



AGENDA

Board of Supervisors Special Meeting

May 25, 2021

5:00 PM

- A. Closed Session – Section 2.2-3711(A)(1) of the Virginia Freedom of Information Act
Personnel re: County Administrator
- B. Request – Contract and Employment of County Administrator

7:00 PM

- A. Call to Order and Pledge of Allegiance of the United States of America
- B. Public Hearing – Reconsideration of Rezoning Request R2020-10-01 for Dudding
Commercial Development, LLC – Joe Petty
- C. Adjournment

Motion to be Made Going into Closed Meeting

I move the Board enter into a closed meeting under the provisions of Section 2.2-3711(A)(1) of the Virginia Freedom of Information Act for the discussion or consideration of the assignment, appointment, promotion, performance, demotion, salaries, and resignation of a specific public officer of the public body; I further move that discussion be limited to the County Administrator.

- - -

Motion to be Made Coming out of Closed Meeting

I move that the Board certifies to the best of each member's knowledge only public business matters lawfully exempted from open meeting requirements under Section 2.2-3711(A)(1) of the Virginia Freedom of Information Act and only such public business matters as were identified in the motion by which the closed meeting was convened were heard, discussed or considered in the meeting by the public body.



COUNTY OF WARREN, VIRGINIA

BOARD OF SUPERVISORS AGENDA ITEM

DATE	ITEM	SUBJECT:	PAGE
5/25/2021	B	Rezoning request - R2020-10-01 Dudding Commercial Development, LLC Agricultural (A) to Commercial (C)	1 of 1

EXPLANATION & SUMMARY:

See attached application and staff report.

PROPOSED OR SUGGESTED MOTION:

Finding that the requested rezoning is appropriate for the public necessity and is good zoning practice, I move that the Board of Supervisors approve the applicant's request to rezone from Agricultural (A) to Commercial (C) a portion of tax map 31, parcel 39 consisting of 6.45 acres, more or less, as identified in the rezoning application, and accept as part of the rezoning the proffers that have been signed and submitted by the applicant.

OR

Finding that the requested rezoning is not appropriate for the public necessity and is not good zoning practice, I move that the Board of Supervisors deny the applicant's request to rezone from Agricultural (A) to Commercial (C) a portion of tax map 31, parcel 39 consisting of 6.45 acres, more or less, as identified in the rezoning application (List Reasons).

SUBMITTED BY:	DISPOSITION OF COMMISSION:	PROCESSED BY:
Joseph Petty, Planning Director	☐ APPROVED ☐ OTHER (Describe)	

STATEMENT OF JUSTIFICATION

Dudding Commercial Development LLC, a West Virginia limited liability company ("Dudding") has a contractual right to purchase a fifteen (15) acre tract or parcel located in Happy Creek Magisterial District, Warren County, Virginia, identified as part of Tax Map/Parcel 31 39, and being more particularly described as Tract A in that certain Deed from Paul O. Lanier and Zaida A. Lanier to Four-L Corporation, a Virginia corporation, dated February 8, 1982 and recorded in Book 291, Page 159 (the "Subject Property"). The Subject Property is currently zoned as Agricultural (A). Dudding seeks to have 6.45 acres, more or less, of the Subject Property rezoned as Commercial (C) to facilitate the development of a convenience store.

Specifically, Dudding intends to lease a portion of the Subject Property to Sheetz, Inc., a Pennsylvania corporation ("Sheetz"), for the development and construction of a new Convenience Store with approximately forty-eight (48) parking spaces, and a Drive-Thru lane. In addition to the new Convenience Store, Sheetz has agreed to construct a paved cul-de-sac for use as a public school bus turnaround and a student shelter area serving school-aged children residing in the nearby Apple Mountain subdivision, along with approximately thirty (30) parking spaces for parent pick up / drop off. Ingress, egress and regress to and from the Subject Property will be provided via Apple Mountain Road.

The use of the Subject Property as a Convenience Store is consistent with the Warren County Comprehensive Plan and is an appropriate use given the proximity of the Subject Property to Interstate 66. Rezoning the Subject Property from Agricultural (A) to Commercial (C) is desirable to allow for commercial and retail development along the existing exit off of Interstate 66. A convenience store is a permitted use in a Commercial (c) zone under and pursuant to the Zoning Ordinance of Warren County, Virginia. The Convenience Store and school bus stop located on the Subject Property will be complimentary to the residential use of the adjacent properties located in Apple Mountain residential subdivision.

WCREZ-000004-2020

REZONING APPLICATION

APPLICATION NO. R2020-10-01

DATE RECEIVED: 9/22/2020

FEE AMOUNT: \$ 2000.00

DATE PAID: 9/22/2020

revised acreage on 11/6/2020

Applicant:

Name:	Dudding Commercial Development LLC
Address:	101 Old Carriage Lane
	Daniels, West Virginia 25832
Telephone: (304) 237-8574	Email: <u>jerime@duddingcommercial.com</u>

Owner of Record: (if different than above; if more than one owner provide information for each on a separate page).

Name:	Four-L Corporation
Address:	2801 Chapel Hill Road, Goochland, Virginia 23063
Telephone : (804) 240-9394	

Respectfully (name above) request that a determination be made by the Warren County Planning Commission and Board of Supervisors on the following request for a rezoning for the property described below.

Property Information:

A. Location of Property:

Election District:	Happy Creek Magisterial District
Tax Map No.:	31 39 (part of)
Section:	Current Deed: Book 291, Page 160 (Tract A)
Block:	
Lot(s):	
Subdivision Name:	Adjacent to Apple Mountain Subdivision
Area of Property (acres):	6.45 acres out of existing 15 acre tract or parcel

B. Current land use and condition of site: Agricultural/Unimproved/Undeveloped

C. Zoning of surrounding land and property: R-1 (Residential - 1) to the North of the property Interstate 66 and Commercial (C) to the South

Zoning Classification and Request:

A. Present Zoning of property: Agricultural (A)

B. Proposed Zoning requested: Commercial (C)

Proposed Use of Property:

A. Describe the proposed use of the property, including primary and secondary uses.

2.35 acres - Convenience Store - Primary Use

1.15 acres - Bus Stop/School Bus Pick Up/Drop Off - Secondary Use

11 acres - Undeveloped/Unimproved

Plans Prepared by:

Name: Bohler Engineering VA, LLC

Address: 28 Blackwell Park Lane, Suite 201

Warrenton, VA 20186

Telephone :(540) 349-4500

I/we the undersigned, do hereby respectfully agree to comply with any conditions required by the Board of Supervisors of the County of Warren, Virginia, and authorize the County personnel to go upon the property for the purpose of making site inspections. Expenses incurred in securing professional assistance in connection with the review of this application for Rezoning, shall be charged to the applicant. **If the set of required documents is incomplete, your application will not be placed on the Planning Commission's agenda.**

Signature of Owner:

Date:

Signature of Applicant:

Date: 9-16-20

Signature of Co-Applicant(s):

Date:

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FOUR L CORPORATION

Signature of Owner: *P.D. Fanning, PRES*

Date: *9/16/2020*

Signature of Applicant:

Date:

Signature of Co-Applicant(s):

Date:

BOOK 291

PAGE 159

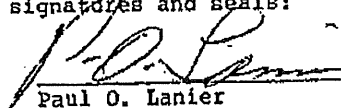
THIS DEED, made this 8th day of February, 1982, by and between PAUL O. LANIER and ZAIDA A. LANIER, his wife, parties of the first part; and FOUR-L CORPORATION, a Virginia corporation, party of the second part;

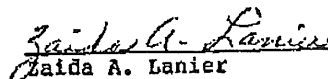
W I T N E S S E T H:

That for and in consideration of the sum of Ten Dollars (\$10.00), and other good and valuable consideration, the receipt of which is hereby acknowledged, the parties of the first part do hereby grant and convey with General Warranty and English Covenants of Title, with the exceptions hereinafter stated, unto the party of the second part, all of the right, title and interest of Paul O. Lanier in and to the real estate described on Schedule A attached hereto.

This conveyance is made subject to all existing easements, conditions and agreements of record applicable thereto. Mrs. Zaida A. Lanier joins in this deed to release her dower interest.

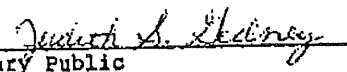
WITNESS the following signatures and seals:

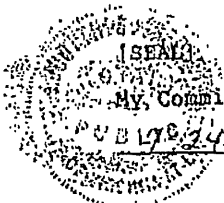
 [SEAL]
Paul O. Lanier

 [SEAL]
Zaida A. Lanier

STATE OF VIRGINIA)
County of *Xrockland*) to-wit:

The foregoing Deed was acknowledged before me this 12th day of February, 1982, by Paul O. Lanier and Zaida A. Lanier, his wife.


Notary Public



My Commission expires:

FEB 24 82

ALL of that certain real estate with all improvements thereon and all rights, easements and appurtenances thereunto belonging, lying and being situate north of Virginia Route #55, approximately one mile west of Linden, in Shenandoah Magisterial District of Warren County, Virginia, and bounded and described according to the surveys and plats made by R. M. Bartenstein, C.L.S., attached to the hereinafter mentioned deed, as follows, to-wit:

(1) TRACT A: "BEGINNING at (F), a point corner to the residue of Prieto and in the northern right of way line of the proposed I-Rt. 66, thence with the said proposed I-Rt. 66 as follows: S. 14° 03' 13" W. 167.89 feet to (A), a point, thence N. 86° 43' 18" W. 583.71 feet to (B), a point, thence with a curve to the right having a radius of 2768.79 feet, a delta angle of 09° 30' 30", and an arc length of 451.44 feet to (C), an iron pipe to be set corner to the Apple Mountain Subdivision, thence leaving the said proposed I-Rt. 66 and with the Apple Mountain Subdivision as follows: N. 16° 57' 42" E. 769.08 feet to (D), an iron pipe to be set, thence S. 73° 02' 18" E. 977.10 feet to (E), an iron pipe to be set, thence first with the Apple Mountain Subdivision then the residue of Prieto (Tract C), S. 13° 33' 47" W. 366.00 feet to (F), the point of beginning, the said tract of land containing 15.0000 Acres; and

(2) TRACT B: BEGINNING at (J), a point in the right of way line of the proposed I-Rt. 66 and corner to the residue of Prieto (Tract C), thence leaving the proposed I-Rt. 66 and first with the residue of Prieto and then Apple Mountain Subdivision N. 13° 33' 47" E. 352.94 feet to (K), an iron pipe to be set corner to Apple Mountain Subdivision, thence with said subdivision as follows: S. 73° 02' 18" E. 1123.23 feet to (L), an iron pipe to be set, thence S. 16° 57' 42" W. 659.75 feet to (M), an iron pipe to be set, in the northern right of way line of the proposed I-Rt. 66, thence with the said right of way line with a curve to the right having a radius of 1833.86 feet, a delta angle

of $25^{\circ} 24' 45''$, and an arc length of 749.36 feet to (N), a point, thence N. $52^{\circ} 46' 44''$ W. 41.61 feet to (O), a point, thence N. $63^{\circ} 03' 56''$ W. 319.45 feet to (P), a point, thence N. $11^{\circ} 13' 29''$ E. 127.67 feet to (J), the point of beginning, the said tract of land containing 15.0000 Acres; and

(3) TRACT D: BEGINNING at (A), an iron pipe set in the southern right of way line of the proposed Interstate Route 66 and corner to White, thence leaving the proposed Interstate Route 66 and with White S. $42^{\circ} 32' 45''$ W. 75.75 feet to (B), an iron pipe set on the north side of an old abandoned road corner to Heflin, thence with Heflin N. $69^{\circ} 15' 58''$ W. 231.00 feet to (C), an iron pipe set, thence S $87^{\circ} 44' 05''$ W. 206.51 feet to (D), an iron pipe set in the center of said road and corner to Martin, thence first with Martin, then an unknown tract, and the center of the said old road as follows: S. $85^{\circ} 04' 49''$ W. 234.50 feet to (E), an iron pipe set, thence S. $88^{\circ} 29' 51''$ W. 220.48 feet to (F), an iron pipe set in the northern right of way line of Virginia Route 55, thence with the said right of way line as follows: With a curve to the left having a radius of 5779.58 feet, a delta angle of $01^{\circ} 12' 00''$ and an arc length of 121.05 feet to (G), an iron pipe set, thence N. $79^{\circ} 03' 25''$ W. 101.29 feet to (H), a point located S. $60^{\circ} 54' 07''$ E. 0.97 feet from a Virginia Department of Highways monument, thence with a curve to the left having a radius of 5769.58 feet, a delta angle of $03^{\circ} 29' 02''$, and an arc length of 350.82 feet to (I), an iron pipe set, thence N. $77^{\circ} 22' 31''$ W. 551.60 feet to (J), a point located N. $44^{\circ} 13' 23''$ W. 1.46 feet from a Virginia Department of Highways monument, thence N. $68^{\circ} 50' 40''$ W. 101.12 feet to (K), an iron pipe set, thence N. $77^{\circ} 22' 31''$ W. 150.00 feet to (L), a point located N. $09^{\circ} 04' 39''$ W. 0.53 feet from a Virginia Department of Highways monument, thence N. $85^{\circ} 54' 22''$ W. 101.12 feet to (M), a point located N. $83^{\circ} 14' 24''$ W. 1.03 feet from a Virginia Department of Highways monument, thence N. $77^{\circ} 22' 31''$ W. 369.67 feet to (N), an iron pipe set in the right of way line of the proposed Interstate Route 66, thence with the said right of way line as follows: N. $45^{\circ} 01' 42''$ W. 108.78 feet to (O), an iron pipe set, thence N. $13^{\circ} 33' 47''$ E. 159.51 feet to (P), an iron pipe set, thence N. $48^{\circ} 07' 19''$ E. 141.88 feet to (Q), an iron pipe set, thence N. $84^{\circ} 00' 01''$ E. 670.46 feet to (R), an iron pipe set, the beginning of

a curve to the right having a radius of 1833.86 feet, a delta angle of $19^{\circ} 00' 36''$, and an arc length of 608.45 feet to (S), an iron pipe set, thence S. $62^{\circ} 26' 23''$ E. 812.64 feet to (T), an iron pipe set, thence S. $57^{\circ} 00' 25''$ E. 440.26 feet to (U), an iron pipe set, thence S. $62^{\circ} 03' 21''$ E. 334.73 feet to (A), the point of beginning, the said tract of land containing .28.2397 Acres; and

(4). TRACT E: BEGINNING at (A), a point in the center of Virginia Route 647 and corner to the parcel previously acquired by the Virginia Department of Highways referred to in Deed Book 149, Page 496, thence leaving the said road and with the above mentioned parcel N. $13^{\circ} 33' 47''$ E. passing through an iron pipe to be set at 25.00 feet, 290.14 feet in all to (B), an iron pipe to be set in the southern right of way line of the proposed Interstate Route 66, thence with the said right of way line as follows: S. $76^{\circ} 26' 13''$ E. 510.00 feet to (C), a point, thence S. $67^{\circ} 24' 19''$ E. 817.44 feet to (D), a point, thence S. $68^{\circ} 14' 09''$ E. 561.67 feet to (E), a point, thence S. $27^{\circ} 10' 40''$ E. 71.67 feet to (F), a point, thence S. $13^{\circ} 33' 47''$ W. 350.00 feet to (G), a point, thence S. $78^{\circ} 47' 12''$ W. 65.81 feet to (H), an iron pipe or spike to be set in the center of Virginia Route 647, thence with the center of the said route N. $56^{\circ} 58' 43''$ W. 716.33 feet to (J), a point in the eastern right of way line of the proposed relocated Virginia Route 647, thence with the said right of way line with a curve to the left having a radius of 411.97 feet, a delta angle of $19^{\circ} 36' 46''$, and an arc length of 141.02 feet to (K), a point, thence S. $35^{\circ} 32' 48''$ W. 30.00 feet to (L), a point in the center of Virginia Route 647, thence with the center of the said route N. $56^{\circ} 11' 35''$ W. 25.93 feet to (M), a point, thence leaving the center of Virginia Route 647 and with the center of an old abandoned road N. $21^{\circ} 06' 22''$ W. 26.10 feet to (N), a point 15.00 feet from the center of Virginia Route 647, thence with a line 15.00 feet from the said center of Virginia Route 647 and parallel to same, the general courses of which are as follows: N. $56^{\circ} 11' 35''$ W. 245.25 feet to (O), a point, thence N. $60^{\circ} 58' 03''$ W. 99.19 feet to (P), a point, thence N. $72^{\circ} 51' 02''$ W. 95.92 feet to (Q), a point, thence N. $83^{\circ} 02' 05''$ W. 58.04 feet to (R), a point in the center of the aforementioned abandoned road, thence with the center of the said road S. $84^{\circ} 56' 52''$ W. 72.04 feet to (S), a point in the center of Virginia

Route 647, thence with the center of the said route, the general courses of which are as follows: N. 89° 51' 34" W. 137.20 feet to (T), a point, thence N. 85° 29' 32" W. 87.01 feet to (U), a point, thence N. 79° 34' 05" W. 137.96 feet to (V), a point, thence N. 76° 12' 26" W. 110.65 feet to (A), the point of beginning, the said tract of land containing 12.7861 Acres," and being a part of the real estate which was conveyed to Serafin G. Prieto by C. W. Keyser and Mary H. Keyser, his wife, by deed dated January 20, 1948, and recorded in the Clerk's Office of Warren County, Virginia, in Deed Book #68, at Page 471, to which said deed reference is hereby made for a further description of the real estate herein and hereby conveyed.

BEING the same real estate conveyed to Paul O. Lanier by two Deeds, one Deed dated May 29, 1975, from William P. Clarke and Emma C. Clarke, recorded in the Circuit Court of Warren County, Virginia, on June 17, 1976, in Deed Book 233, page 163, and another Deed dated May 29, 1976, from J. Goodwin Moore and Barbara H. Moore, recorded in the above-mentioned Clerk's Office on June 17, 1976, in Deed Book 233, page 155.

Sec 53-54 140.32
 Sec 53-54.1 160.50

In the Clerk's Office of the Circuit Court of Warren County, Virginia, this 23rd day of June 1976. This instrument was received and with the certificate annexed, admitted to record.
 Witness William A. Bell Clerk
William A. Bell

REZONING REQUEST PROFFERS

02/4/2021

Rezoning: Agricultural to Commercial ("C")

Property: 6.45, more or less, in Happy Creek Magisterial District, being part of Tax Map No. 31 39, and being identified as Tract A in Deed Book 291, Page 160 (the "Property")

Record Owner: Four-L Corporation

Applicant: Dudding Commercial Development, LLC

I. General Statement

Dudding Commercial Development LLC, a West Virginia limited liability company ("Dudding", or the "Applicant"), on behalf of itself, Four-L Corporation, and Sheetz, Inc., and their respective successors and assigns, proffers and agrees to develop the subject property, and to build and construct certain improvements thereon, including, without limitation, a convenience store and school bus stop, subject to receipt and/or issuance of, and in accordance with (a) the final plans and specifications prepared by the project engineer and approved by all required Federal, State, County and Municipal government agencies or quasi-governmental agencies having jurisdiction over the subject property, which plans and specifications shall be consistent with the site plan submitted with this application in all material respects, (b) all applicable Federal, State, County and Municipal government or quasi-governmental laws, statutes, ordinances and/or codes, together with any rules and/or regulations promulgated thereunder or adopted in connection therewith, and (c) any permits, consents or approvals issued in connection with Dudding's proposed project on the subject Property.

II. Explanation of Applicability

A. The Applicant hereby voluntarily proffers that the use and development of the Property shall be in strict conformance with the following conditions, which shall supersede all other proffers that may have been made prior hereto. In the event the above referenced rezoning is not granted as applied for by the Applicant, these proffers shall be withdrawn and shall be null and void. If this application is denied by the Warren County Board of Supervisors (the "Board"), but in the event an appeal is for any reason thereafter remanded to the Board for reconsideration by a court of competent jurisdiction, then these proffers shall be deemed withdrawn unless the Applicant shall affirmatively readopt all or any portion hereof, in a writing specifically for that purpose.

B. The headings of the proffers set forth below have been prepared for convenience or reference only and shall not control or affect the meaning or be taken as an interpretation of any provision of the proffers. The improvements proffered herein shall be provided at the time of development of that portion of the Property to be served by the improvement or other proffered requirement, unless otherwise specified herein.

C. All land use plans, surveys, reports and similar documents submitted as part of the application by Applicant are for demonstrative purposes only and do not constitute any type of proffer by or on behalf of the Applicant or the owner of the Property. Notwithstanding the foregoing, the Applicant proffers that the development of the Property will substantially conform to the site plan attached hereto and incorporated herein at Exhibit A (the "Site Plan").

D. The proffers set forth in these Amended Proffers shall supersede any other proffers made prior to these Amended Proffers.

III. Proffers

A. Land Use

1. Development of the Property shall be developed in accordance with the regulations of the Commercial ("C") zoning district as are set forth in the Warren County Code or as may otherwise be approved by the Warren County Board of Supervisors in conformance therewith.

2. The following uses shall be prohibited in the above-referenced Property:

- A. Auction houses
- B. Bulk gasoline and petroleum storage; provided, however, the foregoing shall not be deemed to restrict or limit the storage of petroleum products in the normal course of business in connection with the operation of a retail automobile fueling facility
- C. Fairgrounds or racetrack
- D. Amusement Park
- E. Commercial Campground
- F. Auto Sales
- G. Commercial (repair) garage or wrecking service

3. Applicant shall comply with all local, state, and federal regulations applicable to the development of the Property, including those laws, statutes, and regulations pertaining to environmental quality and wetlands.

4. Applicant proffers that Applicant provide water service by private well and shall design, construct and install a private septic system, all in accordance with the minimum standards and specifications of the Commonwealth of Virginia Department of Health. The water well and septic system will be owned and maintained by the Applicant.

Applicant proffers to grant an easement in a form reasonable acceptable to the County over all of the residue of Tax Map 31, Parcel 39 that is located to the west of Apple Mountain Road adjacent to the Property, restricting all future development on said residual property and requiring that said residual property remain open space, and to name the County as the holder and beneficiary of said easement with the right to enforce said easement. Notwithstanding the foregoing, Applicant may retain for development a 30' buffer from the boundary line of the Property which buffer may remain unrestricted and not subject to the aforesaid easement.

B. Architectural/Building Materials

1. Materials used for the facades of the buildings may include but not be limited to concrete masonry units (CMU), brick, architectural block, wood siding, metal, fluted block, tile, concrete tile, dryvit or other simulated stucco (EFIS), real or simulated wood and/or glass.
2. Applicant proffers that all building facades on the Property shall be compatible in architectural style, materials, colors, and details.
3. Applicant proffers that in the event there is a gasoline service station developed onsite, then the fuel storage tanks and appurtenances shall be installed in accordance with the standards of the National Fire Protection Association and the Virginia Uniform Statewide Building Code; further, such development and operation thereof will be performed under strict observation and compliance with 40 CFR 112 for Spill Prevention Control and Countermeasures.

C. Landscaping, Grading, and Erosion and Siltation Control

1. The Applicant shall comply with the landscaping, grading, and erosion and siltation control requirements of the Warren County Code and Virginia erosion and sediment control law.

D. Business Identification Signs

2. The Applicant hereby proffers that, for that portion of the Property to be rezoned to the Commercial C District, all business identification signs will conform to a comprehensive signage program to be approved by the Applicant and shall be in compliance with the applicable provisions of the Warren County Code, as amended.

E. Public Use Dedication

1. Prior to the issuance of any certificate of occupancy for any structure on the Property, Applicant shall build and construct a school bus turnaround (the "Bus Stop") with a designated parking, and pick up / drop area on and about the location shown on, and conforming to the specifications identified on, the Site Plan, or another portion of land within the Property or other specifications if mutually agreeable to the County of Warren and the Applicant. Applicant shall grant and dedicate the Bus Stop as an easement to the Warren County Public Schools, such easement to be in a form reasonably acceptable to Warren County Public Schools. Provided, however, that such dedication of land shall take place only upon (i) the final approval of Applicant's subdivision application by the County of Warren, (ii) recordation of such finally approved subdivision plat among the land records of the Warren County Circuit Court Clerk's Office, and (iii) acceptance by the Warren County Public Schools.

F. Transportation

1. Applicant proffers that Applicant will cause to be prepared, at its sole expense, a revised Traffic Impact Assessment (the "TIA") for the Property based upon the final site plans. The Study shall include the off-ramps from I-66 and Apple Mountain Road. The TIA described in this Paragraph was submitted along with Applicant's initial site plan for commercial retail development on the Property. This TIA was deemed complete and approved by VDOT on January 29th 2021.

2. In addition to any other conditions imposed upon Applicant's proffers set forth in this Section F, Applicant's duties, obligations, and responsibilities set forth in this Section F are expressly conditioned upon written confirmation by VDOT.

3. Applicant further proffers the following highway improvements will be constructed in conjunction with the revised TIA which is dated January 13th, 2021.:

4. All Roadway improvements and site access shall be designed and constructed in accordance with all current VDOT Regulations, Standards, and Specifications.

(a) Apple Mountain Road at Proposed Site Driveway:

- Applicant will provide one inbound lane and two outbound lanes on the site driveway; and
- Applicant will construct a northbound left-turn lane on Apple Mountain Road with 100 feet of storage and a 100 foot taper.

(b) Route 79 at I-66 Eastbound Ramps:

- Applicant will construct a southbound left-turn lane on Route 79 with 175 feet of storage and a 100 foot taper; and
- Applicant will widen and restripe the I-66 eastbound off-ramp to create a left-turn lane with 200 feet of storage.

(c) I-66 West Bound off Ramp:

- Applicant will construct an improved turning radius on the I-66 West bound off ramp. Turning radius will accommodate a WB-67 truck making the westbound right-turn from the I-66 West Bound Off Ramp.
- The existing right turn lane of the I-66 West Bound Ramp will be tested to ensure pavement adequacy.

G. Compliance with Laws

1. The Applicant hereby agrees that these proffers submitted with this Application shall comply with all applicable local, state, and federal laws and regulations.

2. The Applicant hereby agrees that the rezoning itself gives rise to the need for these proffers, that the proffers have a reasonable relation to the rezoning, and that all conditions are in conformity with the County's comprehensive plan.

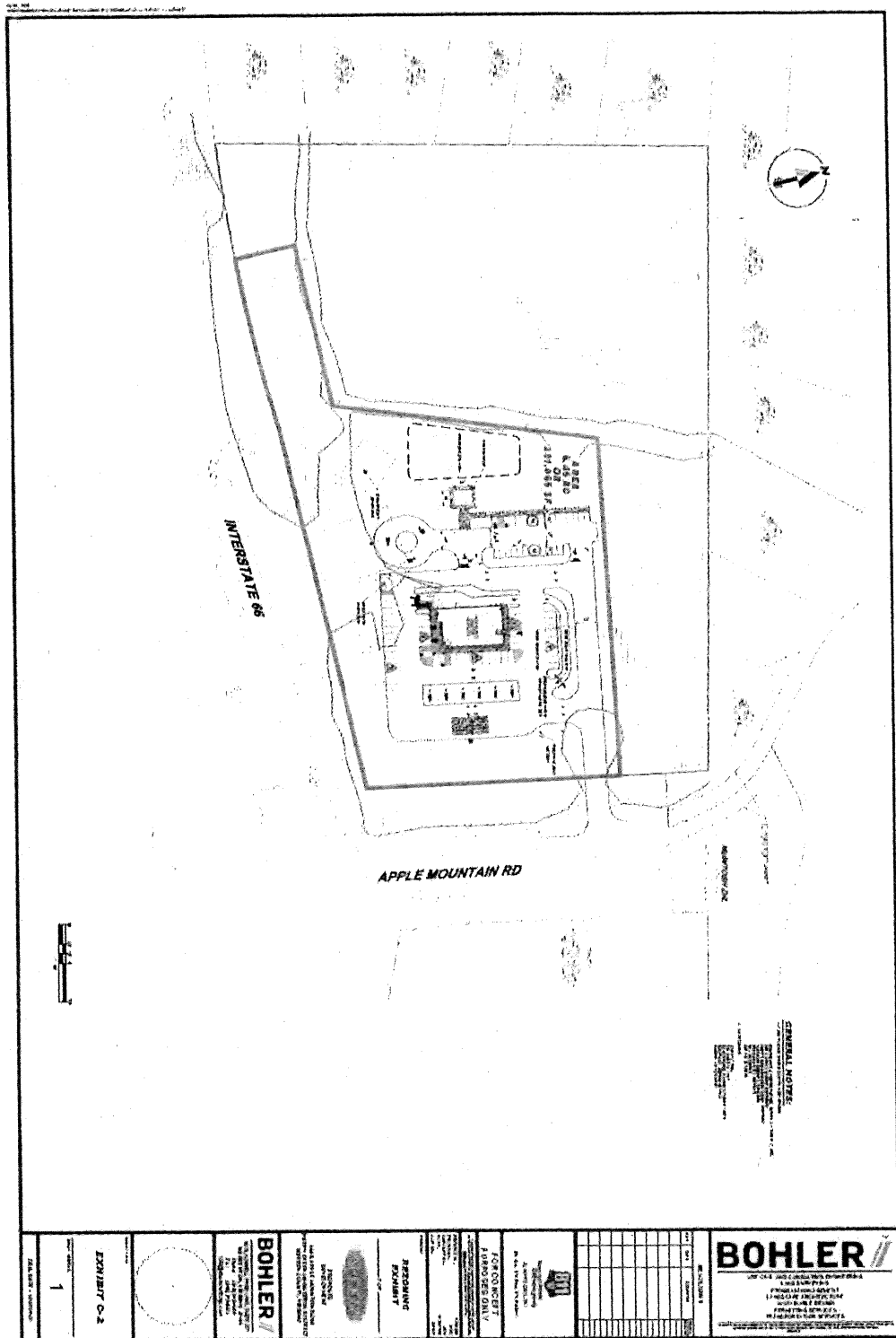
Respectfully Submitted,
Dudding Commercial Development, LLC

By:



Jerine Dudding, its Member

Exhibit A





Borrowers' Certification and Authorization to Release Loan Information

CERTIFICATION

I/We certify the following:

1. I/We have applied for a mortgage loan from AmeriSave Mortgage Corporation ("Lender").
2. First American Title Insurance Company-Mortgage Services Division ("First American") will be handling the settlement and/or title insurance on the Loan with Lender.

AUTHORIZATION TO RELEASE INFORMATION

Property Address: 101 OLD CARRIAGE LN, DANIELS, WV 25832

- A. I/We hereby authorize you to release to First American its employees, agents and assigns, any and all information regarding the above referenced lien/loan above that First American, its employees, agents and assigns may request.
- B. I/We hereby indemnify and hold you harmless by reason of your compliance with this Authorization to Release Information.
- C. A copy of this authorization may be accepted as an original.

Michelle L. Dudding
Borrower Signature
Michelle L Dudding

Date: 2-4-21

Jerime K Dudding
Borrower Signature
Jerime K Dudding

Date: 2-4-21

Direction – Front Royal to Apple Mountain property.

1. Start out going **west** on E 6th St/VA-647 toward Belair Ave. Continue to follow E 6th St.

Then 0.34 miles

2. Turn **left** onto N Commerce Ave/US-522 S.

1. Angel's Korner is on the corner

Then 1.19 miles

3. Turn **left** onto John Marshall Hwy/VA-55.

1. John Marshall Hwy is 0.1 miles past Partsmouth Rd

2. BB&T is on the corner

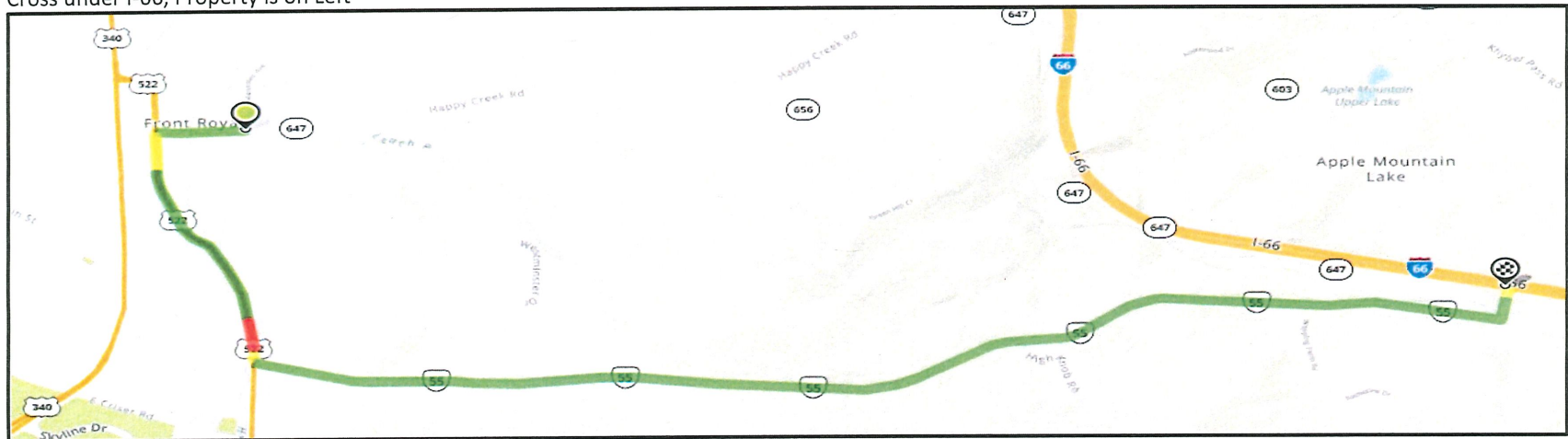
Then 4.71 miles

4. Turn **left** onto Apple Mountain Rd.

1. Apple Mountain Rd is 0.1 miles past Dismal Hollow Rd

Then 0.16 miles

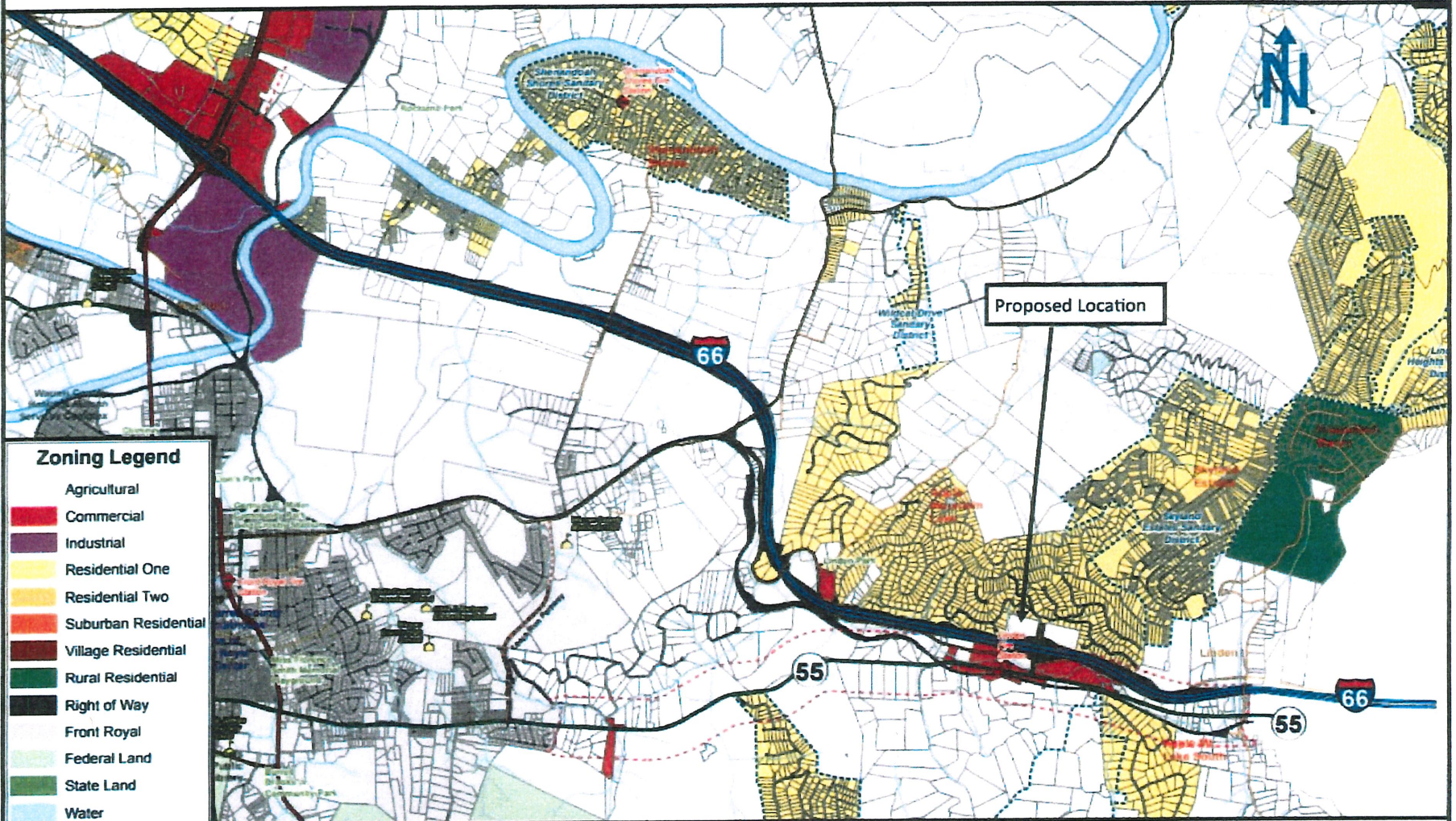
Cross under I-66, Property is on Left



Warren County, Virginia

Proposed Rezone Map

I-66 and Apple Mountain Rd. (Northwest Quadrant)



Deed—Book 291:Page 160 Tract A

15 Acres

Sheetz: Linden, VA (Apple Mountain Rd.)

Development Team:

Jerime Dudding – Dudding Commercial

Sheetz Project Team:

Bob Franks – Permitting/Engineering Manager

Hank Slicker – Real Estate Site Selector

Mike LaCesa – Real Estate Director

John Sieger – Environmental Compliance Manager

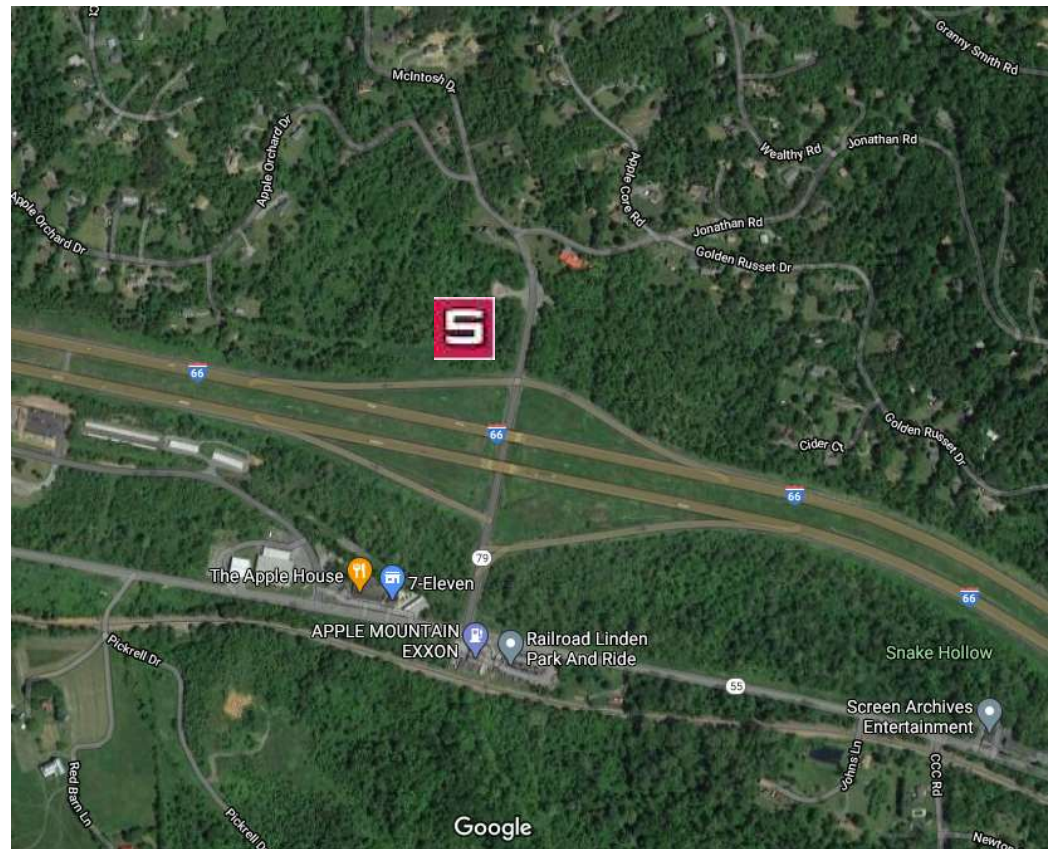
Consultants:

John Wright – Bohler

Carl Hultgren – Ramey-Kemp

Vincent Day – Cardno

Joseph Silek – Legal Counsel



What's A Sheetz?



1/14/2021

Sheetz is a Good Fit

➤ Good neighbor:

- Sheetz has worked with the county school and HOA
- Sheetz has listened to HOA and county staff to update/edit site plan
- Sheetz is only rezoning appropriate land necessary for store/bus turnaround
- Sheetz will provide great economic benefits to the county

➤ Committed to safety:

- Construction of bus turnaround and shelter for county school
- Providing a parking area that is well lit and has video surveillance

➤ Committed to environmental safety:

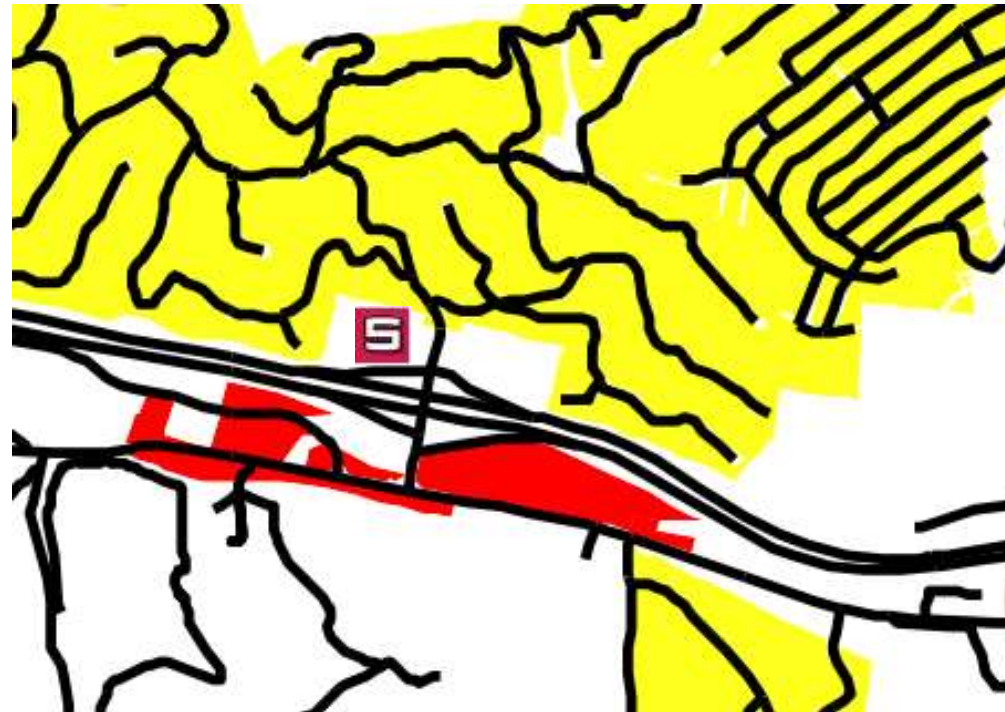
- Installing state-of-the-art petroleum equipment



Warren County Comprehensive Plan

➤ Chapter 4 – Section 8:

“There are already several commercial and industrial uses located near the interchange of I-66 and U.S. Route 55, near the Village of Linden. Continued light commercial and industrial uses should continue to be permitted in this area, within the environment’s limits to support such uses.”



Timeline of Events

- June 11, 2020 – Met HOA representative at site
- June 11, 2020 – Met school representative at site
- June 20, 2020 – Met with HOA board (virtual meeting), presented old site plan
- August 19, 2020 – Met with HOA board (in person), presented updated site plan
- October 15, 2020 – Warren County Schools provides letter of acceptability
- November 12, 2020 – Presented to Planning Commission





1/14/2021



Sheetz is Committed to Safety

- Good neighbor who is committed to safety of staff, patrons, and community
- Bus Turnaround:
 - Safely relocating bus turnaround from Apple Mountain Road
 - Specifications were provided from Warren County Transportation
 - Including shelter for students waiting for bus/ride
 - 30 parking spots
 - Lit for added safety
- Excellent relationship with police



Sheetz is Committed to Safety

➤ Security Operations Center

- 24/7/365 manned center for Sheetz stores
- Respond to all Sheetz panic alarms (emergency pendants) – Dispatch as necessary
- Voice down to all stores 3 to 4 times a day

➤ Comprehensive video surveillance with at least 48 cameras

- Inside: most of store area
- Outside: Pumps, most parking, dumpster area
- The bus turnaround will also be included



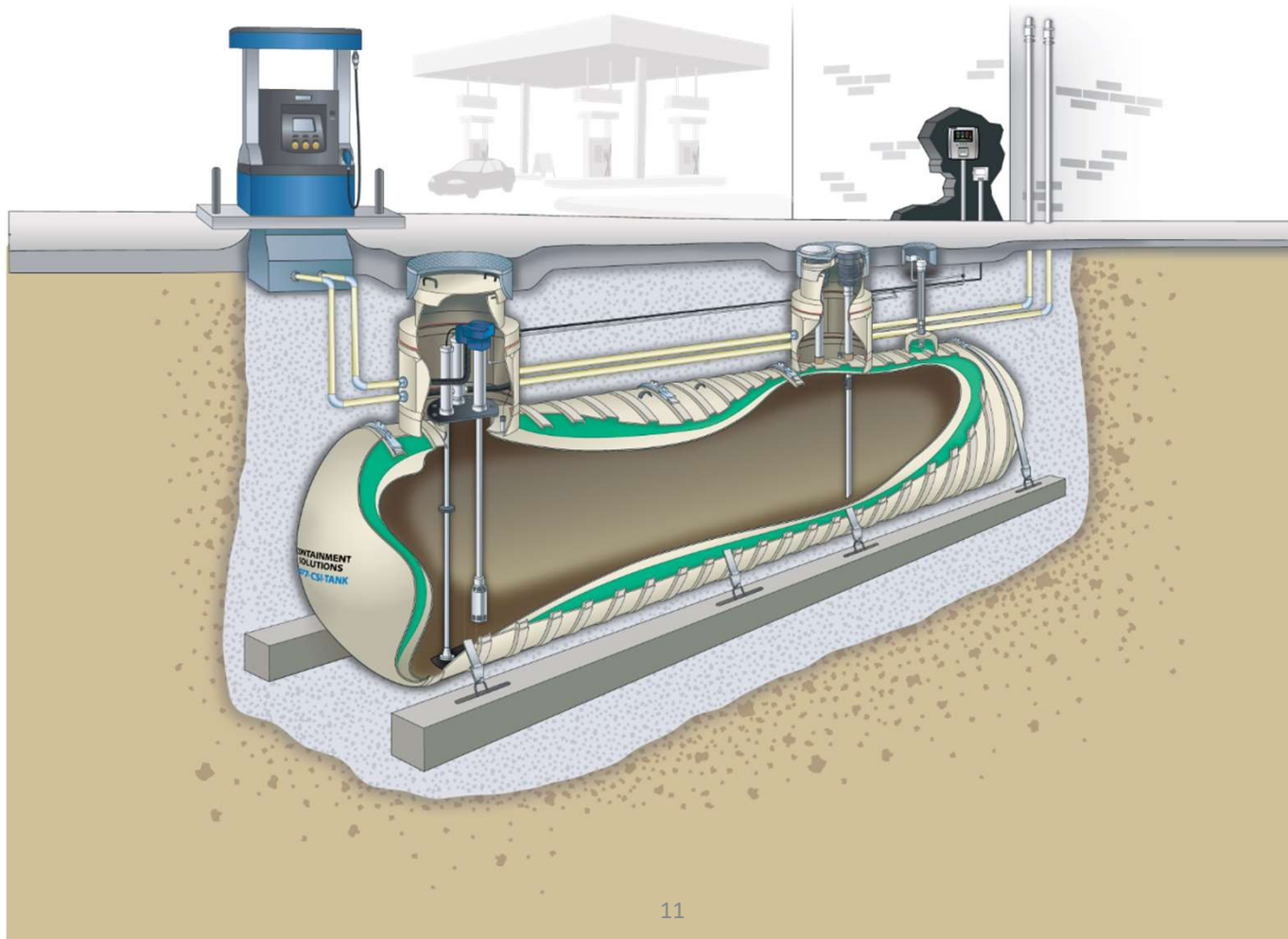
Sheetz is Committed to Water Supply

➤ Cardno's Hydrogeological Report (Vincent Day, Senior Hydrogeologist)

Findings:

- Water recharge rates within the boundaries of the site appear more than adequate to supply water for proposed use.
- A query of 40 well records within 1000 feet of the site revealed that the average yield is about 13 gpm; this statistic compared favorably with a study conducted by USGS.
- Water usage for proposed use is relatively modest; requiring a well that can produce less than 2 gallons per minute (gpm).
- Given the estimated recharge rate, the average yield of wells and the modest groundwater requirements, it is thought that adequate groundwater resources can be developed on the site.
- It is Cardno's professional opinion that the proposed groundwater withdrawals would not be expected to interfere with the production of offsite supplies.

Sheetz is Committed to Environmental Safety



1/14/2021

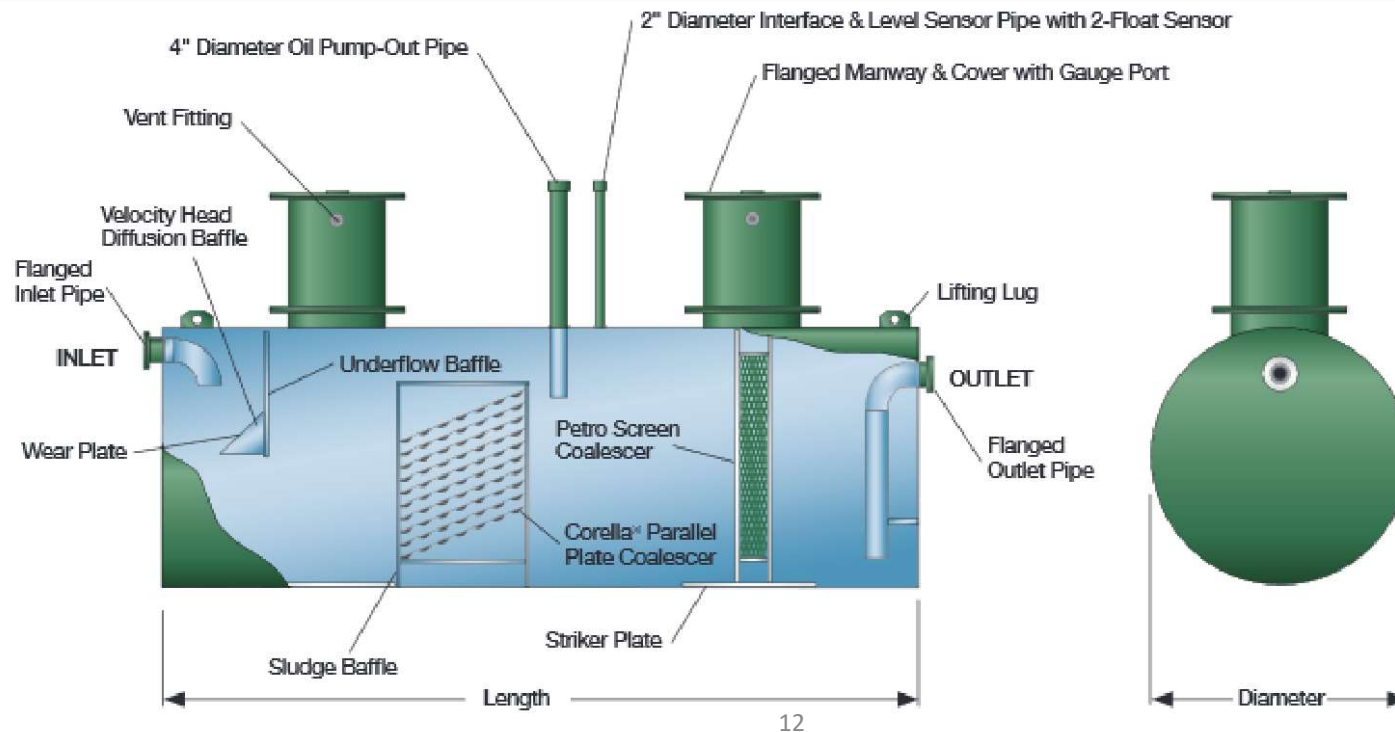
11



Sheetz is Committed to Environmental Safety

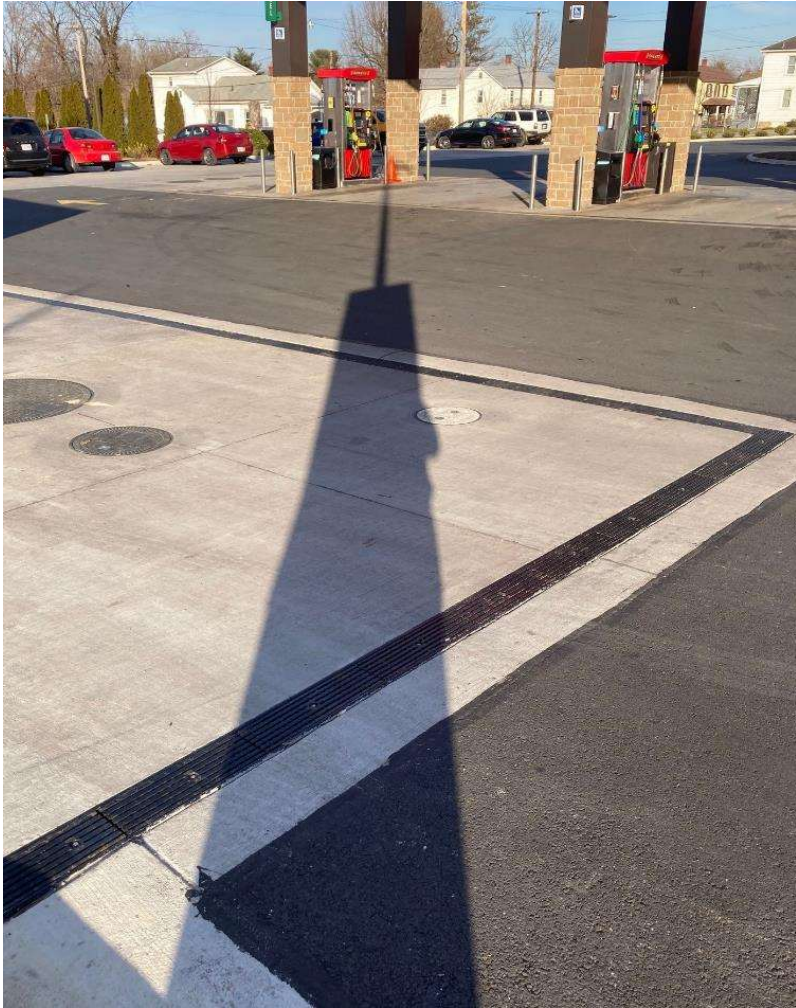
cylindrical separator sizing guide

HT-2040



1/14/2021





1/14/2021



13





1/14/2021



SPILL RESPONSE PROCEDURES

In the event of a gasoline, kerosene, diesel and/or another hazardous substance spill please follow the procedures below.

911 EMERGENCY NUMBER
STORE SUPPORT: 800-280-4357

1 STOP THE FLOW OF FUEL

Stop the flow of fuel by activating the shut off switch/button located behind the register and, possibly, outside the store.

Notify 911 immediately if there is a fire, health/safety concern, or if the spill cannot be contained or stopped with the materials on hand.



2 IMMEDIATELY CONTAIN THE SPILL & BARRICADE THE AREA

1. Put on appropriate PPE including safety vest/reflective jacket, nitrile gloves, and safety glasses/goggles.
2. At leading edge of spill or in front of any storm drains, pour loose absorbent in a "U" shape along the spill's edge to stop the spread of fuel.
3. Use white absorbent pads or, if necessary, spread loose absorbent over the spill to soak it up.
4. Use caution tape and/or cones to ensure the safety of our customers and employees and to prevent vehicles from driving through the spill area.



3 CLEAN UP THE SPILL

1. Sweep up the spill absorbent, pick up the pads and place into the disposable bags provided in your spill kit.
2. Tie off the bags with the zip ties provided.
3. Place all the bagged spill materials in the correct drum located in the hazardous material storage shed at your site for pick up.
4. If fuel contacts the skin or eyes, flush with water immediately for 15 minutes. If symptoms continue, seek medical attention.

1/14/2021



4 REPORT THE SPILL TO STORE SOLUTIONS

1. Investigate if any fuel or hazardous substances have entered any drains, catch basins, or grassy areas of the roadway.
2. Call Store Solutions to report the spill and obtain additional help.

5 BAG OFF THE PUMP

In the event that the spill was caused by a faulty dispenser or defective nozzle, bag-off the nozzle and enter a service desk ticket to have a gas technician replace the nozzle.



6 ALWAYS KEEP YOUR SPILL KIT FULLY STOCKED

Log a Service Desk ticket to have your spill kit supplies replenished after every spill to ensure that you have the minimum supply of spill materials noted below.

THINGS YOU CAN DO TO HELP :

- If you observe a customer that is **NOT** tending the pump, turn that pump off at the POS (NOT the E-Stop) immediately until the customer returns to their vehicle.
- Always keep your spill kit fully stocked.
- Routinely check the onsite storm water drains for fuel, hazardous substance or pooled products.
- Bag off faulty nozzles.
- Place a service call for anything that looks out of the ordinary.

If you have any questions on the spill procedures or would like any further information, please contact Store Solutions and ask for the Environmental Compliance Department.

EACH RED SPILL CONTAINMENT CENTER AT THE GASOLINE PUMPS MUST CONTAIN THE FOLLOWING MINIMUM QUANTITIES:



2 Pairs Nitrile Gloves



2—50ft Rolls of Caution Tape



5 Polyethylene Disposal Bags



20lbs Loose Absorbent



15 Absorbent Pads



1 Plastic Broom & Dust Pan





1/14/2021



Traffic Study

- Ramey Kemp & Associates performed the TIA
- Coordinated closely with Warren County and VDOT
- Study intersections
 - 1 – Apple Mtn. / Sheetz Access
 - 2 – VA 79 / Westbound Ramps
 - 3 – VA 79 / Eastbound Off Ramp
 - 4 – VA 79 / Eastbound On Ramp
 - 5 – VA 55 / VA 79



Proposed Roadway Improvements

➤ #1 - Apple Mtn / Sheetz Access

- Construct a northbound left-turn lane on Apple Mountain Road

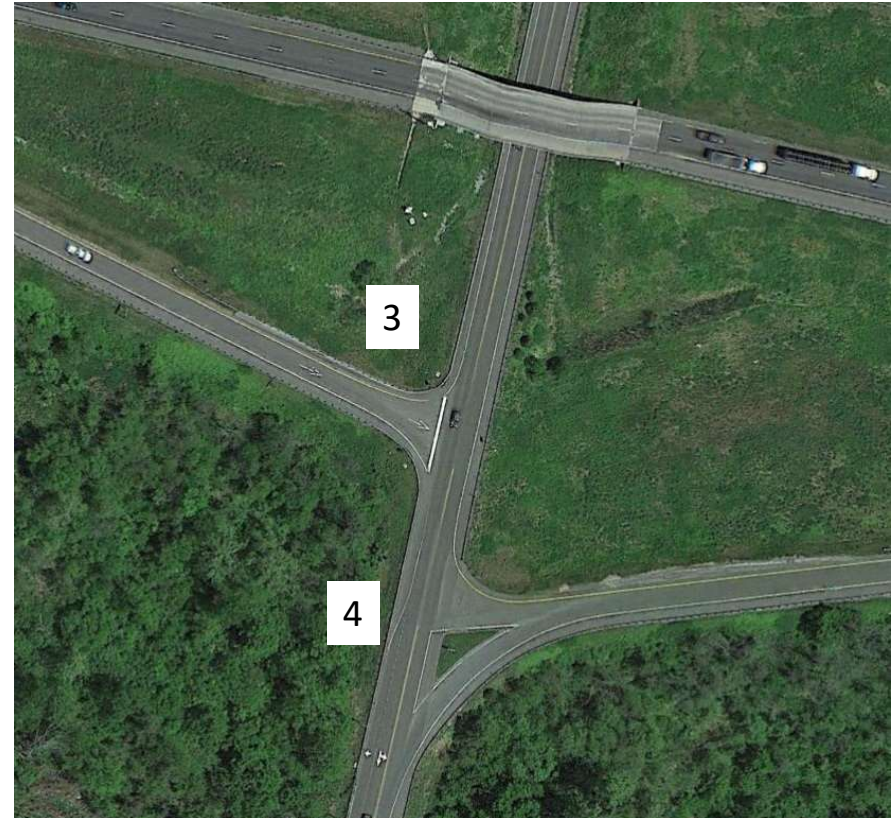
➤ #2 - VA 79 at Westbound Off Ramp

- Pull back stop-bar on southbound Apple Mountain Road
- Add pavement to the radius in northeast quadrant to accommodate truck turns



Proposed Roadway Improvements

- #3 - VA 79 at Eastbound Off Ramp
 - Widen and restripe ramp to add a left-turn lane
- #4 - VA 79 at Eastbound On Ramp
 - Construct a southbound left-turn lane on VA 79, which is already warranted today



Sheetz is Important to the Community

➤ Sheetz Employee Overview:

- About 30 to 35 employees
- 12 to 15 (maybe more) are full time employees
- Full Time employees are eligible for benefits such as medical, 401k, ESOP
- Part Time employees are eligible for certain benefits but work at least 16 hrs.

➤ Economic Benefits to Warren County estimated of \$400,000



Sheetz is a Good Fit

➤ Good neighbor:

- Sheetz has worked with the county school and HOA
- Sheetz has listened to HOA and county staff to update/edit site plan
- Sheetz is only rezoning appropriate land necessary for store/bus turnaround
- Sheetz will provide great economic benefits to the county

➤ Committed to safety:

- Construction of bus turnaround and shelter for county school
- Providing a parking area that is well lit and has video surveillance

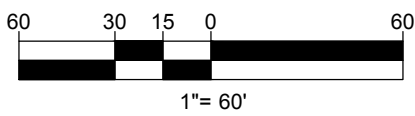
➤ Committed to environmental safety:

- Installing state-of-the-art petroleum equipment



Thank you for your time

We are happy to answer any questions that you may have



SHEETZ, INC.
351 SHEETZ WAY
CLAYSBURG, PENNSYLVANIA 16625
CONTACT: JOHN MAXWELL
PHONE: (814)239-6021

[illegible]

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY
REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION
DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:	V208400
DRAWN BY:	MEG
CHECKED BY:	JCW
DATE:	10/30/2020
CAD I.D.:	CPC-2

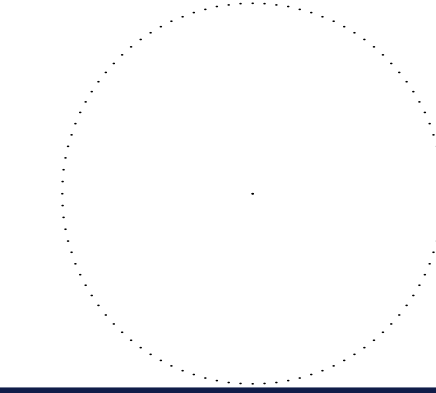
PROJECT:

FOR -



I-66 & APPLE MOUNTAIN ROAD
HAPPY CREEK MAGISTERIAL DISTRICT
WARREN COUNTY, VIRGINIA

28 BLACKWELL PARK LANE, SUITE 201
WARRENTON, VIRGINIA 20186
Phone: (540) 349-4500
Fax: (540) 349-0321
VA@BohlerEng.com



SHEET TITLE:

SHEET NUMBER:

1

ORG. DATE - 10/30/2020

Staff Report

To: Warren County Planning Commission/ Warren County Board of Supervisors
From: Taryn Logan, Deputy County Administrator/Planning Director TEL
Date: February 10, 2021
Re: Rezoning – Agricultural (A) to Commercial (C)

APPLICATION INFORMATION

APPLICANT	Dudding Commercial Development, LLC 101 Old Carriage Lane Daniels, West Virginia 25832
OWNER	Four-L Corporation 2801 Chapel Hill Road Goochland, Virginia 23063
APPLICATION NUMBER	R2020-10-01
REPRESENTATIVE	Joseph F. Silek, Jr., P.C. 43 Chester Street Front Royal, VA 22630 540-635-3415 jsilek@silekpc.com
APPLICANT'S PROPOSAL	A request to amend the Warren County Zoning Map and rezone approximately six and forty-five hundredths (6.45) +/- acres from Agricultural (A) to Commercial (C).
LOCATION	Route 79 (Apple Mountain Road) Northwest corner of Apple Mountain Road and Interstate 66
TAX MAP	Portion of Tax Map 31, Parcel 39
CURRENT ZONING	Agricultural (A)
REQUESTED ZONING	Commercial (C)
PROPOSED USE	Retail Store with Gas Pumps (Sheetz) Use permitted by-right in the Commercial zoning district – code sections 180-28(B)(3) and (14)

REQUEST

The applicant is requesting to rezone approximately 6.45+/- acres from Agricultural (A) to Commercial (C) for a Sheetz store with gas pumps. The property is currently a 30 acre parcel, which is split by Apple Mountain Road. The applicant has a contract on the 15 acres located west of Apple Mountain Road. The original application was to rezone the entire 15 acres, but

they have since revised their request to rezone only the area that they will need to build the Sheetz development. The property is identified on tax map 31, as a portion of parcel 39. It is located on Apple Mountain Road on the northwest corner of Interstate 66 and Apple Mountain Road.

The proposed use of the property will be for a Sheetz store with a drive thru and gas pumps for automobiles. General retailing is permitted as a use by-right in the Commercial zoning district, as well as an automobile filling station. A convenience store is also permitted by-right, but we have classified similar operations under the general retailing use (Royal Farms and 7-Eleven).

The site is currently being used as a school bus stop/turn around, although there is no formal agreement with the property owner. The applicant is proposing to construct a paved cul-de-sac for use as a public school bus turnaround and a student shelter area, along with approximately 30 parking spaces for parent pick up/drop off. An easement area over this site will be dedicated to Warren County Public Schools and constructed by the applicant in connection with the construction of the Sheetz store.

Sheetz is proposing to have 30-35 employees, 12 to 15 of them as full time employees that are eligible for benefits. They have stated their part-time employees are also eligible for certain benefits as well.

In your packets, you have a statement of justification, application, a parcel map, a conceptual development layout, community and environmental impact statements, a hydrological report, proffer statement, and a copy of the latest revision to the traffic impact analysis. There is an approval letter from VDOT for the latest TIA. There are also letters and emails the County has received from citizens in reference to the rezoning application.

The Commercial (C) district is intended, "for areas suitable for the conduct of general business not characterized by either constant heavy trucking or nuisance factors and to which the public requires direct and frequent access."

SURROUNDING USES

North: Zoned Residential-One (R-1)	Use: Apple Mountain Lake Subdivision
South: Interstate 66	Use: Highway
East: Zoned Agricultural (A)	Use: The parcel is split by Apple Mountain Road
West: Zoned Residential-One (R-1)	Use: Apple Mountain Lake Subdivision - Single Family Dwellings

COMPREHENSIVE PLAN

The Future Land Use Map in the existing Comprehensive Plan identifies this area as Agricultural (A).

Staff has reviewed the County's current Comprehensive Plan approved by the Board of Supervisors on July 16, 2013 in relation to this request.

Chapter 4, Section 1 of the Comprehensive Plan (Growth Management and Land Use Issues) states as a goal, "To direct future development into an efficient and serviceable form that will

preserve the County's predominately rural character." (4-5). Specific objectives stated to meet this goal include:

- Direct County development to areas contiguous with Front Royal or rural villages that are served or will be served with adequate public facilities such as roads, sewer, and water. *(The proposed development does not have public water and sewer located at the site. They plan to service the development by a private well and septic. The applicant has had a hydrogeological report prepared for the site. That report is included in your packet. The well would be reviewed and approved by the VDH-Office of Drinking Water. The septic system would be approved by our local Health Department.)*
- Discourage growth in environmentally sensitive areas that have natural development constraints, such as wetlands, steep slopes, karst terrain, and flood plains. *(The site will be reviewed and approved by the Department of Environmental Quality in regards to stormwater. Specific performance objectives regarding stormwater, transportation improvements, aesthetic controls, and downward facing lighting are essential in helping to mitigate the impact of the proposed development.)*

The County adopted a Strategic Vision on February 19, 2019 after conducting a citizen survey and working with a consultant to draft the vision. In the Economic Development strategies, a high priority was listed to focus on industrial and commercial development on Route 340/522 and at the Linden Interchange. Commercial has previously been focused on the John Marshall Highway side of I-66 to the south of the Interstate and the southeast corner was rezoned to Commercial in 2005.

Chapter 4, Section 8 of the Comprehensive Plan addresses commercial development. The introduction states that, "There are already several commercial and industrial uses located near the interchange of I-66 and U.S. Route 55, near the Village of Linden. Continued light commercial and industrial uses should continue to be permitted in this area, within the environment's limits to support such uses."

This section states as a goal to, "Encourage orderly growth of commercial and industrial development relative to environmental and economic impacts along the Route 340/522 Corridor and at Route 55 East (Linden)." Specific objectives stated to meet this goal include:

- A. Provide land areas with adequate services in place or planned for balanced future commercial and industrial development. *(The proposed development is in the Linden area. The Linden area is one of two main areas in the County planned for commercial development. The other area is the Route 340/522 North Corridor.)*
- B. Encourage the location of clean industry and commercial activities through the development of performance standards that ensure the activity would be compatible with the community's goals. *(Specific performance objectives regarding stormwater, transportation improvements, aesthetic controls, and lighting requirements will be required to mitigate impact of the proposed development.)*

POTENTIAL IMPACTS

a) Transportation System:

The site is situated off of Route 79. The rezoning request was sent to VDOT. They have reviewed the traffic impact analysis. VDOT copied our department on their comments to the applicant on November 9th. The TIA was revised by the applicant's traffic engineer, Carl Hultgren, and resubmitted to VDOT on December 10th. VDOT again

issued comments on the TIA on December 22nd. The TIA was resubmitted to VDOT on January 13th. VDOT submitted comments to our office on this submittal on January 29th. Their comments state that the TIA is acceptable and complete and all of their prior comments have been addressed. They did have comments on the proffers which have been incorporated into the latest draft.

The applicant is proposing to construct the following roadway improvements:

- o Constructing a northbound left-turn lane on Apple Mountain Road into the proposed Sheetz site.
- o Improvements at Apple Mountain Road and the Westbound Off-Ramp at I-66 to include: pulling back the stop-bar on the southbound land of Apple Mountain Road and adding pavement to the radius in the northeast quadrant to accommodate truck turns.
- o Improvements at Apple Mountain Road and the Eastbound Off-Ramp at I-66 to include widening and restriping the ramp to add a left-turn lane.
- o Improvements at Apple Mountain Road and the Eastbound On-Ramp at I-66 to include constructing a southbound left-turn lane on Apple Mountain Road, which is warranted today.

b) *Adjoining Properties:*

The use of the surrounding properties is residential and agricultural. The property adjoins Interstate 66 to the east. The closest residential subdivision is Apple Mountain Lake Subdivision which is situated to the north of this property. Our GIS records indicate that this subdivision has a total of 655 lots, 523 of which are built and 123 of which are still vacant. Of the vacant lots, our records show 8 of these to be recreation /POA lots. Our department has sent letters to all of the adjoining property owners that directly adjoin this property. We have also sent the rezoning request to the Apple Mountain Lake Property Owners Association for their comments which are included in your packets. The southwest and southeast quadrants of I-66 are currently zoned Commercial. The northwest and northeast quadrants of I-66 are currently zoned Agricultural (which includes this property).

c) *Historic Resources:*

The Warren County Historic Survey does not identify any historic resources on the site or on adjacent properties.

d) *Environmental Impact:*

The applicant prepared an environmental impact statement as part of the application packet. The report is included in your packet.

e) *Community Impact:*

A community impact statement was submitted with this request. The report is included in your packet.

f) *Outdoor lighting:*

All lighting will need to meet the Warren County Zoning Ordinance requirements in Section 180-49.2. The ordinance requires all lighting fixtures to be full cut-off fixtures. The fixtures must be fully shielded and pointed downward to prevent glare on public roadways and protect the privacy of residents and reduce atmospheric light pollution.

g) *Signage:*

All signs must comply with the Warren County Zoning Ordinance requirements in Section 180-14.

HYDROGEOLOGIC INFORMATION

The applicant has submitted a hydrogeological assessment of the proposed site. They state that the proposed Sheetz store will have an estimated water demand of 2500 gallons per day. This report is included in your packets.

PROFFER STATEMENT

The applicant has submitted a proffer statement. The proffers include information on limiting the future uses on the property, transportation, and aesthetic controls. They have also proffered to construct a school bus turnaround, shelter and parking spaces and dedicate this as an easement to Warren County Public Schools. Sheetz will be constructing this school bus turnaround in connection with their store as stated in the proffers. Sheetz will be maintaining the asphalt area and WCPS will be responsible for maintaining the shelter.

OUTSIDE AGENCIES

This request has been sent to the Virginia Department of Transportation, the Warren County Health Department, Warren County Building Inspections Department, Warren County Public Schools, Rappahannock Electric Company, the Virginia Department of Environmental Quality, and the Apple Mountain Lake Subdivision POA for their review and comment.

All comments received are included in your packets. VDOT has provided several rounds of comments on the traffic impacts. Also, we have received letters from the POA.

Our office has received letters and emails regarding this rezoning application and they are all included in your packets.

TGL

Attachments

Taryn Logan

From: David Beahm
Sent: Thursday, November 12, 2020 8:45 AM
To: Taryn Logan
Cc: Paula Fristoe
Subject: RE: Emailing: R2020-10-02_Request for Comments
Attachments: R2020-10-02_Request for Comments.pdf

Comments – R2020-10-02 – Dubbing Commercial Development, LLC – Rezoning Application – Agricultural to Commercial:

- Erosion and Sediment Control (ESC) Items:
 - Application and permits are required for ESC permit, which would be a normal submission including a full plan review application.
 - The area of disturbance exceeds one (1) acre which would additionally require a Stormwater permit through the Department of Environmental Quality (DEQ). Approval by DEQ would be required prior to anything being issued by Warren County.
- Building Inspections Items:
 - If or when any building construction related activity (structure, electrical, plumbing, mechanical, etc.) were to start, it would be subject to the normal requirements of application, review and approval prior to work beginning.

If anything should change in the scope, additional requirements may be required.

Respectfully,

David C. Beahm, CBO
Building Official
County of Warren
540-636-9973
Fax 540-636-4698
dbeahm@warrencountyva.net
www.warrencountyva.net

THIS MESSAGE IS INTENDED SOLELY FOR THE INDIVIDUAL(S) NAMED IN THE HEADER. THIS MESSAGE MAY CONTAIN MATERIAL THAT IS PRIVILEGED OR CONFIDENTIAL. IF YOU ARE NOT ONE OF THE INTENDED RECIPIENTS, PLEASE DO NOT READ, COPY, USE, OR DISCLOSE THIS MESSAGE TO OTHERS; PLEASE NOTIFY THE SENDER BY REPLYING TO THIS MESSAGE; AND THEN PLEASE DELETE THIS MESSAGE FROM YOUR SYSTEM. THANK YOU.

-----Original Message-----

From: Taryn Logan <Tlogan@warrencountyva.net>
Sent: Tuesday, November 10, 2020 10:25 AM
To: David Beahm <Dbeahm@warrencountyva.net>
Subject: FW: Emailing: R2020-10-02_Request for Comments

Hi David,
Here is the request for comments for the rezoning for the Sheetz store in Linden. Thank you!
Taryn

Taryn Logan

From: Davis, Walter <jim.davis@vdh.virginia.gov>
Sent: Friday, February 5, 2021 10:38 AM
To: Taryn Logan
Subject: Re: FW: Emailing: R2020-10-02_Request for Comments

Good Morning Taryn,

Here is my email response to your request for comments dated 11.09.20. I may have been mistaken that my email response on 11.10.20 was sufficient regarding our office has no objections to the rezoning request thus I did not provide further written response. If you need something, let me know. Yes, our office will review the plans for the proposed onsite sewage system. I have also spoken with Mr. Carter about this and Greg and I will conduct a Level II review of the site which means we will be evaluating the soils, topo and etc. rather than just a paperwork review (Level I). The project will involve a public water well approved by ODW - Culpeper Field Office.

I hope all is well.

Thanks!

Jim Davis, REHS, MAOSE

Environmental Health Supervisor

Clarke, Frederick/Winchester & Warren Offices

Direct Line: 540.551.8434

jim.davis@vdh.virginia.gov

On Tue, Nov 10, 2020 at 3:14 PM Taryn Logan <Tlogan@warrencountyva.net> wrote:

Yes, that works. Thank you.

Taryn G. Logan, AICP

Director of Planning

County of Warren

From: Davis, Walter [mailto:jim.davis@vdh.virginia.gov]
Sent: Tuesday, November 10, 2020 3:10 PM
To: Taryn Logan
Subject: Re: FW: Emailing: R2020-10-02_Request for Comments

Hi Taryn,

Are you simply asking for comments regarding the rezoning request at this time? Obviously, our dept. would have no objections to the rezoning request but there are too many unknown factors for us to provide comments on the well and septic at this time. I'm guessing that will come later.

Thanks

Jim

Jim Davis, REHS

Environmental Health Supervisor

Clarke, Frederick/Winchester & Warren Offices

Direct Line: 540.551.8434

jim.davis@vdh.virginia.gov

On Tue, Nov 10, 2020 at 10:19 AM Taryn Logan <Tlogan@warrencountyva.net> wrote:

Hi Jim,

Please see the attached request for comments for the rezoning for a Sheetz store in Linden. Let me know if you have any questions. Thank you. Taryn

Taryn G. Logan, AICP
Director of Planning
County of Warren

-----Original Message-----

From: Joe Petty
Sent: Monday, November 9, 2020 11:42 AM
To: Taryn Logan
Subject: Emailing: R2020-10-02_Request for Comments

Your message is ready to be sent with the following file or link attachments:

R2020-10-02_Request for Comments

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

Total Control Panel

[Login](#)

To: tlogan@warrencountyva.net

[Remove](#) this sender from my allow list

From: jim.davis@vdh.virginia.gov

You received this message because the sender is on your allow list.



December 22, 2020

John Wright, PE
Bohler Engineering
28 Blackwell Lane, Suite 201
Warrenton, Virginia

Cardno

10988 Richardson Road
Ashland, VA 23005
USA

Phone 804 798-6525
Fax 804 798-5907

www.cardno.com

RE: Hydrogeological Assessment –

Dear Mr. Wright,

Please find the following hydrogeological assessment of the proposed Sheetz Station and Market near Linden, Virginia.

Purpose

Cardno, Inc. (Cardno) was contracted by Bohler Engineering to conduct a hydrogeological assessment for the following purposes:

1. To provide a professional opinion regarding the potential for developing an adequate resource of groundwater for the proposed Sheetz at the Route 66 Linden Exit in Warren County, VA.
2. To determine, in or best professional opinion, whether the proposed withdrawals might cause adverse impacts to neighboring groundwater supplies. An adverse impact, in this case, is defined as one that would reduce the water levels in offsite wells to the point where they would cause a decline in production of those wells.

Scope

Cardno has designed the following scope of work in order to complete the tasks described above:

- Review of published studies and maps regarding soils, geology, topography and hydrogeology
- Conduct a fracture trace analysis by stereoscopically analyzing public domain stereo aerial photographs in an effort to identify a precise drilling locations and potential groundwater zones
- Conduct a groundwater availability and recharge analysis of the site and site vicinity
- Obtain and analyze well records of parcels within the 1000 feet of the site regarding, depth to bedrock, depth of well and yields.

Background

The site is an approximately 15-acre parcel located on the northwest side of the intersection of the west bound entrance ramp of US State Route 66 and Apple Mountain Road and situated approximately 1.35 miles west of Linden, Virginia. It is understood that the developers plan to develop a Sheetz Station and Market at the site. Water will be derived from a private well (groundwater) and wastewater will be treated and disposed of on-site via a waste disposal system into the soil. The average daily consumption of water is estimated at approximately 2500 gallons per day (gpd) requiring a groundwater resource that produces about 1.75 gallons per minute (gpm).

Hydrogeology

The site is located within the Blue Ridge Physiographic Province of Virginia, an area characterized by steep slopes and well developed drainage networks underlain by igneous and metamorphic rocks. Groundwater is derived from a fractured bedrock aquifer.

The overlying material of weathered rock (saprolite) and soil is typically relatively granular and porous; it may house a shallow water-table aquifer separate from, but hydraulically connected to and interacting with, the underlying

fractured bedrock aquifer. The water table in shallow aquifers is often a subdued replica of topography, in which groundwater flow is generally from areas of higher elevation (recharge zones) toward areas of lower elevation (discharge zones). The source of groundwater in both aquifers is ultimately from precipitation (recharge) that infiltrates through the soil and weathered rock.

Bedrock wells in this region of Virginia derive water from a fractured bedrock aquifer in which groundwater occurrence and movement are controlled primarily by fractures and joints within the rock. Groundwater flow patterns in the bedrock can be very complex, depending upon the geologic and topographic setting and upon fracture frequency, size, geometry, and degree of interconnectedness. The characteristics of these fractures determine a wells' yield. A high-yielding well is likely connected to large, and/or many fractures which are connected to a recharge zone (often overlying saprolite). On the other hand, low-yielding wells typically intersect few, and/or small fractures which are connected to a limited recharge zone (water bearing fractures).

Geology

According to the United States Geological Service (USGS), the site is underlain by the Catoctin Formation which is a metabasalt (Zcm) consisting of dark-green, amygdaloidal metabasalt (greenstone) and chlorite schist interlayered with thin, discontinuous, finely laminated phyllitic metasilstone and thin metasandstone and dark, variegated, vesicular tuffaceous phyllite and mud-lump (rip-up) breccias (Reed, 1955). USGS determined a rubidium-strontium (Rb/Sr) age of 570 ± 36 million years (Ma) for the metabasalt of the Catoctin Formation in Virginia. (Nelms, D.L., and Moberg, R.M., Jr., 2010, Preliminary assessment of the hydrogeology and groundwater availability in the metamorphic and siliciclastic fractured-rock aquifer systems of Warren County, Virginia: U.S. Geological Survey Scientific Investigations Report 2010-5190, 74 p.) Within the same publication, the USGS reported in Table 1 that the average yield of wells found in the Catoctin Formation was 13.6 gpm.

Fracture Trace Analysis and Groundwater Potential

Based upon the analysis of the fracture network within the site and site vicinity, it appears that the site possesses at least one moderately well-expressed fracture and that numerous fractured areas are present within 4000 feet of the property. This suggests that the bedrock may be fairly well broken up by joints, fissures, fractures and possibly faults which increases the potential of developing adequate groundwater resources.

Recharge Analysis

In assessing a proposed groundwater withdrawal, it is common practice to compare the proposed withdrawal rate to the rate of groundwater recharge at the withdrawal location. Warren County receives about 41.2 inches of precipitation per year (USGS). Nelms and Moberg in their work, "*Preliminary assessment of the hydrogeology and groundwater availability in the metamorphic and siliciclastic fractured-rock aquifer systems of Warren County, Virginia: U.S. Geological Survey Scientific Investigations Report 2010-5190, 74 p.*", quantified the recharge of the Manassas Run watershed (where the site is situated). This work estimates that between the years of 2001 and 2007 the effective recharge of the aquifer within boundaries of the Manassas Run watershed was about 14.2 inches per year.

After impervious areas, runoff and transpiration are considered, Cardno estimates that average daily recharge rate to the aquifer from within the boundaries of the site is about 4,777,850 gallons of water per year (GPY) or 13,090 gallons per day (gpd). Furthermore, given that the market will treat their waste on site, Cardno has estimated the consumptive use of water will be about 300 gpd. The attached Chart 1 compares, in graphic form, the relative groundwater recharge to consumption, under average rainfall conditions.

Well Records

Well completion reports (GW-2 Forms) were requested from the County Health Department for all parcels within 1,000 feet of the site (90 parcels in total). Of these parcels, 71 well and/or septic system records were obtained, including 40 well completion reports (GW-2 Forms). Data from these GW-2 Forms is reported in **Attachment I** and summarized in **Table 1** below.

Table 1: Well Data Summary

Statistic	Depth (ft)	Yield Gallons per minute	Depth Rock (ft)	Water Bearing Zone (ft)
Minimum	105	3	10	65
Average	342	13	42	
Median	333	8	38	
Maximum	580	40	135	565

Reported well yields ranged between 3 and 40 gallons per minute (gpm), with a median yield of 8 gpm and an average yield of 13 gpm. Bedrock was reported at a depth ranging from 10 to 135 feet below land surface (ft-bls), with a median depth of 38 ft-bls and an average depth of 42 ft-bls.

Water-bearing zones were reported from 65 to 565 ft-bls. The most commonly-reported water-bearing zones in order of most frequent were within: 200-220 ft-bls (8 reports), 120-140 ft-bls (7 reports), 100-120 ft-bls (6 reports), and 180-200 ft-bls (6 reports). Reference Figure 2 for details on reported water-bearing zones. Finally, total depth of well ranged from 105 ft-bls, with a median depth of 333 ft-bls and a mean well depth of 342 ft-bls.

Discussion/ Conclusion

The estimated water demand of 2500 gpd would require a well(s) to produce about 2 gpm. This report has found that the average yield of wells within 1000 feet of the site is about 13 gpm and compares favorably with the average yield reported by the USGS Scientific Investigation 2010-5190 referenced earlier. Given the geology, the presence of apparent fractures in vicinity of the site, the relatively large size of the parcel where multiple drilling opportunities exist and the average yields in the neighborhood, Cardno believes that it is reasonable to expect that adequate groundwater resources can be developed on and for the site.

The work to date indicates that the theoretical recharge within the boundaries of the site is more than adequate to supply water for the proposed uses.

In or best professional opinion, the proposed withdrawal volumes of water are relatively modest and would not be expected to interfere adversely with offsite supplies. At this time the exact location of a well has not been determined; however, the size of the parcel (~15 acres) makes it possible to position a well in such a way that would reduce the potential of interference with off-site wells further.

Finally, once a well is drilled and developed, aquifer testing will be required by the Virginia Department of Health, Office of Drinking Water (VHD-ODW). This testing will collect and analyze empirical data regarding the characteristics of the aquifer. Pertinent offsite wells could be monitored during the test to determine the degree (if any) of impact to offsite wells.

Limitations

The work performed in conjunction with this project, and the data developed, are intended as a description of available information. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a specific location not investigated.

Generally accepted industry standards were used in the preparation of this report. Stated opinions and conclusions are not intended as a guarantee. The only reliable way to confirm that a sustainable groundwater resource is present is to drill a well and test it for quantity and quality.

Cardno appreciates the opportunity to provide hydrogeological consulting services to Bohler Engineering. Please contact us if you have any questions.

Sincerely,



Vincent Day, PG
Senior Hydrogeologist, Principal – Water Supply -
Direct Line +1 804-368-1003
Mobile: 434-923-0888
Email: vincent.day@cardno.com

Figures

Attachment I- GW2 Well Data

Chart 1 - Comparison of Groundwater Usage Estimates

FIGURES

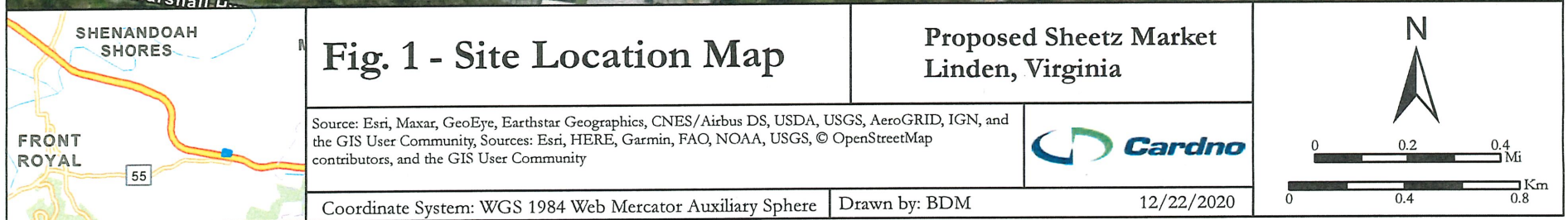
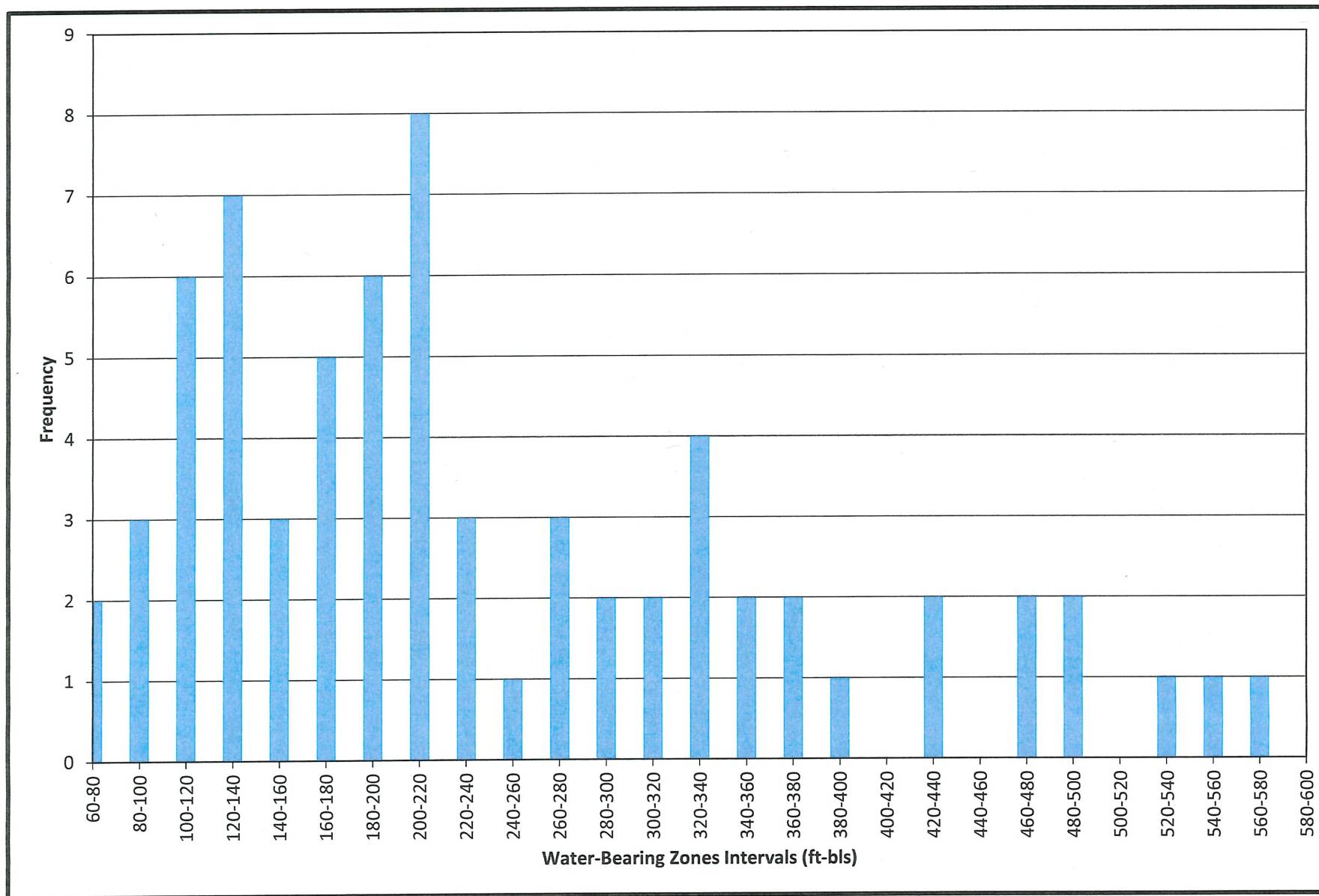


FIGURE 2 - WATER BEARING ZONE HISTOGRAM
WELLS WITHIN 1,000 FEET OF SITE
PROPOSED SHEETZ - LINDEN, VA



ATTACHMENT I
GW-2 WELL DATA

WELL COMPLETION REPORT SUMMARY
PARCELS WITHIN 1,000 FEET OF SITE
PROPOSED SHEETZ - LINDEN, VA

PARCEL	YEAR DRILLED	WELL DEPTH (FT)	WELL DIAMETER (IN)	DEPTH TO BEDROCK (FT)	YIELD (GPM)	STATIC WATER LEVEL (FT)	PUMPING WATER LEVEL (FT)	DEPTH OF CASING (FT)	DEPTH OF GROUT (FT)	WATER-BEARING ZONES (FT)
22B-N-8						No construction information available				
22B-N-10	2020	460	6	10	20	60	NA	72	50	440
22B-N-15						No construction information available				
22B-N-27						No construction information available				
22B-N-28						No construction information available				
22B-N-38	2020	580	6	45	3	50	NA	82	75	265, 565
22B-P-2	2019	500	6	20	5	5	NA	61	50	470
22B-P-13	2016	230	6	25	30	60	180	55	50	125, 200
22B-T-5						No construction information available				
22B-P-12	2016	290	6	40	12	50	240	77	75	180, 265
22B-P-29	2004	400	6	38	8	90	NA	108	60	210, 240, 370
22B-P-43	1989	240	6	62	15	80	200	79	50	120, 140, 220
22B-P-31						No construction information available				
22B-P-32	1987	440	6	60	15	100	380	22	20	210, 425
22B-P-42	1986	250	6	14	8	NA	NA	53	50	220, 235
22B-P-15						No construction information available				
22B-P-30						No construction information available				
22B-N-2	2006	440	6	20	4	75	NA	84	50	376-378
22B-N-16	1987	345	6	70	8	70	300	84	20	210, 330
22B-N-29	1988	300	6	135	5	70	225	139	50	NA
22B-N-3	1990	520	6	50	15	200	470	76	50	190, 490
22B-N-4	1999	380	NA	15	6	80	310	55	50	220, 340
22B-N-6	1993	400	6	30	7	75	NA	55	55	320-325
22B-N-7						No construction information available				
22B-N-11	1994	300	6	40	5	60	NA	65	65	150-155
22B-P-14						No construction information available				
22B-P-11						No construction information available				
22B-N-30						No construction information available				
22B-P-38						No construction information available				
22B-P-37						No construction information available				
22B-P-35						No construction information available				
22B-T-6						No construction information available				
22B-N-23	1983	310	6	35	20	50	NA	48	48	295-300
22B-P-36	1985	240	6	24	8	NA	NA	34	34	128, 205
22B-P-8						No construction information available				
22B-T-3						No construction information available				
22B-N-35	1986	190	6	70	30	40	160	81	20	110, 180
22B-N-34	1984	170	6	88	10	60	130	98	20	110, 150
22B-N-36						No construction information available				
22B-N-33	2001	360	6	25	6	70	NA	113	50	140, 345
22B-N-14	1986	190	6	15	25	40	150	55	50	90, 180
22B-N-32-1	1994	210	6	65	40	65	170	81	50	120, 150, 195
22B-N-31	1998	420	6	40	4	50	NA	60	50	65, 390
22B-N-32-2	1988	565	6	25	12	200	525	56	50	140, 550
22B-N-12	1988	225	6	35	7	75	NA	80	65	165, 185
31-18-D	1995	105	6	40	35	10	NA	75	50	85
22B-N-37						No construction information available				
22B-P-33						No construction information available				
22B-T-18	1984	370	6	59	5	100	350	69	20	NA
22B-T-19	1984	290	6	94	5	120	250	104	20	NA
22B-P-6	2015	500	6	16	7	45	NA	63	50	223, 474

WELL COMPLETION REPORT SUMMARY
PARCELS WITHIN 1,000 FEET OF SITE
PROPOSED SHEETZ - LINDEN, VA

PARCEL	YEAR DRILLED	WELL DEPTH (FT)	WELL DIAMETER (IN)	DEPTH TO BEDROCK (FT)	YIELD (GPM)	STATIC WATER LEVEL (FT)	PUMPING WATER LEVEL (FT)	DEPTH OF CASING (FT)	DEPTH OF GROUT (FT)	WATER-BEARING ZONES (FT)
22B-N-25	1988	325	6	50	10	70	NA	101	60	300
22B-N-44						No construction information available				
22B-P-1	1994	225	6	25	10	90	190	52	50	90, 210
22B-P-5						No construction information available				
22B-N-22	1986	230	6	93	6	25	NA	103	50	180-185, 200-215
22B-N-43	1993	380	6	10	5	12	NA	55	52	189, 359
22B-N-21						No construction information available				
22B-N-17	1994	150	6	30	40	60	120	63	50	70, 120, 140
31-18						No construction information available				
22B-T-1	2013	505	6	40	25	150	NA	70	70	485-490
22B-T-2						No construction information available				
22B-T-17						No construction information available				
22B-P-39						No construction information available				
22B-P-40	1999	420	6	55	7	60	310	72	50	140, 340
22B-P-41	1987	300	6	38	8	35	225	40	20	120, 267
22B-N-5	2019	340	6	20	20	45	NA	82	50	260, 320
22B-P-10						No construction information available				
22B-P-34						No construction information available				
22B-T-11						No construction information available				
22B-T-4	2004	565	6	20	8	100	NA	51	50	329, 530-535

CHART 1

AVERAGE GROUNDWATER RECHARGE

V

PROPOSED CONSUMPTIVE USE IN GALLONS PER DAY

Average Groundwater Recharge vs Proposed Sheetz Consumptive Use in Gallons per Day

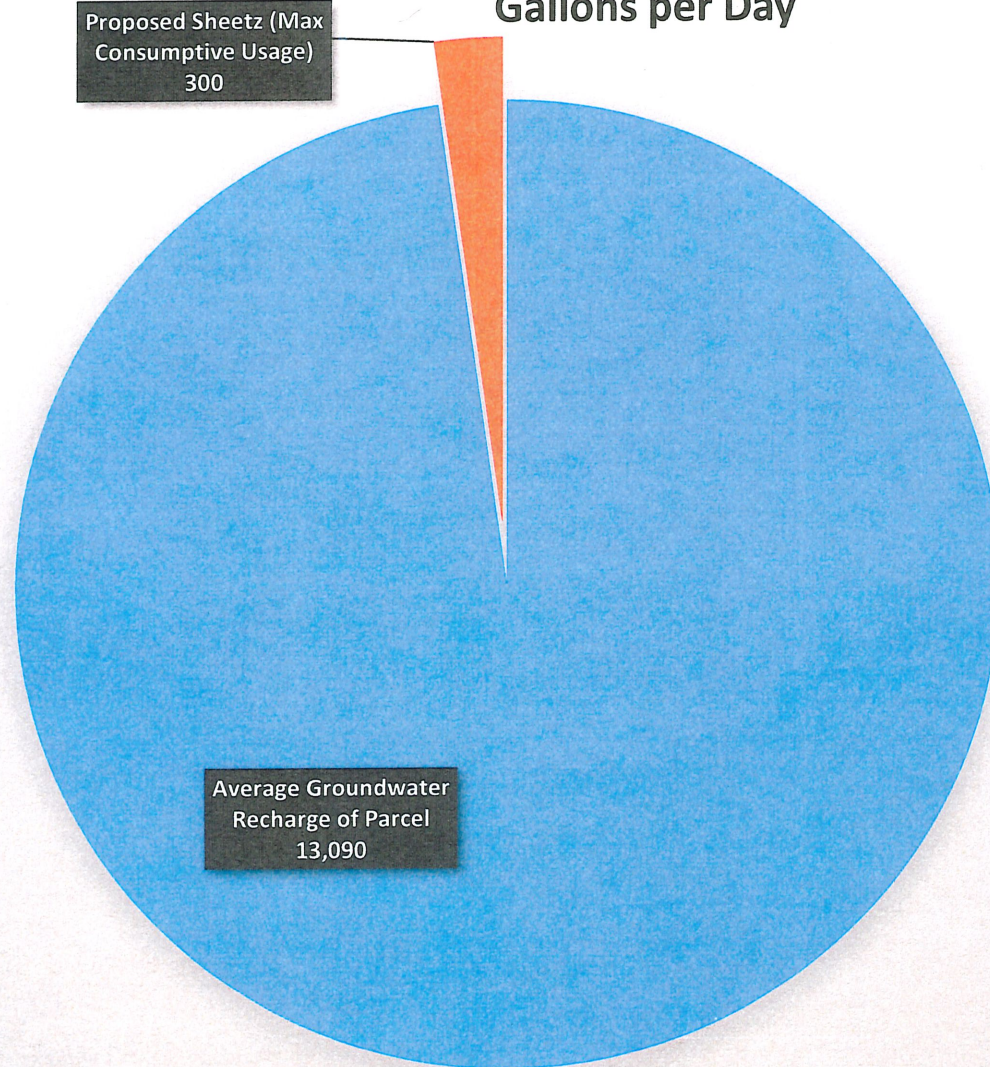


Chart 1: Comparison Analysis of Average Daily Groundwater Recharge to Consumptive Usage

ENVIRONMENTAL IMPACT STATEMENT

PREPARED FOR

Sheetz, Inc.
Apple Mountain Drive & I-66
Warren County, Virginia
BE #V208400

BY

BOHLER //

28 BLACKWELL PARK LANE
SUITE 201
WARRENTON, VA 20186
(540) 349-4500

October 8, 2020

Site Inventory

Background

The subject site is a vacant 15.00 acre parcel located at the corner of Apple Mountain Rd and Interstate 66. The site is bounded by single-family residential to the north and west, Apple Mountain Rd to the east, and Interstate 66 to the south. There is existing access to the site via a paved entrance from Apple Mountain Rd.

This project proposes to construct a ±6,077 SF Sheetz convenience store with a drive-thru, 12 fuel stations, 48 parking spaces and associated utilities and infrastructure improvements, as well as a public bus drop-off with bus shelter and 28 parking spaces. The owner will provide landscaping to meet buffer and coverage requirements per the Warren County Zoning Ordinance. Stormwater requirements will be met with a proposed stormwater conveyance system and BMP measures per State requirements. Water and sewer will be provided via on-site well and septic systems.

Earth

The subject site is currently a vacant, wooded parcel with a paved cul-de-sac and existing entrance to Apple Mountain Rd. The site topography, per the Boundary & Topographic Survey, consists of 5% - 30% slopes leading from high elevations of 855' – 875' at the north end of the site to low points of 810' – 830' at the south end of the site. Per the Web Soil Survey, site soils are predominantly Myersville and Montalto Soils, which are stony soils with silt and clay loams at the surface over a bedrock foundation.

This development will maintain the existing entrance location and general runoff characteristics. Stormwater runoff will be routed through a proposed conveyance system and BMPs to the existing outfall points at the 54" CMP culvert under I-66 at the southeast corner of the site and the 66" CPP culvert under I-66 at the southwest corner of the site.

Water

The existing topography shows a ridge in the center of the site with depressions conveying from north to south on the east and west sides of the site. Stormwater flows on the west side of the site have created a measurable swale, however there is no perennial streams located on-site per FEMA FIRM maps. All runoff currently conveys to the 54" CMP and 66" CPP culverts under I-66.

Atmosphere

No negative air quality indicators around the subject site were identified with EPA Air Quality Maps.

Natural Process

The subject site is located in Zone X, outside the 0.2% annual chance flood, per FEMA FIRM Map Number 51187C0150C. Erosion on-site is anticipated to be minor to moderate due to the mountain slopes landform and dense tree cover. This development is not anticipated to generate any negative impact as all graded tie-out slopes will be fully stabilized.

Flora

The site is currently forested with clearings for the existing cul-de-sac and overhead utility poles running through the site. There are no critical habitats identified within the site per the U.S. Fish and Wildlife Service online resources.

Fauna

Fauna may consist of deer, squirrels, and other small mammals. There are two endangered and one threatened species of bat in this region. The Indiana Bat and Virginia Big-eared Bat are endangered, and the Northern Long-eared Bat is threatened. The subject site is located outside the final critical habitat identified for the two endangered species and no critical habitat has been identified for the threatened species.

Land Use

The subject site is an undeveloped, vacant parcel zoned for Agricultural use, with the existing paved entrance and cul-de-sac currently being used as a bus drop-off location. This development proposes to rezone the site for commercial use and to improve the existing entrance and construct the proposed Sheetz store and fuel station as well as the public bus drop-off area.

Recreation

There are no existing or proposed recreational uses on the subject site.

Aesthetics and Human Interests

No historically or archaeologically significant features have been identified to exist on site. The site does not provide significant aesthetic value due to the proximity to the interstate and the existing overhead utility lines. The primary interest for the site is commercial use.

Cultural Status

This undeveloped site adjacent to the interstate does not have any known cultural status.

Man-made Facilities and Activities

The site contains an existing paved entrance and cul-de-sac as well as overhead utility lines. The cul-de-sac is currently used as a school bus drop-off and turnaround with signage for "Authorized Personnel and Equipment Only" and "Limit One Hour Parking."

IMPACT OF PROJECT

Modification of Natural Environment

The natural environment will be modified with this development to include the clearing of trees and flattening of grade in the store and parking area, as well as additional clearing for utility and infrastructure improvements. Existing drainage patterns at the southern end of the site will be maintained. Interior landscaping will be provided within the development in addition to undisturbed perimeter buffers to minimize any impact to the neighboring residential uses.

Land Transformation and Construction

The vacant, forested parcel will be modified to contain the Sheetz convenience store with drive-thru, fueling station, and public bus drop-off. Construction shall be performed in accordance with County regulations and standards.

Resource Extraction

There is no resource extraction associated with this development.

Processing

There is no heavy or industrial processing associated with this development.

Land Alteration

The existing topography will be modified to provide a flat building area in the vicinity of the ridge and depression in the center to east side of the site. The existing swale identified at the western edge of the site is not anticipated to be impacted with the development. The development will be localized to the southeast portion of the site, nearest the intersection of Apple Mountain Rd and I-66, and will minimize impact to the northern and western boundaries nearest the adjacent residential uses.

Resource Renewal

There are no resource renewal activities associated with this development.

Changes in Traffic

Apple Mountain Rd from the I-66 off-ramp to the intersection with McIntosh Dr and Jonathan Rd would see a slight increase in traffic associated with this development, which would be controlled at the existing signal on Apple Mountain Road and the westbound I-66 on-ramp.

A Traffic Impact Analysis completed by Ramey Kemp Associates, dated September 22, 2020, found that the proposed development will generate minor increases in traffic and will not have a negative impact on safety or commute times given some minor entrance and road improvements are completed with the development. The recommended improvements include constructing a left-turn lane on Route 79 at the I-66 eastbound ramp with 100 feet of storage, restriping the I-66 eastbound off-ramp to create a left-turn lane with 200 feet of storage, and providing one inbound and two outbound lanes with the proposed site entrance.

Waste Storage and Treatment

Sanitary waste will be conveyed to an on-site septic drain field in accordance with a feasibility report prepared by SES Mid-Atlantic, LLC. The feasibility report identified three areas, at the northwest corner, the center north, and the center south, as potential drain field locations. Any grease from the food preparation activities will be collected in a grease interceptor and disposed of in accordance with County and State regulations.

Water Service

Water for the proposed development will be provided by an on-site well. A feasibility report for the well is currently in production by Cardno, Inc.

Chemical Treatment

Chemical treatments will involve deicing operations during winter months. Any chemical treatments required due to a potential spill in the fueling area shall be treated and disposed of in accordance with all County and State regulations.

Accidents

Access to the site will be provided in the current location of the existing paved entrance and cul-de-sac. This location provides good visibility to the south, towards I-66, and limited visibility to the north, along Apple Mountain Rd, due to grade change and road curvature. However, the speed limit north on Apple Mountain Rd is reduced to 15 mph for the residential area and an existing speed bump is located approximately $\pm 170'$ from the proposed entrance, therefore no increase in accidents is anticipated with the development.

References

- **Traffic Impact Analysis**
"Sheetz – I-66 at Route 79 Interchange – Revised Traffic Impact Analysis (TIA)
Warren County, Virginia"
Prepared by: Ramey Kemp & Associates, Inc.
Dated: September 22, 2020
- **Boundary and Topographic Survey**
"Boundary and Topographic Survey Sheetz, Inc."
Prepared by: Bohler
Project #: SV208400
Dated: 06/02/2020
- **Septic Feasibility Study**
"Initial Consult for Onsite Sewage System, Route 66 & Apple Mountain Road,
Linden, Virginia"
Prepared by: SES Mid-Atlantic, LLC
Dated: 05/28/2020
- **Web Soil Survey**
Custom Soil Resource Report
Generated by the USDA and NRCS
- **FEMA FIRM Map**
FIRM Flood Insurance Rate Map, Warren County, Virginia
Map Number: 51187C0150C
Effective Date: 06/03/2008
- **Air Quality Map**
Outdoor Air Quality Data – Interactive Map of Air Quality Monitors
Generated by the EPA
- **Endangered Species**
Information for Planning and Consultation – Resources
Generated by the U.S. Fish & Wildlife Service

COMMUNITY IMPACT STATEMENT

PREPARED FOR

Sheetz, Inc.
Apple Mountain Drive & I-66
Warren County, Virginia
BE #V208400

BY

BOHLER //

28 BLACKWELL PARK LANE
SUITE 201
WARRENTON, VA 20186
(540) 349-4500

October 8, 2020

Background

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This project proposes to construct a ±6,077 SF Sheetz convenience store with a drive-thru, 12 fuel stations, 48 parking spaces and associated utilities and infrastructure improvements, as well as a public bus drop-off with bus shelter and 28 parking spaces. The owner will provide landscaping to meet buffer and coverage requirements per the Warren County Zoning Ordinance. Stormwater requirements will be met with a proposed stormwater conveyance system and BMP measures per State requirements. Water and sewer will be provided via on-site well and septic systems.

Law Enforcement

The Warren County Sheriff's Department is ±7 miles away and would take 10-15 minutes for response time per Google Maps. The surrounding area is single-family residential uses and this development is not anticipated to generate an increase in overall service demand.

Fire and Rescue Services

The Linden Volunteer Fire Department is ±0.5 miles away per Google Maps.

Educational Facilities and Services

The existing paved entrance and cul-de-sac on-site serve as a school bus drop-off and pick-up location. This development will provide an improved bus drop-off location with shelter and parking spaces.

Parks and Recreation

These services are not applicable for this proposed development.

Library

These services are not applicable for this proposed development.

Solid Waste Facilities

Warren County Refuse Collection and Disposal is ±0.9 miles away per Google Maps. The proposed development will be served by private trash collection.

Water and Sanitary Sewer Service

Sanitary waste will be conveyed to an on-site septic drain field in accordance with a feasibility report prepared by SES Mid-Atlantic, LLC. The feasibility report identified three areas, at the northwest corner, the center north, and the center south, as potential drain field locations. Water for the proposed development will be provided by an on-site well. A feasibility report for the well is currently in production by Cardno, Inc.

County Administrative Services

The proposed development will require County services for the review and approval of the civil site plan, including any applicable subcontractor designs such as well and septic, during site design and construction.

Transportation

Apple Mountain Rd from the I-66 off-ramp to the intersection with McIntosh Dr and Jonathan Rd would see a slight increase in traffic associated with this development, which would be controlled at the existing signal on Apple Mountain Road and the westbound I-66 on-ramp.

A Traffic Impact Analysis completed by Ramey Kemp Associates, dated September 22, 2020, found that the proposed development will generate minor increases in traffic and will not have a negative impact on safety or commute times given some minor entrance and road improvements are completed with the development. The recommended improvements include constructing a left-turn lane on Route 79 at the I-66 eastbound ramp with 100 feet of storage, restriping the I-66 eastbound off-ramp to create a left-turn lane with 200 feet of storage, and providing one inbound and two outbound lanes with the proposed site entrance.

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Linden, Virginia"
Prepared by: SES Mid-Atlantic, LLC
Dated: 05/28/2020

DATE: January 29, 2021
TO: Taryn Logan, AICP, Warren County Planning Director
FROM: Bradley S. Riggleman, P.E., Area Land Use Engineer
RE: TIA & Rezoning Comments – Linen Sheetz Rezoning

Ms. Logan,

Staunton District Planning, Traffic Engineering, and the Edinburg Residency have completed a review of the most recent revision of the Linden Sheetz TIA that was submitted to this office via email on January 13, 2021, along with a revised proffer letter dated December 14, 2020. This comment letter is divided into two sections. First will be comments related to the Traffic Impact Analysis, and second will be comments for the rezoning application and revised proffers. Following are comments for the TIA:

1. Previous comments for the TIA have been addressed. The TIA is acceptable and complete.

The following comments are for the rezoning application and revised proffers:

1. The subject rezoning will have a measurable impact to the roadway network. In an effort to mitigate these impacts, the proffer letter includes a number of off-site roadway improvements that are intended to minimizing impacts. However, there are a couple additional concerns that have been communicated in previous comment letters that the proffers do not appear to address. One is the turning radius at the westbound I-66 off ramp. Previous turning movement templates show that the right turn radius is not large enough to accommodate a WB-67 (73.5' semi-truck). This radius needs to be improved to allow these large commercial vehicles to make this turning maneuver without encroaching into the southbound Rt. 79 travel lane. Also, core samples need to be taken in the right turn lane of the I-66 westbound exit ramp to ensure pavement adequacy. While VDOT recently re-stripped the exit ramp to include both a right and left turn lane, it was done without an evaluation of the pavement layers. The plans for the ramp indicate that the main line pavement is 16' wide, with a paved shoulder width of 6' on the right. The plans also indicate that the paved shoulder has a significantly reduced pavement section. With the increase in proposed traffic volume, the pavement structure will need to be evaluated, and if needs be, improved to support the anticipated traffic loading.
2. As noted in previous comment letters, the site entrance on Rt. 79 does not meet current Access Management spacing requirements for the distance between an interchange ramp and a commercial entrance. In an effort to mitigate this reduced spacing, the proffers include the construction of a left turn lane on Apple Mountain Road serving the site entrance. As the TIA indicates, this left turn lane is not warranted, but is included to improve intersection operation and to minimize delay to main line traffic. With this proposed mitigation, the TIA shows that the site entrance will operate with minimum delay, and VDOT could support an Access Management Exception for a reduced entrance spacing.
3. Transportation proffer statement #1 adds some ambiguity to the status of the Traffic Impact Analysis. It is noted that a TIA has been completed and approved by VDOT. We are not

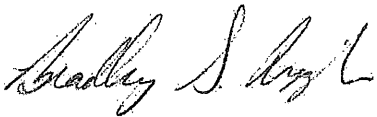
January 29, 2021

opposed to the proffer for another TIA to be submitted based on the actual use of the site as outlined in future site plans, however, care needs to be taken to differentiate between the proffered improvements that are outlined in the current TIA, as opposed to improvements that could be necessary in a future TIA. This could be addressed in Transportation Proffer #3. The proffered improvements here are based on the completed TIA and would be considered to be minimum improvements. Should a future TIA indicate that additional improvements are necessary, then the verbiage should indicate a commitment on the part of the developer to complete these future needed improvements.

4. VDOT does not support Transportation Proffer #2. The FHWA has authority over the Interstate System. With that said, it is not uncommon for VDOT to work alongside the FHWA on these types of projects, and does not anticipate that the FHWA would fail to support these proposed ramp and Rt. 79 improvements.
5. Transportation Proffer #3 speaks of a revised TIA, along with “necessary and reasonable exceptions and/or waivers from minimum front and rear yard building setback requirements in the Highway Corridor Overlay District...” While setbacks are not under the purview of VDOT, this could lead to an expectation of a reduction to County setback requirements. Consideration should be given to the intention of this language and its implications to any potential development and land divisions.
6. Roadway improvements and site access shall be designed and constructed in accordance with all current VDOT Regulations, Standards, and Specifications.

Please feel free to contact me if you have any questions.

Sincerely,



Bradley S. Riggleman, P.E.

Area Land Use Engineer – Edinburg Residency

Cc: Carl Hultgren, P.E., PTOE, Ramey Kemp Associates
Robert Franks, Sheetz
John Wright, P.E., Bohler Engineering
Jeff Lineberry, P.E. – VDOT Transportation and Land Use Director
Terry Short, AICP, VDOT District Planning Manager
Matt Bond, P.E., VDOT District Traffic Engineer

DATE: December 22, 2020
TO: Carl Hultgren, P.E., PTOE, Ramey Kemp Associates
FROM: Bradley S. Riggleman, P.E., Area Land Use Engineer
RE: TIA Comments – Linen Sheetz Rezoning

Mr. Hultgren,

The Residency has completed a review of the most recent revision of the Linden Sheetz TIA that was submitted to this office on December 10, 2020. VDOT has noted one additional comment that is a result of a change to the model at the Rt. 79 & I-66 EB on ramp:

At the Route 79 & I-66 EB Ramps, the December TIA extends the SB left turn lane to the EB on-ramp through the intersection with the EB off-ramp, as seen in the Synchro screenshot below. This turn lane was extended based on our comment that the warrant calls for 175 ft. of storage, but the October TIA only proposed a 100 ft. turn lane to fit in the space between the off-ramp and on-ramp. This new configuration, with two SB approach lanes to the EB off-ramp, changes the HCM calculation significantly, with the EB right turn from the off-ramp (the most delayed movement at the intersection) showing a drop from 106.4 to 21.8 sec in the "PM with Improvements" scenario for the December TIA.

As seen in the HCM 6th Edition table below, it appears that HCM simply cuts the SB lanes (through and left) where they conflict with the EB off ramp. This creates a scenario where the model thinks there are two through lanes through this intersection, greatly reducing the delay for the EB off ramp. This is not a realistic outcome since the downstream demand heavily favors the near-side lane for the SB thru (1087 vehicles) vs. the far lane for the SB left (102 vehicles). We expect that the 106.4 second delay from the previous TIA would be much closer to reality than the 21.8 seconds reported in the December submittal.

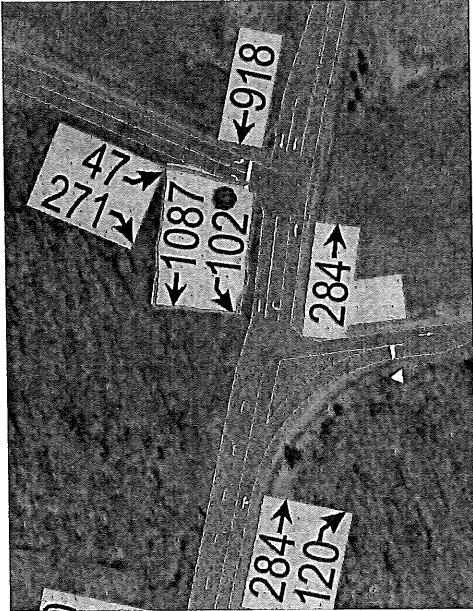
We suggest to remove the additional SB thru lane from model and, if desired, note in Table 4 that the delay may be slightly lower given the lengthened added approach lane.

MOVEMENT SETTING	EBL	EBT	EBL	EBT	EBL	EBT
Lane and Shaping (W/L)	1	1	1	1	1	1
Traffic Volume (vph)	47	271	0	254	918	0
Future Volume (vph)	47	271	0	254	918	0
Controlled Flow (vph)	0	0	0	0	0	0
Stop Control	Stop	Stop	Free	Free	Free	Free
Storage Length (ft)	100	0	0	0	0	0
Vehicle in median storage (ft)	0	0	0	0	0	0
Grade (%)	0	0	0	0	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Length Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adjusted Flow (vph)	52	311	0	316	1020	0
Heavy Vehicles (%)	2	2	2	2	2	2
Right Turn Channelized	None	None	None	None	None	None
Curb Radius (ft)						
Approach Data	EB	EB	EB	EB	EB	EB
Height Factor	1.00	1.00	1.00	1.00	1.00	1.00
Controlled Flow Rate (ft)	125	125	0	0	0	0
Critical Headway	6.0	6.0	0.0	0.0	0.0	0.0
Critical Headway Stage 1	6.0	6.0	0.0	0.0	0.0	0.0
Critical Headway Stage 2	6.4	6.4	0.0	0.0	0.0	0.0
Follow-up Headway	3.5	3.5	0.0	0.0	0.0	0.0
Potential Capacity 1 Movement	150	150	0	0	0	0
Time Blended by (ft/s)	150	150	0	0	0	0
Movement Capacity 1 Movement	150	150	0	0	0	0
Movement Capacity 2 Movement	150	150	0	0	0	0
HCM Approach Control Delay (s)	30.9	30.9	0	0	0	0
HCM Approach LOS	A	A				

Old

MOVEMENT SETTING	EBL	EBT	EBL	EBT	EBL	EBT
Lane and Shaping (W/L)	1	1	1	1	1	1
Traffic Volume (vph)	47	271	0	254	918	0
Future Volume (vph)	47	271	0	254	918	0
Controlled Flow (vph)	0	0	0	0	0	0
Stop Control	Stop	Stop	Free	Free	Free	Free
Storage Length (ft)	100	0	0	0	0	0
Vehicle in median storage (ft)	0	0	0	0	0	0
Grade (%)	0	0	0	0	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Length Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adjusted Flow (vph)	52	311	0	316	1020	0
Heavy Vehicles (%)	2	2	2	2	2	2
Right Turn Channelized	None	None	None	None	None	None
Curb Radius (ft)						
Approach Data	EB	EB	EB	EB	EB	EB
Height Factor	1.00	1.00	1.00	1.00	1.00	1.00
Controlled Flow Rate (ft)	125	125	0	0	0	0
Critical Headway	6.0	6.0	0.0	0.0	0.0	0.0
Critical Headway Stage 1	6.0	6.0	0.0	0.0	0.0	0.0
Critical Headway Stage 2	6.4	6.4	0.0	0.0	0.0	0.0
Follow-up Headway	3.5	3.5	0.0	0.0	0.0	0.0
Potential Capacity 1 Movement	150	150	0	0	0	0
Time Blended by (ft/s)	150	150	0	0	0	0
Movement Capacity 1 Movement	150	150	0	0	0	0
Movement Capacity 2 Movement	150	150	0	0	0	0
HCM Approach Control Delay (s)	21.8	21.8	0	0	0	0
HCM Approach LOS	A	A				

New



Please feel free to contact me if you have any questions.

Sincerely,

A handwritten signature in cursive script, reading "Bradley S. Riggleman".

Bradley S. Riggleman, P.E.
Area Land Use Engineer – Edinburg Residency

Cc: Taryn Logan, AICP, Warren County Planning Director
Robert Franks, Sheetz
John Wright, P.E., Bohler Engineering
Jeff Lineberry, P.E. – VDOT Transportation and Land Use Director
Brad Reed, AICP, VDOT Staunton District Planning



EDINBURG RESIDENCY

LAND USE MEMORANDUM

DATE: November 9, 2020
TO: Carl Hultgren, P.E., PTOE, Ramey Kemp Associates
FROM: Bradley S. Rigglesman, P.E., Area Land Use Engineer
RE: TIA Comments – Linen Sheetz Rezoning

Mr. Hultgren,

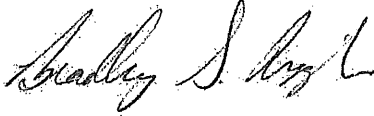
The Residency has completed a review of the second submittal of the Linden Sheetz TIA that was submitted to this office on September 30, 2020. VDOT offers the following comments:

1. The entrance location onto Rt. 79 (Apple Mountain Road) does not meet Access Management Spacing Regulations. While the TIA demonstrates that the 95th percentile queue does not back up to the proposed entrance, the TIA does not offer any type mitigation for the reduced spacing. It is suggested for the Engineer to contact the Residency to discuss possible mitigative measures that would protect the roadway network and reduce inconvenience to the existing users of Apple Mountain Road.
2. While the truck fueling positions are no longer included in the proposed use, right turning heavy vehicles (tanker and delivery trucks) continue to be a concern at the I-66 Westbound off-ramp. It is the expectation that improvements for right turning WB-67's be fully evaluated. It continues to be a concern that the radius is not sufficient and that relocating the stop bar for Southbound Rt. 79 farther north will back the queue up closer to the proposed site entrance.
3. Regarding first submittal Comment #6 & #7: Because this development is proposing a significant increase to right turn volume at this intersection and on Rt. 79, we maintain that core samples need to be obtained to verify pavement adequacy for the proposed traffic volume.
4. The TIA states that a left turn lane onto the I-66 Eastbound on-ramp is warranted based on existing traffic volumes. While this appears to be the case, it should be noted that this development is adding significant traffic volume to this movement, which increases the need for the turn lane. The TIA is recommending the construction of a 100' turn lane. Why does the TIA recommend a 100' turn lane when a 175' turn lane is warranted? The TIA should also make clear what the taper length should be.
5. The TIA recommends restriping the I-66 Eastbound off-ramp to provide a designated left turn lane, and the comment response letter acknowledges that the geometry for this new left turn lanes needs to be confirmed to ensure adequate lane and shoulder widths. However, the TIA recommends re-striping only. The TIA needs to show all necessary measures to ensure that adequate turn lane and shoulder widths can be achieved.
6. Table 3 (Rt. 79/I-66 Westbound Ramp) shows that the queue for NBL/T increase 95' while the lane delay decreases by 0.7 seconds. How can this increase in queue result in a decrease in delay?

November 9, 2020

Please feel free to contact me if you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Bradley S. Riggleman".

Bradley S. Riggleman, P.E.

Area Land Use Engineer – Edinburg Residency

Cc: Taryn Logan, AICP, Warren County Planning Director
Robert Franks, Sheetz
John Wright, P.E., Bohler Engineering
Jeff Lineberry, P.E. – VDOT Transportation and Land Use Director
Brad Reed, AICP, VDOT Staunton District Planning

January 13, 2021

Mr. Bradley Riggleman, P.E.
Area Land Use Engineer
Virginia Department of Transportation
14031 Old Valley Pike
Edinburg, Virginia 22824
Phone: (540) 984-5615

Reference: **Sheetz - I-66 at Route 79 Interchange - Revised Traffic Impact Analysis (TIA)**
Warren County, Virginia

Dear Mr. Riggleman,

Ramey Kemp & Associates, Inc. (RKA) has performed a Traffic Impact Analysis (TIA) for the proposed convenience store in the northwest quadrant of the I-66 at Route 79 interchange. The development plan includes a convenience store with 12 fueling positions and one full-movement driveway on Apple Mountain Road. The development plan also includes relocating and improving the existing school bus stop on the property. If approved, the convenience store is expected to be built-out in 2022. Figure 1 shows the site location and study intersections, and Figure 2 shows the preliminary site plan.

Based on conference calls with you and the County on May 5 and July 14, the purpose of this report is to provide the following:

- Trip generation calculations
- Evaluation of turn lane warrants for the proposed site driveway
- Capacity and queueing analysis of the study intersections

The Revised TIA was dated December 7, and VDOT provided one review comment in a memo dated December 22. Following is the comment related to the Route 79 at I-66 eastbound ramps and our response:

1. We suggest to remove the additional SB thru lane from the model (due to the proposed southbound left-turn lane on Route 79) and, if desired, note in Table 4 that the delay may be slightly lower given the lengthened added approach lane.
 - The Synchro models have been revised as requested so there is only one southbound through lane at the I-66 eastbound off-ramp, and the results have been updated in Table 4.



Existing Roadway Conditions

I-66 is a four-lane divided Interstate with a current average daily traffic (ADT) volume of approximately 40,000 vehicles per day (vpd), and a posted speed limit of 70 miles per hour (mph) in the vicinity of the site.

Route 79 (Apple Mountain Road) is a two-lane Principal Arterial with a current ADT volume of approximately 8,000 vpd, and a posted speed limit of 35 mph in the vicinity of the site north of I-66. Apple Mountain Road is a two-lane residential collector south of I-66, with a current ADT volume of approximately 2,500 vpd, and a posted speed limit of 15 mph.

Route 55 is a two-lane Principal Arterial with a current ADT volume of approximately 13,000 vpd west of Route 79, and a Major Collector with a current ADT volume of approximately 4,500 vpd east of Route 79. Route 55 has a posted speed limit of 45 mph in the vicinity of Route 79.

The existing roadway configuration is shown in Figure 3.

Existing Traffic Volumes

VDOT provided AM peak hour (7:00 to 9:00 AM) and PM peak hour (4:00 to 6:00 PM) turning movement counts at the following intersections:

- Route 79 at I-66 Westbound Ramps – performed by The Traffic Group in November 2016
- Route 79 at Route 55 – performed by Peggy Malone & Associates in May 2016

VDOT also performed tube counts on Route 79 at the I-66 Eastbound off-ramp in May 2017. For the purpose of this study, it was assumed that 10% of drivers on the I-66 Eastbound off-ramp turn left, and 90% turn right on Route 79.

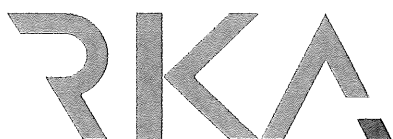
The 2016 and 2017 traffic volumes were grown by 2.0% per year to estimate the existing 2020 traffic volumes at the study intersections. The traffic count data are enclosed.

School Bus Stop Trips

The applicant is proposing to construct a school bus stop on the west side of the proposed store for the County's use. To estimate the trip potential of the bus stop, it was assumed that 3 buses and 27 passenger cars arrive during the AM peak hour, and no trips during the PM peak hour. Figures 4 and 5 show the estimated school bus stop site trip distribution and assignment, and Figure 6 shows the existing 2020 peak hour traffic volumes.

Background Traffic Growth

The existing 2020 peak hour traffic volumes were grown by an annual rate of 2.0% for two years to estimate the 2022 peak hour traffic volumes. The estimated no-build 2022 volumes are shown in Figure 7.



Truck Percentage

The existing truck percentage at the intersection of Route 79 at I-66 Westbound Ramps is approximately 4% in the AM peak hour and 2% in the PM peak hour. These percentages were applied to all movements in the existing and no-build traffic conditions. For the build conditions, the truck percentages for the individual movements that the school buses will use were calculated and entered into the Synchro models.

Approved Developments

Based on discussion with VDOT, there are no approved developments in the vicinity of the site that will generate a significant amount of traffic.

Trip Generation

The trip generation potential of the proposed convenience store during a typical weekday, AM peak hour, and PM peak hour was estimated using the methodologies published by the ITE *Trip Generation Manual - 10th Edition*. Table 1 summarizes the trip generation calculations.

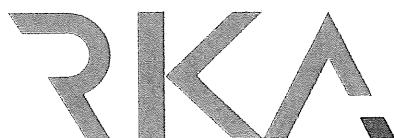
Table 1: ITE Trip Generation - Weekday - 10th Edition

Land Use (ITE Land Use Code)	Size	Weekday Daily Traffic (vpd)		AM Peak Hour (vph)		PM Peak Hour (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit
Super Convenience Market / Gas Station (960)	12 f.p.	1,383	1,383	168	169	138	138
Estimated School Bus Stop Trips		60 ²	60 ²	30 ¹	30 ¹	0	0

1 - Assumes 3 buses and 27 passenger cars in and out

2 - Assumes 3 buses and 27 passenger cars in and out during the AM and mid-afternoon peak hours

Convenience stores attract pass-by trips, which are made by drivers who are already driving past the site today. In this study, it was assumed that the proposed store will divert trips from I-66 instead of attracting pass-by trips from Apple Mountain Road. There will be some internal capture between the proposed store and the school bus stop, but that was ignored to be conservative.



Site Trip Distribution

Based on discussion with VDOT, the following site trip distribution was applied to the Sheetz customers:

- 30% to / from I-66 westbound
- 25% to / from the west on Route 55
- 20% to / from I-66 eastbound
- 15% to / from the east on Route 55
- 10% to / from the north on Apple Mountain Road

Figure 8 shows the site trip distribution for Sheetz customers, and Figure 9 shows the site trip assignment. Figure 10 shows the projected 2022 build-out peak hour traffic volumes.

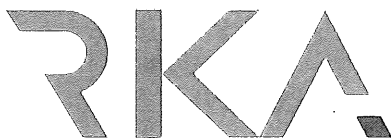
VDOT Turn Lane Warrant Analysis

The existing AM and PM peak hour traffic volumes at the intersection of Route 79 at I-66 eastbound ramps were compared to the turn lane warrants in the Virginia Department of Transportation (VDOT) *Access Management Design Standards for Entrances and Intersections*. Based on the turn lane warrant charts:

Route 79 at I-66 Eastbound Ramps:

- The existing volumes warrant a southbound left-turn lane on Route 79 during both peak hours

The existing AM and PM peak hour traffic volumes are well above the VDOT threshold for a southbound left-turn lane on Route 79. This turn lane is needed with or without the proposed Sheetz trips.



Traffic Capacity Analysis

Traffic capacity analysis for the study intersections was performed using Synchro 10, which is a comprehensive software package that allows the user to model signalized and unsignalized intersections to determine levels-of-service based on the thresholds specified in the Highway Capacity Manual (HCM) – 6th Edition.

Table 2 summarizes the capacity analysis results for the intersection of Apple Mountain Road at Proposed Site Driveway, and the HCM 6th Edition Synchro outputs are enclosed for reference.

Table 2: Level-of-Service Summary for Apple Mountain Road at Proposed Site Driveway

CONDITION	LANE GROUP	AM PEAK HOUR				PM PEAK HOUR			
		Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay) ³	Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay) ³
Existing (2020) Traffic Conditions	EBL/R ¹	A	9.9	3	N/A	A	9.8	0	N/A
	NBL/T ²	A	7.7	0		A	7.5	0	
	SBT/R	-	-	-		-	-	-	
No-Build (2022) Traffic Conditions	EBL/R ¹	A	9.9	3	N/A	A	9.6	0	N/A
	NBL/T ²	A	7.8	0		A	7.5	0	
	SBT/R	-	-	-		-	-	-	
Build (2022) Traffic Conditions <i>With Improvement</i>	EBL ¹	C	15.4	8	N/A	B	13.9	3	N/A
	EBR ¹	B	10.8	23		A	9.7	13	
	NBL ²	A	8.2	13		A	7.8	8	
	NBT	-	-	-		-	-	-	
	SBT/R	-	-	-		-	-	-	

1. Level of service for minor-street approach

2. Level of service for major street left-turn movement

3. HCM methodology does not provide lane group or overall LOS, delay, and queue lengths for major street through movements or right turns at unsignalized intersections.

Capacity analysis indicates that the minor street left-turn movement currently operates with short delays (less than 25 seconds) during the AM and PM peak hours. Under no-build conditions, the minor street left-turn movement is expected to continue to operate with short delays (less than 25 seconds) during the AM and PM peak hours.

Under build conditions, capacity analysis indicates that the eastbound left-turn movement is projected to continue to operate with short delays (less than 25 seconds) during the weekday AM and PM peak hours with one inbound lane and two outbound lanes on the site driveway and the following improvement:

- Construct a northbound left-turn lane on Apple Mountain Road with 100 feet of storage and a 100 foot taper



Table 3 summarizes the capacity analysis results for the signalized intersection of Route 79 at I-66 Westbound Ramps, and the HCM 2000 Signalized outputs and Synchro outputs (for queues only) are enclosed for reference.

Table 3: Level-of-Service Summary for Route 79 at I-66 Westbound Ramps

CONDITION	LANE GROUP	AM PEAK HOUR				PM PEAK HOUR			
		Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay)	Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay)
Existing (2020) Traffic Conditions	WBL/T	B	11.7	74	A (9.2 sec)	C	21.8	574	C (22.4 sec)
	WBR	A	9.9	0		A	8.2	0	
	NBL/T	A	8.2	59		C	26.0	225	
	SBT/R	A	7.7	60		C	24.6	75	
No-Build (2022) Traffic Conditions	WBL/T	B	11.8	79	A (9.4 sec)	C	21.8	574	C (22.4 sec)
	WBR	A	9.9	0		A	8.2	0	
	NBL/T	A	8.3	62		C	26.0	225	
	SBT/R	A	7.8	62		C	24.6	75	
Build (2022) Traffic Conditions	WBL/T	B	14.8	112	B (10.1 sec)	C	25.9	629	C (28.9 sec)
	WBR	B	12.6	11		A	9.4	9	
	NBL/T	A	8.7	110		D	43.2	334	
	SBT/R	A	8.2	122		C	25.1	165	

Capacity analysis indicates that the intersection currently operates at LOS A during the AM peak hour and LOS C during the PM peak hour. Under no-build conditions, the intersection is expected to continue to operate at LOS A during the AM peak hour and LOS C during the PM peak hour.

With the addition of the proposed site traffic, the intersection is expected to operate at LOS B during the AM peak hour and LOS C during the PM peak hour. No improvements are warranted or recommended at build-out of the site.



Table 4 summarizes the capacity analysis results for the unsignalized intersection of Route 79 at I-66 Eastbound Ramps, and the HCM 6th Edition and HCM 2000 Unsignalized Synchro outputs are enclosed for reference.

Table 4: Level-of-Service Summary for Route 79 at I-66 Eastbound Ramps

CONDITION	LANE GROUP	AM PEAK HOUR				PM PEAK HOUR			
		Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay) ³	Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay) ³
Existing (2020) Traffic Conditions	EBL/R ¹	B	11.7	15	N/A	F	71.5	240	N/A
	NBT/R	-	-	-		-	-	-	
	SBL/T ²	A	1.9	5		A	1.8	5	
No-Build (2022) Traffic Conditions	EBL/R ¹	B	11.9	18	N/A	F	95.4	288	N/A
	NBT/R	-	-	-		-	-	-	
	SBL/T ²	A	1.9	5		A	1.9	5	
Build (2022) Traffic Conditions	EBL/R ¹	C	15.6	35	N/A	F	222.1	468	N/A
	NBT/R	-	-	-		-	-	-	
	SBL/T ²	A	2.5	8		A	3.0	7	
Build (2022) Traffic Conditions With Improvements*	EBL ¹	C	15.8	10	N/A	E	35.6	30	N/A
	EBR ¹	B	12.8	18		F	106.4	288	
	NBT/R	-	-	-		-	-	-	
	SBL ²	A	8.0	8		A	8.2	7	
	SBT	-	-	-		-	-	-	

1. Level of service for minor-street approach

2. Level of service for major street left-turn movement

3. HCM methodology does not provide lane group or overall LOS, delay, and queue lengths for major street through movements or right turns at unsignalized intersections.

Capacity analysis indicates that the eastbound left-turn movement currently operates with short delays (less than 25 seconds) during the AM peak hour and with long delays (more than 50 seconds) during the PM peak hour. Under no-build and build conditions, the eastbound left-turn movement is projected to continue to operate with short delays (less than 25 seconds) during the AM peak hour and with long delays (more than 50 seconds) during the PM peak hour.

The existing AM and PM peak hour traffic volumes warrant a southbound left-turn lane on Route 79 with 175 feet of storage, but the applicant is willing to build this turn lane. The following improvement is also recommended to mitigate the proposed site trips:

- Widen and restripe the I-66 eastbound off-ramp to create an eastbound left-turn lane with 200 feet of storage

The eastbound left-turn movement is projected to operate with short delays (less than 25 seconds) during the AM peak hour, and with long delays (greater than 50 seconds) during the PM peak hour, with significantly shorter queues on the off-ramp.



Moving forward.

Table 5 summarizes the capacity analysis results for the signalized intersection of Route 79 at Route 55 / Exxon Driveway, and the HCM 2000 Signalized outputs and Synchro outputs (for queues only) are enclosed for reference.

Table 5: Level-of-Service Summary for Route 79 at Route 55 / Exxon Driveway

CONDITION	LANE GROUP	AM PEAK HOUR				PM PEAK HOUR			
		Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay)	Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay)
Existing (2020) Traffic Conditions	EBL	B	10.9	184	B (16.8 sec)	C	26.9	175	D (37.0 sec)
	EBT/R	A	5.1	31		C	20.9	114	
	WBL	B	18.8	4		C	33.6	7	
	WBT	C	22.1	154		D	48.5	197	
	WBT/R	B	19.1	21		C	33.9	3	
	NBL	C	22.9	11		B	12.9	25	
	NBT/R	C	23.8	52		B	12.7	25	
	SBL/T	C	24.6	65		B	11.9	58	
	SBR	C	23.9	67		D	45.9	536	
No-Build (2022) Traffic Conditions	EBL	B	11.2	196	B (17.3 sec)	C	27.1	171	D (39.8 sec)
	EBT/R	A	5.0	33		C	20.4	113	
	WBL	B	19.3	4		C	32.7	7	
	WBT	C	23.0	161		D	44.8	178	
	WBT/R	B	19.6	23		C	32.9	5	
	NBL	C	23.5	11		B	13.4	27	
	NBT/R	C	24.5	55		B	13.2	27	
	SBL/T	C	25.3	67		B	12.5	60	
	SBR	C	24.6	68		D	52.0	597	
Build (2022) Traffic Conditions	EBL	B	12.8	237	B (19.1 sec)	C	33.3	228	D (40.5 sec)
	EBT/R	A	5.4	34		C	20.5	113	
	WBL	C	21.2	5		C	32.7	7	
	WBT	C	25.2	182		D	44.8	178	
	WBT/R	C	21.6	42		C	33.0	20	
	NBL	C	24.6	13		B	13.3	27	
	NBT/R	C	25.5	61		B	13.1	27	
	SBL/T	C	27.4	99		B	12.7	71	
	SBR	C	25.9	79		D	52.3	616	

Capacity analysis indicates that the intersection currently operates at LOS B during the AM peak hour and LOS D during PM peak hour. Under no-build and build conditions, the intersection is expected to continue to operate at LOS B during the AM peak hour and LOS D during the PM peak hour. No improvements are warranted or recommended at build-out of the site.



Recommendations

Based on the trip generation potential of the proposed convenience store, the following roadway improvements are warranted or recommended:

Apple Mountain Road at Proposed Site Driveway:

- Provide one inbound lane and two outbound lanes on the site driveway
- Construct a northbound left-turn lane on Apple Mountain Road with 100 feet of storage and a 100 foot taper

Route 79 at I-66 Eastbound Ramps:

- Construct a southbound left-turn lane on Route 79 with 175 feet of storage and a 100 foot taper
- Widen and restripe the I-66 eastbound off-ramp to create a left-turn lane with 200 feet of storage

Figure 11 shows the recommended roadway laneage.

We appreciate your attention to this matter. Please contact me at (804) 217-8560 if you have any questions about this report.

Sincerely yours,
Ramey Kemp & Associates, Inc.



Carl Hultgren, P.E., PTOE
State Traffic Engineering Lead

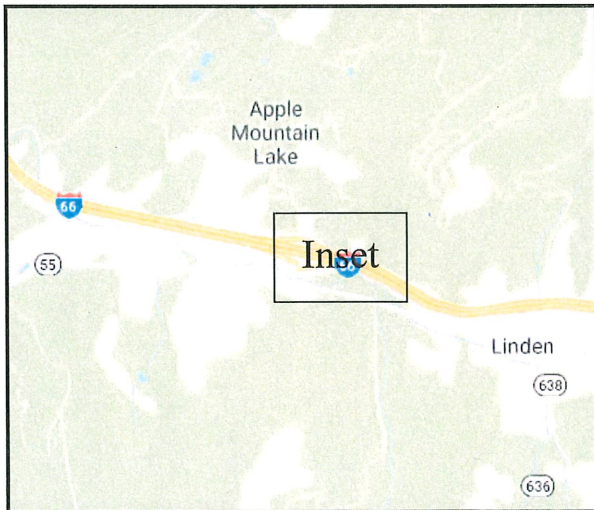
Enclosures: Figures, Traffic count data, Synchro output, VDOT turn lane warrant diagrams

Copy to: Mr. Robert Franks, Sheetz
Mr. John Wright, P.E., Bohler Engineering
Mr. Jeffrey Lineberry, P.E., VDOT
Mr. Brad Reed, AICP, VDOT

FIGURES



Inset



Overview



LEGEND



Study Intersection



Site Boundary

Moving forward.

RKA

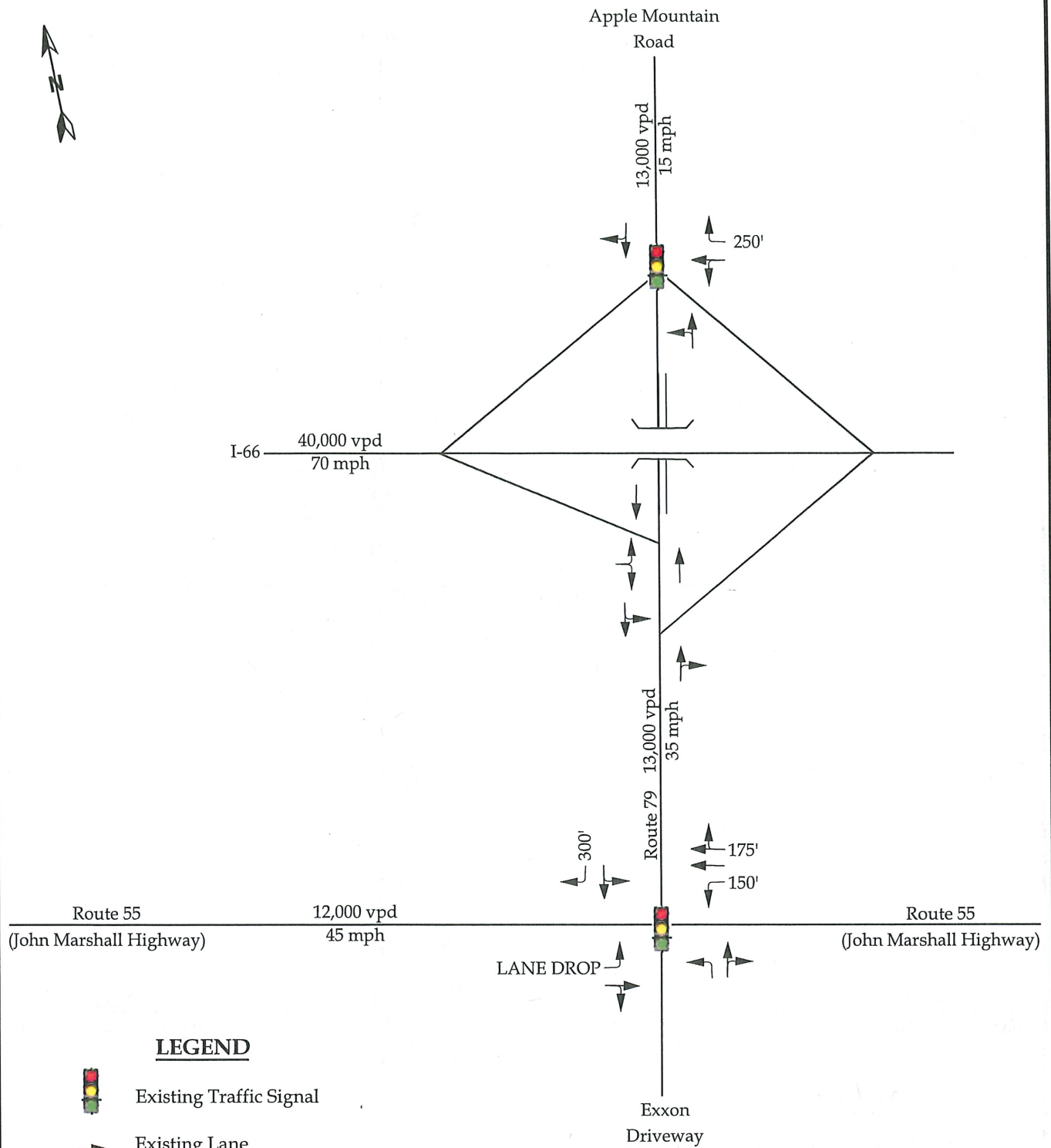
RANNEY KEMP ASSOCIATES

Sheetz
Route 79
Warren County, Virginia

Site Location and
Study Intersections

Scale: Not to Scale

Figure 1



Moving forward.

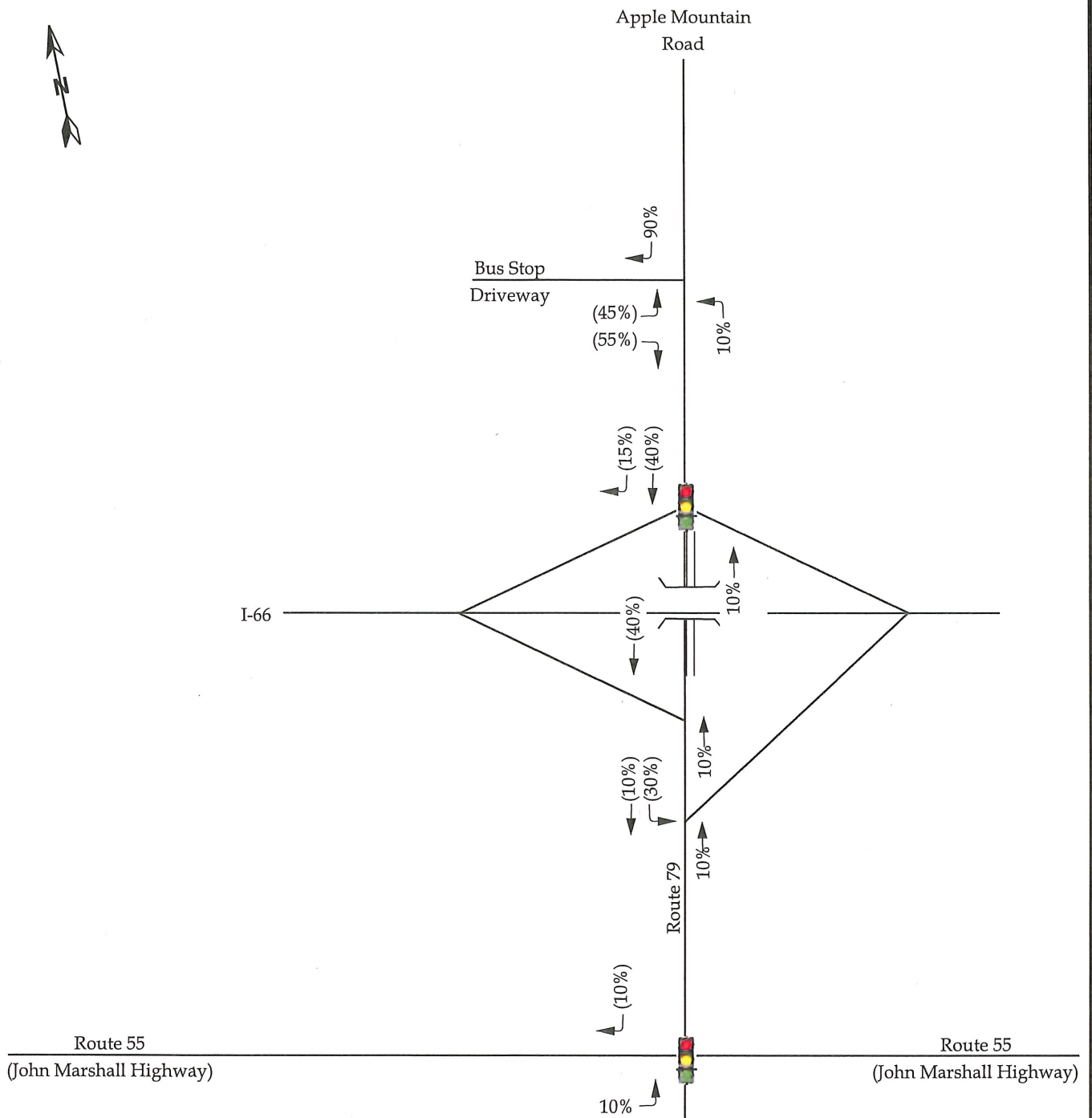
RKA
RAMEY KEMP ASSOCIATES

Sheetz
Route 79
Warren County, Virginia

Existing Lane
Configuration

Scale: Not to Scale

Figure 3



LEGEND

X% (Y%) Entering (Exiting) Trip Distribution

XX% Regional Trip Distribution

Moving forward.



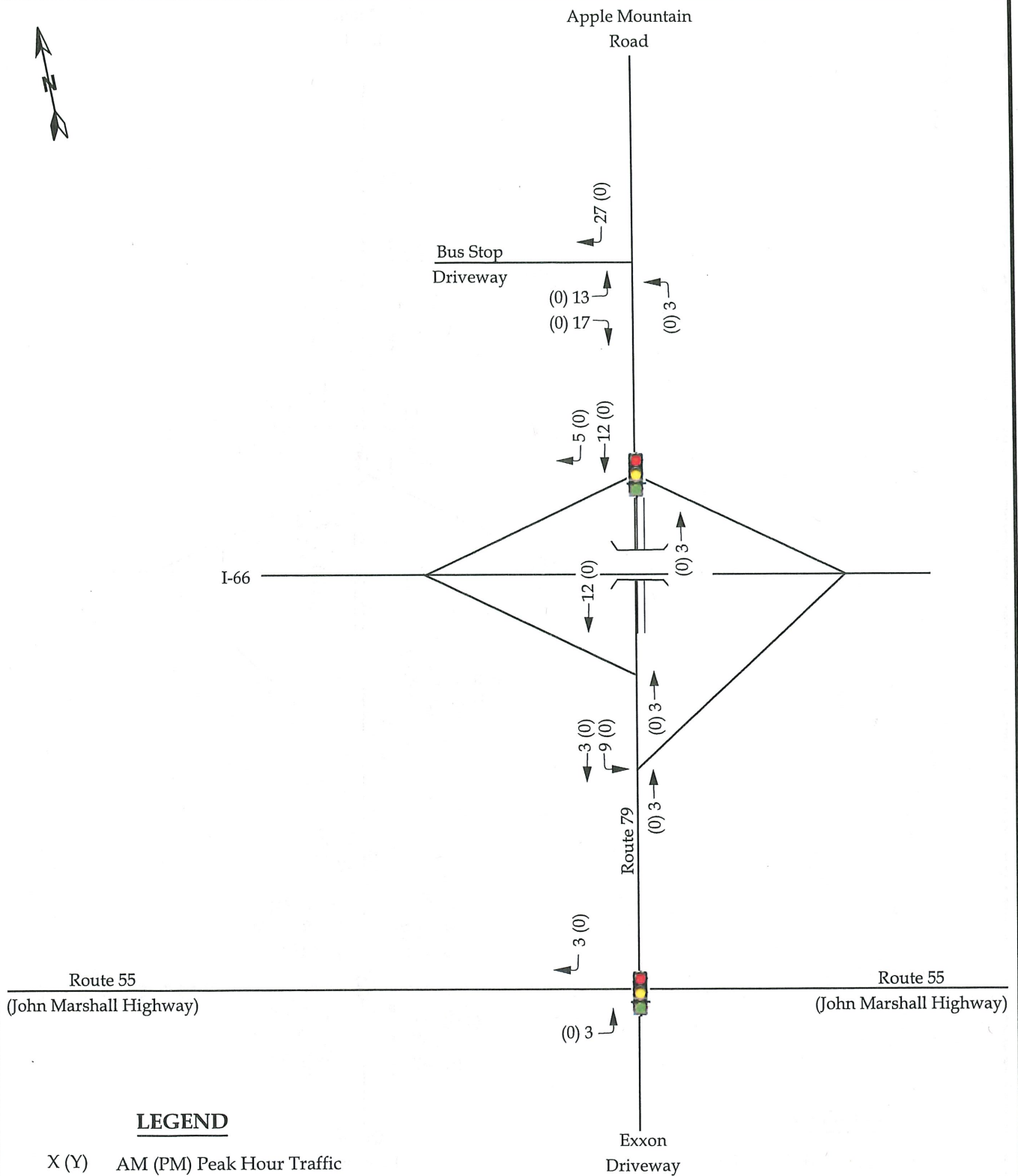
RAMSEY KEMP ASSOCIATES

Sheetz
Route 79
Warren County, Virginia

School Bus Stop
Trip Distribution

Scale: Not to Scale

Figure 4



LEGEND

X (Y) AM (PM) Peak Hour Traffic

Moving forward.

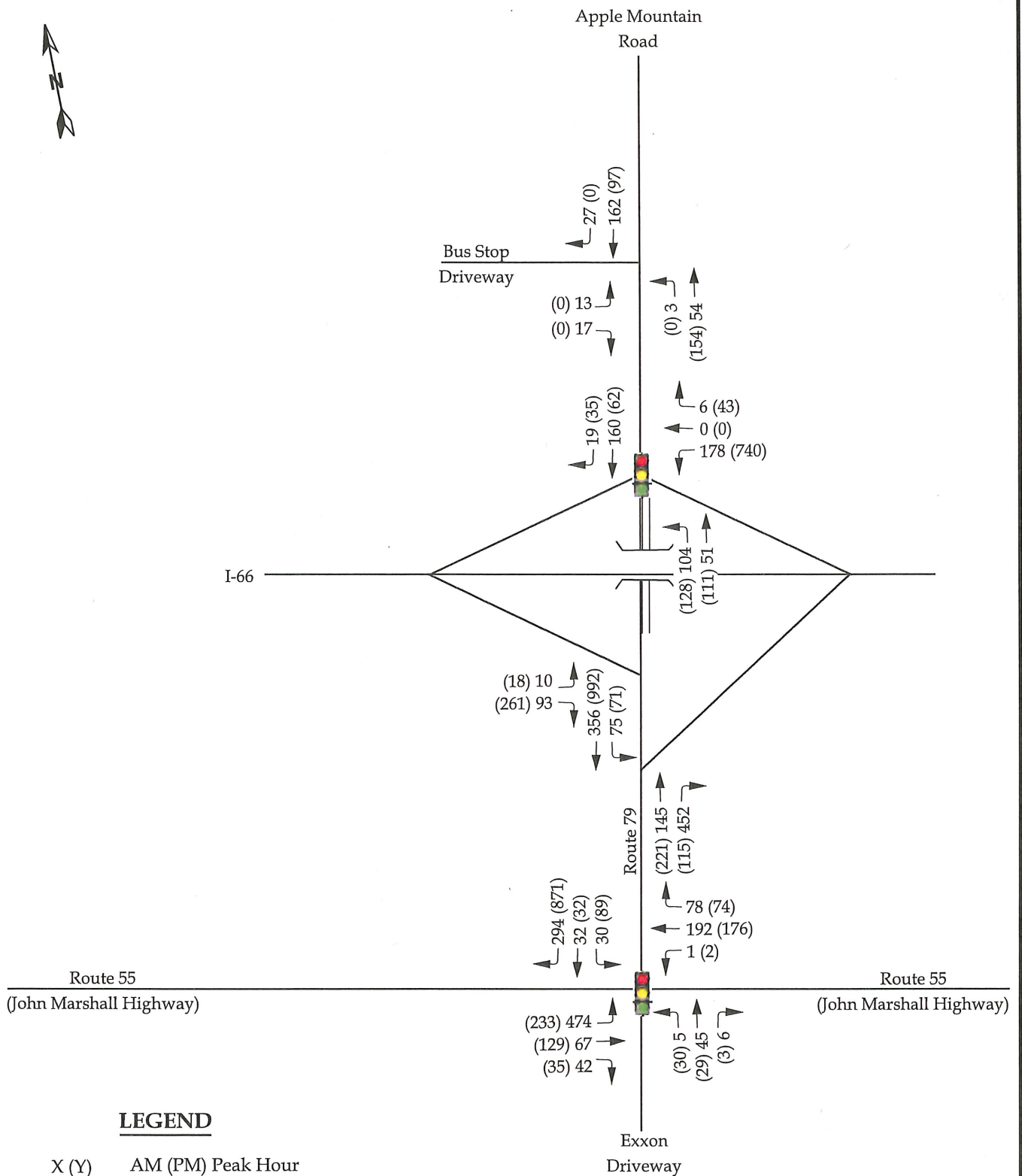


Sheetz
Route 79
Warren County, Virginia

School Bus Stop
Trip Assignment

Scale: Not to Scale

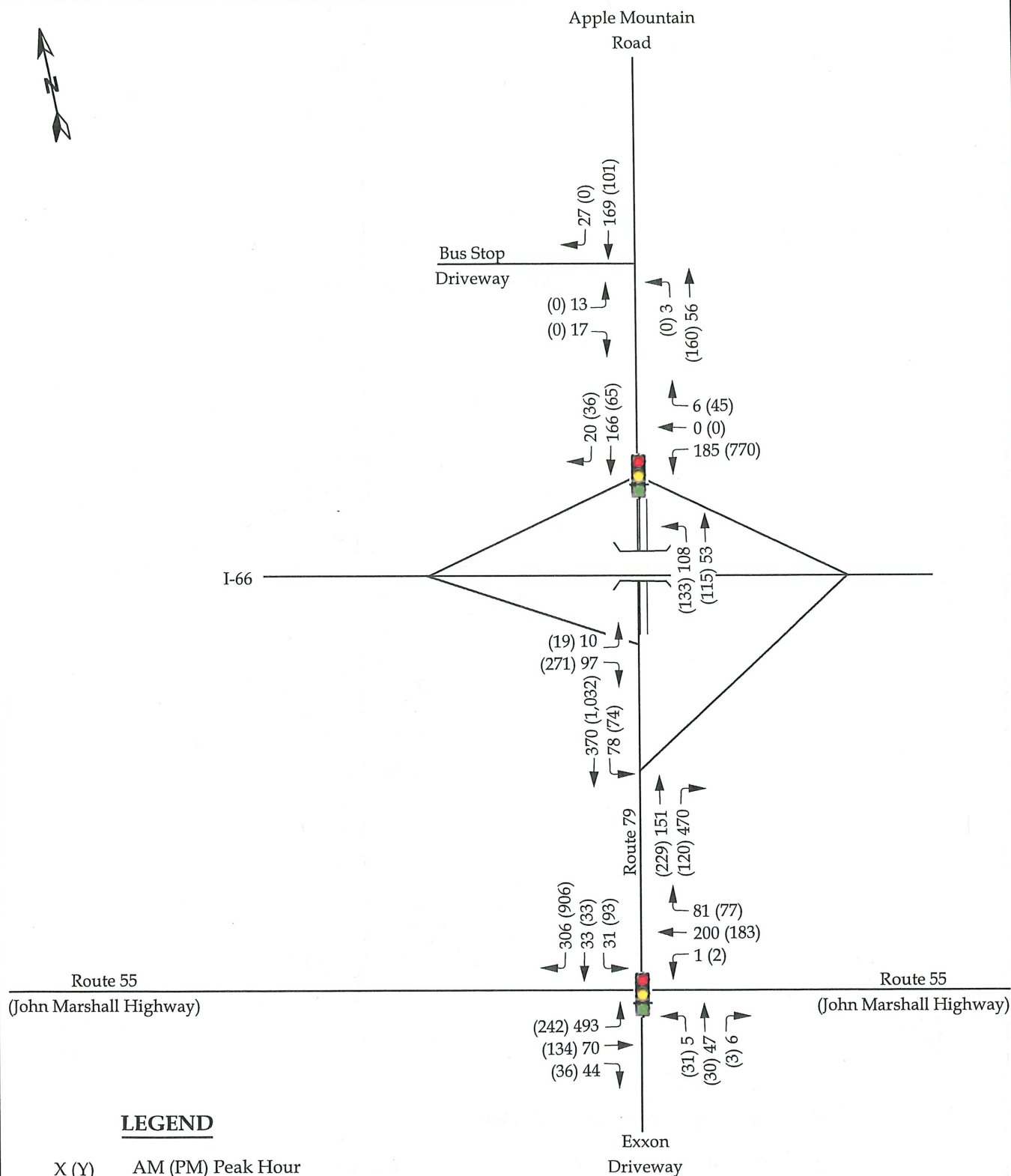
Figure 5



Sheetz
Route 79
Warren County, Virginia

Existing (2020) Peak
Hour Traffic Volumes

Scale: Not to Scale Figure 6



LEGEND

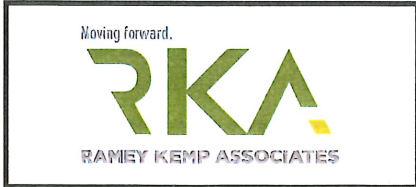
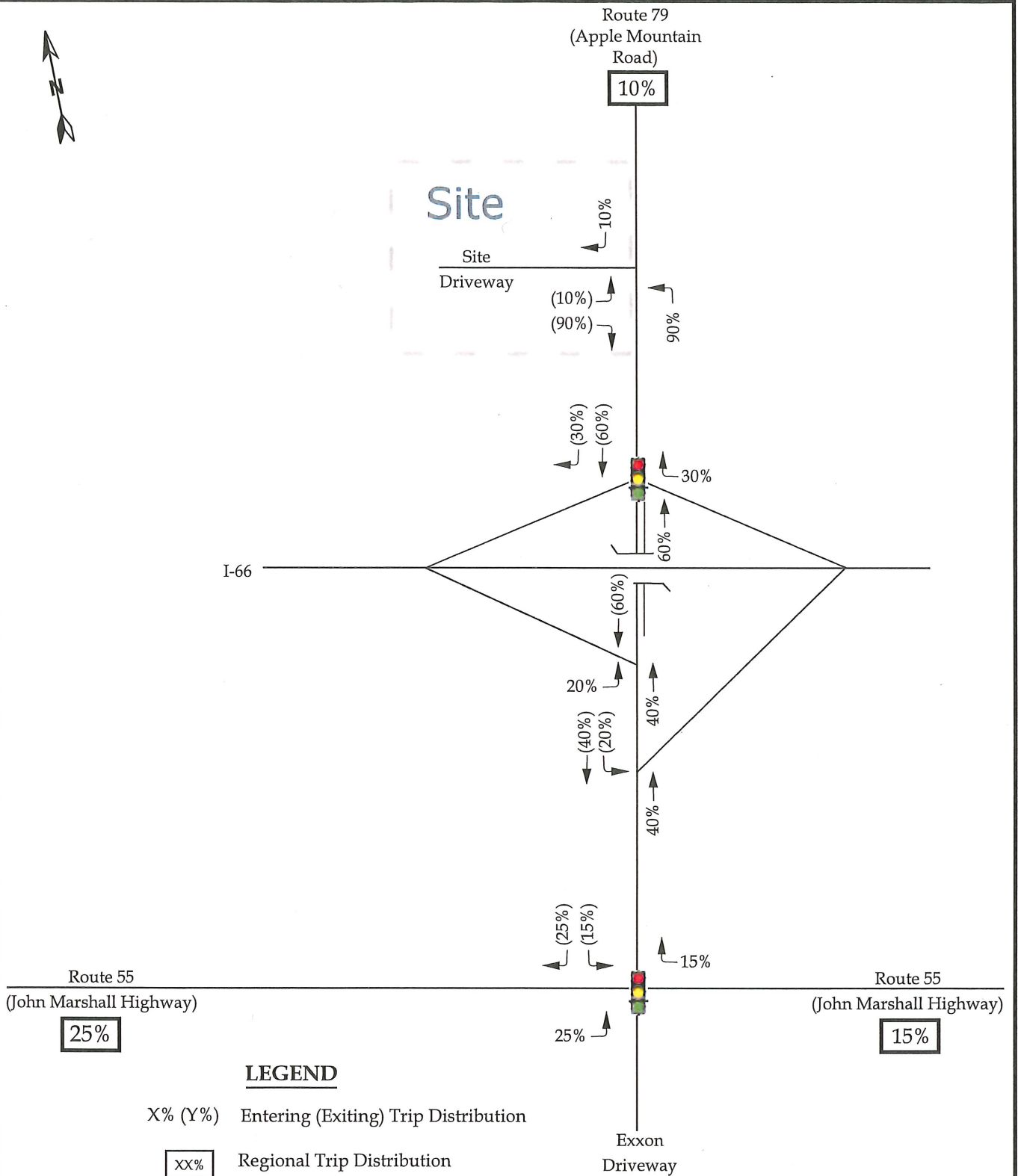
X (Y) AM (PM) Peak Hour



**Sheetz
Route 79
Warren County, Virginia**

**No-Build (2022) Peak
Hour Traffic Volumes**

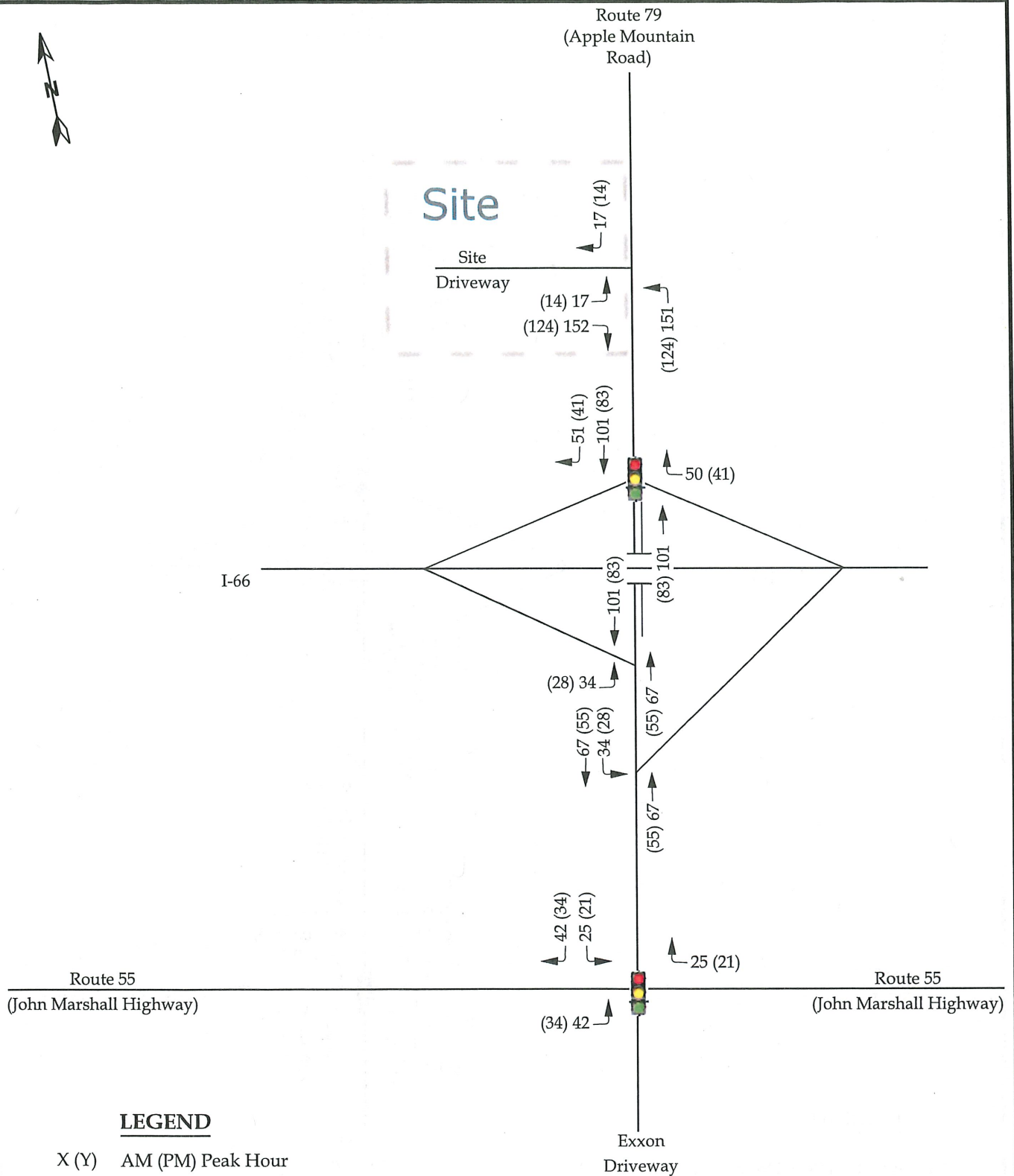
Scale: Not to Scale Figure 7



Sheetz
Route 79
Warren County, Virginia

Primary
Site Trip Distribution

Scale: Not to Scale | Figure 8



LEGEND

X (Y) AM (PM) Peak Hour

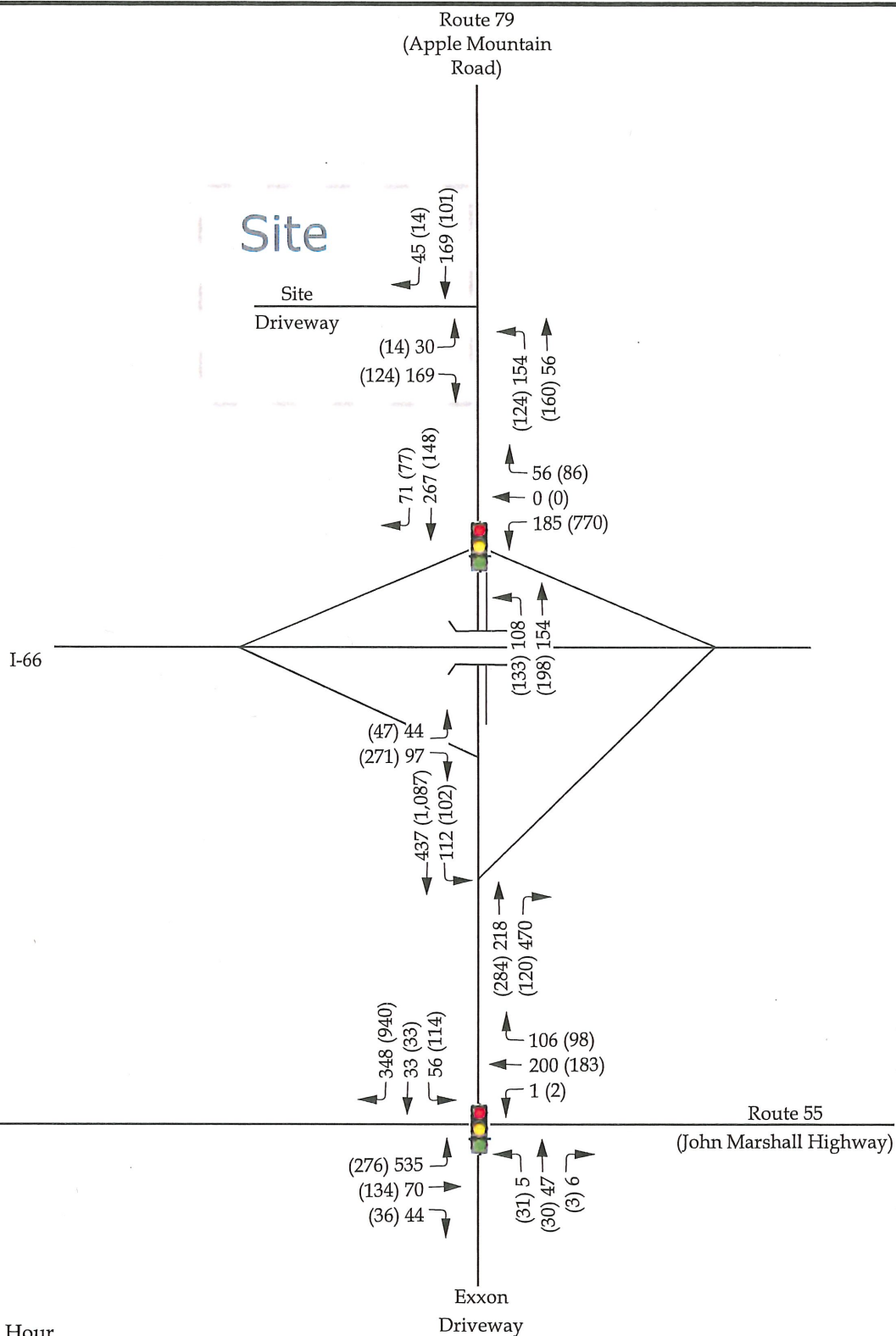


Sheetz
Route 79
Warren County, Virginia

Primary Site Trip
Assignment

Scale: Not to Scale

Figure 9



LEGEND

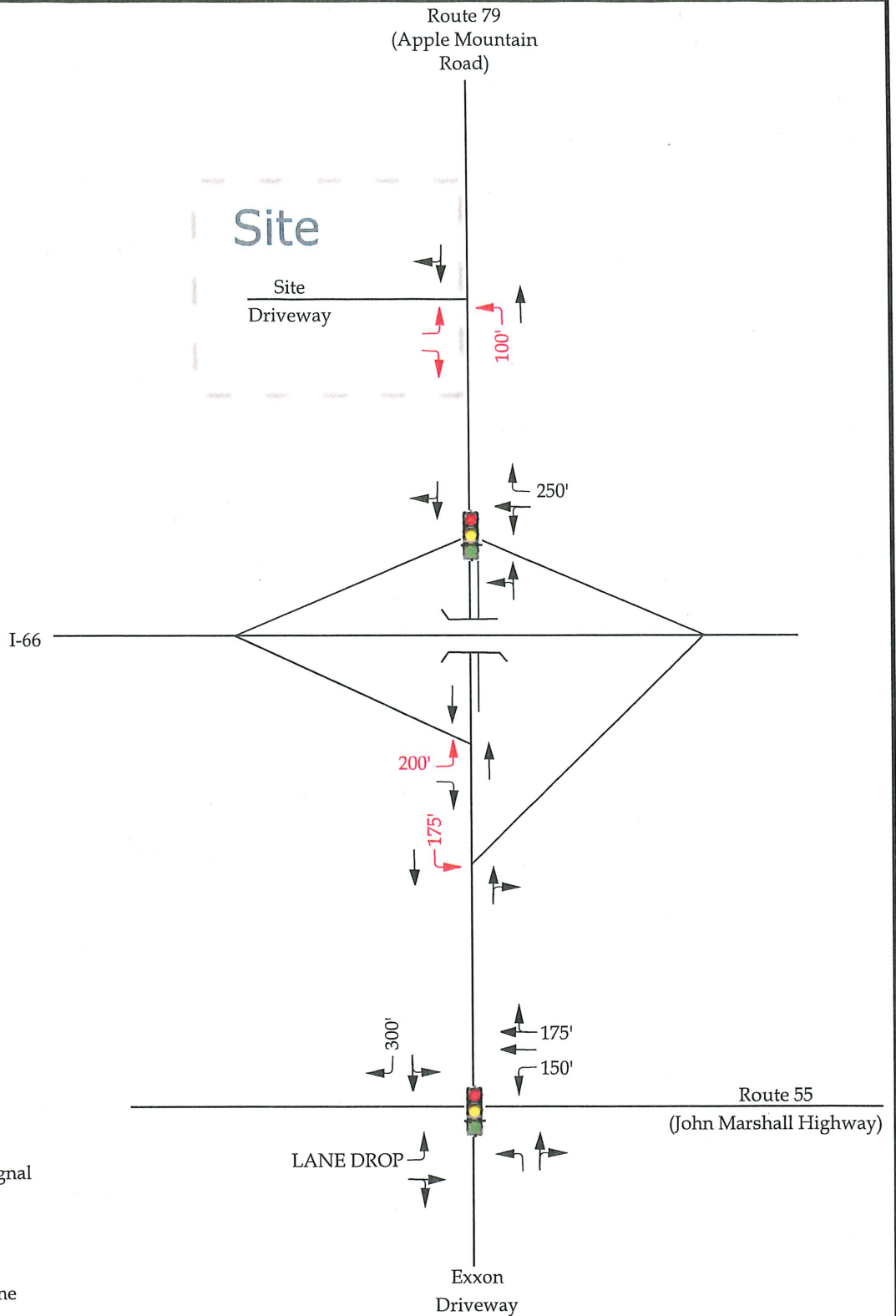
X (Y) AM (PM) Peak Hour



Sheetz
Route 79
Warren County, Virginia

Build (2022) Peak Hour
Traffic Volumes

Scale: Not to Scale Figure 10



LEGEND



Existing Traffic Signal

X'

Storage (In Feet)



Existing Lane



Recommended Lane

Moving forward.



RAMSEY KEMP ASSOCIATES

Sheetz
Route 79
Warren County, Virginia

Recommended Lane
Configuration

Scale: Not to Scale Figure 11

COUNT DATA

Peggy Malone & Associates, Inc.
(888) 247-8602

File Name : 7-Rt. 79 and Rt. 55 AM
Site Code :
Start Date : 5/10/2016
Page No : 1

Groups Printed- Car

Start Time	Rt. 79 Southbound					Rt. 55 Westbound					Exxon Entrance/Exit Northbound					Rt. 55 Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:00 AM	16	2	7	0	25	23	14	0	0	37	0	13	2	0	15	12	8	154	0	174	251
06:15 AM	14	3	3	0	20	18	9	2	0	29	0	10	1	0	11	7	10	160	0	177	237
06:30 AM	23	4	7	0	34	15	15	1	0	31	3	15	1	0	19	11	10	155	0	176	260
06:45 AM	27	1	6	0	34	15	15	0	0	30	0	7	1	0	8	10	13	131	0	154	226
Total	80	10	23	0	113	71	53	3	0	127	3	45	5	0	53	40	41	600	0	681	974
07:00 AM	31	6	5	0	42	24	11	1	0	36	0	7	2	0	9	5	12	124	0	141	228
07:15 AM	31	4	5	0	40	23	20	0	0	43	1	5	1	0	7	11	12	108	0	131	221
07:30 AM	68	8	2	0	78	20	35	0	0	55	0	13	0	0	13	9	13	115	0	137	283
07:45 AM	65	5	7	0	77	16	63	0	0	79	3	8	2	0	13	7	13	112	0	132	301
Total	195	23	19	0	237	83	129	1	0	213	4	33	5	0	42	32	50	459	0	541	1033
08:00 AM	69	10	9	0	88	18	36	0	0	54	3	7	1	0	11	8	11	83	0	102	255
08:15 AM	47	7	8	0	62	15	38	1	0	54	0	13	1	0	14	14	21	114	0	149	279
08:30 AM	35	2	3	0	40	14	15	0	0	29	3	10	0	0	13	5	20	90	0	115	197
08:45 AM	35	2	8	0	45	10	21	1	0	32	2	5	3	0	10	3	20	76	0	99	186
Total	186	21	28	0	235	57	110	2	0	169	8	35	5	0	48	30	72	363	0	465	917
09:00 AM	34	6	6	0	46	9	20	1	0	30	1	7	3	0	11	4	19	68	0	91	178
09:15 AM	25	5	9	0	39	6	19	1	0	26	1	8	3	0	12	6	6	57	0	69	146
09:30 AM	30	7	3	0	40	6	23	2	0	31	0	8	5	0	13	5	16	64	0	85	169
09:45 AM	33	4	4	0	41	5	19	2	0	26	1	6	2	0	9	7	12	52	0	71	147
Total	122	22	22	0	166	26	81	6	0	113	3	29	13	0	45	22	53	241	0	316	640
Grand Total	583	76	92	0	751	237	373	12	0	622	18	142	28	0	188	124	216	1663	0	2003	3564
Appreh %	77.6	10.1	12.3	0		38.1	60	1.9	0		9.6	75.5	14.9	0		6.2	10.8	83	0		
Total %	16.4	2.1	2.6	0	21.1	6.6	10.5	0.3	0	17.5	0.5	4	0.8	0	5.3	3.5	6.1	46.7	0	56.2	

	Rt. 79 Southbound				Rt. 55 Westbound				Exxon Entrance/Exit Northbound				Rt. 55 Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	68	8	2	78	20	35	0	55	0	13	0	13	9	13	115	137	283
07:45 AM	65	5	7	77	16	63	0	79	3	8	2	13	7	13	112	132	301
08:00 AM	69	10	9	88	18	36	0	54	3	7	1	11	8	11	83	102	255
08:15 AM	47	7	8	62	15	38	1	54	0	13	1	14	14	21	114	149	279
Total Volume	249	30	26	305	69	172	1	242	6	41	4	51	38	58	424	520	1118
% App. Total	81.6	9.8	8.5		28.5	71.1	0.4		11.8	80.4	7.8		7.3	11.2	81.5		
PHF	.902	.750	.722	.866	.863	.683	.250	.766	.500	.788	.500	.911	.679	.690	.922	.872	.929

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Start Date : 5/10/2016
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Groups Printed- Truck

Start Time	Rt. 79 Southbound					Rt. 55 Westbound					Exxon Entrance/Exit Northbound					Rt. 55 Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:00 AM	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	4	0	4	7
06:15 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
06:30 AM	2	0	0	0	2	1	0	0	0	1	0	0	0	0	0	0	0	3	0	3	6
06:45 AM	2	0	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	5	0	5	8
Total	7	0	0	0	7	1	1	1	0	3	0	0	0	0	0	0	1	12	0	13	23
07:00 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	2	0	5	8
07:15 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	4	2	0	6	9
07:30 AM	3	0	1	0	4	2	3	0	0	5	0	0	0	0	0	0	1	3	0	4	13
07:45 AM	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	3
Total	10	0	1	0	11	2	4	0	0	6	0	0	0	0	0	0	8	8	0	16	33
08:00 AM	1	0	1	0	2	0	1	0	0	1	0	1	1	0	2	1	2	6	0	9	14
08:15 AM	4	0	0	0	4	1	0	0	0	1	0	0	0	0	0	0	1	4	0	5	10
08:30 AM	2	1	2	0	5	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	7
08:45 AM	4	1	0	0	5	0	1	0	0	1	0	1	0	0	1	0	0	4	0	4	11
Total	11	2	3	0	16	1	2	0	0	3	0	2	1	0	3	2	3	15	0	20	42
09:00 AM	3	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	7
09:15 AM	1	0	1	0	2	1	2	1	0	4	1	0	0	0	1	0	1	3	0	4	11
09:30 AM	6	0	1	0	7	1	0	0	0	1	0	0	0	0	0	0	0	2	0	2	10
09:45 AM	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	2	0	1	0	3	5
Total	11	0	3	0	14	2	2	1	0	5	1	0	1	0	2	2	2	8	0	12	33
Grand Total	39	2	7	0	48	6	9	2	0	17	1	2	2	0	5	4	14	43	0	61	131
Apprch %	81.2	4.2	14.6	0		35.3	52.9	11.8	0		20	40	40	0		6.6	23	70.5	0		
Total %	29.8	1.5	5.3	0	36.6	4.6	6.9	1.5	0	13	0.8	1.5	1.5	0	3.8	3.1	10.7	32.8	0	46.6	

	Rt. 79 Southbound				Rt. 55 Westbound				Exxon Entrance/Exit Northbound				Rt. 55 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	1	0	1	2	0	1	0	1	0	1	1	2	1	2	6	9	14
08:15 AM	4	0	0	4	1	0	0	1	0	0	0	0	0	1	4	5	10
08:30 AM	2	1	2	5	0	0	0	0	0	0	0	0	1	0	1	2	7
08:45 AM	4	1	0	5	0	1	0	1	0	1	0	1	0	0	4	4	11
Total Volume	11	2	3	16	1	2	0	3	0	2	1	3	2	3	15	20	42
% App. Total	68.8	12.5	18.8		33.3	66.7	0		0	66.7	33.3		10	15	75		
PHF	.688	.500	.375	.800	.250	.500	.000	.750	.000	.500	.250	.375	.500	.375	.625	.556	.750

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Groups Printed- Combined

Start Time	Rt. 79 Southbound					Rt. 55 Westbound					Exxon Entrance/Exit Northbound					Rt. 55 Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:00 AM	18	2	7	0	27	23	15	0	0	38	0	13	2	0	15	12	8	158	0	178	258
06:15 AM	15	3	3	0	21	18	9	2	0	29	0	10	1	0	11	7	11	160	0	178	239
06:30 AM	25	4	7	0	36	16	15	1	0	32	3	15	1	0	19	11	10	158	0	179	266
06:45 AM	29	1	6	0	36	15	15	1	0	31	0	7	1	0	8	10	13	136	0	159	234
Total	87	10	23	0	120	72	54	4	0	130	3	45	5	0	53	40	42	612	0	694	997
07:00 AM	34	6	5	0	45	24	11	1	0	36	0	7	2	0	9	5	15	126	0	146	236
07:15 AM	34	4	5	0	43	23	20	0	0	43	1	5	1	0	7	11	16	110	0	137	230
07:30 AM	71	8	3	0	82	22	38	0	0	60	0	13	0	0	13	9	14	118	0	141	296
07:45 AM	66	5	7	0	78	16	64	0	0	80	3	8	2	0	13	7	13	113	0	133	304
Total	205	23	20	0	248	85	133	1	0	219	4	33	5	0	42	32	58	467	0	557	1066
08:00 AM	70	10	10	0	90	18	37	0	0	55	3	8	2	0	13	9	13	89	0	111	269
08:15 AM	51	7	8	0	66	16	38	1	0	55	0	13	1	0	14	14	22	118	0	154	289
08:30 AM	37	3	5	0	45	14	15	0	0	29	3	10	0	0	13	6	20	91	0	117	204
08:45 AM	39	3	8	0	50	10	22	1	0	33	2	6	3	0	11	3	20	80	0	103	197
Total	197	23	31	0	251	58	112	2	0	172	8	37	6	0	51	32	75	378	0	485	959
09:00 AM	37	6	7	0	50	9	20	1	0	30	1	7	3	0	11	4	20	70	0	94	185
09:15 AM	26	5	10	0	41	7	21	2	0	30	2	8	3	0	13	6	7	60	0	73	157
09:30 AM	36	7	4	0	47	7	23	2	0	32	0	8	5	0	13	5	16	66	0	87	179
09:45 AM	34	4	4	0	42	5	19	2	0	26	1	6	3	0	10	9	12	53	0	74	152
Total	133	22	25	0	180	28	83	7	0	118	4	29	14	0	47	24	55	249	0	328	673
Grand Total	622	78	99	0	799	243	382	14	0	639	19	144	30	0	193	128	230	1706	0	2064	3695
Apprch %	77.8	9.8	12.4	0		38	59.8	2.2	0		9.8	74.6	15.5	0		6.2	11.1	82.7	0		
Total %	16.8	2.1	2.7	0	21.6	6.6	10.3	0.4	0	17.3	0.5	3.9	0.8	0	5.2	3.5	6.2	46.2	0	55.9	

	Rt. 79 Southbound				Rt. 55 Westbound				Exxon Entrance/Exit Northbound				Rt. 55 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	71	8	3	82	22	38	0	60	0	13	0	13	9	14	118	141	296
07:45 AM	66	5	7	78	16	64	0	80	3	8	2	13	7	13	113	133	304
08:00 AM	70	10	10	90	18	37	0	55	3	8	2	13	9	13	89	111	269
08:15 AM	51	7	8	66	16	38	1	55	0	13	1	14	14	22	118	154	289
Total Volume	258	30	28	316	72	177	1	250	6	42	5	53	39	62	438	539	1158
% App. Total	81.6	9.5	8.9		28.8	70.8	0.4		11.3	79.2	9.4		7.2	11.5	81.3		
PHF	.908	.750	.700	.878	.818	.691	.250	.781	.500	.808	.625	.946	.696	.705	.928	.875	.952

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File Name : 7-Rt. 79 and Rt. 55 PM
Site Code :
Start Date : 5/10/2016
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Groups Printed- Car

	Rt. 79 Southbound					Rt. 55 Westbound					Exxon Entrance/Exit Northbound					Rt. 55 Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	137	8	14	0	159	17	38	4	0	59	0	8	3	0	11	8	30	63	0	101	330
03:15 PM	161	7	21	0	189	17	36	1	0	54	2	9	7	0	18	7	29	48	0	84	345
03:30 PM	134	8	17	0	159	11	30	3	0	44	2	4	3	0	9	5	27	58	0	90	302
03:45 PM	151	12	16	0	179	15	28	2	0	45	1	6	4	0	11	6	37	49	0	92	327
Total	583	35	68	0	686	60	132	10	0	202	5	27	17	0	49	26	123	218	0	367	1304
04:00 PM	163	10	19	0	192	12	40	3	0	55	1	4	1	0	6	5	22	56	0	83	336
04:15 PM	154	5	22	0	181	17	21	1	0	39	1	5	4	0	10	8	34	67	0	109	339
04:30 PM	181	7	18	0	206	17	49	3	0	69	2	2	5	0	9	10	28	45	0	83	367
04:45 PM	194	5	26	0	225	18	41	0	0	59	0	8	10	0	18	11	28	50	0	89	391
Total	692	27	85	0	804	64	151	7	0	222	4	19	20	0	43	34	112	218	0	364	1433
05:00 PM	215	10	17	0	242	11	41	0	0	52	2	7	7	0	16	5	26	59	0	90	400
05:15 PM	192	5	19	0	216	18	42	2	0	62	1	5	7	0	13	4	30	51	0	85	376
05:30 PM	196	9	19	0	224	18	34	0	0	52	0	6	4	0	10	11	35	50	0	96	382
05:45 PM	162	4	17	0	183	21	33	1	0	55	0	8	4	0	12	10	16	44	0	70	320
Total	765	28	72	0	865	68	150	3	0	221	3	26	22	0	51	30	107	204	0	341	1478
06:00 PM	158	8	17	0	183	11	28	0	0	39	3	2	9	0	14	4	24	55	0	83	319
06:15 PM	119	10	21	0	150	8	29	0	0	37	1	7	2	0	10	11	22	40	0	73	270
06:30 PM	124	10	14	0	148	16	30	2	0	48	2	3	4	0	9	9	22	45	0	76	281
06:45 PM	115	9	12	0	136	9	19	0	0	28	2	4	2	0	8	7	13	30	0	50	222
Total	516	37	64	0	617	44	106	2	0	152	8	16	17	0	41	31	81	170	0	282	1092
Grand Total	2556	127	289	0	2972	236	539	22	0	797	20	88	76	0	184	121	423	810	0	1354	5307
Approch %	86	4.3	9.7	0		29.6	67.6	2.8	0		10.9	47.8	41.3	0		8.9	31.2	59.8	0		
Total %	48.2	2.4	5.4	0	56	4.4	10.2	0.4	0	15	0.4	1.7	1.4	0	3.5	2.3	8	15.3	0	25.5	

	Rt. 79 Southbound				Rt. 55 Westbound				Exxon Entrance/Exit Northbound				Rt. 55 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	194	5	26	225	18	41	0	59	0	8	10	18	11	28	50	89	391
05:00 PM	215	10	17	242	11	41	0	52	2	7	7	16	5	26	59	90	400
05:15 PM	192	5	19	216	18	42	2	62	1	5	7	13	4	30	51	85	376
05:30 PM	196	9	19	224	18	34	0	52	0	6	4	10	11	35	50	96	382
Total Volume	797	29	81	907	65	158	2	225	3	26	28	57	31	119	210	360	1549
% App. Total	87.9	3.2	8.9		28.9	70.2	0.9		5.3	45.6	49.1		8.6	33.1	58.3		
PHF	.927	.725	.779	.937	.903	.940	.250	.907	.375	.813	.700	.792	.705	.850	.890	.938	.968

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File Name : 7-Rt. 79 and Rt. 55 PM
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Groups Printed- Truck

Start Time	Rt. 79 Southbound					Rt. 55 Westbound					Exxon Entrance/Exit Northbound					Rt. 55 Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	8	0	0	0	8	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	10
03:15 PM	4	0	0	0	4	0	1	0	0	1	0	0	0	0	0	0	1	7	0	8	13
03:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	3	1	0	4	6
03:45 PM	1	0	1	0	2	0	1	0	0	1	0	0	0	0	0	0	2	4	0	6	9
Total	13	0	1	0	14	1	4	0	0	5	0	0	0	0	0	0	6	13	0	19	38
04:00 PM	4	0	1	0	5	0	6	0	0	6	0	0	0	0	0	0	1	5	0	6	17
04:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	3
04:30 PM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:45 PM	1	0	0	0	1	1	2	0	0	3	0	0	0	0	0	1	0	1	0	2	6
Total	8	0	1	0	9	1	10	0	0	11	0	0	0	0	0	1	1	7	0	9	29
05:00 PM	3	1	1	0	5	1	2	0	0	3	0	1	0	0	1	0	0	2	0	2	11
05:15 PM	2	0	0	0	2	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	4
05:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
05:45 PM	5	0	1	0	6	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7
Total	12	1	2	0	15	3	3	0	0	6	0	1	0	0	1	0	0	4	0	4	26
06:00 PM	2	0	0	0	2	1	0	0	0	1	0	0	1	0	1	0	0	2	0	2	6
06:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
06:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
06:45 PM	2	0	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	6
Total	7	0	2	0	9	1	0	0	0	1	0	0	1	0	1	0	0	5	0	5	16
Grand Total	40	1	6	0	47	6	17	0	0	23	0	1	1	0	2	1	7	29	0	37	109
Apprch %	85.1	2.1	12.8	0		26.1	73.9	0	0		0	50	50	0		2.7	18.9	78.4	0		
Total %	36.7	0.9	5.5	0	43.1	5.5	15.6	0	0	21.1	0	0.9	0.9	0	1.8	0.9	6.4	26.6	0	33.9	

	Rt. 79 Southbound				Rt. 55 Westbound				Exxon Entrance/Exit Northbound				Rt. 55 Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 03:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:15 PM																	
03:15 PM	4	0	0	4	0	1	0	1	0	0	0	0	0	1	7	8	13
03:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	1	4	6
03:45 PM	1	0	1	2	0	1	0	1	0	0	0	0	0	2	4	6	9
04:00 PM	4	0	1	5	0	6	0	6	0	0	0	0	0	1	5	6	17
Total Volume	9	0	2	11	0	10	0	10	0	0	0	0	0	7	17	24	45
% App. Total	81.8	0	18.2		0	100	0		0	0	0		0	29.2	70.8		
PHF	.563	.000	.500	.550	.000	.417	.000	.417	.000	.000	.000	.000	.000	.583	.607	.750	.662

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Groups Printed- Combined

	Rt. 79 Southbound					Rt. 55 Westbound					Exxon Entrance/Exit Northbound					Rt. 55 Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	145	8	14	0	167	18	38	4	0	60	0	8	3	0	11	8	30	64	0	102	340
03:15 PM	165	7	21	0	193	17	37	1	0	55	2	9	7	0	18	7	30	55	0	92	358
03:30 PM	134	8	17	0	159	11	32	3	0	46	2	4	3	0	9	5	30	59	0	94	308
03:45 PM	152	12	17	0	181	15	29	2	0	46	1	6	4	0	11	6	39	53	0	98	336
Total	596	35	69	0	700	61	136	10	0	207	5	27	17	0	49	26	129	231	0	386	1342
04:00 PM	167	10	20	0	197	12	46	3	0	61	1	4	1	0	6	5	23	61	0	89	353
04:15 PM	154	5	22	0	181	17	23	1	0	41	1	5	4	0	10	8	34	68	0	110	342
04:30 PM	184	7	18	0	209	17	49	3	0	69	2	2	5	0	9	10	28	45	0	83	370
04:45 PM	195	5	26	0	226	19	43	0	0	62	0	8	10	0	18	12	28	51	0	91	397
Total	700	27	86	0	813	65	161	7	0	233	4	19	20	0	43	35	113	225	0	373	1462
05:00 PM	218	11	18	0	247	12	43	0	0	55	2	8	7	0	17	5	26	61	0	92	411
05:15 PM	194	5	19	0	218	19	43	2	0	64	1	5	7	0	13	4	30	51	0	85	380
05:30 PM	198	9	19	0	226	18	34	0	0	52	0	6	4	0	10	11	35	52	0	98	386
05:45 PM	167	4	18	0	189	22	33	1	0	56	0	8	4	0	12	10	16	44	0	70	327
Total	777	29	74	0	880	71	153	3	0	227	3	27	22	0	52	30	107	208	0	345	1504
06:00 PM	160	8	17	0	185	12	28	0	0	40	3	2	10	0	15	4	24	57	0	85	325
06:15 PM	120	10	21	0	151	8	29	0	0	37	1	7	2	0	10	11	22	41	0	74	272
06:30 PM	126	10	14	0	150	16	30	2	0	48	2	3	4	0	9	9	22	45	0	76	283
06:45 PM	117	9	14	0	140	9	19	0	0	28	2	4	2	0	8	7	13	32	0	52	228
Total	523	37	66	0	626	45	106	2	0	153	8	16	18	0	42	31	81	175	0	287	1108
Grand Total	2596	128	295	0	3019	242	556	22	0	820	20	89	77	0	186	122	430	839	0	1391	5416
Apprch %	86	4.2	9.8	0		29.5	67.8	2.7	0		10.8	47.8	41.4	0		8.8	30.9	60.3	0		
Total %	47.9	2.4	5.4	0	55.7	4.5	10.3	0.4	0	15.1	0.4	1.6	1.4	0	3.4	2.3	7.9	15.5	0	25.7	

	Rt. 79 Southbound				Rt. 55 Westbound				Exxon Entrance/Exit Northbound				Rt. 55 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	195	5	26	226	19	43	0	62	0	8	10	18	12	28	51	91	397
05:00 PM	218	11	18	247	12	43	0	55	2	8	7	17	5	26	61	92	411
05:15 PM	194	5	19	218	19	43	2	64	1	5	7	13	4	30	51	85	380
05:30 PM	198	9	19	226	18	34	0	52	0	6	4	10	11	35	52	98	386
Total Volume	805	30	82	917	68	163	2	233	3	27	28	58	32	119	215	366	1574
% App. Total	87.8	3.3	8.9		29.2	70	0.9		5.2	46.6	48.3		8.7	32.5	58.7		
PHF	.923	.682	.788	.928	.895	.948	.250	.910	.375	.844	.700	.806	.667	.850	.881	.934	.957

SYNCHRO OUTPUT REPORTS

Sheetz - Route 79 - Warren County, VA
1: Apple Mountain Road & Bus Stop Driveway

Existing (2020) Conditions
Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			4	4	
Traffic Vol, veh/h	13	17	3	54	162	27
Future Vol, veh/h	13	17	3	54	162	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	10	10	10	2	2	10
Mvmt Flow	14	19	3	60	180	30

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	261	195	210	0	-	0
Stage 1	195	-	-	-	-	-
Stage 2	66	-	-	-	-	-
Critical Hdwy	6.5	6.3	4.2	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.39	2.29	-	-	-
Pot Cap-1 Maneuver	711	826	1314	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	937	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	710	826	1314	-	-	-
Mov Cap-2 Maneuver	710	-	-	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	937	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1314	-	771	-	-
HCM Lane V/C Ratio	0.003	-	0.043	-	-
HCM Control Delay (s)	7.7	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Sheetz - Route 79 - Warren County, VA

Existing (2020) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	178	1	6	104	51	0	0	160	19
Future Volume (vph)	0	0	0	178	1	6	104	51	0	0	160	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.3	5.3		7.2			7.2	
Lane Util. Factor					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.99	
Flt Protected					0.95	1.00		0.97			1.00	
Satd. Flow (prot)					1774	1583		1802			1836	
Flt Permitted					0.95	1.00		0.68			1.00	
Satd. Flow (perm)					1774	1583		1272			1836	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	196	1	7	114	56	0	0	176	21
RTOR Reduction (vph)	0	0	0	0	0	5	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	197	2	0	170	0	0	193	0
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		5	2			6	
Permitted Phases				4		4	2					
Actuated Green, G (s)					9.6	9.6		14.3			14.3	
Effective Green, g (s)					9.6	9.6		14.3			14.3	
Actuated g/C Ratio					0.26	0.26		0.39			0.39	
Clearance Time (s)					5.3	5.3		7.2			7.2	
Vehicle Extension (s)					3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)					467	417		499			721	
v/s Ratio Prot											0.10	
v/s Ratio Perm					0.11	0.00		c0.13				
v/c Ratio					0.42	0.00		0.34			0.27	
Uniform Delay, d1					11.1	9.9		7.7			7.5	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.4			0.2	
Delay (s)					11.7	9.9		8.2			7.7	
Level of Service					B	A		A			A	
Approach Delay (s)		0.0			11.7			8.2			7.7	
Approach LOS		A			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.2		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			36.4		Sum of lost time (s)					19.7		
Intersection Capacity Utilization			44.3%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Sheetz - Route 79 - Warren County, VA

Existing (2020) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	178	1	6	104	51	0	0	160	19
Future Volume (vph)	0	0	0	178	1	6	104	51	0	0	160	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		300	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1775	1583	0	1803	0	0	1837	0
Flt Permitted					0.953			0.683				
Satd. Flow (perm)	0	0	0	0	1775	1583	0	1272	0	0	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						104					7	
Link Speed (mph)		35			40			35			35	
Link Distance (ft)		1108			857			695			405	
Travel Time (s)		21.6			14.6			13.5			7.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	197	7	0	170	0	0	197	0
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		5	2			6	
Permitted Phases				4		4	2					
Detector Phase				4	4	4	5	2			6	
Switch Phase												
Minimum Initial (s)				8.0	8.0	8.0	6.0	6.0			6.0	
Minimum Split (s)				18.0	18.0	18.0	14.0	18.0			15.0	
Total Split (s)				40.0	40.0	40.0	14.0	80.0			66.0	
Total Split (%)				33.3%	33.3%	33.3%	11.7%	66.7%			55.0%	
Yellow Time (s)				4.0	4.0	4.0	4.7	4.7			4.7	
All-Red Time (s)				1.3	1.3	1.3	2.5	2.5			2.5	
Lost Time Adjust (s)					0.0	0.0		0.0			0.0	
Total Lost Time (s)					5.3	5.3		7.2			7.2	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None	None	None	Min			Min	
Act Effect Green (s)					9.6	9.6		14.3			14.3	
Actuated g/C Ratio					0.26	0.26		0.39			0.39	
v/c Ratio					0.42	0.01		0.34			0.27	
Control Delay					13.8	0.0		10.9			9.1	
Queue Delay					0.0	0.0		0.0			0.0	
Total Delay					13.8	0.0		10.9			9.1	
LOS					B	A		B			A	
Approach Delay					13.3			10.9			9.1	
Approach LOS					B			B			A	
Queue Length 50th (ft)					26	0		21			23	
Queue Length 95th (ft)					74	0		59			60	
Internal Link Dist (ft)		1028			777			615			325	
Turn Bay Length (ft)						300						
Base Capacity (vph)					1663	1490		1272			1837	
Starvation Cap Reductn					0	0		0			0	

Sheetz - Route 79 - Warren County, VA

Existing (2020) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn					0	0		0			0	
Storage Cap Reductn					0	0		0			0	
Reduced v/c Ratio					0.12	0.00		0.13			0.11	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 36.5

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.42

Intersection Signal Delay: 11.1

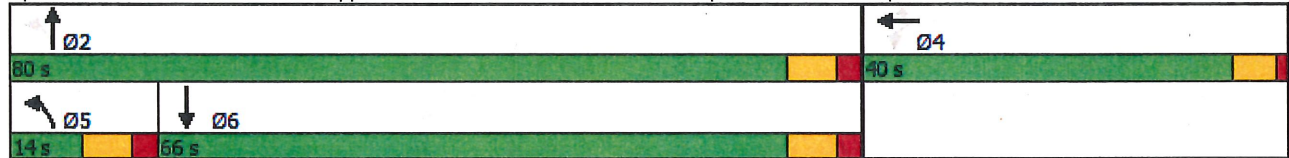
Intersection Capacity Utilization 44.3%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service A

Splits and Phases: 2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp



Sheetz - Route 79 - Warren County, VA
3: Route 79 & I-66 EB Off-Ramp

Existing (2020) Conditions
Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	10	93	0	145	338	0
Future Vol, veh/h	10	93	0	145	338	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	11	103	0	161	376	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	537	376	-	0	-	0
Stage 1	376	-	-	-	-	-
Stage 2	161	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	505	670	0	-	-	0
Stage 1	694	-	0	-	-	0
Stage 2	868	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	505	670	-	-	-	-
Mov Cap-2 Maneuver	505	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	868	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 649	-
HCM Lane V/C Ratio	- 0.176	-
HCM Control Delay (s)	- 11.7	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0.6	-

Sheetz - Route 79 - Warren County, VA
4: Route 79 & I-66 EB On-Ramp

Existing (2020) Conditions
Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	145	452	75	356
Future Volume (Veh/h)	0	0	145	452	75	356
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	161	502	83	396
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			399			839
pX, platoon unblocked	0.84	0.84			0.84	
vC, conflicting volume	974	412			161	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	873	202			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			94	
cM capacity (veh/h)	253	703			1361	
Direction, Lane #	NB 1	SB 1				
Volume Total	663	479				
Volume Left	0	83				
Volume Right	502	0				
cSH	1700	1361				
Volume to Capacity	0.39	0.06				
Queue Length 95th (ft)	0	5				
Control Delay (s)	0.0	1.9				
Lane LOS		A				
Approach Delay (s)	0.0	1.9				
Approach LOS						
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			65.0%	ICU Level of Service		C
Analysis Period (min)			15			

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

Existing (2020) Conditions

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	474	67	42	1	192	78	5	45	6	30	32	294
Future Volume (vph)	474	67	42	1	192	78	5	45	6	30	32	294
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (prot)	1770	1755		1770	1863	1583	1770	1832			1819	1583
Flt Permitted	0.40	1.00		0.68	1.00	1.00	0.71	1.00			0.82	1.00
Satd. Flow (perm)	739	1755		1270	1863	1583	1330	1832			1525	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	510	72	45	1	206	84	5	48	6	32	34	316
RTOR Reduction (vph)	0	16	0	0	0	65	0	4	0	0	0	271
Lane Group Flow (vph)	510	101	0	1	206	19	5	50	0	0	66	45
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		4
Actuated Green, G (s)	37.7	37.7		13.7	13.7	13.7	8.8	8.8			8.8	8.8
Effective Green, g (s)	37.7	37.7		13.7	13.7	13.7	8.8	8.8			8.8	8.8
Actuated g/C Ratio	0.61	0.61		0.22	0.22	0.22	0.14	0.14			0.14	0.14
Clearance Time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	716	1068		281	412	350	189	260			216	225
v/s Ratio Prot	c0.18	0.06			0.11			0.03				
v/s Ratio Perm	c0.25			0.00		0.01	0.00				c0.04	0.03
v/c Ratio	0.71	0.09		0.00	0.50	0.05	0.03	0.19			0.31	0.20
Uniform Delay, d1	7.6	5.0		18.8	21.1	19.0	22.9	23.4			23.8	23.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	3.4	0.0		0.0	1.0	0.1	0.1	0.4			0.8	0.4
Delay (s)	10.9	5.1		18.8	22.1	19.1	22.9	23.8			24.6	23.9
Level of Service	B	A		B	C	B	C	C			C	C
Approach Delay (s)		9.8			21.2			23.7			24.0	
Approach LOS		A			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			16.8			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			61.9			Sum of lost time (s)			23.4			
Intersection Capacity Utilization			65.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

Existing (2020) Conditions
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	474	67	42	1	192	78	5	45	6	30	32	294
Future Volume (vph)	474	67	42	1	192	78	5	45	6	30	32	294
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	175		250	0		0	0		300
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	1755	0	1770	1863	1583	1770	1831	0	0	1818	1583
Flt Permitted	0.397			0.682			0.714				0.819	
Satd. Flow (perm)	740	1755	0	1270	1863	1583	1330	1831	0	0	1526	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42				113		5				316
Link Speed (mph)		55			55			35			35	
Link Distance (ft)		724			777			182			399	
Travel Time (s)		9.0			9.6			3.5			7.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	510	117	0	1	206	84	5	54	0	0	66	316
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		4
Detector Phase	1	6		2	2	2	4	4		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	14.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Total Split (s)	32.0	75.0		43.0	43.0	43.0	45.0	45.0		45.0	45.0	45.0
Total Split (%)	26.7%	62.5%		35.8%	35.8%	35.8%	37.5%	37.5%		37.5%	37.5%	37.5%
Yellow Time (s)	4.8	4.8		4.8	4.8	4.8	4.1	4.1		4.1	4.1	4.1
All-Red Time (s)	3.2	3.2		3.2	3.2	3.2	3.3	3.3		3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4		7.4	7.4	7.4
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)	37.6	37.6		13.4	13.4	13.4	8.8	8.8			8.8	8.8
Actuated g/C Ratio	0.60	0.60		0.22	0.22	0.22	0.14	0.14			0.14	0.14
v/c Ratio	0.72	0.11		0.00	0.51	0.20	0.03	0.21			0.31	0.64
Control Delay	13.3	4.0		22.0	28.1	4.3	26.4	26.0			30.2	10.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	13.3	4.0		22.0	28.1	4.3	26.4	26.0			30.2	10.4
LOS	B	A		C	C	A	C	C			C	B
Approach Delay		11.6			21.2			26.1			13.8	
Approach LOS		B			C			C			B	
Queue Length 50th (ft)	88	10		0	66	0	2	16			22	0
Queue Length 95th (ft)	184	31		4	154	21	11	52			65	67
Internal Link Dist (ft)		644			697			102			319	
Turn Bay Length (ft)				175		250						300
Base Capacity (vph)	854	1695		733	1075	961	824	1137			946	1101
Starvation Cap Reductn	0	0		0	0	0	0	0			0	0

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

Existing (2020) Conditions
Timing Plan: AM Peak Hour

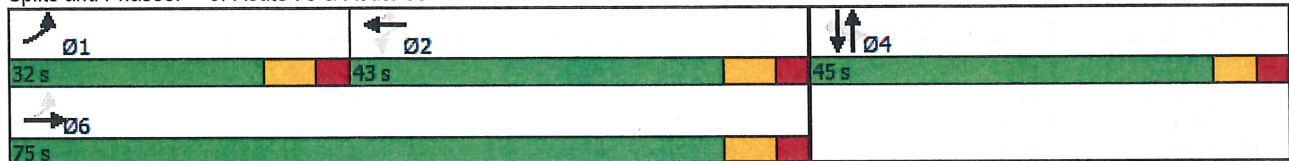
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0		0	0	0	0	0			0	0
Storage Cap Reductn	0	0		0	0	0	0	0			0	0
Reduced v/c Ratio	0.60	0.07		0.00	0.19	0.09	0.01	0.05			0.07	0.29

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 62.3
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 14.9
 Intersection Capacity Utilization 65.9%
 Analysis Period (min) 15

Intersection LOS: B
ICU Level of Service C

Splits and Phases: 5: Route 79 & Route 55



Sheetz - Route 79 - Warren County, VA
1: Apple Mountain Road & Bus Stop Driveway

Existing (2020) Conditions
Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh 0.1

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	Y			4	4	
Traffic Vol, veh/h	1	1	1	154	97	1
Future Vol, veh/h	1	1	1	154	97	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	10	10	10	2	2	10
Mvmt Flow	1	1	1	171	108	1

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	282	109	109	0	-	0
Stage 1	109	-	-	-	-	-
Stage 2	173	-	-	-	-	-
Critical Hdwy	6.5	6.3	4.2	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.39	2.29	-	-	-
Pot Cap-1 Maneuver	691	923	1433	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	838	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	690	923	1433	-	-	-
Mov Cap-2 Maneuver	690	-	-	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	838	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	9.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h)	1433	-	790	-	-
HCM Lane V/C Ratio	0.001	-	0.003	-	-
HCM Control Delay (s)	7.5	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Sheetz - Route 79 - Warren County, VA

Existing (2020) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	740	1	43	128	111	0	0	62	35
Future Volume (vph)	0	0	0	740	1	43	128	111	0	0	62	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.3	5.3		7.2			7.2	
Lane Util. Factor					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.95	
Flt Protected					0.95	1.00		0.97			1.00	
Satd. Flow (prot)					1774	1583		1814			1772	
Flt Permitted					0.95	1.00		0.78			1.00	
Satd. Flow (perm)					1774	1583		1445			1772	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	796	1	46	138	119	0	0	67	38
RTOR Reduction (vph)	0	0	0	0	0	20	0	0	0	0	18	0
Lane Group Flow (vph)	0	0	0	0	797	26	0	257	0	0	87	0
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		5	2			6	
Permitted Phases				4		4	2					
Actuated Green, G (s)					51.1	51.1		26.4			26.4	
Effective Green, g (s)					51.1	51.1		26.4			26.4	
Actuated g/C Ratio					0.57	0.57		0.29			0.29	
Clearance Time (s)					5.3	5.3		7.2			7.2	
Vehicle Extension (s)					3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)					1007	898		423			519	
v/s Ratio Prot											0.05	
v/s Ratio Perm					0.45	0.02		0.18				
v/c Ratio					0.79	0.03		0.61			0.17	
Uniform Delay, d1					15.3	8.5		27.3			23.6	
Progression Factor					1.00	1.00		0.79			1.00	
Incremental Delay, d2					6.4	0.1		2.2			0.2	
Delay (s)					21.6	8.6		23.9			23.8	
Level of Service					C	A		C			C	
Approach Delay (s)		0.0			20.9			23.9			23.8	
Approach LOS		A			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			21.8		HCM 2000 Level of Service						C	
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					19.7		
Intersection Capacity Utilization			71.1%		ICU Level of Service					C		
Analysis Period (min)			15									
c Critical Lane Group												

Sheetz - Route 79 - Warren County, VA

Existing (2020) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	740	1	43	128	111	0	0	62	35
Future Volume (vph)	0	0	0	740	1	43	128	111	0	0	62	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		300	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1773	1583	0	1814	0	0	1771	0
Flt Permitted					0.952			0.776				
Satd. Flow (perm)	0	0	0	0	1773	1583	0	1445	0	0	1771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						138						25
Link Speed (mph)		35			40			35			35	
Link Distance (ft)		1108			857			695			393	
Travel Time (s)		21.6			14.6			13.5			7.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	797	46	0	257	0	0	105	0
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		5	2			6	
Permitted Phases				4		4	2					
Detector Phase				4	4	4	5	2			6	
Switch Phase												
Minimum Initial (s)				8.0	8.0	8.0	6.0	6.0			6.0	
Minimum Split (s)				18.0	18.0	18.0	14.0	18.0			15.0	
Total Split (s)				55.0	55.0	55.0	20.0	35.0			15.0	
Total Split (%)				61.1%	61.1%	61.1%	22.2%	38.9%			16.7%	
Yellow Time (s)				4.0	4.0	4.0	4.7	4.7			4.7	
All-Red Time (s)				1.3	1.3	1.3	2.5	2.5			2.5	
Lost Time Adjust (s)					0.0	0.0		0.0			0.0	
Total Lost Time (s)					5.3	5.3		7.2			7.2	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				C-Min	C-Min	C-Min	None	None			None	
Act Effct Green (s)					51.1	51.1		26.4			23.4	
Actuated g/C Ratio					0.57	0.57		0.29			0.26	
v/c Ratio					0.79	0.05		0.61			0.22	
Control Delay					23.3	0.1		27.5			18.8	
Queue Delay					0.0	0.0		0.0			0.0	
Total Delay					23.3	0.1		27.5			18.8	
LOS					C	A		C			B	
Approach Delay					22.1			27.5			18.8	
Approach LOS					C			C			B	
Queue Length 50th (ft)					346	0		131			33	
Queue Length 95th (ft)					#528	0		219			72	
Internal Link Dist (ft)		1028			777			615			313	
Turn Bay Length (ft)						300						
Base Capacity (vph)					1006	957		446			486	
Starvation Cap Reductn					0	0		0			0	

Sheetz - Route 79 - Warren County, VA

Existing (2020) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn					0	0		0			0	
Storage Cap Reductn					0	0		0			0	
Reduced v/c Ratio					0.79	0.05		0.58			0.22	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 40 (44%), Referenced to phase 4:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 22.9

Intersection LOS: C

Intersection Capacity Utilization 71.1%

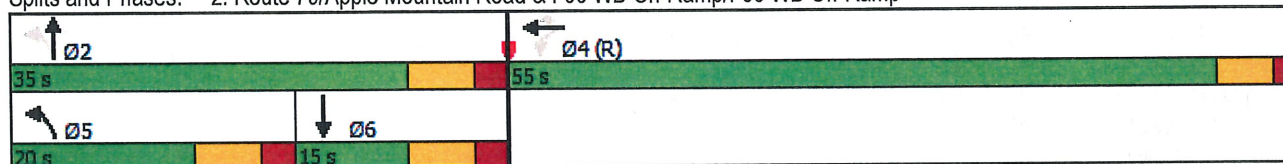
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp



Sheetz - Route 79 - Warren County, VA
3: Route 79 & I-66 EB Off-Ramp

Existing (2020) Conditions
Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh 15.3

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	18	261	0	221	802	0
Future Vol, veh/h	18	261	0	221	802	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	20	290	0	246	891	0

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	1137	891	-	0	-	0
Stage 1	891	-	-	-	-	-
Stage 2	246	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	223	341	0	-	-	0
Stage 1	401	-	0	-	-	0
Stage 2	795	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	223	341	-	-	-	-
Mov Cap-2 Maneuver	223	-	-	-	-	-
Stage 1	401	-	-	-	-	-
Stage 2	795	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	71.5	0	0
HCM LOS	F		

Minor Lane/Major Mvmt NBT EBLn1 SBT

Capacity (veh/h)	-	330	-
HCM Lane V/C Ratio	-	0.939	-
HCM Control Delay (s)	-	71.5	-
HCM Lane LOS	-	F	-
HCM 95th %tile Q(veh)	-	9.6	-

Sheetz - Route 79 - Warren County, VA
4: Route 79 & I-66 EB On-Ramp

Existing (2020) Conditions
Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	221	115	71	992
Future Volume (Veh/h)	0	0	221	115	71	992
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	246	128	79	1102
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)			399			839
pX, platoon unblocked	0.90	0.90			0.90	
vC, conflicting volume	1570	310			246	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1578	175			104	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			94	
cM capacity (veh/h)	102	780			1336	
Direction, Lane #	NB 1	SB 1				
Volume Total	374	1181				
Volume Left	0	79				
Volume Right	128	0				
cSH	1700	1336				
Volume to Capacity	0.22	0.06				
Queue Length 95th (ft)	0	5				
Control Delay (s)	0.0	1.8				
Lane LOS		A				
Approach Delay (s)	0.0	1.8				
Approach LOS						
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			81.4%	ICU Level of Service		D
Analysis Period (min)			15			

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

Existing (2020) Conditions
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	129	35	2	176	74	30	29	3	89	32	871
Future Volume (vph)	233	129	35	2	176	74	30	29	3	89	32	871
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1770	1803		1770	1863	1583	1770	1838			1796	1583
Flt Permitted	0.35	1.00		0.65	1.00	1.00	0.67	1.00			0.77	1.00
Satd. Flow (perm)	655	1803		1203	1863	1583	1255	1838			1440	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	251	139	38	2	189	80	32	31	3	96	34	937
RTOR Reduction (vph)	0	11	0	0	0	69	0	2	0	0	0	318
Lane Group Flow (vph)	251	166	0	2	189	11	32	32	0	0	130	619
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		4
Actuated Green, G (s)	31.9	31.9		12.3	12.3	12.3	42.7	42.7			42.7	42.7
Effective Green, g (s)	31.9	31.9		12.3	12.3	12.3	42.7	42.7			42.7	42.7
Actuated g/C Ratio	0.35	0.35		0.14	0.14	0.14	0.47	0.47			0.47	0.47
Clearance Time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	375	639		164	254	216	595	872			683	751
v/s Ratio Prot	c0.09	0.09			0.10			0.02				
v/s Ratio Perm	c0.15			0.00		0.01	0.03				0.09	c0.39
v/c Ratio	0.67	0.26		0.01	0.74	0.05	0.05	0.04			0.19	0.82
Uniform Delay, d1	22.4	20.7		33.6	37.3	33.8	12.8	12.7			13.7	20.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			0.83	1.83
Incremental Delay, d2	4.5	0.2		0.0	11.2	0.1	0.2	0.1			0.5	8.6
Delay (s)	26.9	20.9		33.6	48.5	33.9	12.9	12.7			11.9	45.9
Level of Service	C	C		C	D	C	B	B			B	D
Approach Delay (s)		24.4			44.1			12.8			41.8	
Approach LOS		C			D			B			D	
Intersection Summary												
HCM 2000 Control Delay			37.0			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			23.4			
Intersection Capacity Utilization			90.5%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

Existing (2020) Conditions
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	129	35	2	176	74	30	29	3	89	32	871
Future Volume (vph)	233	129	35	2	176	74	30	29	3	89	32	871
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	175		250	0		0	0		300
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	1803	0	1770	1863	1583	1770	1839	0	0	1796	1583
Flt Permitted	0.352			0.646			0.674				0.773	
Satd. Flow (perm)	656	1803	0	1203	1863	1583	1255	1839	0	0	1440	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17				150		3				606
Link Speed (mph)		45			45			25			35	
Link Distance (ft)		728			663			182			399	
Travel Time (s)		11.0			10.0			5.0			7.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	251	177	0	2	189	80	32	34	0	0	130	937
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		4
Detector Phase	1	6		2	2	2	4	4		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	9.9		9.9	9.9	9.9	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	14.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Total Split (s)	19.0	40.0		21.0	21.0	21.0	50.0	50.0		50.0	50.0	50.0
Total Split (%)	21.1%	44.4%		23.3%	23.3%	23.3%	55.6%	55.6%		55.6%	55.6%	55.6%
Yellow Time (s)	4.8	4.8		4.8	4.8	4.8	4.1	4.1		4.1	4.1	4.1
All-Red Time (s)	3.2	3.2		3.2	3.2	3.2	3.3	3.3		3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4		7.4	7.4	7.4
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	None		None	None	None	C-Min	C-Min		C-Min	C-Min	C-Min
Act Effect Green (s)	31.9	31.9		12.3	12.3	12.3	42.7	42.7		42.7	42.7	42.7
Actuated g/C Ratio	0.35	0.35		0.14	0.14	0.14	0.47	0.47		0.47	0.47	0.47
v/c Ratio	0.67	0.27		0.01	0.74	0.23	0.05	0.04		0.19	0.88	0.88
Control Delay	32.0	19.8		33.5	56.0	1.8	13.5	12.3		12.4	22.8	22.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	32.0	19.8		33.5	56.0	1.8	13.5	12.3		12.4	22.8	22.8
LOS	C	B		C	E	A	B	B		B	C	C
Approach Delay		26.9			39.9			12.9			21.6	
Approach LOS		C			D			B			C	
Queue Length 50th (ft)	102	61		1	104	0	10	10		57	391	
Queue Length 95th (ft)	#175	114		7	#197	3	25	25		m58	#536	
Internal Link Dist (ft)		648			-583			102			319	
Turn Bay Length (ft)				175		250						300
Base Capacity (vph)	377	664		173	269	356	605	887		693	1076	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

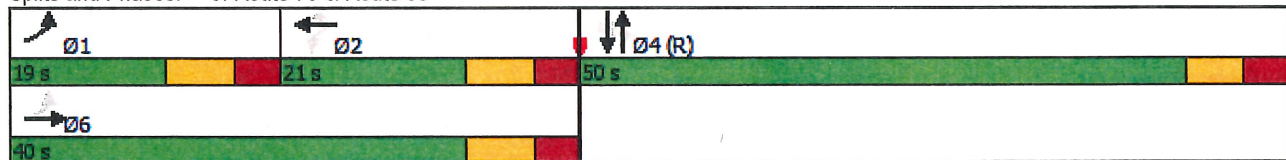
Existing (2020) Conditions
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0		0	0	0	0	0			0	0
Storage Cap Reductn	0	0		0	0	0	0	0			0	0
Reduced v/c Ratio	0.67	0.27		0.01	0.70	0.22	0.05	0.04			0.19	0.87

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 4:NBSB, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 25.2
 Intersection Capacity Utilization 90.5%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Route 79 & Route 55



Sheetz - Route 79 - Warren County, VA
1: Apple Mountain Road & Bus Stop Driveway

No-Build (2022) Conditions
Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	17	3	56	169	27
Future Vol, veh/h	13	17	3	56	169	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	10	10	10	2	2	10
Mvmt Flow	14	19	3	62	188	30

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	271	203	218	0	-	0
Stage 1	203	-	-	-	-	-
Stage 2	68	-	-	-	-	-
Critical Hdwy	6.5	6.3	4.2	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.39	2.29	-	-	-
Pot Cap-1 Maneuver	702	818	1305	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	935	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	701	818	1305	-	-	-
Mov Cap-2 Maneuver	701	-	-	-	-	-
Stage 1	810	-	-	-	-	-
Stage 2	935	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1305	-	763	-	-
HCM Lane V/C Ratio	0.003	-	0.044	-	-
HCM Control Delay (s)	7.8	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Sheetz - Route 79 - Warren County, VA

No-Build (2022) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	185	1	6	108	53	0	0	166	20
Future Volume (vph)	0	0	0	185	1	6	108	53	0	0	166	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.3	5.3		7.2			7.2	
Lane Util. Factor					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.99	
Flt Protected					0.95	1.00		0.97			1.00	
Satd. Flow (prot)					1774	1583		1802			1836	
Flt Permitted					0.95	1.00		0.68			1.00	
Satd. Flow (perm)					1774	1583		1264			1836	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	203	1	7	119	58	0	0	182	22
RTOR Reduction (vph)	0	0	0	0	0	5	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	204	2	0	177	0	0	200	0
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		5	2			6	
Permitted Phases				4		4	2					
Actuated Green, G (s)					9.8	9.8		14.4			14.4	
Effective Green, g (s)					9.8	9.8		14.4			14.4	
Actuated g/C Ratio					0.27	0.27		0.39			0.39	
Clearance Time (s)					5.3	5.3		7.2			7.2	
Vehicle Extension (s)					3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)					473	422		495			720	
v/s Ratio Prot											0.11	
v/s Ratio Perm					0.11	0.00		c0.14				
v/c Ratio					0.43	0.00		0.36			0.28	
Uniform Delay, d1					11.1	9.9		7.9			7.6	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.4			0.2	
Delay (s)					11.8	9.9		8.3			7.8	
Level of Service					B	A		A			A	
Approach Delay (s)		0.0			11.7			8.3			7.8	
Approach LOS		A			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.4				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			36.7				Sum of lost time (s)		19.7			
Intersection Capacity Utilization			45.4%				ICU Level of Service		A			
Analysis Period (min)			15									
c Critical Lane Group												

Sheetz - Route 79 - Warren County, VA

No-Build (2022) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	185	1	6	108	53	0	0	166	20
Future Volume (vph)	0	0	0	185	1	6	108	53	0	0	166	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		300	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1775	1583	0	1801	0	0	1835	0
Flt Permitted					0.953			0.678				
Satd. Flow (perm)	0	0	0	0	1775	1583	0	1263	0	0	1835	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						104						7
Link Speed (mph)		35			40			35			35	
Link Distance (ft)		1108			857			695			405	
Travel Time (s)		21.6			14.6			13.5			7.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	204	7	0	177	0	0	204	0
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		5	2			6	
Permitted Phases				4		4	2					
Detector Phase				4	4	4	5	2			6	
Switch Phase												
Minimum Initial (s)				8.0	8.0	8.0	6.0	6.0			6.0	
Minimum Split (s)				18.0	18.0	18.0	14.0	18.0			15.0	
Total Split (s)				40.0	40.0	40.0	14.0	80.0			66.0	
Total Split (%)				33.3%	33.3%	33.3%	11.7%	66.7%			55.0%	
Yellow Time (s)				4.0	4.0	4.0	4.7	4.7			4.7	
All-Red Time (s)				1.3	1.3	1.3	2.5	2.5			2.5	
Lost Time Adjust (s)					0.0	0.0		0.0			0.0	
Total Lost Time (s)					5.3	5.3		7.2			7.2	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None	None	None	Min			Min	
Act Effct Green (s)					9.8	9.8		14.4			14.4	
Actuated g/C Ratio					0.27	0.27		0.39			0.39	
v/c Ratio					0.43	0.01		0.36			0.28	
Control Delay					14.2	0.0		11.1			9.2	
Queue Delay					0.0	0.0		0.0			0.0	
Total Delay					14.2	0.0		11.1			9.2	
LOS					B	A		B			A	
Approach Delay					13.7			11.1			9.2	
Approach LOS					B			B			A	
Queue Length 50th (ft)					28	0		23			24	
Queue Length 95th (ft)					79	0		62			62	
Internal Link Dist (ft)		1028			777			615			325	
Turn Bay Length (ft)						300						
Base Capacity (vph)					1654	1482		1263			1835	
Starvation Cap Reductn					0	0		0			0	

Sheetz - Route 79 - Warren County, VA

No-Build (2022) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn					0	0		0			0	
Storage Cap Reductn					0	0		0			0	
Reduced v/c Ratio					0.12	0.00		0.14			0.11	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 36.8

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 11.4

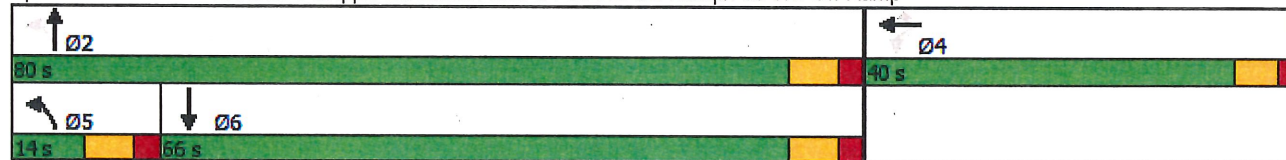
Intersection Capacity Utilization 45.4%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service A

Splits and Phases: 2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp



Sheetz - Route 79 - Warren County, VA
3: Route 79 & I-66 EB Off-Ramp

No-Build (2022) Conditions
Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh 2.1

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	10	97	0	151	351	0
Future Vol, veh/h	10	97	0	151	351	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	11	108	0	168	390	0

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	558	390	-	0	-	0
Stage 1	390	-	-	-	-	-
Stage 2	168	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	491	658	0	-	-	0
Stage 1	684	-	0	-	-	0
Stage 2	862	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	491	658	-	-	-	-
Mov Cap-2 Maneuver	491	-	-	-	-	-
Stage 1	684	-	-	-	-	-
Stage 2	862	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	11.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt NBT EBLn1 SBT

Capacity (veh/h)	-	638	-
HCM Lane V/C Ratio	-	0.186	-
HCM Control Delay (s)	-	11.9	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.7	-

Sheetz - Route 79 - Warren County, VA
4: Route 79 & I-66 EB On-Ramp

No-Build (2022) Conditions
Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	151	470	78	370
Future Volume (Veh/h)	0	0	151	470	78	370
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	168	522	87	411
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			399			839
pX, platoon unblocked	0.83	0.83			0.83	
vC, conflicting volume	1014	429			168	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	915	212			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			94	
cM capacity (veh/h)	235	689			1349	
Direction, Lane #	NB 1	SB 1				
Volume Total	690	498				
Volume Left	0	87				
Volume Right	522	0				
cSH	1700	1349				
Volume to Capacity	0.41	0.06				
Queue Length 95th (ft)	0	5				
Control Delay (s)	0.0	1.9				
Lane LOS		A				
Approach Delay (s)	0.0	1.9				
Approach LOS						
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			67.3%	ICU Level of Service		C
Analysis Period (min)			15			

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

No-Build (2022) Conditions

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	493	70	44	1	200	81	5	47	6	31	33	306
Future Volume (vph)	493	70	44	1	200	81	5	47	6	31	33	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (prot)	1770	1755		1770	1863	1583	1770	1833			1819	1583
Flt Permitted	0.40	1.00		0.68	1.00	1.00	0.71	1.00			0.82	1.00
Satd. Flow (perm)	739	1755		1264	1863	1583	1328	1833			1522	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	530	75	47	1	215	87	5	51	6	33	35	329
RTOR Reduction (vph)	0	17	0	0	0	68	0	4	0	0	0	282
Lane Group Flow (vph)	530	105	0	1	215	19	5	53	0	0	68	47
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		4
Actuated Green, G (s)	39.1	39.1		14.0	14.0	14.0	9.0	9.0			9.0	9.0
Effective Green, g (s)	39.1	39.1		14.0	14.0	14.0	9.0	9.0			9.0	9.0
Actuated g/C Ratio	0.62	0.62		0.22	0.22	0.22	0.14	0.14			0.14	0.14
Clearance Time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	732	1080		278	410	349	188	259			215	224
v/s Ratio Prot	c0.19	0.06			0.12			0.03				
v/s Ratio Perm	c0.25			0.00		0.01	0.00				c0.04	0.03
v/c Ratio	0.72	0.10		0.00	0.52	0.05	0.03	0.20			0.32	0.21
Uniform Delay, d1	7.6	5.0		19.3	21.8	19.5	23.5	24.1			24.5	24.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	3.6	0.0		0.0	1.2	0.1	0.1	0.4			0.8	0.5
Delay (s)	11.2	5.0		19.3	23.0	19.6	23.5	24.5			25.3	24.6
Level of Service	B	A		B	C	B	C	C			C	C
Approach Delay (s)		10.0			22.0			24.4			24.7	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			17.3			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			63.5			Sum of lost time (s)			23.4			
Intersection Capacity Utilization			67.5%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

No-Build (2022) Conditions
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	493	70	44	1	200	81	5	47	6	31	33	306
Future Volume (vph)	493	70	44	1	200	81	5	47	6	31	33	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	175		250	0		0	0		300
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	1755	0	1770	1863	1583	1770	1833	0	0	1818	1583
Flt Permitted	0.397			0.679			0.713				0.817	
Satd. Flow (perm)	740	1755	0	1265	1863	1583	1328	1833	0	0	1522	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43				113		5				329
Link Speed (mph)		55			55			35			35	
Link Distance (ft)		724			777			182			399	
Travel Time (s)		9.0			9.6			3.5			7.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	530	122	0	1	215	87	5	57	0	0	68	329
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		4
Detector Phase	1	6		2	2	2	4	4		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	14.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Total Split (s)	32.0	75.0		43.0	43.0	43.0	45.0	45.0		45.0	45.0	45.0
Total Split (%)	26.7%	62.5%		35.8%	35.8%	35.8%	37.5%	37.5%		37.5%	37.5%	37.5%
Yellow Time (s)	4.8	4.8		4.8	4.8	4.8	4.1	4.1		4.1	4.1	4.1
All-Red Time (s)	3.2	3.2		3.2	3.2	3.2	3.3	3.3		3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)	39.1	39.1		13.8	13.8	13.8	9.0	9.0			9.0	9.0
Actuated g/C Ratio	0.61	0.61		0.22	0.22	0.22	0.14	0.14			0.14	0.14
v/c Ratio	0.73	0.11		0.00	0.54	0.20	0.03	0.22			0.32	0.65
Control Delay	13.5	4.0		22.0	29.1	4.6	26.8	26.8			31.1	10.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	13.5	4.0		22.0	29.1	4.6	26.8	26.8			31.1	10.6
LOS	B	A		C	C	A	C	C			C	B
Approach Delay		11.7			22.0			26.8			14.1	
Approach LOS		B			C			C			B	
Queue Length 50th (ft)	94	10		0	72	0	2	18			23	0
Queue Length 95th (ft)	196	33		4	161	23	11	55			67	68
Internal Link Dist (ft)		644			697			102			319	
Turn Bay Length (ft)				175		250						300
Base Capacity (vph)	850	1687		711	1048	939	802	1109			920	1086
Starvation Cap Reductn	0	0		0	0	0	0	0			0	0

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

No-Build (2022) Conditions
Timing Plan: AM Peak Hour

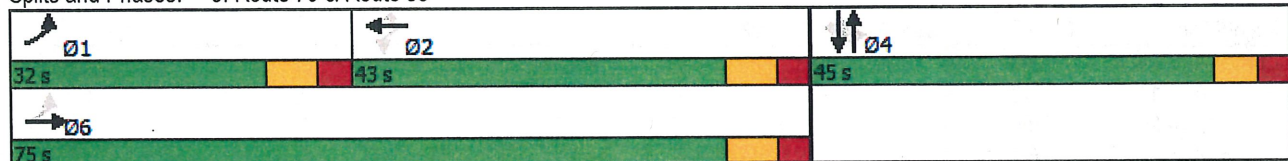
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0		0	0	0	0	0			0	0
Storage Cap Reductn	0	0		0	0	0	0	0			0	0
Reduced v/c Ratio	0.62	0.07		0.00	0.21	0.09	0.01	0.05			0.07	0.30

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 63.9
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 15.3
 Intersection Capacity Utilization 67.5%
 Analysis Period (min) 15

Intersection LOS: B
ICU Level of Service C

Splits and Phases: 5: Route 79 & Route 55



Sheetz - Route 79 - Warren County, VA
1: Apple Mountain Road & Bus Stop Driveway

No-Build (2022) Conditions
Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh 0.1

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations

Traffic Vol, veh/h	1	1	1	160	101	1
Future Vol, veh/h	1	1	1	160	101	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	10	10	10	2	2	10
Mvmt Flow	1	1	1	178	112	1

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	293	113	113	0	-	0
Stage 1	113	-	-	-	-	-
Stage 2	180	-	-	-	-	-
Critical Hdwy	6.5	6.3	4.2	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.39	2.29	-	-	-
Pot Cap-1 Maneuver	681	919	1428	-	-	-
Stage 1	892	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	680	919	1428	-	-	-
Mov Cap-2 Maneuver	680	-	-	-	-	-
Stage 1	891	-	-	-	-	-
Stage 2	832	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	9.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h)	1428	-	782	-	-
HCM Lane V/C Ratio	0.001	-	0.003	-	-
HCM Control Delay (s)	7.5	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Sheetz - Route 79 - Warren County, VA

No-Build (2022) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	770	1	45	133	115	0	0	65	36
Future Volume (vph)	0	0	0	770	1	45	133	115	0	0	65	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.3	5.3		7.2			7.2	
Lane Util. Factor					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.95	
Flt Protected					0.95	1.00		0.97			1.00	
Satd. Flow (prot)					1774	1583		1814			1773	
Flt Permitted					0.95	1.00		0.77			1.00	
Satd. Flow (perm)					1774	1583		1442			1773	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	828	1	48	143	124	0	0	70	39
RTOR Reduction (vph)	0	0	0	0	0	20	0	0	0	0	19	0
Lane Group Flow (vph)	0	0	0	0	829	28	0	267	0	0	90	0
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		5	2			6	
Permitted Phases				4		4	2					
Actuated Green, G (s)					52.1	52.1		25.4			25.4	
Effective Green, g (s)					52.1	52.1		25.4			25.4	
Actuated g/C Ratio					0.58	0.58		0.28			0.28	
Clearance Time (s)					5.3	5.3		7.2			7.2	
Vehicle Extension (s)					3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)					1026	916		406			500	
v/s Ratio Prot											0.05	
v/s Ratio Perm					0.47	0.02		0.19				
v/c Ratio					0.81	0.03		0.66			0.18	
Uniform Delay, d1					15.0	8.1		28.5			24.4	
Progression Factor					1.00	1.00		0.79			1.00	
Incremental Delay, d2					6.8	0.1		3.4			0.2	
Delay (s)					21.8	8.2		26.0			24.6	
Level of Service					C	A		C			C	
Approach Delay (s)		0.0			21.1			26.0			24.6	
Approach LOS		A			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			22.4		HCM 2000 Level of Service					C		
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					19.7		
Intersection Capacity Utilization			73.2%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												

Sheetz - Route 79 - Warren County, VA

No-Build (2022) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	770	1	45	133	115	0	0	65	36
Future Volume (vph)	0	0	0	770	1	45	133	115	0	0	65	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		300	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1773	1583	0	1814	0	0	1773	0
Flt Permitted					0.952			0.774				
Satd. Flow (perm)	0	0	0	0	1773	1583	0	1442	0	0	1773	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						138					26	
Link Speed (mph)		35			40			35			35	
Link Distance (ft)		1108			857			695			393	
Travel Time (s)		21.6			14.6			13.5			7.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	829	48	0	267	0	0	109	0
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		5	2			6	
Permitted Phases				4		4	2					
Detector Phase				4	4	4	5	2			6	
Switch Phase												
Minimum Initial (s)				8.0	8.0	8.0	6.0	6.0			6.0	
Minimum Split (s)				18.0	18.0	18.0	14.0	18.0			15.0	
Total Split (s)				56.0	56.0	56.0	14.0	34.0			20.0	
Total Split (%)				62.2%	62.2%	62.2%	15.6%	37.8%			22.2%	
Yellow Time (s)				4.0	4.0	4.0	4.7	4.7			4.7	
All-Red Time (s)				1.3	1.3	1.3	2.5	2.5			2.5	
Lost Time Adjust (s)					0.0	0.0		0.0			0.0	
Total Lost Time (s)					5.3	5.3		7.2			7.2	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				C-Min	C-Min	C-Min	None	None			None	
Act Effct Green (s)					52.1	52.1		25.4			22.6	
Actuated g/C Ratio					0.58	0.58		0.28			0.25	
v/c Ratio					0.81	0.05		0.66			0.23	
Control Delay					23.6	0.1		30.0			19.4	
Queue Delay					0.0	0.0		0.0			0.0	
Total Delay					23.6	0.1		30.0			19.4	
LOS					C	A		C			B	
Approach Delay					22.3			30.0			19.4	
Approach LOS					C			C			B	
Queue Length 50th (ft)					361	0		142			35	
Queue Length 95th (ft)					#574	0		m225			75	
Internal Link Dist (ft)		1028			777			615			313	
Turn Bay Length (ft)						300						
Base Capacity (vph)					1025	974		429			492	
Starvation Cap Reductn					0	0		0			0	

Sheetz - Route 79 - Warren County, VA

No-Build (2022) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn					0	0		0			0	
Storage Cap Reductn					0	0		0			0	
Reduced v/c Ratio					0.81	0.05		0.62			0.22	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 40 (44%), Referenced to phase 4:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 23.7

Intersection LOS: C

Intersection Capacity Utilization 73.2%

ICU Level of Service D

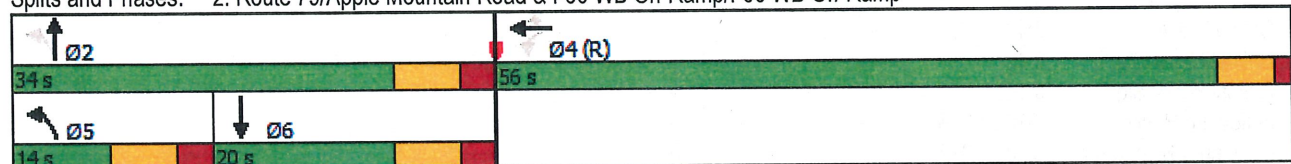
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp



Sheetz - Route 79 - Warren County, VA
3: Route 79 & I-66 EB Off-Ramp

No-Build (2022) Conditions

Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh	20.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	271	0	229	835	0
Future Vol, veh/h	19	271	0	229	835	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	21	301	0	254	928	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1182	928	0
Stage 1	928	-	-
Stage 2	254	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	210	325	0
Stage 1	385	-	0
Stage 2	788	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	210	325	-
Mov Cap-2 Maneuver	210	-	-
Stage 1	385	-	-
Stage 2	788	-	-

Approach	EB	NB	SB
HCM Control Delay, s	95.4	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 314	-
HCM Lane V/C Ratio	- 1.026	-
HCM Control Delay (s)	- 95.4	-
HCM Lane LOS	- F	-
HCM 95th %tile Q(veh)	- 11.5	-

Sheetz - Route 79 - Warren County, VA
4: Route 79 & I-66 EB On-Ramp

No-Build (2022) Conditions
Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	229	120	74	1032
Future Volume (Veh/h)	0	0	229	120	74	1032
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	254	133	82	1147
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)			399			839
pX, platoon unblocked	0.89	0.89			0.89	
vC, conflicting volume	1632	320			254	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1647	182			108	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			94	
cM capacity (veh/h)	92	770			1327	
Direction, Lane #	NB 1	SB 1				
Volume Total	387	1229				
Volume Left	0	82				
Volume Right	133	0				
cSH	1700	1327				
Volume to Capacity	0.23	0.06				
Queue Length 95th (ft)	0	5				
Control Delay (s)	0.0	1.9				
Lane LOS		A				
Approach Delay (s)	0.0	1.9				
Approach LOS						
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			84.4%	ICU Level of Service	E	
Analysis Period (min)			15			

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

No-Build (2022) Conditions
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	242	134	36	2	183	77	31	30	3	93	33	906
Future Volume (vph)	242	134	36	2	183	77	31	30	3	93	33	906
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1770	1803		1770	1863	1583	1770	1839			1796	1583
Flt Permitted	0.36	1.00		0.64	1.00	1.00	0.67	1.00			0.77	1.00
Satd. Flow (perm)	661	1803		1196	1863	1583	1249	1839			1432	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	260	144	39	2	197	83	33	32	3	100	35	974
RTOR Reduction (vph)	0	11	0	0	0	71	0	2	0	0	0	319
Lane Group Flow (vph)	260	172	0	2	197	12	33	33	0	0	135	655
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		4
Actuated Green, G (s)	32.7	32.7		13.4	13.4	13.4	41.9	41.9			41.9	41.9
Effective Green, g (s)	32.7	32.7		13.4	13.4	13.4	41.9	41.9			41.9	41.9
Actuated g/C Ratio	0.36	0.36		0.15	0.15	0.15	0.47	0.47			0.47	0.47
Clearance Time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	379	655		178	277	235	581	856			666	736
v/s Ratio Prot	c0.09	0.10			0.11			0.02				
v/s Ratio Perm	c0.16			0.00		0.01	0.03				0.09	c0.41
v/c Ratio	0.69	0.26		0.01	0.71	0.05	0.06	0.04			0.20	0.89
Uniform Delay, d1	22.0	20.2		32.7	36.5	32.9	13.2	13.1			14.2	22.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			0.84	1.77
Incremental Delay, d2	5.1	0.2		0.0	8.3	0.1	0.2	0.1			0.6	13.2
Delay (s)	27.1	20.4		32.7	44.8	32.9	13.4	13.2			12.5	52.0
Level of Service	C	C		C	D	C	B	B			B	D
Approach Delay (s)		24.3			41.2			13.3			47.2	
Approach LOS		C			D			B			D	
Intersection Summary												
HCM 2000 Control Delay			39.8			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			23.4			
Intersection Capacity Utilization			93.1%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

No-Build (2022) Conditions
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	242	134	36	2	183	77	31	30	3	93	33	906
Future Volume (vph)	242	134	36	2	183	77	31	30	3	93	33	906
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	175		250	0		0	0		300
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	1803	0	1770	1863	1583	1770	1839	0	0	1796	1583
Flt Permitted	0.355			0.642			0.671				0.769	
Satd. Flow (perm)	661	1803	0	1196	1863	1583	1250	1839	0	0	1432	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17				150		3				596
Link Speed (mph)		45			45			25			35	
Link Distance (ft)		728			663			182			399	
Travel Time (s)		11.0			10.0			5.0			7.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	260	183	0	2	197	83	33	35	0	0	135	974
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		4
Detector Phase	1	6		2	2	2	4	4		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	9.9		9.9	9.9	9.9	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	14.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Total Split (s)	19.0	42.0		23.0	23.0	23.0	48.0	48.0		48.0	48.0	48.0
Total Split (%)	21.1%	46.7%		25.6%	25.6%	25.6%	53.3%	53.3%		53.3%	53.3%	53.3%
Yellow Time (s)	4.8	4.8		4.8	4.8	4.8	4.1	4.1		4.1	4.1	4.1
All-Red Time (s)	3.2	3.2		3.2	3.2	3.2	3.3	3.3		3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4		7.4	7.4	7.4
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	None		None	None	None	C-Min	C-Min		C-Min	C-Min	C-Min
Act Effct Green (s)	32.7	32.7		13.4	13.4	13.4	41.9	41.9		41.9	41.9	41.9
Actuated g/C Ratio	0.36	0.36		0.15	0.15	0.15	0.47	0.47		0.47	0.47	0.47
v/c Ratio	0.69	0.28		0.01	0.71	0.23	0.06	0.04		0.20	0.92	0.92
Control Delay	31.8	19.2		31.5	50.8	2.0	14.3	13.2		13.2	28.7	28.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	31.8	19.2		31.5	50.8	2.0	14.3	13.2		13.2	28.7	28.7
LOS	C	B		C	D	A	B	B		B	C	C
Approach Delay		26.6			36.3			13.7		26.8		
Approach LOS		C			D			B		C		
Queue Length 50th (ft)	106	64		1	106	0	10	10		54	425	425
Queue Length 95th (ft)	171	113		7	178	5	27	27		m60	#597	#597
Internal Link Dist (ft)		648			583			102		319		
Turn Bay Length (ft)				175		250						300
Base Capacity (vph)	380	691		199	310	388	582	858		666	1055	1055
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

No-Build (2022) Conditions
Timing Plan: PM Peak Hour

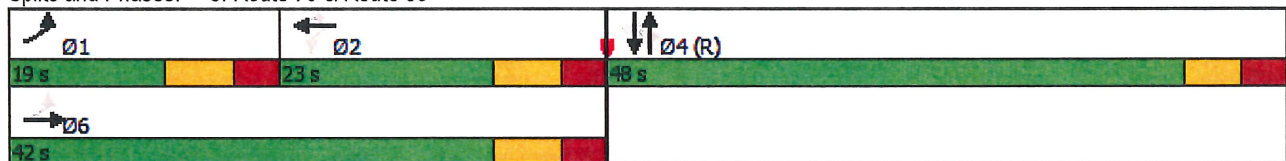
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0		0	0	0	0	0			0	0
Storage Cap Reductn	0	0		0	0	0	0	0			0	0
Reduced v/c Ratio	0.68	0.26		0.01	0.64	0.21	0.06	0.04			0.20	0.92

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 4:NBSB, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 27.7
 Intersection Capacity Utilization 93.1%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Intersection LOS: C
ICU Level of Service F

Splits and Phases: 5: Route 79 & Route 55



Sheetz - Route 79 - Warren County, VA
1: Apple Mountain Road & Proposed Site Driveway

Build (2022) Conditions
Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh 5.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	169	154	56	169	45
Future Vol, veh/h	30	169	154	56	169	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
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, %	10	10	10	2	2	10
Mvmt Flow	33	188	171	62	188	50

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	617	213	238	0	-	0
Stage 1	213	-	-	-	-	-
Stage 2	404	-	-	-	-	-
Critical Hdwy	6.5	6.3	4.2	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.39	2.29	-	-	-
Pot Cap-1 Maneuver	441	807	1283	-	-	-
Stage 1	804	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	380	807	1283	-	-	-
Mov Cap-2 Maneuver	380	-	-	-	-	-
Stage 1	693	-	-	-	-	-
Stage 2	657	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1283	-	380	807	-	-
HCM Lane V/C Ratio	0.133	-	0.088	0.233	-	-
HCM Control Delay (s)	8.2	0	15.4	10.8	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.3	0.9	-	-

Intersection

Int Delay, s/veh 5.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
----------	-----	-----	-----	-----	-----	-----

Lane Configurations						
Traffic Vol, veh/h	30	169	154	56	169	45
Future Vol, veh/h	30	169	154	56	169	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	10	10	10	2	2	10
Mvmt Flow	33	188	171	62	188	50

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	617	213	238	0	-	0
Stage 1	213	-	-	-	-	-
Stage 2	404	-	-	-	-	-
Critical Hdwy	6.5	6.3	4.2	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.39	2.29	-	-	-
Pot Cap-1 Maneuver	441	807	1283	-	-	-
Stage 1	804	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	382	807	1283	-	-	-
Mov Cap-2 Maneuver	382	-	-	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	657	-	-	-	-	-

Approach	EB	NB	SB
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HCM Control Delay, s	11.5	6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
-----------------------	-----	-----	-------	-------	-----	-----

Capacity (veh/h)	1283	-	382	807	-	-
HCM Lane V/C Ratio	0.133	-	0.087	0.233	-	-
HCM Control Delay (s)	8.2	-	15.3	10.8	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.3	0.9	-	-

Sheetz - Route 79 - Warren County, VA

Build (2022) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	185	1	56	108	154	0	0	267	71
Future Volume (vph)	0	0	0	185	1	56	108	154	0	0	267	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.3	5.3		7.2			7.2	
Lane Util. Factor					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.97	
Flt Protected					0.95	1.00		0.98			1.00	
Satd. Flow (prot)					1774	1583		1825			1810	
Flt Permitted					0.95	1.00		0.70			1.00	
Satd. Flow (perm)					1774	1583		1310			1810	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	203	1	62	119	169	0	0	293	78
RTOR Reduction (vph)	0	0	0	0	0	46	0	0	0	0	9	0
Lane Group Flow (vph)	0	0	0	0	204	16	0	288	0	0	362	0
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		5	2			6	
Permitted Phases				4		4	2					
Actuated Green, G (s)					11.1	11.1		20.6			20.6	
Effective Green, g (s)					11.1	11.1		20.6			20.6	
Actuated g/C Ratio					0.25	0.25		0.47			0.47	
Clearance Time (s)					5.3	5.3		7.2			7.2	
Vehicle Extension (s)					3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)					445	397		610			843	
v/s Ratio Prot											0.20	
v/s Ratio Perm					0.11	0.01		0.22				
v/c Ratio					0.46	0.04		0.47			0.43	
Uniform Delay, d1					14.0	12.5		8.1			7.9	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.8	0.0		0.6			0.4	
Delay (s)					14.8	12.6		8.7			8.2	
Level of Service					B	B		A			A	
Approach Delay (s)		0.0			14.2			8.7			8.2	
Approach LOS		A			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.1		HCM 2000 Level of Service						B	
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			44.2		Sum of lost time (s)					19.7		
Intersection Capacity Utilization			59.2%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												

Sheetz - Route 79 - Warren County, VA

Build (2022) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	185	1	56	108	154	0	0	267	71
Future Volume (vph)	0	0	0	185	1	56	108	154	0	0	267	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		300	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1775	1583	0	1825	0	0	1811	0
Flt Permitted					0.953			0.703				
Satd. Flow (perm)	0	0	0	0	1775	1583	0	1310	0	0	1811	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						104						16
Link Speed (mph)		35			40			35			35	
Link Distance (ft)		1108			857			695			405	
Travel Time (s)		21.6			14.6			13.5			7.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	204	62	0	288	0	0	371	0
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		5	2			6	
Permitted Phases				4		4	2					
Detector Phase				4	4	4	5	2			6	
Switch Phase												
Minimum Initial (s)				8.0	8.0	8.0	6.0	6.0			6.0	
Minimum Split (s)				18.0	18.0	18.0	14.0	18.0			15.0	
Total Split (s)				40.0	40.0	40.0	14.0	80.0			66.0	
Total Split (%)				33.3%	33.3%	33.3%	11.7%	66.7%			55.0%	
Yellow Time (s)				4.0	4.0	4.0	4.7	4.7			4.7	
All-Red Time (s)				1.3	1.3	1.3	2.5	2.5			2.5	
Lost Time Adjust (s)					0.0	0.0		0.0			0.0	
Total Lost Time (s)					5.3	5.3		7.2			7.2	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None	None	None	Min			Min	
Act Effct Green (s)					11.1	11.1		20.6			20.6	
Actuated g/C Ratio					0.25	0.25		0.46			0.46	
v/c Ratio					0.46	0.13		0.48			0.44	
Control Delay					18.8	2.4		11.8			9.9	
Queue Delay					0.0	0.0		0.0			0.0	
Total Delay					18.8	2.4		11.8			9.9	
LOS					B	A		B			A	
Approach Delay					14.9			11.8			9.9	
Approach LOS					B			B			A	
Queue Length 50th (ft)					38	0		44			52	
Queue Length 95th (ft)					112	11		110			122	
Internal Link Dist (ft)		1028			777			615			325	
Turn Bay Length (ft)						300						
Base Capacity (vph)					1424	1290		1310			1807	
Starvation Cap Reductn					0	0		0			0	

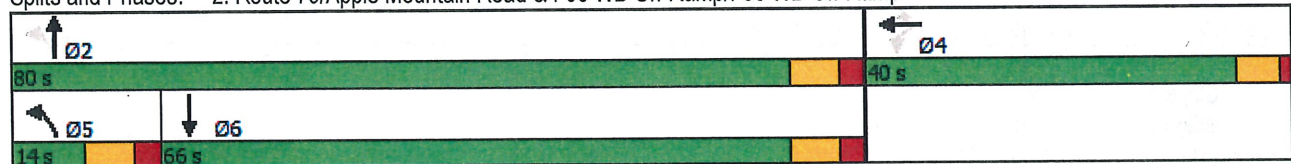
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn					0	0		0			0	
Storage Cap Reductn					0	0		0			0	
Reduced v/c Ratio					0.14	0.05		0.22			0.21	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 44.6
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 11.9
 Intersection Capacity Utilization 59.2%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp



Sheetz - Route 79 - Warren County, VA
 3: Route 79 & I-66 EB Off-Ramp

Build (2022) Conditions
 Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh	2.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	44	97	0	218	452	0
Future Vol, veh/h	44	97	0	218	452	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	49	108	0	242	502	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	744	502	-	0	-	0
Stage 1	502	-	-	-	-	-
Stage 2	242	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	382	569	0	-	-	0
Stage 1	608	-	0	-	-	0
Stage 2	798	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	382	569	-	-	-	-
Mov Cap-2 Maneuver	382	-	-	-	-	-
Stage 1	608	-	-	-	-	-
Stage 2	798	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 494	-
HCM Lane V/C Ratio	- 0.317	-
HCM Control Delay (s)	- 15.6	-
HCM Lane LOS	- C	-
HCM 95th %tile Q(veh)	- 1.4	-

Sheetz - Route 79 - Warren County, VA
3: Route 79 & I-66 EB Off-Ramp

Build (2022) Conditions - with Improvements
Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	97	0	218	452	0
Future Vol, veh/h	44	97	0	218	452	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	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	49	108	0	242	502	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	744	502	- 0 - 0
Stage 1	502	-	- - -
Stage 2	242	-	- - -
Critical Hdwy	6.42	6.22	- - -
Critical Hdwy Stg 1	5.42	-	- - -
Critical Hdwy Stg 2	5.42	-	- - -
Follow-up Hdwy	3.518	3.318	- - -
Pot Cap-1 Maneuver	382	569	0 - - 0
Stage 1	608	-	0 - - 0
Stage 2	798	-	0 - - 0
Platoon blocked, %			- -
Mov Cap-1 Maneuver	382	569	- - -
Mov Cap-2 Maneuver	382	-	- - -
Stage 1	608	-	- - -
Stage 2	798	-	- - -

Approach	EB	NB	SB
HCM Control Delay, s	13.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	-	382	569	-
HCM Lane V/C Ratio	-	0.128	0.189	-
HCM Control Delay (s)	-	15.8	12.8	-
HCM Lane LOS	-	C	B	-
HCM 95th %tile Q(veh)	-	0.4	0.7	-

Sheetz - Route 79 - Warren County, VA
4: Route 79 & I-66 EB On-Ramp

Build (2022) Conditions
Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	218	470	112	437
Future Volume (Veh/h)	0	0	218	470	112	437
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	242	522	124	486
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)			399			839
pX, platoon unblocked	0.81	0.81			0.81	
vC, conflicting volume	1237	503			242	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1176	270			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			91	
cM capacity (veh/h)	155	623			1316	
Direction, Lane #	NB 1	SB 1				
Volume Total	764	610				
Volume Left	0	124				
Volume Right	522	0				
cSH	1700	1316				
Volume to Capacity	0.45	0.09				
Queue Length 95th (ft)	0	8				
Control Delay (s)	0.0	2.5				
Lane LOS		A				
Approach Delay (s)	0.0	2.5				
Approach LOS						
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			76.2%	ICU Level of Service		D
Analysis Period (min)			15			

Sheetz - Route 79 - Warren County, VA
4: Route 79 & I-66 EB On-Ramp

Build (2022) Conditions - with Improvements

Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	218	470	112	437
Future Volume (Veh/h)	0	0	218	470	112	437
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	242	522	124	486
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)			399			839
pX, platoon unblocked	0.81	0.81			0.81	
vC, conflicting volume	1237	503			242	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1175	268			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			91	
cM capacity (veh/h)	155	624			1313	
Direction, Lane #	NB 1	SB 1	SB 2			
Volume Total	764	124	486			
Volume Left	0	124	0			
Volume Right	522	0	0			
cSH	1700	1313	1700			
Volume to Capacity	0.45	0.09	0.29			
Queue Length 95th (ft)	0	8	0			
Control Delay (s)	0.0	8.0	0.0			
Lane LOS		A				
Approach Delay (s)	0.0	1.6				
Approach LOS						
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			53.2%	ICU Level of Service		A
Analysis Period (min)			15			

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

Build (2022) Conditions
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	535	70	44	1	200	106	5	47	6	56	33	348
Future Volume (vph)	535	70	44	1	200	106	5	47	6	56	33	348
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.97	1.00
Satd. Flow (prot)	1770	1755		1770	1863	1583	1770	1833			1806	1583
Flt Permitted	0.41	1.00		0.68	1.00	1.00	0.70	1.00			0.77	1.00
Satd. Flow (perm)	759	1755		1264	1863	1583	1295	1833			1442	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	575	75	47	1	215	114	5	51	6	60	35	374
RTOR Reduction (vph)	0	18	0	0	0	89	0	4	0	0	0	315
Lane Group Flow (vph)	575	104	0	1	215	25	5	53	0	0	95	59
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		4
Actuated Green, G (s)	42.8	42.8		15.1	15.1	15.1	11.0	11.0			11.0	11.0
Effective Green, g (s)	42.8	42.8		15.1	15.1	15.1	11.0	11.0			11.0	11.0
Actuated g/C Ratio	0.62	0.62		0.22	0.22	0.22	0.16	0.16			0.16	0.16
Clearance Time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	757	1085		275	406	345	205	291			229	251
v/s Ratio Prot	c0.22	0.06			0.12			0.03				
v/s Ratio Perm	c0.25			0.00		0.02	0.00				c0.07	0.04
v/c Ratio	0.76	0.10		0.00	0.53	0.07	0.02	0.18			0.41	0.24
Uniform Delay, d1	8.4	5.4		21.2	23.9	21.5	24.6	25.2			26.2	25.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	4.4	0.0		0.0	1.3	0.1	0.0	0.3			1.2	0.5
Delay (s)	12.8	5.4		21.2	25.2	21.6	24.6	25.5			27.4	25.9
Level of Service	B	A		C	C	C	C	C			C	C
Approach Delay (s)		11.5			23.9			25.4			26.2	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			19.1			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			69.2			Sum of lost time (s)				23.4		
Intersection Capacity Utilization			71.2%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

Build (2022) Conditions
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	535	70	44	1	200	106	5	47	6	56	33	348
Future Volume (vph)	535	70	44	1	200	106	5	47	6	56	33	348
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	175		250	0		0	0		300
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	1755	0	1770	1863	1583	1770	1833	0	0	1805	1583
Flt Permitted	0.408			0.679			0.695				0.774	
Satd. Flow (perm)	760	1755	0	1265	1863	1583	1295	1833	0	0	1442	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		47				114		5				374
Link Speed (mph)		55			55			35			35	
Link Distance (ft)		724			777			182			399	
Travel Time (s)		9.0			9.6			3.5			7.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	575	122	0	1	215	114	5	57	0	0	95	374
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		4
Detector Phase	1	6		2	2	2	4	4		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	14.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Total Split (s)	49.0	86.0		37.0	37.0	37.0	34.0	34.0		34.0	34.0	34.0
Total Split (%)	40.8%	71.7%		30.8%	30.8%	30.8%	28.3%	28.3%		28.3%	28.3%	28.3%
Yellow Time (s)	4.8	4.8		4.8	4.8	4.8	4.1	4.1		4.1	4.1	4.1
All-Red Time (s)	3.2	3.2		3.2	3.2	3.2	3.3	3.3		3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4		7.4	7.4	7.4
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)	42.8	42.8		14.8	14.8	14.8	11.0	11.0		11.0	11.0	11.0
Actuated g/C Ratio	0.61	0.61		0.21	0.21	0.21	0.16	0.16		0.16	0.16	0.16
v/c Ratio	0.77	0.11		0.00	0.55	0.27	0.02	0.20		0.42	0.66	0.66
Control Delay	15.5	4.1		26.0	32.3	7.8	29.6	28.4		35.6	10.2	10.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	15.5	4.1		26.0	32.3	7.8	29.6	28.4		35.6	10.2	10.2
LOS	B	A		C	C	A	C	C		D	B	B
Approach Delay		13.5			23.8			28.5			15.3	
Approach LOS		B			C			C			B	
Queue Length 50th (ft)	117	11		0	78	0	2	19		35	0	0
Queue Length 95th (ft)	237	34		5	182	42	13	61		99	79	79
Internal Link Dist (ft)		644			697			102			319	
Turn Bay Length (ft)				175		250						300
Base Capacity (vph)	1132	1693		548	807	750	515	732		573	854	854
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

Build (2022) Conditions
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0		0	0	0	0	0			0	0
Storage Cap Reductn	0	0		0	0	0	0	0			0	0
Reduced v/c Ratio	0.51	0.07		0.00	0.27	0.15	0.01	0.08			0.17	0.44

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 69.9

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 16.8

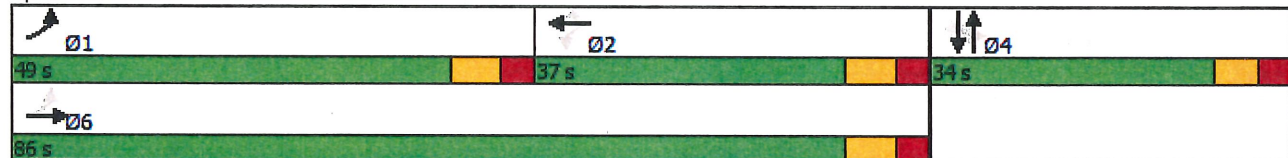
Intersection Capacity Utilization 71.2%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service C

Splits and Phases: 5: Route 79 & Route 55



Sheetz - Route 79 - Warren County, VA
 1: Apple Mountain Road & Proposed Site Driveway

Build (2022) Conditions
 Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh 4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	124	124	160	101	14
Future Vol, veh/h	14	124	124	160	101	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
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, %	10	10	10	2	2	10
Mvmt Flow	16	138	138	178	112	16

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	574	120	128
Stage 1	120	-	-
Stage 2	454	-	-
Critical Hdwy	6.5	6.3	4.2
Critical Hdwy Stg 1	5.5	-	-
Critical Hdwy Stg 2	5.5	-	-
Follow-up Hdwy	3.59	3.39	2.29
Pot Cap-1 Maneuver	467	910	1410
Stage 1	886	-	-
Stage 2	623	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	416	910	1410
Mov Cap-2 Maneuver	416	-	-
Stage 1	789	-	-
Stage 2	623	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	3.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1410	-	416	910	-	-
HCM Lane V/C Ratio	0.098	-	0.037	0.151	-	-
HCM Control Delay (s)	7.8	0	14	9.7	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	0.1	0.5	-	-

Intersection

Int Delay, s/veh 4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	124	124	160	101	14
Future Vol, veh/h	14	124	124	160	101	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	10	10	10	2	2	10
Mvmt Flow	16	138	138	178	112	16

Major/Minor

	Minor2	Major1	Major2
Conflicting Flow All	574	120	128
Stage 1	120	-	-
Stage 2	454	-	-
Critical Hdwy	6.5	6.3	4.2
Critical Hdwy Stg 1	5.5	-	-
Critical Hdwy Stg 2	5.5	-	-
Follow-up Hdwy	3.59	3.39	2.29
Pot Cap-1 Maneuver	467	910	1410
Stage 1	886	-	-
Stage 2	623	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	421	910	1410
Mov Cap-2 Maneuver	421	-	-
Stage 1	799	-	-
Stage 2	623	-	-

Approach

	EB	NB	SB
HCM Control Delay, s	10.1	3.4	0
HCM LOS	B		

Minor Lane/Major Mvmt

	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1410	-	421	910	-	-
HCM Lane V/C Ratio	0.098	-	0.037	0.151	-	-
HCM Control Delay (s)	7.8	-	13.9	9.7	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	0.1	0.5	-	-

Sheetz - Route 79 - Warren County, VA

Build (2022) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	770	1	86	133	198	0	0	148	77
Future Volume (vph)	0	0	0	770	1	86	133	198	0	0	148	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.3	5.3		7.2			7.2	
Lane Util. Factor					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.95	
Flt Protected					0.95	1.00		0.98			1.00	
Satd. Flow (prot)					1774	1583		1826			1776	
Flt Permitted					0.95	1.00		0.70			1.00	
Satd. Flow (perm)					1774	1583		1295			1776	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	828	1	92	143	213	0	0	159	83
RTOR Reduction (vph)	0	0	0	0	0	41	0	0	0	0	17	0
Lane Group Flow (vph)	0	0	0	0	829	51	0	356	0	0	225	0
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		5	2			6	
Permitted Phases				4		4	2					
Actuated Green, G (s)					49.7	49.7		27.8			27.8	
Effective Green, g (s)					49.7	49.7		27.8			27.8	
Actuated g/C Ratio					0.55	0.55		0.31			0.31	
Clearance Time (s)					5.3	5.3		7.2			7.2	
Vehicle Extension (s)					3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)					979	874		400			548	
v/s Ratio Prot											0.13	
v/s Ratio Perm					0.47	0.03		0.27				
v/c Ratio					0.85	0.06		0.89			0.41	
Uniform Delay, d1					16.9	9.3		29.6			24.6	
Progression Factor					1.00	1.00		0.82			1.00	
Incremental Delay, d2					9.0	0.1		19.0			0.5	
Delay (s)					25.9	9.4		43.2			25.1	
Level of Service					C	A		D			C	
Approach Delay (s)		0.0			24.3			43.2			25.1	
Approach LOS		A			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			28.9				HCM 2000 Level of Service		C			
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)		19.7			
Intersection Capacity Utilization			89.4%				ICU Level of Service		E			
Analysis Period (min)			15									
c Critical Lane Group												

Sheetz - Route 79 - Warren County, VA

Build (2022) Conditions

2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	770	1	86	133	198	0	0	148	77
Future Volume (vph)	0	0	0	770	1	86	133	198	0	0	148	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		300	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1773	1583	0	1825	0	0	1777	0
Flt Permitted					0.952			0.695				
Satd. Flow (perm)	0	0	0	0	1773	1583	0	1295	0	0	1777	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						138						25
Link Speed (mph)		35			40			35			35	
Link Distance (ft)		1108			857			695			393	
Travel Time (s)		21.6			14.6			13.5			7.7	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	829	92	0	356	0	0	242	0
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		5	2			6	
Permitted Phases				4		4	2					
Detector Phase				4	4	4	5	2			6	
Switch Phase												
Minimum Initial (s)				8.0	8.0	8.0	6.0	6.0			6.0	
Minimum Split (s)				18.0	18.0	18.0	14.0	18.0			15.0	
Total Split (s)				55.0	55.0	55.0	14.0	35.0			21.0	
Total Split (%)				61.1%	61.1%	61.1%	15.6%	38.9%			23.3%	
Yellow Time (s)				4.0	4.0	4.0	4.7	4.7			4.7	
All-Red Time (s)				1.3	1.3	1.3	2.5	2.5			2.5	
Lost Time Adjust (s)					0.0	0.0		0.0			0.0	
Total Lost Time (s)					5.3	5.3		7.2			7.2	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				C-Min	C-Min	C-Min	None	None			None	
Act Effct Green (s)					49.7	49.7		27.8			27.8	
Actuated g/C Ratio					0.55	0.55		0.31			0.31	
v/c Ratio					0.85	0.10		0.89			0.43	
Control Delay					27.2	0.8		48.8			24.9	
Queue Delay					0.0	0.0		0.0			0.0	
Total Delay					27.2	0.8		48.8			24.9	
LOS					C	A		D			C	
Approach Delay					24.6			48.8			24.9	
Approach LOS					C			D			C	
Queue Length 50th (ft)					371	0		205			97	
Queue Length 95th (ft)					#629	9		m#334			165	
Internal Link Dist (ft)		1028			777			615			313	
Turn Bay Length (ft)						300						
Base Capacity (vph)					979	935		400			566	
Starvation Cap Reductn					0	0		0			0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn					0	0		0			0	
Storage Cap Reductn					0	0		0			0	
Reduced v/c Ratio					0.85	0.10		0.89			0.43	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 40 (44%), Referenced to phase 4:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 30.3

Intersection LOS: C

Intersection Capacity Utilization 89.4%

ICU Level of Service E

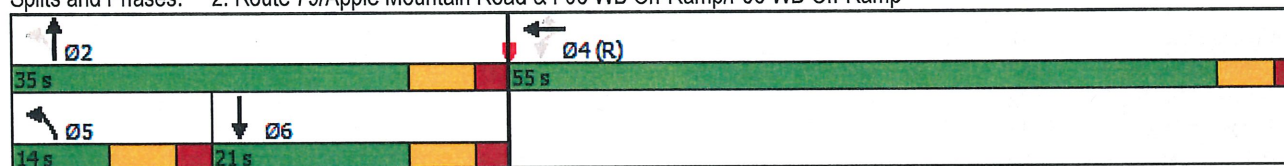
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Route 79/Apple Mountain Road & I-66 WB On-Ramp/I-66 WB Off-Ramp



Sheetz - Route 79 - Warren County, VA
3: Route 79 & I-66 EB Off-Ramp

Build (2022) Conditions
Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh 46.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	47	271	0	284	918	0
Future Vol, veh/h	47	271	0	284	918	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	52	301	0	316	1020	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1336	1020	-
Stage 1	1020	-	-
Stage 2	316	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	169	~ 287	0
Stage 1	348	-	0
Stage 2	739	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	169	~ 287	-
Mov Cap-2 Maneuver	169	-	-
Stage 1	348	-	-
Stage 2	739	-	-

Approach	EB	NB	SB
HCM Control Delay, s	222.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 260	-
HCM Lane V/C Ratio	- 1.359	-
HCM Control Delay (s)	- 222.1	-
HCM Lane LOS	- F	-
HCM 95th %tile Q(veh)	- 18.7	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Sheetz - Route 79 - Warren County, VA
3: Route 79 & I-66 EB Off-Ramp

Build (2022) Conditions - with Improvements
Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh 20.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗		↑	↑	
Traffic Vol, veh/h	47	271	0	284	918	0
Future Vol, veh/h	47	271	0	284	918	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	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	52	301	0	316	1020	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1336	1020	-
Stage 1	1020	-	-
Stage 2	316	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	169 ~ 287	0	-
Stage 1	348	0	-
Stage 2	739	0	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	169 ~ 287	-	-
Mov Cap-2 Maneuver	169	-	-
Stage 1	348	-	-
Stage 2	739	-	-

Approach	EB	NB	SB
HCM Control Delay, s	95.9	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	-	169	287	-
HCM Lane V/C Ratio	-	0.309	1.049	-
HCM Control Delay (s)	-	35.6	106.4	-
HCM Lane LOS	-	E	F	-
HCM 95th %tile Q(veh)	-	1.2	11.5	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Sheetz - Route 79 - Warren County, VA
4: Route 79 & I-66 EB On-Ramp

Build (2022) Conditions
Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	284	120	102	1087
Future Volume (Veh/h)	0	0	284	120	102	1087
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	316	133	113	1208
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)			399			839
pX, platoon unblocked	0.87	0.87			0.87	
vC, conflicting volume	1816	382			316	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1862	222			146	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			91	
cM capacity (veh/h)	64	715			1256	
Direction, Lane #	NB 1	SB 1				
Volume Total	449	1321				
Volume Left	0	113				
Volume Right	133	0				
cSH	1700	1256				
Volume to Capacity	0.26	0.09				
Queue Length 95th (ft)	0	7				
Control Delay (s)	0.0	3.0				
Lane LOS		A				
Approach Delay (s)	0.0	3.0				
Approach LOS						
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			91.8%	ICU Level of Service		F
Analysis Period (min)			15			

Sheetz - Route 79 - Warren County, VA
4: Route 79 & I-66 EB On-Ramp

Build (2022) Conditions - with Improvements

Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	284	120	102	1087
Future Volume (Veh/h)	0	0	284	120	102	1087
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	316	133	113	1208
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			399			839
pX, platoon unblocked	0.87	0.87			0.87	
vC, conflicting volume	1816	382			316	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1862	222			146	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			91	
cM capacity (veh/h)	64	715			1256	
Direction, Lane #	NB 1	SB 1	SB 2			
Volume Total	449	113	1208			
Volume Left	0	113	0			
Volume Right	133	0	0			
cSH	1700	1256	1700			
Volume to Capacity	0.26	0.09	0.71			
Queue Length 95th (ft)	0	7	0			
Control Delay (s)	0.0	8.2	0.0			
Lane LOS		A				
Approach Delay (s)	0.0	0.7				
Approach LOS						
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			60.5%		ICU Level of Service	B
Analysis Period (min)			15			

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

Build (2022) Conditions

Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	276	134	36	2	183	98	31	30	3	114	33	940
Future Volume (vph)	276	134	36	2	183	98	31	30	3	114	33	940
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1770	1803		1770	1863	1583	1770	1839			1793	1583
Flt Permitted	0.36	1.00		0.64	1.00	1.00	0.66	1.00			0.75	1.00
Satd. Flow (perm)	661	1803		1196	1863	1583	1223	1839			1397	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	297	144	39	2	197	105	33	32	3	123	35	1011
RTOR Reduction (vph)	0	11	0	0	0	89	0	2	0	0	0	318
Lane Group Flow (vph)	297	172	0	2	197	16	33	33	0	0	158	693
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		4
Actuated Green, G (s)	32.6	32.6		13.4	13.4	13.4	42.0	42.0			42.0	42.0
Effective Green, g (s)	32.6	32.6		13.4	13.4	13.4	42.0	42.0			42.0	42.0
Actuated g/C Ratio	0.36	0.36		0.15	0.15	0.15	0.47	0.47			0.47	0.47
Clearance Time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	377	653		178	277	235	570	858			651	738
v/s Ratio Prot	c0.10	0.10			0.11			0.02				
v/s Ratio Perm	c0.19			0.00		0.01	0.03				0.11	c0.44
v/c Ratio	0.79	0.26		0.01	0.71	0.07	0.06	0.04			0.24	0.94
Uniform Delay, d1	22.9	20.2		32.7	36.5	32.9	13.2	13.0			14.4	22.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			0.83	1.49
Incremental Delay, d2	10.4	0.2		0.0	8.3	0.1	0.2	0.1			0.7	18.4
Delay (s)	33.3	20.5		32.7	44.8	33.0	13.3	13.1			12.7	52.3
Level of Service	C	C		C	D	C	B	B			B	D
Approach Delay (s)		28.4			40.7			13.2			46.9	
Approach LOS		C			D			B			D	
Intersection Summary												
HCM 2000 Control Delay			40.5			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			23.4			
Intersection Capacity Utilization			95.2%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

Build (2022) Conditions
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	276	134	36	2	183	98	31	30	3	114	33	940
Future Volume (vph)	276	134	36	2	183	98	31	30	3	114	33	940
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	175		250	0		0	0		300
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	1803	0	1770	1863	1583	1770	1839	0	0	1794	1583
Flt Permitted	0.355			0.642			0.657				0.750	
Satd. Flow (perm)	661	1803	0	1196	1863	1583	1224	1839	0	0	1397	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17				150		3				596
Link Speed (mph)		45			45			25			35	
Link Distance (ft)		728			663			182			399	
Travel Time (s)		11.0			10.0			5.0			7.8	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	297	183	0	2	197	105	33	35	0	0	158	1011
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2		2	4			4		4
Detector Phase	1	6		2	2	2	4	4		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	9.9		9.9	9.9	9.9	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	14.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Total Split (s)	19.0	42.0		23.0	23.0	23.0	48.0	48.0		48.0	48.0	48.0
Total Split (%)	21.1%	46.7%		25.6%	25.6%	25.6%	53.3%	53.3%		53.3%	53.3%	53.3%
Yellow Time (s)	4.8	4.8		4.8	4.8	4.8	4.1	4.1		4.1	4.1	4.1
All-Red Time (s)	3.2	3.2		3.2	3.2	3.2	3.3	3.3		3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		8.0	8.0	8.0	7.4	7.4			7.4	7.4
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	Min		None	None	None	C-Min	C-Min		C-Min	C-Min	C-Min
Act Effect Green (s)	32.6	32.6		13.4	13.4	13.4	42.0	42.0			42.0	42.0
Actuated g/C Ratio	0.36	0.36		0.15	0.15	0.15	0.47	0.47			0.47	0.47
v/c Ratio	0.79	0.28		0.01	0.71	0.29	0.06	0.04			0.24	0.96
Control Delay	39.1	19.3		31.5	50.8	4.3	14.3	13.1			13.4	31.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	39.1	19.3		31.5	50.8	4.3	14.3	13.1			13.4	31.8
LOS	D	B		C	D	A	B	B			B	C
Approach Delay		31.5			34.6			13.7			29.3	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)	125	64		1	106	0	10	10			58	443
Queue Length 95th (ft)	#228	113		7	178	20	27	27			m71	m#616
Internal Link Dist (ft)		648			583			102			319	
Turn Bay Length (ft)				175		250						300
Base Capacity (vph)	377	691		199	310	388	571	859			652	1056
Starvation Cap Reductn	0	0		0	0	0	0	0			0	0

Sheetz - Route 79 - Warren County, VA
5: Route 79 & Route 55

Build (2022) Conditions
Timing Plan: PM Peak Hour

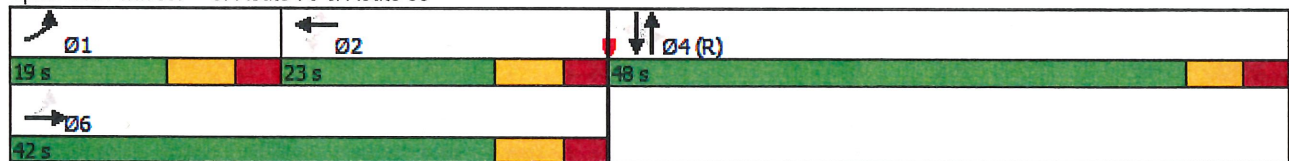
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0		0	0	0	0	0			0	0
Storage Cap Reductn	0	0		0	0	0	0	0			0	0
Reduced v/c Ratio	0.79	0.26		0.01	0.64	0.27	0.06	0.04			0.24	0.96

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 4:NBSB, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 30.1
Intersection Capacity Utilization 95.2%
Analysis Period (min) 15
Intersection LOS: C
ICU Level of Service F

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Route 79 & Route 55



VDOT TURN LANE WARRANT DIAGRAMS

Route 79 at I-66 Eastbound Ramps
Southbound Left-Turn Lane Warrant
Existing (2020) Volumes

F-62

WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAY

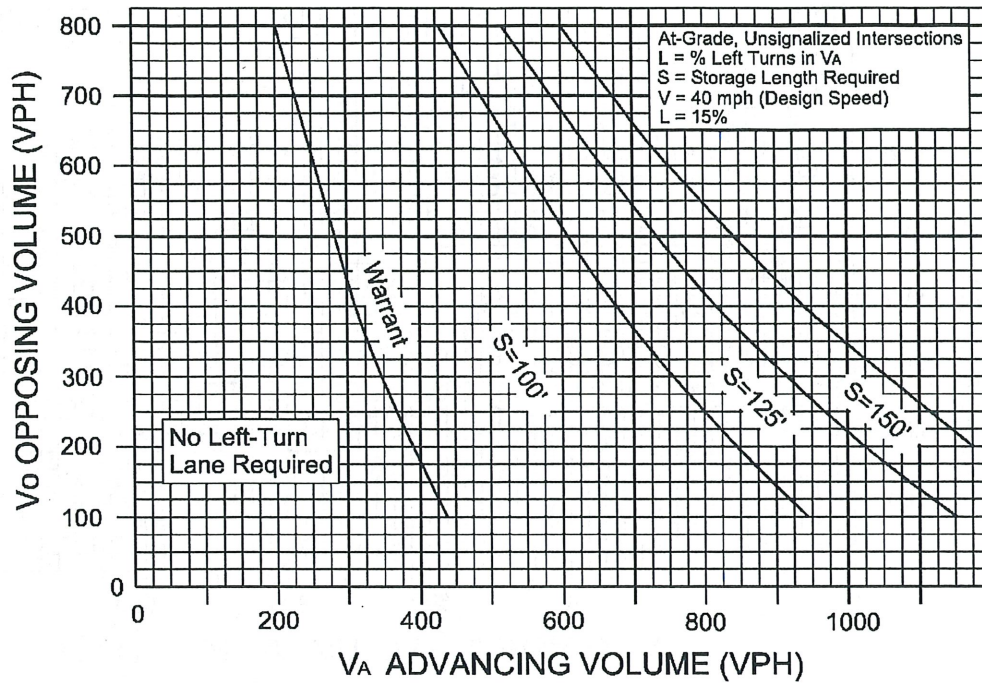
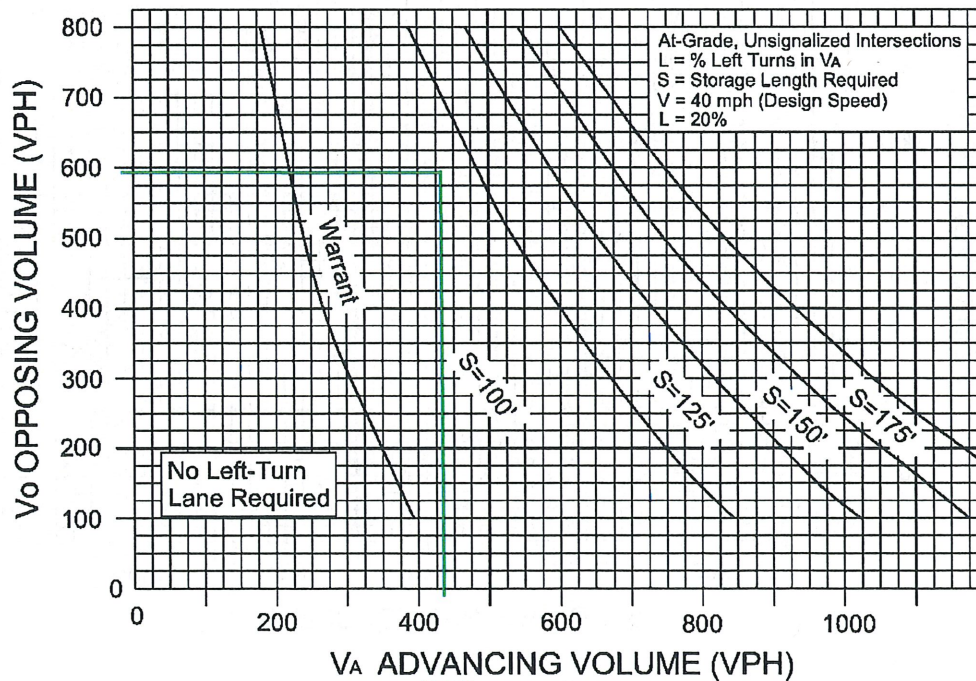


FIGURE 3-7



431

FIGURE 3-8

AM Peak 597

Route 79 at I-66 Eastbound Ramps
Southbound Left-Turn Lane Warrant
Existing (2022) Volumes

F-61

WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAY

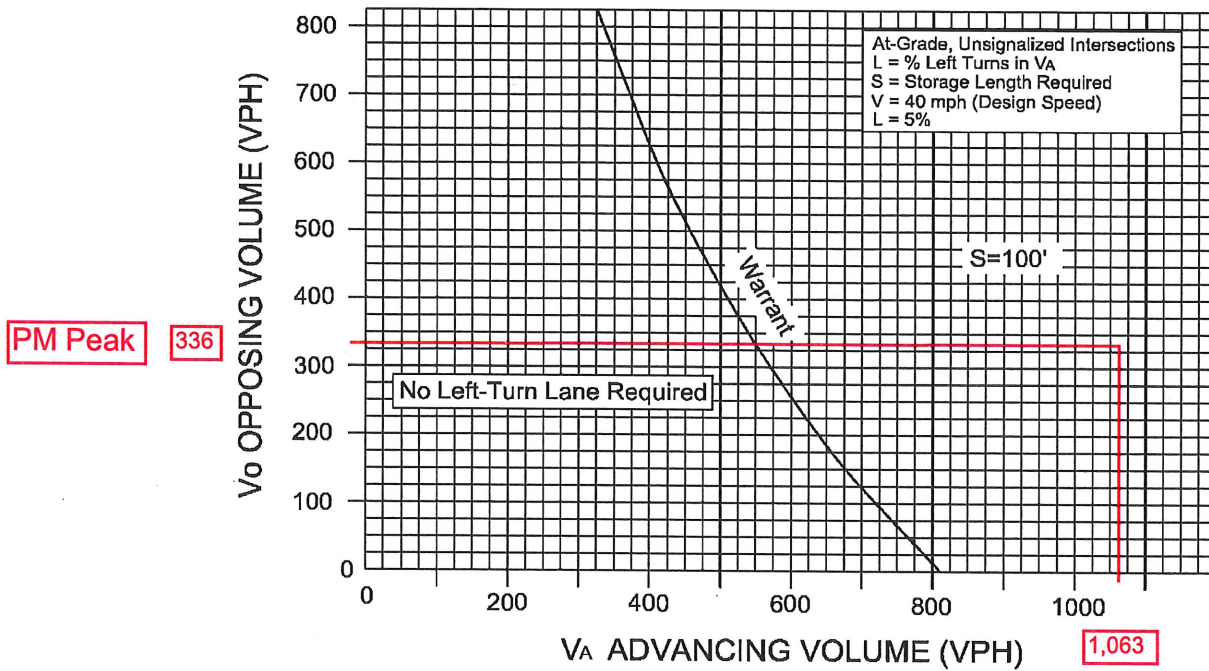


FIGURE 3-5

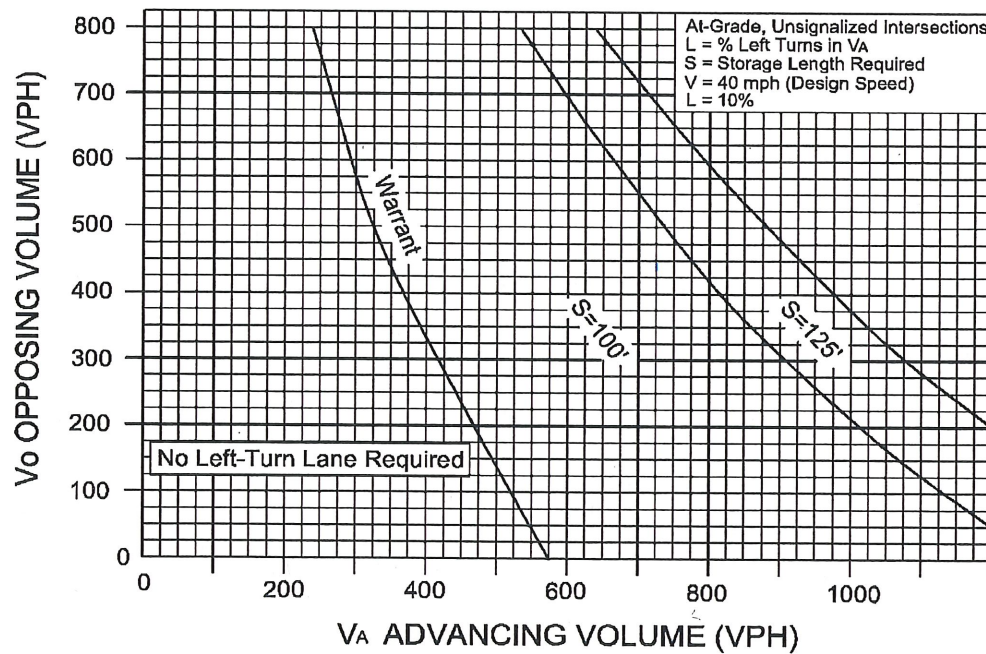


FIGURE 3-6

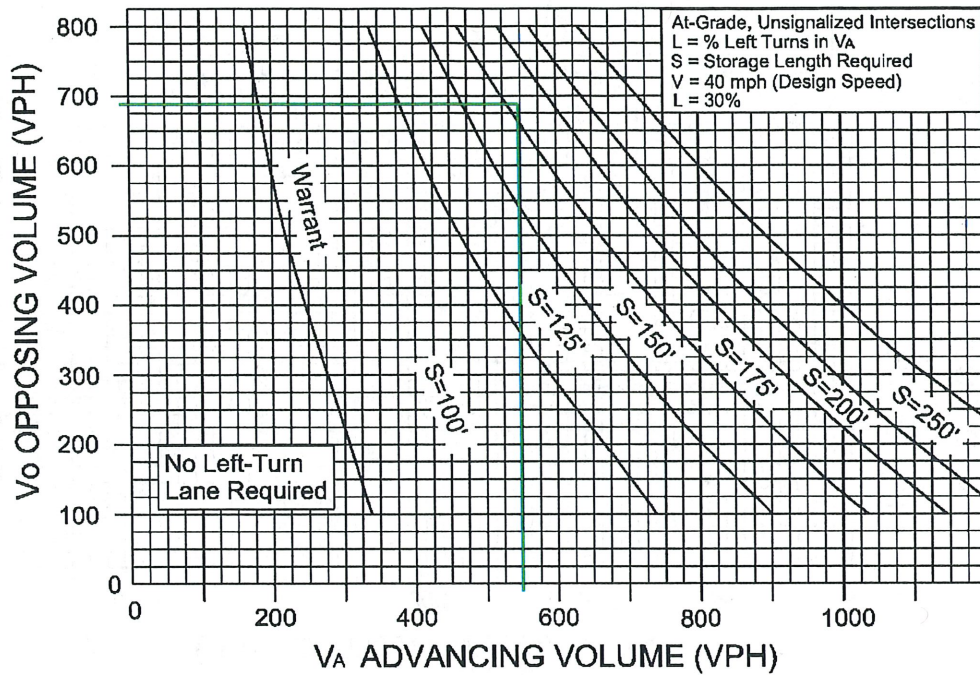
Route 79 at I-66 Eastbound Ramps
Southbound Left-Turn Lane Warrant
Build (2022) Volumes

F-63

WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAY

AM Peak

688



549

FIGURE 3-9

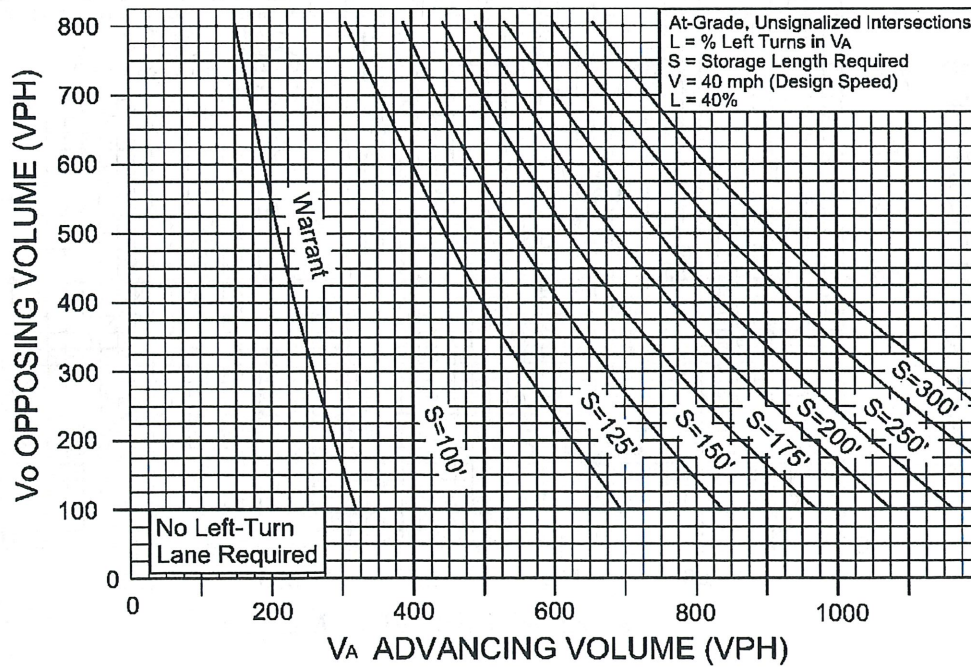


FIGURE 3-10

Route 79 at I-66 Eastbound Ramps
Southbound Left-Turn Lane Warrant
Build (2022) Volumes

F-61

WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAY

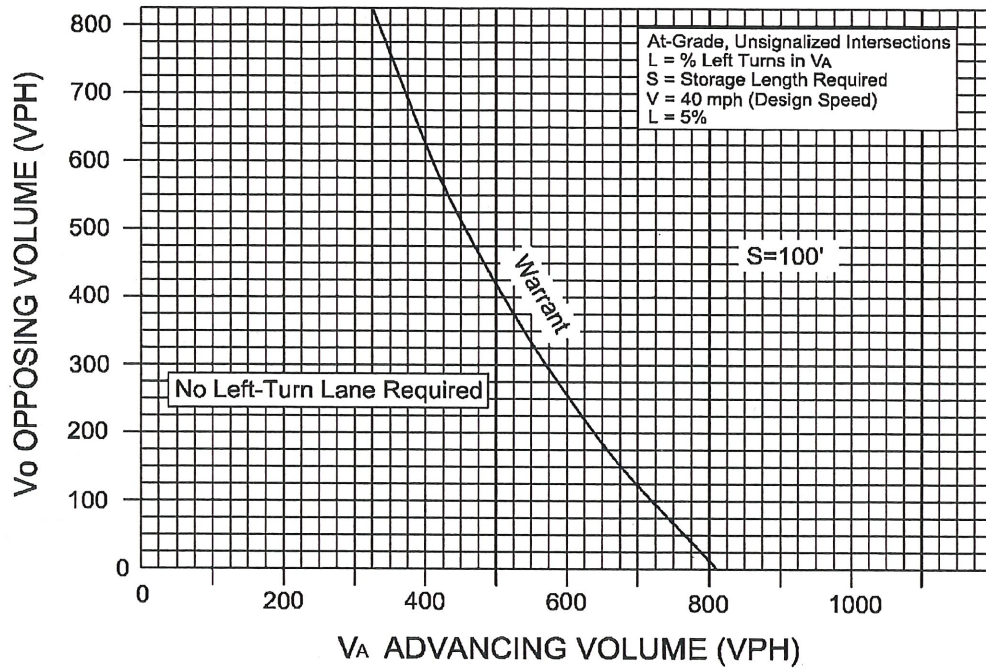


FIGURE 3-5

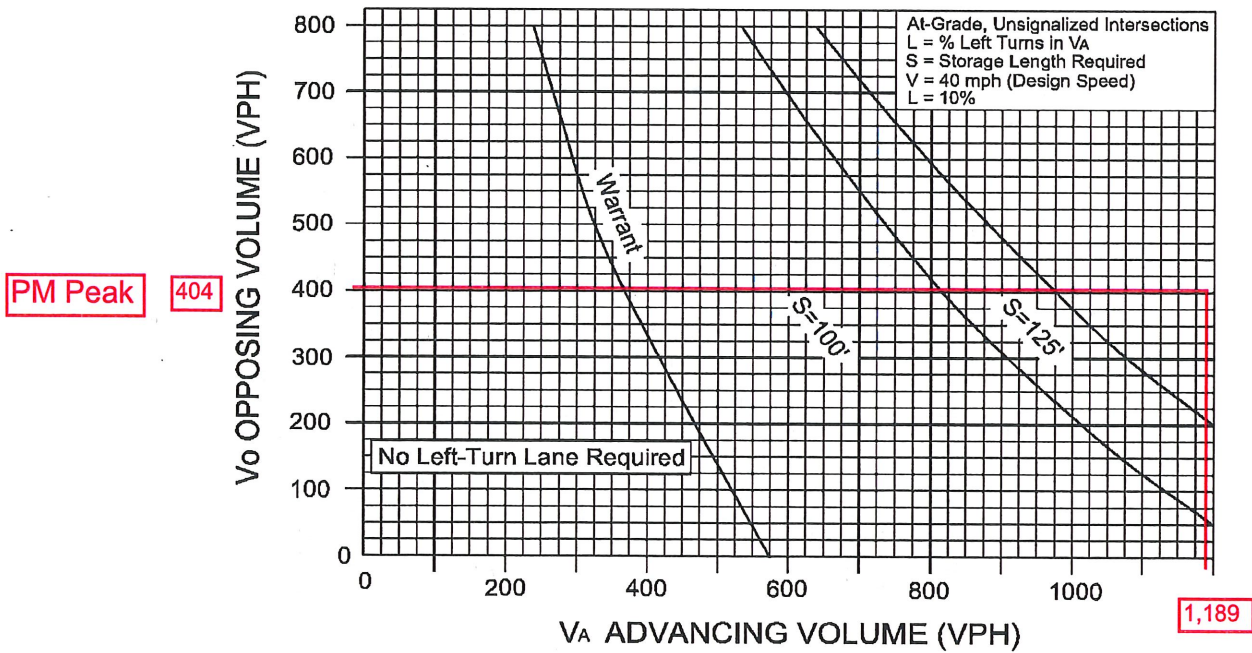


FIGURE 3-6

Apple Mountain Road at Proposed Site Driveway
Northbound Left-Turn Lane Warrant
Build (2022) Volumes

F-63

WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAY

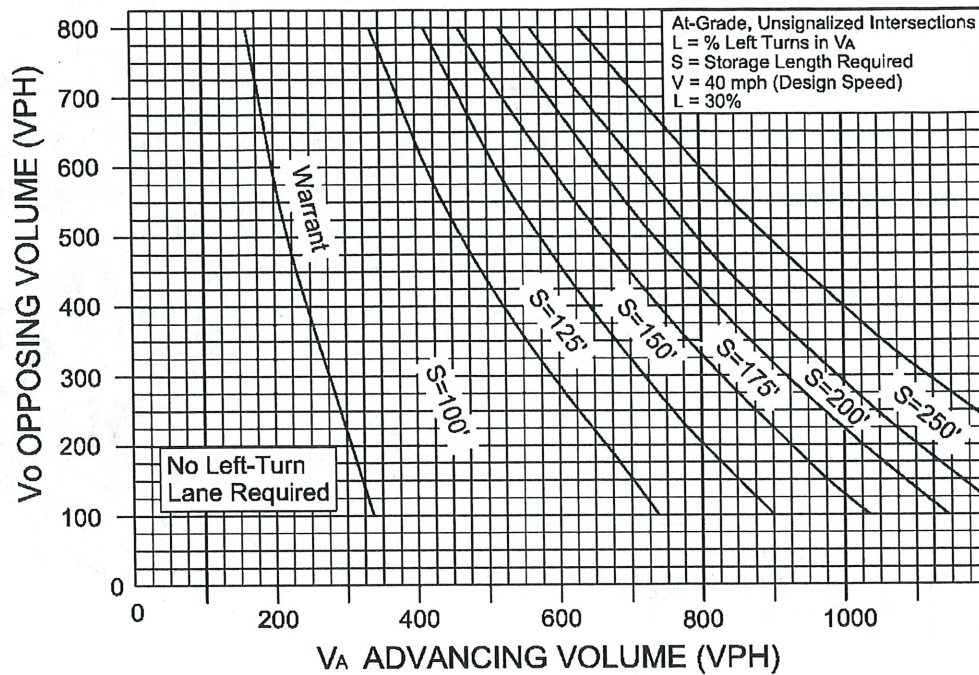


FIGURE 3-9

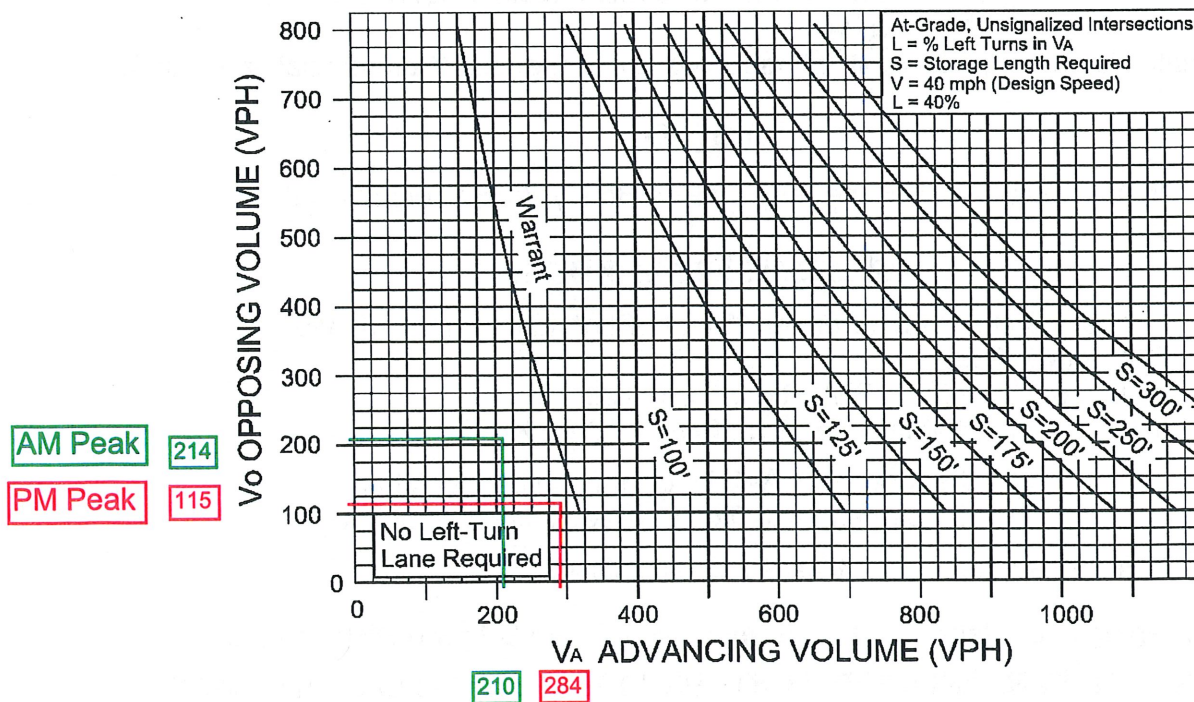
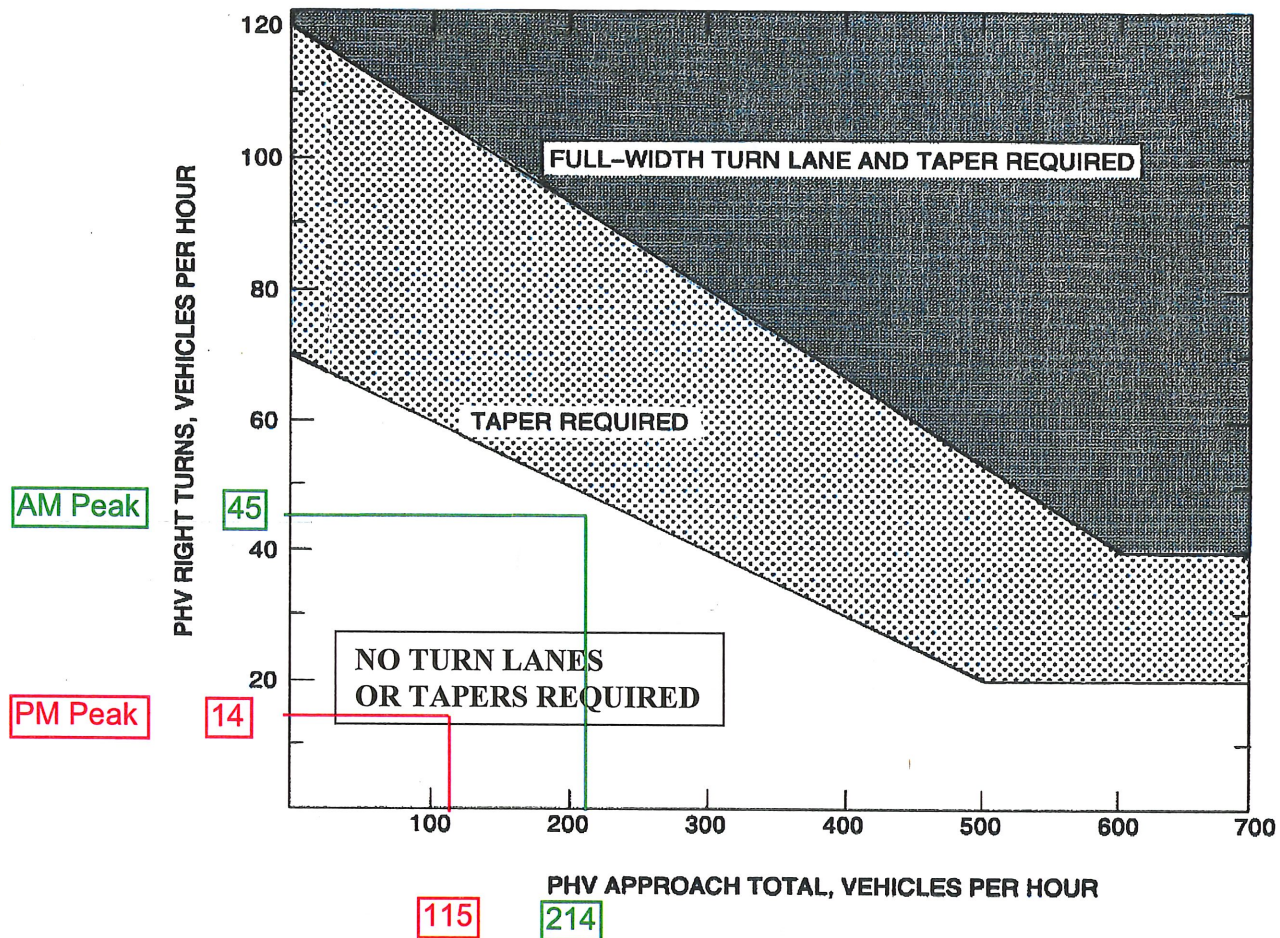


FIGURE 3-10

Apple Mountain Road at Proposed Site Driveway
Southbound Right-Turn Lane Warrant
Build (2022) Volumes

F-96



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

Adjusted right turns = PHV Right Turns - 20

If PHV is not known use formula: $PHV = ADT \times K \times D$

K = the percent of AADT occurring in the peak hour

D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.*

FIGURE 3-26 WARRANTS FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)

* Rev. 1/15