 77 | 35 | 0 | 251 | |
| 4:30 PM | 0 | 0 | 0 | 0 | 53 | 0 | 13 | 0 | 9 | 79 | 0 | 0 | 0 | 62 | 33 | 0 | 249 | |
| 4:45 PM | 0 | 0 | 0 | 0 | 49 | 0 | 13 | 0 | 3 | 84 | 0 | 0 | 0 | 79 | 41 | 0 | 269 | 1031 |
| 5:00 PM | 0 | 0 | 0 | 0 | 50 | 0 | 9 | 0 | 4 | 62 | 0 | 0 | 0 | 76 | 35 | 0 | 236 | 1005 |
| 5:15 PM | 0 | 0 | 0 | 0 | 41 | 0 | 5 | 0 | 8 | 72 | 0 | 0 | 0 | 73 | 41 | 0 | 240 | 994 |
| 5:30 PM | 0 | 0 | 0 | 0 | 36 | 0 | 12 | 0 | 7 | 65 | 0 | 0 | 0 | 57 | 53 | 0 | 230 | 975 |
| 5:45 PM | 0 | 0 | 0 | 0 | 41 | 0 | 14 | 0 | 3 | 67 | 0 | 0 | 0 | 80 | 42 | 0 | 247 | 953 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 0 | 0 | 0 | 0 | 196 | 0 | 52 | 0 | 12 | 336 | 0 | 0 | 0 | 316 | 164 | 0 | 1076 |
| Heavy Trucks | 0 | 0 | 0 | | 4 | 0 | 0 | | 0 | 20 | 0 | | 0 | 12 | 0 | | 36 |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 0 | | | 0 |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Railroad | | | | | | | | | | | | | | | | | |
| Stopped Buses | | | | | | | | | | | | | | | | | |

*Comments:*

Report generated on 5/9/2018 11:10 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

# *VEHICLE AND PEDESTRIAN VOLUME SUMMARY*

| *COUNT LOCATION* | |
|---|---|
| *CITY* | Charles Town |
| *STATE* | WV |
| *DATE* | 4/23/2021 |
| *INTERSECTION* | Int 3: WV 115 @ US 340 Southbound Ramps/Citizens Way |
| *COUNT BY* | AMT |

Friday

| STREET | Citizens Way | | | | US 340 SB Ramps | | | | WV 115 | | | | WV 115 | | | | Total | | | PEAK HR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | From North | | | | From South | | | | From East | | | | From West | | | | | | | |
| TIME | L | T | R | TOT | L | T | R | TOT | L | T | R | TOT | L | T | R | TOT | N-S | E-W | ALL | |
| 0700 - 0715 | 8 | 2 | 5 | 15 | 6 | 2 | 10 | 18 | 8 | 31 | 3 | 42 | 7 | 23 | 5 | 35 | 33 | 77 | 110 | 110 |
| 0715 - 0730 | 5 | 4 | 7 | 16 | 12 | 5 | 13 | 30 | 15 | 41 | 1 | 57 | 1 | 29 | 11 | 41 | 46 | 98 | 144 | 254 |
| **0730 - 0745** | **8** | **0** | **8** | **16** | **8** | **3** | **14** | **25** | **15** | **56** | **4** | **75** | **2** | **46** | **25** | **73** | **41** | **148** | **189** | 443 |
| **0745 - 0800** | **5** | **5** | **6** | **16** | **19** | **8** | **22** | **49** | **25** | **61** | **1** | **87** | **5** | **62** | **15** | **82** | **65** | **169** | **234** | 677 |
| **0800 - 0815** | **6** | **6** | **2** | **14** | **10** | **6** | **17** | **33** | **17** | **47** | **5** | **69** | **5** | **51** | **13** | **69** | **47** | **138** | **185** | 752 |
| **0815 - 0830** | **10** | **2** | **6** | **18** | **7** | **3** | **27** | **37** | **10** | **56** | **0** | **66** | **3** | **50** | **10** | **63** | **55** | **129** | **184** | ***792*** |
| 0830 - 0845 | 6 | 7 | 7 | 20 | 11 | 1 | 13 | 25 | 6 | 51 | 0 | 57 | 3 | 30 | 9 | 42 | 45 | 99 | 144 | 747 |
| 0845 - 0900 | 11 | 4 | 8 | 23 | 10 | 0 | 24 | 34 | 10 | 62 | 2 | 74 | 5 | 49 | 8 | 62 | 57 | 136 | 193 | 706 |
| 1500 - 1515 | 5 | 0 | 6 | 11 | 21 | 5 | 40 | 66 | 11 | 60 | 2 | 73 | 11 | 78 | 23 | 112 | 77 | 185 | 262 | 262 |
| **1515 - 1530** | **6** | **0** | **8** | **14** | **22** | **13** | **46** | **81** | **5** | **69** | **0** | **74** | **16** | **72** | **10** | **98** | **95** | **172** | **267** | 529 |
| **1530 - 1545** | **10** | **2** | **7** | **19** | **29** | **2** | **50** | **81** | **11** | **62** | **2** | **75** | **8** | **69** | **17** | **94** | **100** | **169** | **269** | 798 |
| **1545 - 1600** | **6** | **3** | **8** | **17** | **21** | **10** | **45** | **76** | **8** | **62** | **1** | **71** | **7** | **83** | **12** | **102** | **93** | **173** | **266** | 1064 |
| **1600 - 1615** | **11** | **2** | **12** | **25** | **24** | **3** | **47** | **74** | **14** | **65** | **6** | **85** | **5** | **90** | **16** | **111** | **99** | **196** | **295** | ***1097*** |
| 1615 - 1630 | 11 | 3 | 4 | 18 | 18 | 5 | 41 | 64 | 13 | 63 | 4 | 80 | 9 | 71 | 19 | 99 | 82 | 179 | 261 | 1091 |
| 1630 - 1645 | 10 | 2 | 8 | 20 | 18 | 11 | 41 | 70 | 7 | 66 | 3 | 76 | 7 | 83 | 13 | 103 | 90 | 179 | 269 | 1091 |
| 1645 - 1700 | 6 | 0 | 3 | 9 | 21 | 5 | 41 | 67 | 4 | 59 | 4 | 67 | 7 | 95 | 13 | 115 | 76 | 182 | 258 | 1083 |
| 1700 - 1715 | 4 | 3 | 5 | 12 | 26 | 8 | 39 | 73 | 9 | 57 | 4 | 70 | 10 | 90 | 19 | 119 | 85 | 189 | 274 | 1062 |
| 1715 - 1730 | 8 | 1 | 8 | 17 | 16 | 5 | 29 | 50 | 9 | 76 | 8 | 93 | 8 | 74 | 10 | 92 | 67 | 185 | 252 | 1053 |
| 1730 - 1745 | 4 | 0 | 8 | 12 | 22 | 12 | 43 | 77 | 6 | 56 | 5 | 67 | 10 | 68 | 13 | 91 | 89 | 158 | 247 | 1031 |
| 1745 - 1800 | 3 | 3 | 8 | 14 | 17 | 4 | 37 | 58 | 16 | 56 | 6 | 78 | 10 | 60 | 10 | 80 | 72 | 158 | 230 | 1003 |
| | | | | | | | | | | | | | | | | | | | | |
| Peak HR AM | | | | | | | | | | | | | | | | | | | | |
| 0730 - 0830 | ***29*** | ***13*** | ***22*** | ***64*** | ***44*** | ***20*** | ***80*** | ***144*** | ***67*** | ***220*** | ***10*** | ***297*** | ***15*** | ***209*** | ***63*** | ***287*** | ***208*** | ***584*** | ***792*** | |
| | | | | | | | | | | | | | | | | | | | | |
| Peak HR PM | | | | | | | | | | | | | | | | | | | | |
| 1515 - 1615 | ***33*** | ***7*** | ***35*** | ***75*** | ***96*** | ***28*** | ***188*** | ***312*** | ***38*** | ***258*** | ***9*** | ***305*** | ***36*** | ***314*** | ***55*** | ***405*** | ***387*** | ***710*** | ***1097*** | |
| | | | | | | | | | | | | | | | | | | | | |
| **AM PHF** | **0.889** | | | | **0.735** | | | | **0.853** | | | | **0.875** | | | | **0.846** | | | |
| | | | | | | | | | | | | | | | | | | | | |
| **PM PHF** | **0.750** | | | | **0.963** | | | | **0.897** | | | | **0.912** | | | | **0.930** | | | |

# *VEHICLE AND PEDESTRIAN VOLUME SUMMARY*

| *COUNT LOCATION* | |
|---|---|
| *CITY* | Charles Town |
| *STATE* | WV |
| *DATE* | 4/23/2021 |
| *INTERSECTION* | Int 4: WV 115 @ US 340 Northbound Ramps/Hillside Drive |
| *COUNT BY* | AMT |

Friday

| STREET | Hillside Dr | | | | US 340 NB Ramps | | | | WV 115 | | | | WV 115 | | | | Total | | | PEAK HR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | From North | | | | From South | | | | From East | | | | From West | | | | | | | |
| TIME | L | T | R | TOT | L | T | R | TOT | L | T | R | TOT | L | T | R | TOT | N-S | E-W | ALL | |
| 0700 - 0715 | 0 | 1 | 0 | 1 | 6 | 0 | 2 | 8 | 28 | 36 | 0 | 64 | 0 | 19 | 22 | 41 | 9 | 105 | 114 | 114 |
| 0715 - 0730 | 0 | 2 | 2 | 4 | 7 | 0 | 3 | 10 | 35 | 55 | 2 | 92 | 1 | 23 | 24 | 48 | 14 | 140 | 154 | 268 |
| **0730 - 0745** | **0** | **0** | **1** | **1** | **35** | **0** | **6** | **41** | **37** | **39** | **0** | **76** | **2** | **29** | **38** | **69** | **42** | **145** | **187** | 455 |
| **0745 - 0800** | **0** | **1** | **3** | **4** | **14** | **0** | **6** | **20** | **28** | **67** | **0** | **95** | **1** | **58** | **30** | **89** | **24** | **184** | **208** | 663 |
| **0800 - 0815** | **0** | **2** | **2** | **4** | **12** | **0** | **9** | **21** | **31** | **49** | **1** | **81** | **0** | **50** | **32** | **82** | **25** | **163** | **188** | 737 |
| **0815 - 0830** | **0** | **0** | **3** | **3** | **10** | **0** | **6** | **16** | **27** | **59** | **1** | **87** | **2** | **51** | **27** | **80** | **19** | **167** | **186** | ***769*** |
| 0830 - 0845 | 0 | 2 | 0 | 2 | 6 | 0 | 4 | 10 | 35 | 49 | 0 | 84 | 1 | 31 | 17 | 49 | 12 | 133 | 145 | 727 |
| 0845 - 0900 | 2 | 1 | 0 | 3 | 11 | 0 | 10 | 21 | 33 | 66 | 0 | 99 | 1 | 63 | 21 | 85 | 24 | 184 | 208 | 727 |
| 1500 - 1515 | 0 | 0 | 2 | 2 | 19 | 0 | 4 | 23 | 32 | 57 | 0 | 89 | 1 | 100 | 25 | 126 | 25 | 215 | 240 | 240 |
| **1515 - 1530** | **0** | **0** | **1** | **1** | **14** | **0** | **12** | **26** | **28** | **55** | **0** | **83** | **2** | **102** | **19** | **123** | **27** | **206** | **233** | 473 |
| **1530 - 1545** | **0** | **4** | **2** | **6** | **9** | **1** | **17** | **27** | **33** | **70** | **0** | **103** | **1** | **104** | **23** | **128** | **33** | **231** | **264** | 737 |
| **1545 - 1600** | **0** | **0** | **1** | **1** | **8** | **2** | **9** | **19** | **23** | **58** | **0** | **81** | **2** | **116** | **21** | **139** | **20** | **220** | **240** | 977 |
| **1600 - 1615** | **1** | **1** | **2** | **4** | **23** | **0** | **9** | **32** | **34** | **71** | **0** | **105** | **2** | **106** | **37** | **145** | **36** | **250** | **286** | ***1023*** |
| 1615 - 1630 | 0 | 1 | 4 | 5 | 11 | 3 | 9 | 23 | 20 | 58 | 0 | 78 | 2 | 99 | 25 | 126 | 28 | 204 | 232 | 1022 |
| 1630 - 1645 | 0 | 0 | 1 | 1 | 14 | 0 | 7 | 21 | 30 | 62 | 0 | 92 | 5 | 94 | 32 | 131 | 22 | 223 | 245 | 1003 |
| 1645 - 1700 | 0 | 1 | 1 | 2 | 10 | 1 | 23 | 34 | 35 | 56 | 0 | 91 | 2 | 100 | 19 | 121 | 36 | 212 | 248 | 1011 |
| 1700 - 1715 | 0 | 2 | 0 | 2 | 19 | 0 | 13 | 32 | 31 | 57 | 0 | 88 | 3 | 114 | 19 | 136 | 34 | 224 | 258 | 983 |
| 1715 - 1730 | 0 | 0 | 0 | 0 | 21 | 1 | 17 | 39 | 34 | 67 | 0 | 101 | 0 | 87 | 23 | 110 | 39 | 211 | 250 | 1001 |
| 1730 - 1745 | 0 | 0 | 2 | 2 | 18 | 3 | 9 | 30 | 39 | 42 | 0 | 81 | 2 | 99 | 16 | 117 | 32 | 198 | 230 | 986 |
| 1745 - 1800 | 0 | 1 | 2 | 3 | 15 | 0 | 6 | 21 | 31 | 71 | 1 | 103 | 3 | 77 | 18 | 98 | 24 | 201 | 225 | 963 |
| | | | | | | | | | | | | | | | | | | | | |
| Peak HR AM | | | | | | | | | | | | | | | | | | | | |
| 0730 - 0830 | ***0*** | ***3*** | ***9*** | ***12*** | ***71*** | ***0*** | ***27*** | ***98*** | ***123*** | ***214*** | ***2*** | ***339*** | ***5*** | ***188*** | ***127*** | ***320*** | ***110*** | ***659*** | ***769*** | |
| | | | | | | | | | | | | | | | | | | | | |
| Peak HR PM | | | | | | | | | | | | | | | | | | | | |
| 1515 - 1615 | ***1*** | ***5*** | ***6*** | ***12*** | ***54*** | ***3*** | ***47*** | ***104*** | ***118*** | ***254*** | ***0*** | ***372*** | ***7*** | ***428*** | ***100*** | ***535*** | ***116*** | ***907*** | ***1023*** | |
| | | | | | | | | | | | | | | | | | | | | |
| **AM PHF** | **0.750** | | | | **0.598** | | | | **0.892** | | | | **0.976** | | | | **0.924** | | | |
| | | | | | | | | | | | | | | | | | | | | |
| **PM PHF** | **0.500** | | | | **0.813** | | | | **0.886** | | | | **0.922** | | | | **0.894** | | | |

# *VEHICLE AND PEDESTRIAN VOLUME SUMMARY*

| *COUNT LOCATION* | |
|---|---|
| *CITY* | Charles Town |
| *STATE* | WV |
| *DATE* | 4/23/2021 |
| *INTERSECTION* | Int 5: WV 115 @ Fairleigh Drive/Baily Brooks Way |
| *COUNT BY* | AMT |

Friday

| STREET | Bailey Brooks Way | | | | Fairleigh Dr | | | | WV 115 | | | | WV 115 | | | | Total | | | PEAK HR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | From North | | | | From South | | | | From East | | | | From West | | | | | | | |
| TIME | L | T | R | TOT | L | T | R | TOT | L | T | R | TOT | L | T | R | TOT | N-S | E-W | ALL | |
| 0700 - 0715 | 0 | 0 | 2 | 2 | 7 | 0 | 0 | 7 | 0 | 56 | 0 | 56 | 1 | 18 | 0 | 19 | 9 | 75 | 84 | 84 |
| 0715 - 0730 | 0 | 0 | 1 | 1 | 9 | 0 | 0 | 9 | 1 | 84 | 0 | 85 | 0 | 24 | 0 | 24 | 10 | 109 | 119 | 203 |
| **0730 - 0745** | **0** | **0** | **0** | **0** | **10** | **0** | **1** | **11** | **0** | **67** | **0** | **67** | **1** | **32** | **5** | **38** | **11** | **105** | **116** | 319 |
| **0745 - 0800** | **0** | **0** | **4** | **4** | **10** | **0** | **0** | **10** | **0** | **84** | **0** | **84** | **0** | **51** | **5** | **56** | **14** | **140** | **154** | 473 |
| **0800 - 0815** | **0** | **1** | **1** | **2** | **8** | **0** | **0** | **8** | **0** | **71** | **0** | **71** | **0** | **64** | **2** | **66** | **10** | **137** | **147** | 536 |
| **0815 - 0830** | **0** | **0** | **1** | **1** | **2** | **0** | **0** | **2** | **0** | **71** | **0** | **71** | **0** | **43** | **8** | **51** | **3** | **122** | **125** | ***542*** |
| 0830 - 0845 | 0 | 0 | 2 | 2 | 12 | 0 | 2 | 14 | 0 | 89 | 0 | 89 | 1 | 37 | 1 | 39 | 16 | 128 | 144 | 570 |
| 0845 - 0900 | 0 | 0 | 1 | 1 | 7 | 0 | 3 | 10 | 0 | 70 | 0 | 70 | 3 | 59 | 9 | 71 | 11 | 141 | 152 | 568 |
| 1500 - 1515 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 82 | 0 | 82 | 2 | 83 | 10 | 95 | 7 | 177 | 184 | 184 |
| **1515 - 1530** | **0** | **0** | **2** | **2** | **5** | **0** | **0** | **5** | **0** | **72** | **0** | **72** | **2** | **106** | **13** | **121** | **7** | **193** | **200** | 384 |
| **1530 - 1545** | **0** | **0** | **3** | **3** | **6** | **0** | **0** | **6** | **0** | **93** | **0** | **93** | **1** | **105** | **9** | **115** | **9** | **208** | **217** | 601 |
| **1545 - 1600** | **0** | **0** | **2** | **2** | **4** | **0** | **0** | **4** | **1** | **77** | **0** | **78** | **2** | **104** | **13** | **119** | **6** | **197** | **203** | 804 |
| **1600 - 1615** | **0** | **0** | **3** | **3** | **4** | **0** | **0** | **4** | **0** | **83** | **0** | **83** | **0** | **107** | **12** | **119** | **7** | **202** | **209** | ***829*** |
| 1615 - 1630 | 0 | 0 | 2 | 2 | 9 | 0 | 0 | 9 | 0 | 68 | 0 | 68 | 4 | 87 | 6 | 97 | 11 | 165 | 176 | 805 |
| 1630 - 1645 | 0 | 0 | 2 | 2 | 7 | 0 | 0 | 7 | 0 | 81 | 0 | 81 | 2 | 93 | 8 | 103 | 9 | 184 | 193 | 781 |
| 1645 - 1700 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 9 | 0 | 74 | 0 | 74 | 3 | 108 | 11 | 122 | 9 | 196 | 205 | 783 |
| 1700 - 1715 | 0 | 0 | 1 | 1 | 10 | 0 | 0 | 10 | 0 | 82 | 0 | 82 | 2 | 112 | 13 | 127 | 11 | 209 | 220 | 794 |
| 1715 - 1730 | 0 | 0 | 1 | 1 | 12 | 0 | 0 | 12 | 1 | 89 | 0 | 90 | 1 | 97 | 11 | 109 | 13 | 199 | 212 | 830 |
| 1730 - 1745 | 0 | 0 | 1 | 1 | 3 | 0 | 0 | 3 | 0 | 77 | 0 | 77 | 3 | 81 | 12 | 96 | 4 | 173 | 177 | 814 |
| 1745 - 1800 | 1 | 0 | 1 | 2 | 10 | 0 | 0 | 10 | 0 | 81 | 0 | 81 | 2 | 75 | 11 | 88 | 12 | 169 | 181 | 790 |
| | | | | | | | | | | | | | | | | | | | | |
| Peak HR AM | | | | | | | | | | | | | | | | | | | | |
| 0730 - 0830 | ***0*** | ***1*** | ***6*** | ***7*** | ***30*** | ***0*** | ***1*** | ***31*** | ***0*** | ***293*** | ***0*** | ***293*** | ***1*** | ***190*** | ***20*** | ***211*** | ***38*** | ***504*** | ***542*** | |
| | | | | | | | | | | | | | | | | | | | | |
| Peak HR PM | | | | | | | | | | | | | | | | | | | | |
| 1515 - 1615 | ***0*** | ***0*** | ***10*** | ***10*** | ***19*** | ***0*** | ***0*** | ***19*** | ***1*** | ***325*** | ***0*** | ***326*** | ***5*** | ***422*** | ***47*** | ***474*** | ***29*** | ***800*** | ***829*** | |
| | | | | | | | | | | | | | | | | | | | | |
| **AM PHF** | **0.438** | | | | **0.705** | | | | **0.872** | | | | **0.799** | | | | **0.880** | | | |
| | | | | | | | | | | | | | | | | | | | | |
| **PM PHF** | **0.833** | | | | **0.792** | | | | **0.876** | | | | **0.979** | | | | **0.955** | | | |

# *VEHICLE AND PEDESTRIAN VOLUME SUMMARY*

| *COUNT LOCATION* | |
|---|---|
| *CITY* | Charles Town |
| *STATE* | WV |
| *DATE* | 4/23/2021 |
| *INTERSECTION* | Int 6: WV 115 @ Crosswinds Drive |
| *COUNT BY* | AMT |

Friday

| STREET | | | | | Crosswinds Dr | | | | WV 115 | | | | WV 115 | | | | Total | | | PEAK HR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | From North | | | | From South | | | | From East | | | | From West | | | | | | | |
| TIME | L | T | R | TOT | L | T | R | TOT | L | T | R | TOT | L | T | R | TOT | N-S | E-W | ALL | |
| 0700 - 0715 | 0 | 0 | 0 | 0 | 4 | 0 | 3 | 7 | 1 | 52 | 0 | 53 | 0 | 19 | 4 | 23 | 7 | 76 | 83 | 83 |
| 0715 - 0730 | 0 | 0 | 0 | 0 | 4 | 0 | 5 | 9 | 0 | 78 | 0 | 78 | 0 | 19 | 3 | 22 | 9 | 100 | 109 | 192 |
| **0730 - 0745** | **0** | **0** | **0** | **0** | **7** | **0** | **1** | **8** | **1** | **54** | **0** | **55** | **0** | **23** | **6** | **29** | **8** | **84** | **92** | 284 |
| **0745 - 0800** | **0** | **0** | **0** | **0** | **15** | **0** | **5** | **20** | **1** | **63** | **0** | **64** | **0** | **50** | **3** | **53** | **20** | **117** | **137** | 421 |
| **0800 - 0815** | **0** | **0** | **0** | **0** | **8** | **0** | **4** | **12** | **0** | **63** | **0** | **63** | **0** | **46** | **3** | **49** | **12** | **112** | **124** | 462 |
| **0815 - 0830** | **0** | **0** | **0** | **0** | **4** | **0** | **2** | **6** | **0** | **65** | **0** | **65** | **0** | **48** | **6** | **54** | **6** | **119** | **125** | ***478*** |
| 0830 - 0845 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 6 | 2 | 69 | 0 | 71 | 0 | 31 | 3 | 34 | 6 | 105 | 111 | 497 |
| 0845 - 0900 | 0 | 0 | 0 | 0 | 6 | 0 | 1 | 7 | 1 | 77 | 0 | 78 | 0 | 52 | 10 | 62 | 7 | 140 | 147 | 507 |
| 1500 - 1515 | 0 | 0 | 0 | 0 | 4 | 0 | 3 | 7 | 0 | 71 | 0 | 71 | 0 | 75 | 10 | 85 | 7 | 156 | 163 | 163 |
| **1515 - 1530** | **0** | **0** | **0** | **0** | **4** | **0** | **1** | **5** | **1** | **66** | **0** | **67** | **0** | **89** | **7** | **96** | **5** | **163** | **168** | 331 |
| **1530 - 1545** | **0** | **0** | **0** | **0** | **6** | **0** | **1** | **7** | **0** | **85** | **0** | **85** | **0** | **98** | **5** | **103** | **7** | **188** | **195** | 526 |
| **1545 - 1600** | **0** | **0** | **0** | **0** | **8** | **0** | **0** | **8** | **0** | **71** | **0** | **71** | **0** | **96** | **6** | **102** | **8** | **173** | **181** | 707 |
| **1600 - 1615** | **0** | **0** | **0** | **0** | **8** | **0** | **2** | **10** | **2** | **74** | **0** | **76** | **0** | **94** | **10** | **104** | **10** | **180** | **190** | ***734*** |
| 1615 - 1630 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 6 | 3 | 60 | 0 | 63 | 0 | 72 | 9 | 81 | 6 | 144 | 150 | 716 |
| 1630 - 1645 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 6 | 1 | 74 | 0 | 75 | 0 | 82 | 12 | 94 | 6 | 169 | 175 | 696 |
| 1645 - 1700 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 1 | 75 | 0 | 76 | 0 | 87 | 17 | 104 | 3 | 180 | 183 | 698 |
| 1700 - 1715 | 0 | 0 | 0 | 0 | 13 | 0 | 2 | 15 | 2 | 62 | 0 | 64 | 0 | 95 | 13 | 108 | 15 | 172 | 187 | 695 |
| 1715 - 1730 | 0 | 0 | 0 | 0 | 10 | 0 | 2 | 12 | 4 | 75 | 0 | 79 | 0 | 83 | 8 | 91 | 12 | 170 | 182 | 727 |
| 1730 - 1745 | 0 | 0 | 0 | 0 | 5 | 0 | 2 | 7 | 1 | 70 | 0 | 71 | 0 | 70 | 12 | 82 | 7 | 153 | 160 | 712 |
| 1745 - 1800 | 0 | 0 | 0 | 0 | 10 | 0 | 1 | 11 | 1 | 71 | 0 | 72 | 0 | 56 | 13 | 69 | 11 | 141 | 152 | 681 |
| | | | | | | | | | | | | | | | | | | | | |
| Peak HR AM | | | | | | | | | | | | | | | | | | | | |
| 0730 - 0830 | ***0*** | ***0*** | ***0*** | ***0*** | ***34*** | ***0*** | ***12*** | ***46*** | ***2*** | ***245*** | ***0*** | ***247*** | ***0*** | ***167*** | ***18*** | ***185*** | ***46*** | ***432*** | ***478*** | |
| | | | | | | | | | | | | | | | | | | | | |
| Peak HR PM | | | | | | | | | | | | | | | | | | | | |
| 1515 - 1615 | ***0*** | ***0*** | ***0*** | ***0*** | ***26*** | ***0*** | ***4*** | ***30*** | ***3*** | ***296*** | ***0*** | ***299*** | ***0*** | ***377*** | ***28*** | ***405*** | ***30*** | ***704*** | ***734*** | |

| | | | | |
|---|---|---|---|---|
| **AM PHF** | **0.000** | **0.575** | **0.950** | **0.856** | **0.872** |
| **PM PHF** | **0.000** | **0.750** | **0.879** | **0.974** | **0.941** |

# *VEHICLE AND PEDESTRIAN VOLUME SUMMARY*

| *COUNT LOCATION* | |
|---|---|
| *CITY* | Charles Town |
| *STATE* | WV |
| *DATE* | 4/23/2021 |
| *INTERSECTION* | Int 7: WV 115 @ Kabletown Road |
| *COUNT BY* | AMT |

Friday

| STREET | | | | | Kabletown Rd | | | | WV 115 | | | | WV 115 | | | | Total | | | PEAK HR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | From North | | | | From South | | | | From East | | | | From West | | | | | | | |
| TIME | L | T | R | TOT | L | T | R | TOT | L | T | R | TOT | L | T | R | TOT | N-S | E-W | ALL | |
| 0700 - 0715 | 0 | 0 | 0 | 0 | 10 | 0 | 4 | 14 | 0 | 43 | 0 | 43 | 0 | 18 | 3 | 21 | 14 | 64 | 78 | 78 |
| 0715 - 0730 | 0 | 0 | 0 | 0 | 14 | 0 | 5 | 19 | 4 | 62 | 0 | 66 | 0 | 20 | 3 | 23 | 19 | 89 | 108 | 186 |
| **0730 - 0745** | **0** | **0** | **0** | **0** | **14** | **0** | **2** | **16** | **1** | **42** | **0** | **43** | **0** | **22** | **4** | **26** | **16** | **69** | **85** | 271 |
| **0745 - 0800** | **0** | **0** | **0** | **0** | **8** | **0** | **2** | **10** | **5** | **60** | **0** | **65** | **0** | **42** | **6** | **48** | **10** | **113** | **123** | 394 |
| **0800 - 0815** | **0** | **0** | **0** | **0** | **11** | **0** | **3** | **14** | **4** | **50** | **0** | **54** | **0** | **42** | **7** | **49** | **14** | **103** | **117** | 433 |
| **0815 - 0830** | **0** | **0** | **0** | **0** | **12** | **0** | **4** | **16** | **2** | **50** | **0** | **52** | **0** | **35** | **19** | **54** | **16** | **106** | **122** | ***447*** |
| 0830 - 0845 | 0 | 0 | 0 | 0 | 10 | 0 | 5 | 15 | 3 | 65 | 0 | 68 | 0 | 27 | 4 | 31 | 15 | 99 | 114 | 476 |
| 0845 - 0900 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 6 | 2 | 71 | 0 | 73 | 0 | 41 | 10 | 51 | 6 | 124 | 130 | 483 |
| 1500 - 1515 | 0 | 0 | 0 | 0 | 22 | 0 | 6 | 28 | 6 | 50 | 0 | 56 | 0 | 66 | 10 | 76 | 28 | 132 | 160 | 160 |
| **1515 - 1530** | **0** | **0** | **0** | **0** | **10** | **0** | **4** | **14** | **7** | **54** | **0** | **61** | **0** | **73** | **24** | **97** | **14** | **158** | **172** | 332 |
| **1530 - 1545** | **0** | **0** | **0** | **0** | **16** | **0** | **4** | **20** | **5** | **66** | **0** | **71** | **0** | **68** | **20** | **88** | **20** | **159** | **179** | 511 |
| **1545 - 1600** | **0** | **0** | **0** | **0** | **9** | **0** | **5** | **14** | **2** | **66** | **0** | **68** | **0** | **77** | **22** | **99** | **14** | **167** | **181** | 692 |
| **1600 - 1615** | **0** | **0** | **0** | **0** | **14** | **0** | **4** | **18** | **8** | **58** | **0** | **66** | **0** | **79** | **17** | **96** | **18** | **162** | **180** | ***712*** |
| 1615 - 1630 | 0 | 0 | 0 | 0 | 8 | 0 | 4 | 12 | 6 | 54 | 0 | 60 | 0 | 68 | 10 | 78 | 12 | 138 | 150 | 690 |
| 1630 - 1645 | 0 | 0 | 0 | 0 | 16 | 0 | 1 | 17 | 8 | 55 | 0 | 63 | 0 | 58 | 21 | 79 | 17 | 142 | 159 | 670 |
| 1645 - 1700 | 0 | 0 | 0 | 0 | 15 | 0 | 5 | 20 | 12 | 60 | 1 | 73 | 0 | 76 | 12 | 88 | 20 | 161 | 181 | 670 |
| 1700 - 1715 | 0 | 0 | 0 | 0 | 12 | 0 | 7 | 19 | 3 | 54 | 0 | 57 | 0 | 79 | 16 | 95 | 19 | 152 | 171 | 661 |
| 1715 - 1730 | 0 | 0 | 0 | 0 | 14 | 0 | 2 | 16 | 12 | 66 | 0 | 78 | 0 | 78 | 10 | 88 | 16 | 166 | 182 | 693 |
| 1730 - 1745 | 0 | 0 | 0 | 0 | 14 | 0 | 5 | 19 | 4 | 53 | 0 | 57 | 0 | 57 | 13 | 70 | 19 | 127 | 146 | 680 |
| 1745 - 1800 | 0 | 0 | 0 | 0 | 13 | 0 | 4 | 17 | 8 | 61 | 0 | 69 | 0 | 49 | 6 | 55 | 17 | 124 | 141 | 640 |
| | | | | | | | | | | | | | | | | | | | | |
| Peak HR AM | | | | | | | | | | | | | | | | | | | | |
| 0730 - 0830 | ***0*** | ***0*** | ***0*** | ***0*** | ***45*** | ***0*** | ***11*** | ***56*** | ***12*** | ***202*** | ***0*** | ***214*** | ***0*** | ***141*** | ***36*** | ***177*** | ***56*** | ***391*** | ***447*** | |
| | | | | | | | | | | | | | | | | | | | | |
| Peak HR PM | | | | | | | | | | | | | | | | | | | | |
| 1515 - 1615 | ***0*** | ***0*** | ***0*** | ***0*** | ***49*** | ***0*** | ***17*** | ***66*** | ***22*** | ***244*** | ***0*** | ***266*** | ***0*** | ***297*** | ***83*** | ***380*** | ***66*** | ***646*** | ***712*** | |

| | | | | |
|---|---|---|---|---|
| **AM PHF** | **0.000** | **0.875** | **0.823** | **0.819** | **0.909** |
| **PM PHF** | **0.000** | **0.825** | **0.937** | **0.960** | **0.983** |

**2025 AM Full Build (WV 115 & Site Drive #1)**

| % LT | Speed | Opposing Veh/h (X1) | Opposing Veh/h (X3) | Actual Opposing Veh/h |
|---|---|---|---|---|
| 5 % Left Turns | 55 mph | 200 | 400 | 248 |
| Advancing Veh/h (Y1) | Advancing Veh/h (Y3) | Actual Advancing Veh/h | Required Advacning (Y2) | AASHTO Analysis |
| 500 | 398 | 331 | 475 | Guideline Not Met |

| Metric | | | | | US Customary | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Opposing Volume (veh/h ) | Advancing Volume (veh/h) | | | | Opposing Volume (veh/h ) | Advancing Volume (veh/h) | | | |
| | 5 % Left Turns | 10 % Left Turns | 20 % Left Turns | 30 % Left Turns | | 5 % Left Turns | 10 % Left Turns | 20 % Left Turns | 30 % Left Turns |
| **60 km/h Operating Speed** | | | | | **40 mph Operating Speed** | | | | |
| 800 | 330 | 240 | 180 | 160 | 800 | 330 | 240 | 180 | 160 |
| 600 | 410 | 305 | 225 | 200 | 600 | 410 | 305 | 225 | 200 |
| 400 | 510 | 380 | 275 | 245 | 400 | 510 | 380 | 275 | 245 |
| 200 | 640 | 470 | 350 | 305 | 200 | 640 | 470 | 350 | 305 |
| 100 | 720 | 515 | 390 | 340 | 100 | 720 | 515 | 390 | 340 |
| **70 km/h Operating Speed** | | | | | **45 mph Operating Speed** | | | | |
| 800 | 305 | 225 | 173 | 148 | 800 | 305 | 225 | 173 | 148 |
| 600 | 380 | 283 | 210 | 185 | 600 | 380 | 283 | 210 | 185 |
| 400 | 470 | 350 | 258 | 228 | 400 | 470 | 350 | 258 | 228 |
| 200 | 595 | 435 | 325 | 288 | 200 | 595 | 435 | 325 | 288 |
| 100 | 668 | 480 | 363 | 318 | 100 | 668 | 480 | 363 | 318 |
| **80 km/h Operating Speed** | | | | | **50 mph Operating Speed** | | | | |
| 800 | 280 | 210 | 165 | 135 | 800 | 280 | 210 | 165 | 135 |
| 600 | 350 | 260 | 195 | 170 | 600 | 350 | 260 | 195 | 170 |
| 400 | 430 | 320 | 240 | 210 | 400 | 430 | 320 | 240 | 210 |
| 200 | 550 | 400 | 300 | 270 | 200 | 550 | 400 | 300 | 270 |
| 100 | 615 | 445 | 335 | 295 | 100 | 615 | 445 | 335 | 295 |
| **90 km/h Operating Speed** | | | | | **55 mph Operating Speed** | | | | |
| 800 | 255 | 190 | 145 | 125 | 800 | 255 | 190 | 145 | 125 |
| 600 | 320 | 235 | 178 | 155 | 600 | 320 | 235 | 178 | 155 |
| 400 | 398 | 295 | 220 | 193 | 400 | 398 | 295 | 220 | 193 |
| 200 | 500 | 365 | 275 | 243 | 200 | 500 | 365 | 275 | 243 |
| 100 | 560 | 408 | 305 | 268 | 100 | 560 | 408 | 305 | 268 |
| **100 km/h Operating Speed** | | | | | **60 mph Operating Speed** | | | | |
| 800 | 230 | 170 | 125 | 115 | 800 | 230 | 170 | 125 | 115 |
| 600 | 290 | 210 | 160 | 140 | 600 | 290 | 210 | 160 | 140 |
| 400 | 365 | 270 | 200 | 175 | 400 | 365 | 270 | 200 | 175 |
| 200 | 450 | 330 | 250 | 215 | 200 | 450 | 330 | 250 | 215 |
| 100 | 505 | 370 | 275 | 240 | 100 | 505 | 370 | 275 | 240 |

**2025 PM Full Build (WV 115 & Site Drive #1)**

| % LT | Speed | Opposing Veh/h (X1) | Opposing Veh/h (X3) | Actual Opposing Veh/h |
|---|---|---|---|---|
| 5 % Left Turns | 55 mph | 400 | 600 | 584 |
| **Advancing Veh/h (Y1)** | **Advancing Veh/h (Y3)** | **Actual Advancing Veh/h** | **Required Advacning (Y2)** | **AASHTO Analysis** |
| 398 | 320 | 367 | 326 | Guideline Met |

| Metric | | | | | US Customary | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Opposing Volume (veh/h ) | Advancing Volume (veh/h) | | | | Opposing Volume (veh/h ) | Advancing Volume (veh/h) | | | |
| | 5 % Left Turns | 10 % Left Turns | 20 % Left Turns | 30 % Left Turns | | 5 % Left Turns | 10 % Left Turns | 20 % Left Turns | 30 % Left Turns |
| **60 km/h Operating Speed** | | | | | **40 mph Operating Speed** | | | | |
| 800 | 330 | 240 | 180 | 160 | 800 | 330 | 240 | 180 | 160 |
| 600 | 410 | 305 | 225 | 200 | 600 | 410 | 305 | 225 | 200 |
| 400 | 510 | 380 | 275 | 245 | 400 | 510 | 380 | 275 | 245 |
| 200 | 640 | 470 | 350 | 305 | 200 | 640 | 470 | 350 | 305 |
| 100 | 720 | 515 | 390 | 340 | 100 | 720 | 515 | 390 | 340 |
| **70 km/h Operating Speed** | | | | | **45 mph Operating Speed** | | | | |
| 800 | 305 | 225 | 173 | 148 | 800 | 305 | 225 | 173 | 148 |
| 600 | 380 | 283 | 210 | 185 | 600 | 380 | 283 | 210 | 185 |
| 400 | 470 | 350 | 258 | 228 | 400 | 470 | 350 | 258 | 228 |
| 200 | 595 | 435 | 325 | 288 | 200 | 595 | 435 | 325 | 288 |
| 100 | 668 | 480 | 363 | 318 | 100 | 668 | 480 | 363 | 318 |
| **80 km/h Operating Speed** | | | | | **50 mph Operating Speed** | | | | |
| 800 | 280 | 210 | 165 | 135 | 800 | 280 | 210 | 165 | 135 |
| 600 | 350 | 260 | 195 | 170 | 600 | 350 | 260 | 195 | 170 |
| 400 | 430 | 320 | 240 | 210 | 400 | 430 | 320 | 240 | 210 |
| 200 | 550 | 400 | 300 | 270 | 200 | 550 | 400 | 300 | 270 |
| 100 | 615 | 445 | 335 | 295 | 100 | 615 | 445 | 335 | 295 |
| **90 km/h Operating Speed** | | | | | **55 mph Operating Speed** | | | | |
| 800 | 255 | 190 | 145 | 125 | 800 | 255 | 190 | 145 | 125 |
| 600 | 320 | 235 | 178 | 155 | 600 | 320 | 235 | 178 | 155 |
| 400 | 398 | 295 | 220 | 193 | 400 | 398 | 295 | 220 | 193 |
| 200 | 500 | 365 | 275 | 243 | 200 | 500 | 365 | 275 | 243 |
| 100 | 560 | 408 | 305 | 268 | 100 | 560 | 408 | 305 | 268 |
| **100 km/h Operating Speed** | | | | | **60 mph Operating Speed** | | | | |
| 800 | 230 | 170 | 125 | 115 | 800 | 230 | 170 | 125 | 115 |
| 600 | 290 | 210 | 160 | 140 | 600 | 290 | 210 | 160 | 140 |
| 400 | 365 | 270 | 200 | 175 | 400 | 365 | 270 | 200 | 175 |
| 200 | 450 | 330 | 250 | 215 | 200 | 450 | 330 | 250 | 215 |
| 100 | 505 | 370 | 275 | 240 | 100 | 505 | 370 | 275 | 240 |

**2025 AM Full Build (WV 115 & Site Drive #2)**

| % LT | Speed | Opposing Veh/h (X1) | Opposing Veh/h (X3) | Actual Opposing Veh/h |
|---|---|---|---|---|
| 5 % Left Turns | 55 mph | 200 | 400 | 225 |
| Advancing Veh/h (Y1) | Advancing Veh/h (Y3) | Actual Advancing Veh/h | Required Advacning (Y2) | AASHTO Analysis |
| 500 | 398 | 267 | 487 | Guideline Not Met |

| Metric | | | | | US Customary | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Opposing Volume (veh/h ) | Advancing Volume (veh/h) | | | | Opposing Volume (veh/h ) | Advancing Volume (veh/h) | | | |
| | 5 % Left Turns | 10 % Left Turns | 20 % Left Turns | 30 % Left Turns | | 5 % Left Turns | 10 % Left Turns | 20 % Left Turns | 30 % Left Turns |
| **60 km/h Operating Speed** | | | | | **40 mph Operating Speed** | | | | |
| 800 | 330 | 240 | 180 | 160 | 800 | 330 | 240 | 180 | 160 |
| 600 | 410 | 305 | 225 | 200 | 600 | 410 | 305 | 225 | 200 |
| 400 | 510 | 380 | 275 | 245 | 400 | 510 | 380 | 275 | 245 |
| 200 | 640 | 470 | 350 | 305 | 200 | 640 | 470 | 350 | 305 |
| 100 | 720 | 515 | 390 | 340 | 100 | 720 | 515 | 390 | 340 |
| **70 km/h Operating Speed** | | | | | **45 mph Operating Speed** | | | | |
| 800 | 305 | 225 | 173 | 148 | 800 | 305 | 225 | 173 | 148 |
| 600 | 380 | 283 | 210 | 185 | 600 | 380 | 283 | 210 | 185 |
| 400 | 470 | 350 | 258 | 228 | 400 | 470 | 350 | 258 | 228 |
| 200 | 595 | 435 | 325 | 288 | 200 | 595 | 435 | 325 | 288 |
| 100 | 668 | 480 | 363 | 318 | 100 | 668 | 480 | 363 | 318 |
| **80 km/h Operating Speed** | | | | | **50 mph Operating Speed** | | | | |
| 800 | 280 | 210 | 165 | 135 | 800 | 280 | 210 | 165 | 135 |
| 600 | 350 | 260 | 195 | 170 | 600 | 350 | 260 | 195 | 170 |
| 400 | 430 | 320 | 240 | 210 | 400 | 430 | 320 | 240 | 210 |
| 200 | 550 | 400 | 300 | 270 | 200 | 550 | 400 | 300 | 270 |
| 100 | 615 | 445 | 335 | 295 | 100 | 615 | 445 | 335 | 295 |
| **90 km/h Operating Speed** | | | | | **55 mph Operating Speed** | | | | |
| 800 | 255 | 190 | 145 | 125 | 800 | 255 | 190 | 145 | 125 |
| 600 | 320 | 235 | 178 | 155 | 600 | 320 | 235 | 178 | 155 |
| 400 | 398 | 295 | 220 | 193 | 400 | 398 | 295 | 220 | 193 |
| 200 | 500 | 365 | 275 | 243 | 200 | 500 | 365 | 275 | 243 |
| 100 | 560 | 408 | 305 | 268 | 100 | 560 | 408 | 305 | 268 |
| **100 km/h Operating Speed** | | | | | **60 mph Operating Speed** | | | | |
| 800 | 230 | 170 | 125 | 115 | 800 | 230 | 170 | 125 | 115 |
| 600 | 290 | 210 | 160 | 140 | 600 | 290 | 210 | 160 | 140 |
| 400 | 365 | 270 | 200 | 175 | 400 | 365 | 270 | 200 | 175 |
| 200 | 450 | 330 | 250 | 215 | 200 | 450 | 330 | 250 | 215 |
| 100 | 505 | 370 | 275 | 240 | 100 | 505 | 370 | 275 | 240 |

**2025 PM Full Build (WV 115 & Site Drive #2)**

| % LT | Speed | Opposing Veh/h (X1) | Opposing Veh/h (X3) | Actual Opposing Veh/h |
|---|---|---|---|---|
| 5 % Left Turns | 55 mph | 400 | 600 | 482 |
| Advancing Veh/h (Y1) | Advancing Veh/h (Y3) | Actual Advancing Veh/h | Required Advacning (Y2) | AASHTO Analysis |
| 398 | 320 | 327 | 366 | Guideline Not Met |

| Metric | | | | | US Customary | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Opposing Volume (veh/h ) | Advancing Volume (veh/h) | | | | Opposing Volume (veh/h ) | Advancing Volume (veh/h) | | | |
| | 5 % Left Turns | 10 % Left Turns | 20 % Left Turns | 30 % Left Turns | | 5 % Left Turns | 10 % Left Turns | 20 % Left Turns | 30 % Left Turns |
| **60 km/h Operating Speed** | | | | | **40 mph Operating Speed** | | | | |
| 800 | 330 | 240 | 180 | 160 | 800 | 330 | 240 | 180 | 160 |
| 600 | 410 | 305 | 225 | 200 | 600 | 410 | 305 | 225 | 200 |
| 400 | 510 | 380 | 275 | 245 | 400 | 510 | 380 | 275 | 245 |
| 200 | 640 | 470 | 350 | 305 | 200 | 640 | 470 | 350 | 305 |
| 100 | 720 | 515 | 390 | 340 | 100 | 720 | 515 | 390 | 340 |
| **70 km/h Operating Speed** | | | | | **45 mph Operating Speed** | | | | |
| 800 | 305 | 225 | 173 | 148 | 800 | 305 | 225 | 173 | 148 |
| 600 | 380 | 283 | 210 | 185 | 600 | 380 | 283 | 210 | 185 |
| 400 | 470 | 350 | 258 | 228 | 400 | 470 | 350 | 258 | 228 |
| 200 | 595 | 435 | 325 | 288 | 200 | 595 | 435 | 325 | 288 |
| 100 | 668 | 480 | 363 | 318 | 100 | 668 | 480 | 363 | 318 |
| **80 km/h Operating Speed** | | | | | **50 mph Operating Speed** | | | | |
| 800 | 280 | 210 | 165 | 135 | 800 | 280 | 210 | 165 | 135 |
| 600 | 350 | 260 | 195 | 170 | 600 | 350 | 260 | 195 | 170 |
| 400 | 430 | 320 | 240 | 210 | 400 | 430 | 320 | 240 | 210 |
| 200 | 550 | 400 | 300 | 270 | 200 | 550 | 400 | 300 | 270 |
| 100 | 615 | 445 | 335 | 295 | 100 | 615 | 445 | 335 | 295 |
| **90 km/h Operating Speed** | | | | | **55 mph Operating Speed** | | | | |
| 800 | 255 | 190 | 145 | 125 | 800 | 255 | 190 | 145 | 125 |
| 600 | 320 | 235 | 178 | 155 | 600 | 320 | 235 | 178 | 155 |
| 400 | 398 | 295 | 220 | 193 | 400 | 398 | 295 | 220 | 193 |
| 200 | 500 | 365 | 275 | 243 | 200 | 500 | 365 | 275 | 243 |
| 100 | 560 | 408 | 305 | 268 | 100 | 560 | 408 | 305 | 268 |
| **100 km/h Operating Speed** | | | | | **60 mph Operating Speed** | | | | |
| 800 | 230 | 170 | 125 | 115 | 800 | 230 | 170 | 125 | 115 |
| 600 | 290 | 210 | 160 | 140 | 600 | 290 | 210 | 160 | 140 |
| 400 | 365 | 270 | 200 | 175 | 400 | 365 | 270 | 200 | 175 |
| 200 | 450 | 330 | 250 | 215 | 200 | 450 | 330 | 250 | 215 |
| 100 | 505 | 370 | 275 | 240 | 100 | 505 | 370 | 275 | 240 |

# Appendix C

## Synchro Outputs

# Appendix C-1

## 2021 Existing Conditions
## AM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 673 | 4 | 7 | 681 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 673 | 4 | 7 | 681 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 8 | 0 | 17 | 0 | 756 | 4 | 8 | 765 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1155 | - | 378 | 765 | 0 | 0 | 760 | 0 | 0 |
| Stage 1 | 756 | - | - | - | - | - | - | - | - |
| Stage 2 | 399 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 190 | 0 | 620 | 844 | - | - | 848 | - | - |
| Stage 1 | 424 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 647 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 188 | 0 | 620 | 844 | - | - | 848 | - | - |
| Mov Cap-2 Maneuver | 188 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 424 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 641 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 15.5 | 0 | 0.1 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 844 | - | - | 188 | 620 | 848 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.042 | 0.027 | 0.009 | - | - |
| HCM Control Delay (s) | 0 | - | - | 25 | 11 | 9.3 | - | - |
| HCM Lane LOS | A | - | - | D | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 0.1 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 5 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 70 | 200 | 229 | 164 | 126 | 54 |
| Future Vol, veh/h | 70 | 200 | 229 | 164 | 126 | 54 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 76 | 217 | 249 | 178 | 137 | 59 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 427 | 0 | - | 0 | 707 | 338 |
| Stage 1 | - | - | - | - | 338 | - |
| Stage 2 | - | - | - | - | 369 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1132 | - | - | - | 402 | 704 |
| Stage 1 | - | - | - | - | 722 | - |
| Stage 2 | - | - | - | - | 699 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1132 | - | - | - | 371 | 704 |
| Mov Cap-2 Maneuver | - | - | - | - | 371 | - |
| Stage 1 | - | - | - | - | 667 | - |
| Stage 2 | - | - | - | - | 699 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 2.2 | 0 | 20 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1132 | - | - | - | 432 |
| HCM Lane V/C Ratio | 0.067 | - | - | - | 0.453 |
| HCM Control Delay (s) | 8.4 | 0 | - | - | 20 |
| HCM Lane LOS | A | A | - | - | C |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | 2.3 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 5.8 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 5 | 188 | 150 | 123 | 214 | 2 | 114 | 0 | 27 | 0 | 3 | 12 |
| Future Vol, veh/h | 5 | 188 | 150 | 123 | 214 | 2 | 114 | 0 | 27 | 0 | 3 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 204 | 163 | 134 | 233 | 2 | 124 | 0 | 29 | 0 | 3 | 13 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 235 | 0 | 0 | 367 | 0 | 0 | 806 | 799 | 286 | 798 | 879 | 234 |
| Stage 1 | - | - | - | - | - | - | 296 | 296 | - | 502 | 502 | - |
| Stage 2 | - | - | - | - | - | - | 510 | 503 | - | 296 | 377 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1332 | - | - | 1192 | - | - | 300 | 319 | 753 | 304 | 286 | 805 |
| Stage 1 | - | - | - | - | - | - | 712 | 668 | - | 552 | 542 | - |
| Stage 2 | - | - | - | - | - | - | 546 | 541 | - | 712 | 616 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1332 | - | - | 1192 | - | - | 266 | 282 | 753 | 266 | 253 | 805 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 266 | 282 | - | 266 | 253 | - |
| Stage 1 | - | - | - | - | - | - | 709 | 665 | - | 550 | 481 | - |
| Stage 2 | - | - | - | - | - | - | 474 | 480 | - | 682 | 614 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3 | 26 | 11.6 |
| HCM LOS | | | D | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 266 | 753 | 1332 | - | - | 1192 | - | - | 560 |
| HCM Lane V/C Ratio | 0.466 | 0.039 | 0.004 | - | - | 0.112 | - | - | 0.029 |
| HCM Control Delay (s) | 29.8 | 10 | 7.7 | - | - | 8.4 | - | - | 11.6 |
| HCM Lane LOS | D | B | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 2.3 | 0.1 | 0 | - | - | 0.4 | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 1 | 190 | 20 | 0 | 293 | 0 | 30 | 0 | 1 | 0 | 1 | 6 |
| Future Vol, veh/h | 1 | 190 | 20 | 0 | 293 | 0 | 30 | 0 | 1 | 0 | 1 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 216 | 23 | 0 | 333 | 0 | 34 | 0 | 1 | 0 | 1 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 333 | 0 | 0 | 239 | 0 | 0 | 567 | 563 | 228 | 563 | 574 | 333 |
| Stage 1 | - | - | - | - | - | - | 230 | 230 | - | 333 | 333 | - |
| Stage 2 | - | - | - | - | - | - | 337 | 333 | - | 230 | 241 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1226 | - | - | 1328 | - | - | 434 | 435 | 811 | 437 | 429 | 709 |
| Stage 1 | - | - | - | - | - | - | 773 | 714 | - | 681 | 644 | - |
| Stage 2 | - | - | - | - | - | - | 677 | 644 | - | 773 | 706 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1226 | - | - | 1328 | - | - | 429 | 435 | 811 | 436 | 429 | 709 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 429 | 435 | - | 436 | 429 | - |
| Stage 1 | - | - | - | - | - | - | 772 | 713 | - | 680 | 644 | - |
| Stage 2 | - | - | - | - | - | - | 669 | 644 | - | 771 | 705 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 14 | 10.6 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 436 | 1226 | - | - | 1328 | - | - | 649 |
| HCM Lane V/C Ratio | 0.081 | 0.001 | - | - | - | - | - | 0.012 |
| HCM Control Delay (s) | 14 | 7.9 | 0 | - | 0 | - | - | 10.6 |
| HCM Lane LOS | B | A | A | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 167 | 18 | 2 | 245 | 34 | 12 |
| Future Vol, veh/h | 167 | 18 | 2 | 245 | 34 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 87 | 87 | 87 | 87 | 87 | 87 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 192 | 21 | 2 | 282 | 39 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 213 | 0 | 478 | 192 |
| Stage 1 | - | - | - | - | 192 | - |
| Stage 2 | - | - | - | - | 286 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1357 | - | 546 | 850 |
| Stage 1 | - | - | - | - | 841 | - |
| Stage 2 | - | - | - | - | 763 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1357 | - | 545 | 850 |
| Mov Cap-2 Maneuver | - | - | - | - | 545 | - |
| Stage 1 | - | - | - | - | 841 | - |
| Stage 2 | - | - | - | - | 762 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 11.4 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 545 | 850 | - | - | 1357 | - |
| HCM Lane V/C Ratio | 0.072 | 0.016 | - | - | 0.002 | - |
| HCM Control Delay (s) | 12.1 | 9.3 | - | - | 7.7 | - |
| HCM Lane LOS | B | A | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 141 | 36 | 12 | 202 | 45 | 11 |
| Future Vol, veh/h | 141 | 36 | 12 | 202 | 45 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 155 | 40 | 13 | 222 | 49 | 12 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 195 | 0 | 403 | 155 |
| Stage 1 | - | - | - | - | 155 | - |
| Stage 2 | - | - | - | - | 248 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1378 | - | 603 | 891 |
| Stage 1 | - | - | - | - | 873 | - |
| Stage 2 | - | - | - | - | 793 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1378 | - | 596 | 891 |
| Mov Cap-2 Maneuver | - | - | - | - | 596 | - |
| Stage 1 | - | - | - | - | 873 | - |
| Stage 2 | - | - | - | - | 784 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.4 | 11.3 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 637 | - | - | 1378 | - |
| HCM Lane V/C Ratio | 0.097 | - | - | 0.01 | - |
| HCM Control Delay (s) | 11.3 | - | - | 7.6 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0 | - |

# Appendix C-2

## 2021 Existing Conditions
## PM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 898 | 12 | 27 | 926 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 898 | 12 | 27 | 926 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 5 | 0 | 18 | 0 | 926 | 12 | 28 | 955 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1460 | - | 463 | 955 | 0 | 0 | 938 | 0 | 0 |
| Stage 1 | 926 | - | - | - | - | - | - | - | - |
| Stage 2 | 534 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 120 | 0 | 546 | 715 | - | - | 726 | - | - |
| Stage 1 | 346 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 552 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 115 | 0 | 546 | 715 | - | - | 726 | - | - |
| Mov Cap-2 Maneuver | 115 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 346 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 530 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 17.7 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 715 | - | - | 115 | 546 | 726 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.045 | 0.032 | 0.038 | - | - |
| HCM Control Delay (s) | 0 | - | - | 37.8 | 11.8 | 10.2 | - | - |
| HCM Lane LOS | A | - | - | E | B | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 0.1 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 8.5 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 36 | 317 | 287 | 150 | 189 | 52 |
| Future Vol, veh/h | 36 | 317 | 287 | 150 | 189 | 52 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 39 | 345 | 312 | 163 | 205 | 57 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 475 | 0 | - | 0 | 817 | 394 |
| Stage 1 | - | - | - | - | 394 | - |
| Stage 2 | - | - | - | - | 423 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1087 | - | - | - | 346 | 655 |
| Stage 1 | - | - | - | - | 681 | - |
| Stage 2 | - | - | - | - | 661 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1087 | - | - | - | 331 | 655 |
| Mov Cap-2 Maneuver | - | - | - | - | 331 | - |
| Stage 1 | - | - | - | - | 651 | - |
| Stage 2 | - | - | - | - | 661 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.9 | 0 | 34.9 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1087 | - | - | - | 371 |
| HCM Lane V/C Ratio | 0.036 | - | - | - | 0.706 |
| HCM Control Delay (s) | 8.4 | 0 | - | - | 34.9 |
| HCM Lane LOS | A | A | - | - | D |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 5.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 5.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 7 | 428 | 140 | 118 | 254 | 0 | 70 | 3 | 47 | 1 | 5 | 6 |
| Future Vol, veh/h | 7 | 428 | 140 | 118 | 254 | 0 | 70 | 3 | 47 | 1 | 5 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 481 | 157 | 133 | 285 | 0 | 79 | 3 | 53 | 1 | 6 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 285 | 0 | 0 | 638 | 0 | 0 | 1134 | 1127 | 560 | 1128 | 1205 | 285 |
| Stage 1 | - | - | - | - | - | - | 576 | 576 | - | 551 | 551 | - |
| Stage 2 | - | - | - | - | - | - | 558 | 551 | - | 577 | 654 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1277 | - | - | 946 | - | - | 180 | 205 | 528 | 181 | 184 | 754 |
| Stage 1 | - | - | - | - | - | - | 503 | 502 | - | 519 | 515 | - |
| Stage 2 | - | - | - | - | - | - | 514 | 515 | - | 502 | 463 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1277 | - | - | 946 | - | - | 154 | 175 | 528 | 143 | 157 | 754 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 154 | 175 | - | 143 | 157 | - |
| Stage 1 | - | - | - | - | - | - | 500 | 499 | - | 516 | 442 | - |
| Stage 2 | - | - | - | - | - | - | 432 | 442 | - | 446 | 460 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3 | 36.4 | 19.8 |
| HCM LOS | | | E | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 155 | 528 | 1277 | - | - | 946 | - | - | 256 |
| HCM Lane V/C Ratio | 0.529 | 0.1 | 0.006 | - | - | 0.14 | - | - | 0.053 |
| HCM Control Delay (s) | 51.7 | 12.6 | 7.8 | - | - | 9.4 | - | - | 19.8 |
| HCM Lane LOS | F | B | A | - | - | A | - | - | C |
| HCM 95th %tile Q(veh) | 2.6 | 0.3 | 0 | - | - | 0.5 | - | - | 0.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 5 | 422 | 47 | 1 | 325 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Future Vol, veh/h | 5 | 422 | 47 | 1 | 325 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 440 | 49 | 1 | 339 | 0 | 20 | 0 | 0 | 0 | 0 | 10 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 339 | 0 | 0 | 489 | 0 | 0 | 821 | 816 | 465 | 816 | 840 | 339 |
| Stage 1 | - | - | - | - | - | - | 475 | 475 | - | 341 | 341 | - |
| Stage 2 | - | - | - | - | - | - | 346 | 341 | - | 475 | 499 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1220 | - | - | 1074 | - | - | 293 | 311 | 597 | 296 | 302 | 703 |
| Stage 1 | - | - | - | - | - | - | 570 | 557 | - | 674 | 639 | - |
| Stage 2 | - | - | - | - | - | - | 670 | 639 | - | 570 | 544 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1220 | - | - | 1074 | - | - | 287 | 309 | 597 | 295 | 300 | 703 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 287 | 309 | - | 295 | 300 | - |
| Stage 1 | - | - | - | - | - | - | 567 | 554 | - | 670 | 638 | - |
| Stage 2 | - | - | - | - | - | - | 659 | 638 | - | 567 | 541 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 18.5 | 10.2 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 287 | 1220 | - | - | 1074 | - | - | 703 |
| HCM Lane V/C Ratio | 0.069 | 0.004 | - | - | 0.001 | - | - | 0.015 |
| HCM Control Delay (s) | 18.5 | 8 | 0 | - | 8.4 | 0 | - | 10.2 |
| HCM Lane LOS | C | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0 | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 377 | 28 | 3 | 296 | 26 | 4 |
| Future Vol, veh/h | 377 | 28 | 3 | 296 | 26 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 401 | 30 | 3 | 315 | 28 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 431 | 0 | 722 | 401 |
| Stage 1 | - | - | - | - | 401 | - |
| Stage 2 | - | - | - | - | 321 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1129 | - | 394 | 649 |
| Stage 1 | - | - | - | - | 676 | - |
| Stage 2 | - | - | - | - | 735 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1129 | - | 393 | 649 |
| Mov Cap-2 Maneuver | - | - | - | - | 393 | - |
| Stage 1 | - | - | - | - | 676 | - |
| Stage 2 | - | - | - | - | 733 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 14.3 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 393 | 649 | - | - | 1129 | - |
| HCM Lane V/C Ratio | 0.07 | 0.007 | - | - | 0.003 | - |
| HCM Control Delay (s) | 14.9 | 10.6 | - | - | 8.2 | - |
| HCM Lane LOS | B | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 297 | 83 | 22 | 244 | 49 | 17 |
| Future Vol, veh/h | 297 | 83 | 22 | 244 | 49 | 17 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 98 | 98 | 98 | 98 | 98 | 98 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 303 | 85 | 22 | 249 | 50 | 17 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 388 | 0 | 596 | 303 |
| Stage 1 | - | - | - | - | 303 | - |
| Stage 2 | - | - | - | - | 293 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1170 | - | 466 | 737 |
| Stage 1 | - | - | - | - | 749 | - |
| Stage 2 | - | - | - | - | 757 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1170 | - | 456 | 737 |
| Mov Cap-2 Maneuver | - | - | - | - | 456 | - |
| Stage 1 | - | - | - | - | 749 | - |
| Stage 2 | - | - | - | - | 740 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.7 | 13.2 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 506 | - | - | 1170 | - |
| HCM Lane V/C Ratio | 0.133 | - | - | 0.019 | - |
| HCM Control Delay (s) | 13.2 | - | - | 8.1 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.5 | - | - | 0.1 | - |

# Appendix C-3

## 2022 No-Build Conditions
## AM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 689 | 4 | 7 | 695 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 689 | 4 | 7 | 695 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 8 | 0 | 17 | 0 | 774 | 4 | 8 | 781 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1181 | - | 387 | 781 | 0 | 0 | 778 | 0 | 0 |
| Stage 1 | 774 | - | - | - | - | - | - | - | - |
| Stage 2 | 407 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 183 | 0 | 611 | 832 | - | - | 834 | - | - |
| Stage 1 | 415 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 641 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 181 | 0 | 611 | 832 | - | - | 834 | - | - |
| Mov Cap-2 Maneuver | 181 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 415 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 635 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 15.8 | 0 | 0.1 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 832 | - | - | 181 | 611 | 834 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.043 | 0.028 | 0.009 | - | - |
| HCM Control Delay (s) | 0 | - | - | 25.8 | 11.1 | 9.4 | - | - |
| HCM Lane LOS | A | - | - | D | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 0.1 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 5.5 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 74 | 212 | 243 | 174 | 134 | 57 |
| Future Vol, veh/h | 74 | 212 | 243 | 174 | 134 | 57 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 80 | 230 | 264 | 189 | 146 | 62 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 453 | 0 | - | 0 | 749 | 359 |
| Stage 1 | - | - | - | - | 359 | - |
| Stage 2 | - | - | - | - | 390 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1108 | - | - | - | 379 | 685 |
| Stage 1 | - | - | - | - | 707 | - |
| Stage 2 | - | - | - | - | 684 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1108 | - | - | - | 348 | 685 |
| Mov Cap-2 Maneuver | - | - | - | - | 348 | - |
| Stage 1 | - | - | - | - | 648 | - |
| Stage 2 | - | - | - | - | 684 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 2.2 | 0 | 22.6 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1108 | - | - | - | 408 |
| HCM Lane V/C Ratio | 0.073 | - | - | - | 0.509 |
| HCM Control Delay (s) | 8.5 | 0 | - | - | 22.6 |
| HCM Lane LOS | A | A | - | - | C |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | 2.8 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 5 | 190 | 162 | 124 | 217 | 2 | 123 | 0 | 27 | 0 | 3 | 12 |
| Future Vol, veh/h | 5 | 190 | 162 | 124 | 217 | 2 | 123 | 0 | 27 | 0 | 3 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 207 | 176 | 135 | 236 | 2 | 134 | 0 | 29 | 0 | 3 | 13 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 238 | 0 | 0 | 383 | 0 | 0 | 820 | 813 | 295 | 812 | 900 | 237 |
| Stage 1 | - | - | - | - | - | - | 305 | 305 | - | 507 | 507 | - |
| Stage 2 | - | - | - | - | - | - | 515 | 508 | - | 305 | 393 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1329 | - | - | 1175 | - | - | 294 | 313 | 744 | 298 | 278 | 802 |
| Stage 1 | - | - | - | - | - | - | 705 | 662 | - | 548 | 539 | - |
| Stage 2 | - | - | - | - | - | - | 543 | 539 | - | 705 | 606 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1329 | - | - | 1175 | - | - | 260 | 276 | 744 | 260 | 245 | 802 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 260 | 276 | - | 260 | 245 | - |
| Stage 1 | - | - | - | - | - | - | 702 | 659 | - | 546 | 477 | - |
| Stage 2 | - | - | - | - | - | - | 470 | 477 | - | 675 | 604 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3.1 | 28.5 | 11.7 |
| HCM LOS | | | D | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 260 | 744 | 1329 | - | - | 1175 | - | - | 551 |
| HCM Lane V/C Ratio | 0.514 | 0.039 | 0.004 | - | - | 0.115 | - | - | 0.03 |
| HCM Control Delay (s) | 32.6 | 10 | 7.7 | - | - | 8.5 | - | - | 11.7 |
| HCM Lane LOS | D | B | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 2.7 | 0.1 | 0 | - | - | 0.4 | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 1 | 192 | 20 | 0 | 297 | 0 | 30 | 0 | 1 | 0 | 1 | 6 |
| Future Vol, veh/h | 1 | 192 | 20 | 0 | 297 | 0 | 30 | 0 | 1 | 0 | 1 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 218 | 23 | 0 | 338 | 0 | 34 | 0 | 1 | 0 | 1 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 338 | 0 | 0 | 241 | 0 | 0 | 574 | 570 | 230 | 570 | 581 | 338 |
| Stage 1 | - | - | - | - | - | - | 232 | 232 | - | 338 | 338 | - |
| Stage 2 | - | - | - | - | - | - | 342 | 338 | - | 232 | 243 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1221 | - | - | 1326 | - | - | 430 | 431 | 809 | 432 | 425 | 704 |
| Stage 1 | - | - | - | - | - | - | 771 | 713 | - | 676 | 641 | - |
| Stage 2 | - | - | - | - | - | - | 673 | 641 | - | 771 | 705 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1221 | - | - | 1326 | - | - | 425 | 431 | 809 | 431 | 425 | 704 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 425 | 431 | - | 431 | 425 | - |
| Stage 1 | - | - | - | - | - | - | 770 | 712 | - | 675 | 641 | - |
| Stage 2 | - | - | - | - | - | - | 665 | 641 | - | 769 | 704 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 14.1 | 10.7 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 432 | 1221 | - | - | 1326 | - | - | 644 |
| HCM Lane V/C Ratio | 0.082 | 0.001 | - | - | - | - | - | 0.012 |
| HCM Control Delay (s) | 14.1 | 8 | 0 | - | 0 | - | - | 10.7 |
| HCM Lane LOS | B | A | A | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 169 | 18 | 2 | 248 | 34 | 12 |
| Future Vol, veh/h | 169 | 18 | 2 | 248 | 34 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 87 | 87 | 87 | 87 | 87 | 87 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 194 | 21 | 2 | 285 | 39 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 215 | 0 | 483 | 194 |
| Stage 1 | - | - | - | - | 194 | - |
| Stage 2 | - | - | - | - | 289 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1355 | - | 542 | 847 |
| Stage 1 | - | - | - | - | 839 | - |
| Stage 2 | - | - | - | - | 760 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1355 | - | 541 | 847 |
| Mov Cap-2 Maneuver | - | - | - | - | 541 | - |
| Stage 1 | - | - | - | - | 839 | - |
| Stage 2 | - | - | - | - | 759 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 11.4 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 541 | 847 | - | - | 1355 | - |
| HCM Lane V/C Ratio | 0.072 | 0.016 | - | - | 0.002 | - |
| HCM Control Delay (s) | 12.2 | 9.3 | - | - | 7.7 | - |
| HCM Lane LOS | B | A | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.2 | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 143 | 36 | 12 | 204 | 46 | 11 |
| Future Vol, veh/h | 143 | 36 | 12 | 204 | 46 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 157 | 40 | 13 | 224 | 51 | 12 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 197 | 0 | 407 | 157 |
| Stage 1 | - | - | - | - | 157 | - |
| Stage 2 | - | - | - | - | 250 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1376 | - | 600 | 889 |
| Stage 1 | - | - | - | - | 871 | - |
| Stage 2 | - | - | - | - | 792 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1376 | - | 593 | 889 |
| Mov Cap-2 Maneuver | - | - | - | - | 593 | - |
| Stage 1 | - | - | - | - | 871 | - |
| Stage 2 | - | - | - | - | 783 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.4 | 11.3 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 634 | - | - | 1376 | - |
| HCM Lane V/C Ratio | 0.099 | - | - | 0.01 | - |
| HCM Control Delay (s) | 11.3 | - | - | 7.6 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0 | - |

# Appendix C-4

## 2022 No-Build Conditions
## PM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 920 | 12 | 27 | 951 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 920 | 12 | 27 | 951 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 5 | 0 | 18 | 0 | 948 | 12 | 28 | 980 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1494 | - | 474 | 980 | 0 | 0 | 960 | 0 | 0 |
| Stage 1 | 948 | - | - | - | - | - | - | - | - |
| Stage 2 | 546 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 114 | 0 | 537 | 700 | - | - | 712 | - | - |
| Stage 1 | 337 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 544 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 110 | 0 | 537 | 700 | - | - | 712 | - | - |
| Mov Cap-2 Maneuver | 110 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 337 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 523 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 18.1 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 700 | - | - | 110 | 537 | 712 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.047 | 0.033 | 0.039 | - | - |
| HCM Control Delay (s) | 0 | - | - | 39.3 | 11.9 | 10.3 | - | - |
| HCM Lane LOS | A | - | - | E | B | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 0.1 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 11.3 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 38 | 336 | 305 | 159 | 201 | 55 |
| Future Vol, veh/h | 38 | 336 | 305 | 159 | 201 | 55 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 41 | 365 | 332 | 173 | 218 | 60 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 505 | 0 | - | 0 | 866 | 419 |
| Stage 1 | - | - | - | - | 419 | - |
| Stage 2 | - | - | - | - | 447 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1060 | - | - | - | 324 | 634 |
| Stage 1 | - | - | - | - | 664 | - |
| Stage 2 | - | - | - | - | 644 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1060 | - | - | - | 308 | 634 |
| Mov Cap-2 Maneuver | - | - | - | - | 308 | - |
| Stage 1 | - | - | - | - | 631 | - |
| Stage 2 | - | - | - | - | 644 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.9 | 0 | 46.9 |
| HCM LOS | | | E |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1060 | - | - | - | 346 |
| HCM Lane V/C Ratio | 0.039 | - | - | - | 0.804 |
| HCM Control Delay (s) | 8.5 | 0 | - | - | 46.9 |
| HCM Lane LOS | A | A | - | - | E |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 6.8 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.8 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 7 | 443 | 152 | 119 | 257 | 0 | 82 | 3 | 48 | 1 | 5 | 6 |
| Future Vol, veh/h | 7 | 443 | 152 | 119 | 257 | 0 | 82 | 3 | 48 | 1 | 5 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 498 | 171 | 134 | 289 | 0 | 92 | 3 | 54 | 1 | 6 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 289 | 0 | 0 | 669 | 0 | 0 | 1164 | 1157 | 584 | 1158 | 1242 | 289 |
| Stage 1 | - | - | - | - | - | - | 600 | 600 | - | 557 | 557 | - |
| Stage 2 | - | - | - | - | - | - | 564 | 557 | - | 601 | 685 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1273 | - | - | 921 | - | - | 171 | 196 | 512 | 173 | 175 | 750 |
| Stage 1 | - | - | - | - | - | - | 488 | 490 | - | 515 | 512 | - |
| Stage 2 | - | - | - | - | - | - | 510 | 512 | - | 487 | 448 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1273 | - | - | 921 | - | - | 146 | 167 | 512 | 135 | 149 | 750 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 146 | 167 | - | 135 | 149 | - |
| Stage 1 | - | - | - | - | - | - | 485 | 487 | - | 512 | 438 | - |
| Stage 2 | - | - | - | - | - | - | 426 | 438 | - | 430 | 445 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3 | 47 | 20.5 |
| HCM LOS | | | E | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 147 | 512 | 1273 | - | - | 921 | - | - | 245 |
| HCM Lane V/C Ratio | 0.65 | 0.105 | 0.006 | - | - | 0.145 | - | - | 0.055 |
| HCM Control Delay (s) | 66.3 | 12.9 | 7.8 | - | - | 9.6 | - | - | 20.5 |
| HCM Lane LOS | F | B | A | - | - | A | - | - | C |
| HCM 95th %tile Q(veh) | 3.6 | 0.4 | 0 | - | - | 0.5 | - | - | 0.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 5 | 427 | 48 | 1 | 329 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Future Vol, veh/h | 5 | 427 | 48 | 1 | 329 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 445 | 50 | 1 | 343 | 0 | 20 | 0 | 0 | 0 | 0 | 10 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 343 | 0 | 0 | 495 | 0 | 0 | 830 | 825 | 470 | 825 | 850 | 343 |
| Stage 1 | - | - | - | - | - | - | 480 | 480 | - | 345 | 345 | - |
| Stage 2 | - | - | - | - | - | - | 350 | 345 | - | 480 | 505 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1216 | - | - | 1069 | - | - | 289 | 308 | 594 | 292 | 298 | 700 |
| Stage 1 | - | - | - | - | - | - | 567 | 554 | - | 671 | 636 | - |
| Stage 2 | - | - | - | - | - | - | 666 | 636 | - | 567 | 540 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1216 | - | - | 1069 | - | - | 283 | 306 | 594 | 291 | 296 | 700 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 283 | 306 | - | 291 | 296 | - |
| Stage 1 | - | - | - | - | - | - | 564 | 551 | - | 667 | 635 | - |
| Stage 2 | - | - | - | - | - | - | 655 | 635 | - | 564 | 537 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 18.7 | 10.2 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 283 | 1216 | - | - | 1069 | - | - | 700 |
| HCM Lane V/C Ratio | 0.07 | 0.004 | - | - | 0.001 | - | - | 0.015 |
| HCM Control Delay (s) | 18.7 | 8 | 0 | - | 8.4 | 0 | - | 10.2 |
| HCM Lane LOS | C | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0 | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 382 | 28 | 3 | 300 | 26 | 4 |
| Future Vol, veh/h | 382 | 28 | 3 | 300 | 26 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 406 | 30 | 3 | 319 | 28 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 436 | 0 | 731 | 406 |
| Stage 1 | - | - | - | - | 406 | - |
| Stage 2 | - | - | - | - | 325 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1124 | - | 389 | 645 |
| Stage 1 | - | - | - | - | 673 | - |
| Stage 2 | - | - | - | - | 732 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1124 | - | 388 | 645 |
| Mov Cap-2 Maneuver | - | - | - | - | 388 | - |
| Stage 1 | - | - | - | - | 673 | - |
| Stage 2 | - | - | - | - | 730 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 14.4 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 388 | 645 | - | - | 1124 | - |
| HCM Lane V/C Ratio | 0.071 | 0.007 | - | - | 0.003 | - |
| HCM Control Delay (s) | 15 | 10.6 | - | - | 8.2 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 301 | 84 | 22 | 247 | 50 | 17 |
| Future Vol, veh/h | 301 | 84 | 22 | 247 | 50 | 17 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 98 | 98 | 98 | 98 | 98 | 98 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 307 | 86 | 22 | 252 | 51 | 17 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 393 | 0 | 603 | 307 |
| Stage 1 | - | - | - | - | 307 | - |
| Stage 2 | - | - | - | - | 296 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1166 | - | 462 | 733 |
| Stage 1 | - | - | - | - | 746 | - |
| Stage 2 | - | - | - | - | 755 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1166 | - | 452 | 733 |
| Mov Cap-2 Maneuver | - | - | - | - | 452 | - |
| Stage 1 | - | - | - | - | 746 | - |
| Stage 2 | - | - | - | - | 738 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.7 | 13.3 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 501 | - | - | 1166 | - |
| HCM Lane V/C Ratio | 0.136 | - | - | 0.019 | - |
| HCM Control Delay (s) | 13.3 | - | - | 8.1 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.5 | - | - | 0.1 | - |

# Appendix C-5

## 2022 Phase 1 Build Conditions
## AM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 694 | 4 | 7 | 708 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 694 | 4 | 7 | 708 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 1 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 8 | 0 | 17 | 0 | 780 | 4 | 8 | 796 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1194 | - | 390 | 796 | 0 | 0 | 784 | 0 | 0 |
| Stage 1 | 780 | - | - | - | - | - | - | - | - |
| Stage 2 | 414 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 179 | 0 | 609 | 822 | - | - | 830 | - | - |
| Stage 1 | 412 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 635 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 177 | 0 | 609 | 822 | - | - | 830 | - | - |
| Mov Cap-2 Maneuver | 177 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 412 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 629 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 15.9 | 0 | 0.1 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 822 | - | - | 177 | 609 | 830 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.044 | 0.028 | 0.009 | - | - |
| HCM Control Delay (s) | 0 | - | - | 26.3 | 11.1 | 9.4 | - | - |
| HCM Lane LOS | A | - | - | D | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 0.1 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 5.7 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 74 | 218 | 259 | 174 | 134 | 57 |
| Future Vol, veh/h | 74 | 218 | 259 | 174 | 134 | 57 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 80 | 237 | 282 | 189 | 146 | 62 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 471 | 0 | - | 0 | 774 | 377 |
| Stage 1 | - | - | - | - | 377 | - |
| Stage 2 | - | - | - | - | 397 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1091 | - | - | - | 367 | 670 |
| Stage 1 | - | - | - | - | 694 | - |
| Stage 2 | - | - | - | - | 679 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1091 | - | - | - | 336 | 670 |
| Mov Cap-2 Maneuver | - | - | - | - | 336 | - |
| Stage 1 | - | - | - | - | 636 | - |
| Stage 2 | - | - | - | - | 679 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 2.2 | 0 | 23.8 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1091 | - | - | - | 395 |
| HCM Lane V/C Ratio | 0.074 | - | - | - | 0.526 |
| HCM Control Delay (s) | 8.6 | 0 | - | - | 23.8 |
| HCM Lane LOS | A | A | - | - | C |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | 3 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 5 | 203 | 162 | 143 | 246 | 2 | 123 | 0 | 32 | 0 | 3 | 12 |
| Future Vol, veh/h | 5 | 203 | 162 | 143 | 246 | 2 | 123 | 0 | 32 | 0 | 3 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 221 | 176 | 155 | 267 | 2 | 134 | 0 | 35 | 0 | 3 | 13 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 269 | 0 | 0 | 397 | 0 | 0 | 905 | 898 | 309 | 897 | 985 | 268 |
| Stage 1 | - | - | - | - | - | - | 319 | 319 | - | 578 | 578 | - |
| Stage 2 | - | - | - | - | - | - | 586 | 579 | - | 319 | 407 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1295 | - | - | 1162 | - | - | 257 | 279 | 731 | 261 | 248 | 771 |
| Stage 1 | - | - | - | - | - | - | 693 | 653 | - | 501 | 501 | - |
| Stage 2 | - | - | - | - | - | - | 496 | 501 | - | 693 | 597 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1295 | - | - | 1162 | - | - | 224 | 241 | 731 | 223 | 214 | 771 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 224 | 241 | - | 223 | 214 | - |
| Stage 1 | - | - | - | - | - | - | 690 | 650 | - | 499 | 434 | - |
| Stage 2 | - | - | - | - | - | - | 419 | 434 | - | 657 | 595 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3.1 | 35.8 | 12.3 |
| HCM LOS | | | E | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 224 | 731 | 1295 | - | - | 1162 | - | - | 507 |
| HCM Lane V/C Ratio | 0.597 | 0.048 | 0.004 | - | - | 0.134 | - | - | 0.032 |
| HCM Control Delay (s) | 42.4 | 10.2 | 7.8 | - | - | 8.6 | - | - | 12.3 |
| HCM Lane LOS | E | B | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 3.4 | 0.1 | 0 | - | - | 0.5 | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 1 | 210 | 20 | 0 | 345 | 0 | 30 | 0 | 1 | 0 | 1 | 6 |
| Future Vol, veh/h | 1 | 210 | 20 | 0 | 345 | 0 | 30 | 0 | 1 | 0 | 1 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 239 | 23 | 0 | 392 | 0 | 34 | 0 | 1 | 0 | 1 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 392 | 0 | 0 | 262 | 0 | 0 | 649 | 645 | 251 | 645 | 656 | 392 |
| Stage 1 | - | - | - | - | - | - | 253 | 253 | - | 392 | 392 | - |
| Stage 2 | - | - | - | - | - | - | 396 | 392 | - | 253 | 264 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1167 | - | - | 1302 | - | - | 383 | 391 | 788 | 385 | 385 | 657 |
| Stage 1 | - | - | - | - | - | - | 751 | 698 | - | 633 | 606 | - |
| Stage 2 | - | - | - | - | - | - | 629 | 606 | - | 751 | 690 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1167 | - | - | 1302 | - | - | 378 | 391 | 788 | 384 | 385 | 657 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 378 | 391 | - | 384 | 385 | - |
| Stage 1 | - | - | - | - | - | - | 750 | 697 | - | 632 | 606 | - |
| Stage 2 | - | - | - | - | - | - | 621 | 606 | - | 749 | 689 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 15.3 | 11.1 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 384 | 1167 | - | - | 1302 | - | - | 597 |
| HCM Lane V/C Ratio | 0.092 | 0.001 | - | - | - | - | - | 0.013 |
| HCM Control Delay (s) | 15.3 | 8.1 | 0 | - | 0 | - | - | 11.1 |
| HCM Lane LOS | C | A | A | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 187 | 18 | 2 | 296 | 34 | 12 |
| Future Vol, veh/h | 187 | 18 | 2 | 296 | 34 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 87 | 87 | 87 | 87 | 87 | 87 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 215 | 21 | 2 | 340 | 39 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 236 | 0 | 559 | 215 |
| Stage 1 | - | - | - | - | 215 | - |
| Stage 2 | - | - | - | - | 344 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1331 | - | 490 | 825 |
| Stage 1 | - | - | - | - | 821 | - |
| Stage 2 | - | - | - | - | 718 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1331 | - | 489 | 825 |
| Mov Cap-2 Maneuver | - | - | - | - | 489 | - |
| Stage 1 | - | - | - | - | 821 | - |
| Stage 2 | - | - | - | - | 717 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 12.1 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 489 | 825 | - | - | 1331 | - |
| HCM Lane V/C Ratio | 0.08 | 0.017 | - | - | 0.002 | - |
| HCM Control Delay (s) | 13 | 9.4 | - | - | 7.7 | - |
| HCM Lane LOS | B | A | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.3 | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 148 | 36 | 12 | 206 | 46 | 11 |
| Future Vol, veh/h | 148 | 36 | 12 | 206 | 46 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 163 | 40 | 13 | 226 | 51 | 12 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 203 | 0 | 415 | 163 |
| Stage 1 | - | - | - | - | 163 | - |
| Stage 2 | - | - | - | - | 252 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1369 | - | 594 | 882 |
| Stage 1 | - | - | - | - | 866 | - |
| Stage 2 | - | - | - | - | 790 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1369 | - | 587 | 882 |
| Mov Cap-2 Maneuver | - | - | - | - | 587 | - |
| Stage 1 | - | - | - | - | 866 | - |
| Stage 2 | - | - | - | - | 781 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.4 | 11.4 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 628 | - | - | 1369 | - |
| HCM Lane V/C Ratio | 0.1 | - | - | 0.01 | - |
| HCM Control Delay (s) | 11.4 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.8 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 188 | 11 | 1 | 268 | 30 | 4 |
| Future Vol, veh/h | 188 | 11 | 1 | 268 | 30 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 209 | 12 | 1 | 298 | 33 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 221 | 0 | 515 | 215 |
| Stage 1 | - | - | - | - | 215 | - |
| Stage 2 | - | - | - | - | 300 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1348 | - | 520 | 825 |
| Stage 1 | - | - | - | - | 821 | - |
| Stage 2 | - | - | - | - | 752 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1348 | - | 519 | 825 |
| Mov Cap-2 Maneuver | - | - | - | - | 519 | - |
| Stage 1 | - | - | - | - | 821 | - |
| Stage 2 | - | - | - | - | 751 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 12 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 519 | 825 | - | - | 1348 | - |
| HCM Lane V/C Ratio | 0.064 | 0.005 | - | - | 0.001 | - |
| HCM Control Delay (s) | 12.4 | 9.4 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 185 | 7 | 1 | 251 | 18 | 1 |
| Future Vol, veh/h | 185 | 7 | 1 | 251 | 18 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 206 | 8 | 1 | 279 | 20 | 1 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 214 | 0 | 491 | 210 |
| Stage 1 | - | - | - | - | 210 | - |
| Stage 2 | - | - | - | - | 281 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1356 | - | 537 | 830 |
| Stage 1 | - | - | - | - | 825 | - |
| Stage 2 | - | - | - | - | 767 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1356 | - | 536 | 830 |
| Mov Cap-2 Maneuver | - | - | - | - | 536 | - |
| Stage 1 | - | - | - | - | 825 | - |
| Stage 2 | - | - | - | - | 766 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 11.9 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 536 | 830 | - | - | 1356 | - |
| HCM Lane V/C Ratio | 0.037 | 0.001 | - | - | 0.001 | - |
| HCM Control Delay (s) | 12 | 9.3 | - | - | 7.7 | - |
| HCM Lane LOS | B | A | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.1 | 0 | - | - | 0 | - |

# Appendix C-6

## 2022 Phase 1 Build Conditions
## PM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 934 | 12 | 27 | 960 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 934 | 12 | 27 | 960 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 1 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 5 | 0 | 18 | 0 | 963 | 12 | 28 | 990 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1514 | - | 482 | 990 | 0 | 0 | 975 | 0 | 0 |
| Stage 1 | 963 | - | - | - | - | - | - | - | - |
| Stage 2 | 551 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 110 | 0 | 530 | 694 | - | - | 703 | - | - |
| Stage 1 | 331 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 541 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 106 | 0 | 530 | 694 | - | - | 703 | - | - |
| Mov Cap-2 Maneuver | 106 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 331 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 519 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 18.5 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 694 | - | - | 106 | 530 | 703 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.049 | 0.033 | 0.04 | - | - |
| HCM Control Delay (s) | 0 | - | - | 40.7 | 12 | 10.3 | - | - |
| HCM Lane LOS | A | - | - | E | B | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.2 | 0.1 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 12.3 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 38 | 353 | 315 | 159 | 201 | 55 |
| Future Vol, veh/h | 38 | 353 | 315 | 159 | 201 | 55 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 41 | 384 | 342 | 173 | 218 | 60 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 515 | 0 | - | 0 | 895 | 429 |
| Stage 1 | - | - | - | - | 429 | - |
| Stage 2 | - | - | - | - | 466 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1051 | - | - | - | 311 | 626 |
| Stage 1 | - | - | - | - | 657 | - |
| Stage 2 | - | - | - | - | 632 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1051 | - | - | - | 295 | 626 |
| Mov Cap-2 Maneuver | - | - | - | - | 295 | - |
| Stage 1 | - | - | - | - | 624 | - |
| Stage 2 | - | - | - | - | 632 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.8 | 0 | 52.5 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1051 | - | - | - | 333 |
| HCM Lane V/C Ratio | 0.039 | - | - | - | 0.836 |
| HCM Control Delay (s) | 8.6 | 0 | - | - | 52.5 |
| HCM Lane LOS | A | A | - | - | F |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 7.4 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 8.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 7 | 470 | 152 | 131 | 276 | 0 | 82 | 3 | 62 | 1 | 5 | 6 |
| Future Vol, veh/h | 7 | 470 | 152 | 131 | 276 | 0 | 82 | 3 | 62 | 1 | 5 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 528 | 171 | 147 | 310 | 0 | 92 | 3 | 70 | 1 | 6 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 310 | 0 | 0 | 699 | 0 | 0 | 1241 | 1234 | 614 | 1235 | 1319 | 310 |
| Stage 1 | - | - | - | - | - | - | 630 | 630 | - | 604 | 604 | - |
| Stage 2 | - | - | - | - | - | - | 611 | 604 | - | 631 | 715 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1250 | - | - | 898 | - | - | 152 | 177 | 492 | 153 | 157 | 730 |
| Stage 1 | - | - | - | - | - | - | 470 | 475 | - | 485 | 488 | - |
| Stage 2 | - | - | - | - | - | - | 481 | 488 | - | 469 | 434 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1250 | - | - | 898 | - | - | 127 | 147 | 492 | 112 | 130 | 730 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 127 | 147 | - | 112 | 130 | - |
| Stage 1 | - | - | - | - | - | - | 467 | 472 | - | 482 | 408 | - |
| Stage 2 | - | - | - | - | - | - | 393 | 408 | - | 397 | 431 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3.2 | 57 | 22.8 |
| HCM LOS | | | F | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 128 | 492 | 1250 | - | - | 898 | - | - | 216 |
| HCM Lane V/C Ratio | 0.746 | 0.142 | 0.006 | - | - | 0.164 | - | - | 0.062 |
| HCM Control Delay (s) | 88.7 | 13.5 | 7.9 | - | - | 9.8 | - | - | 22.8 |
| HCM Lane LOS | F | B | A | - | - | A | - | - | C |
| HCM 95th %tile Q(veh) | 4.3 | 0.5 | 0 | - | - | 0.6 | - | - | 0.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 5 | 477 | 48 | 1 | 360 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Future Vol, veh/h | 5 | 477 | 48 | 1 | 360 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 497 | 50 | 1 | 375 | 0 | 20 | 0 | 0 | 0 | 0 | 10 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 375 | 0 | 0 | 547 | 0 | 0 | 914 | 909 | 522 | 909 | 934 | 375 |
| Stage 1 | - | - | - | - | - | - | 532 | 532 | - | 377 | 377 | - |
| Stage 2 | - | - | - | - | - | - | 382 | 377 | - | 532 | 557 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1183 | - | - | 1022 | - | - | 254 | 275 | 555 | 256 | 266 | 671 |
| Stage 1 | - | - | - | - | - | - | 531 | 526 | - | 644 | 616 | - |
| Stage 2 | - | - | - | - | - | - | 640 | 616 | - | 531 | 512 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1183 | - | - | 1022 | - | - | 249 | 273 | 555 | 255 | 264 | 671 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 249 | 273 | - | 255 | 264 | - |
| Stage 1 | - | - | - | - | - | - | 528 | 523 | - | 640 | 615 | - |
| Stage 2 | - | - | - | - | - | - | 629 | 615 | - | 528 | 509 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 20.7 | 10.5 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 249 | 1183 | - | - | 1022 | - | - | 671 |
| HCM Lane V/C Ratio | 0.079 | 0.004 | - | - | 0.001 | - | - | 0.016 |
| HCM Control Delay (s) | 20.7 | 8.1 | 0 | - | 8.5 | 0 | - | 10.5 |
| HCM Lane LOS | C | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 432 | 28 | 3 | 331 | 26 | 4 |
| Future Vol, veh/h | 432 | 28 | 3 | 331 | 26 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 460 | 30 | 3 | 352 | 28 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 490 | 0 | 818 | 460 |
| Stage 1 | - | - | - | - | 460 | - |
| Stage 2 | - | - | - | - | 358 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1073 | - | 346 | 601 |
| Stage 1 | - | - | - | - | 636 | - |
| Stage 2 | - | - | - | - | 707 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1073 | - | 345 | 601 |
| Mov Cap-2 Maneuver | - | - | - | - | 345 | - |
| Stage 1 | - | - | - | - | 636 | - |
| Stage 2 | - | - | - | - | 705 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 15.6 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 345 | 601 | - | - | 1073 | - |
| HCM Lane V/C Ratio | 0.08 | 0.007 | - | - | 0.003 | - |
| HCM Control Delay (s) | 16.3 | 11 | - | - | 8.4 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 305 | 84 | 22 | 252 | 50 | 17 |
| Future Vol, veh/h | 305 | 84 | 22 | 252 | 50 | 17 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 98 | 98 | 98 | 98 | 98 | 98 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 311 | 86 | 22 | 257 | 51 | 17 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 397 | 0 | 612 | 311 |
| Stage 1 | - | - | - | - | 311 | - |
| Stage 2 | - | - | - | - | 301 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1162 | - | 456 | 729 |
| Stage 1 | - | - | - | - | 743 | - |
| Stage 2 | - | - | - | - | 751 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1162 | - | 446 | 729 |
| Mov Cap-2 Maneuver | - | - | - | - | 446 | - |
| Stage 1 | - | - | - | - | 743 | - |
| Stage 2 | - | - | - | - | 734 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.7 | 13.4 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 495 | - | - | 1162 | - |
| HCM Lane V/C Ratio | 0.138 | - | - | 0.019 | - |
| HCM Control Delay (s) | 13.4 | - | - | 8.2 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.5 | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 406 | 31 | 4 | 309 | 19 | 3 |
| Future Vol, veh/h | 406 | 31 | 4 | 309 | 19 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 451 | 34 | 4 | 343 | 21 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 485 | 0 | 819 | 468 |
| Stage 1 | - | - | - | - | 468 | - |
| Stage 2 | - | - | - | - | 351 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1078 | - | 345 | 595 |
| Stage 1 | - | - | - | - | 630 | - |
| Stage 2 | - | - | - | - | 713 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1078 | - | 343 | 595 |
| Mov Cap-2 Maneuver | - | - | - | - | 343 | - |
| Stage 1 | - | - | - | - | 630 | - |
| Stage 2 | - | - | - | - | 709 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 15.5 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 343 | 595 | - | - | 1078 | - |
| HCM Lane V/C Ratio | 0.062 | 0.006 | - | - | 0.004 | - |
| HCM Control Delay (s) | 16.2 | 11.1 | - | - | 8.4 | 0 |
| HCM Lane LOS | C | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 389 | 20 | 1 | 301 | 12 | 1 |
| Future Vol, veh/h | 389 | 20 | 1 | 301 | 12 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 432 | 22 | 1 | 334 | 13 | 1 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 454 | 0 | 779 | 443 |
| Stage 1 | - | - | - | - | 443 | - |
| Stage 2 | - | - | - | - | 336 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1107 | - | 364 | 615 |
| Stage 1 | - | - | - | - | 647 | - |
| Stage 2 | - | - | - | - | 724 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1107 | - | 364 | 615 |
| Mov Cap-2 Maneuver | - | - | - | - | 364 | - |
| Stage 1 | - | - | - | - | 647 | - |
| Stage 2 | - | - | - | - | 723 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 15 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 364 | 615 | - | - | 1107 | - |
| HCM Lane V/C Ratio | 0.037 | 0.002 | - | - | 0.001 | - |
| HCM Control Delay (s) | 15.3 | 10.9 | - | - | 8.3 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.1 | 0 | - | - | 0 | - |

# Appendix C-7

## 2024 Partial Build Conditions
## AM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 719 | 4 | 7 | 748 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 719 | 4 | 7 | 748 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 1 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 8 | 0 | 17 | 0 | 808 | 4 | 8 | 840 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1244 | - | 404 | 840 | 0 | 0 | 812 | 0 | 0 |
| Stage 1 | 808 | - | - | - | - | - | - | - | - |
| Stage 2 | 436 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 166 | 0 | 596 | 791 | - | - | 810 | - | - |
| Stage 1 | 399 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 619 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 164 | 0 | 596 | 791 | - | - | 810 | - | - |
| Mov Cap-2 Maneuver | 164 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 399 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 613 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 16.6 | 0 | 0.1 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 791 | - | - | 164 | 596 | 810 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.048 | 0.028 | 0.01 | - | - |
| HCM Control Delay (s) | 0 | - | - | 28.1 | 11.2 | 9.5 | - | - |
| HCM Lane LOS | A | - | - | D | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 0.1 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.4 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 76 | 226 | 275 | 179 | 142 | 60 |
| Future Vol, veh/h | 76 | 226 | 275 | 179 | 142 | 60 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 83 | 246 | 299 | 195 | 154 | 65 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 494 | 0 | - | 0 | 809 | 397 |
| Stage 1 | - | - | - | - | 397 | - |
| Stage 2 | - | - | - | - | 412 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1070 | - | - | - | 350 | 652 |
| Stage 1 | - | - | - | - | 679 | - |
| Stage 2 | - | - | - | - | 669 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1070 | - | - | - | 319 | 652 |
| Mov Cap-2 Maneuver | - | - | - | - | 319 | - |
| Stage 1 | - | - | - | - | 618 | - |
| Stage 2 | - | - | - | - | 669 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 2.2 | 0 | 27.2 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1070 | - | - | - | 376 |
| HCM Lane V/C Ratio | 0.077 | - | - | - | 0.584 |
| HCM Control Delay (s) | 8.6 | 0 | - | - | 27.2 |
| HCM Lane LOS | A | A | - | - | D |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | 3.6 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 10.2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 5 | 208 | 303 | 146 | 251 | 2 | 134 | 0 | 33 | 0 | 3 | 12 |
| Future Vol, veh/h | 5 | 208 | 303 | 146 | 251 | 2 | 134 | 0 | 33 | 0 | 3 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 226 | 329 | 159 | 273 | 2 | 146 | 0 | 36 | 0 | 3 | 13 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 275 | 0 | 0 | 555 | 0 | 0 | 1001 | 994 | 391 | 993 | 1157 | 274 |
| Stage 1 | - | - | - | - | - | - | 401 | 401 | - | 592 | 592 | - |
| Stage 2 | - | - | - | - | - | - | 600 | 593 | - | 401 | 565 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1288 | - | - | 1015 | - | - | 222 | 245 | 658 | 224 | 196 | 765 |
| Stage 1 | - | - | - | - | - | - | 626 | 601 | - | 493 | 494 | - |
| Stage 2 | - | - | - | - | - | - | 488 | 493 | - | 626 | 508 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1288 | - | - | 1015 | - | - | 189 | 206 | 658 | 186 | 165 | 765 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 189 | 206 | - | 186 | 165 | - |
| Stage 1 | - | - | - | - | - | - | 623 | 599 | - | 491 | 416 | - |
| Stage 2 | - | - | - | - | - | - | 401 | 416 | - | 590 | 506 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3.4 | 57.3 | 13.4 |
| HCM LOS | | | F | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 189 | 658 | 1288 | - | - | 1015 | - | - | 443 |
| HCM Lane V/C Ratio | 0.771 | 0.055 | 0.004 | - | - | 0.156 | - | - | 0.037 |
| HCM Control Delay (s) | 68.7 | 10.8 | 7.8 | - | - | 9.2 | - | - | 13.4 |
| HCM Lane LOS | F | B | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 5.2 | 0.2 | 0 | - | - | 0.6 | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 1 | 215 | 20 | 0 | 352 | 0 | 31 | 0 | 1 | 0 | 1 | 6 |
| Future Vol, veh/h | 1 | 215 | 20 | 0 | 352 | 0 | 31 | 0 | 1 | 0 | 1 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 244 | 23 | 0 | 400 | 0 | 35 | 0 | 1 | 0 | 1 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 400 | 0 | 0 | 267 | 0 | 0 | 662 | 658 | 256 | 658 | 669 | 400 |
| Stage 1 | - | - | - | - | - | - | 258 | 258 | - | 400 | 400 | - |
| Stage 2 | - | - | - | - | - | - | 404 | 400 | - | 258 | 269 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1159 | - | - | 1297 | - | - | 375 | 384 | 783 | 378 | 379 | 650 |
| Stage 1 | - | - | - | - | - | - | 747 | 694 | - | 626 | 602 | - |
| Stage 2 | - | - | - | - | - | - | 623 | 602 | - | 747 | 687 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1159 | - | - | 1297 | - | - | 370 | 384 | 783 | 377 | 379 | 650 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 370 | 384 | - | 377 | 379 | - |
| Stage 1 | - | - | - | - | - | - | 746 | 693 | - | 625 | 602 | - |
| Stage 2 | - | - | - | - | - | - | 615 | 602 | - | 745 | 686 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 15.6 | 11.2 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 376 | 1159 | - | - | 1297 | - | - | 590 |
| HCM Lane V/C Ratio | 0.097 | 0.001 | - | - | - | - | - | 0.013 |
| HCM Control Delay (s) | 15.6 | 8.1 | 0 | - | 0 | - | - | 11.2 |
| HCM Lane LOS | C | A | A | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 191 | 18 | 2 | 302 | 35 | 12 |
| Future Vol, veh/h | 191 | 18 | 2 | 302 | 35 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 87 | 87 | 87 | 87 | 87 | 87 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 220 | 21 | 2 | 347 | 40 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 241 | 0 | 571 | 220 |
| Stage 1 | - | - | - | - | 220 | - |
| Stage 2 | - | - | - | - | 351 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1326 | - | 482 | 820 |
| Stage 1 | - | - | - | - | 817 | - |
| Stage 2 | - | - | - | - | 713 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1326 | - | 481 | 820 |
| Mov Cap-2 Maneuver | - | - | - | - | 481 | - |
| Stage 1 | - | - | - | - | 817 | - |
| Stage 2 | - | - | - | - | 712 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 12.3 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 481 | 820 | - | - | 1326 | - |
| HCM Lane V/C Ratio | 0.084 | 0.017 | - | - | 0.002 | - |
| HCM Control Delay (s) | 13.2 | 9.5 | - | - | 7.7 | - |
| HCM Lane LOS | B | A | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.3 | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 151 | 37 | 12 | 211 | 47 | 11 |
| Future Vol, veh/h | 151 | 37 | 12 | 211 | 47 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 166 | 41 | 13 | 232 | 52 | 12 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 207 | 0 | 424 | 166 |
| Stage 1 | - | - | - | - | 166 | - |
| Stage 2 | - | - | - | - | 258 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1364 | - | 587 | 878 |
| Stage 1 | - | - | - | - | 863 | - |
| Stage 2 | - | - | - | - | 785 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1364 | - | 581 | 878 |
| Mov Cap-2 Maneuver | - | - | - | - | 581 | - |
| Stage 1 | - | - | - | - | 863 | - |
| Stage 2 | - | - | - | - | 776 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.4 | 11.5 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 621 | - | - | 1364 | - |
| HCM Lane V/C Ratio | 0.103 | - | - | 0.01 | - |
| HCM Control Delay (s) | 11.5 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.8 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 192 | 11 | 1 | 274 | 30 | 4 |
| Future Vol, veh/h | 192 | 11 | 1 | 274 | 30 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 213 | 12 | 1 | 304 | 33 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 225 | 0 | 525 | 219 |
| Stage 1 | - | - | - | - | 219 | - |
| Stage 2 | - | - | - | - | 306 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1344 | - | 513 | 821 |
| Stage 1 | - | - | - | - | 817 | - |
| Stage 2 | - | - | - | - | 747 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1344 | - | 512 | 821 |
| Mov Cap-2 Maneuver | - | - | - | - | 512 | - |
| Stage 1 | - | - | - | - | 817 | - |
| Stage 2 | - | - | - | - | 746 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 12.1 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 512 | 821 | - | - | 1344 | - |
| HCM Lane V/C Ratio | 0.065 | 0.005 | - | - | 0.001 | - |
| HCM Control Delay (s) | 12.5 | 9.4 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 189 | 7 | 1 | 257 | 18 | 1 |
| Future Vol, veh/h | 189 | 7 | 1 | 257 | 18 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 210 | 8 | 1 | 286 | 20 | 1 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 218 | 0 | 502 | 214 |
| Stage 1 | - | - | - | - | 214 | - |
| Stage 2 | - | - | - | - | 288 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1352 | - | 529 | 826 |
| Stage 1 | - | - | - | - | 822 | - |
| Stage 2 | - | - | - | - | 761 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1352 | - | 528 | 826 |
| Mov Cap-2 Maneuver | - | - | - | - | 528 | - |
| Stage 1 | - | - | - | - | 822 | - |
| Stage 2 | - | - | - | - | 760 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 12 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 528 | 826 | - | - | 1352 | - |
| HCM Lane V/C Ratio | 0.038 | 0.001 | - | - | 0.001 | - |
| HCM Control Delay (s) | 12.1 | 9.4 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.1 | 0 | - | - | 0 | - |

# Appendix C-8

## 2024 Partial Build Conditions
## PM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 982 | 12 | 28 | 998 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 982 | 12 | 28 | 998 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 1 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 5 | 0 | 18 | 0 | 1012 | 12 | 29 | 1029 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1585 | - | 506 | 1029 | 0 | 0 | 1024 | 0 | 0 |
| Stage 1 | 1012 | - | - | - | - | - | - | - | - |
| Stage 2 | 573 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 99 | 0 | 512 | 671 | - | - | 674 | - | - |
| Stage 1 | 312 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 527 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 95 | 0 | 512 | 671 | - | - | 674 | - | - |
| Mov Cap-2 Maneuver | 95 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 312 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 504 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 19.8 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 671 | - | - | 95 | 512 | 674 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.054 | 0.034 | 0.043 | - | - |
| HCM Control Delay (s) | 0 | - | - | 45.1 | 12.3 | 10.6 | - | - |
| HCM Lane LOS | A | - | - | E | B | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.2 | 0.1 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 16.5 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 41 | 372 | 328 | 168 | 209 | 57 |
| Future Vol, veh/h | 41 | 372 | 328 | 168 | 209 | 57 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 45 | 404 | 357 | 183 | 227 | 62 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 540 | 0 | - | 0 | 943 | 449 |
| Stage 1 | - | - | - | - | 449 | - |
| Stage 2 | - | - | - | - | 494 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1028 | - | - | - | 291 | 610 |
| Stage 1 | - | - | - | - | 643 | - |
| Stage 2 | - | - | - | - | 613 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1028 | - | - | - | 275 | 610 |
| Mov Cap-2 Maneuver | - | - | - | - | 275 | - |
| Stage 1 | - | - | - | - | 607 | - |
| Stage 2 | - | - | - | - | 613 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.9 | 0 | 71.3 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1028 | - | - | - | 312 |
| HCM Lane V/C Ratio | 0.043 | - | - | - | 0.927 |
| HCM Control Delay (s) | 8.7 | 0 | - | - | 71.3 |
| HCM Lane LOS | A | A | - | - | F |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 9.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 19.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 7 | 480 | 247 | 134 | 282 | 0 | 110 | 3 | 63 | 1 | 5 | 6 |
| Future Vol, veh/h | 7 | 480 | 247 | 134 | 282 | 0 | 110 | 3 | 63 | 1 | 5 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 539 | 278 | 151 | 317 | 0 | 124 | 3 | 71 | 1 | 6 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 317 | 0 | 0 | 817 | 0 | 0 | 1320 | 1313 | 678 | 1315 | 1452 | 317 |
| Stage 1 | - | - | - | - | - | - | 694 | 694 | - | 619 | 619 | - |
| Stage 2 | - | - | - | - | - | - | 626 | 619 | - | 696 | 833 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1243 | - | - | 811 | - | - | 134 | 158 | 452 | 135 | 130 | 724 |
| Stage 1 | - | - | - | - | - | - | 433 | 444 | - | 476 | 480 | - |
| Stage 2 | - | - | - | - | - | - | 472 | 480 | - | 432 | 384 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1243 | - | - | 811 | - | - | ~ 109 | 128 | 452 | 95 | 105 | 724 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 109 | 128 | - | 95 | 105 | - |
| Stage 1 | - | - | - | - | - | - | 430 | 441 | - | 473 | 391 | - |
| Stage 2 | - | - | - | - | - | - | 375 | 391 | - | 359 | 382 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3.4 | 141.1 | 26.5 |
| HCM LOS | | | F | D |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 109 | 452 | 1243 | - | - | 811 | - | - | 181 |
| HCM Lane V/C Ratio | 1.165 | 0.157 | 0.006 | - | - | 0.186 | - | - | 0.074 |
| HCM Control Delay (s) | 211.8 | 14.4 | 7.9 | - | - | 10.4 | - | - | 26.5 |
| HCM Lane LOS | F | B | A | - | - | B | - | - | D |
| HCM 95th %tile Q(veh) | 8.1 | 0.6 | 0 | - | - | 0.7 | - | - | 0.2 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 5 | 487 | 49 | 1 | 368 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Future Vol, veh/h | 5 | 487 | 49 | 1 | 368 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 507 | 51 | 1 | 383 | 0 | 20 | 0 | 0 | 0 | 0 | 10 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 383 | 0 | 0 | 558 | 0 | 0 | 933 | 928 | 533 | 928 | 953 | 383 |
| Stage 1 | - | - | - | - | - | - | 543 | 543 | - | 385 | 385 | - |
| Stage 2 | - | - | - | - | - | - | 390 | 385 | - | 543 | 568 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1175 | - | - | 1013 | - | - | 246 | 268 | 547 | 248 | 259 | 664 |
| Stage 1 | - | - | - | - | - | - | 524 | 520 | - | 638 | 611 | - |
| Stage 2 | - | - | - | - | - | - | 634 | 611 | - | 524 | 506 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1175 | - | - | 1013 | - | - | 241 | 266 | 547 | 247 | 257 | 664 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 241 | 266 | - | 247 | 257 | - |
| Stage 1 | - | - | - | - | - | - | 521 | 517 | - | 634 | 610 | - |
| Stage 2 | - | - | - | - | - | - | 623 | 610 | - | 521 | 503 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 21.3 | 10.5 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 241 | 1175 | - | - | 1013 | - | - | 664 |
| HCM Lane V/C Ratio | 0.082 | 0.004 | - | - | 0.001 | - | - | 0.016 |
| HCM Control Delay (s) | 21.3 | 8.1 | 0 | - | 8.6 | 0 | - | 10.5 |
| HCM Lane LOS | C | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 441 | 29 | 3 | 338 | 27 | 4 |
| Future Vol, veh/h | 441 | 29 | 3 | 338 | 27 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 469 | 31 | 3 | 360 | 29 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 500 | 0 | 835 | 469 |
| Stage 1 | - | - | - | - | 469 | - |
| Stage 2 | - | - | - | - | 366 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1064 | - | 338 | 594 |
| Stage 1 | - | - | - | - | 630 | - |
| Stage 2 | - | - | - | - | 702 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1064 | - | 337 | 594 |
| Mov Cap-2 Maneuver | - | - | - | - | 337 | - |
| Stage 1 | - | - | - | - | 630 | - |
| Stage 2 | - | - | - | - | 700 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 16 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 337 | 594 | - | - | 1064 | - |
| HCM Lane V/C Ratio | 0.085 | 0.007 | - | - | 0.003 | - |
| HCM Control Delay (s) | 16.7 | 11.1 | - | - | 8.4 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 312 | 86 | 23 | 258 | 51 | 17 |
| Future Vol, veh/h | 312 | 86 | 23 | 258 | 51 | 17 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 98 | 98 | 98 | 98 | 98 | 98 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 318 | 88 | 23 | 263 | 52 | 17 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 406 | 0 | 627 | 318 |
| Stage 1 | - | - | - | - | 318 | - |
| Stage 2 | - | - | - | - | 309 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1153 | - | 447 | 723 |
| Stage 1 | - | - | - | - | 738 | - |
| Stage 2 | - | - | - | - | 745 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1153 | - | 437 | 723 |
| Mov Cap-2 Maneuver | - | - | - | - | 437 | - |
| Stage 1 | - | - | - | - | 738 | - |
| Stage 2 | - | - | - | - | 728 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.7 | 13.7 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 485 | - | - | 1153 | - |
| HCM Lane V/C Ratio | 0.143 | - | - | 0.02 | - |
| HCM Control Delay (s) | 13.7 | - | - | 8.2 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.5 | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 415 | 31 | 4 | 316 | 19 | 3 |
| Future Vol, veh/h | 415 | 31 | 4 | 316 | 19 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 461 | 34 | 4 | 351 | 21 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 495 | 0 | 837 | 478 |
| Stage 1 | - | - | - | - | 478 | - |
| Stage 2 | - | - | - | - | 359 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1069 | - | 337 | 587 |
| Stage 1 | - | - | - | - | 624 | - |
| Stage 2 | - | - | - | - | 707 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1069 | - | 335 | 587 |
| Mov Cap-2 Maneuver | - | - | - | - | 335 | - |
| Stage 1 | - | - | - | - | 624 | - |
| Stage 2 | - | - | - | - | 703 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 15.8 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 335 | 587 | - | - | 1069 | - |
| HCM Lane V/C Ratio | 0.063 | 0.006 | - | - | 0.004 | - |
| HCM Control Delay (s) | 16.5 | 11.2 | - | - | 8.4 | 0 |
| HCM Lane LOS | C | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 398 | 20 | 1 | 308 | 12 | 1 |
| Future Vol, veh/h | 398 | 20 | 1 | 308 | 12 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 442 | 22 | 1 | 342 | 13 | 1 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 464 | 0 | 797 | 453 |
| Stage 1 | - | - | - | - | 453 | - |
| Stage 2 | - | - | - | - | 344 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1097 | - | 356 | 607 |
| Stage 1 | - | - | - | - | 640 | - |
| Stage 2 | - | - | - | - | 718 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1097 | - | 356 | 607 |
| Mov Cap-2 Maneuver | - | - | - | - | 356 | - |
| Stage 1 | - | - | - | - | 640 | - |
| Stage 2 | - | - | - | - | 717 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 15.1 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 356 | 607 | - | - | 1097 | - |
| HCM Lane V/C Ratio | 0.037 | 0.002 | - | - | 0.001 | - |
| HCM Control Delay (s) | 15.5 | 10.9 | - | - | 8.3 | 0 |
| HCM Lane LOS | C | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.1 | 0 | - | - | 0 | - |

# Appendix C-9

## 2024 Phase 2 Build Conditions
## AM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 726 | 4 | 7 | 768 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 726 | 4 | 7 | 768 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 1 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 8 | 0 | 17 | 0 | 816 | 4 | 8 | 863 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1264 | - | 408 | 863 | 0 | 0 | 820 | 0 | 0 |
| Stage 1 | 816 | - | - | - | - | - | - | - | - |
| Stage 2 | 448 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 161 | 0 | 593 | 775 | - | - | 805 | - | - |
| Stage 1 | 395 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 611 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 159 | 0 | 593 | 775 | - | - | 805 | - | - |
| Mov Cap-2 Maneuver | 159 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 395 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 605 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 16.8 | 0 | 0.1 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 775 | - | - | 159 | 593 | 805 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.049 | 0.028 | 0.01 | - | - |
| HCM Control Delay (s) | 0 | - | - | 28.8 | 11.2 | 9.5 | - | - |
| HCM Lane LOS | A | - | - | D | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.2 | 0.1 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.7 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 76 | 234 | 299 | 179 | 142 | 60 |
| Future Vol, veh/h | 76 | 234 | 299 | 179 | 142 | 60 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 83 | 254 | 325 | 195 | 154 | 65 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 520 | 0 | - | 0 | 843 | 423 |
| Stage 1 | - | - | - | - | 423 | - |
| Stage 2 | - | - | - | - | 420 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1046 | - | - | - | 334 | 631 |
| Stage 1 | - | - | - | - | 661 | - |
| Stage 2 | - | - | - | - | 663 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1046 | - | - | - | 303 | 631 |
| Mov Cap-2 Maneuver | - | - | - | - | 303 | - |
| Stage 1 | - | - | - | - | 600 | - |
| Stage 2 | - | - | - | - | 663 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 2.1 | 0 | 29.8 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1046 | - | - | - | 358 |
| HCM Lane V/C Ratio | 0.079 | - | - | - | 0.613 |
| HCM Control Delay (s) | 8.7 | 0 | - | - | 29.8 |
| HCM Lane LOS | A | A | - | - | D |
| HCM 95th %tile Q(veh) | 0.3 | - | - | - | 3.9 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 16 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 5 | 226 | 303 | 173 | 295 | 2 | 134 | 0 | 40 | 0 | 3 | 12 |
| Future Vol, veh/h | 5 | 226 | 303 | 173 | 295 | 2 | 134 | 0 | 40 | 0 | 3 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 246 | 329 | 188 | 321 | 2 | 146 | 0 | 43 | 0 | 3 | 13 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 323 | 0 | 0 | 575 | 0 | 0 | 1127 | 1120 | 411 | 1119 | 1283 | 322 |
| Stage 1 | - | - | - | - | - | - | 421 | 421 | - | 698 | 698 | - |
| Stage 2 | - | - | - | - | - | - | 706 | 699 | - | 421 | 585 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1237 | - | - | 998 | - | - | 182 | 206 | 641 | 184 | 165 | 719 |
| Stage 1 | - | - | - | - | - | - | 610 | 589 | - | 431 | 442 | - |
| Stage 2 | - | - | - | - | - | - | 427 | 442 | - | 610 | 498 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1237 | - | - | 998 | - | - | 150 | 167 | 641 | 146 | 133 | 719 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 150 | 167 | - | 146 | 133 | - |
| Stage 1 | - | - | - | - | - | - | 608 | 587 | - | 429 | 359 | - |
| Stage 2 | - | - | - | - | - | - | 337 | 359 | - | 566 | 496 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3.5 | 98.9 | 14.8 |
| HCM LOS | | | F | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 150 | 641 | 1237 | - | - | 998 | - | - | 382 |
| HCM Lane V/C Ratio | 0.971 | 0.068 | 0.004 | - | - | 0.188 | - | - | 0.043 |
| HCM Control Delay (s) | 125.1 | 11 | 7.9 | - | - | 9.4 | - | - | 14.8 |
| HCM Lane LOS | F | B | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 7.1 | 0.2 | 0 | - | - | 0.7 | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 1 | 242 | 20 | 0 | 427 | 0 | 31 | 0 | 1 | 0 | 1 | 6 |
| Future Vol, veh/h | 1 | 242 | 20 | 0 | 427 | 0 | 31 | 0 | 1 | 0 | 1 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 275 | 23 | 0 | 485 | 0 | 35 | 0 | 1 | 0 | 1 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 485 | 0 | 0 | 298 | 0 | 0 | 778 | 774 | 287 | 774 | 785 | 485 |
| Stage 1 | - | - | - | - | - | - | 289 | 289 | - | 485 | 485 | - |
| Stage 2 | - | - | - | - | - | - | 489 | 485 | - | 289 | 300 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1078 | - | - | 1263 | - | - | 314 | 329 | 752 | 316 | 325 | 582 |
| Stage 1 | - | - | - | - | - | - | 719 | 673 | - | 563 | 552 | - |
| Stage 2 | - | - | - | - | - | - | 561 | 552 | - | 719 | 666 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1078 | - | - | 1263 | - | - | 309 | 329 | 752 | 315 | 325 | 582 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 309 | 329 | - | 315 | 325 | - |
| Stage 1 | - | - | - | - | - | - | 718 | 672 | - | 562 | 552 | - |
| Stage 2 | - | - | - | - | - | - | 553 | 552 | - | 717 | 665 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 17.9 | 12 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 315 | 1078 | - | - | 1263 | - | - | 523 |
| HCM Lane V/C Ratio | 0.115 | 0.001 | - | - | - | - | - | 0.015 |
| HCM Control Delay (s) | 17.9 | 8.3 | 0 | - | 0 | - | - | 12 |
| HCM Lane LOS | C | A | A | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.4 | 0 | - | - | 0 | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 276 | 18 | 2 | 373 | 35 | 12 |
| Future Vol, veh/h | 276 | 18 | 2 | 373 | 35 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 87 | 87 | 87 | 87 | 87 | 87 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 317 | 21 | 2 | 429 | 40 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 338 | 0 | 750 | 317 |
| Stage 1 | - | - | - | - | 317 | - |
| Stage 2 | - | - | - | - | 433 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1221 | - | 379 | 724 |
| Stage 1 | - | - | - | - | 738 | - |
| Stage 2 | - | - | - | - | 654 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1221 | - | 378 | 724 |
| Mov Cap-2 Maneuver | - | - | - | - | 378 | - |
| Stage 1 | - | - | - | - | 738 | - |
| Stage 2 | - | - | - | - | 653 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 14.3 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 378 | 724 | - | - | 1221 | - |
| HCM Lane V/C Ratio | 0.106 | 0.019 | - | - | 0.002 | - |
| HCM Control Delay (s) | 15.7 | 10.1 | - | - | 8 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.4 | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 159 | 37 | 12 | 214 | 47 | 11 |
| Future Vol, veh/h | 159 | 37 | 12 | 214 | 47 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 175 | 41 | 13 | 235 | 52 | 12 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 216 | 0 | 436 | 175 |
| Stage 1 | - | - | - | - | 175 | - |
| Stage 2 | - | - | - | - | 261 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1354 | - | 578 | 868 |
| Stage 1 | - | - | - | - | 855 | - |
| Stage 2 | - | - | - | - | 783 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1354 | - | 572 | 868 |
| Mov Cap-2 Maneuver | - | - | - | - | 572 | - |
| Stage 1 | - | - | - | - | 855 | - |
| Stage 2 | - | - | - | - | 774 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.4 | 11.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 612 | - | - | 1354 | - |
| HCM Lane V/C Ratio | 0.104 | - | - | 0.01 | - |
| HCM Control Delay (s) | 11.6 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.9 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 202 | 26 | 4 | 301 | 74 | 10 |
| Future Vol, veh/h | 202 | 26 | 4 | 301 | 74 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 224 | 29 | 4 | 334 | 82 | 11 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 253 | 0 | 581 | 239 |
| Stage 1 | - | - | - | - | 239 | - |
| Stage 2 | - | - | - | - | 342 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1312 | - | 476 | 800 |
| Stage 1 | - | - | - | - | 801 | - |
| Stage 2 | - | - | - | - | 719 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1312 | - | 474 | 800 |
| Mov Cap-2 Maneuver | - | - | - | - | 474 | - |
| Stage 1 | - | - | - | - | 801 | - |
| Stage 2 | - | - | - | - | 716 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 13.7 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 474 | 800 | - | - | 1312 | - |
| HCM Lane V/C Ratio | 0.173 | 0.014 | - | - | 0.003 | - |
| HCM Control Delay (s) | 14.2 | 9.6 | - | - | 7.8 | 0 |
| HCM Lane LOS | B | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.6 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.2 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 195 | 17 | 1 | 260 | 45 | 3 |
| Future Vol, veh/h | 195 | 17 | 1 | 260 | 45 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 217 | 19 | 1 | 289 | 50 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 236 | 0 | 518 | 227 |
| Stage 1 | - | - | - | - | 227 | - |
| Stage 2 | - | - | - | - | 291 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1331 | - | 518 | 812 |
| Stage 1 | - | - | - | - | 811 | - |
| Stage 2 | - | - | - | - | 759 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1331 | - | 517 | 812 |
| Mov Cap-2 Maneuver | - | - | - | - | 517 | - |
| Stage 1 | - | - | - | - | 811 | - |
| Stage 2 | - | - | - | - | 758 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 12.5 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 517 | 812 | - | - | 1331 | - |
| HCM Lane V/C Ratio | 0.097 | 0.004 | - | - | 0.001 | - |
| HCM Control Delay (s) | 12.7 | 9.5 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - |

# Appendix C-10

## 2024 Phase 2 Build Conditions
## PM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 1003 | 12 | 28 | 1011 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 1003 | 12 | 28 | 1011 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 1 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 5 | 0 | 18 | 0 | 1034 | 12 | 29 | 1042 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1613 | - | 517 | 1042 | 0 | 0 | 1046 | 0 | 0 |
| Stage 1 | 1034 | - | - | - | - | - | - | - | - |
| Stage 2 | 579 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 95 | 0 | 503 | 663 | - | - | 661 | - | - |
| Stage 1 | 304 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 524 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 91 | 0 | 503 | 663 | - | - | 661 | - | - |
| Mov Cap-2 Maneuver | 91 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 304 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 501 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 20.2 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 663 | - | - | 91 | 503 | 661 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.057 | 0.035 | 0.044 | - | - |
| HCM Control Delay (s) | 0 | - | - | 46.9 | 12.4 | 10.7 | - | - |
| HCM Lane LOS | A | - | - | E | B | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.2 | 0.1 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 19.3 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 41 | 398 | 344 | 168 | 209 | 57 |
| Future Vol, veh/h | 41 | 398 | 344 | 168 | 209 | 57 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 45 | 433 | 374 | 183 | 227 | 62 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 557 | 0 | - | 0 | 989 | 466 |
| Stage 1 | - | - | - | - | 466 | - |
| Stage 2 | - | - | - | - | 523 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1014 | - | - | - | 274 | 597 |
| Stage 1 | - | - | - | - | 632 | - |
| Stage 2 | - | - | - | - | 595 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1014 | - | - | - | 258 | 597 |
| Mov Cap-2 Maneuver | - | - | - | - | 258 | - |
| Stage 1 | - | - | - | - | 595 | - |
| Stage 2 | - | - | - | - | 595 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.8 | 0 | 87.2 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1014 | - | - | - | 294 |
| HCM Lane V/C Ratio | 0.044 | - | - | - | 0.983 |
| HCM Control Delay (s) | 8.7 | 0 | - | - | 87.2 |
| HCM Lane LOS | A | A | - | - | F |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 10.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 31.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 7 | 536 | 247 | 152 | 311 | 0 | 110 | 3 | 64 | 1 | 5 | 6 |
| Future Vol, veh/h | 7 | 536 | 247 | 152 | 311 | 0 | 110 | 3 | 64 | 1 | 5 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 602 | 278 | 171 | 349 | 0 | 124 | 3 | 72 | 1 | 6 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 349 | 0 | 0 | 880 | 0 | 0 | 1455 | 1448 | 741 | 1450 | 1587 | 349 |
| Stage 1 | - | - | - | - | - | - | 757 | 757 | - | 691 | 691 | - |
| Stage 2 | - | - | - | - | - | - | 698 | 691 | - | 759 | 896 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1210 | - | - | 768 | - | - | ~ 108 | 131 | 416 | 109 | 108 | 694 |
| Stage 1 | - | - | - | - | - | - | 400 | 416 | - | 435 | 446 | - |
| Stage 2 | - | - | - | - | - | - | 431 | 446 | - | 399 | 359 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1210 | - | - | 768 | - | - | ~ 84 | 101 | 416 | 72 | 83 | 694 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 84 | 101 | - | 72 | 83 | - |
| Stage 1 | - | - | - | - | - | - | 397 | 413 | - | 432 | 347 | - |
| Stage 2 | - | - | - | - | - | - | 326 | 347 | - | 325 | 356 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3.6 | 241.1 | 32.4 |
| HCM LOS | | | F | D |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 84 | 416 | 1210 | - | - | 768 | - | - | 145 |
| HCM Lane V/C Ratio | 1.512 | 0.173 | 0.007 | - | - | 0.222 | - | - | 0.093 |
| HCM Control Delay (s) | $ 368.8 | 15.5 | 8 | - | - | 11 | - | - | 32.4 |
| HCM Lane LOS | F | C | A | - | - | B | - | - | D |
| HCM 95th %tile Q(veh) | 10.1 | 0.6 | 0 | - | - | 0.8 | - | - | 0.3 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 5 | 564 | 49 | 1 | 415 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Future Vol, veh/h | 5 | 564 | 49 | 1 | 415 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 588 | 51 | 1 | 432 | 0 | 20 | 0 | 0 | 0 | 0 | 10 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 432 | 0 | 0 | 639 | 0 | 0 | 1063 | 1058 | 614 | 1058 | 1083 | 432 |
| Stage 1 | - | - | - | - | - | - | 624 | 624 | - | 434 | 434 | - |
| Stage 2 | - | - | - | - | - | - | 439 | 434 | - | 624 | 649 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1128 | - | - | 945 | - | - | 201 | 225 | 492 | 203 | 217 | 624 |
| Stage 1 | - | - | - | - | - | - | 473 | 478 | - | 600 | 581 | - |
| Stage 2 | - | - | - | - | - | - | 597 | 581 | - | 473 | 466 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1128 | - | - | 945 | - | - | 196 | 223 | 492 | 202 | 215 | 624 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 196 | 223 | - | 202 | 215 | - |
| Stage 1 | - | - | - | - | - | - | 470 | 475 | - | 596 | 580 | - |
| Stage 2 | - | - | - | - | - | - | 586 | 580 | - | 470 | 463 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 25.4 | 10.9 |
| HCM LOS | | | D | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 196 | 1128 | - | - | 945 | - | - | 624 |
| HCM Lane V/C Ratio | 0.101 | 0.005 | - | - | 0.001 | - | - | 0.017 |
| HCM Control Delay (s) | 25.4 | 8.2 | 0 | - | 8.8 | 0 | - | 10.9 |
| HCM Lane LOS | D | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 518 | 29 | 3 | 385 | 27 | 4 |
| Future Vol, veh/h | 518 | 29 | 3 | 385 | 27 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 551 | 31 | 3 | 410 | 29 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 582 | 0 | 967 | 551 |
| Stage 1 | - | - | - | - | 551 | - |
| Stage 2 | - | - | - | - | 416 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 992 | - | 282 | 534 |
| Stage 1 | - | - | - | - | 577 | - |
| Stage 2 | - | - | - | - | 666 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 992 | - | 281 | 534 |
| Mov Cap-2 Maneuver | - | - | - | - | 281 | - |
| Stage 1 | - | - | - | - | 577 | - |
| Stage 2 | - | - | - | - | 664 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 18.3 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 281 | 534 | - | - | 992 | - |
| HCM Lane V/C Ratio | 0.102 | 0.008 | - | - | 0.003 | - |
| HCM Control Delay (s) | 19.3 | 11.8 | - | - | 8.6 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 317 | 86 | 23 | 266 | 51 | 17 |
| Future Vol, veh/h | 317 | 86 | 23 | 266 | 51 | 17 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 98 | 98 | 98 | 98 | 98 | 98 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 323 | 88 | 23 | 271 | 52 | 17 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 411 | 0 | 640 | 323 |
| Stage 1 | - | - | - | - | 323 | - |
| Stage 2 | - | - | - | - | 317 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1148 | - | 440 | 718 |
| Stage 1 | - | - | - | - | 734 | - |
| Stage 2 | - | - | - | - | 738 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1148 | - | 429 | 718 |
| Mov Cap-2 Maneuver | - | - | - | - | 429 | - |
| Stage 1 | - | - | - | - | 734 | - |
| Stage 2 | - | - | - | - | 720 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.7 | 13.8 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 477 | - | - | 1148 | - |
| HCM Lane V/C Ratio | 0.145 | - | - | 0.02 | - |
| HCM Control Delay (s) | 13.8 | - | - | 8.2 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.5 | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.2 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 445 | 78 | 10 | 334 | 48 | 7 |
| Future Vol, veh/h | 445 | 78 | 10 | 334 | 48 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 494 | 87 | 11 | 371 | 53 | 8 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 581 | 0 | 931 | 538 |
| Stage 1 | - | - | - | - | 538 | - |
| Stage 2 | - | - | - | - | 393 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 993 | - | 296 | 543 |
| Stage 1 | - | - | - | - | 585 | - |
| Stage 2 | - | - | - | - | 682 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 993 | - | 292 | 543 |
| Mov Cap-2 Maneuver | - | - | - | - | 292 | - |
| Stage 1 | - | - | - | - | 585 | - |
| Stage 2 | - | - | - | - | 672 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.3 | 19 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 292 | 543 | - | - | 993 | - |
| HCM Lane V/C Ratio | 0.183 | 0.014 | - | - | 0.011 | - |
| HCM Control Delay (s) | 20.1 | 11.7 | - | - | 8.7 | 0 |
| HCM Lane LOS | C | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.7 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.7 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 402 | 50 | 3 | 314 | 30 | 2 |
| Future Vol, veh/h | 402 | 50 | 3 | 314 | 30 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 447 | 56 | 3 | 349 | 33 | 2 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 503 | 0 | 830 | 475 |
| Stage 1 | - | - | - | - | 475 | - |
| Stage 2 | - | - | - | - | 355 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1061 | - | 340 | 590 |
| Stage 1 | - | - | - | - | 626 | - |
| Stage 2 | - | - | - | - | 710 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1061 | - | 339 | 590 |
| Mov Cap-2 Maneuver | - | - | - | - | 339 | - |
| Stage 1 | - | - | - | - | 626 | - |
| Stage 2 | - | - | - | - | 707 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 16.4 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 339 | 590 | - | - | 1061 | - |
| HCM Lane V/C Ratio | 0.098 | 0.004 | - | - | 0.003 | - |
| HCM Control Delay (s) | 16.8 | 11.1 | - | - | 8.4 | 0 |
| HCM Lane LOS | C | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - |

# Appendix C-11

## 2025 Partial Build Conditions
## AM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 734 | 4 | 7 | 777 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 734 | 4 | 7 | 777 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 1 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 8 | 0 | 17 | 0 | 825 | 4 | 8 | 873 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1278 | - | 413 | 873 | 0 | 0 | 829 | 0 | 0 |
| Stage 1 | 825 | - | - | - | - | - | - | - | - |
| Stage 2 | 453 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 158 | 0 | 588 | 768 | - | - | 798 | - | - |
| Stage 1 | 391 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 607 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 156 | 0 | 588 | 768 | - | - | 798 | - | - |
| Mov Cap-2 Maneuver | 156 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 391 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 601 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 17 | 0 | 0.1 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 768 | - | - | 156 | 588 | 798 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.05 | 0.029 | 0.01 | - | - |
| HCM Control Delay (s) | 0 | - | - | 29.3 | 11.3 | 9.6 | - | - |
| HCM Lane LOS | A | - | - | D | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.2 | 0.1 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 77 | 237 | 302 | 181 | 144 | 61 |
| Future Vol, veh/h | 77 | 237 | 302 | 181 | 144 | 61 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 84 | 258 | 328 | 197 | 157 | 66 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 525 | 0 | - | 0 | 853 | 427 |
| Stage 1 | - | - | - | - | 427 | - |
| Stage 2 | - | - | - | - | 426 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1042 | - | - | - | 330 | 628 |
| Stage 1 | - | - | - | - | 658 | - |
| Stage 2 | - | - | - | - | 659 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1042 | - | - | - | 299 | 628 |
| Mov Cap-2 Maneuver | - | - | - | - | 299 | - |
| Stage 1 | - | - | - | - | 596 | - |
| Stage 2 | - | - | - | - | 659 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 2.1 | 0 | 31 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1042 | - | - | - | 354 |
| HCM Lane V/C Ratio | 0.08 | - | - | - | 0.629 |
| HCM Control Delay (s) | 8.8 | 0 | - | - | 31 |
| HCM Lane LOS | A | A | - | - | D |
| HCM 95th %tile Q(veh) | 0.3 | - | - | - | 4.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 17.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 5 | 228 | 305 | 175 | 298 | 2 | 136 | 0 | 40 | 0 | 3 | 12 |
| Future Vol, veh/h | 5 | 228 | 305 | 175 | 298 | 2 | 136 | 0 | 40 | 0 | 3 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 248 | 332 | 190 | 324 | 2 | 148 | 0 | 43 | 0 | 3 | 13 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 326 | 0 | 0 | 580 | 0 | 0 | 1137 | 1130 | 414 | 1129 | 1295 | 325 |
| Stage 1 | - | - | - | - | - | - | 424 | 424 | - | 705 | 705 | - |
| Stage 2 | - | - | - | - | - | - | 713 | 706 | - | 424 | 590 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1234 | - | - | 994 | - | - | 179 | 204 | 638 | 181 | 162 | 716 |
| Stage 1 | - | - | - | - | - | - | 608 | 587 | - | 427 | 439 | - |
| Stage 2 | - | - | - | - | - | - | 423 | 439 | - | 608 | 495 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1234 | - | - | 994 | - | - | ~ 147 | 164 | 638 | 144 | 131 | 716 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 147 | 164 | - | 144 | 131 | - |
| Stage 1 | - | - | - | - | - | - | 606 | 585 | - | 425 | 355 | - |
| Stage 2 | - | - | - | - | - | - | 333 | 355 | - | 564 | 493 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3.5 | 107.6 | 15 |
| HCM LOS | | | F | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 147 | 638 | 1234 | - | - | 994 | - | - | 378 |
| HCM Lane V/C Ratio | 1.006 | 0.068 | 0.004 | - | - | 0.191 | - | - | 0.043 |
| HCM Control Delay (s) | 136 | 11.1 | 7.9 | - | - | 9.5 | - | - | 15 |
| HCM Lane LOS | F | B | A | - | - | A | - | - | C |
| HCM 95th %tile Q(veh) | 7.5 | 0.2 | 0 | - | - | 0.7 | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 1 | 242 | 20 | 0 | 427 | 0 | 31 | 0 | 1 | 0 | 1 | 6 |
| Future Vol, veh/h | 1 | 242 | 20 | 0 | 427 | 0 | 31 | 0 | 1 | 0 | 1 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 275 | 23 | 0 | 485 | 0 | 35 | 0 | 1 | 0 | 1 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 485 | 0 | 0 | 298 | 0 | 0 | 778 | 774 | 287 | 774 | 785 | 485 |
| Stage 1 | - | - | - | - | - | - | 289 | 289 | - | 485 | 485 | - |
| Stage 2 | - | - | - | - | - | - | 489 | 485 | - | 289 | 300 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1078 | - | - | 1263 | - | - | 314 | 329 | 752 | 316 | 325 | 582 |
| Stage 1 | - | - | - | - | - | - | 719 | 673 | - | 563 | 552 | - |
| Stage 2 | - | - | - | - | - | - | 561 | 552 | - | 719 | 666 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1078 | - | - | 1263 | - | - | 309 | 329 | 752 | 315 | 325 | 582 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 309 | 329 | - | 315 | 325 | - |
| Stage 1 | - | - | - | - | - | - | 718 | 672 | - | 562 | 552 | - |
| Stage 2 | - | - | - | - | - | - | 553 | 552 | - | 717 | 665 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 17.9 | 12 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 315 | 1078 | - | - | 1263 | - | - | 523 |
| HCM Lane V/C Ratio | 0.115 | 0.001 | - | - | - | - | - | 0.015 |
| HCM Control Delay (s) | 17.9 | 8.3 | 0 | - | 0 | - | - | 12 |
| HCM Lane LOS | C | A | A | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.4 | 0 | - | - | 0 | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 218 | 18 | 2 | 376 | 35 | 12 |
| Future Vol, veh/h | 218 | 18 | 2 | 376 | 35 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 87 | 87 | 87 | 87 | 87 | 87 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 251 | 21 | 2 | 432 | 40 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 272 | 0 | 687 | 251 |
| Stage 1 | - | - | - | - | 251 | - |
| Stage 2 | - | - | - | - | 436 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1291 | - | 413 | 788 |
| Stage 1 | - | - | - | - | 791 | - |
| Stage 2 | - | - | - | - | 652 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1291 | - | 412 | 788 |
| Mov Cap-2 Maneuver | - | - | - | - | 412 | - |
| Stage 1 | - | - | - | - | 791 | - |
| Stage 2 | - | - | - | - | 651 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 13.4 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 412 | 788 | - | - | 1291 | - |
| HCM Lane V/C Ratio | 0.098 | 0.018 | - | - | 0.002 | - |
| HCM Control Delay (s) | 14.7 | 9.7 | - | - | 7.8 | - |
| HCM Lane LOS | B | A | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.3 | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 161 | 37 | 12 | 217 | 48 | 11 |
| Future Vol, veh/h | 161 | 37 | 12 | 217 | 48 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 177 | 41 | 13 | 238 | 53 | 12 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 218 | 0 | 441 | 177 |
| Stage 1 | - | - | - | - | 177 | - |
| Stage 2 | - | - | - | - | 264 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1352 | - | 574 | 866 |
| Stage 1 | - | - | - | - | 854 | - |
| Stage 2 | - | - | - | - | 780 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1352 | - | 568 | 866 |
| Mov Cap-2 Maneuver | - | - | - | - | 568 | - |
| Stage 1 | - | - | - | - | 854 | - |
| Stage 2 | - | - | - | - | 771 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.4 | 11.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 607 | - | - | 1352 | - |
| HCM Lane V/C Ratio | 0.107 | - | - | 0.01 | - |
| HCM Control Delay (s) | 11.6 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.4 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.9 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 204 | 26 | 4 | 304 | 74 | 10 |
| Future Vol, veh/h | 204 | 26 | 4 | 304 | 74 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 227 | 29 | 4 | 338 | 82 | 11 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 256 | 0 | 588 | 242 |
| Stage 1 | - | - | - | - | 242 | - |
| Stage 2 | - | - | - | - | 346 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1309 | - | 471 | 797 |
| Stage 1 | - | - | - | - | 798 | - |
| Stage 2 | - | - | - | - | 716 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1309 | - | 469 | 797 |
| Mov Cap-2 Maneuver | - | - | - | - | 469 | - |
| Stage 1 | - | - | - | - | 798 | - |
| Stage 2 | - | - | - | - | 713 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 13.7 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 469 | 797 | - | - | 1309 | - |
| HCM Lane V/C Ratio | 0.175 | 0.014 | - | - | 0.003 | - |
| HCM Control Delay (s) | 14.3 | 9.6 | - | - | 7.8 | 0 |
| HCM Lane LOS | B | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.6 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 197 | 17 | 1 | 263 | 45 | 3 |
| Future Vol, veh/h | 197 | 17 | 1 | 263 | 45 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 219 | 19 | 1 | 292 | 50 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 238 | 0 | 523 | 229 |
| Stage 1 | - | - | - | - | 229 | - |
| Stage 2 | - | - | - | - | 294 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1329 | - | 514 | 810 |
| Stage 1 | - | - | - | - | 809 | - |
| Stage 2 | - | - | - | - | 756 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1329 | - | 513 | 810 |
| Mov Cap-2 Maneuver | - | - | - | - | 513 | - |
| Stage 1 | - | - | - | - | 809 | - |
| Stage 2 | - | - | - | - | 755 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 12.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 513 | 810 | - | - | 1329 | - |
| HCM Lane V/C Ratio | 0.097 | 0.004 | - | - | 0.001 | - |
| HCM Control Delay (s) | 12.8 | 9.5 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - |

# Appendix C-12

## 2025 Partial Build Conditions
## PM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 1014 | 12 | 28 | 1023 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 1014 | 12 | 28 | 1023 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 1 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 5 | 0 | 18 | 0 | 1045 | 12 | 29 | 1055 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1631 | - | 523 | 1055 | 0 | 0 | 1057 | 0 | 0 |
| Stage 1 | 1045 | - | - | - | - | - | - | - | - |
| Stage 2 | 586 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 92 | 0 | 499 | 656 | - | - | 655 | - | - |
| Stage 1 | 300 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 519 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 88 | 0 | 499 | 656 | - | - | 655 | - | - |
| Mov Cap-2 Maneuver | 88 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 300 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 496 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 20.7 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 656 | - | - | 88 | 499 | 655 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.059 | 0.035 | 0.044 | - | - |
| HCM Control Delay (s) | 0 | - | - | 48.4 | 12.5 | 10.7 | - | - |
| HCM Lane LOS | A | - | - | E | B | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.2 | 0.1 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 20.9 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 41 | 402 | 348 | 170 | 211 | 58 |
| Future Vol, veh/h | 41 | 402 | 348 | 170 | 211 | 58 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 45 | 437 | 378 | 185 | 229 | 63 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 563 | 0 | - | 0 | 998 | 471 |
| Stage 1 | - | - | - | - | 471 | - |
| Stage 2 | - | - | - | - | 527 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1008 | - | - | - | 270 | 593 |
| Stage 1 | - | - | - | - | 628 | - |
| Stage 2 | - | - | - | - | 592 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1008 | - | - | - | 254 | 593 |
| Mov Cap-2 Maneuver | - | - | - | - | 254 | - |
| Stage 1 | - | - | - | - | 591 | - |
| Stage 2 | - | - | - | - | 592 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.8 | 0 | 94.3 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1008 | - | - | - | 290 |
| HCM Lane V/C Ratio | 0.044 | - | - | - | 1.008 |
| HCM Control Delay (s) | 8.7 | 0 | - | - | 94.3 |
| HCM Lane LOS | A | A | - | - | F |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 10.6 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 32.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 7 | 541 | 249 | 153 | 314 | 0 | 111 | 3 | 85 | 1 | 5 | 6 |
| Future Vol, veh/h | 7 | 541 | 249 | 153 | 314 | 0 | 111 | 3 | 85 | 1 | 5 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 608 | 280 | 172 | 353 | 0 | 125 | 3 | 96 | 1 | 6 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 353 | 0 | 0 | 888 | 0 | 0 | 1468 | 1461 | 748 | 1463 | 1601 | 353 |
| Stage 1 | - | - | - | - | - | - | 764 | 764 | - | 697 | 697 | - |
| Stage 2 | - | - | - | - | - | - | 704 | 697 | - | 766 | 904 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1206 | - | - | 763 | - | - | ~ 106 | 129 | 412 | 107 | 106 | 691 |
| Stage 1 | - | - | - | - | - | - | 396 | 413 | - | 431 | 443 | - |
| Stage 2 | - | - | - | - | - | - | 428 | 443 | - | 395 | 356 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1206 | - | - | 763 | - | - | ~ 82 | 99 | 412 | 66 | 82 | 691 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 82 | 99 | - | 66 | 82 | - |
| Stage 1 | - | - | - | - | - | - | 393 | 410 | - | 428 | 343 | - |
| Stage 2 | - | - | - | - | - | - | 323 | 343 | - | 299 | 354 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3.6 | 231.5 | 33.2 |
| HCM LOS | | | F | D |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 82 | 412 | 1206 | - | - | 763 | - | - | 141 |
| HCM Lane V/C Ratio | 1.562 | 0.232 | 0.007 | - | - | 0.225 | - | - | 0.096 |
| HCM Control Delay (s) | $ 391.8 | 16.4 | 8 | - | - | 11.1 | - | - | 33.2 |
| HCM Lane LOS | F | C | A | - | - | B | - | - | D |
| HCM 95th %tile Q(veh) | 10.4 | 0.9 | 0 | - | - | 0.9 | - | - | 0.3 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 5 | 569 | 50 | 1 | 419 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Future Vol, veh/h | 5 | 569 | 50 | 1 | 419 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 593 | 52 | 1 | 436 | 0 | 20 | 0 | 0 | 0 | 0 | 10 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 436 | 0 | 0 | 645 | 0 | 0 | 1072 | 1067 | 619 | 1067 | 1093 | 436 |
| Stage 1 | - | - | - | - | - | - | 629 | 629 | - | 438 | 438 | - |
| Stage 2 | - | - | - | - | - | - | 443 | 438 | - | 629 | 655 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1124 | - | - | 940 | - | - | 198 | 222 | 489 | 200 | 214 | 620 |
| Stage 1 | - | - | - | - | - | - | 470 | 475 | - | 597 | 579 | - |
| Stage 2 | - | - | - | - | - | - | 594 | 579 | - | 470 | 463 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1124 | - | - | 940 | - | - | 193 | 220 | 489 | 199 | 212 | 620 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 193 | 220 | - | 199 | 212 | - |
| Stage 1 | - | - | - | - | - | - | 467 | 472 | - | 593 | 578 | - |
| Stage 2 | - | - | - | - | - | - | 583 | 578 | - | 467 | 460 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 25.8 | 10.9 |
| HCM LOS | | | D | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 193 | 1124 | - | - | 940 | - | - | 620 |
| HCM Lane V/C Ratio | 0.103 | 0.005 | - | - | 0.001 | - | - | 0.017 |
| HCM Control Delay (s) | 25.8 | 8.2 | 0 | - | 8.8 | 0 | - | 10.9 |
| HCM Lane LOS | D | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 523 | 29 | 3 | 389 | 27 | 4 |
| Future Vol, veh/h | 523 | 29 | 3 | 389 | 27 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 556 | 31 | 3 | 414 | 29 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 587 | 0 | 976 | 556 |
| Stage 1 | - | - | - | - | 556 | - |
| Stage 2 | - | - | - | - | 420 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 988 | - | 279 | 531 |
| Stage 1 | - | - | - | - | 574 | - |
| Stage 2 | - | - | - | - | 663 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 988 | - | 278 | 531 |
| Mov Cap-2 Maneuver | - | - | - | - | 278 | - |
| Stage 1 | - | - | - | - | 574 | - |
| Stage 2 | - | - | - | - | 661 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 18.4 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 278 | 531 | - | - | 988 | - |
| HCM Lane V/C Ratio | 0.103 | 0.008 | - | - | 0.003 | - |
| HCM Control Delay (s) | 19.4 | 11.8 | - | - | 8.7 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 321 | 87 | 23 | 269 | 52 | 17 |
| Future Vol, veh/h | 321 | 87 | 23 | 269 | 52 | 17 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 98 | 98 | 98 | 98 | 98 | 98 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 328 | 89 | 23 | 274 | 53 | 17 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 417 | 0 | 648 | 328 |
| Stage 1 | - | - | - | - | 328 | - |
| Stage 2 | - | - | - | - | 320 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1142 | - | 435 | 713 |
| Stage 1 | - | - | - | - | 730 | - |
| Stage 2 | - | - | - | - | 736 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1142 | - | 425 | 713 |
| Mov Cap-2 Maneuver | - | - | - | - | 425 | - |
| Stage 1 | - | - | - | - | 730 | - |
| Stage 2 | - | - | - | - | 718 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.6 | 14 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 472 | - | - | 1142 | - |
| HCM Lane V/C Ratio | 0.149 | - | - | 0.021 | - |
| HCM Control Delay (s) | 14 | - | - | 8.2 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.5 | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.2 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 450 | 78 | 10 | 338 | 48 | 7 |
| Future Vol, veh/h | 450 | 78 | 10 | 338 | 48 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 500 | 87 | 11 | 376 | 53 | 8 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 587 | 0 | 942 | 544 |
| Stage 1 | - | - | - | - | 544 | - |
| Stage 2 | - | - | - | - | 398 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 988 | - | 292 | 539 |
| Stage 1 | - | - | - | - | 582 | - |
| Stage 2 | - | - | - | - | 678 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 988 | - | 288 | 539 |
| Mov Cap-2 Maneuver | - | - | - | - | 288 | - |
| Stage 1 | - | - | - | - | 582 | - |
| Stage 2 | - | - | - | - | 669 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | 19.2 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 288 | 539 | - | - | 988 | - |
| HCM Lane V/C Ratio | 0.185 | 0.014 | - | - | 0.011 | - |
| HCM Control Delay (s) | 20.3 | 11.8 | - | - | 8.7 | 0 |
| HCM Lane LOS | C | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.7 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.7 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 407 | 50 | 3 | 318 | 30 | 2 |
| Future Vol, veh/h | 407 | 50 | 3 | 318 | 30 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 452 | 56 | 3 | 353 | 33 | 2 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 508 | 0 | 839 | 480 |
| Stage 1 | - | - | - | - | 480 | - |
| Stage 2 | - | - | - | - | 359 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1057 | - | 336 | 586 |
| Stage 1 | - | - | - | - | 622 | - |
| Stage 2 | - | - | - | - | 707 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1057 | - | 335 | 586 |
| Mov Cap-2 Maneuver | - | - | - | - | 335 | - |
| Stage 1 | - | - | - | - | 622 | - |
| Stage 2 | - | - | - | - | 704 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 16.5 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 335 | 586 | - | - | 1057 | - |
| HCM Lane V/C Ratio | 0.1 | 0.004 | - | - | 0.003 | - |
| HCM Control Delay (s) | 16.9 | 11.2 | - | - | 8.4 | 0 |
| HCM Lane LOS | C | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - |

# Appendix C-13

## 2025 Full Build Conditions
## AM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 739 | 4 | 7 | 792 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 739 | 4 | 7 | 792 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 1 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 8 | 0 | 17 | 0 | 830 | 4 | 8 | 890 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1291 | - | 415 | 890 | 0 | 0 | 834 | 0 | 0 |
| Stage 1 | 830 | - | - | - | - | - | - | - | - |
| Stage 2 | 461 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 155 | 0 | 586 | 757 | - | - | 795 | - | - |
| Stage 1 | 388 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 601 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 153 | 0 | 586 | 757 | - | - | 795 | - | - |
| Mov Cap-2 Maneuver | 153 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 388 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 595 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 17.2 | 0 | 0.1 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 757 | - | - | 153 | 586 | 795 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.051 | 0.029 | 0.01 | - | - |
| HCM Control Delay (s) | 0 | - | - | 29.8 | 11.3 | 9.6 | - | - |
| HCM Lane LOS | A | - | - | D | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.2 | 0.1 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.3 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 77 | 243 | 320 | 181 | 144 | 61 |
| Future Vol, veh/h | 77 | 243 | 320 | 181 | 144 | 61 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 84 | 264 | 348 | 197 | 157 | 66 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 545 | 0 | - | 0 | 879 | 447 |
| Stage 1 | - | - | - | - | 447 | - |
| Stage 2 | - | - | - | - | 432 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1024 | - | - | - | 318 | 612 |
| Stage 1 | - | - | - | - | 644 | - |
| Stage 2 | - | - | - | - | 655 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1024 | - | - | - | 287 | 612 |
| Mov Cap-2 Maneuver | - | - | - | - | 287 | - |
| Stage 1 | - | - | - | - | 582 | - |
| Stage 2 | - | - | - | - | 655 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 2.1 | 0 | 33.4 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1024 | - | - | - | 341 |
| HCM Lane V/C Ratio | 0.082 | - | - | - | 0.653 |
| HCM Control Delay (s) | 8.8 | 0 | - | - | 33.4 |
| HCM Lane LOS | A | A | - | - | D |
| HCM 95th %tile Q(veh) | 0.3 | - | - | - | 4.4 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 24.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 5 | 241 | 305 | 196 | 331 | 2 | 136 | 0 | 45 | 0 | 3 | 12 |
| Future Vol, veh/h | 5 | 241 | 305 | 196 | 331 | 2 | 136 | 0 | 45 | 0 | 3 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 262 | 332 | 213 | 360 | 2 | 148 | 0 | 49 | 0 | 3 | 13 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 362 | 0 | 0 | 594 | 0 | 0 | 1233 | 1226 | 428 | 1225 | 1391 | 361 |
| Stage 1 | - | - | - | - | - | - | 438 | 438 | - | 787 | 787 | - |
| Stage 2 | - | - | - | - | - | - | 795 | 788 | - | 438 | 604 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1197 | - | - | 982 | - | - | 154 | 179 | 627 | 156 | 142 | 684 |
| Stage 1 | - | - | - | - | - | - | 597 | 579 | - | 385 | 403 | - |
| Stage 2 | - | - | - | - | - | - | 381 | 402 | - | 597 | 488 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1197 | - | - | 982 | - | - | ~ 123 | 140 | 627 | 119 | 111 | 684 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 123 | 140 | - | 119 | 111 | - |
| Stage 1 | - | - | - | - | - | - | 595 | 577 | - | 383 | 316 | - |
| Stage 2 | - | - | - | - | - | - | 290 | 315 | - | 548 | 486 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3.6 | 163.1 | 16.2 |
| HCM LOS | | | F | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 123 | 627 | 1197 | - | - | 982 | - | - | 337 |
| HCM Lane V/C Ratio | 1.202 | 0.078 | 0.005 | - | - | 0.217 | - | - | 0.048 |
| HCM Control Delay (s) | 213.4 | 11.2 | 8 | - | - | 9.7 | - | - | 16.2 |
| HCM Lane LOS | F | B | A | - | - | A | - | - | C |
| HCM 95th %tile Q(veh) | 9.2 | 0.3 | 0 | - | - | 0.8 | - | - | 0.2 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 1 | 260 | 20 | 0 | 481 | 0 | 31 | 0 | 1 | 0 | 1 | 6 |
| Future Vol, veh/h | 1 | 260 | 20 | 0 | 481 | 0 | 31 | 0 | 1 | 0 | 1 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 295 | 23 | 0 | 547 | 0 | 35 | 0 | 1 | 0 | 1 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 547 | 0 | 0 | 318 | 0 | 0 | 860 | 856 | 307 | 856 | 867 | 547 |
| Stage 1 | - | - | - | - | - | - | 309 | 309 | - | 547 | 547 | - |
| Stage 2 | - | - | - | - | - | - | 551 | 547 | - | 309 | 320 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1022 | - | - | 1242 | - | - | 276 | 295 | 733 | 278 | 291 | 537 |
| Stage 1 | - | - | - | - | - | - | 701 | 660 | - | 521 | 517 | - |
| Stage 2 | - | - | - | - | - | - | 519 | 517 | - | 701 | 652 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1022 | - | - | 1242 | - | - | 272 | 295 | 733 | 277 | 291 | 537 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 272 | 295 | - | 277 | 291 | - |
| Stage 1 | - | - | - | - | - | - | 700 | 659 | - | 520 | 517 | - |
| Stage 2 | - | - | - | - | - | - | 511 | 517 | - | 699 | 651 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 20 | 12.6 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 277 | 1022 | - | - | 1242 | - | - | 479 |
| HCM Lane V/C Ratio | 0.131 | 0.001 | - | - | - | - | - | 0.017 |
| HCM Control Delay (s) | 20 | 8.5 | 0 | - | 0 | - | - | 12.6 |
| HCM Lane LOS | C | A | A | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.4 | 0 | - | - | 0 | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 236 | 18 | 2 | 430 | 35 | 12 |
| Future Vol, veh/h | 236 | 18 | 2 | 430 | 35 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 87 | 87 | 87 | 87 | 87 | 87 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 271 | 21 | 2 | 494 | 40 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 292 | 0 | 769 | 271 |
| Stage 1 | - | - | - | - | 271 | - |
| Stage 2 | - | - | - | - | 498 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1270 | - | 369 | 768 |
| Stage 1 | - | - | - | - | 775 | - |
| Stage 2 | - | - | - | - | 611 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1270 | - | 368 | 768 |
| Mov Cap-2 Maneuver | - | - | - | - | 368 | - |
| Stage 1 | - | - | - | - | 775 | - |
| Stage 2 | - | - | - | - | 610 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 14.4 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 368 | 768 | - | - | 1270 | - |
| HCM Lane V/C Ratio | 0.109 | 0.018 | - | - | 0.002 | - |
| HCM Control Delay (s) | 16 | 9.8 | - | - | 7.8 | - |
| HCM Lane LOS | C | A | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.4 | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 166 | 37 | 12 | 220 | 48 | 11 |
| Future Vol, veh/h | 166 | 37 | 12 | 220 | 48 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 182 | 41 | 13 | 242 | 53 | 12 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 223 | 0 | 450 | 182 |
| Stage 1 | - | - | - | - | 182 | - |
| Stage 2 | - | - | - | - | 268 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1346 | - | 567 | 861 |
| Stage 1 | - | - | - | - | 849 | - |
| Stage 2 | - | - | - | - | 777 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1346 | - | 561 | 861 |
| Mov Cap-2 Maneuver | - | - | - | - | 561 | - |
| Stage 1 | - | - | - | - | 849 | - |
| Stage 2 | - | - | - | - | 768 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.4 | 11.7 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 600 | - | - | 1346 | - |
| HCM Lane V/C Ratio | 0.108 | - | - | 0.01 | - |
| HCM Control Delay (s) | 11.7 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.4 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.7 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 211 | 37 | 6 | 325 | 107 | 14 |
| Future Vol, veh/h | 211 | 37 | 6 | 325 | 107 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 234 | 41 | 7 | 361 | 119 | 16 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 275 | 0 | 630 | 255 |
| Stage 1 | - | - | - | - | 255 | - |
| Stage 2 | - | - | - | - | 375 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1288 | - | 446 | 784 |
| Stage 1 | - | - | - | - | 788 | - |
| Stage 2 | - | - | - | - | 695 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1288 | - | 443 | 784 |
| Mov Cap-2 Maneuver | - | - | - | - | 443 | - |
| Stage 1 | - | - | - | - | 788 | - |
| Stage 2 | - | - | - | - | 690 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 15.4 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 443 | 784 | - | - | 1288 | - |
| HCM Lane V/C Ratio | 0.268 | 0.02 | - | - | 0.005 | - |
| HCM Control Delay (s) | 16.1 | 9.7 | - | - | 7.8 | 0 |
| HCM Lane LOS | C | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 1.1 | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.7 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 201 | 24 | 2 | 265 | 66 | 4 |
| Future Vol, veh/h | 201 | 24 | 2 | 265 | 66 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 223 | 27 | 2 | 294 | 73 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 250 | 0 | 535 | 237 |
| Stage 1 | - | - | - | - | 237 | - |
| Stage 2 | - | - | - | - | 298 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1316 | - | 506 | 802 |
| Stage 1 | - | - | - | - | 802 | - |
| Stage 2 | - | - | - | - | 753 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1316 | - | 505 | 802 |
| Mov Cap-2 Maneuver | - | - | - | - | 505 | - |
| Stage 1 | - | - | - | - | 802 | - |
| Stage 2 | - | - | - | - | 751 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 13.1 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 505 | 802 | - | - | 1316 | - |
| HCM Lane V/C Ratio | 0.145 | 0.006 | - | - | 0.002 | - |
| HCM Control Delay (s) | 13.3 | 9.5 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.5 | 0 | - | - | 0 | - |

# Appendix C-14

## 2025 Full Build Conditions
## PM Peak

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 1030 | 12 | 28 | 1033 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 1030 | 12 | 28 | 1033 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 1 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 5 | 0 | 18 | 0 | 1062 | 12 | 29 | 1065 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1653 | - | 531 | 1065 | 0 | 0 | 1074 | 0 | 0 |
| Stage 1 | 1062 | - | - | - | - | - | - | - | - |
| Stage 2 | 591 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 89 | 0 | 493 | 650 | - | - | 645 | - | - |
| Stage 1 | 294 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 516 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 85 | 0 | 493 | 650 | - | - | 645 | - | - |
| Mov Cap-2 Maneuver | 85 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 294 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 493 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 21.1 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 650 | - | - | 85 | 493 | 645 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.061 | 0.036 | 0.045 | - | - |
| HCM Control Delay (s) | 0 | - | - | 50.1 | 12.6 | 10.8 | - | - |
| HCM Lane LOS | A | - | - | F | B | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.2 | 0.1 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 23.5 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 41 | 420 | 359 | 170 | 211 | 58 |
| Future Vol, veh/h | 41 | 420 | 359 | 170 | 211 | 58 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 45 | 457 | 390 | 185 | 229 | 63 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 575 | 0 | - | 0 | 1030 | 483 |
| Stage 1 | - | - | - | - | 483 | - |
| Stage 2 | - | - | - | - | 547 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 998 | - | - | - | 259 | 584 |
| Stage 1 | - | - | - | - | 620 | - |
| Stage 2 | - | - | - | - | 580 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 998 | - | - | - | 243 | 584 |
| Mov Cap-2 Maneuver | - | - | - | - | 243 | - |
| Stage 1 | - | - | - | - | 583 | - |
| Stage 2 | - | - | - | - | 580 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.8 | 0 | 108.7 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 998 | - | - | - | 278 |
| HCM Lane V/C Ratio | 0.045 | - | - | - | 1.052 |
| HCM Control Delay (s) | 8.8 | 0 | - | - | 108.7 |
| HCM Lane LOS | A | A | - | - | F |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 11.4 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 43.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 7 | 581 | 249 | 167 | 335 | 0 | 111 | 3 | 101 | 1 | 5 | 6 |
| Future Vol, veh/h | 7 | 581 | 249 | 167 | 335 | 0 | 111 | 3 | 101 | 1 | 5 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | Stop | - | - | None |
| Storage Length | 150 | - | - | 175 | - | - | - | - | 125 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 653 | 280 | 188 | 376 | 0 | 125 | 3 | 113 | 1 | 6 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 376 | 0 | 0 | 933 | 0 | 0 | 1568 | 1561 | 793 | 1563 | 1701 | 376 |
| Stage 1 | - | - | - | - | - | - | 809 | 809 | - | 752 | 752 | - |
| Stage 2 | - | - | - | - | - | - | 759 | 752 | - | 811 | 949 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1182 | - | - | 734 | - | - | ~ 90 | 112 | 389 | 91 | 92 | 670 |
| Stage 1 | - | - | - | - | - | - | 374 | 394 | - | 402 | 418 | - |
| Stage 2 | - | - | - | - | - | - | 399 | 418 | - | 373 | 339 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1182 | - | - | 734 | - | - | ~ 67 | 83 | 389 | 50 | 68 | 670 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 67 | 83 | - | 50 | 68 | - |
| Stage 1 | - | - | - | - | - | - | 371 | 391 | - | 399 | 311 | - |
| Stage 2 | - | - | - | - | - | - | 289 | 311 | - | 260 | 337 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 3.9 | $ 306 | 39.7 |
| HCM LOS | | | F | E |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 67 | 389 | 1182 | - | - | 734 | - | - | 117 |
| HCM Lane V/C Ratio | 1.912 | 0.292 | 0.007 | - | - | 0.256 | - | - | 0.115 |
| HCM Control Delay (s) | $ 561.1 | 18 | 8.1 | - | - | 11.6 | - | - | 39.7 |
| HCM Lane LOS | F | C | A | - | - | B | - | - | E |
| HCM 95th %tile Q(veh) | 11.7 | 1.2 | 0 | - | - | 1 | - | - | 0.4 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 5 | 625 | 50 | 1 | 454 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Future Vol, veh/h | 5 | 625 | 50 | 1 | 454 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 651 | 52 | 1 | 473 | 0 | 20 | 0 | 0 | 0 | 0 | 10 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 473 | 0 | 0 | 703 | 0 | 0 | 1167 | 1162 | 677 | 1162 | 1188 | 473 |
| Stage 1 | - | - | - | - | - | - | 687 | 687 | - | 475 | 475 | - |
| Stage 2 | - | - | - | - | - | - | 480 | 475 | - | 687 | 713 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1089 | - | - | 895 | - | - | 171 | 195 | 453 | 172 | 188 | 591 |
| Stage 1 | - | - | - | - | - | - | 437 | 447 | - | 570 | 557 | - |
| Stage 2 | - | - | - | - | - | - | 567 | 557 | - | 437 | 435 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1089 | - | - | 895 | - | - | 167 | 193 | 453 | 171 | 186 | 591 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 167 | 193 | - | 171 | 186 | - |
| Stage 1 | - | - | - | - | - | - | 434 | 443 | - | 565 | 556 | - |
| Stage 2 | - | - | - | - | - | - | 556 | 556 | - | 434 | 432 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 29.4 | 11.2 |
| HCM LOS | | | D | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 167 | 1089 | - | - | 895 | - | - | 591 |
| HCM Lane V/C Ratio | 0.119 | 0.005 | - | - | 0.001 | - | - | 0.018 |
| HCM Control Delay (s) | 29.4 | 8.3 | 0 | - | 9 | 0 | - | 11.2 |
| HCM Lane LOS | D | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.4 | 0 | - | - | 0 | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 579 | 29 | 3 | 424 | 27 | 4 |
| Future Vol, veh/h | 579 | 29 | 3 | 424 | 27 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 616 | 31 | 3 | 451 | 29 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 647 | 0 | 1073 | 616 |
| Stage 1 | - | - | - | - | 616 | - |
| Stage 2 | - | - | - | - | 457 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 939 | - | 244 | 491 |
| Stage 1 | - | - | - | - | 539 | - |
| Stage 2 | - | - | - | - | 638 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 939 | - | 243 | 491 |
| Mov Cap-2 Maneuver | - | - | - | - | 243 | - |
| Stage 1 | - | - | - | - | 539 | - |
| Stage 2 | - | - | - | - | 636 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 20.6 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 243 | 491 | - | - | 939 | - |
| HCM Lane V/C Ratio | 0.118 | 0.009 | - | - | 0.003 | - |
| HCM Control Delay (s) | 21.8 | 12.4 | - | - | 8.8 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.4 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 325 | 87 | 23 | 275 | 52 | 17 |
| Future Vol, veh/h | 325 | 87 | 23 | 275 | 52 | 17 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 98 | 98 | 98 | 98 | 98 | 98 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 332 | 89 | 23 | 281 | 53 | 17 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 421 | 0 | 659 | 332 |
| Stage 1 | - | - | - | - | 332 | - |
| Stage 2 | - | - | - | - | 327 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1138 | - | 429 | 710 |
| Stage 1 | - | - | - | - | 727 | - |
| Stage 2 | - | - | - | - | 731 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1138 | - | 419 | 710 |
| Mov Cap-2 Maneuver | - | - | - | - | 419 | - |
| Stage 1 | - | - | - | - | 727 | - |
| Stage 2 | - | - | - | - | 713 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.6 | 14.1 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 466 | - | - | 1138 | - |
| HCM Lane V/C Ratio | 0.151 | - | - | 0.021 | - |
| HCM Control Delay (s) | 14.1 | - | - | 8.2 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.5 | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.9 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 472 | 112 | 15 | 352 | 69 | 10 |
| Future Vol, veh/h | 472 | 112 | 15 | 352 | 69 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 524 | 124 | 17 | 391 | 77 | 11 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 648 | 0 | 1011 | 586 |
| Stage 1 | - | - | - | - | 586 | - |
| Stage 2 | - | - | - | - | 425 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 938 | - | 265 | 510 |
| Stage 1 | - | - | - | - | 556 | - |
| Stage 2 | - | - | - | - | 659 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 938 | - | 259 | 510 |
| Mov Cap-2 Maneuver | - | - | - | - | 259 | - |
| Stage 1 | - | - | - | - | 556 | - |
| Stage 2 | - | - | - | - | 644 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.4 | 23 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 259 | 510 | - | - | 938 | - |
| HCM Lane V/C Ratio | 0.296 | 0.022 | - | - | 0.018 | - |
| HCM Control Delay (s) | 24.6 | 12.2 | - | - | 8.9 | 0 |
| HCM Lane LOS | C | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 1.2 | 0.1 | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 410 | 72 | 4 | 323 | 44 | 3 |
| Future Vol, veh/h | 410 | 72 | 4 | 323 | 44 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 456 | 80 | 4 | 359 | 49 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 536 | 0 | 863 | 496 |
| Stage 1 | - | - | - | - | 496 | - |
| Stage 2 | - | - | - | - | 367 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1032 | - | 325 | 574 |
| Stage 1 | - | - | - | - | 612 | - |
| Stage 2 | - | - | - | - | 701 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1032 | - | 323 | 574 |
| Mov Cap-2 Maneuver | - | - | - | - | 323 | - |
| Stage 1 | - | - | - | - | 612 | - |
| Stage 2 | - | - | - | - | 697 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 17.7 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 323 | 574 | - | - | 1032 | - |
| HCM Lane V/C Ratio | 0.151 | 0.006 | - | - | 0.004 | - |
| HCM Control Delay (s) | 18.1 | 11.3 | - | - | 8.5 | 0 |
| HCM Lane LOS | C | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.5 | 0 | - | - | 0 | - |

# Appendix C-15

## 2025 Full Build Improved Conditions AM Peak

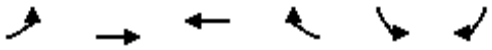
| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 739 | 4 | 7 | 792 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 739 | 4 | 7 | 792 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 1 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 8 | 0 | 17 | 0 | 830 | 4 | 8 | 890 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1291 | - | 415 | 890 | 0 | 0 | 834 | 0 | 0 |
| Stage 1 | 830 | - | - | - | - | - | - | - | - |
| Stage 2 | 461 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 155 | 0 | 586 | 757 | - | - | 795 | - | - |
| Stage 1 | 388 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 601 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 153 | 0 | 586 | 757 | - | - | 795 | - | - |
| Mov Cap-2 Maneuver | 153 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 388 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 595 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 17.2 | 0 | 0.1 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 757 | - | - | 153 | 586 | 795 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.051 | 0.029 | 0.01 | - | - |
| HCM Control Delay (s) | 0 | - | - | 29.8 | 11.3 | 9.6 | - | - |
| HCM Lane LOS | A | - | - | D | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.2 | 0.1 | 0 | - | - |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 77 | 243 | 320 | 181 | 144 | 61 |
| Future Volume (veh/h) | 77 | 243 | 320 | 181 | 144 | 61 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | | 1.00 | 1.00 | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | No | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 84 | 264 | 348 | 197 | 157 | 66 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 497 | 957 | 574 | 325 | 378 | 159 |
| Arrive On Green | 0.51 | 0.51 | 0.51 | 0.44 | 0.31 | 0.24 |
| Sat Flow, veh/h | 862 | 1870 | 1121 | 635 | 1205 | 506 |
| Grp Volume(v), veh/h | 84 | 264 | 0 | 545 | 224 | 0 |
| Grp Sat Flow(s),veh/h/ln | 862 | 1870 | 0 | 1756 | 1719 | 0 |
| Q Serve(g_s), s | 2.2 | 2.3 | 0.0 | 6.5 | 3.0 | 0.0 |
| Cycle Q Clear(g_c), s | 8.7 | 2.3 | 0.0 | 6.5 | 3.0 | 0.0 |
| Prop In Lane | 1.00 | | | 0.36 | 0.70 | 0.29 |
| Lane Grp Cap(c), veh/h | 497 | 957 | 0 | 899 | 539 | 0 |
| V/C Ratio(X) | 0.17 | 0.28 | 0.00 | 0.61 | 0.42 | 0.00 |
| Avail Cap(c_a), veh/h | 1664 | 3489 | 0 | 3276 | 1888 | 0 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 8.1 | 4.0 | 0.0 | 5.3 | 8.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.2 | 0.2 | 0.0 | 0.7 | 0.5 | 0.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.2 | 0.1 | 0.0 | 0.4 | 0.7 | 0.0 |
| Unsig. Movement Delay, s/veh | | | | | | |
| LnGrp Delay(d),s/veh | 8.3 | 4.1 | 0.0 | 5.9 | 8.5 | 0.0 |
| LnGrp LOS | A | A | A | A | A | A |
| Approach Vol, veh/h | | 348 | 545 | | 224 | |
| Approach Delay, s/veh | | 5.1 | 5.9 | | 8.5 | |
| Approach LOS | | A | A | | A | |

| Timer - Assigned Phs | | 4 | | 6 | 8 |
|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | | 17.2 | | 11.5 | 17.2 |
| Change Period (Y+Rc), s | | 4.5 | | 4.5 | 4.5 |
| Max Green Setting (Gmax), s | | 51.5 | | 29.5 | 51.5 |
| Max Q Clear Time (g_c+I1), s | | 10.7 | | 5.0 | 8.5 |
| Green Ext Time (p_c), s | | 2.0 | | 0.6 | 3.7 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 6.2 |
| HCM 6th LOS | A |

**Notes**

User approved volume balancing among the lanes for turning movement.

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 1 | 260 | 20 | 0 | 481 | 0 | 31 | 0 | 1 | 0 | 1 | 6 |
| Future Vol, veh/h | 1 | 260 | 20 | 0 | 481 | 0 | 31 | 0 | 1 | 0 | 1 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 295 | 23 | 0 | 547 | 0 | 35 | 0 | 1 | 0 | 1 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 547 | 0 | 0 | 318 | 0 | 0 | 860 | 856 | 307 | 856 | 867 | 547 |
| Stage 1 | - | - | - | - | - | - | 309 | 309 | - | 547 | 547 | - |
| Stage 2 | - | - | - | - | - | - | 551 | 547 | - | 309 | 320 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1022 | - | - | 1242 | - | - | 276 | 295 | 733 | 278 | 291 | 537 |
| Stage 1 | - | - | - | - | - | - | 701 | 660 | - | 521 | 517 | - |
| Stage 2 | - | - | - | - | - | - | 519 | 517 | - | 701 | 652 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1022 | - | - | 1242 | - | - | 272 | 295 | 733 | 277 | 291 | 537 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 272 | 295 | - | 277 | 291 | - |
| Stage 1 | - | - | - | - | - | - | 700 | 659 | - | 520 | 517 | - |
| Stage 2 | - | - | - | - | - | - | 511 | 517 | - | 699 | 651 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 20 | 12.6 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 277 | 1022 | - | - | 1242 | - | - | 479 |
| HCM Lane V/C Ratio | 0.131 | 0.001 | - | - | - | - | - | 0.017 |
| HCM Control Delay (s) | 20 | 8.5 | 0 | - | 0 | - | - | 12.6 |
| HCM Lane LOS | C | A | A | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.4 | 0 | - | - | 0 | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 236 | 18 | 2 | 430 | 35 | 12 |
| Future Vol, veh/h | 236 | 18 | 2 | 430 | 35 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 87 | 87 | 87 | 87 | 87 | 87 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 271 | 21 | 2 | 494 | 40 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 292 | 0 | 769 | 271 |
| Stage 1 | - | - | - | - | 271 | - |
| Stage 2 | - | - | - | - | 498 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1270 | - | 369 | 768 |
| Stage 1 | - | - | - | - | 775 | - |
| Stage 2 | - | - | - | - | 611 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1270 | - | 368 | 768 |
| Mov Cap-2 Maneuver | - | - | - | - | 368 | - |
| Stage 1 | - | - | - | - | 775 | - |
| Stage 2 | - | - | - | - | 610 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 14.4 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 368 | 768 | - | - | 1270 | - |
| HCM Lane V/C Ratio | 0.109 | 0.018 | - | - | 0.002 | - |
| HCM Control Delay (s) | 16 | 9.8 | - | - | 7.8 | - |
| HCM Lane LOS | C | A | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.4 | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 166 | 37 | 12 | 220 | 48 | 11 |
| Future Vol, veh/h | 166 | 37 | 12 | 220 | 48 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 182 | 41 | 13 | 242 | 53 | 12 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 223 | 0 | 450 | 182 |
| Stage 1 | - | - | - | - | 182 | - |
| Stage 2 | - | - | - | - | 268 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1346 | - | 567 | 861 |
| Stage 1 | - | - | - | - | 849 | - |
| Stage 2 | - | - | - | - | 777 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1346 | - | 561 | 861 |
| Mov Cap-2 Maneuver | - | - | - | - | 561 | - |
| Stage 1 | - | - | - | - | 849 | - |
| Stage 2 | - | - | - | - | 768 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.4 | 11.7 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 600 | - | - | 1346 | - |
| HCM Lane V/C Ratio | 0.108 | - | - | 0.01 | - |
| HCM Control Delay (s) | 11.7 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.4 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.7 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 211 | 37 | 6 | 325 | 107 | 14 |
| Future Vol, veh/h | 211 | 37 | 6 | 325 | 107 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 125 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 234 | 41 | 7 | 361 | 119 | 16 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 275 | 0 | 630 | 255 |
| Stage 1 | - | - | - | - | 255 | - |
| Stage 2 | - | - | - | - | 375 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1288 | - | 446 | 784 |
| Stage 1 | - | - | - | - | 788 | - |
| Stage 2 | - | - | - | - | 695 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1288 | - | 444 | 784 |
| Mov Cap-2 Maneuver | - | - | - | - | 444 | - |
| Stage 1 | - | - | - | - | 788 | - |
| Stage 2 | - | - | - | - | 692 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 15.3 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 444 | 784 | - | - | 1288 | - |
| HCM Lane V/C Ratio | 0.268 | 0.02 | - | - | 0.005 | - |
| HCM Control Delay (s) | 16 | 9.7 | - | - | 7.8 | - |
| HCM Lane LOS | C | A | - | - | A | - |
| HCM 95th %tile Q(veh) | 1.1 | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.7 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 201 | 24 | 2 | 265 | 66 | 4 |
| Future Vol, veh/h | 201 | 24 | 2 | 265 | 66 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 223 | 27 | 2 | 294 | 73 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 250 | 0 | 535 | 237 |
| Stage 1 | - | - | - | - | 237 | - |
| Stage 2 | - | - | - | - | 298 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1316 | - | 506 | 802 |
| Stage 1 | - | - | - | - | 802 | - |
| Stage 2 | - | - | - | - | 753 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1316 | - | 505 | 802 |
| Mov Cap-2 Maneuver | - | - | - | - | 505 | - |
| Stage 1 | - | - | - | - | 802 | - |
| Stage 2 | - | - | - | - | 751 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 13.1 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 505 | 802 | - | - | 1316 | - |
| HCM Lane V/C Ratio | 0.145 | 0.006 | - | - | 0.002 | - |
| HCM Control Delay (s) | 13.3 | 9.5 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.5 | 0 | - | - | 0 | - |

# Appendix C-16

## 2025 Full Build Improved Conditions PM Peak

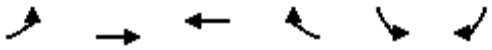
| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 1030 | 12 | 28 | 1033 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 5 | 0 | 17 | 0 | 1030 | 12 | 28 | 1033 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | 0 | 300 | - | 150 | 300 | - | 150 |
| Veh in Median Storage, # | - | 1 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 5 | 0 | 18 | 0 | 1062 | 12 | 29 | 1065 | 0 |

| Major/Minor | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1653 | - | 531 | 1065 | 0 | 0 | 1074 | 0 | 0 |
| Stage 1 | 1062 | - | - | - | - | - | - | - | - |
| Stage 2 | 591 | - | - | - | - | - | - | - | - |
| Critical Hdwy | 6.84 | - | 6.94 | 4.14 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | - | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 89 | 0 | 493 | 650 | - | - | 645 | - | - |
| Stage 1 | 294 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 516 | 0 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 85 | 0 | 493 | 650 | - | - | 645 | - | - |
| Mov Cap-2 Maneuver | 85 | 0 | - | - | - | - | - | - | - |
| Stage 1 | 294 | 0 | - | - | - | - | - | - | - |
| Stage 2 | 493 | 0 | - | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 21.1 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 650 | - | - | 85 | 493 | 645 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.061 | 0.036 | 0.045 | - | - |
| HCM Control Delay (s) | 0 | - | - | 50.1 | 12.6 | 10.8 | - | - |
| HCM Lane LOS | A | - | - | F | B | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.2 | 0.1 | 0.1 | - | - |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 41 | 420 | 359 | 170 | 211 | 58 |
| Future Volume (veh/h) | 41 | 420 | 359 | 170 | 211 | 58 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | | 1.00 | 1.00 | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | No | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 45 | 457 | 390 | 185 | 229 | 63 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 484 | 973 | 624 | 296 | 419 | 115 |
| Arrive On Green | 0.52 | 0.52 | 0.52 | 0.45 | 0.31 | 0.24 |
| Sat Flow, veh/h | 838 | 1870 | 1199 | 569 | 1356 | 373 |
| Grp Volume(v), veh/h | 45 | 457 | 0 | 575 | 293 | 0 |
| Grp Sat Flow(s),veh/h/ln | 838 | 1870 | 0 | 1768 | 1735 | 0 |
| Q Serve(g_s), s | 1.2 | 4.5 | 0.0 | 6.9 | 4.2 | 0.0 |
| Cycle Q Clear(g_c), s | 8.1 | 4.5 | 0.0 | 6.9 | 4.2 | 0.0 |
| Prop In Lane | 1.00 | | | 0.32 | 0.78 | 0.22 |
| Lane Grp Cap(c), veh/h | 484 | 973 | 0 | 920 | 536 | 0 |
| V/C Ratio(X) | 0.09 | 0.47 | 0.00 | 0.63 | 0.55 | 0.00 |
| Avail Cap(c_a), veh/h | 1524 | 3295 | 0 | 3115 | 1989 | 0 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 7.9 | 4.5 | 0.0 | 5.3 | 8.6 | 0.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.4 | 0.0 | 0.7 | 0.9 | 0.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.1 | 0.3 | 0.0 | 0.5 | 1.0 | 0.0 |
| Unsig. Movement Delay, s/veh | | | | | | |
| LnGrp Delay(d),s/veh | 8.0 | 4.8 | 0.0 | 6.0 | 9.5 | 0.0 |
| LnGrp LOS | A | A | A | A | A | A |
| Approach Vol, veh/h | | 502 | 575 | | 293 | |
| Approach Delay, s/veh | | 5.1 | 6.0 | | 9.5 | |
| Approach LOS | | A | A | | A | |

| Timer - Assigned Phs | 4 | 6 | 8 |
|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 17.7 | 11.5 | 17.7 |
| Change Period (Y+Rc), s | 4.5 | 4.5 | 4.5 |
| Max Green Setting (Gmax), s | 49.5 | 31.5 | 49.5 |
| Max Q Clear Time (g_c+I1), s | 10.1 | 6.2 | 8.9 |
| Green Ext Time (p_c), s | 3.1 | 0.9 | 4.0 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 6.4 |
| HCM 6th LOS | A |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 5 | 625 | 50 | 1 | 454 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Future Vol, veh/h | 5 | 625 | 50 | 1 | 454 | 0 | 19 | 0 | 0 | 0 | 0 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 651 | 52 | 1 | 473 | 0 | 20 | 0 | 0 | 0 | 0 | 10 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 473 | 0 | 0 | 703 | 0 | 0 | 1167 | 1162 | 677 | 1162 | 1188 | 473 |
| Stage 1 | - | - | - | - | - | - | 687 | 687 | - | 475 | 475 | - |
| Stage 2 | - | - | - | - | - | - | 480 | 475 | - | 687 | 713 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1089 | - | - | 895 | - | - | 171 | 195 | 453 | 172 | 188 | 591 |
| Stage 1 | - | - | - | - | - | - | 437 | 447 | - | 570 | 557 | - |
| Stage 2 | - | - | - | - | - | - | 567 | 557 | - | 437 | 435 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1089 | - | - | 895 | - | - | 167 | 193 | 453 | 171 | 186 | 591 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 167 | 193 | - | 171 | 186 | - |
| Stage 1 | - | - | - | - | - | - | 434 | 443 | - | 565 | 556 | - |
| Stage 2 | - | - | - | - | - | - | 556 | 556 | - | 434 | 432 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 29.4 | 11.2 |
| HCM LOS | | | D | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 167 | 1089 | - | - | 895 | - | - | 591 |
| HCM Lane V/C Ratio | 0.119 | 0.005 | - | - | 0.001 | - | - | 0.018 |
| HCM Control Delay (s) | 29.4 | 8.3 | 0 | - | 9 | 0 | - | 11.2 |
| HCM Lane LOS | D | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.4 | 0 | - | - | 0 | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 579 | 29 | 3 | 424 | 27 | 4 |
| Future Vol, veh/h | 579 | 29 | 3 | 424 | 27 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 175 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 616 | 31 | 3 | 451 | 29 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 647 | 0 | 1073 | 616 |
| Stage 1 | - | - | - | - | 616 | - |
| Stage 2 | - | - | - | - | 457 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 939 | - | 244 | 491 |
| Stage 1 | - | - | - | - | 539 | - |
| Stage 2 | - | - | - | - | 638 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 939 | - | 243 | 491 |
| Mov Cap-2 Maneuver | - | - | - | - | 243 | - |
| Stage 1 | - | - | - | - | 539 | - |
| Stage 2 | - | - | - | - | 636 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 20.6 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 243 | 491 | - | - | 939 | - |
| HCM Lane V/C Ratio | 0.118 | 0.009 | - | - | 0.003 | - |
| HCM Control Delay (s) | 21.8 | 12.4 | - | - | 8.8 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.4 | 0 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 325 | 87 | 23 | 275 | 52 | 17 |
| Future Vol, veh/h | 325 | 87 | 23 | 275 | 52 | 17 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 100 | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 98 | 98 | 98 | 98 | 98 | 98 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 332 | 89 | 23 | 281 | 53 | 17 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 421 | 0 | 659 | 332 |
| Stage 1 | - | - | - | - | 332 | - |
| Stage 2 | - | - | - | - | 327 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1138 | - | 429 | 710 |
| Stage 1 | - | - | - | - | 727 | - |
| Stage 2 | - | - | - | - | 731 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1138 | - | 419 | 710 |
| Mov Cap-2 Maneuver | - | - | - | - | 419 | - |
| Stage 1 | - | - | - | - | 727 | - |
| Stage 2 | - | - | - | - | 713 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.6 | 14.1 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 466 | - | - | 1138 | - |
| HCM Lane V/C Ratio | 0.151 | - | - | 0.021 | - |
| HCM Control Delay (s) | 14.1 | - | - | 8.2 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.5 | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.9 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 472 | 112 | 15 | 352 | 69 | 10 |
| Future Vol, veh/h | 472 | 112 | 15 | 352 | 69 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | 125 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 524 | 124 | 17 | 391 | 77 | 11 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 648 | 0 | 1011 | 586 |
| Stage 1 | - | - | - | - | 586 | - |
| Stage 2 | - | - | - | - | 425 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 938 | - | 265 | 510 |
| Stage 1 | - | - | - | - | 556 | - |
| Stage 2 | - | - | - | - | 659 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 938 | - | 260 | 510 |
| Mov Cap-2 Maneuver | - | - | - | - | 260 | - |
| Stage 1 | - | - | - | - | 556 | - |
| Stage 2 | - | - | - | - | 647 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.4 | 22.9 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 260 | 510 | - | - | 938 | - |
| HCM Lane V/C Ratio | 0.295 | 0.022 | - | - | 0.018 | - |
| HCM Control Delay (s) | 24.5 | 12.2 | - | - | 8.9 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 1.2 | 0.1 | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 410 | 72 | 4 | 323 | 44 | 3 |
| Future Vol, veh/h | 410 | 72 | 4 | 323 | 44 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 456 | 80 | 4 | 359 | 49 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 536 | 0 | 863 | 496 |
| Stage 1 | - | - | - | - | 496 | - |
| Stage 2 | - | - | - | - | 367 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1032 | - | 325 | 574 |
| Stage 1 | - | - | - | - | 612 | - |
| Stage 2 | - | - | - | - | 701 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1032 | - | 323 | 574 |
| Mov Cap-2 Maneuver | - | - | - | - | 323 | - |
| Stage 1 | - | - | - | - | 612 | - |
| Stage 2 | - | - | - | - | 697 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 17.7 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 323 | 574 | - | - | 1032 | - |
| HCM Lane V/C Ratio | 0.151 | 0.006 | - | - | 0.004 | - |
| HCM Control Delay (s) | 18.1 | 11.3 | - | - | 8.5 | 0 |
| HCM Lane LOS | C | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.5 | 0 | - | - | 0 | - |

# Appendix D

## SimTraffic Outputs

# Appendix D-1

## 2021 Existing Conditions
## AM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 31 | 24 | 21 |
| Average Queue (ft) | 6 | 9 | 2 |
| 95th Queue (ft) | 23 | 28 | 13 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | WB | SB |
|---|---|---|---|
| Directions Served | LT | TR | LR |
| Maximum Queue (ft) | 79 | 13 | 129 |
| Average Queue (ft) | 26 | 0 | 59 |
| 95th Queue (ft) | 64 | 5 | 106 |
| Link Distance (ft) | 368 | 891 | 755 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | LT | R | LTR |
| Maximum Queue (ft) | 10 | 16 | 73 | 104 | 28 | 40 |
| Average Queue (ft) | 0 | 1 | 22 | 49 | 1 | 12 |
| 95th Queue (ft) | 6 | 7 | 52 | 80 | 12 | 36 |
| Link Distance (ft) | | 927 | | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | 125 | |
| Storage Blk Time (%) | | | | 0 | | |
| Queuing Penalty (veh) | | | | 0 | | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | NB | SB |
|---|---|---|---|
| Directions Served | LTR | LTR | LTR |
| Maximum Queue (ft) | 6 | 61 | 34 |
| Average Queue (ft) | 0 | 21 | 6 |
| 95th Queue (ft) | 4 | 52 | 27 |
| Link Distance (ft) | 642 | 816 | 393 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 5 | 55 | 26 |
| Average Queue (ft) | 0 | 19 | 10 |
| 95th Queue (ft) | 5 | 46 | 31 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 31 | 47 |
| Average Queue (ft) | 3 | 21 |
| 95th Queue (ft) | 18 | 36 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Zone Summary

Zone wide Queuing Penalty: 0

# Appendix D-2

## 2021 Existing Conditions
## PM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 26 | 33 | 46 |
| Average Queue (ft) | 4 | 10 | 10 |
| 95th Queue (ft) | 19 | 30 | 32 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | WB | SB |
|---|---|---|---|
| Directions Served | LT | TR | LR |
| Maximum Queue (ft) | 77 | 9 | 198 |
| Average Queue (ft) | 19 | 0 | 90 |
| 95th Queue (ft) | 59 | 4 | 163 |
| Link Distance (ft) | 344 | 898 | 752 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | LT | R | LTR |
| Maximum Queue (ft) | 15 | 27 | 76 | 75 | 63 | 39 |
| Average Queue (ft) | 1 | 2 | 32 | 41 | 8 | 9 |
| 95th Queue (ft) | 9 | 15 | 62 | 69 | 37 | 32 |
| Link Distance (ft) | | 927 | | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | 125 | |
| Storage Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 46 | 12 | 39 | 30 |
| Average Queue (ft) | 2 | 1 | 14 | 7 |
| 95th Queue (ft) | 23 | 10 | 39 | 27 |
| Link Distance (ft) | 642 | 1414 | 816 | 393 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 21 | 53 | 26 |
| Average Queue (ft) | 1 | 18 | 4 |
| 95th Queue (ft) | 9 | 44 | 18 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 42 | 53 |
| Average Queue (ft) | 5 | 23 |
| 95th Queue (ft) | 24 | 43 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Zone Summary

Zone wide Queuing Penalty: 0

# Appendix D-3

## 2022 No-Build Conditions
## AM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 26 | 34 | 23 |
| Average Queue (ft) | 6 | 10 | 3 |
| 95th Queue (ft) | 24 | 31 | 14 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | WB | SB |
|---|---|---|---|
| Directions Served | LT | TR | LR |
| Maximum Queue (ft) | 108 | 21 | 126 |
| Average Queue (ft) | 29 | 1 | 60 |
| 95th Queue (ft) | 73 | 9 | 107 |
| Link Distance (ft) | 368 | 898 | 721 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | LT | R | LTR |
| Maximum Queue (ft) | 16 | 33 | 64 | 94 | 38 | 35 |
| Average Queue (ft) | 1 | 2 | 26 | 47 | 2 | 12 |
| 95th Queue (ft) | 10 | 17 | 57 | 78 | 19 | 36 |
| Link Distance (ft) | | 927 | | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | 125 | |
| Storage Blk Time (%) | | | | 0 | | |
| Queuing Penalty (veh) | | | | 0 | | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | NB | SB |
|---|---|---|---|
| Directions Served | LTR | LTR | LTR |
| Maximum Queue (ft) | 6 | 56 | 30 |
| Average Queue (ft) | 0 | 22 | 6 |
| 95th Queue (ft) | 4 | 50 | 26 |
| Link Distance (ft) | 642 | 816 | 393 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 11 | 54 | 27 |
| Average Queue (ft) | 0 | 21 | 9 |
| 95th Queue (ft) | 6 | 47 | 30 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 14 | 48 |
| Average Queue (ft) | 0 | 20 |
| 95th Queue (ft) | 6 | 39 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Zone Summary

Zone wide Queuing Penalty: 0

# Appendix D-4

## 2022 No-Build Conditions
## PM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 26 | 37 | 39 |
| Average Queue (ft) | 4 | 10 | 10 |
| 95th Queue (ft) | 18 | 31 | 31 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | WB | SB |
|---|---|---|---|
| Directions Served | LT | TR | LR |
| Maximum Queue (ft) | 91 | 13 | 203 |
| Average Queue (ft) | 17 | 0 | 89 |
| 95th Queue (ft) | 58 | 5 | 169 |
| Link Distance (ft) | 365 | 890 | 737 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | LT | R | LTR |
| Maximum Queue (ft) | 16 | 30 | 72 | 87 | 47 | 36 |
| Average Queue (ft) | 2 | 2 | 30 | 42 | 7 | 9 |
| 95th Queue (ft) | 13 | 17 | 56 | 77 | 34 | 32 |
| Link Distance (ft) | | 927 | | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | 125 | |
| Storage Blk Time (%) | | | | 0 | | |
| Queuing Penalty (veh) | | | | 0 | | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 41 | 11 | 40 | 34 |
| Average Queue (ft) | 2 | 0 | 14 | 8 |
| 95th Queue (ft) | 17 | 6 | 39 | 30 |
| Link Distance (ft) | 642 | 1414 | 816 | 393 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 10 | 37 | 27 |
| Average Queue (ft) | 0 | 17 | 3 |
| 95th Queue (ft) | 5 | 40 | 18 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 32 | 53 |
| Average Queue (ft) | 4 | 23 |
| 95th Queue (ft) | 20 | 45 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Zone Summary

Zone wide Queuing Penalty: 0

# Appendix D-5

## 2022 Phase 1 Build Conditions
## AM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 26 | 24 | 22 |
| Average Queue (ft) | 4 | 8 | 2 |
| 95th Queue (ft) | 20 | 27 | 13 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | WB | SB |
|---|---|---|---|
| Directions Served | LT | TR | LR |
| Maximum Queue (ft) | 88 | 17 | 149 |
| Average Queue (ft) | 29 | 1 | 63 |
| 95th Queue (ft) | 68 | 6 | 113 |
| Link Distance (ft) | 377 | 889 | 764 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | LT | R | LTR |
| Maximum Queue (ft) | 21 | 15 | 64 | 116 | 33 | 35 |
| Average Queue (ft) | 1 | 1 | 26 | 48 | 3 | 10 |
| 95th Queue (ft) | 11 | 7 | 57 | 84 | 20 | 33 |
| Link Distance (ft) | | 927 | | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | 125 | |
| Storage Blk Time (%) | | | | 0 | | |
| Queuing Penalty (veh) | | | | 0 | | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | NB | SB |
|---|---|---|---|
| Directions Served | LTR | LTR | LTR |
| Maximum Queue (ft) | 5 | 60 | 30 |
| Average Queue (ft) | 0 | 22 | 6 |
| 95th Queue (ft) | 4 | 51 | 25 |
| Link Distance (ft) | 642 | 816 | 393 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 6 | 53 | 31 |
| Average Queue (ft) | 0 | 20 | 9 |
| 95th Queue (ft) | 4 | 47 | 30 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 25 | 51 |
| Average Queue (ft) | 1 | 21 |
| 95th Queue (ft) | 10 | 42 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 8: Site Drive #1 & WV 115

| Movement | NB | NB |
|---|---|---|
| Directions Served | L | R |
| Maximum Queue (ft) | 51 | 34 |
| Average Queue (ft) | 19 | 4 |
| 95th Queue (ft) | 44 | 23 |
| Link Distance (ft) | 350 | 350 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 9: Site Drive #2 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 5 | 34 | 18 |
| Average Queue (ft) | 0 | 13 | 1 |
| 95th Queue (ft) | 3 | 38 | 10 |
| Link Distance (ft) | 1103 | 406 | 406 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Zone Summary

Zone wide Queuing Penalty: 0

# Appendix D-6

## 2022 Phase 1 Build Conditions
## PM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 26 | 33 | 46 |
| Average Queue (ft) | 4 | 10 | 12 |
| 95th Queue (ft) | 19 | 30 | 35 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | SB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 101 | 197 |
| Average Queue (ft) | 22 | 78 |
| 95th Queue (ft) | 71 | 144 |
| Link Distance (ft) | 379 | 837 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | LT | R | LTR |
| Maximum Queue (ft) | 17 | 32 | 84 | 114 | 88 | 40 |
| Average Queue (ft) | 2 | 2 | 35 | 45 | 12 | 10 |
| 95th Queue (ft) | 12 | 17 | 66 | 85 | 51 | 34 |
| Link Distance (ft) | | 927 | | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | 125 | |
| Storage Blk Time (%) | | | | 1 | 0 | |
| Queuing Penalty (veh) | | | | 0 | 0 | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 58 | 6 | 54 | 34 |
| Average Queue (ft) | 4 | 0 | 15 | 8 |
| 95th Queue (ft) | 32 | 3 | 43 | 30 |
| Link Distance (ft) | 642 | 1414 | 816 | 393 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 16 | 45 | 27 |
| Average Queue (ft) | 1 | 17 | 3 |
| 95th Queue (ft) | 9 | 42 | 18 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 43 | 67 |
| Average Queue (ft) | 5 | 24 |
| 95th Queue (ft) | 24 | 47 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 8: Site Drive #1 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 25 | 38 | 30 |
| Average Queue (ft) | 1 | 14 | 3 |
| 95th Queue (ft) | 12 | 39 | 19 |
| Link Distance (ft) | 557 | 350 | 350 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 9: Site Drive #2 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 5 | 34 | 24 |
| Average Queue (ft) | 0 | 9 | 1 |
| 95th Queue (ft) | 4 | 31 | 11 |
| Link Distance (ft) | 1103 | 406 | 406 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Zone Summary

Zone wide Queuing Penalty: 0

# Appendix D-7

## 2024 Partial Build Conditions
## AM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 30 | 34 | 22 |
| Average Queue (ft) | 6 | 11 | 2 |
| 95th Queue (ft) | 24 | 32 | 12 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | WB | SB |
|---|---|---|---|
| Directions Served | LT | TR | LR |
| Maximum Queue (ft) | 125 | 17 | 170 |
| Average Queue (ft) | 33 | 1 | 66 |
| 95th Queue (ft) | 87 | 9 | 128 |
| Link Distance (ft) | 372 | 881 | 754 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 3: US 340 SB Ramps/Citizens Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 77 | 103 | 84 | 76 |
| Average Queue (ft) | 31 | 30 | 35 | 35 |
| 95th Queue (ft) | 63 | 70 | 73 | 68 |
| Link Distance (ft) | 881 | 927 | 999 | 1157 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | LT | R | LTR |
| Maximum Queue (ft) | 20 | 47 | 76 | 117 | 32 | 39 |
| Average Queue (ft) | 1 | 6 | 35 | 54 | 2 | 12 |
| 95th Queue (ft) | 8 | 28 | 63 | 98 | 16 | 35 |
| Link Distance (ft) | | 927 | | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | 125 | |
| Storage Blk Time (%) | | | | 1 | | |
| Queuing Penalty (veh) | | | | 0 | | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | NB | SB |
|---|---|---|
| Directions Served | LTR | LTR |
| Maximum Queue (ft) | 56 | 30 |
| Average Queue (ft) | 21 | 5 |
| 95th Queue (ft) | 50 | 22 |
| Link Distance (ft) | 816 | 393 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 5 | 51 | 27 |
| Average Queue (ft) | 0 | 20 | 10 |
| 95th Queue (ft) | 3 | 44 | 31 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 25 | 44 |
| Average Queue (ft) | 1 | 21 |
| 95th Queue (ft) | 9 | 39 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 8: Site Drive #1 & WV 115

| Movement | NB | NB |
|---|---|---|
| Directions Served | L | R |
| Maximum Queue (ft) | 47 | 31 |
| Average Queue (ft) | 20 | 3 |
| 95th Queue (ft) | 46 | 18 |
| Link Distance (ft) | 350 | 350 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 9: Site Drive #2 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 5 | 30 | 18 |
| Average Queue (ft) | 0 | 13 | 1 |
| 95th Queue (ft) | 3 | 37 | 9 |
| Link Distance (ft) | 1103 | 406 | 406 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

# Appendix D-8

## 2024 Partial Build Conditions
## PM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 30 | 29 | 49 |
| Average Queue (ft) | 4 | 11 | 12 |
| 95th Queue (ft) | 19 | 31 | 36 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | WB | SB |
|---|---|---|---|
| Directions Served | LT | TR | LR |
| Maximum Queue (ft) | 78 | 13 | 194 |
| Average Queue (ft) | 22 | 1 | 93 |
| 95th Queue (ft) | 61 | 6 | 168 |
| Link Distance (ft) | 356 | 883 | 738 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 3: US 340 SB Ramps/Citizens Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 186 | 106 | 277 | 79 |
| Average Queue (ft) | 60 | 40 | 122 | 34 |
| 95th Queue (ft) | 145 | 85 | 240 | 68 |
| Link Distance (ft) | 883 | 927 | 999 | 1157 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | LT | R | LTR |
| Maximum Queue (ft) | 21 | 48 | 95 | 172 | 72 | 39 |
| Average Queue (ft) | 2 | 10 | 42 | 63 | 18 | 11 |
| 95th Queue (ft) | 13 | 34 | 75 | 124 | 58 | 35 |
| Link Distance (ft) | | 927 | | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | 125 | |
| Storage Blk Time (%) | | | | 2 | | |
| Queuing Penalty (veh) | | | | 2 | | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 29 | 3 | 39 | 30 |
| Average Queue (ft) | 2 | 0 | 12 | 8 |
| 95th Queue (ft) | 16 | 2 | 37 | 29 |
| Link Distance (ft) | 642 | 1414 | 816 | 393 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 21 | 56 | 27 |
| Average Queue (ft) | 1 | 18 | 3 |
| 95th Queue (ft) | 10 | 44 | 18 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 34 | 53 |
| Average Queue (ft) | 5 | 24 |
| 95th Queue (ft) | 23 | 44 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 8: Site Drive #1 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 45 | 39 | 31 |
| Average Queue (ft) | 3 | 15 | 3 |
| 95th Queue (ft) | 21 | 41 | 18 |
| Link Distance (ft) | 557 | 350 | 350 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 9: Site Drive #2 & WV 115

| Movement | NB | NB |
|---|---|---|
| Directions Served | L | R |
| Maximum Queue (ft) | 43 | 29 |
| Average Queue (ft) | 8 | 2 |
| 95th Queue (ft) | 31 | 15 |
| Link Distance (ft) | 406 | 406 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

# Appendix D-9

## 2024 Phase 2 Build Conditions
## AM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 31 | 38 | 22 |
| Average Queue (ft) | 6 | 11 | 3 |
| 95th Queue (ft) | 25 | 32 | 14 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | WB | SB |
|---|---|---|---|
| Directions Served | LT | TR | LR |
| Maximum Queue (ft) | 105 | 17 | 218 |
| Average Queue (ft) | 32 | 1 | 81 |
| 95th Queue (ft) | 79 | 8 | 179 |
| Link Distance (ft) | 372 | 881 | 754 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 3: US 340 SB Ramps/Citizens Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 99 | 121 | 94 | 87 |
| Average Queue (ft) | 39 | 36 | 41 | 40 |
| 95th Queue (ft) | 76 | 83 | 80 | 77 |
| Link Distance (ft) | 881 | 927 | 999 | 1157 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | LT | R | LTR |
| Maximum Queue (ft) | 16 | 40 | 91 | 141 | 47 | 35 |
| Average Queue (ft) | 1 | 9 | 40 | 58 | 5 | 12 |
| 95th Queue (ft) | 11 | 31 | 74 | 102 | 27 | 36 |
| Link Distance (ft) | | 927 | | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | 125 | |
| Storage Blk Time (%) | | | | 1 | | |
| Queuing Penalty (veh) | | | | 0 | | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | NB | SB |
|---|---|---|---|
| Directions Served | LTR | LTR | LTR |
| Maximum Queue (ft) | 20 | 65 | 34 |
| Average Queue (ft) | 1 | 20 | 5 |
| 95th Queue (ft) | 9 | 50 | 23 |
| Link Distance (ft) | 642 | 816 | 393 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 5 | 49 | 31 |
| Average Queue (ft) | 0 | 20 | 9 |
| 95th Queue (ft) | 4 | 45 | 30 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 20 | 50 |
| Average Queue (ft) | 1 | 22 |
| 95th Queue (ft) | 10 | 40 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 8: Site Drive #1 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 16 | 79 | 35 |
| Average Queue (ft) | 1 | 35 | 9 |
| 95th Queue (ft) | 9 | 63 | 32 |
| Link Distance (ft) | 557 | 350 | 350 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 9: Site Drive #2 & WV 115

| Movement | NB | NB |
|---|---|---|
| Directions Served | L | R |
| Maximum Queue (ft) | 56 | 30 |
| Average Queue (ft) | 26 | 4 |
| 95th Queue (ft) | 50 | 20 |
| Link Distance (ft) | 406 | 406 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

# Appendix D-10

## 2024 Phase 2 Build Conditions
## PM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 30 | 28 | 41 |
| Average Queue (ft) | 4 | 10 | 11 |
| 95th Queue (ft) | 20 | 29 | 31 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | WB | SB |
|---|---|---|---|
| Directions Served | LT | TR | LR |
| Maximum Queue (ft) | 110 | 18 | 252 |
| Average Queue (ft) | 23 | 1 | 103 |
| 95th Queue (ft) | 73 | 8 | 189 |
| Link Distance (ft) | 356 | 883 | 738 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 3: US 340 SB Ramps/Citizens Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 176 | 102 | 346 | 86 |
| Average Queue (ft) | 70 | 40 | 148 | 34 |
| 95th Queue (ft) | 149 | 80 | 287 | 66 |
| Link Distance (ft) | 883 | 927 | 999 | 1157 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | LT | R | LTR |
| Maximum Queue (ft) | 27 | 47 | 108 | 160 | 72 | 43 |
| Average Queue (ft) | 2 | 10 | 47 | 68 | 16 | 10 |
| 95th Queue (ft) | 13 | 34 | 84 | 128 | 55 | 34 |
| Link Distance (ft) | | 927 | | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | 125 | |
| Storage Blk Time (%) | | | | 3 | | |
| Queuing Penalty (veh) | | | | 2 | | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | NB | SB |
|---|---|---|---|
| Directions Served | LTR | LTR | LTR |
| Maximum Queue (ft) | 64 | 44 | 30 |
| Average Queue (ft) | 3 | 13 | 7 |
| 95th Queue (ft) | 26 | 38 | 27 |
| Link Distance (ft) | 642 | 816 | 393 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 16 | 51 | 26 |
| Average Queue (ft) | 1 | 17 | 3 |
| 95th Queue (ft) | 10 | 43 | 17 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 38 | 58 |
| Average Queue (ft) | 6 | 24 |
| 95th Queue (ft) | 26 | 44 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 8: Site Drive #1 & WV 115

| Movement | EB | WB | NB | NB |
|---|---|---|---|---|
| Directions Served | TR | LT | L | R |
| Maximum Queue (ft) | 4 | 42 | 67 | 31 |
| Average Queue (ft) | 0 | 5 | 26 | 9 |
| 95th Queue (ft) | 3 | 26 | 53 | 31 |
| Link Distance (ft) | 1952 | 557 | 350 | 350 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 9: Site Drive #2 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 15 | 60 | 35 |
| Average Queue (ft) | 0 | 20 | 3 |
| 95th Queue (ft) | 6 | 47 | 17 |
| Link Distance (ft) | 1103 | 406 | 406 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

# Appendix D-11

## 2025 Partial Build Conditions
## AM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 26 | 28 | 22 |
| Average Queue (ft) | 5 | 11 | 2 |
| 95th Queue (ft) | 22 | 30 | 12 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | WB | SB |
|---|---|---|---|
| Directions Served | LT | TR | LR |
| Maximum Queue (ft) | 121 | 23 | 187 |
| Average Queue (ft) | 33 | 1 | 70 |
| 95th Queue (ft) | 87 | 9 | 140 |
| Link Distance (ft) | 372 | 881 | 754 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 3: US 340 SB Ramps/Citizens Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 95 | 100 | 82 | 87 |
| Average Queue (ft) | 34 | 34 | 41 | 37 |
| 95th Queue (ft) | 76 | 77 | 73 | 75 |
| Link Distance (ft) | 881 | 927 | 999 | 1157 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | LT | R | LTR |
| Maximum Queue (ft) | 17 | 53 | 84 | 118 | 40 | 45 |
| Average Queue (ft) | 1 | 11 | 39 | 55 | 3 | 11 |
| 95th Queue (ft) | 9 | 37 | 69 | 93 | 22 | 36 |
| Link Distance (ft) | | 927 | | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | 125 | |
| Storage Blk Time (%) | | | | 0 | | |
| Queuing Penalty (veh) | | | | 0 | | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | NB | SB |
|---|---|---|---|
| Directions Served | LTR | LTR | LTR |
| Maximum Queue (ft) | 5 | 53 | 30 |
| Average Queue (ft) | 0 | 21 | 6 |
| 95th Queue (ft) | 4 | 51 | 26 |
| Link Distance (ft) | 642 | 816 | 393 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 11 | 56 | 32 |
| Average Queue (ft) | 0 | 20 | 11 |
| 95th Queue (ft) | 5 | 46 | 33 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 32 | 58 |
| Average Queue (ft) | 2 | 23 |
| 95th Queue (ft) | 15 | 45 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 8: Site Drive #1 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 21 | 63 | 31 |
| Average Queue (ft) | 1 | 35 | 8 |
| 95th Queue (ft) | 11 | 59 | 31 |
| Link Distance (ft) | 557 | 350 | 350 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 9: Site Drive #2 & WV 115

| Movement | NB | NB |
|---|---|---|
| Directions Served | L | R |
| Maximum Queue (ft) | 52 | 31 |
| Average Queue (ft) | 25 | 3 |
| 95th Queue (ft) | 49 | 18 |
| Link Distance (ft) | 406 | 406 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

# Appendix D-12

## 2025 Partial Build Conditions
## PM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 40 | 34 | 48 |
| Average Queue (ft) | 5 | 11 | 11 |
| 95th Queue (ft) | 25 | 32 | 33 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | WB | SB |
|---|---|---|---|
| Directions Served | LT | TR | LR |
| Maximum Queue (ft) | 122 | 13 | 258 |
| Average Queue (ft) | 29 | 1 | 115 |
| 95th Queue (ft) | 84 | 7 | 218 |
| Link Distance (ft) | 356 | 883 | 738 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 3: US 340 SB Ramps/Citizens Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 255 | 100 | 452 | 99 |
| Average Queue (ft) | 87 | 42 | 206 | 34 |
| 95th Queue (ft) | 207 | 83 | 492 | 74 |
| Link Distance (ft) | 883 | 927 | 999 | 1157 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | TR | LT | R | LTR |
| Maximum Queue (ft) | 22 | 50 | 115 | 52 | 203 | 143 | 40 |
| Average Queue (ft) | 1 | 10 | 49 | 2 | 76 | 41 | 8 |
| 95th Queue (ft) | 10 | 36 | 92 | 36 | 166 | 120 | 31 |
| Link Distance (ft) | | 927 | | 642 | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | | 125 | |
| Storage Blk Time (%) | | | 0 | | 6 | 3 | |
| Queuing Penalty (veh) | | | 1 | | 5 | 3 | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 35 | 60 | 44 | 34 |
| Average Queue (ft) | 3 | 4 | 12 | 7 |
| 95th Queue (ft) | 24 | 49 | 39 | 28 |
| Link Distance (ft) | 642 | 1414 | 816 | 393 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 27 | 54 | 27 |
| Average Queue (ft) | 2 | 18 | 5 |
| 95th Queue (ft) | 12 | 46 | 21 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 46 | 61 |
| Average Queue (ft) | 6 | 25 |
| 95th Queue (ft) | 27 | 48 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 8: Site Drive #1 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 60 | 59 | 31 |
| Average Queue (ft) | 7 | 28 | 6 |
| 95th Queue (ft) | 34 | 52 | 27 |
| Link Distance (ft) | 557 | 350 | 350 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 9: Site Drive #2 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 16 | 46 | 30 |
| Average Queue (ft) | 1 | 18 | 2 |
| 95th Queue (ft) | 9 | 43 | 14 |
| Link Distance (ft) | 1103 | 406 | 406 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

# Appendix D-13

## 2025 Full Build Conditions
## AM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 26 | 34 | 22 |
| Average Queue (ft) | 5 | 9 | 3 |
| 95th Queue (ft) | 22 | 29 | 15 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | WB | SB |
|---|---|---|---|
| Directions Served | LT | TR | LR |
| Maximum Queue (ft) | 108 | 21 | 218 |
| Average Queue (ft) | 36 | 2 | 78 |
| 95th Queue (ft) | 83 | 11 | 164 |
| Link Distance (ft) | 372 | 881 | 754 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 3: US 340 SB Ramps/Citizens Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 114 | 112 | 111 | 88 |
| Average Queue (ft) | 41 | 37 | 47 | 43 |
| 95th Queue (ft) | 81 | 84 | 88 | 74 |
| Link Distance (ft) | 881 | 927 | 999 | 1157 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | LT | R | LTR |
| Maximum Queue (ft) | 22 | 50 | 100 | 125 | 51 | 34 |
| Average Queue (ft) | 1 | 11 | 43 | 60 | 5 | 8 |
| 95th Queue (ft) | 9 | 36 | 78 | 104 | 30 | 30 |
| Link Distance (ft) | | 927 | | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | 125 | |
| Storage Blk Time (%) | | | | 0 | | |
| Queuing Penalty (veh) | | | | 0 | | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | NB | SB |
|---|---|---|
| Directions Served | LTR | LTR |
| Maximum Queue (ft) | 62 | 30 |
| Average Queue (ft) | 24 | 4 |
| 95th Queue (ft) | 54 | 21 |
| Link Distance (ft) | 816 | 393 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 10 | 60 | 32 |
| Average Queue (ft) | 0 | 22 | 10 |
| 95th Queue (ft) | 5 | 50 | 31 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 21 | 47 |
| Average Queue (ft) | 1 | 21 |
| 95th Queue (ft) | 11 | 41 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 8: Site Drive #1 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 20 | 90 | 31 |
| Average Queue (ft) | 1 | 39 | 12 |
| 95th Queue (ft) | 10 | 71 | 37 |
| Link Distance (ft) | 557 | 350 | 350 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 9: Site Drive #2 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 10 | 54 | 31 |
| Average Queue (ft) | 0 | 31 | 3 |
| 95th Queue (ft) | 5 | 51 | 17 |
| Link Distance (ft) | 1103 | 406 | 406 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

# Appendix D-14

## 2025 Full Build Conditions
## PM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 31 | 33 | 43 |
| Average Queue (ft) | 4 | 12 | 13 |
| 95th Queue (ft) | 21 | 32 | 34 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | WB | SB |
|---|---|---|---|
| Directions Served | LT | TR | LR |
| Maximum Queue (ft) | 114 | 17 | 353 |
| Average Queue (ft) | 26 | 1 | 160 |
| 95th Queue (ft) | 74 | 7 | 376 |
| Link Distance (ft) | 356 | 883 | 738 |
| Upstream Blk Time (%) | | | 0 |
| Queuing Penalty (veh) | | | 0 |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 3: US 340 SB Ramps/Citizens Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 382 | 107 | 563 | 95 |
| Average Queue (ft) | 147 | 47 | 277 | 36 |
| 95th Queue (ft) | 346 | 86 | 532 | 73 |
| Link Distance (ft) | 883 | 927 | 999 | 1157 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | EB | WB | NB | NB | SB |
|---|---|---|---|---|---|---|
| Directions Served | L | TR | L | LT | R | LTR |
| Maximum Queue (ft) | 28 | 52 | 122 | 236 | 194 | 31 |
| Average Queue (ft) | 2 | 12 | 53 | 96 | 54 | 12 |
| 95th Queue (ft) | 13 | 38 | 92 | 212 | 159 | 34 |
| Link Distance (ft) | | 927 | | 1086 | | 690 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 150 | | 175 | | 125 | |
| Storage Blk Time (%) | | | 0 | 13 | 5 | |
| Queuing Penalty (veh) | | | 0 | 14 | 5 | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 46 | 64 | 43 | 38 |
| Average Queue (ft) | 4 | 3 | 14 | 10 |
| 95th Queue (ft) | 25 | 40 | 40 | 33 |
| Link Distance (ft) | 642 | 1414 | 816 | 393 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | EB | WB | NB | NB |
|---|---|---|---|---|
| Directions Served | R | L | L | R |
| Maximum Queue (ft) | 4 | 16 | 51 | 22 |
| Average Queue (ft) | 0 | 1 | 19 | 3 |
| 95th Queue (ft) | 3 | 10 | 45 | 16 |
| Link Distance (ft) | | | 265 | 265 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | 150 | 175 | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 50 | 56 |
| Average Queue (ft) | 6 | 25 |
| 95th Queue (ft) | 29 | 44 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 8: Site Drive #1 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 64 | 91 | 31 |
| Average Queue (ft) | 8 | 36 | 8 |
| 95th Queue (ft) | 34 | 68 | 30 |
| Link Distance (ft) | 557 | 350 | 350 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 9: Site Drive #2 & WV 115

| Movement | EB | WB | NB | NB |
|---|---|---|---|---|
| Directions Served | TR | LT | L | R |
| Maximum Queue (ft) | 4 | 31 | 56 | 30 |
| Average Queue (ft) | 0 | 1 | 25 | 4 |
| 95th Queue (ft) | 3 | 12 | 49 | 19 |
| Link Distance (ft) | 557 | 1103 | 406 | 406 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

# Appendix D-15

## 2025 Full Build Improved Conditions AM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 26 | 29 | 17 |
| Average Queue (ft) | 3 | 9 | 2 |
| 95th Queue (ft) | 17 | 28 | 11 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | EB | WB | SB |
|---|---|---|---|---|
| Directions Served | L | T | TR | LR |
| Maximum Queue (ft) | 90 | 107 | 145 | 134 |
| Average Queue (ft) | 40 | 42 | 73 | 65 |
| 95th Queue (ft) | 74 | 79 | 117 | 118 |
| Link Distance (ft) | | 369 | 883 | 747 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | 125 | | | |
| Storage Blk Time (%) | 0 | 0 | | |
| Queuing Penalty (veh) | 0 | 0 | | |

## Intersection: 3: US 340 SB Ramps/Citizens Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 113 | 114 | 118 | 117 |
| Average Queue (ft) | 39 | 41 | 44 | 43 |
| 95th Queue (ft) | 84 | 91 | 87 | 90 |
| Link Distance (ft) | 883 | 901 | 999 | 1157 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 114 | 90 | 63 | 31 |
| Average Queue (ft) | 41 | 35 | 22 | 4 |
| 95th Queue (ft) | 83 | 76 | 56 | 20 |
| Link Distance (ft) | 901 | 616 | 1067 | 672 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | NB | SB |
|---|---|---|---|
| Directions Served | LTR | LTR | LTR |
| Maximum Queue (ft) | 10 | 56 | 31 |
| Average Queue (ft) | 0 | 20 | 6 |
| 95th Queue (ft) | 7 | 48 | 26 |
| Link Distance (ft) | 616 | 815 | 399 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 5 | 58 | 27 |
| Average Queue (ft) | 0 | 21 | 8 |
| 95th Queue (ft) | 4 | 47 | 28 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 20 | 44 |
| Average Queue (ft) | 1 | 21 |
| 95th Queue (ft) | 10 | 40 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 8: Site Drive #1 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 21 | 96 | 30 |
| Average Queue (ft) | 1 | 39 | 12 |
| 95th Queue (ft) | 9 | 72 | 36 |
| Link Distance (ft) | | 344 | 344 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 125 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 9: Site Drive #2 & WV 115

| Movement | NB | NB |
|---|---|---|
| Directions Served | L | R |
| Maximum Queue (ft) | 57 | 31 |
| Average Queue (ft) | 30 | 4 |
| 95th Queue (ft) | 56 | 21 |
| Link Distance (ft) | 400 | 400 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

# Appendix D-16

## 2025 Full Build Improved Conditions PM Peak

## Intersection: 1: US 340 & Undeveloped Road/Candlewood Dr

| Movement | WB | WB | SB |
|---|---|---|---|
| Directions Served | L | R | L |
| Maximum Queue (ft) | 30 | 33 | 37 |
| Average Queue (ft) | 4 | 10 | 11 |
| 95th Queue (ft) | 18 | 30 | 31 |
| Link Distance (ft) | 1735 | 1735 | |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | 300 |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 2: WV 115 & Jefferson Ave

| Movement | EB | EB | WB | SB |
|---|---|---|---|---|
| Directions Served | L | T | TR | LR |
| Maximum Queue (ft) | 61 | 180 | 172 | 180 |
| Average Queue (ft) | 26 | 70 | 80 | 82 |
| 95th Queue (ft) | 54 | 134 | 138 | 143 |
| Link Distance (ft) | | 354 | 883 | 731 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | 125 | | | |
| Storage Blk Time (%) | | 1 | | |
| Queuing Penalty (veh) | | 0 | | |

## Intersection: 3: US 340 SB Ramps/Citizens Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 315 | 110 | 729 | 80 |
| Average Queue (ft) | 104 | 39 | 346 | 33 |
| 95th Queue (ft) | 250 | 84 | 766 | 67 |
| Link Distance (ft) | 883 | 901 | 999 | 1157 |
| Upstream Blk Time (%) | | | 1 | |
| Queuing Penalty (veh) | | | 3 | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 4: US 340 NB Ramps/Hillside Dr & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 345 | 75 | 84 | 31 |
| Average Queue (ft) | 119 | 26 | 37 | 4 |
| 95th Queue (ft) | 307 | 65 | 75 | 21 |
| Link Distance (ft) | 901 | 616 | 1067 | 672 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 5: Fairleigh Dr/Bailey Brooks Way & WV 115

| Movement | EB | WB | NB | SB |
|---|---|---|---|---|
| Directions Served | LTR | LTR | LTR | LTR |
| Maximum Queue (ft) | 40 | 8 | 55 | 35 |
| Average Queue (ft) | 2 | 0 | 16 | 9 |
| 95th Queue (ft) | 17 | 6 | 43 | 32 |
| Link Distance (ft) | 616 | 1414 | 815 | 399 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

## Intersection: 6: Crosswinds Dr & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 16 | 49 | 27 |
| Average Queue (ft) | 1 | 17 | 3 |
| 95th Queue (ft) | 9 | 43 | 18 |
| Link Distance (ft) | | 265 | 265 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 175 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 7: Kabletown Rd & WV 115

| Movement | WB | NB |
|---|---|---|
| Directions Served | LT | LR |
| Maximum Queue (ft) | 56 | 56 |
| Average Queue (ft) | 8 | 24 |
| 95th Queue (ft) | 33 | 46 |
| Link Distance (ft) | 707 | 600 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

## Intersection: 8: Site Drive #1 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | L | L | R |
| Maximum Queue (ft) | 29 | 94 | 30 |
| Average Queue (ft) | 7 | 36 | 7 |
| 95th Queue (ft) | 25 | 72 | 27 |
| Link Distance (ft) | | 344 | 344 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 125 | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

## Intersection: 9: Site Drive #2 & WV 115

| Movement | WB | NB | NB |
|---|---|---|---|
| Directions Served | LT | L | R |
| Maximum Queue (ft) | 15 | 60 | 30 |
| Average Queue (ft) | 1 | 24 | 3 |
| 95th Queue (ft) | 10 | 50 | 17 |
| Link Distance (ft) | 1103 | 406 | 406 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

# Appendix E

## Sidra Outputs

# Appendix E-1

## 2021 Existing Conditions
## AM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - AM Peak (Site Folder: 2021 Existing Conditions)]

New Site
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 258 | 2.0 | 951 | 0.271 | 100 | 6.5 | LOS A | 1.3 | 33.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 258 | 2.0 | | 0.271 | | 6.5 | LOS A | 1.3 | 33.0 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 409 | 2.0 | 1121 | 0.365 | 100 | 6.9 | LOS A | 2.1 | 52.8 | Full | 1000 | 0.0 | 0.0 |
| Approach | 409 | 2.0 | | 0.365 | | 6.9 | LOS A | 2.1 | 52.8 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 78 | 2.0 | 773 | 0.100 | 100 | 5.7 | LOS A | 0.4 | 10.2 | Full | 1600 | 0.0 | 0.0 |
| Approach | 78 | 2.0 | | 0.100 | | 5.7 | LOS A | 0.4 | 10.2 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 402 | 2.0 | 1181 | 0.341 | 100 | 6.3 | LOS A | 1.9 | 49.3 | Full | 1600 | 0.0 | 0.0 |
| Approach | 402 | 2.0 | | 0.341 | | 6.3 | LOS A | 1.9 | 49.3 | | | | |
| Intersection | 1147 | 2.0 | | 0.365 | | 6.5 | LOS A | 2.1 | 52.8 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 140 | 24 | 94 | 258 | 2.0 | 951 | 0.271 | 100 | NA | NA |
| Approach | 140 | 24 | 94 | 258 | 2.0 | | 0.271 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 79 | 319 | 12 | 409 | 2.0 | 1121 | 0.365 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 79 | 319 | 12 | 409 | 2.0 | | 0.365 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov.<br>From N<br>To Exit: | L2<br><br>E | T1<br><br>S | R2<br><br>W | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 36 | 15 | 26 | 78 | 2.0 | 773 | 0.100 | 100 | NA | NA |
| Approach | 36 | 15 | 26 | 78 | 2.0 | | 0.100 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov.<br>From W<br>To Exit: | L2<br><br>N | T1<br><br>E | R2<br><br>S | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 18 | 285 | 100 | 402 | 2.0 | 1181 | 0.341 | 100 | NA | NA |
| Approach | 18 | 285 | 100 | 402 | 2.0 | | 0.341 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | |
| Intersection | 1147 | 2.0 | | 0.365 | | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-2

## 2021 Existing Conditions
## PM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - PM Peak (Site Folder: 2021 Existing Conditions)]

New Site
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 371 | 2.0 | 834 | 0.445 | 100 | 10.0 | LOS A | 2.7 | 69.5 | Full | 1600 | 0.0 | 0.0 |
| Approach | 371 | 2.0 | | 0.445 | | 10.0 | LOS A | 2.7 | 69.5 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 367 | 2.0 | 1090 | 0.336 | 100 | 6.6 | LOS A | 1.8 | 46.4 | Full | 1000 | 0.0 | 0.0 |
| Approach | 367 | 2.0 | | 0.336 | | 6.6 | LOS A | 1.8 | 46.4 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 81 | 2.0 | 808 | 0.100 | 100 | 5.4 | LOS A | 0.4 | 10.2 | Full | 1600 | 0.0 | 0.0 |
| Approach | 81 | 2.0 | | 0.100 | | 5.4 | LOS A | 0.4 | 10.2 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 570 | 2.0 | 1240 | 0.460 | 100 | 7.6 | LOS A | 3.2 | 80.8 | Full | 1600 | 0.0 | 0.0 |
| Approach | 570 | 2.0 | | 0.460 | | 7.6 | LOS A | 3.2 | 80.8 | | | | |
| Intersection | 1388 | 2.0 | | 0.460 | | 7.9 | LOS A | 3.2 | 80.8 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 139 | 30 | 202 | 371 | 2.0 | 834 | 0.445 | 100 | NA | NA |
| Approach | 139 | 30 | 202 | 371 | 2.0 | | 0.445 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 41 | 316 | 10 | 367 | 2.0 | 1090 | 0.336 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 41 | 316 | 10 | 367 | 2.0 | | 0.336 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 35 | 8 | 38 | 81 | 2.0 | 808 | 0.100 | 100 | NA | NA |
| Approach | 35 | 8 | 38 | 81 | 2.0 | | 0.100 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 39 | 391 | 140 | 570 | 2.0 | 1240 | 0.460 | 100 | NA | NA |
| Approach | 39 | 391 | 140 | 570 | 2.0 | | 0.460 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 1388 | 2.0 | 0.460 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | |

# Appendix E-3

## 2022 No-Build Conditions
## AM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - AM Peak (Site Folder: 2022 No-Build Conditions)]

2022 No-Build
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 260 | 2.0 | 948 | 0.274 | 100 | 6.6 | LOS A | 1.3 | 33.5 | Full | 1600 | 0.0 | 0.0 |
| Approach | 260 | 2.0 | | 0.274 | | 6.6 | LOS A | 1.3 | 33.5 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 414 | 2.0 | 1119 | 0.370 | 100 | 6.9 | LOS A | 2.1 | 53.7 | Full | 1000 | 0.0 | 0.0 |
| Approach | 414 | 2.0 | | 0.370 | | 6.9 | LOS A | 2.1 | 53.7 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 78 | 2.0 | 769 | 0.101 | 100 | 5.7 | LOS A | 0.4 | 10.3 | Full | 1600 | 0.0 | 0.0 |
| Approach | 78 | 2.0 | | 0.101 | | 5.7 | LOS A | 0.4 | 10.3 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 407 | 2.0 | 1180 | 0.345 | 100 | 6.4 | LOS A | 2.0 | 50.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 407 | 2.0 | | 0.345 | | 6.4 | LOS A | 2.0 | 50.1 | | | | |
| Intersection | 1159 | 2.0 | | 0.370 | | 6.6 | LOS A | 2.1 | 53.7 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 141 | 24 | 95 | 260 | 2.0 | 948 | 0.274 | 100 | NA | NA |
| Approach | 141 | 24 | 95 | 260 | 2.0 | | 0.274 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 80 | 322 | 12 | 414 | 2.0 | 1119 | 0.370 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 80 | 322 | 12 | 414 | 2.0 | | 0.370 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 36 | 15 | 26 | 78 | 2.0 | 769 | 0.101 | 100 | NA | NA |
| Approach | 36 | 15 | 26 | 78 | 2.0 | | 0.101 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 18 | 288 | 101 | 407 | 2.0 | 1180 | 0.345 | 100 | NA | NA |
| Approach | 18 | 288 | 101 | 407 | 2.0 | | 0.345 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | |
| Intersection | 1159 | 2.0 | | 0.370 | | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-4

## 2022 No-Build Conditions
## PM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - PM Peak (Site Folder: 2022 No-Build Conditions)]

2022 No-Build
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 375 | 2.0 | 830 | 0.452 | 100 | 10.1 | LOS B | 2.8 | 72.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 375 | 2.0 | | 0.452 | | 10.1 | LOS B | 2.8 | 72.1 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 371 | 2.0 | 1088 | 0.341 | 100 | 6.7 | LOS A | 1.9 | 47.2 | Full | 1000 | 0.0 | 0.0 |
| Approach | 371 | 2.0 | | 0.341 | | 6.7 | LOS A | 1.9 | 47.2 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 81 | 2.0 | 802 | 0.101 | 100 | 5.5 | LOS A | 0.4 | 10.3 | Full | 1600 | 0.0 | 0.0 |
| Approach | 81 | 2.0 | | 0.101 | | 5.5 | LOS A | 0.4 | 10.3 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 576 | 2.0 | 1240 | 0.465 | 100 | 7.7 | LOS A | 3.2 | 82.4 | Full | 1600 | 0.0 | 0.0 |
| Approach | 576 | 2.0 | | 0.465 | | 7.7 | LOS A | 3.2 | 82.4 | | | | |
| Intersection | 1403 | 2.0 | | 0.465 | | 8.0 | LOS A | 3.2 | 82.4 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 141 | 30 | 204 | 375 | 2.0 | 830 | 0.452 | 100 | NA | NA |
| Approach | 141 | 30 | 204 | 375 | 2.0 | | 0.452 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 41 | 320 | 10 | 371 | 2.0 | 1088 | 0.341 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 41 | 320 | 10 | 371 | 2.0 | | 0.341 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 35 | 8 | 38 | 81 | 2.0 | 802 | 0.101 | 100 | NA | NA |
| Approach | 35 | 8 | 38 | 81 | 2.0 | | 0.101 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 39 | 396 | 142 | 576 | 2.0 | 1240 | 0.465 | 100 | NA | NA |
| Approach | 39 | 396 | 142 | 576 | 2.0 | | 0.465 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | |
| Intersection | 1403 | 2.0 | | 0.465 | | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-5

## 2022 Phase 1 Build Conditions
## AM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - AM Peak (Site Folder: 2022 Phase 1 Build Conditions)]

2022 Phase 1 Build
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 268 | 2.0 | 941 | 0.285 | 100 | 6.8 | LOS A | 1.4 | 35.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 268 | 2.0 | | 0.285 | | 6.8 | LOS A | 1.4 | 35.0 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 448 | 2.0 | 1119 | 0.401 | 100 | 7.4 | LOS A | 2.4 | 60.3 | Full | 1000 | 0.0 | 0.0 |
| Approach | 448 | 2.0 | | 0.401 | | 7.4 | LOS A | 2.4 | 60.3 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 78 | 2.0 | 742 | 0.105 | 100 | 5.9 | LOS A | 0.4 | 10.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 78 | 2.0 | | 0.105 | | 5.9 | LOS A | 0.4 | 10.6 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 414 | 2.0 | 1161 | 0.357 | 100 | 6.6 | LOS A | 2.1 | 52.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 414 | 2.0 | | 0.357 | | 6.6 | LOS A | 2.1 | 52.1 | | | | |
| Intersection | 1208 | 2.0 | | 0.401 | | 6.9 | LOS A | 2.4 | 60.3 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 141 | 24 | 104 | 268 | 2.0 | 941 | 0.285 | 100 | NA | NA |
| Approach | 141 | 24 | 104 | 268 | 2.0 | | 0.285 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 95 | 341 | 12 | 448 | 2.0 | 1119 | 0.401 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 95 | 341 | 12 | 448 | 2.0 | | 0.401 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov.<br>From N<br>To Exit: | L2<br><br>E | T1<br><br>S | R2<br><br>W | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 36 | 15 | 26 | 78 | 2.0 | 742 | 0.105 | 100 | NA | NA |
| Approach | 36 | 15 | 26 | 78 | 2.0 | | 0.105 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov.<br>From W<br>To Exit: | L2<br><br>N | T1<br><br>E | R2<br><br>S | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 18 | 295 | 101 | 414 | 2.0 | 1161 | 0.357 | 100 | NA | NA |
| Approach | 18 | 295 | 101 | 414 | 2.0 | | 0.357 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | |
| Intersection | 1208 | 2.0 | | 0.401 | | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-6

## 2022 Phase 1 Build Conditions
## PM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - PM Peak (Site Folder: 2022 Phase 1 Build Conditions)]

2022 Phase 1 Build
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 397 | 2.0 | 736 | 0.539 | 100 | 13.2 | LOS B | 4.0 | 100.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 397 | 2.0 | | 0.539 | | 13.2 | LOS B | 4.0 | 100.6 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 391 | 2.0 | 1088 | 0.360 | 100 | 7.0 | LOS A | 2.0 | 50.8 | Full | 1000 | 0.0 | 0.0 |
| Approach | 391 | 2.0 | | 0.360 | | 7.0 | LOS A | 2.0 | 50.8 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 200 | 2.0 | 786 | 0.255 | 100 | 7.4 | LOS A | 1.1 | 28.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 200 | 2.0 | | 0.255 | | 7.4 | LOS A | 1.1 | 28.6 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 595 | 2.0 | 1093 | 0.544 | 100 | 9.9 | LOS A | 3.8 | 96.8 | Full | 1600 | 0.0 | 0.0 |
| Approach | 595 | 2.0 | | 0.544 | | 9.9 | LOS A | 3.8 | 96.8 | | | | |
| Intersection | 1583 | 2.0 | | 0.544 | | 9.7 | LOS A | 4.0 | 100.6 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 141 | 30 | 226 | 397 | 2.0 | 736 | 0.539 | 100 | NA | NA |
| Approach | 141 | 30 | 226 | 397 | 2.0 | | 0.539 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 51 | 331 | 10 | 391 | 2.0 | 1088 | 0.360 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 51 | 331 | 10 | 391 | 2.0 | | 0.360 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov.<br>From N<br>To Exit: | L2<br><br>E | T1<br><br>S | R2<br><br>W | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 132 | 23 | 45 | 200 | 2.0 | 786 | 0.255 | 100 | NA | NA |
| Approach | 132 | 23 | 45 | 200 | 2.0 | | 0.255 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov.<br>From W<br>To Exit: | L2<br><br>N | T1<br><br>E | R2<br><br>S | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 39 | 414 | 142 | 595 | 2.0 | 1093 | 0.544 | 100 | NA | NA |
| Approach | 39 | 414 | 142 | 595 | 2.0 | | 0.544 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 1583 | 2.0 | 0.544 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-7

## 2024 Partial Build Conditions
## AM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - AM Peak (Site Folder: 2024 Partial Build Conditions)]

2024 Partial Build
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 327 | 2.0 | 786 | 0.416 | 100 | 9.9 | LOS A | 2.4 | 59.8 | Full | 1600 | 0.0 | 0.0 |
| Approach | 327 | 2.0 | | 0.416 | | 9.9 | LOS A | 2.4 | 59.8 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 468 | 2.0 | 1051 | 0.445 | 100 | 8.4 | LOS A | 2.7 | 67.9 | Full | 1000 | 0.0 | 0.0 |
| Approach | 468 | 2.0 | | 0.445 | | 8.4 | LOS A | 2.7 | 67.9 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 274 | 2.0 | 730 | 0.375 | 100 | 9.7 | LOS A | 1.9 | 48.4 | Full | 1600 | 0.0 | 0.0 |
| Approach | 274 | 2.0 | | 0.375 | | 9.7 | LOS A | 1.9 | 48.4 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 433 | 2.0 | 957 | 0.452 | 100 | 9.1 | LOS A | 2.6 | 66.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 433 | 2.0 | | 0.452 | | 9.1 | LOS A | 2.6 | 66.6 | | | | |
| Intersection | 1502 | 2.0 | | 0.452 | | 9.2 | LOS A | 2.7 | 67.9 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 146 | 75 | 106 | 327 | 2.0 | 786 | 0.416 | 100 | NA | NA |
| Approach | 146 | 75 | 106 | 327 | 2.0 | | 0.416 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 98 | 349 | 21 | 468 | 2.0 | 1051 | 0.445 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 98 | 349 | 21 | 468 | 2.0 | | 0.445 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov.<br>From N<br>To Exit: | L2<br><br>E | T1<br><br>S | R2<br><br>W | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 195 | 40 | 39 | 274 | 2.0 | 730 | 0.375 | 100 | NA | NA |
| Approach | 195 | 40 | 39 | 274 | 2.0 | | 0.375 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov.<br>From W<br>To Exit: | L2<br><br>N | T1<br><br>E | R2<br><br>S | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 21 | 306 | 106 | 433 | 2.0 | 957 | 0.452 | 100 | NA | NA |
| Approach | 21 | 306 | 106 | 433 | 2.0 | | 0.452 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 1502 | 2.0 | 0.452 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-8

## 2024 Partial Build Conditions
## PM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - PM Peak (Site Folder: 2024 Partial Build Conditions)]

2024 Partial Build
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 570 | 2.0 | 717 | 0.794 | 100 | 25.4 | LOS D | 10.8 | 273.3 | Full | 1600 | 0.0 | 0.0 |
| Approach | 570 | 2.0 | | 0.794 | | 25.4 | LOS D | 10.8 | 273.3 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 428 | 2.0 | 901 | 0.475 | 100 | 9.9 | LOS A | 3.2 | 80.7 | Full | 1000 | 0.0 | 0.0 |
| Approach | 428 | 2.0 | | 0.475 | | 9.9 | LOS A | 3.2 | 80.7 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 200 | 2.0 | 772 | 0.259 | 100 | 7.6 | LOS A | 1.1 | 29.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 200 | 2.0 | | 0.259 | | 7.6 | LOS A | 1.1 | 29.1 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 624 | 2.0 | 1091 | 0.571 | 100 | 10.5 | LOS B | 4.2 | 105.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 624 | 2.0 | | 0.571 | | 10.5 | LOS B | 4.2 | 105.6 | | | | |
| Intersection | 1822 | 2.0 | | 0.794 | | 14.7 | LOS B | 10.8 | 273.3 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 147 | 191 | 231 | 570 | 2.0 | 717 | 0.794 | 100 | NA | NA |
| Approach | 147 | 191 | 231 | 570 | 2.0 | | 0.794 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 52 | 341 | 35 | 428 | 2.0 | 901 | 0.475 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 52 | 341 | 35 | 428 | 2.0 | | 0.475 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov.<br>From N<br>To Exit: | L2<br><br>E | T1<br><br>S | R2<br><br>W | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 132 | 23 | 45 | 200 | 2.0 | 772 | 0.259 | 100 | NA | NA |
| Approach | 132 | 23 | 45 | 200 | 2.0 | | 0.259 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov.<br>From W<br>To Exit: | L2<br><br>N | T1<br><br>E | R2<br><br>S | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 52 | 426 | 146 | 624 | 2.0 | 1091 | 0.571 | 100 | NA | NA |
| Approach | 52 | 426 | 146 | 624 | 2.0 | | 0.571 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 1822 | 2.0 | 0.794 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-9

## 2024 Phase 2 Build Conditions
## AM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - AM Peak (Site Folder: 2024 Phase 2 Build Conditions)]

2024 Phase 2 Build
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 339 | 2.0 | 778 | 0.435 | 100 | 10.3 | LOS B | 2.6 | 65.7 | Full | 1600 | 0.0 | 0.0 |
| Approach | 339 | 2.0 | | 0.435 | | 10.3 | LOS B | 2.6 | 65.7 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 520 | 2.0 | 1051 | 0.495 | 100 | 9.2 | LOS A | 3.1 | 79.9 | Full | 1000 | 0.0 | 0.0 |
| Approach | 520 | 2.0 | | 0.495 | | 9.2 | LOS A | 3.1 | 79.9 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 274 | 2.0 | 692 | 0.396 | 100 | 10.6 | LOS B | 2.1 | 53.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 274 | 2.0 | | 0.396 | | 10.6 | LOS B | 2.1 | 53.0 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 442 | 2.0 | 934 | 0.474 | 100 | 9.6 | LOS A | 3.1 | 78.8 | Full | 1600 | 0.0 | 0.0 |
| Approach | 442 | 2.0 | | 0.474 | | 9.6 | LOS A | 3.1 | 78.8 | | | | |
| Intersection | 1575 | 2.0 | | 0.495 | | 9.8 | LOS A | 3.1 | 79.9 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 146 | 75 | 118 | 339 | 2.0 | 778 | 0.435 | 100 | NA | NA |
| Approach | 146 | 75 | 118 | 339 | 2.0 | | 0.435 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 121 | 378 | 21 | 520 | 2.0 | 1051 | 0.495 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 121 | 378 | 21 | 520 | 2.0 | | 0.495 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov.<br>From N<br>To Exit: | L2<br><br>E | T1<br><br>S | R2<br><br>W | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 195 | 40 | 39 | 274 | 2.0 | 692 | 0.396 | 100 | NA | NA |
| Approach | 195 | 40 | 39 | 274 | 2.0 | | 0.396 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov.<br>From W<br>To Exit: | L2<br><br>N | T1<br><br>E | R2<br><br>S | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 21 | 315 | 106 | 442 | 2.0 | 934 | 0.474 | 100 | NA | NA |
| Approach | 21 | 315 | 106 | 442 | 2.0 | | 0.474 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | |
| Intersection | 1575 | 2.0 | | 0.495 | | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-10

## 2024 Phase 2 Build Conditions
## PM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - PM Peak (Site Folder: 2024 Phase 2 Build Conditions)]

2024 Phase 2 Build
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 602 | 2.0 | 697 | 0.864 | 100 | 33.2 | LOS D | 14.2 | 361.2 | Full | 1600 | 0.0 | 0.0 |
| Approach | 602 | 2.0 | | 0.864 | | 33.2 | LOS D | 14.2 | 361.2 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 459 | 2.0 | 901 | 0.509 | 100 | 10.6 | LOS B | 3.8 | 97.2 | Full | 1000 | 0.0 | 0.0 |
| Approach | 459 | 2.0 | | 0.509 | | 10.6 | LOS B | 3.8 | 97.2 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 200 | 2.0 | 747 | 0.268 | 100 | 7.9 | LOS A | 1.2 | 29.9 | Full | 1600 | 0.0 | 0.0 |
| Approach | 200 | 2.0 | | 0.268 | | 7.9 | LOS A | 1.2 | 29.9 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 652 | 2.0 | 1076 | 0.606 | 100 | 11.4 | LOS B | 5.8 | 146.2 | Full | 1600 | 0.0 | 0.0 |
| Approach | 652 | 2.0 | | 0.606 | | 11.4 | LOS B | 5.8 | 146.2 | | | | |
| Intersection | 1913 | 2.0 | | 0.864 | | 17.7 | LOS C | 14.2 | 361.2 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 147 | 191 | 263 | 602 | 2.0 | 697 | 0.864 | 100 | NA | NA |
| Approach | 147 | 191 | 263 | 602 | 2.0 | | 0.864 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 66 | 358 | 35 | 459 | 2.0 | 901 | 0.509 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 66 | 358 | 35 | 459 | 2.0 | | 0.509 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov.<br>From N<br>To Exit: | L2<br><br>E | T1<br><br>S | R2<br><br>W | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 132 | 23 | 45 | 200 | 2.0 | 747 | 0.268 | 100 | NA | NA |
| Approach | 132 | 23 | 45 | 200 | 2.0 | | 0.268 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov.<br>From W<br>To Exit: | L2<br><br>N | T1<br><br>E | R2<br><br>S | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 52 | 454 | 146 | 652 | 2.0 | 1076 | 0.606 | 100 | NA | NA |
| Approach | 52 | 454 | 146 | 652 | 2.0 | | 0.606 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 1913 | 2.0 | 0.864 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-11

## 2025 Partial Build Conditions
## AM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - AM Peak (Site Folder: 2025 Partial Build Conditions)]

2025 Partial Build
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 339 | 2.0 | 775 | 0.437 | 100 | 10.4 | LOS B | 2.6 | 66.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 339 | 2.0 | | 0.437 | | 10.4 | LOS B | 2.6 | 66.1 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 520 | 2.0 | 1051 | 0.495 | 100 | 9.2 | LOS A | 3.1 | 79.9 | Full | 1000 | 0.0 | 0.0 |
| Approach | 520 | 2.0 | | 0.495 | | 9.2 | LOS A | 3.1 | 79.9 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 274 | 2.0 | 692 | 0.396 | 100 | 10.6 | LOS B | 2.1 | 53.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 274 | 2.0 | | 0.396 | | 10.6 | LOS B | 2.1 | 53.0 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 447 | 2.0 | 934 | 0.479 | 100 | 9.7 | LOS A | 3.2 | 81.2 | Full | 1600 | 0.0 | 0.0 |
| Approach | 447 | 2.0 | | 0.479 | | 9.7 | LOS A | 3.2 | 81.2 | | | | |
| Intersection | 1580 | 2.0 | | 0.495 | | 9.8 | LOS A | 3.2 | 81.2 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 146 | 75 | 118 | 339 | 2.0 | 775 | 0.437 | 100 | NA | NA |
| Approach | 146 | 75 | 118 | 339 | 2.0 | | 0.437 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 121 | 378 | 21 | 520 | 2.0 | 1051 | 0.495 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 121 | 378 | 21 | 520 | 2.0 | | 0.495 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 195 | 40 | 39 | 274 | 2.0 | 692 | 0.396 | 100 | NA | NA |
| Approach | 195 | 40 | 39 | 274 | 2.0 | | 0.396 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 21 | 319 | 107 | 447 | 2.0 | 934 | 0.479 | 100 | NA | NA |
| Approach | 21 | 319 | 107 | 447 | 2.0 | | 0.479 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | |
| Intersection | 1580 | 2.0 | | 0.495 | | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-12

## 2025 Partial Build Conditions
## PM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - PM Peak (Site Folder: 2025 Partial Build Conditions)]

2025 Partial Build
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 606 | 2.0 | 693 | 0.875 | 100 | 34.7 | LOS D | 14.9 | 378.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 606 | 2.0 | | 0.875 | | 34.7 | LOS D | 14.9 | 378.0 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 463 | 2.0 | 899 | 0.515 | 100 | 10.8 | LOS B | 3.9 | 100.3 | Full | 1000 | 0.0 | 0.0 |
| Approach | 463 | 2.0 | | 0.515 | | 10.8 | LOS B | 3.9 | 100.3 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 200 | 2.0 | 742 | 0.270 | 100 | 8.0 | LOS A | 1.2 | 30.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 200 | 2.0 | | 0.270 | | 8.0 | LOS A | 1.2 | 30.1 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 659 | 2.0 | 1076 | 0.613 | 100 | 11.6 | LOS B | 6.1 | 154.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 659 | 2.0 | | 0.613 | | 11.6 | LOS B | 6.1 | 154.1 | | | | |
| Intersection | 1929 | 2.0 | | 0.875 | | 18.3 | LOS C | 14.9 | 378.0 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 149 | 191 | 266 | 606 | 2.0 | 693 | 0.875 | 100 | NA | NA |
| Approach | 149 | 191 | 266 | 606 | 2.0 | | 0.875 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 66 | 362 | 35 | 463 | 2.0 | 899 | 0.515 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 66 | 362 | 35 | 463 | 2.0 | | 0.515 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov.<br>From N<br>To Exit: | L2<br><br>E | T1<br><br>S | R2<br><br>W | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 132 | 23 | 45 | 200 | 2.0 | 742 | 0.270 | 100 | NA | NA |
| Approach | 132 | 23 | 45 | 200 | 2.0 | | 0.270 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov.<br>From W<br>To Exit: | L2<br><br>N | T1<br><br>E | R2<br><br>S | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 52 | 459 | 148 | 659 | 2.0 | 1076 | 0.613 | 100 | NA | NA |
| Approach | 52 | 459 | 148 | 659 | 2.0 | | 0.613 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | |
| Intersection | 1929 | 2.0 | | 0.875 | | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-13

## 2025 Full Build Conditions
## AM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - AM Peak (Site Folder: 2025 Build Conditions)]

New Site
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 349 | 2.0 | 770 | 0.454 | 100 | 10.8 | LOS B | 2.8 | 71.5 | Full | 1600 | 0.0 | 0.0 |
| Approach | 349 | 2.0 | | 0.454 | | 10.8 | LOS B | 2.8 | 71.5 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 564 | 2.0 | 1050 | 0.537 | 100 | 10.0 | LOS B | 3.7 | 94.3 | Full | 1000 | 0.0 | 0.0 |
| Approach | 564 | 2.0 | | 0.537 | | 10.0 | LOS B | 3.7 | 94.3 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 274 | 2.0 | 660 | 0.415 | 100 | 11.3 | LOS B | 2.2 | 56.9 | Full | 1600 | 0.0 | 0.0 |
| Approach | 274 | 2.0 | | 0.415 | | 11.3 | LOS B | 2.2 | 56.9 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 454 | 2.0 | 916 | 0.496 | 100 | 10.2 | LOS B | 3.6 | 90.4 | Full | 1600 | 0.0 | 0.0 |
| Approach | 454 | 2.0 | | 0.496 | | 10.2 | LOS B | 3.6 | 90.4 | | | | |
| Intersection | 1641 | 2.0 | | 0.537 | | 10.5 | LOS B | 3.7 | 94.3 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 147 | 75 | 127 | 349 | 2.0 | 770 | 0.454 | 100 | NA | NA |
| Approach | 147 | 75 | 127 | 349 | 2.0 | | 0.454 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 140 | 402 | 21 | 564 | 2.0 | 1050 | 0.537 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 140 | 402 | 21 | 564 | 2.0 | | 0.537 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov.<br>From N<br>To Exit: | L2<br><br>E | T1<br><br>S | R2<br><br>W | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 195 | 40 | 39 | 274 | 2.0 | 660 | 0.415 | 100 | NA | NA |
| Approach | 195 | 40 | 39 | 274 | 2.0 | | 0.415 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov.<br>From W<br>To Exit: | L2<br><br>N | T1<br><br>E | R2<br><br>S | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 21 | 326 | 107 | 454 | 2.0 | 916 | 0.496 | 100 | NA | NA |
| Approach | 21 | 326 | 107 | 454 | 2.0 | | 0.496 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | |
| Intersection | 1641 | 2.0 | | 0.537 | | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-14

## 2025 Full Build Conditions
## PM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - PM Peak (Site Folder: 2025 Build Conditions)]

New Site
Site Category: Existing Design
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 630 | 2.0 | 679 | 0.928 | 100 | 43.4 | LOS E | 18.8 | 478.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 630 | 2.0 | | 0.928 | | 43.4 | LOS E | 18.8 | 478.0 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 486 | 2.0 | 899 | 0.540 | 100 | 11.3 | LOS B | 4.5 | 113.9 | Full | 1000 | 0.0 | 0.0 |
| Approach | 486 | 2.0 | | 0.540 | | 11.3 | LOS B | 4.5 | 113.9 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 200 | 2.0 | 725 | 0.276 | 100 | 8.2 | LOS A | 1.2 | 30.7 | Full | 1600 | 0.0 | 0.0 |
| Approach | 200 | 2.0 | | 0.276 | | 8.2 | LOS A | 1.2 | 30.7 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 678 | 2.0 | 1064 | 0.638 | 100 | 12.3 | LOS B | 7.5 | 189.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 678 | 2.0 | | 0.638 | | 12.3 | LOS B | 7.5 | 189.6 | | | | |
| Intersection | 1995 | 2.0 | | 0.928 | | 21.5 | LOS C | 18.8 | 478.0 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 149 | 191 | 289 | 630 | 2.0 | 679 | 0.928 | 100 | NA | NA |
| Approach | 149 | 191 | 289 | 630 | 2.0 | | 0.928 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 76 | 374 | 35 | 486 | 2.0 | 899 | 0.540 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 76 | 374 | 35 | 486 | 2.0 | | 0.540 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov.<br>From N<br>To Exit: | L2<br><br>E | T1<br><br>S | R2<br><br>W | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 132 | 23 | 45 | 200 | 2.0 | 725 | 0.276 | 100 | NA | NA |
| Approach | 132 | 23 | 45 | 200 | 2.0 | | 0.276 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov.<br>From W<br>To Exit: | L2<br><br>N | T1<br><br>E | R2<br><br>S | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 52 | 478 | 148 | 678 | 2.0 | 1064 | 0.638 | 100 | NA | NA |
| Approach | 52 | 478 | 148 | 678 | 2.0 | | 0.638 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 1995 | 2.0 | 0.928 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-15

## 2025 Full Build Improved Conditions AM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - AM Peak (Site Folder: 2025 Build Improved Conditions)]

New Site
Site Category: (None)
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 222 | 2.0 | 842 | 0.264 | 100 | 7.1 | LOS A | 1.1 | 28.2 | Full | 1600 | 0.0 | 0.0 |
| Lane 2 | 127 | 2.0 | 858 | 0.148 | 100 | 5.7 | LOS A | 0.6 | 14.7 | Full | 1600 | 0.0 | 0.0 |
| Approach | 349 | 2.0 | | 0.264 | | 6.6 | LOS A | 1.1 | 28.2 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 564 | 2.0 | 1050 | 0.537 | 100 | 10.0 | LOS B | 3.7 | 94.3 | Full | 1000 | 0.0 | 0.0 |
| Approach | 564 | 2.0 | | 0.537 | | 10.0 | LOS B | 3.7 | 94.3 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 274 | 2.0 | 660 | 0.415 | 100 | 11.3 | LOS B | 2.2 | 56.9 | Full | 1600 | 0.0 | 0.0 |
| Approach | 274 | 2.0 | | 0.415 | | 11.3 | LOS B | 2.2 | 56.9 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 454 | 2.0 | 916 | 0.496 | 100 | 10.2 | LOS B | 3.6 | 90.4 | Full | 1600 | 0.0 | 0.0 |
| Approach | 454 | 2.0 | | 0.496 | | 10.2 | LOS B | 3.6 | 90.4 | | | | |
| Intersection | 1641 | 2.0 | | 0.537 | | 9.6 | LOS A | 3.7 | 94.3 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 147 | 75 | - | 222 | 2.0 | 842 | 0.264 | 100 | NA | NA |
| Lane 2 | - | - | 127 | 127 | 2.0 | 858 | 0.148 | 100 | NA | NA |
| Approach | 147 | 75 | 127 | 349 | 2.0 | | 0.264 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 140 | 402 | 21 | 564 | 2.0 | 1050 | 0.537 | 100 | NA | NA |
| Approach | 140 | 402 | 21 | 564 | 2.0 | | 0.537 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 195 | 40 | 39 | 274 | 2.0 | 660 | 0.415 | 100 | NA | NA |
| Approach | 195 | 40 | 39 | 274 | 2.0 | | 0.415 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 21 | 326 | 107 | 454 | 2.0 | 916 | 0.496 | 100 | NA | NA |
| Approach | 21 | 326 | 107 | 454 | 2.0 | | 0.496 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | |
| Intersection | 1641 | 2.0 | | 0.537 | | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# LANE SUMMARY

## Site: 4 [WV 115 w US 340 NB/Hillside Drive - AM Peak (Site Folder: 2025 Build Improved Conditions)]

New Site
Site Category: (None)
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 NB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 198 | 2.0 | 1023 | 0.193 | 100 | 5.3 | LOS A | 0.9 | 22.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 198 | 2.0 | | 0.193 | | 5.3 | LOS A | 0.9 | 22.6 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 575 | 2.0 | 1152 | 0.499 | 100 | 8.7 | LOS A | 3.4 | 87.3 | Full | 1000 | 0.0 | 0.0 |
| Approach | 575 | 2.0 | | 0.499 | | 8.7 | LOS A | 3.4 | 87.3 | | | | |
| North: Hillside Dr | | | | | | | | | | | | | |
| Lane 1[d] | 17 | 2.0 | 639 | 0.027 | 100 | 5.9 | LOS A | 0.1 | 2.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 17 | 2.0 | | 0.027 | | 5.9 | LOS A | 0.1 | 2.6 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 599 | 2.0 | 1079 | 0.555 | 100 | 10.2 | LOS B | 3.9 | 99.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 599 | 2.0 | | 0.555 | | 10.2 | LOS B | 3.9 | 99.1 | | | | |
| Intersection | 1389 | 2.0 | | 0.555 | | 8.8 | LOS A | 3.9 | 99.1 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 NB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 148 | 1 | 49 | 198 | 2.0 | 1023 | 0.193 | 100 | NA | NA |
| Approach | 148 | 1 | 49 | 198 | 2.0 | | 0.193 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 213 | 360 | 2 | 575 | 2.0 | 1152 | 0.499 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 213 | 360 | 2 | 575 | 2.0 | | 0.499 | | | |
| North: Hillside Dr | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 1 | 3 | 13 | 17 | 2.0 | 639 | 0.027 | 100 | NA | NA |
| Approach | 1 | 3 | 13 | 17 | 2.0 | | 0.027 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 5 | 262 | 332 | 599 | 2.0 | 1079 | 0.555 | 100 | NA | NA |
| Approach | 5 | 262 | 332 | 599 | 2.0 | | 0.555 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 1389 | 2.0 | 0.555 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 NB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Hillside Dr<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix E-16

## 2025 Full Build Improved Conditions PM Peak

# LANE SUMMARY

## Site: 3 [WV 115 w US 340 SB/Citizens Way - PM Peak (Site Folder: 2025 Build Improved Conditions)]

New Site
Site Category: (None)
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 SB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 341 | 2.0 | 753 | 0.453 | 100 | 10.9 | LOS B | 2.6 | 66.1 | Full | 1600 | 0.0 | 0.0 |
| Lane 2 | 289 | 2.0 | 790 | 0.366 | 100 | 9.0 | LOS A | 1.7 | 44.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 630 | 2.0 | | 0.453 | | 10.1 | LOS B | 2.6 | 66.1 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 486 | 2.0 | 899 | 0.540 | 100 | 11.3 | LOS B | 4.5 | 113.9 | Full | 1000 | 0.0 | 0.0 |
| Approach | 486 | 2.0 | | 0.540 | | 11.3 | LOS B | 4.5 | 113.9 | | | | |
| North: Citizens Way | | | | | | | | | | | | | |
| Lane 1[d] | 200 | 2.0 | 725 | 0.276 | 100 | 8.2 | LOS A | 1.2 | 30.7 | Full | 1600 | 0.0 | 0.0 |
| Approach | 200 | 2.0 | | 0.276 | | 8.2 | LOS A | 1.2 | 30.7 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 678 | 2.0 | 1064 | 0.638 | 100 | 12.3 | LOS B | 7.5 | 189.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 678 | 2.0 | | 0.638 | | 12.3 | LOS B | 7.5 | 189.6 | | | | |
| Intersection | 1995 | 2.0 | | 0.638 | | 11.0 | LOS B | 7.5 | 189.6 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 SB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 149 | 191 | - | 341 | 2.0 | 753 | 0.453 | 100 | NA | NA |
| Lane 2 | - | - | 289 | 289 | 2.0 | 790 | 0.366 | 100 | NA | NA |
| Approach | 149 | 191 | 289 | 630 | 2.0 | | 0.453 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 76 | 374 | 35 | 486 | 2.0 | 899 | 0.540 | 100 | NA | NA |
| Approach | 76 | 374 | 35 | 486 | 2.0 | | 0.540 | | | |
| North: Citizens Way | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 132 | 23 | 45 | 200 | 2.0 | 725 | 0.276 | 100 | NA | NA |
| Approach | 132 | 23 | 45 | 200 | 2.0 | | 0.276 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 52 | 478 | 148 | 678 | 2.0 | 1064 | 0.638 | 100 | NA | NA |
| Approach | 52 | 478 | 148 | 678 | 2.0 | | 0.638 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| Intersection | 1995 | 2.0 | 0.638 |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

## Merge Analysis

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 SB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Citizens Way<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

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Organisation: A MORTON THOMAS AND ASSOCIATES INC | Licence: PLUS / 1PC | Processed: Friday, April 29, 2022 9:05:36 AM
Project: C:\Users\cglaser\Desktop\Completed Projects\King Crossing TIS\Sidra Analysis\Sidra Models\Apr 2022_Int 3 and 4.sip9

# LANE SUMMARY

## Site: 4 [WV 115 w US 340 NB/Hillside Drive - PM Peak (Site Folder: 2025 Build Improved Conditions)]

New Site
Site Category: (None)
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: US 340 NB Ramps | | | | | | | | | | | | | |
| Lane 1[d] | 242 | 2.0 | 680 | 0.355 | 100 | 10.0 | LOS A | 1.7 | 43.4 | Full | 1600 | 0.0 | 0.0 |
| Approach | 242 | 2.0 | | 0.355 | | 10.0 | LOS A | 1.7 | 43.4 | | | | |
| East: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 565 | 2.0 | 1174 | 0.481 | 100 | 8.3 | LOS A | 3.3 | 83.4 | Full | 1000 | 0.0 | 0.0 |
| Approach | 565 | 2.0 | | 0.481 | | 8.3 | LOS A | 3.3 | 83.4 | | | | |
| North: Hillside Dr | | | | | | | | | | | | | |
| Lane 1[d] | 13 | 2.0 | 661 | 0.020 | 100 | 5.7 | LOS A | 0.1 | 1.9 | Full | 1600 | 0.0 | 0.0 |
| Approach | 13 | 2.0 | | 0.020 | | 5.7 | LOS A | 0.1 | 1.9 | | | | |
| West: WV 115 | | | | | | | | | | | | | |
| Lane 1[d] | 940 | 2.0 | 1105 | 0.851 | 100 | 22.7 | LOS C | 28.4 | 720.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 940 | 2.0 | | 0.851 | | 22.7 | LOS C | 28.4 | 720.6 | | | | |
| Intersection | 1761 | 2.0 | | 0.851 | | 16.2 | LOS C | 28.4 | 720.6 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: US 340 NB Ramps

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 125 | 3 | 113 | 242 | 2.0 | 680 | 0.355 | 100 | NA | NA |
| Approach | 125 | 3 | 113 | 242 | 2.0 | | 0.355 | | | |

East: WV 115

| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 188 | 376 | 1 | 565 | 2.0 | 1174 | 0.481 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 188 | 376 | 1 | 565 | 2.0 | | 0.481 | | | |
| North: Hillside Dr | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 1 | 6 | 7 | 13 | 2.0 | 661 | 0.020 | 100 | NA | NA |
| Approach | 1 | 6 | 7 | 13 | 2.0 | | 0.020 | | | |
| West: WV 115 | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 8 | 653 | 280 | 940 | 2.0 | 1105 | 0.851 | 100 | NA | NA |
| Approach | 8 | 653 | 280 | 940 | 2.0 | | 0.851 | | | |
| | Total | %HV | Deg.Satn (v/c) | | | | | | | |
| Intersection | 1761 | 2.0 | | 0.851 | | | | | | |

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

**Merge Analysis**

| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Exit: US 340 NB Ramps<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| East Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| North Exit: Hillside Dr<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |
| West Exit: WV 115<br>Merge Type: **Not Applied** | | | | | | | | | | | | |
| Full Length Lane | 1 | Merge Analysis not applied. | | | | | | | | | | |

# Appendix F

## Signal Warrant Analysis

# Warrant 2: Four-hour Vehicular Volume

**3: WV 115 with Hillside Drive/US 340 NB**

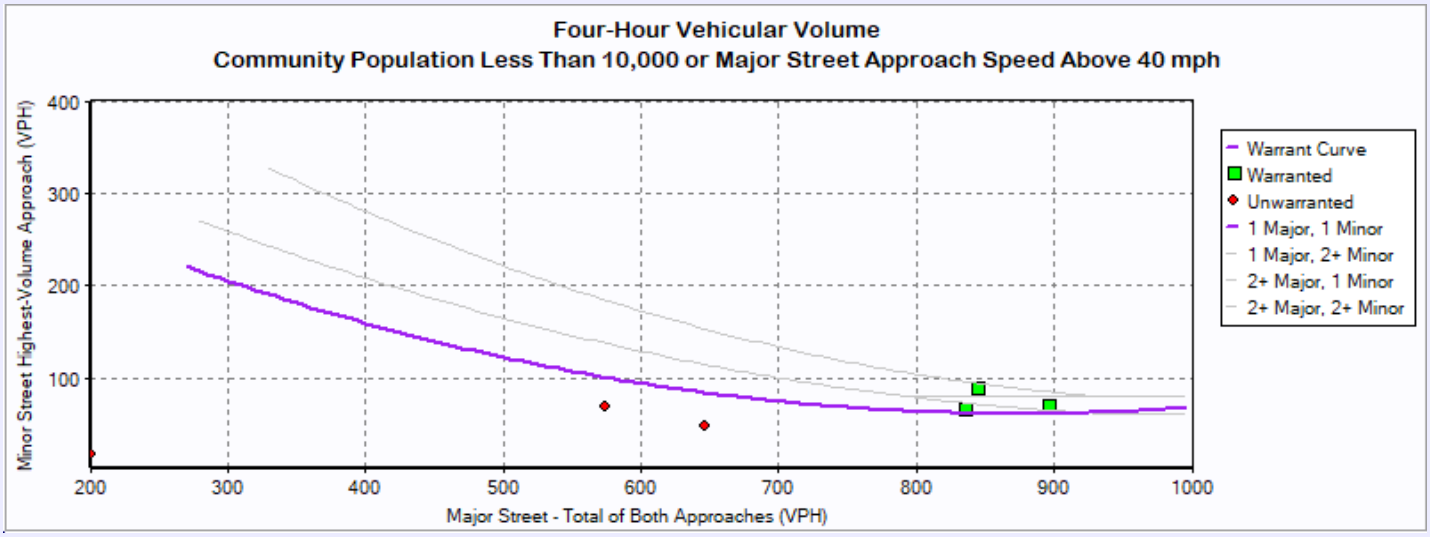
**Intersection Information**

| | Major Street | Minor Street |
|---|---|---|
| **Street Name** | WV 115 | Hillside Dr |
| **Direction** | EB/WB | NB/SB |
| **Number of Lanes** | 1 | 1 |
| **Approch Speed** | 45 | 25 |

**Warrant 2 Met?** **No**

**Details:**

| | |
|---|---|
| **Notes** | 3 Hours met (4 required) |
| **Low population** | Yes |



# Warrant 2: Four-hour Vehicular Volume

**3: WV 115 with Hillside Drive/US 340 NB**

**Hourly Volumes**

| Hour | Major Street<br>Total All Approaches (vph) | Minor Street<br>Highest Volume Approach (vph) |
|---|---|---|
| 00:00:00 - 01:00:00 | 574 | 68 |
| 01:00:00 - 02:00:00 | 647 | 47 |
| 02:00:00 - 03:00:00 | 872 | 63 |
| 03:00:00 - 04:00:00 | 889 | 74 |
| 04:00:00 - 05:00:00 | 834 | 88 |
| 05:00:00 - 06:00:00 | 0 | 0 |
| 06:00:00 - 07:00:00 | 0 | 0 |
| 07:00:00 - 08:00:00 | 0 | 0 |
| 08:00:00 - 09:00:00 | 0 | 0 |
| 09:00:00 - 10:00:00 | 0 | 0 |
| 10:00:00 - 11:00:00 | 0 | 0 |
| 11:00:00 - 12:00:00 | 0 | 0 |
| 12:00:00 - 13:00:00 | 0 | 0 |
| 13:00:00 - 14:00:00 | 0 | 0 |
| 14:00:00 - 15:00:00 | 0 | 0 |
| 15:00:00 - 16:00:00 | 0 | 0 |
| 16:00:00 - 17:00:00 | 0 | 0 |
| 17:00:00 - 18:00:00 | 0 | 0 |
| 18:00:00 - 19:00:00 | 0 | 0 |
| 19:00:00 - 20:00:00 | 0 | 0 |
| 20:00:00 - 21:00:00 | 0 | 0 |
| 21:00:00 - 22:00:00 | 0 | 0 |
| 22:00:00 - 23:00:00 | 0 | 0 |

| | | |
|---|---|---|
| 23:00:00 - 00:00:00 | 0 | 0 |

**Warranted Hours**

| Hour | Major Street<br>Total All Approaches (vph) | Minor Street<br>Highest Volume Approach (vph) |
|---|---|---|
| 01:45:00 - 02:45:00 | 836.00 | 65.00 |
| 02:45:00 - 03:45:00 | 897.00 | 69.00 |
| 03:45:00 - 04:45:00 | 845.00 | 88.00 |

Note: Only data of hours warranted is represented in the above table.

# Appendix G

## WVDOH Approved TIS

# Appendix G-1

## Magnolia Springs TIS

Transportation Impact Study

# Magnolia Springs

Jefferson County, West Virginia

June 2018
***(Revised September 2018)***

Transportation Impact Study

# Magnolia Springs

Jefferson County, West Virginia

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Project No. 22481

September 2018



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# Section 1
# Executive Summary

# EXECUTIVE SUMMARY

Chandlers Glen, LLC proposes to develop the Magnolia Springs development, located west of US-340 near Charles Town in Jefferson County, West Virginia.

A traffic operations analysis has been conducted to confirm that the transportation system can adequately support the proposed Magnolia Springs, in fulfillment of West Virginia Division of Highways (WVDOH) requirements. The scope of the project analysis was developed through collaboration with WVDOH staff in accordance with WVDOH's Traffic Engineering Directive (TED) 106-2.

Specifically, this analysis includes:

- Year 2018 existing land use and transportation system conditions within the site vicinity;
- Planned development improvements in the study area;
- Forecast year 2022 background traffic conditions during the Friday a.m. and Friday p.m. peak periods, including regional growth;
- Trip generation and distribution estimates for the proposed development;
- Forecast year 2022 total traffic conditions with full build-out of the site during the Friday a.m. and Friday p.m. peak periods;
- Conclusions and recommendations.

## TRANSPORTATION IMPACT ANALYSIS FINDINGS

The results of the traffic impact analysis indicate that the proposed development can be constructed while not impacting operations on the surrounding transportation system assuming provision of mitigations specified in this report. The findings of this analysis and our recommendations are discussed below.

### Existing Conditions

- The study intersections operate at acceptable levels of service during the Friday a.m. and Friday p.m. peak hours, with the exception of the Route 115 & Hillside Drive & US-340 NB Ramps intersection.
    - During the Friday a.m. peak hour, the northbound approach operates at LOS E.
    - During the Friday p.m. peak hour, the northbound approach operates at LOS F.

### Year 2022 Background Traffic Conditions

- A 0.625 percent growth rate (compounded annually) was used to account for regional growth in development of year 2022 background traffic volumes.
- In-process traffic from the Jefferson Heights North development was added to background traffic to project year 2022 background traffic volumes.

- The Euclid Avenue & Belvedere Farm Court intersection will also be realigned and changed to All-Way Stop Control with the Jefferson Heights North development.
- The study intersections operate at acceptable levels of service during the Friday a.m. and Friday p.m. peak hours, with the exception of the Route 115 & Hillside Drive & US-340 NB Ramps intersection.
    - During both peak hours, the northbound approach is expected to experience an increase in delay but maintain levels of service consistent with existing conditions.
        - To help mitigate increased delay at the intersection, MUTCD traffic signal warrants were evaluated. Only Warrant 3 (Peak Hour) will be met under year 2022 background conditions, which is generally a warrant reserved for special cases.
        - A single-lane roundabout was also evaluated to help mitigate the northbound approach delays. Based on these analyses, the intersection would operate acceptably with a roundabout during the Friday a.m. and p.m. peak hours.
- All forecast queues are anticipated to be accommodated with existing storage lengths.

## Proposed Development Plan

- The Magnolia Springs development is anticipated to be fully built-out in year 2022.
- The current development plan consists of up to 350 single-family homes.
- Access to the site is proposed via an extension of Citizens Way to the south and a driveway off Belvedere Farm Court to the north. The following driveway distributions were assumed and confirmed during the scoping process:
    - Citizens Way (south): 80 percent
    - Belvedere Farm Court (north): 20 percent
- The proposed development would be estimated to generate approximately 259 Friday a.m. (65 in; 194 out), and 347 Friday p.m. (218 in; 129 out) net new peak hour trips. These estimates are based on data available from the *Trip Generation Manual, 10th Edition* and the number of dwelling units (Single-family Detached Housing: ITE Land Use Code 210).

## Year 2022 Total Traffic Conditions

- All of the study intersections are forecast to operate at the same level-of-service during both the Friday a.m. and Friday p.m. peak periods relative to year 2022 background traffic conditions with the following exceptions:
    - Route 115 & Citizens Way & US-340 SB Ramps: The critical movements are anticipated to operate at LOS "B" during the Friday a.m. peak hour and LOS "D" during the Friday p.m. peak hour with v/c ratios of 0.45 and 0.80, respectively. Under year 2022 background conditions, the critical movements are anticipated to operate at LOS "A" during the Friday a.m. peak hour and LOS "B" during the Friday p.m. peak hour.

- Note the intersection is still forecast to operate acceptably, so adding roadway capacity does not appear warranted as part of the development.

- Route 115 & Hillside Drive & US-340 NB Ramps: The critical northbound movement is anticipated to operate at LOS "F" during the Friday a.m. and p.m. peak hours with a v/c ratio of 0.78 and over 1.0, respectively. Under year 2022 background conditions, this approach is anticipated to operate at LOS "E" during the Friday a.m. peak hour and LOS "F" during the Friday p.m. peak hour.

  - To help mitigate increased delay at the intersection, MUTCD traffic signal warrants were evaluated. Warrant 1 (Eight-Hour Vehicular Volume), Warrant 2 (Four-Hour Vehicular Volume), and Warrant 3 (Peak Hour) are expected to be met under year 2022 total traffic conditions at the 70 and 100 percent volume thresholds.

    - With the installation of a traffic signal, the westbound left-turn 95$^{th}$ percentile queue is anticipated to exceed the available storage capacity during the Friday p.m. peak hour. If this improvement is implemented, the westbound left-turn lane could be extended to 250 feet of storage to accommodate queues.

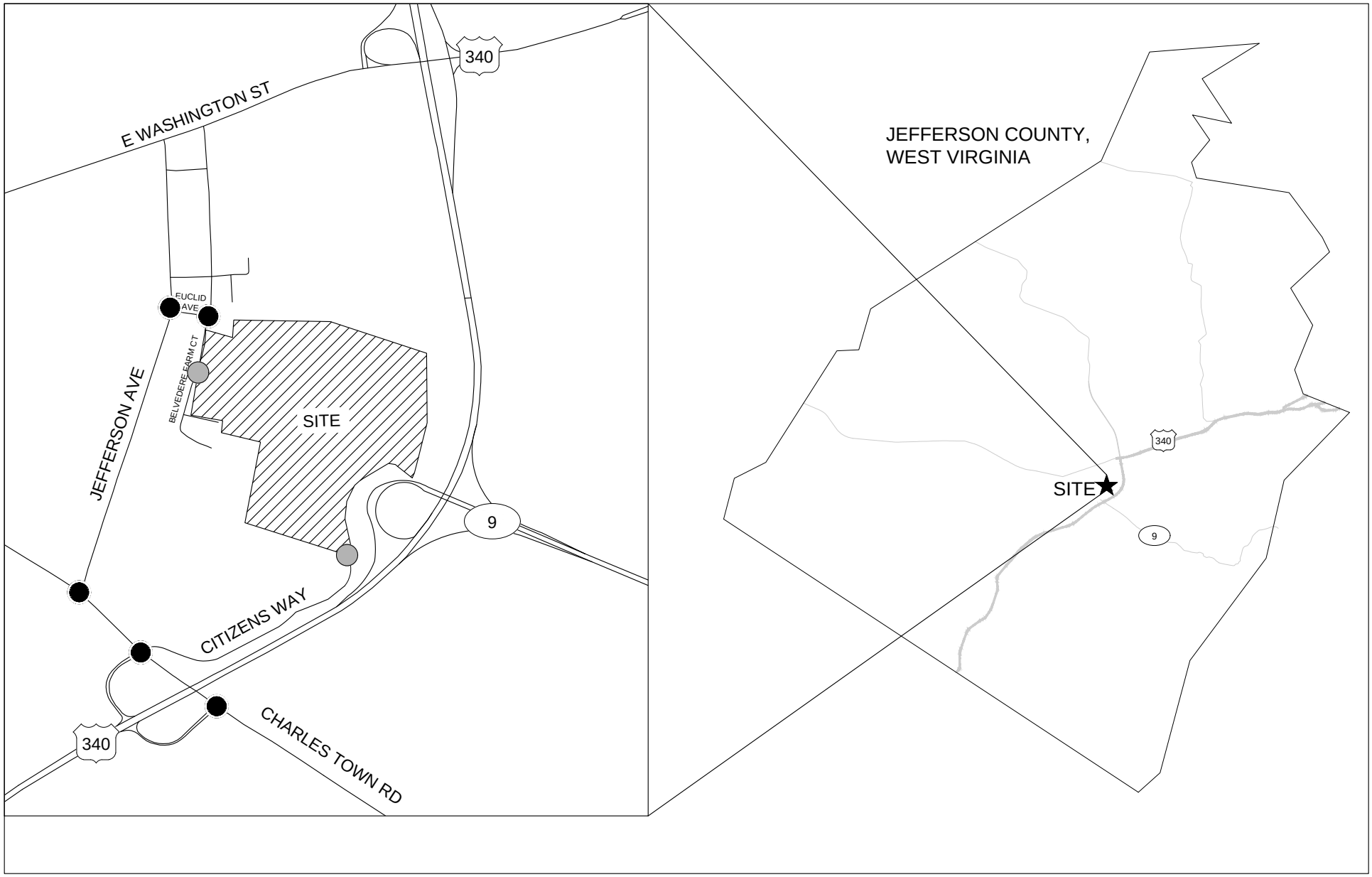
  - A single-lane roundabout was also evaluated to help mitigate the northbound approach delays. Based on these analyses, the intersection would operate acceptably with a roundabout during the Friday a.m. and p.m. peak hours.

- Increases to queueing is typically less than the assumed length of one vehicle and is anticipated to have only minor impacts operations beyond conditions already noted under year 2022 background conditions. The largest disparity in queuing between year 2022 background and year 2022 total conditions is projected to occur on the northbound approach of the Route 115 & Citizens Way & US-340 SB Ramps intersection (approximately five vehicles); however, this increase can be accommodated by the existing roadway geometry and the level of service is expected to be acceptable.

## RECOMMENDATIONS

Both the City of Charles Town and Hagerstown/Eastern Panhandle Metropolitan Planning Organization (HEPMPO) prefer the installation of a roundabout at the Route 115 & Hillside Drive & US-340 NB ramps intersection, which operates with deficiencies under existing and background conditions. A preliminary cost estimate provided by WVDOH indicates the cost of a roundabout at this location would be approximately $950,000.

Per discussions with WVDOH, the applicant is willing to make a one-time contribution of $50,000 to a future intersection improvement at the Route 115 & Hillside Drive & US-340 NB ramps intersection once a project is formally programmed. No other improvements to the roadway network are recommended with the Magnolia Springs development.




Study Intersections

Site Access Locations

Site Vicinity Map
Jefferson County, West Virginia

Figure
1

KITTELSON & ASSOCIATES




SCALE

0 500' 1000'

Proposed Site Plan
Developed by Gordon (provided on 5/29/2018)
Jefferson County, West Virginia

Figure
2

KITTELSON & ASSOCIATES

# Section 4
# Transportation Impact Analysis

## Trip Generation

Trip generation estimates for the proposed development were developed using the standard reference *Trip Generation, 10th Edition* (Reference 4) published by the Institute of Transportation Engineers (ITE). **Table 6** shows the estimated trip generation potential of the site when completed.

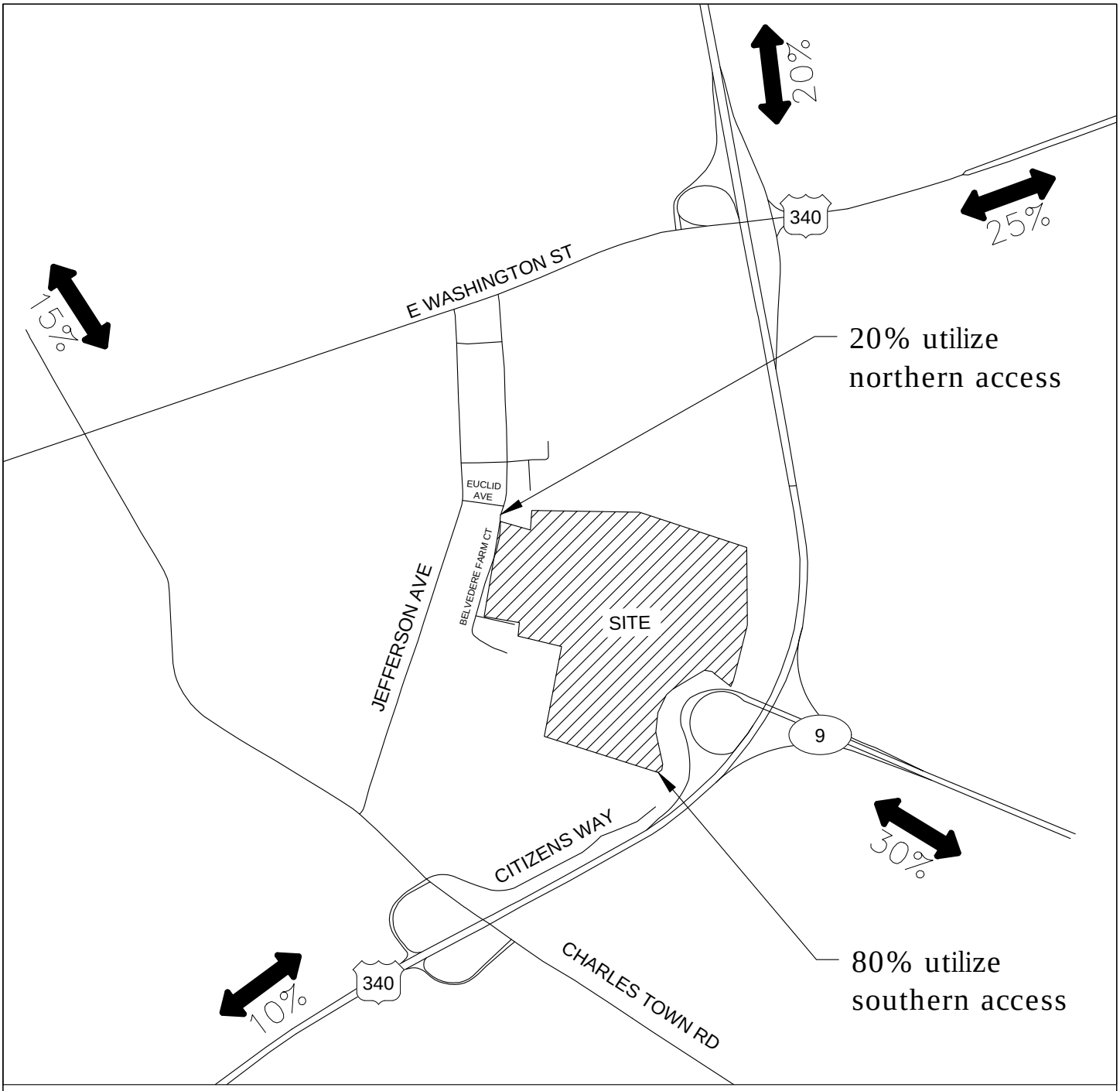
**Table 6. Estimated Trip Generation**

| Land Use | ITE Code | Units | | Peak Hour of Adjacent Street | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Weekday Daily Trips | Weekday AM Peak Hour | | | Weekday PM Peak Hour | | |
| | | | | | Total | In | Out | Total | In | Out |
| Single-family Detached Housing | 210 | 350 | Dwelling Units | 3,304 | 259 | 65 | 194 | 347 | 218 | 129 |

As shown in **Table 6**, the proposed development would be estimated to generate approximately 259 Friday a.m. (65 in; 194 out), and 347 Friday p.m. (218 in; 129 out) net new peak hour trips.

## Site Trip Distribution/Trip Assignment

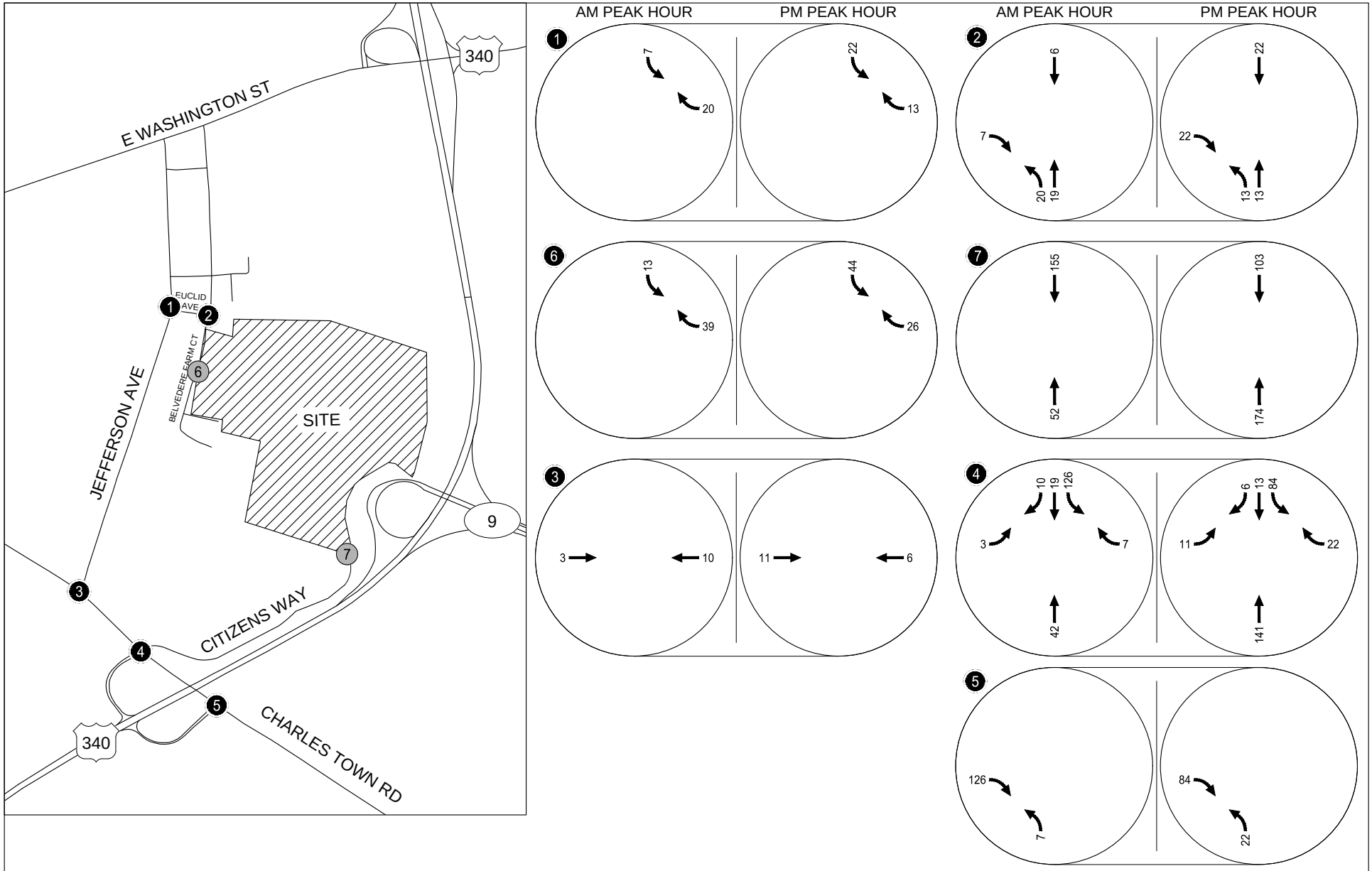
The estimated trip distribution pattern was confirmed by WVDOH through scoping correspondence. **Figure 10** illustrates the estimated trip distribution pattern. **Figure 11** shows the assignment of net new site-generated trips to the roadway network during the Friday a.m. and Friday p.m. peak hours.




Proposed Trip Distribution
XX%

Trip Distribution
Jefferson County, West Virginia

Figure
10




Site-Generated Trips
Friday AM and PM Peak Hours
Jefferson County, West Virginia

Figure
11

KITTELSON & ASSOCIATES

# Section 5
# Conclusions and Recommendations

# CONCLUSIONS AND RECOMMENDATIONS

The results of the traffic impact analysis indicate that the proposed development can be constructed while not impacting operations on the surrounding transportation system assuming provision of mitigations specified in this report. The findings of this analysis and our recommendations are discussed below.

## FINDINGS

### Existing Conditions

- The study intersections operate at acceptable levels of service during the Friday a.m. and Friday p.m. peak hours, with the exception of the Route 115 & Hillside Drive & US-340 NB Ramps intersection.
    - During the Friday a.m. peak hour, the northbound approach operates at LOS E.
    - During the Friday p.m. peak hour, the northbound approach operates at LOS F.

### Year 2022 Background Traffic Conditions

- A 0.625 percent growth rate (compounded annually) was used to account for regional growth in development of year 2022 background traffic volumes.
- In-process traffic from the Jefferson Heights North development was added to background traffic to project year 2022 background traffic volumes.
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        - To help mitigate increased delay at the intersection, MUTCD traffic signal warrants were evaluated. Only Warrant 3 (Peak Hour) will be met under year 2022 background conditions, which is generally a warrant reserved for special cases.
        - A single-lane roundabout was also evaluated to help mitigate the northbound approach delays. Based on these analyses, the intersection would operate acceptably with a roundabout during the Friday a.m. and p.m. peak hours.
- All forecast queues are anticipated to be accommodated with existing storage lengths.

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- The Magnolia Springs development is anticipated to be fully built-out in year 2022.
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    - Citizens Way (south): 80 percent
    - Belvedere Farm Court (north): 20 percent
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## Year 2022 Total Traffic Conditions

- All of the study intersections are forecast to operate at the same level-of-service during both the Friday a.m. and Friday p.m. peak periods relative to year 2022 background traffic conditions with the following exceptions:
    - Route 115 & Citizens Way & US-340 SB Ramps: The critical movements are anticipated to operate at LOS "B" during the Friday a.m. peak hour and LOS "D" during the Friday p.m. peak hour with v/c ratios of 0.45 and 0.80, respectively. Under year 2022 background conditions, the critical movements are anticipated to operate at LOS "A" during the Friday a.m. peak hour and LOS "B" during the Friday p.m. peak hour.
        - Note the intersection is still forecast to operate acceptably, so adding roadway capacity does not appear warranted as part of the development.
    - Route 115 & Hillside Drive & US-340 NB Ramps: The critical northbound movement is anticipated to operate at LOS "F" during the Friday a.m. and p.m. peak hours with a v/c ratio of 0.78 and over 1.0, respectively. Under year 2022 background conditions, this approach is anticipated to operate at LOS "E" during the Friday a.m. peak hour and LOS "F" during the Friday p.m. peak hour.
        - To help mitigate increased delay at the intersection, MUTCD traffic signal warrants were evaluated. Warrant 1 (Eight-Hour Vehicular Volume), Warrant 2 (Four-Hour Vehicular Volume), and Warrant 3 (Peak Hour) are expected to be met under year 2022 total traffic conditions at the 70 and 100 percent volume thresholds.
            - With the installation of a traffic signal, the westbound left-turn 95th percentile queue is anticipated to exceed the available storage capacity during the Friday p.m. peak hour. If this improvement is implemented, the westbound left-turn lane could be extended to 250 feet of storage to accommodate queues.

- A single-lane roundabout was also evaluated to help mitigate the northbound approach delays. Based on these analyses, the intersection would operate acceptably with a roundabout during the Friday a.m. and p.m. peak hours.

- Increases to queueing is typically less than the assumed length of one vehicle and is anticipated to have only minor impacts operations beyond conditions already noted under year 2022 background conditions. The largest disparity in queuing between year 2022 background and year 2022 total conditions is projected to occur on the northbound approach of the Route 115 & Citizens Way & US-340 SB Ramps intersection (approximately five vehicles); however, this increase can be accommodated by the existing roadway geometry and the level of service is expected to be acceptable.

## RECOMMENDATIONS

Both the City of Charles Town and Hagerstown/Eastern Panhandle Metropolitan Planning Organization (HEPMPO) prefer the installation of a roundabout at the Route 115 & Hillside Drive & US-340 NB ramps intersection, which operates with deficiencies under existing and background conditions. A preliminary cost estimate provided by WVDOH indicates the cost of a roundabout at this location would be approximately $950,000.

Per discussions with WVDOH, the applicant is willing to make a one-time contribution of $50,000 to a future intersection improvement at the Route 115 & Hillside Drive & US-340 NB ramps intersection once a project is formally programmed. No other improvements to the roadway network are recommended with the Magnolia Springs development.

# Appendix G-2

## Tate Manor TIS

# Tate Manor Traffic Impact Study
# Jefferson County, WV

AMT Project File 19-0073.001 | December 19, 2019 **REVISED**

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# EXECUTIVE SUMMARY

This report summarizes the existing and future traffic analyses conducted in support of the proposed Tate Manor residential development. The proposed residential development will be located along the east side of Jefferson Avenue (CR 34) and north of Crescent Drive/High Street in Charles Town, Jefferson County. Site access is proposed to Jefferson Avenue, Belvedere Farm Lane, and an extension of Belvedere Drive from Crescent Drive. The proposed site includes 80 townhomes and is expected to be completed by 2024.

The site is proposed to be served by three site driveways – one full-movement connection to Jefferson Avenue, one full-movement connection to Belvedere Farm Lane, and one full-movement connection via extension of Belvedere Drive via Crescent Drive. The proposed site driveways are assumed to operate under stop-control.

The traffic analysis will consider future conditions at the anticipated build-out year of 2024. This report summarizes the analyses of 2019 Existing conditions, 2024 No-Build conditions (without the proposed development in place), and 2024 Build conditions (with the proposed development in place) during the weekday AM and PM peak hours. Traffic generated by the pending Magnolia Springs development is included in the No Build and Build Conditions analysis. The annual growth rate was provided by WVDOH at a compounded rate of 1.31% per year.

AMT (A. Morton Thomas and Associates, Inc.) was retained to determine the potential traffic impacts of the proposed residential development in accordance with the guidelines set forth by the WVDOH (Division of Highways) in Traffic Engineering Directive (TED) 106-2. The intention of the study is to fully examine the impacts of the traffic generated by the residential development on the existing transportation system and identify potential mitigation measures. This report presents trip generation, trip distribution, intersection capacity analysis, queuing analysis, auxiliary lane analysis, signal warrant analysis, and recommendations for transportation improvements required to meet anticipated traffic demands.

Based upon a review of the site plan and adjacent transportation network, the following seven (7) existing and one (1) proposed site driveway intersections are included within the scope of the Traffic Impact Study (TIS) for the proposed Tate Manor residential development:

1) Jefferson Avenue (CR 34) with Euclid Avenue *(Two-way Stop-Control Three-legged intersection)*
2) Euclid Avenue with Belvedere Farm Lane *(Two-way Stop-Control Three-legged intersection)*
3) Jefferson Avenue (CR 34) with High Street *(Two-way Stop-Control Three-legged intersection)*
4) Crescent Drive with Belvedere Drive *(Two-way Stop-Control Three-legged intersection)*
5) WV 115 with Jefferson Avenue (CR 34) *(Two-way Stop-Control Three-legged intersection)*
6) WV 115 with Citizens Way/US 340 *(Single-lane Roundabout Four-legged intersection)*
7) WV 115 with Hillside Drive/US 340 *(Two-way Stop-Control Four-legged intersection)*
8) Jefferson Avenue (CR 34) with Site Driveway #1 *(Proposed Two-way Stop-Control Three-legged intersection)*

The existing Two-way Stop-Control Three-legged intersection of Belvedere Drive with Crescent Drive will be the location of one of the three proposed site driveways. This site driveway will be located in line with Belvedere Drive on the north side of Crescent Drive and will create a fourth leg to the intersection. The

site driveway will be an extension of Belvedere Drive and will operate under stop control. Additional site access will be provided via direct access to Jefferson Avenue and extension of Belvedere Farm Lane, which connects to Euclid Avenue.

Hale Road currently dead ends prior to connection with Crescent Drive just west of Belvedere Drive, and there are no plans to connect these two streets. No traffic from Tate Manor will enter Jefferson Avenue via Hale Road and High Street, which avoids conflict with traffic from Charles Town Middle School.

**Site Trip Generation and Distribution**

The proposed Tate Manor residential development will include 80 townhomes. The trip generation "Peak Hour of Generator" rates from the ITE Trip Generation Manual, 10th Edition, were utilized for Multifamily Housing (LUC 220). The trip generation analysis indicates that a total of 564 new daily trips will be generated, which includes 39 new AM peak hour trips, and 48 new PM peak hour trips.

The AM and PM peak hour site generated trips to/from the proposed site were distributed based upon interpolation from current traffic patterns. The distribution of the new external trips are as follows:

- 35% to/from the north on US 340
- 10% to/from the south on US 340
- 5% to/from the west on WV 115
- 35% to/from the north on Jefferson Avenue (CR 34)
- 15% to/from the north on Euclid Avenue

**2019 Existing Conditions Analysis**

The capacity analysis indicates the westbound approach of Euclid Avenue to Jefferson Avenue (CR 34) currently operates at Level of Service (LOS) B during both the AM and PM peak hours with stop control. The southbound approach of Jefferson Avenue currently operates at LOS A during both the AM and PM peak hours. The northbound approach of Jefferson Avenue operates as free-flow traveling unimpeded through the intersection.

Additional analysis indicates that the northbound Belvedere Farm Lane approach to Euclid Avenue currently operates at LOS A during both the AM and PM peak hour with stop control. The westbound Euclid Avenue approach to Belvedere Farm Lane currently operates at LOS A during both the AM and PM peak hours. The eastbound approach of Euclid Avenue operates as free-flow traveling unimpeded through the intersection.

Analysis indicates that the westbound approach of High Street to Jefferson Avenue currently operates at LOS C during the AM peak hour and LOS B during the PM peak hour with stop control. The southbound approach of Jefferson Avenue currently operates at LOS A during both the AM and PM peak hours. The northbound approach of Jefferson Avenue operates as free-flow traveling unimpeded through the intersection.

Additional analysis indicates that the northbound Belvedere Drive approach to Crescent Drive currently operates at LOS A during both the AM and PM peak hours with stop control. The westbound Crescent Drive approach to Belvedere Drive currently operates at LOS A during both the AM and PM peak hours. The eastbound approach of Crescent Drive operates as free-flow traveling unimpeded through the

intersection. Hale Road currently dead ends prior to connection with Crescent Drive just west of Belvedere Drive, and there are no plans to connect these two streets.

Additional analysis indicates that the southbound Jefferson Avenue approach to WV 115 currently operates at LOS C during the AM peak hour and LOS E during the PM peak hour with stop control. The eastbound WV 115 approach to Jefferson Avenue currently operates at LOS A during both the AM and PM peak hours. The westbound approach of WV 115 operates as free-flow traveling unimpeded through the intersection.

The intersection of WV 115 with Citizens Way and the US 340 Southbound Ramps was recently modified to a four-legged roundabout. Analysis indicates that the eastbound WV 115 approach to Citizens Way currently operates at LOS A during both the AM and PM peak hours. The westbound WV 115 approach to Citizens Way currently operates at LOS A during both the AM and PM peak hours. The northbound US 340 ramps approach to WV 115 currently operates at LOS A during the AM peak hour and LOS B during the PM peak hour. The southbound Citizens Way approach to WV 115 currently operates at LOS A during both the AM and PM peak hours.

Further analysis indicates that the left turn movement on the eastbound WV 115 approach to Hillside Drive and the US 340 Northbound ramps currently operates at LOS A during both the AM and PM peak hours. The eastbound through movement travels uninhibited through the intersection. The left turn movement on the westbound WV 115 approach to Hillside Drive and the US 340 Northbound ramps currently operates at LOS A during both the AM and PM peak hours. The westbound through movement travels uninhibited through the intersection. The US 340 Northbound Ramps approach currently operates at LOS D during the AM peak hour and LOS F during the PM peak hour. The southbound Hillside Drive approach currently operates at LOS C during the AM peak hour and LOS D during the PM peak hour.

**2024 No-Build Conditions Analysis**

The 2024 No Build Conditions include the existing 2019 traffic volume, anticipated annual traffic growth to 2024, and the traffic anticipated to be generated by the Magnolia Springs development.

The capacity analysis indicates the westbound approach of Euclid Avenue to Jefferson Avenue (CR 34) will continue to operate at LOS B during both the AM and PM peak hours with stop control. The southbound approach of Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The northbound approach of Jefferson Avenue will continue to operate as free-flow traveling unimpeded through the intersection.

Additional analysis indicates that the northbound Belvedere Farm Lane approach to Euclid Avenue will continue to operate at LOS A during both the AM and PM peak hour with stop control. The westbound Euclid Avenue approach to Belvedere Farm Lane will continue to operate at LOS A during both the AM and PM peak hours. The eastbound approach of Euclid Avenue will continue to operate as free-flow traveling unimpeded through the intersection.

Analysis indicates that the westbound approach of High Street to Jefferson Avenue is expected to operate at LOS D during the AM peak hour and LOS B during the PM peak hour with stop control. The southbound approach of Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The northbound approach of Jefferson Avenue will continue to operate as free-flow traveling unimpeded through the intersection.

Additional analysis indicates that the northbound Belvedere Drive approach to Crescent Drive will continue to operate at LOS A during both the AM and PM peak hours with stop control. The westbound Crescent Drive approach to Belvedere Drive will continue to operate at LOS A during both the AM and PM peak hours. The eastbound approach of Crescent Drive will continue to operate as free-flow traveling unimpeded through the intersection.

Additional analysis indicates that the southbound Jefferson Avenue approach to WV 115 is expected to operate at LOS C during the AM peak hour and LOS F during the PM peak hour with stop control in the No Build Condition. The eastbound WV 115 approach to Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The westbound approach of WV 115 will continue to operate as free-flow traveling unimpeded through the intersection. The intersection can be improved to LOS A during the AM and PM peak hours considering No Build conditions if a traffic signal is installed prior to 2024.

The intersection of WV 115 with Citizens Way and the US 340 Southbound Ramps was recently modified to a four-legged single lane roundabout. Analysis indicates that the eastbound WV 115 approach to Citizens Way is expected to operate at LOS A during the AM peak hour and LOS B during the PM peak hour. The westbound WV 115 approach to Citizens Way is expected to operate at LOS A during the AM peak hour and LOS B during the PM peak hour. The northbound US 340 ramps approach to WV 115 is expected to operate at LOS A during the AM peak hour and LOS D during the PM peak hour. The southbound Citizens Way approach to WV 115 will continue to operate at LOS A during both the AM and PM peak hours. The LOS of the US 340 southbound ramp approach can be improved to LOS B in the PM peak hour considering Build conditions if a right turn slip is constructed.

The intersection of WV 115 with Hillside Drive and the US 340 Northbound Ramps is anticipated to be modified to a four-legged single lane roundabout to mirror the newly constructed roundabout at WV 115 with Citizens Drive by 2024. For this traffic study, it was assumed the roundabout would be constructed by 2024 and thus included in the No-Build and Build Conditions. Analysis indicates that the eastbound WV 115 approach to Hillside Drive is expected to operate at LOS A during the AM peak hour and LOS B during the PM peak hour. The westbound WV 115 approach to Hillside Drive is expected to operate at LOS A during both the AM and PM peak hours. The northbound US 340 ramps approach to WV 115 is expected to operate at LOS A during both the AM and PM peak hours. The southbound Hillside Drive approach to WV 115 is expected to operate at LOS A during both the AM and PM peak hours.

**2024 Build Conditions Analysis**

The 2024 Build Conditions include the existing 2019 traffic volume, anticipated annual traffic growth to 2024, traffic anticipated to be generated by the Magnolia Springs development, and the traffic generated by the Tate Manor development.

The capacity analysis indicates the westbound approach of Euclid Avenue to Jefferson Avenue will continue to operate at LOS B during both the AM and PM peak hours with stop control. The southbound approach of Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The northbound approach of Jefferson Avenue will continue to operate as free-flow traveling unimpeded through the intersection.

Additional analysis indicates that the northbound Belvedere Farm Lane approach to Euclid Avenue will continue to operate at LOS A during both the AM and PM peak hour with stop control. The westbound

Euclid Avenue approach to Belvedere Farm Lane will continue to operate at LOS A during both the AM and PM peak hours. The eastbound approach of Euclid Avenue will continue to operate as free-flow traveling unimpeded through the intersection.

Analysis indicates that the westbound approach of High Street to Jefferson Avenue will continue to operate at LOS D during the AM peak hour and LOS B during the PM peak hour with stop control. The southbound approach of Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The northbound approach of Jefferson Avenue will continue to operate as free-flow traveling unimpeded through the intersection. Hale Road currently dead ends prior to connection with Crescent Drive just west of Belvedere Drive, and there are no plans to connect these two streets. No traffic from Tate Manor will enter Jefferson Avenue via Hale Road and High Street, which avoids conflict with traffic from Charles Town Middle School.

Additional analysis indicates that the northbound Belvedere Drive approach to Crescent Drive will continue to operate at LOS A during both the AM and PM peak hours with stop control. The proposed southbound Belvedere Drive approach to Crescent Drive is expected to operate at LOS A during both the AM and PM peak hours with stop control. The westbound Crescent Drive approach to Belvedere Drive will continue to operate at LOS A during both the AM and PM peak hours. The eastbound approach of Crescent Drive will continue to operate as free-flow traveling unimpeded through the intersection. Crescent Drive dead ends immediately west of Belvedere Drive.

Additional analysis indicates that the southbound Jefferson Avenue approach to WV 115 is expected to operate at LOS D during the AM peak hour and LOS F during the PM peak hour with stop control. The eastbound WV 115 approach to Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The westbound approach of WV 115 will continue to operate as free-flow traveling unimpeded through the intersection. The intersection can be improved to LOS A during the AM and PM peak hours considering Build conditions if a traffic signal is installed prior to 2024.

The intersection of WV 115 with Citizens Way and the US 340 Southbound Ramps was recently modified to a four-legged single lane roundabout. Analysis indicates that the eastbound WV 115 approach to Citizens Way will continue to operate at LOS A during the AM peak hour and LOS B during the PM peak hour. The westbound WV 115 approach to Citizens Way will continue to operate at LOS A during the AM peak hour and LOS B during the PM peak hour. The northbound US 340 ramps approach to WV 115 will continue to operate at LOS A during the AM peak hour and LOS D during the PM peak hour. The southbound Citizens Way approach to WV 115 will continue to operate at LOS A during both the AM and PM peak hours. The LOS of the US 340 southbound ramp approach can be improved to LOS B in the PM peak hour considering No Build conditions if a right turn slip lane is constructed.

The intersection of WV 115 with Hillside Drive and the US 340 Northbound Ramps is anticipated to be modified to a four-legged single lane roundabout to mirror the newly constructed roundabout at WV 115 with Citizens Drive. For this traffic study, it was assumed the roundabout would be constructed by 2024 and thus included in the No-Build and Build Conditions. Analysis indicates that the eastbound WV 115 approach to Hillside Drive is expected to operate at LOS A during the AM peak hour and LOS B during the PM peak hour. The westbound WV 115 approach to Hillside Drive is expected to operate at LOS A during both the AM and PM peak hours. The northbound US 340 ramps approach to WV 115 is expected to operate at LOS A during both the AM and PM peak hours. The southbound Hillside Drive approach to WV 115 is expected to operate at LOS A during both the AM and PM peak hours.

Further analysis indicates that the westbound Site Drive #1 approach is expected to operate at LOS B during both the AM and PM peak hours with stop control. The southbound Jefferson Avenue approach is expected to operate at LOS A during both the AM and PM peak hours. The northbound Jefferson Avenue approach is expected to operate as free-flow traveling unimpeded through the intersection.

**2024 Build Conditions Analysis**

The 2024 Build Conditions include the existing 2019 traffic volume, anticipated annual traffic growth to 2024, traffic anticipated to be generated by the Magnolia Springs development, and the traffic generated by the Tate Manor development.

The 2024 Build Improved Conditions also includes a number of proposed roadway improvements that are to mitigate capacity issues along the existing transportation network. These are proposed to mitigate existing issues and not as a result of the proposed Tate Manor residential development. These improvements include, installing a traffic signal at the WV 115 with Jefferson Avenue intersection, constructing an exclusive left-turn lane on the eastbound WV 115 approach to Jefferson Avenue, and constructing an exclusive right-turn slip lane on the US 340 southbound exit ramp approach to WV 115.

The capacity analysis indicates the westbound approach of Euclid Avenue to Jefferson Avenue will continue to operate at LOS B during both the AM and PM peak hours with stop control. The southbound approach of Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The northbound approach of Jefferson Avenue will continue to operate as free-flow traveling unimpeded through the intersection.

Additional analysis indicates that the northbound Belvedere Farm Lane approach to Euclid Avenue will continue to operate at LOS A during both the AM and PM peak hour with stop control. The westbound Euclid Avenue approach to Belvedere Farm Lane will continue to operate at LOS A during both the AM and PM peak hours with stop control. The eastbound approach of Euclid Avenue will continue to operate at LOS A during both the AM and PM peak hours with stop control. This intersection is proposed to be modified to an All-Way Stop-Control intersection with the completion of the proposed Magnolia Springs development.

Analysis indicates that the westbound approach of High Street to Jefferson Avenue will continue to operate at LOS D during the AM peak hour and LOS B during the PM peak hour with stop control. The southbound approach of Jefferson Avenue will continue to operate at LOS A during both the AM and PM peak hours. The northbound approach of Jefferson Avenue will continue to operate as free-flow traveling unimpeded through the intersection. Hale Road currently dead ends prior to connection with Crescent Drive just west of Belvedere Drive, and there are no plans to connect these two streets. No traffic from Tate Manor will enter Jefferson Avenue via Hale Road and High Street, which avoids conflict with traffic from Charles Town Middle School.

Additional analysis indicates that the northbound Belvedere Drive approach to Crescent Drive will continue to operate at LOS A during both the AM and PM peak hours with stop control. The proposed southbound Belvedere Drive approach to Crescent Drive is expected to operate at LOS A during both the AM and PM peak hours with stop control. The westbound Crescent Drive approach to Belvedere Drive will continue to operate at LOS A during both the AM and PM peak hours. The eastbound approach of Crescent Drive will continue to operate as free-flow traveling unimpeded through the intersection. Crescent Drive dead ends immediately west of Belvedere Drive.

The intersection is proposed to be modified to a signalized intersection with the addition of an exclusive left-turn lane on the eastbound WV 115 approach. Analysis indicates that the southbound Jefferson Avenue approach to WV 115 is expected to operate at LOS B during both the AM and PM peak hours with traffic-signal control. The eastbound WV 115 approach to Jefferson Avenue is expected to operate at LOS A during both the AM and PM peak hours with traffic-signal control. The westbound approach of WV 115 is expected to operate at LOS A during both the AM and PM peak hours with traffic-signal control. The overall intersection is expected to operate at LOS A during both the AM and PM peak hours.

The intersection of WV 115 with Citizens Way and the US 340 Southbound Ramps was recently modified to a four-legged single lane roundabout. Analysis indicates that the eastbound WV 115 approach to Citizens Way will continue to operate at LOS A during the AM peak hour and LOS B during the PM peak hour. The westbound WV 115 approach to Citizens Way will continue to operate at LOS A during the AM peak hour and LOS B during the PM peak hour. The northbound US 340 ramps approach to WV 115 is expected to operate at LOS A during both the AM and PM peak hours with the addition of a right-turn slip lane. The southbound Citizens Way approach to WV 115 will continue to operate at LOS A during both the AM and PM peak hours.

The intersection of WV 115 with Hillside Drive and the US 340 Northbound Ramps is anticipated to be modified to a four-legged single lane roundabout to mirror the newly constructed roundabout at WV 115 with Citizens Drive. For this traffic study, it was assumed the roundabout would be constructed by 2024 and thus included in the No-Build and Build Conditions. Analysis indicates that the eastbound WV 115 approach to Hillside Drive is expected to operate at LOS A during the AM peak hour and LOS B during the PM peak hour. The westbound WV 115 approach to Hillside Drive is expected to operate at LOS A during both the AM and PM peak hours. The northbound US 340 ramps approach to WV 115 is expected to operate at LOS A during both the AM and PM peak hours. The southbound Hillside Drive approach to WV 115 is expected to operate at LOS A during both the AM and PM peak hours.

Further analysis indicates that the westbound Site Drive #1 approach is expected to operate at LOS B during both the AM and PM peak hours with stop control. The southbound Jefferson Avenue approach is expected to operate at LOS A during both the AM and PM peak hours. The northbound Jefferson Avenue approach is expected to operate as free-flow traveling unimpeded through the intersection.

**Conclusions/Recommendations**

The proposed Tate Manor residential development will be located along the east side of Jefferson Avenue and north of Crescent Drive/High Street in Charles Town, Jefferson County, West Virginia. Site access is proposed to Jefferson Avenue, Belvedere Farm Lane, and an extension of Belvedere Drive from Crescent Drive. The proposed site includes 80 townhomes. The residential development is expected to be completed by 2024.

The site is proposed to be served by three site driveways – one full-movement connection to Jefferson Avenue, one full-movement connection to Belvedere Farm Lane, and one full-movement connection via extension of Belvedere Drive via Crescent Drive. The proposed site driveways are assumed to operate under stop-control.

The results of the capacity analyses and the queueing analyses indicate that the trips generated by the proposed site can be accommodated within the existing transportation network.

Based on the findings of this study, the following infrastructure improvements are recommended from evaluation of the Tate Manor Residential Traffic Impact Study maintain adequate operation of the existing transportation network:

**Jefferson Avenue with Proposed Site Driveway #1**

- Construct Site Driveway #1 as a full movement approach located approximately 250 feet north of the Jefferson Avenue and High Street intersection. The driveway should be constructed to provide one ingress lane and two egress lanes. The proposed driveway will operate under stop-control while Jefferson Avenue operates as free-flow.

**Crescent Drive with Belvedere Drive (Proposed Site Driveway #2)**

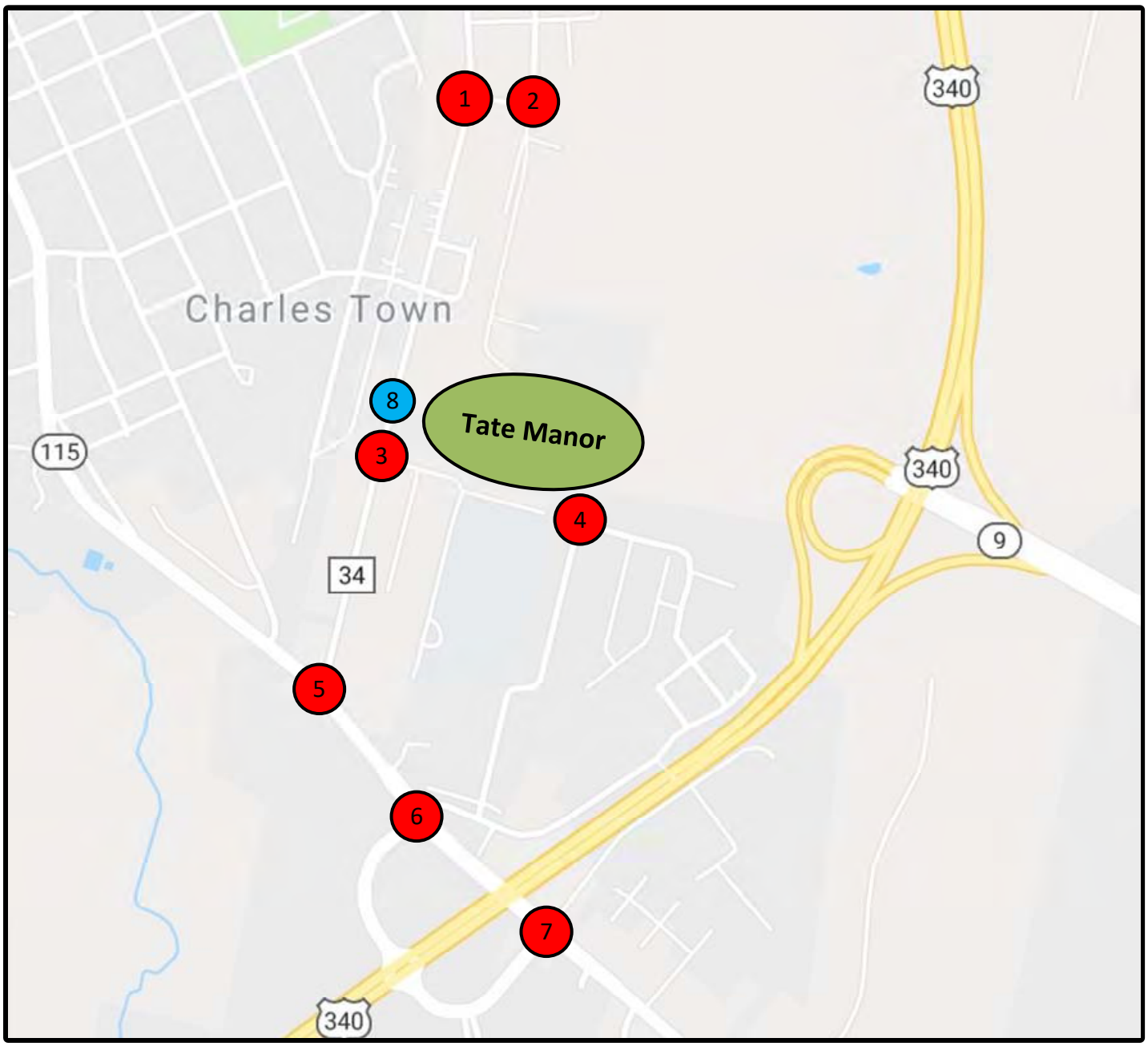
- Construct Site Driveway #2 as a full movement approach as an extension of Belvedere Drive, which will intersect with Crescent Drive opposite existing Belvedere Drive creating a plus type intersection. The driveway should be constructed to provide one ingress lane and one egress lanes. The proposed driveway will operate under stop-control while Crescent Drive operates as free-flow.

**WV 115 with Jefferson Avenue**

- It is recommended that the WVDOH further evaluate the need for a traffic signal at the intersection of WV 115 with Jefferson Avenue. Evaluation of existing peak hour conditions indicate that the MUTCD Peak Hour Warrant is met for the intersection. In addition, the No Build analysis indicates that LOS will deteriorate to LOS F during the PM peak hour by 2024 with Two Way Stop Control.

**WV 115 with Citizens Way and the US 340 Southbound Ramps**

- Ideally, consideration should be given to add a right turn slip lane on the US 340 southbound ramp approach to WV 115. The No Build analysis indicates that LOS will deteriorate to LOS D for the ramp approach during the PM peak hour by 2024 with the current configuration. Creating the right turn slip lane improves the ramp approach to LOS B.




**LEGEND**

= Proposed Site

= Existing Intersection

= Proposed Intersection

N

NOT TO SCALE

**Tate Manor**
**Residential Development TIS**

Site Location Map

**DATE:** December 2019

**FIGURE 1**

Intersection #8 – Jefferson Ave & Site Drive #1 (Full Access)

Internal Connection to Belvedere Farm Ln Extension

Internal Future Connection

Internal Connection to Belvedere Dr Extension

Intersection #4 – Crescent Drive & Belvedere Drive (Full Access)

**Tate Manor Residential Development TIS**

Site Plan

DATE: December 2019

**FIGURE 2**

NOT TO SCALE

# TRIP GENERATION

The proposed residential development will be located along the east side of Jefferson Avenue and north of Crescent Drive/High Street in Charles Town, Jefferson County. Site access is proposed to Jefferson Avenue, Belvedere Farm Lane, and an extension of Belvedere Drive from Crescent Drive. The proposed site includes 80 townhomes and is expected to be completed by 2024. The trip generation "Peak Hour of Generator" rates from the ITE Trip Generation Manual, 10th Edition, were utilized for Multifamily Housing (LUC 220).

As shown in **Table 2** below, the proposed residential development will generate a total of 564 new daily trips, including 39 new AM peak hour, and 48 new PM peak hour trips.

**Table 2: Trip Generation Summary**

| Description | LUC | Density | | Daily Trips | AM Peak | | | PM Peak | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Enter | Exit | Total | Enter | Exit | Total |
| Multifamily Housing | 220 | 80 | Units | 564 | 9 | 30 | 39 | 30 | 18 | 48 |
| **Total** | | | | **564** | **9** | **30** | **39** | **30** | **18** | **48** |

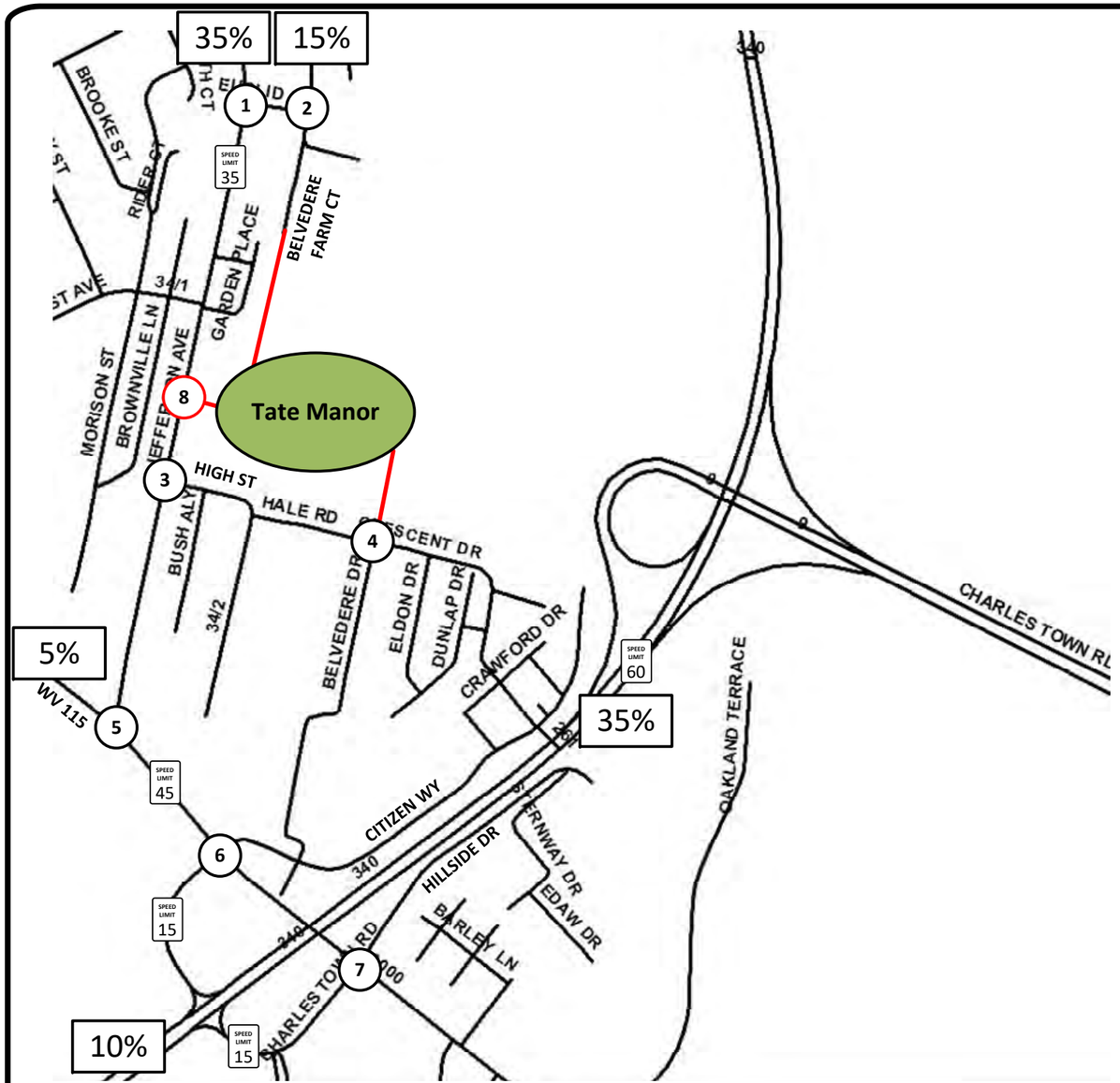
# TRIP DISTRIBUTION

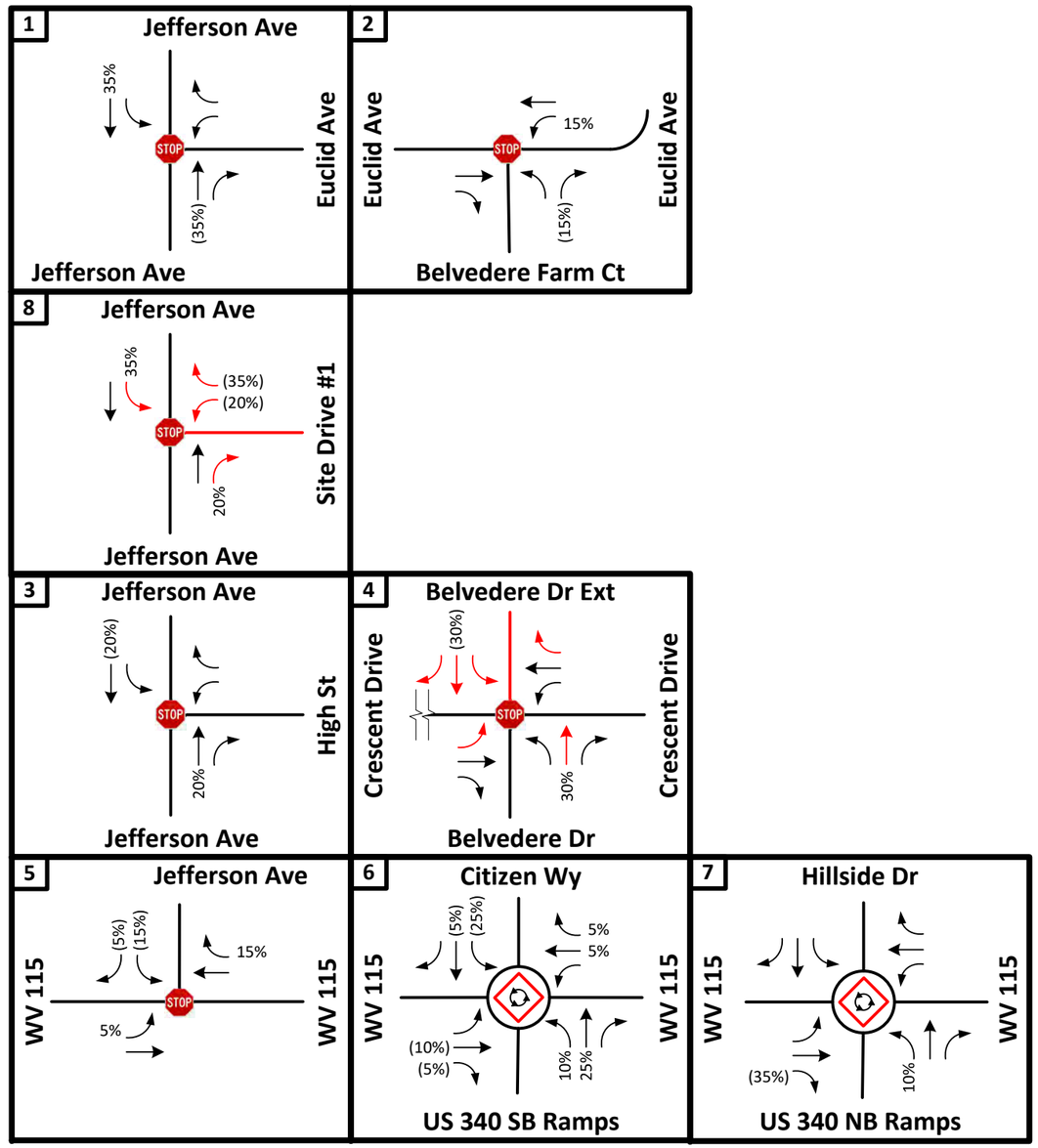
The new AM and PM peak hour site generated trips to/from the proposed site were distributed based upon interpolation from current traffic patterns. The distribution of the new external trips are as follows:

- 35% to/from the north on US 340
- 10% to/from the south on US 340
- 5% to/from the west on WV 115
- 35% to/from the north on Jefferson Avenue
- 15% to/from the north on Euclid Avenue

Traffic generated by the impending Magnolia Springs development located north of the Tate Manor residential development is included as a pending development accounted for in No Build and Build conditions. Magnolia Springs is proposed to have site driveways which intersect with Euclid Avenue and with Citizens Way. An approved Traffic Impact Study by Kittelson & Associates was obtained for this project and future traffic volumes were accounted for in the No Build and Build volume calculations, as directed by the WVDOH.

The external trip distribution percentages are shown in **Figure 4**, and the AM and PM peak hour new site trip assignments are shown on **Figure 5**.




**LEGEND**

- Existing Traffic Control
- Roundabout
- Existing Roadway
- Proposed Roadway
- XX% Entering Trip Percentage
- (XX%) Exiting Trip Percentage

N

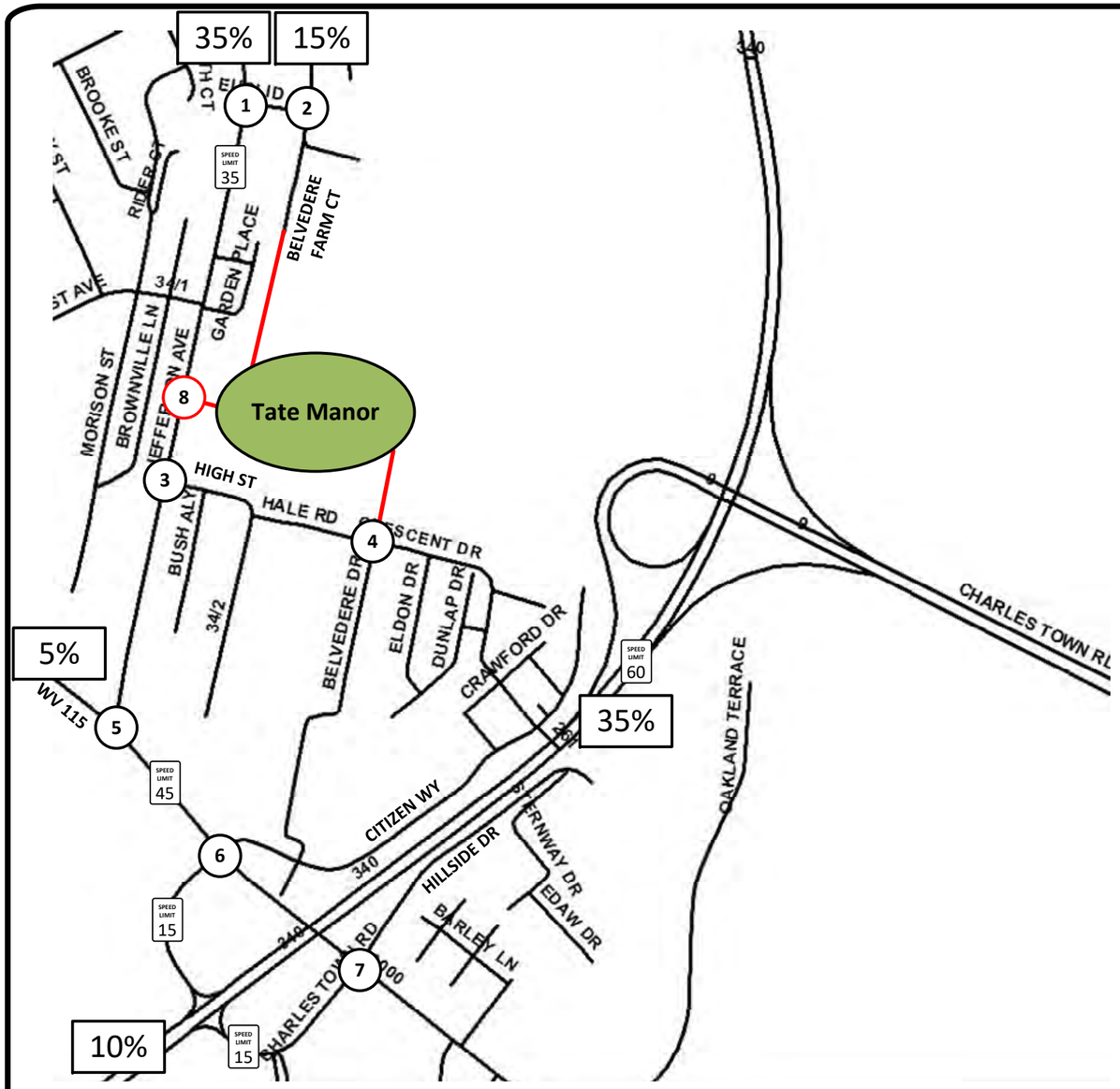
NOT TO SCALE

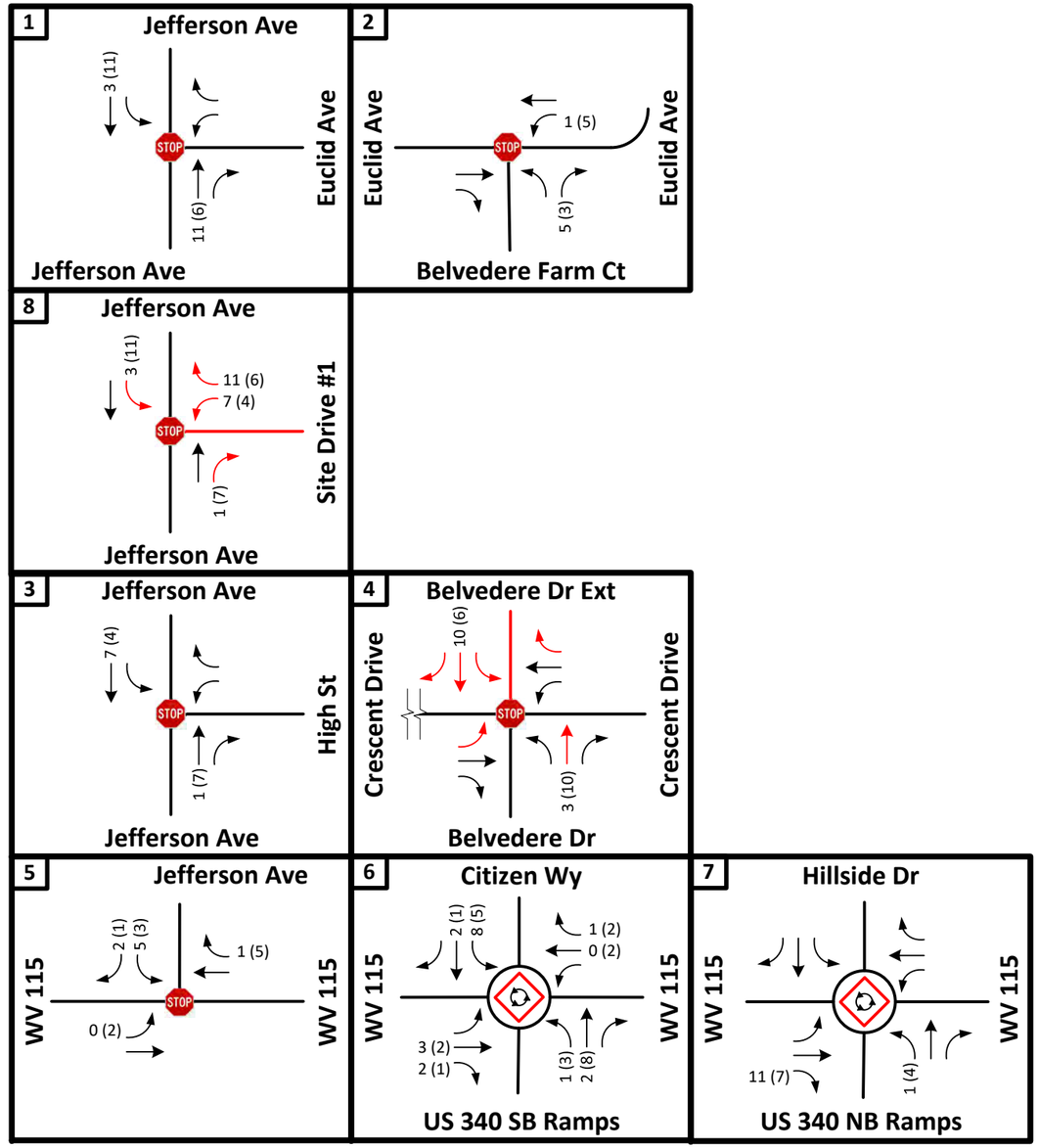
**Tate Manor Residential Development TIS**

Site Trip Distribution

**DATE:** December 2019

**FIGURE 4**




**LEGEND**

- Existing Traffic Control
- Roundabout
- Existing Roadway
- Proposed Roadway
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

N

NOT TO SCALE

**Tate Manor Residential Development TIS**

Site Trip Assignment

**DATE:** December 2019

**FIGURE 5**

# CONCLUSIONS/RECOMMENDATIONS

The proposed Tate Manor residential development will be located along the east side of Jefferson Avenue and north of Crescent Drive/High Street in Charles Town, Jefferson County, West Virginia. Site access is proposed to Jefferson Avenue, Belvedere Farm Lane, and an extension of Belvedere Drive from Crescent Drive. The proposed site includes 80 townhomes. The residential development is expected to be completed by 2024.

The site is proposed to be served by three site driveways – one full-movement connection to Jefferson Avenue, one full-movement connection to Belvedere Farm Lane, and one full-movement connection via extension of Belvedere Drive via Crescent Drive. The proposed site driveways are assumed to operate under stop-control.

The results of the capacity analyses and the queueing analyses indicate that the trips generated by the proposed site can be accommodated within the existing transportation network.

Based on the findings of this study, the following infrastructure improvements are recommended from evaluation of the Tate Manor Residential Traffic Impact Study maintain adequate operation of the existing transportation network:

**Jefferson Avenue with Proposed Site Driveway #1**

- Construct Site Driveway #1 as a full movement approach located approximately 250 feet north of the Jefferson Avenue and High Street intersection. The driveway should be constructed to provide one ingress lane and two egress lanes. The proposed driveway will operate under stop-control while Jefferson Avenue operates as free-flow.

**Crescent Drive with Belvedere Drive (Proposed Site Driveway #2)**

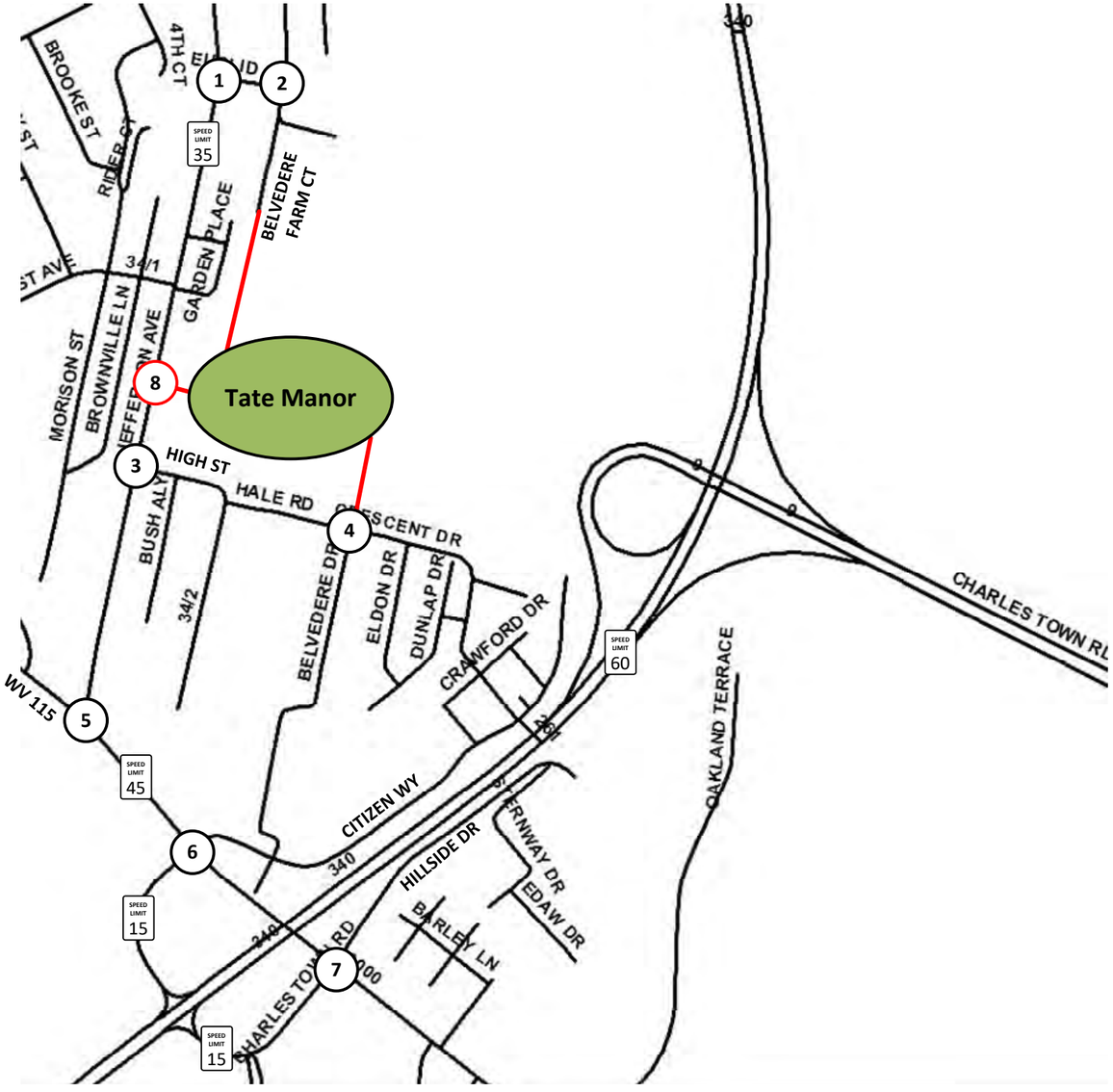
- Construct Site Driveway #2 as a full movement approach as an extension of Belvedere Drive, which will intersect with Crescent Drive opposite existing Belvedere Drive creating a plus type intersection. The driveway should be constructed to provide one ingress lane and one egress lanes. The proposed driveway will operate under stop-control while Crescent Drive operates as free-flow.

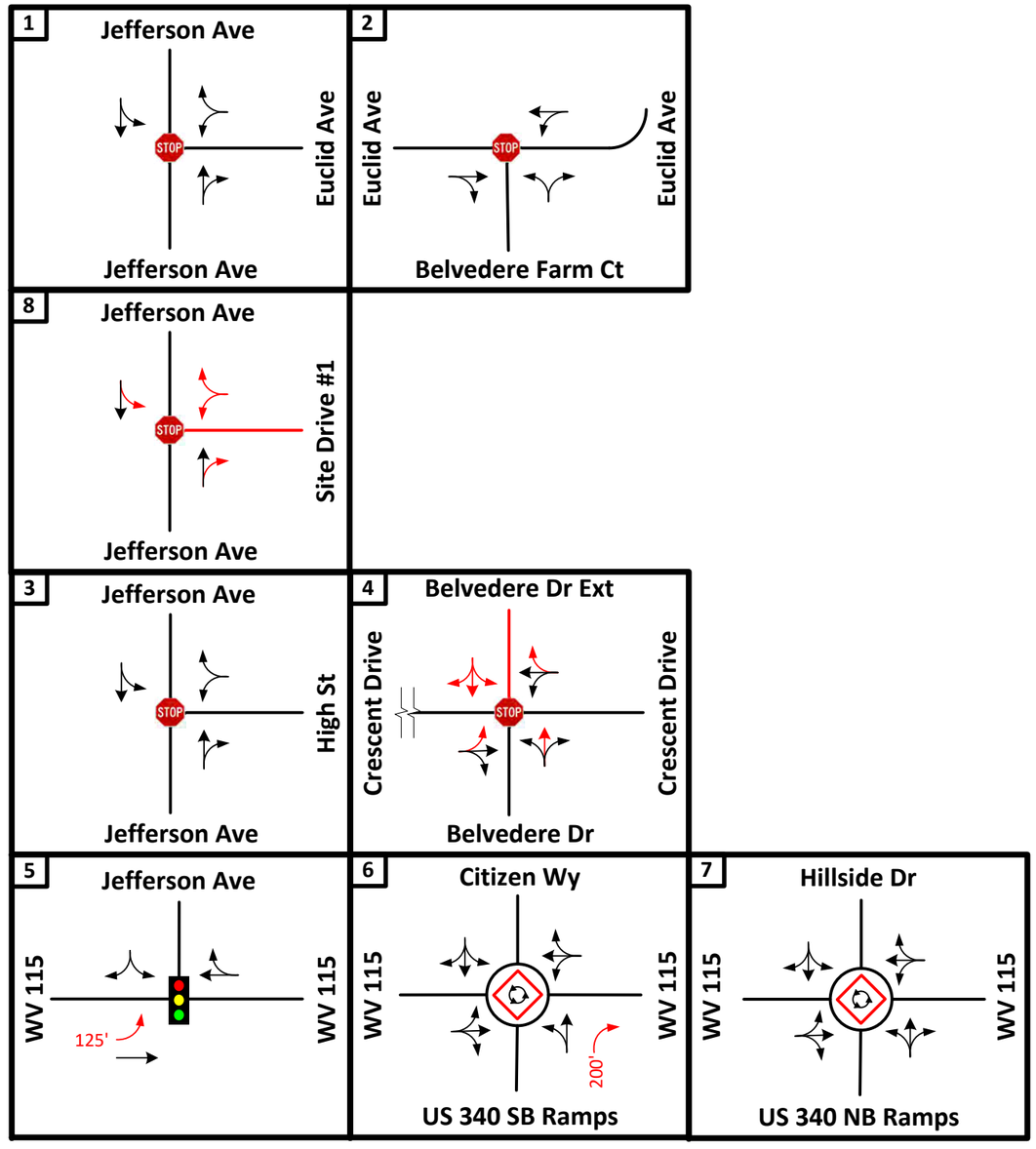
**WV 115 with Jefferson Avenue**

- It is recommended that the WVDOH further evaluate the need for a traffic signal at the intersection of WV 115 with Jefferson Avenue. Evaluation of existing peak hour conditions indicate that the MUTCD Peak Hour Warrant is met for the intersection. In addition, the No Build analysis indicates that LOS will deteriorate to LOS F during the PM peak hour by 2024 with Two Way Stop Control.

**WV 115 with Citizens Way and the US 340 Southbound Ramps**

- Ideally, consideration should be given to add a right turn slip lane on the US 340 southbound ramp approach to WV 115. The No Build analysis indicates that LOS will deteriorate to LOS D for the ramp approach during the PM peak hour by 2024 with the current configuration. Creating the right turn slip lane improves the ramp approach to LOS B.




**LEGEND**

- Existing Traffic Control
- Roundabout
- Existing Roadway
- Existing Lane Configuration
- Proposed Lanes
- XXX' Storage Bay Length
- XXX' Recommended Storage (FT)

N

NOT TO SCALE

**Tate Manor**
**Residential Development TIS**

2024 Recommended Improvements

**DATE:** December 2019

**FIGURE 17**

# Appendix H

## Project Correspondence

## Kirk, Tim

**From:** Cramer, David E <David.E.Cramer@wv.gov>
**Sent:** Wednesday, June 16, 2021 3:30 PM
**To:** Kirk, Tim
**Cc:** Meadows, Donald R; Clohan, Kenneth L; Willis, Trixie A
**Subject:** FW: [External] Proposed SOW Kings Crossing TIS - Jefferson County
**Attachments:** 2021_06_08, Kings Crossing TIS Proposed SOW_AMT.pdf; 22481_Magnolia Springs Final Submission.pdf

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you verify that the attachment and content are safe.

The results of DOH review of the proposed scope indicate that the intersection of WV 115 with CR 34 (Jefferson Ave) should be included as part of the study. Please include that intersection in the study, however no revised scope needs to be submitted to DOH; the scope is approved with the stipulation that this intersection be included and that the Developer review the DOH Driveway Manual spacing guidelines with respect to the two proposed site accesses at WV 115 The DOH assumes you have (from TIS for Jefferson Heights) relatively recent data at this intersection that could be factored up as necessary to be considered existing 2021 volumes. The approved TIS for Magnolia Springs is attached also for your use in completing this TIS. The Hillside Dr Roundabout project is not yet programmed and no implementation schedule is available.

If additional info is needed, let us know.

Dave

David E. Cramer, PE
West Virginia Department of Transportation
Commissioner's Office of Economic Development
1900 Kanawha Blvd., E
Building 5, Room 148
Charleston, WV 25305
304-414-6697
David.E.Cramer@wv.gov

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**From:** Kirk, Tim <tkirk@amtengineering.com>
**Sent:** Tuesday, June 8, 2021 5:58 PM
**To:** Cramer, David E <David.E.Cramer@wv.gov>
**Cc:** Clohan, Kenneth L <Kenneth.L.Clohan@wv.gov>; Meadows, Donald R <Donald.R.Meadows@wv.gov>
**Subject:** [External] Proposed SOW Kings Crossing TIS - Jefferson County

Dave - Attached is our proposed SOW plan for the Kings Crossing Residential development project located south of WV 115, east of US 340 and west Kabletown Road. This site is located inside the Charles Town municipal boundary. Access is proposed to WV 115 via two direct site driveways and to US 340 via the Norborne Glebe subdivision. Connection to

Norborne Glebe is desired by Charles Town. AMT is preparing this study for Dan Ryan Builders and our point of contact is Matt Stare. I have briefly discussed this site with both Ken and Don so they are aware of this project. Mr. Stare's contact information is included. Please let me know if you wish to discuss.

**MATT STARE**
Land Acquisition & Development Manager
**Washington West**
240-420-6046 Ext. 2031
mstare@drbgroup.com
10212 Governor Lane Blvd, Ste 1006, Williamsport, MD 21795

DRB GROUP

**Tim Kirk** PE, PTOE, RSP1
Associate

**P** 304-400-4952 | **D** 304-903-7008 | **C** 304-488-6031
**W** www.amtengineering.com

# Proposed TIS Scope of Work (SOW)

## Kings Crossing Residential Development TIS

## Charles Town, Jefferson County

## June 8, 2021

### Purpose

The purpose of this SOW document is to delineate the assumptions of the Traffic Impact Study (TIS) for the proposed development project. Confirming assumptions at the beginning of the project helps to assure that the TIS will be completed only once and in a timely manner. This memorandum aims to create a communicative line between the WVDOH, the client, and the traffic engineer to discuss all the issues involved with completing the TIS. This document will cover the following topics:

- Client Information
- Study Methodology
- Intersections to be studied
- Trip Generation
- Trip Distribution
- Site Access
- Approved Developments

### Client Information

AMT is preparing this study on behalf of *Dan Ryan Builders* from the following business address:

*10212 Governor Lane Blvd, Suite 106*
*Williamsport, MD 21795*

### Study Methodology

The site is located south of WV 115 and west of Kabletown Road (CR 25) in Charles Town, Jefferson County. Site access is proposed via two site driveways to WV 115 and to US 340 via Courier Drive and Candlewood Drive through the existing Norborne Glebe subdivision. Both the AM (7-9 AM) and PM (3-6 PM) peak hours will be studied.

The analysis will follow the TED 106-2 along with applicable ITE and Highway Capacity methodologies which include four (4) individual analyses of each intersection:

- 2021 Existing Conditions
- 2025 Future No-Build Conditions (without proposed development and with any approved adjacent development in place)
- 2025 Future Build Conditions (with proposed development in place)
- 2025 Future Build Improved Conditions (with proposed development and Recommended Improvements in place)

Traffic analysis will consider Future Build conditions at the build-out year. Based upon current information, the development is assumed to fully built by 2025. A growth rate has been requested from WVDOH Planning Division and will be utilized to determine future traffic volumes. Additional traffic volumes generated by the proposed Tate Manor Development and proposed Magnolia Springs development will be considered as background volumes. These developments are anticipated to be completed in the year 2024.

The analyses will be performed using the SYNCHRO 10.3 and Sidra 9.0 software packages. The use of this software helps to ensure that the intersections will be analyzed in real life situations with intersections in coordination in all conditions.

Number of Intersections to be Studied

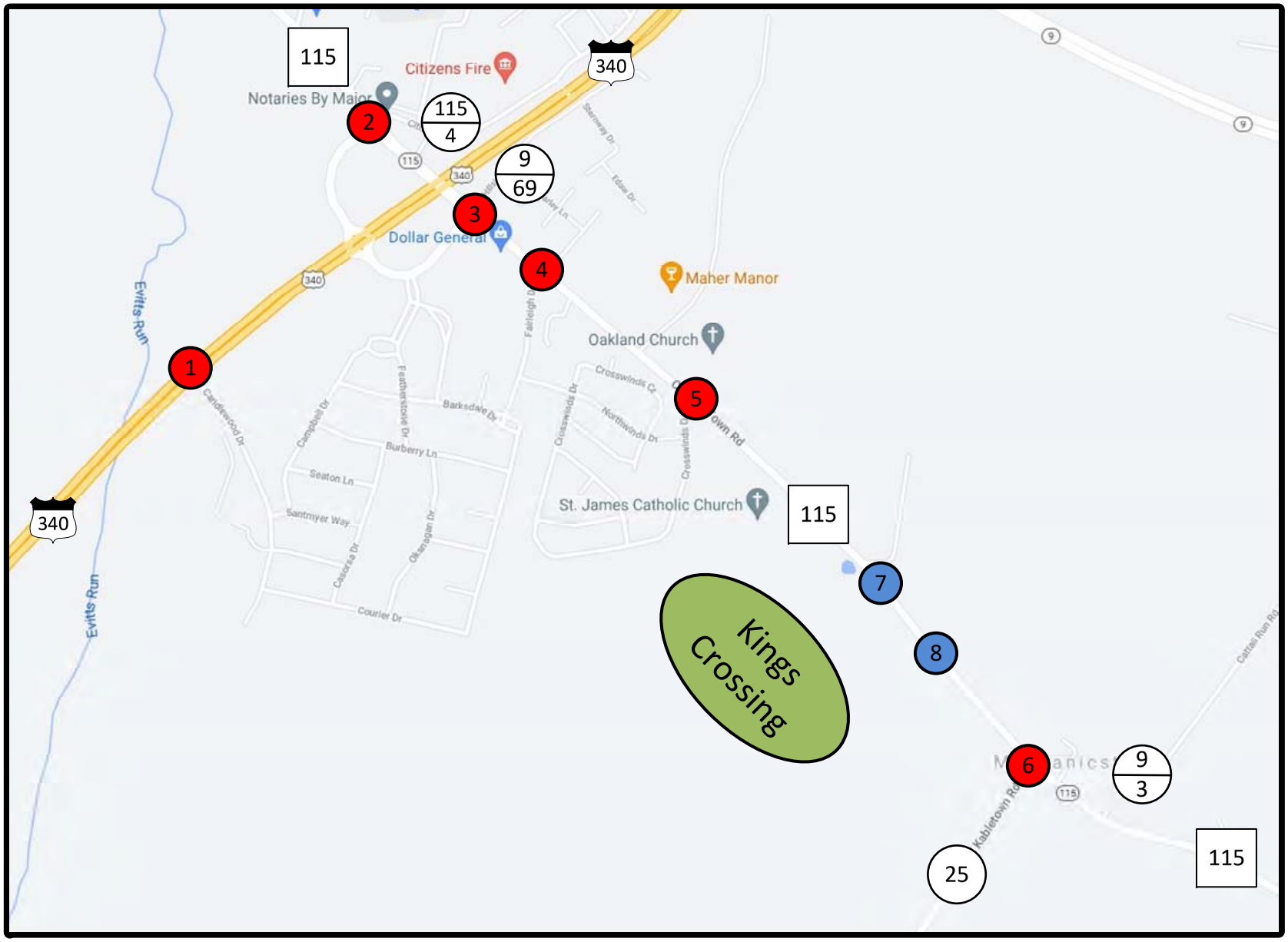
The following six (6) existing intersections will be included in the study for capacity analysis:

1. US 340 with Candlewood Drive
    - Existing: Stop Controlled "T" Intersection
2. WV 115 with Citizens Way/US 340 SB Ramps
    - Existing: Roundabout Plus Intersection
3. WV 115 with Hillside Drive/US 340 NB Ramps
    - Existing: Stop Controlled Plus Intersection
4. WV 115 with Fairleigh Drive
    - Existing: Stop Controlled "T" Intersection
5. WV 115 with Crosswinds Drive
    - Existing: Stop Controlled "T" Intersection
6. WV 115 with Kabletown Road (CR 25)
    - Existing: Stop Controlled "T" Intersection

The following two (2) new intersections will be included in the study for capacity analysis:

7. WV 115 with Site Drive #1 (Road 1)
    - Proposed: Stop Controlled "T" Intersection
8. WV 115 with Site Drive #2 (Road 12)
    - Proposed: Stop Controlled "T" Intersection

Figure 1 shows the study area and key intersections. Figure 2 shows the current conceptual site plan with proposed access.




## LEGEND

= Development

= Existing Intersection

= Proposed Intersection

AMT

N

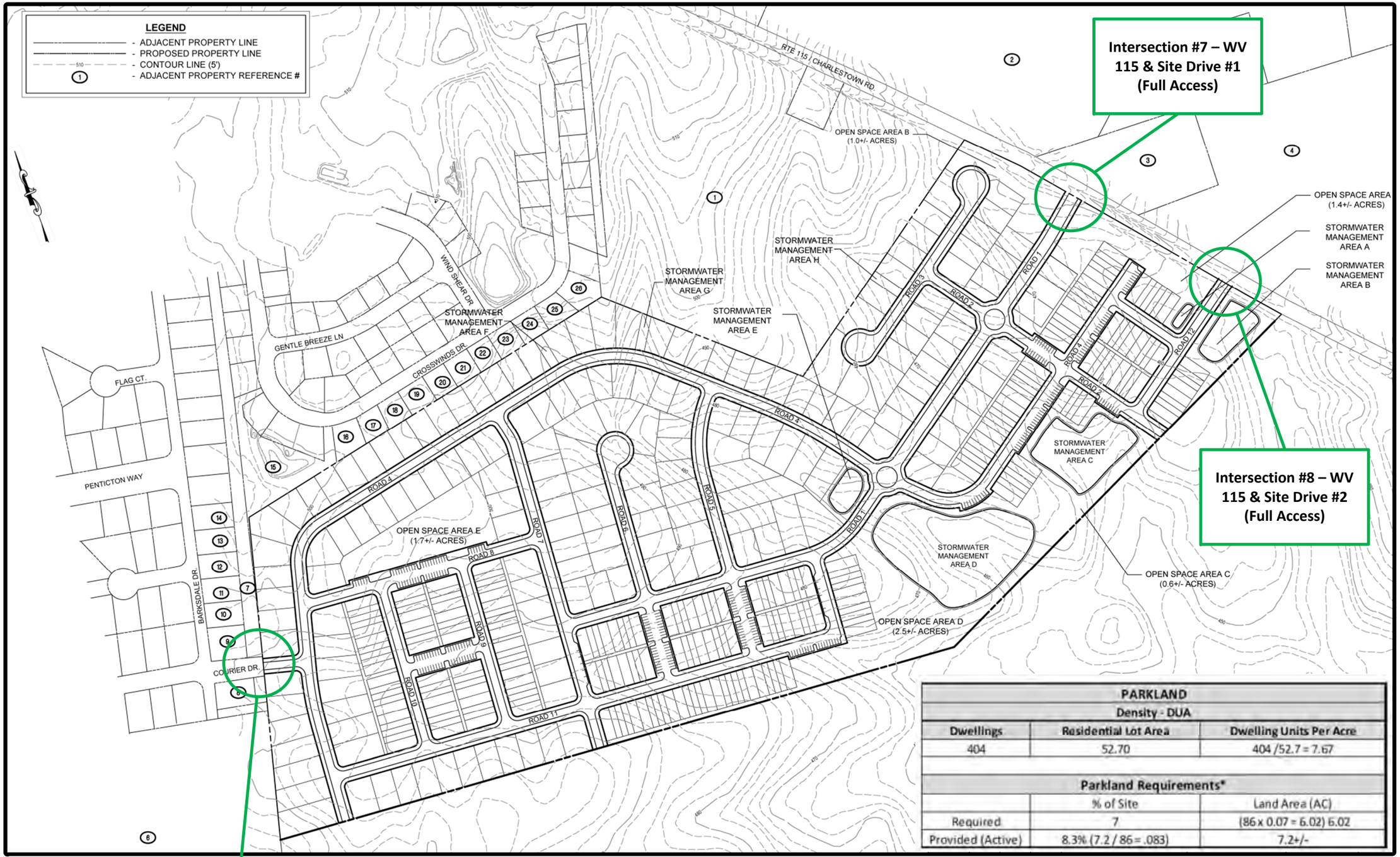
NOT TO SCALE

**Kings Crossing Residential TIS**

Site Location Map

**DATE:** June 2021

**FIGURE 1**




| PARKLAND | | |
|---|---|---|
| Density - DUA | | |
| Dwellings | Residential Lot Area | Dwelling Units Per Acre |
| 404 | 52.70 | 404 /52.7 = 7.67 |
| | | |
| Parkland Requirements* | | |
| | % of Site | Land Area (AC) |
| Required | 7 | (86 x 0.07 = 6.02) 6.02 |
| Provided (Active) | 8.3% (7.2 / 86 = .083) | 7.2+/- |

AMT

NOT TO SCALE

**Kings Crossing Residential TIS**

Site Plan

**DATE:** June 2021

**FIGURE 2**

## Existing Traffic Data Collection

With the reopening of public schools and traffic volumes returning to normal levels, collection of new turning movement counts is suggested. Peak hour turning movement counts at each existing intersection will be collected on a typical Friday when Jefferson County Schools are in session between the hours of 7AM to 9AM and 3PM to 6PM. New Turning Movement counts will be collected at the following locations:

- WV 115 with Citizens Way/US 340 SB Ramps
- WV 115 with Hillside Drive/US 340 NB Ramps
- WV 115 with Fairleigh Drive
- WV 115 with Crosswinds Drive
- WV 115 with Kabletown Road (CR 25)
- US 340 with Candlewood Drive

The collected data will be compared with previous turning movement data and the current AADT value for WV 115 and US 340 with any noted potential decrease in traffic from Covid-19 impacts will be discussed with WVDOH for potential volume modification.

## Trip Generation

The proposed site will be 175 single-family homes and 229 townhomes (See Figure 1). Peak hour trip generation will be determined using trip rate data from the latest version of the ITE Trip Generation Manual using Land Use Codes (LUC) 210 (Single-Family Detached Housing) and 220 (Multi-Family Housing).

## Trip Distribution

The site-generated trips to and from the proposed residential development will be distributed in accordance with the existing traffic patterns and land uses in the vicinity of the study area. *Proposed* trip distribution based upon current conditions is as follows:

- 35% to/from the north on US 340
- 25% to/from the south on US 340
- 30% to/from the west on WV 115
- 10% to/from the east on WV 115

## Site Access

Access to the site is proposed to be provided by three (3) site access points. Each of these are detailed below:

*Site Drive #1 (Site Access 1)*
Site Drive #1 is proposed as a full movement two-way approach to WV 115 near the western end of the parcel.

*Site Drive #2 (Site Access 2)*
Site Drive #2 is proposed as a full movement two-way approach to WV 115 near the eastern end of the parcel.

*Site Drive #3 (Site Access 3)*
Site Drive #3 is proposed as a full movement two-way approach to Courier Road near the western end of the parcel and is a connection to the Norborne Glebe subdivision. Courier Road connects to Candlewood Drive which is directly connected to US 340. These streets are Charles Town City streets and the City desires this interconnection.

## Approved Developments

The TIS will potentially include any applicable approved or pending TIS documents for projects in the vicinity of this proposed development, as determined by WVDOH. Preliminary adjacent pending developments will include the following:

- Magnolia Springs TIS (parcel north of WV 115 and east of US 340)
- Jefferson Heights South TIS (parcel east of CR 34 near Belvedere Farms Lane)

## Additional Data Needs

The following information is requested in order to complete the analysis for this project:

- Any potential improvement projects planned in this area
    - Specifically – is there an official project to construct a roundabout on WV 115 at the US 340 NB Ramps?

## Local Government Coordination

AMT will provide the preliminary and final TIS reports to local government in accordance with the pending Development Agreement with *DR Horton*. Unless directed otherwise by WVDOH, the TIS will be provided to the following entities for comment:

- City of Charles Town
- Jefferson County Commission
- Hagerstown Eastern Panhandle MPO

## Glaser, Caleb

**From:** Skeen, Jeremy P <Jeremy.P.Skeen@wv.gov>
**Sent:** Wednesday, May 5, 2021 7:36 AM
**To:** Glaser, Caleb
**Cc:** Johnson, Leland W
**Subject:** RE: [External] WV 115 Growth Rate - Jefferson County

Caleb,

According to the MPO Model of Jefferson County, the growth rate of WV 115 just East of the US 340 interchange is: 1.1978%

Thanks,
Jeremy

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**From:** Johnson, Leland W <Leland.W.Johnson@wv.gov>
**Sent:** Friday, April 30, 2021 1:18 PM
**To:** Skeen, Jeremy P <Jeremy.P.Skeen@wv.gov>
**Cc:** cglaser@amtengineering.com
**Subject:** FW: [External] WV 115 Growth Rate - Jefferson County

Jeremy,

Please handle this request.

Leland

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**From:** Glaser, Caleb <cglaser@amtengineering.com>
**Sent:** Friday, April 30, 2021 1:16 PM
**To:** Johnson, Leland W <Leland.W.Johnson@wv.gov>
**Cc:** Elsayed, Gehan M <Gehan.M.Elsayed@wv.gov>
**Subject:** [External] WV 115 Growth Rate - Jefferson County

CAUTION: External email. Do not click links or open attachments unless you verify sender.

Good Afternoon Leland,

Could you provide the anticipated annual traffic growth rate for WV 115 in Jefferson County at the US 340 interchange? We are preparing a TIS for a residential development just east of the interchange. In June 2019 you provided us with a growth rate in this area at 1.31% and was unsure if it would've changed.

Thank you,