

SOUTH MIDDLETON TOWNSHIP

ELECTRONIC PLAN SUBMISSION

Please visit <http://smiddleton.com/2158/Applications> for subdivision, land development, and conditional use documentation.

Submission of Conditional Use

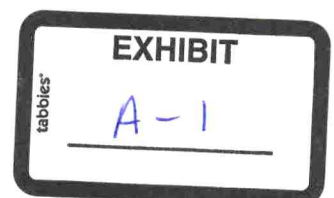
Conditional Use applications must be submitted to the Township by 4:00p.m. 14 days prior to the next Planning Commission meeting.

- A PDF of the conditional use application and supporting documentation must be emailed to Natalie Kaczor, Community Development Coordinator, at nkaczor@smiddleton.com.
- Three hard copies of the application, all supporting documentation, and ten (10) copies of the plan set should be submitted to the Township along with the application fee and escrow.

If the plans cannot be submitted by email, a flash drive or an online file hosting service should be used instead. Unfortunately, the Township cannot accept CDs as an alternative.

Application Requirements

- A Development Plan, as per Section 2005 of Zoning Ordinance No. 3 of 2007, as amended, shall accompany the application. In addition, Section 2001, 2005, and any supplemental regulations shall be addressed in written form with the narrative explaining the proposed use.
- Application fee and escrow shall accompany the application.
 - See Current Fee Schedule for Amount Due



South Middleton Township

Serving our Community with Pride

CONDITIONAL USE APPLICATION

DOCKET NO. _____

To the Board of Supervisors of South Middleton Township, Cumberland County, Pennsylvania:

1. Applicant Keystone FC, c/o Sean Cochran Phone No. 717-329-8201
 Email Address scochran@keystonefc.com
 Address PO Box 1332, Mechanicsburg, PA 17055

2. Applicant's Attorney Michael Pykosh Phone No. 717-975-9446
 Address DPM Attorneys - 2132 Market Street, Camp Hill, PA 17011

3. The interest of applicant is to develop the parcel into soccer fields with supporting design features
such as parking lots, access drives, fieldhouse and stormwater management bmps.

4. The subject property is described, located, and used as follows: The property is located at
842 York Road, Carlisle, PA 17015. The property is currently an undeveloped, agricultural field

5. State the present zoning classification of the property and the section of Zoning Ordinance No. 3 of 2007, as amended, under which the Conditional Use is requested: _____
AC - Agricultural Conservation District. Article VI, Section 602.3

6. **A Conditional Use Narrative and site plan is required with this application. The narrative shall explain the applicant's request in detail and address the Conditional Use objectives of Section 2001, Plan requirements of Section 2005, and any applicable supplement regulations found in Article XVI. Otherwise, it will be deemed an incomplete submission.**

Signature of Applicant: 

Date Received _____ Fees: Application \$ _____
 Received By _____ Escrow \$ _____

June 5, 2023

Mr. Tim Duerr, AICP
Director of Community Development
South Middleton Township
520 Park Drive
Boiling Springs, PA 17007

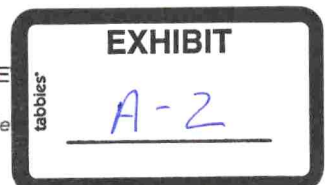
RE: Conditional Use Review Application – Wolf Farm Soccer Fields

Dear Mr. Duerr,

Attached to this letter is the application and supporting documents for a conditional use review for the Wolf Farm Soccer Fields located at 842 York Road. The applicant, Keystone FC, is the equitable owner of this property situated in the Agricultural and Conservation District (AC) and intends to purchase the property, subdivide and develop the land into soccer fields. The purchased lot (49.3 acres) will be the result of a subdivision of parcels 40-10-0638-025 and 40-10-0638-029A as shown in the separately submitted Lot Addition – Final Subdivision for these properties. The remaining lands (19.35 acres) will remain in ownership of the current owners William Crock and Pamela Hendrickson. The proposed total of impervious surface coverage for the parking lots and access drive will be approximately 6 acres and stormwater management bmp's will be designed to mitigate additional site runoff.

Below is a list that addresses Conditional Use Objectives from Section 2001 of the Zoning Ordinance:

- *The proposed use shall be of such location, size and character that, in general, it will be in harmony with the appropriate and orderly development of the District in which it is proposed to be situated and will not be detrimental to the orderly development of adjacent properties in accordance with the zoning classification of such properties.*
 - The Keystone FC is proposing multiple soccer fields with supporting parking, stormwater facilities and proposed building with concession, private restrooms, offices and storage. Most fields will be traditional turf grass and 3 fields will be synthetic turf to include lighting for extended hour usage.
 - The proposed development is larger in size but very minimal when it comes to development and added impervious coverage. This will match the lesser developed neighboring properties of the agricultural and conservation district. Less than half of the approximate 40 acre disturbed area for the project will be constructed with a surface other than natural lawn and grass supporting the low-density, low-impact development.



- *The location and height of buildings, the location, nature and height of walls and fences, and the nature and extent of landscaping on the site shall be such that the use will not hinder or discourage the appropriate development and use of adjacent land and buildings.*
 - Please see Conditional Use plan for building locations on the property.
 - There are no existing buildings on the property. The height of the proposed office and storage building will be less than 35 ft. The proposed building is approximately 300 ft. from the nearest property line which will be the newly created shared property line to the east. The next closest property line is the southern property line which is over 600 ft. from the proposed building.
 - Also, there's a storage shed and portable restroom enclosure located along the main drive aisle. The shed would be no larger than 24 ft. x 24 ft. and the enclosure 10 ft. x 30 ft. The storage will be for a mower, water wheel (for watering fields), Gator for moving goals and equipment, soccer balls, goals, nets, and other miscellaneous equipment (field liners, paint, etc.).

Below is a list that addresses the Development Plan from Section 2005 of the Zoning Ordinance:

- *The location, boundaries, dimensions and ownership of the land.*
 - For lot dimensions, layout, existing features, property owners, etc., please see the Conditional Use plan.
- *In the case of commercial or industrial development, a general description of the activities to take place as may be appropriate such as maximum employment, working hours, customer traffic, delivery services, development schedule staging plan.*
 - The proposed development will cater to local soccer organizations for weekend games, weekday practices with the occasional regional tournament. These events will mainly take place over weekends with one proposed entrance on East Springville Road. 619 parking spaces are proposed on-site to accommodate visitors which is an average of 68.7 spaces for each of the 9 proposed fields. See the included Precedent Project Narrative for similar projects of size, scope and design to see how this compares.
 - There could be up to 2-3 regular employees on-site day-to-day. The coaches for the teams will be on-site during practices or games and regular maintenance crews will be present on-site as well. Hours of operation are typically Monday through Friday 4:45 pm until 8:30 pm and Saturday and Sunday 9:00 am until 7:00 pm. Usage of the field with lights, when used after dark, would not last later than 10:00 pm. Weekday usage consists of youth teams practicing in the evenings. Weekend usage typically consists of youth soccer games, with Keystone FC occasionally running weekend tournaments. Youth games run during the late summer (August – September) through the fall (October – November). Use of the artificial turf would allow of the fields in the winter (December – March), but this is very limited. Youth games start again in Spring (March – June). Tournaments are scattered through the year and are typically on weekends where youth games are not played. Keystone FC does hold meetings and other gatherings from year to year, but impact would be minimal from a traffic standpoint.

- The walking loop trail around the site will be available to the public during operating hours and this trail will also be utilized for ADA access for all the fields.
- *The location, use, and ground area of such proposed building and other structure.*
 - The location of the proposed office and storage building can be found on the attached Conditional Use Plan.
 - This building will be used for typical concession for sporting events, storage for equipment, office space, meeting room, small team locker rooms used on 8-10 occasions during the summer and small, private restrooms to serve staff and Keystone members only. Restrooms would not be available to the general public through the year.
 - For public restrooms, Keystone FC currently works with Walter's Services Inc. They currently rent 4-6 portable restrooms throughout the year being used at various locations where games and practices occur. The plan would be to have a 3-4 portable toilets available from August through November, reduce that number to 1 in the winter months (December through mid-March) and then increase that number to 3-4 during Spring (mid-march through early June), before reducing the number to 2 in the Summer months (June & July). For tournaments we would bring in additional toilets for those weekends, most likely an additional 2 toilets for those weekends, for a total of 5-6 portable toilets. A structure for the portable restrooms is located next to the storage shed.
- *The capacity arrangement and controls for all areas to be used for automobile access, parking, loading and unloading in sufficient detail to demonstrate that satisfactory arrangements will be made to facilitate traffic movement from the street or highway.*
 - The applicant intends to connect for driveway access in one location. This entrance will not be gated but a traffic control plan will be utilized for larger events on-site. This control plan could be working with Mt. Holly or Carlisle Fire Police Departments which are utilized for other larger events in South Middleton Township requiring traffic control. Also included are sight distance worksheets calculating the required and provided safe sight distance for the driveway. All of the parking lots are located for ease of access and drop off for the soccer fields.
 - Applicant is also providing an alternate/secondary plan in which the applicant intends to connect for driveway access in two locations; one drive along East Springville Road and the other at South Ridge Road. These entrances will not be gated but a traffic control plan will be utilized for larger events on-site. This control plan could be working with Mt. Holly or Carlisle Fire Police Departments which are utilized for other larger events in South Middleton Township requiring traffic control. Also included are sight distance worksheets calculating the required and provided safe sight distance for each driveway. Both parking lots are centrally located for ease of access and drop off for the soccer fields.

- *The character of the buffer area and screening devices to be maintained including the dimensions and arrangements of all areas devoted to planting, lawns, trees or similar purposes.*
 - There is no existing screening but there is a plan to include proposed buffering. This screening will consist of a dense mix of coniferous and deciduous trees which will provide a year-round visual and noise barrier. The screening is proposed along all property boundaries and will be installed in phases with the proposed phasing of development.

- *A description of the proposed methods of control of development in sufficient detail to indicate the noise glare, air pollution, water pollution, fire hazards, traffic congestion, and other safety hazards to be produced.*
 - There will be minimal noise from the site during the week as it will mainly be intermittent practices. Weekend games will result in the typical noise levels attributed from recreational development like this. The proposed screening, as mentioned above, will help dampen noise levels.
 - Exterior lighting has been noted on the plan to be installed as to not point or provide any unwanted glare or illumination for adjacent property owners. Parking lot lights would be on a timer set to turn off at 10:00 pm but would be able to be controlled via smartphone app. The same would be true for the field lighting which they'll be set to turn off at 10 pm each evening they are in use. These would also be controlled by a smartphone app.
 - In reference to water pollution, stormwater management facilities will be provided to alleviate any additional site runoff from the newly built parking lot, synthetic turf fields and access drives.

- *A description of the methods to be used for water supply treatment and disposal of sewage, wastes, refuse, and storm drainage.*
 - The current lot is not served for water or sewage. The proposed office and storage building will be connected to a private well and septic system. The property has been previously tested for a septic system and the results supported this type of sewage facility. Current testing is underway for additional sewage testing.
 - Trash collection would be minimal early in the project. For weekdays and weekend games, trash cans would be placed near the parking lot areas with trash collection taking place at the conclusion of the week (Thursday/Friday) and then again on Sunday afternoons. Trash would be minimal with the majority of the trash being plastic water bottles. These would be collected and disposed of by Keystone FC Staff. On tournament weekends where additional trash might occur portable trash cans would be set-up around fields and collection would occur at the conclusion of each day. Keystone FC currently has access to two different dumpsters and any tournament waste would be placed in these dumpsters, but once again the trash would be minimal.
 - The proposed stormwater locations will help treat and manage the expected runoff on-site. The synthetic turf fields will be managed by a subsurface bmp. Most of the

anticipated runoff will be from the drive aisles which will be managed by surface bmp's which are located on the plan. The plan is to explore reinforced turf for portions of the parking lots as well to reduce runoff which will be managed subsurface, similar to the synthetic turf fields. Any sinkholes discovered on-site will be repaired according to Geotechnical suggestions which will help control groundwater entering the water table within this region.

- *The names and addresses of all adjoining property owners.*
 - Please see the below table for the addresses and owners of adjacent properties:

Owner	Property ID #	Address
William and Tracy Clements	40-10-0638-102	820 York Road
Richard Hilleary	40-10-0638-101	842 York Road
Howard and Barbara Custer	40-10-0638-104	South Ridge Road
William Crock and Pamela Hendrickson	40-10-0638-029A	842 York Road

Below is a list that addresses the conditions associated with Non-municipal recreational facilities and organizations such as playgrounds, fishing and hunting clubs, swimming clubs, golf clubs, tennis courts and similar activities from Article VI Section 602.3 of the Zoning Ordinance:

- a) *Such use shall occupy a lot with an area of not less than five (5) acres.*
The proposed, subdivided lot will be over 49 acres.
- b) *That exterior lighting, other than that essential for the safety and convenience of the users of the premises shall be prohibited. All exterior lighting shall be shielded from adjacent properties.*
All proposed lighting will point down and inward towards the site and not spill or glare onto adjoining properties. All lights for the fields will directed towards the fields and not towards the property perimeter. As stated previously, the parking lot lighting and field lighting will be on timers and controlled by smartphone app. The parking lights will turn off at 10 pm and field lights off at 10 pm each evening they're in use. See photometric plans for details.
- c) *Along all property lines adjacent to a residential use, screening shall be provided.*
Screening is included along all property lines for the full, development property. Each phase will consist of screening along the nearest property lines and will be planted at the time that phase is constructed.
- d) *A parking and circulation pattern shall be established to assure that ingress and egress does not negatively impact upon adjacent roads and that accessibility by emergency vehicles is provided.*
There will be 1 proposed entrance for the site to offer ingress and egress onto the property as well as access for emergency vehicles. Also, this entrance point is located at the high point along East Springville Road to provide best visibility possible.
Applicant is providing an alternate/secondary plan in which there will be 2 proposed entrances for the site to offer better ingress and egress onto the property as well as easier access for emergency vehicles approaching on either E. Springville Road and S. Ridge Road. Also, these

entrance points are located at high points along each road to provide the best visibility possible at each location.

- e) *The applicant shall submit a plan and supporting documentation to establish compliance with the standards herein in accordance with Article XX.*
See attached conditional use plan submitted.

Below is a list that addresses conditional use objectives from Article XX Section 2001 in the Zoning Ordinance:

- 1) *That all proposed structures, equipment, or material shall be readily accessible for fire and police protection.*

Accessibility for emergency services will be available on-site. With regards to the alternate/secondary plan accessibility for emergency services will be available on-site from two different sides of the property. There are proposed entrances on both E. Springville Road and S. Ridge Road which provides opportunity for emergency vehicles to approach from both roads to each side of the property.

- 2) *That the proposed use shall be of such location, size and character that, in general, it will be in harmony with the appropriate and orderly development of the District in which it is proposed to be situated and will not be detrimental to the orderly development of adjacent properties in accordance with the zoning classification of such properties*

The intended use is considered a conditional use already within the Agricultural and Conservation District. The proposed features will match the character of this district since there is a minimal amount of proposed impervious surface being proposed. Most of the development will consist of grass/lawn for the sports fields which matches the surrounding less development landscape.

- 3) *That, in addition to the above, in the case of any use located in, or directly adjacent to, a Residential District:*

- a. *The location and size of such use, the nature and intensity of operations involved in or conducted in connection therewith, its site layout and its relation to access streets shall be such that both pedestrian and vehicular traffic to and from the use and the assembly of persons in connection therewith will not be hazardous or inconvenient to, or incongruous with, said Residential District or conflict with the normal traffic of the neighborhood.*
- b. *The location and height of buildings, the location, nature and height of walls and fences, and the nature and extent of South Middleton Township 314 landscaping on the site shall be such that the use will not hinder or discourage the appropriate development and use of adjacent land and buildings.*

Both sections above do not pertain to the proposed development since it does not exist within or directly adjacent to a residential district.

Thank you for your consideration. Please feel free to contact me with questions. You can reach me by phone at (717) 701-8111 or by email at JDoty@fsa-inc.com.

Sincerely,

FREDERICK, SEIBERT AND ASSOCIATES, INC.



Justin Doty, P.E.
Vice President



Professional Certification

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Pennsylvania, License No. PE080613, Expiration Date: 09-30-2023

Justin T. Doty Digitally signed by Justin T. Doty
Date: 2023.06.05 09:18:14 -04'00'

AGREEMENT FOR THE SALE OF COMMERCIAL REAL ESTATE

ASC

This form recommended and approved for, but not restricted to use by, the members of the Pennsylvania Association of Realtors® (PAR).

PARTIES	
BUYER(S): <u>Keystone FC</u> PO Box 1332 Mechanicsburg PA 17055	SELLER(S): <u>William A Crock III, Pamela Hendrickson</u> 4501 Dunton Terrace, Unt G Perry Hall, MD 21128

PROPERTY
PROPERTY ADDRESS <u>49.26 acres located on York Rd, Carlisle PA</u> <div style="text-align: right;">ZIP <u>17015</u></div> in the municipality of <u>South Middleton Township</u> County of <u>Cumberland</u> , in the Commonwealth of Pennsylvania. Identification (e.g., Parcel #; Lot, Block; Deed Book, Page, Recording Date): <u>40-10-0638-029A</u> Tax ID #(s): <u>40-10-0638-029A</u>

BUYER'S RELATIONSHIP WITH PA LICENSED BROKER	
<input type="checkbox"/> No Business Relationship (Buyer is not represented by a broker)	
Broker (Company) <u>Keller Williams of Central PA</u> Company Address <u>2040 Good Hope Road, Enola, PA 17025</u> Company Phone <u>(717)761-4300</u> Company Fax _____ Broker is (check only one): <input checked="" type="checkbox"/> Buyer Agent (Broker represents Buyer only) <input type="checkbox"/> Dual Agent (See Dual and/or Designated Agent box below)	Licensee(s) (Name) <u>Matt Madden</u> Direct Phone(s) _____ Cell Phone(s) <u>(717)421-4401</u> Fax _____ Email <u>mattmadden@kw.com</u> Licensee(s) is (check only one): <input type="checkbox"/> Buyer Agent (all company licensees represent Buyer) <input checked="" type="checkbox"/> Buyer Agent with Designated Agency (only Licensee(s) named above represent Buyer) <input type="checkbox"/> Dual Agent (See Dual and/or Designated Agent box below)
<input type="checkbox"/> Transaction Licensee (Broker and Licensee(s) provide real estate services but do not represent Buyer)	

SELLER'S RELATIONSHIP WITH PA LICENSED BROKER	
<input checked="" type="checkbox"/> No Business Relationship (Seller is not represented by a broker)	
Broker (Company) _____ Company Address _____ Company Phone _____ Company Fax _____ Broker is (check only one): <input type="checkbox"/> Seller Agent (Broker represents Seller only) <input type="checkbox"/> Dual Agent (See Dual and/or Designated Agent box below)	Licensee(s) (Name) _____ Direct Phone(s) _____ Cell Phone(s) _____ Fax _____ Email _____ Licensee(s) is (check only one): <input type="checkbox"/> Seller Agent (all company licensees represent Seller) <input type="checkbox"/> Seller Agent with Designated Agency (only Licensee(s) named above represent Seller) <input type="checkbox"/> Dual Agent (See Dual and/or Designated Agent box below)
<input type="checkbox"/> Transaction Licensee (Broker and Licensee(s) provide real estate services but do not represent Seller)	

DUAL AND/OR DESIGNATED AGENCY

A Broker is a Dual Agent when a Broker represents both Buyer and Seller in the same transaction. A Licensee is a Dual Agent when a Licensee represents Buyer and Seller in the same transaction. All of Broker's licensees are also Dual Agents UNLESS there are separate Designated Agents for Buyer and Seller. If the same Licensee is designated for Buyer and Seller, the Licensee is a Dual Agent.

By signing this Agreement, Buyer and Seller each acknowledge having been previously informed of, and consented to, dual agency, if applicable.

Buyer Initials: DMW

Seller Initials: PH WAC



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rev.11/20; rel.6/20

EXHIBIT

A-3

tabbles

- 1 1. By this Agreement, dated November 2, 2021, Seller hereby agrees to sell and convey to
 2 Buyer, who agrees to purchase, the identified Property.
 3 2. PURCHASE PRICE AND DEPOSITS (3-15)
 4 (A) Purchase Price [REDACTED]
 5 [REDACTED] U.S. Dollars), to be paid by Buyer as follows:
 6
 7 1. Initial Deposit, within days (5 if not specified) of Execution Date,
 8 if not included with this Agreement: \$ [REDACTED]
 9 2. Additional Deposit within days of the Execution Date: \$
 10 3. \$
 11 Remaining balance will be paid at settlement.
 12 (B) All funds paid by Buyer, including deposits, will be paid by check, cashier's check or wired funds. All funds paid by Buyer
 13 within 30 DAYS of settlement, including funds paid at settlement, will be by cashier's check or wired funds, but not by
 14 personal check.
 15 (C) Deposits, regardless of the form of payment and the person designated as payee, will be paid in U.S. Dollars to Broker for Seller
 16 (unless otherwise stated here: Deposit to be held by Keller Williams of Central PA), who
 17 will retain deposits in an escrow account in conformity with all applicable laws and regulations until consummation or termina-
 18 tion of this Agreement. Only real estate brokers are required to hold deposits in accordance with the rules and regulations of the
 19 State Real Estate Commission. Checks tendered as deposit monies may be held uncashed pending the execution of this Agreement.
 20 3. SETTLEMENT AND POSSESSION (6-13)
 21 (A) Settlement Date is August 31, 2022, or before if Buyer and Seller agree.
 22 (B) Settlement will occur in the county where the Property is located or in an adjacent county, during normal business hours, unless
 23 Buyer and Seller agree otherwise.
 24 (C) At time of settlement, the following will be pro-rated on a daily basis between Buyer and Seller, reimbursing where applicable:
 25 current taxes; rents; interest on mortgage assumptions; condominium fees and homeowner association fees; water and/or sewer
 26 fees, together with any other lienable municipal service fees. All charges will be pro-rated for the period(s) covered. Seller will
 27 pay up to and including the date of settlement and Buyer will pay for all days following settlement, unless otherwise stated here:
 28
 29 (D) For purposes of prorating real estate taxes, the "periods covered" are as follows:
 30 1. Municipal tax bills for all counties and municipalities in Pennsylvania are for the period from January 1 to December 31.
 31 2. School tax bills for the Philadelphia, Pittsburgh and Scranton School Districts are for the period from January 1 to December
 32 31. School tax bills for all other school districts are for the period from July 1 to June 30.
 33 (E) Conveyance from Seller will be by fee simple deed of special warranty unless otherwise stated here:
 34
 35 (F) Payment of transfer taxes will be divided equally between Buyer and Seller unless otherwise stated here:
 36
 37 (G) Possession is to be delivered by deed, existing keys and physical possession to a vacant Property free of debris, with all structures
 38 broom-clean, at day and time of settlement, unless Seller, before signing this Agreement, has identified in writing that the Property
 39 is subject to a lease.
 40 (H) If Seller has identified in writing that the Property is subject to a lease, possession is to be delivered by deed, existing keys and
 41 assignment of existing leases for the Property, together with security deposits and interest, if any, at day and time of settlement.
 42 Seller will not enter into any new leases, nor extend existing leases, for the Property without the written consent of Buyer. Buyer will
 43 acknowledge existing lease(s) by initialing the lease(s) at the execution of this Agreement, unless otherwise stated in this Agreement.
 44 Tenant-Occupied Property Addendum (PAR Form TOP) is attached and made part of this Agreement.
 45 4. DATES/TIME IS OF THE ESSENCE (3-15)
 46 (A) Written acceptance of all parties will be on or before: November 23, 2021
 47 (B) The Settlement Date and all other dates and times identified for the performance of any obligations of this Agreement are of the
 48 essence and are binding.
 49 (C) The Execution Date of this Agreement is the date when Buyer and Seller have indicated full acceptance of this Agreement by
 50 signing and/or initialing it. For purposes of this Agreement, the number of days will be counted from the Execution Date, exclud-
 51 ing the day this Agreement was executed and including the last day of the time period. All changes to this Agreement should be
 52 initialed and dated.
 53 (D) The Settlement Date is not extended by any other provision of this Agreement and may only be extended by mutual written agree-
 54 ment of the parties.
 55 (E) Certain terms and time periods are pre-printed in this Agreement as a convenience to the Buyer and Seller. All pre-printed terms
 56 and time periods are negotiable and may be changed by striking out the pre-printed text and inserting different terms acceptable
 57 to all parties, except where restricted by law.
 58 5. FIXTURES AND PERSONAL PROPERTY (6-20)
 59 (A) It is possible for certain items of personal property to be so integrated into the Property that they become fixtures and will be
 60 regarded as part of the Property and therefore included in a sale. Buyer and Seller are encouraged to be specific when negotiating
 61 what items will be included or excluded in this sale.

62 Buyer Initials: DMW

Seller Initials: PH WAC

63 (B) INCLUDED in this sale are all existing items permanently installed in the Property, free of liens, including plumbing; heating;
64 HVAC equipment; lighting fixtures (including chandeliers and ceiling fans); and water treatment systems, unless otherwise stated
65 below; any remaining heating, cooking and other fuels stored on the Property at the time of settlement. Also included: _____
66 _____
67 _____
68 _____

69 (C) The following items are not owned by Seller and may be subject to a lease or other financing agreement: _____
70 _____

71 (D) EXCLUDED fixtures and items: _____
72 _____

73 6. ZONING (4-14)

74 Failure of this Agreement to contain the zoning classification (except in cases where the property (and each parcel thereof, if subdividable) is zoned solely or primarily to permit single-family dwellings) will render this Agreement voidable at Buyer's option, and, if voided, any deposits tendered by the Buyer will be returned to the Buyer without any requirement for court action.

75 Zoning Classification, as set forth in the local zoning ordinance: _____
76

77 7. FINANCING CONTINGENCY (4-14)

78 WAIVED. This sale is NOT contingent on financing, although Buyer may obtain financing and/or the parties may include an appraisal contingency.

79 ELECTED.

80 (A) This sale is contingent upon Buyer obtaining financing according to the following terms:
81

83 First Loan on the Property	Second Loan on the Property
84 Loan Amount \$ _____	Loan Amount \$ _____
85 Minimum Term _____ years	Minimum Term _____ years
86 Type of Loan <u>commercial</u>	Type of Loan _____
87 Interest rate _____%; however, Buyer agrees to accept the	Interest rate _____%; however, Buyer agrees to accept the
88 interest rate as may be committed by the lender, not to exceed	interest rate as may be committed by the lender, not to exceed
89 a maximum interest rate of _____%.	a maximum interest rate of _____%.

90 (B) Financing Commitment Date _____
91

92 (C) Within _____ days (10 if not specified) from the Execution Date of this Agreement, Buyer will make a completed, written application for the financing terms stated above to a responsible lender(s) of Buyer's choice. Broker for Buyer, if any, otherwise Broker for Seller, is authorized to communicate with the lender(s) to assist in the financing process.
93

94 (D) Should Buyer furnish false or incomplete information to Seller, Broker(s), or the lender(s) concerning Buyer's legal or financial status, or fail to cooperate in good faith in processing the financing application, which results in the lender(s) refusing to approve a financing commitment, Buyer will be in default of this Agreement.
95

96 (E) Upon receipt of a financing commitment, Buyer will promptly deliver a copy of the commitment to Seller. Unless otherwise agreed to in writing by Buyer and Seller, if a written commitment is not received by Seller by the above date, this Agreement may be terminated by Buyer or Seller, with all deposit monies returned to Buyer according to the terms of Paragraph 24. Buyer will be responsible for any premiums for mechanics' lien insurance and/or title search, or fee for cancellation of same, if any; AND/OR any premiums for flood insurance and/or fire insurance with extended coverage, insurance binder charges or cancellation fee, if any; AND/OR any appraisal fees and charges paid in advance to lender.
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102

103 8. CHANGE IN BUYER'S FINANCIAL STATUS (6-20)

104 If a change in Buyer's financial status affects Buyer's ability to purchase, Buyer will, within 5 days (5 if not specified) of said change notify Seller and lender(s) to whom the Buyer submitted loan application, if any, in writing. A change in financial status includes, but is not limited to, loss or a change in income; Buyer's having incurred a new financial obligation; entry of a judgment against Buyer. Buyer understands that applying for and/or incurring an additional financial obligation may affect Buyer's ability to purchase.
105
106
107
108

109 9. SELLER REPRESENTATIONS (1-20)

110 (A) Status of Water

111 Seller represents that the Property is served by:

112 Public Water Community Water On-site Water None _____
113

114 (B) Status of Sewer

115 1. Seller represents that the Property is served by:

116 Public Sewer Community Sewage Disposal System Ten-Acre Permit Exemption (see Sewage Notice 2)
117 Individual On-lot Sewage Disposal System (see Sewage Notice 1) Holding Tank (see Sewage Notice 3)
118 Individual On-lot Sewage Disposal System in Proximity to Well (see Sewage Notice 1; see Sewage Notice 4, if applicable)
119 None (see Sewage Notice 1) None Available/Permit Limitations in Effect (see Sewage Notice 5)
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121 2. Notices Pursuant to the Pennsylvania Sewage Facilities Act

122 Notice 1: There is no currently existing community sewage system available for the subject property. Section 7 of the Pennsylvania Sewage Facilities Act provides that no person shall install, construct, request bid proposals for construction, alter, repair or occupy any building or structure for which an individual sewage system is to be installed, without first obtaining a permit. Buyer is advised by this notice that, before signing this Agreement, Buyer should contact the local agency charged with administering the Act to determine the procedure and requirements for obtaining a permit for an individual sewage system. The
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126 Buyer Initials: DALW

Seller Initials: PH WPC

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local agency charged with administering the Act will be the municipality where the Property is located or that municipality working cooperatively with others.

Notice 2: This Property is serviced by an individual sewage system installed under the ten-acre permit exemption provisions of Section 7 of the Pennsylvania Sewage Facilities Act. (Section 7 provides that a permit may not be required before installing, constructing, awarding a contract for construction, altering, repairing or connecting to an individual sewage system where a ten-acre parcel or lot is subdivided from a parent tract after January 10, 1987). Buyer is advised that soils and site testing were not conducted and that, should the system malfunction, the owner of the Property or properties serviced by the system at the time of a malfunction may be held liable for any contamination, pollution, public health hazard or nuisance which occurs as a result.

Notice 3: This Property is serviced by a holding tank (permanent or temporary) to which sewage is conveyed by a water carrying system and which is designed and constructed to facilitate ultimate disposal of the sewage at another site. Pursuant to the Pennsylvania Sewage Facilities Act, Seller must provide a history of the annual cost of maintaining the tank from the date of its installation or December 14, 1995, whichever is later.

Notice 4: An individual sewage system has been installed at an isolation distance from a well that is less than the distance specified by regulation. The regulations at 25 Pa. Code §73.13 pertaining to minimum horizontal isolation distances provide guidance. Subsection (b) of §73.13 states that the minimum horizontal isolation distance between an individual water supply or water supply system suction line and treatment tanks shall be 50 feet. Subsection (c) of §73.13 states that the horizontal isolation distance between the individual water supply or water supply system suction line and the perimeter of the absorption area shall be 100 feet.

Notice 5: This lot is within an area in which permit limitations are in effect and is subject to those limitations. Sewage facilities are not available for this lot and construction of a structure to be served by sewage facilities may not begin until the municipality completes a major planning requirement pursuant to the Pennsylvania Sewage Facilities Act and regulations promulgated thereunder.

- (C) Seller represents and warrants that Seller has no knowledge except as noted in this Agreement that: (1) The premises have been contaminated by any substance in any manner which requires remediation; (2) The Property contains wetlands, flood plains, or any other environmentally sensitive areas, development of which is limited or precluded by law; (3) The Property contains asbestos, polychlorinated biphenyls, lead-based paint or any other substance, the removal or disposal of which is subject to any law or regulation; and (4) Any law has been violated in the handling or disposing of any material or waste or the discharge of any material into the soil, air, surface water, or ground water.
- (D) Seller agrees to indemnify and to hold Broker harmless from and against all claims, demands, or liabilities, including attorneys fees and court costs, which arise from or are related to the environmental condition or suitability of the Property prior to, during, or after Seller's occupation of the Property including without limitation any condition listed in Paragraph 9(C).
- (E) Seller is not aware of historic preservation restrictions regarding the Property unless otherwise stated here: _____

(F) Seller represents that, as of the date Seller signed this Agreement, no public improvement, condominium or homeowner association assessments have been made against the Property which remain unpaid, and that no notice by any government or public authority has been served upon Seller or anyone on Seller's behalf, including notices relating to violations of zoning, housing, building, safety or fire ordinances that remain uncorrected, and that Seller knows of no condition that would constitute a violation of any such ordinances that remain uncorrected, unless otherwise specified here: _____

(G) Seller knows of no other potential notices (including violations) and/or assessments except as follows: _____

(H) Access to a public road may require issuance of a highway occupancy permit from the Department of Transportation.

(I) Internet of Things (IoT) Devices

1. The presence of smart and green home devices that are capable of connecting to the Internet, directly or indirectly, and the data stored on those various devices make up a digital ecosystem in the Property sometimes referred to as the "Internet of Things (IoT)." Buyer and Seller acknowledge that IoT devices may transmit data to third parties outside of the control of their owner.
2. On or before settlement, Seller will make a reasonable effort to clear all data stored on all IoT devices located on the Property and included in the sale. Seller further acknowledges that all personal devices owned by Seller (including but not limited to cellular telephones, personal computers and tablets) having connectivity to any IoT device(s) located on the Property will be disconnected and cleared of relevant data prior to settlement. Further, no attempts will be made after settlement by Seller or anyone on Seller's behalf to access any IoT devices remaining on the Property.
3. Following settlement, Buyer will make a reasonable effort to clear all stored data from any IoT device(s) remaining on the Property and to restrict access to said devices by Seller, Seller's agents or any third party to whom Seller may have previously provided access. This includes, but is not limited to, restoring IoT devices to original settings, changing passwords or codes, updating network settings and submitting change of ownership and contact information to device manufacturers and service providers.
4. This paragraph will survive settlement.

10. WAIVER OF CONTINGENCIES (9-05)

If this Agreement is contingent on Buyer's right to inspect and/or repair the Property, or to verify insurability, environmental conditions, boundaries, certifications, zoning classification or use, or any other information regarding the Property, Buyer's failure to exercise any of Buyer's options within the times set forth in this Agreement is a WAIVER of that contingency and Buyer accepts the Property and agrees to the RELEASE in Paragraph 26 of this Agreement.

189 Buyer Initials: DAW

Seller Initials: PR WAC

190 11. BUYER'S DUE DILIGENCE (3-15)

191 WAIVED. This sale is NOT contingent upon the results of any inspection(s), although Buyer may inspect the Property (including fixtures and any personal property specifically listed herein). Buyer agrees to purchase the Property IN ITS PRESENT CONDITION, regardless of the results of any inspection(s) or findings that Buyer may learn of after the Execution Date of this Agreement.

195 ELECTED. This sale IS contingent upon the results of inspection(s). It is Buyer's responsibility to determine that the condition and permitted use of the property is satisfactory. Buyer may, within 270 days (30 if not specified) from the Execution Date of this Agreement, conduct due diligence (Due Diligence Period), which includes, but is not limited to, verifying that the condition, permitted use, insurability, environmental conditions, boundaries, certifications, deed restrictions, zoning classifications and any other features of the Property are satisfactory. Buyer may request that the property be inspected, at Buyer's expense, by qualified professionals to determine the physical, structural, mechanical and environmental condition of the land, improvements or their components, or for the suitability of the property for Buyer's needs. If, as the result of Buyer's due diligence, Buyer determines that the Property is not suitable for Buyer's needs, Buyer may, prior to the expiration of the Due Diligence Period, terminate this Agreement by written notice to Seller, with all deposit monies returned to Buyer according to the terms of Paragraph 24 of this Agreement. In the event that Buyer has not provided Seller with written notice of Buyer's intent to terminate this Agreement prior to the end of the Due Diligence Period, this Agreement shall remain in full force and effect in accordance with the terms and conditions as more fully set forth in this Agreement.

207 (A) Buyer has been given the opportunity to inspect the Property (including fixtures and any personal property specifically listed herein) and, subject to the Due Diligence contingency if elected, agrees to purchase the Property IN ITS PRESENT CONDITION unless the parties agree otherwise in writing. Buyer's decision to purchase the Property is a result of Buyer's own inspections and determinations and not because of or in reliance on any representations made by Seller or any other party. Buyer acknowledges that Brokers, their licensees, employees, officers or partners have not made an independent examination or determination of the structural soundness of the Property, the age or condition of the components, environmental conditions, the permitted uses, nor of conditions existing in the locale where the Property is situated; nor have they made a mechanical inspection of any of the systems contained therein.

215 (B) Any repairs required by this Agreement will be completed in a workmanlike manner.

216 (C) Revised flood maps and changes to Federal law may substantially increase future flood insurance premiums or require insurance for formerly exempt properties. Buyer should consult with one or more insurance agents regarding the need for flood insurance and possible premium increases.

219 12. NOTICES, ASSESSMENTS AND MUNICIPAL REQUIREMENTS (4-14)

220 (A) In Pennsylvania, taxing authorities (school districts and municipalities) and property owners may appeal the assessed value of a property at the time of sale, or at any time thereafter. A successful appeal by a taxing authority may result in a higher assessed value for the property and an increase in property taxes. Also, periodic county-wide property reassessments may change the assessed value of the property and result in a change in property tax.

225 (B) With the exception of county-wide reassessments, assessment appeal notices, notices of change in millage rates or increases in rates, in the event any other notices, including violations, and/or assessments are received after Seller has signed this Agreement and before settlement, Seller will within 10 days (10 if not specified) of receiving the notices and/or assessments provide a copy of the notices and/or assessments to Buyer and will notify Buyer in writing that Seller will:

228 1. Fully comply with the notices and/or assessments, at Seller's expense, before settlement. If Seller fully complies with the notices and/or assessments, Buyer accepts the Property and agrees to the RELEASE in Paragraph 26 of this Agreement, OR

230 2. Not comply with the notices and/or assessments. If Seller chooses not to comply with the notices and/or assessments, or fails within the stated time to notify Buyer whether Seller will comply, Buyer will notify Seller in writing within 10 days (10 if not specified) that Buyer will:

233 a. Comply with the notices and/or assessments at Buyer's expense, accept the Property, and agree to the RELEASE in Paragraph 26 of this Agreement, OR

235 b. Terminate this Agreement by written notice to Seller, with all deposit monies returned to Buyer according to the terms of Paragraph 24 of this Agreement.

237 If Buyer fails to respond within the time stated in Paragraph 12(B) (2) or fails to terminate this Agreement by written notice to Seller within that time, Buyer will accept the Property and agree to the RELEASE in Paragraph 26 of this Agreement.

239 (C) If required by law, within 30 DAYS from the Execution Date of this Agreement, but in no case later than 15 DAYS prior to Settlement Date, Seller will order at Seller's expense a certification from the appropriate municipal department(s) disclosing notice of any uncorrected violations of zoning, housing, building, safety or fire ordinances and/or a certificate permitting occupancy of the Property. If Buyer receives a notice of any required repairs/improvements, Buyer will promptly deliver a copy of the notice to Seller.

243 (D) Seller has no knowledge of any current or pending condemnation or eminent domain proceedings that would affect the Property. If any portion of the Property should be subject to condemnation or eminent domain proceedings after the signing of this Agreement, Seller shall immediately advise Buyer, in writing, of such proceedings. Buyer will have the option to terminate this Agreement by written notice to Seller within 15 days (15 days if not specified) after Buyer learns of the filing of such proceedings, with all deposit monies returned to Buyer according to the terms of Paragraph 24 of this Agreement. Buyer's failure to provide notice of termination within the time stated will constitute a WAIVER of this contingency and all other terms of this Agreement remain in full force and effect.

250 13. TAX DEFERRED EXCHANGE (4-14)

251 (A) If Seller notifies Buyer that it wishes to enter into a tax deferred exchange for the Property pursuant to the Internal Revenue Code, Buyer agrees to cooperate with Seller in connection with such exchange, including the execution of such documents as may be reasonably necessary to conduct the exchange, provided that there shall be no delay in the agreed-to settlement date, and that any

254 Buyer Initials: DMW

Seller Initials: PRK WAC

255 additional costs associated with the exchange are paid solely by Seller. Buyer is aware that Seller anticipates assigning Seller's
256 interest in this Agreement to a third party under an Exchange Agreement and consents to such assignment. Buyer shall not be
257 required to execute any note, contract, deed or other document providing any liability which would survive the exchange, nor shall
258 Buyer be obligated to take title to any property other than the Property described in this Agreement. Seller shall indemnify and
259 hold harmless Buyer against any liability which arises or is claimed to have arisen from any aspect of the exchange transaction

260 (B) If Buyer notifies Seller that it wishes to enter into a tax deferred exchange for the Property pursuant to the Internal Revenue Code,
261 Seller agrees to cooperate with Buyer in connection with such exchange, including the execution of such documents as may be
262 reasonably necessary to conduct the exchange, provided that there shall be no delay in the agreed-to settlement date, and that any
263 additional costs associated with the exchange are paid solely by Buyer. Seller is aware that Buyer has assigned Buyer's interest
264 in this Agreement to a third party under an Exchange Agreement and consents to such assignment. Seller shall not be required
265 to execute any note, contract, deed or other document providing any liability which would survive the exchange. Buyer shall
266 indemnify and hold harmless Seller against any liability which arises or is claimed to have arisen from any aspect of the exchange
267 transaction.

268 14. COMMERCIAL CONDOMINIUM (10-01)

269 NOT APPLICABLE.

270 APPLICABLE. Buyer acknowledges that the condominium unit to be transferred by this Agreement is intended for nonresidential
271 use, and that Buyer may agree to modify or waive the applicability of certain provisions of the Uniform Condominium Act of
272 Pennsylvania (68 Pa.C.S. §3101 et seq.).

273 15. TITLES, SURVEYS AND COSTS (6-20)

274 (A) The Property will be conveyed with good and marketable title that is insurable by a reputable title insurance company at the reg-
275 ular rates, free and clear of all liens, encumbrances, and easements, **excepting however** the following: existing deed restrictions;
276 historic preservation restrictions or ordinances; building restrictions; ordinances; easements of roads; easements visible upon the
277 ground; easements of record; and privileges or rights of public service companies, if any.

278 (B) Buyer will pay for the following: (1) Title search, title insurance and/or mechanics' lien insurance, or any fee for cancellation;
279 (2) Flood insurance, fire insurance, hazard insurance, mine subsidence insurance, or any fee for cancellation; (3) Appraisal fees
280 and charges paid in advance to mortgage lender; (4) Buyer's customary settlement costs and accruals.

281 (C) Any survey or surveys required by the title insurance company or the abstracting company for preparing an adequate legal descrip-
282 tion of the Property (or the correction thereof) will be obtained and paid for by Seller. Any survey or surveys desired by Buyer or
283 required by the mortgage lender will be obtained and paid for by Buyer.

284 (D) If a change in Seller's financial status affects Seller's ability to convey title to the Property as set forth in this Agreement on or
285 before the Settlement Date, or any extension thereof, Seller shall, within _____ days (5 if not specified) notify Buyer, in writing.
286 A change in financial status includes, but is not limited to, Seller filing bankruptcy; filing of a foreclosure law suit against the
287 Property; entry of a monetary judgment against Seller; notice of public tax sale affecting the Property; and Seller learning that
288 the sale price of the Property is no longer sufficient to satisfy all liens and encumbrances against the Property. In the event of the
289 death of Seller, the representative of the estate, or a surviving Seller shall immediately notify Buyer

290 (E) If Seller is unable to give good and marketable title that is insurable by a reputable title insurance company at the regular rates, as
291 specified in Paragraph 15(A), Buyer may terminate this Agreement by written notice to Seller, or take such title as Seller can convey.
292 If the title condition precludes Seller from conveying title, Buyer's sole remedy shall be to terminate this Agreement. Upon termina-
293 tion, all deposit monies shall be returned to Buyer according to the terms of Paragraph 24 of this Agreement and Seller will reimburse
294 Buyer for any costs incurred by Buyer for any inspections or certifications obtained according to the terms of this Agreement, and
295 for those items specified in Paragraph 15(B) items (1), (2), (3) and in Paragraph 15(C).

296 (F) Oil, gas, mineral, or other rights of this Property may have been previously conveyed or leased, and Sellers make no representa-
297 tion about the status of those rights unless indicated elsewhere in this Agreement.

298 Oil, Gas and Mineral Rights Addendum (PAR Form OGM) is attached and made part of this Agreement.

299 (G) COAL NOTICE (Where Applicable)

300 THIS DOCUMENT MAY NOT SELL, CONVEY, TRANSFER, INCLUDE OR INSURE THE TITLE TO THE COAL AND RIGHTS OF SUPPORT UNDER-
301 NEATH THE SURFACE LAND DESCRIBED OR REFERRED TO HEREIN, AND THE OWNER OR OWNERS OF SUCH COAL MAY HAVE THE COM-
302 PLETE LEGAL RIGHT TO REMOVE ALL SUCH COAL AND IN THAT CONNECTION, DAMAGE MAY RESULT TO THE SURFACE OF THE LAND AND
303 ANY HOUSE, BUILDING OR OTHER STRUCTURE ON OR IN SUCH LAND. (This notice is set forth in the manner provided in Section 1 of
304 the Act of July 17, 1957, P.L. 984.) "Buyer acknowledges that he may not be obtaining the right of protection against subsidence
305 resulting from coal mining operations, and that the property described herein may be protected from damage due to mine subsi-
306 dence by a private contract with the owners of the economic interests in the coal. This acknowledgement is made for the purpose
307 of complying with the provisions of Section 14 of the Bituminous Mine Subsidence and the Land Conservation Act of April 27,
308 1966." Buyer agrees to sign the deed from Seller which deed will contain the aforesaid provision.

309 (H) The Property is not a "recreational cabin" as defined in the Pennsylvania Construction Code Act unless otherwise stated here: _____

310 (I) 1. This property is not subject to a Private Transfer Fee Obligation unless otherwise stated here: _____

311 Private Transfer Fee Addendum (PAR Form PTF) is attached and made part of this Agreement.

312 2. **Notice Regarding Private Transfer Fees:** In Pennsylvania, Private Transfer Fees are defined and regulated in the Private
313 Transfer Fee Obligation Act (Act 1 of 2011; 68 Pa.C.S. §§ 8101, et. seq.), which defines a Private Transfer Fee as "a fee that
314 is payable upon the transfer of an interest in real property, or payable for the right to make or accept the transfer, if the obli-
315 gation to pay the fee or charge runs with title to the property or otherwise binds subsequent owners of property, regardless of
316 whether the fee or charge is a fixed amount or is determined as a percentage of the value of the property, the purchase price or
317 other consideration given for the transfer." A Private Transfer Fee must be properly recorded to be binding, and sellers must
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319

320 Buyer Initials: DAW

Seller Initials: PT WAC

321 disclose the existence of the fees to prospective buyers. Where a Private Transfer Fee is not properly recorded or disclosed,
322 the Act gives certain rights and protections to buyers.

323 **16. MAINTENANCE AND RISK OF LOSS (10-06)**

- 324 (A) Seller will maintain the Property, grounds, fixtures and personal property specifically listed in this Agreement in its present con-
325 dition, normal wear and tear excepted.
- 326 (B) Seller will promptly notify the Buyer if, at any time prior to the time of settlement, all or any portion of the Property is destroyed,
327 or damaged as a result of any cause whatsoever.
- 328 (C) Seller bears the risk of loss from fire or other casualties until settlement. If any property included in this sale is destroyed and not
329 replaced, Buyer will:
 - 330 1. Accept the Property in its then current condition together with the proceeds of any insurance recovery obtainable by Seller, OR
 - 331 2. Terminate this Agreement by written notice to Seller, with all deposit monies returned to Buyer according to the terms of
332 Paragraph 24 of this Agreement.

333 **17. RECORDING (9-05)**

334 This Agreement will not be recorded in the Office of the Recorder of Deeds or in any other office or place of public record. If Buyer
335 causes or permits this Agreement to be recorded, Seller may elect to treat such act as a default of this Agreement.

336 **18. ASSIGNMENT (1-10)**

337 This Agreement is binding upon the parties, their heirs, personal representatives, guardians and successors, and to the extent assign-
338 able, on the assigns of the parties hereto. Buyer will not transfer or assign this Agreement without the written consent of Seller unless
339 otherwise stated in this Agreement. Assignment of this Agreement may result in additional transfer taxes.

340 **19. GOVERNING LAW, VENUE AND PERSONAL JURISDICTION (9-05)**

- 341 (A) The validity and construction of this Agreement, and the rights and duties of the parties, will be governed in accordance with the
342 laws of the Commonwealth of Pennsylvania.
- 343 (B) The parties agree that any dispute, controversy or claim arising under or in connection with this Agreement or its performance by either
344 party submitted to a court shall be filed exclusively by and in the state or federal courts sitting in the Commonwealth of Pennsylvania.
345 Seller understands that any documentation provided under this provision may be disclosed to the Internal Revenue Service by
346 Buyer, and that any false statements contained therein could result in punishment by fine, imprisonment, or both.

347 **20. NOTICE REGARDING CONVICTED SEX OFFENDERS (MEGAN'S LAW) (6-13)**

348 The Pennsylvania General Assembly has passed legislation (often referred to as "Megan's Law," 42 Pa.C.S. § 9791 et seq.) providing
349 for community notification of the presence of certain convicted sex offenders. Buyers are encouraged to contact the municipal
350 police department or the Pennsylvania State Police for information relating to the presence of sex offenders near a particular prop-
351 erty, or to check the information on the Pennsylvania State Police Web site at www.pameganslaw.state.pa.us.

352 **21. CERTIFICATION OF NON-FOREIGN INTEREST (10-01)**

- 353 Seller IS a foreign person, foreign corporation, foreign partnership, foreign trust, or foreign estate subject to Section 1445 of the
354 Internal Revenue Code, which provides that a transferee (Buyer) of a U.S. real property interest must withhold tax if the transferor
355 (Seller) is a foreign person.
- 356 Seller is NOT a foreign person, foreign corporation, foreign partnership, foreign trust, or a foreign estate as defined by the Internal
357 Revenue Code, or is otherwise not subject to the tax withholding requirements of Section 1445 of the Internal Revenue Code. To
358 inform Buyer that the withholding of tax is not required upon the sale/disposition of the Property by Seller, Seller hereby agrees
359 to furnish Buyer, at or before closing, with the following:
 - 360 An affidavit stating, under penalty of perjury, the Seller's U.S. taxpayer identification number and that the Seller is not a for-
361 eign person.
 - 362 A "qualifying statement," as defined by statute, that tax withholding is not required by Buyer.
 - 363 Other: _____

364 **22. REPRESENTATIONS (1-10)**

- 365 (A) All representations, claims, advertising, promotional activities, brochures or plans of any kind made by Seller, Brokers, their licens-
366 ees, employees, officers or partners are not a part of this Agreement unless expressly incorporated or stated in this Agreement.
367 This Agreement contains the whole agreement between Seller and Buyer, and there are no other terms, obligations, covenants,
368 representations, statements or conditions, oral or otherwise, of any kind whatsoever concerning this sale. This Agreement will not
369 be altered, amended, changed or modified except in writing executed by the parties.
- 370 (B) Broker(s) have provided or may provide services to assist unrepresented parties in complying with this Agreement.

371 **23. BROKER INDEMNIFICATION (6-13)**

- 372 (A) Buyer and Seller represent that the only Brokers involved in this transaction are: Keller Williams of Central PA
373 _____
374 and that the transaction has not been brought about through the efforts of anyone other than said Brokers. It is agreed that if any
375 claims for brokerage commissions or fees are ever made against Buyer or Seller in connection with this transaction, each party
376 shall pay its own legal fees and costs in connection with such claims. It is further agreed that Buyer and Seller agree to indemnify
377 and hold harmless each other and the above-listed Brokers from and against the non-performance of this Agreement by either
378 party, and from any claim of loss or claim for brokerage commissions, including all legal fees and costs, that may be made by any
379 person or entity. This paragraph shall survive settlement.
- 380 (B) Seller and Buyer acknowledge that any Broker identified in this Agreement: (1) Is a licensed real estate broker; (2) Is not an
381 expert in construction, engineering, code or regulatory compliance or environmental matters and was not engaged to provide
382 advice or guidance in such matters, unless otherwise stated in writing; and (3) Has not made and will not make any representa-
383 tions or warranties nor conduct investigations of the environmental condition or suitability of the Property or any adjacent prop-
384 erty, including but not limited to those conditions listed in Paragraph 9(C).

385 Buyer Initials: D/W

Seller Initials: PK WAC

386 **24. DEFAULT, TERMINATION AND RETURN OF DEPOSITS (1-18)**

- 387 (A) Where Buyer terminates this Agreement pursuant to any right granted by this Agreement, Buyer will be entitled to a return of all
- 388 deposit monies paid on account of Purchase Price pursuant to the terms of Paragraph 24(B), and this Agreement will be VOID.
- 389 Termination of this Agreement may occur for other reasons giving rise to claims by Buyer and/or Seller for the deposit monies.
- 390 (B) Regardless of the apparent entitlement to deposit monies, Pennsylvania law does not allow a Broker holding deposit monies to
- 391 determine who is entitled to the deposit monies when settlement does not occur. Broker can only release the deposit monies:
- 392 1. If this Agreement is terminated prior to settlement and there is no dispute over entitlement to the deposit monies. A written
- 393 agreement signed by both parties is evidence that there is no dispute regarding deposit monies.
- 394 2. If, after Broker has received deposit monies, Broker receives a written agreement that is signed by Buyer and Seller, directing
- 395 Broker how to distribute some or all of the deposit monies.
- 396 3. According to the terms of a final order of court.
- 397 4. According to the terms of a prior written agreement between Buyer and Seller that directs the Broker how to distribute the
- 398 deposit monies if there is a dispute between the parties that is not resolved. (See Paragraph 24 (C))
- 399 (C) Buyer and Seller agree that if there is a dispute over the entitlement to deposit monies that is unresolved 60 days (180 if not
- 400 specified) days after the Settlement Date stated in Paragraph 3(A) (or any written extensions thereof) or following date of termina-
- 401 tion of the Agreement, whichever is earlier, then the Broker holding the deposit monies will, within 30 days of receipt of Buyer's
- 402 written request, distribute the deposit monies to Buyer unless the Broker is in receipt of verifiable written notice that the dispute is
- 403 the subject of litigation or mediation. If Broker has received verifiable written notice of litigation or mediation prior to the receipt
- 404 of Buyer's request for distribution, Broker will continue to hold the deposit monies until receipt of a written distribution agreement
- 405 between Buyer and Seller or a final court order. Buyer and Seller are advised to initiate litigation or mediation for any portion of
- 406 the deposit monies prior to any distribution made by Broker pursuant to this paragraph. Buyer and Seller agree that the distribution
- 407 of deposit monies based upon the passage of time does not legally determine entitlement to deposit monies, and that the parties
- 408 maintain their legal rights to pursue litigation even after a distribution is made.
- 409 (D) Buyer and Seller agree that Broker who holds or distributes deposit monies pursuant to the terms of Paragraph 24 or Pennsylvania
- 410 law will not be liable. Buyer and Seller agree that if any Broker or affiliated licensee is named in litigation regarding deposit
- 411 monies, the attorneys' fees and costs of the Broker(s) and licensee(s) will be paid by the party naming them in litigation.
- 412 (E) Seller has the option of retaining all sums paid by Buyer, including the deposit monies, should Buyer:
- 413 1. Fail to make any additional payments as specified in Paragraph 2, OR
- 414 2. Furnish false or incomplete information to Seller, Broker(s), or any other party identified in this Agreement concerning
- 415 Buyer's legal or financial status, OR
- 416 3. Violate or fail to fulfill and perform any other terms or conditions of this Agreement.
- 417 (F) **Unless otherwise checked in Paragraph 24(G), Seller may elect to retain those sums paid by Buyer, including deposit monies:**
- 418 1. On account of purchase price, OR
- 419 2. As monies to be applied to Seller's damages, OR
- 420 3. As liquidated damages for such default.
- 421 (G) **SELLER IS LIMITED TO RETAINING SUMS PAID BY BUYER, INCLUDING DEPOSIT MONIES, AS LIQUIDATED DAMAGES.**
- 422
- 423 (H) If Seller retains all sums paid by Buyer, including deposit monies, as liquidated damages pursuant to Paragraph 24 (F) or (G), Buyer
- 424 and Seller are released from further liability or obligation and this Agreement is VOID.
- 425 (I) Brokers and licensees are not responsible for unpaid deposits.

426 **25. ARBITRATION OF DISPUTES (1-00)**

427 Buyer and Seller agree to arbitrate any dispute between them that cannot be amicably resolved. After written demand for arbitration by
428 either Buyer or Seller, each party will select a competent and disinterested arbitrator. The two so selected will select a third. If selection
429 of the third arbitrator cannot be agreed upon within 30 days, either party may request that selection be made by a judge of a court of
430 record in the county in which arbitration is pending. Each party will pay its chosen arbitrator, and bear equally expenses for the third
431 and all other expenses of arbitration. Arbitration will be conducted in accordance with the provisions of Pennsylvania Common Law
432 Arbitration 42 Pa. C.S.A. §7341 et seq. This agreement to arbitrate disputes arising from this Agreement will survive settlement.

433 **26. RELEASE (9-05)**

434 Buyer releases, quit claims and forever discharges SELLER, ALL BROKERS, their LICENSEES, EMPLOYEES and any
435 OFFICER or PARTNER of any one of them and any other PERSON, FIRM or CORPORATION who may be liable by or
436 through them, from any and all claims, losses or demands, including, but not limited to, personal injury and property damage and all
437 of the consequences thereof, whether known or not, which may arise from the presence of termites or other wood-boring insects, radon,
438 lead-based paint hazards, mold, fungi or indoor air quality, environmental hazards, any defects in the individual on-lot sewage disposal
439 system or deficiencies in the on-site water service system, or any defects or conditions on the Property. Should Seller be in default under
440 the terms of this Agreement or in violation of any Seller disclosure law or regulation, this release does not deprive Buyer of any right to
441 pursue any remedies that may be available under law or equity. This release will survive settlement.

442 **27. REAL ESTATE RECOVERY FUND (1-18)**

443 A Real Estate Recovery Fund exists to reimburse any persons who have obtained a final civil judgment against a Pennsylvania real
444 estate licensee (or a licensee's affiliates) owing to fraud, misrepresentation, or deceit in a real estate transaction and who have been
445 unable to collect the judgment after exhausting all legal and equitable remedies. For complete details about the Fund, call (717) 783-
446 3658.

447 **28. COMMUNICATIONS WITH BUYER AND/OR SELLER (6-13)**

448 Wherever this Agreement contains a provision that requires or allows communication/delivery to a Buyer, that provision shall be
449 satisfied by communication/delivery to the Broker for Buyer, if any, except where required by law. If there is no Broker for Buyer,
450 those provisions may be satisfied only by communication/delivery being made directly to the Buyer, unless otherwise agreed to by the

451 Buyer Initials: DAB

Seller Initials: PT UAC

452 parties. Wherever this Agreement contains a provision that requires or allows communication/delivery to a Seller, that provision shall
453 be satisfied by communication/delivery to the Broker for Seller, if any. If there is no Broker for Seller, those provisions may be satisfied
454 only by communication/delivery being made directly to the Seller, unless otherwise agreed to by the parties.

455 29. NOTICE BEFORE SIGNING (4-14)

456 Unless otherwise stated in writing, Buyer and Seller acknowledge that Brokers are not experts in legal or tax matters and that Brokers
457 have not made, nor will they make, any representations or warranties nor conduct research of the legal or tax ramifications of this
458 Agreement. Buyer and Seller acknowledge that Brokers have advised them to consult and retain experts concerning the legal and tax
459 effects of this Agreement and the completion of the sale, as well as the condition and/or legality of the Property, including, but not
460 limited to, the Property's improvements, equipment, soil, tenancies, title and environmental aspects. Buyer and Seller acknowledge
461 receipt of a copy of this Agreement at the time of signing. **This Agreement may be executed in one or more counterparts**, each of
462 which shall be deemed to be an original and which counterparts together shall constitute one and the same Agreement of the Parties.
463 **WHEN SIGNED, THIS AGREEMENT IS A BINDING CONTRACT.** Return of this Agreement, and any addenda and amend-
464 ments, including return by electronic transmission, bearing the signatures of all parties, constitutes acceptance by the parties.

465 30. SPECIAL CLAUSES (4-14)

466 (A) The following are part of this Agreement if checked:

- 467 Appraisal Contingency Addendum to Agreement of Sale (PAR Form ACA)
- 468 Short Sale Addendum to Agreement of Sale (PAR Form SHS)
- 469 Zoning Approval Contingency Addendum to Agreement of Sale (PAR Form ZA)
- 470 _____
- 471 _____
- 472 _____

473 (B) Additional Terms:

474 Continued... See Addendum Additional Terms 1

475 Buyer has received the Consumer Notice, where applicable, as adopted by the State Real Estate Commission at 49 Pa.
476 Code §35.336.

477 Buyer has received a statement of Buyer's estimated closing costs before signing this Agreement.

478 Buyer has received the Deposit Money Notice (for cooperative sales when Broker for Seller is holding deposit money)
479 before signing this Agreement.

480 BUYER Dawn Waterman DATE 11/9/2021 | 8:43 PM EST
Keystone FC

481 Mailing Address PO Box 1332, Mechanicsburg, PA 17055-1332
482 Phone(s) _____ Fax _____ Email president@keystonefc.com

483 BUYER _____ DATE _____

484 Mailing Address _____

485 Phone(s) _____ Fax _____ Email _____

486 BUYER _____ DATE _____

487 Mailing Address _____

488 Phone(s) _____ Fax _____ Email _____

489 AUTHORIZED REPRESENTATIVE Dawn Waterman

490 Title President

491 COMPANY Keystone FC

492 Seller has received the Consumer Notice, where applicable, as adopted by the State Real Estate Commission at 49 Pa. Code § 35.336.

493 Seller has received a statement of Seller's estimated closing costs before signing this Agreement.

494 **VOLUNTARY TRANSFER OF CORPORATE ASSETS** (if applicable): The undersigned acknowledges that he/she is authorized
495 by the Board of Directors to sign this Agreement on behalf of the Seller corporation and that this sale does not constitute a sale, lease, or
496 exchange of all or substantially all the property and assets of the corporation, such as would require the authorization or consent of the
497 shareholders pursuant to 15 P.S. §1311.

498 SELLER William A Crock III DATE 11-19-2021
William A Crock III

499 Mailing Address _____

500 Phone(s) _____ Fax _____ Email _____

501 SELLER Pamela Hendrickson DATE 11/19/2021 | 6:58 AM EST
Pamela Hendrickson

502 Mailing Address _____

503 Phone(s) _____ Fax _____ Email _____

504 SELLER _____ DATE _____

505 Mailing Address _____

506 Phone(s) _____ Fax _____ Email _____

507 AUTHORIZED REPRESENTATIVE _____

508 Title _____

509 COMPANY _____

ADDENDUM/ENDORSEMENT TO AGREEMENT OF SALE

ASA

1 PROPERTY 49.26 acres +/- York Rd
2 Carlisle, PA 17015
3 SELLER William A Crock III, Pamela Hendrickson
4 BUYER Keystone FC
5 DATE OF AGREEMENT November 2, 2021

7 Addendum #1

- 9 1. Buyer will be responsible for any payment and penalty associated with removal of the Property from the Pennsylvania Department of Agriculture Clean and Green Program ("Program") as a result of any change in use of the Property by Buyer. Seller will keep the Property in the Program until Settlement.
12 2. The parties acknowledge that Buyer's rights regarding the Due Diligence Period, as provided for in Paragraph 11 above, include, but are not limited to, Buyer's right to seek, at Buyer's cost, "Conditional Use Approval" from South Middleton Township for Buyer's intended use of the Property as a private recreational facility and any other governmental permits or approvals required in connection with such intended use, and that Buyer's right to terminate this Agreement and receive the deposit shall include the right to do so if Buyer is unable to obtain a final, non-appealable Conditional Use Approval or any other required governmental permit or approval prior to the end of the Due Diligence Period. Seller agrees to cooperate with such efforts and to sign any applications or other documents that require signature from the owner of the Property. Should Buyer need any physical examination of the Property related to the Conditional Use Approval or other due diligence activities (survey, hydrate study, soils testing, etc.), Seller agrees to allow Buyer and Buyer's representative(s) reasonable access to the Property at all times during the Due Diligence Period for such testing upon reasonable notice. Buyer agrees to attempt to conduct testing in a manner that is as minimally disruptive to any farming activities taking place on the Property as possible.
27 3. In the event Buyer terminates this agreement, Buyer agrees to provide Seller with copies of any and all surveys, studies, reports and the like completed regarding the property on the Buyer's behalf, at no cost to Seller.
30 4. In the event of any conflict between the terms of this Addendum and the terms of the Agreement, the terms set forth in this Addendum shall control.

37 All other terms and conditions of the Agreement of Sale remain unchanged and in full force and effect.

38 WITNESS BUYER Dawn Waterman DATE 11/18/2021 | 2
39 Keystone FC
40 WITNESS BUYER DATE
41 WITNESS BUYER DATE
42 WITNESS SELLER William A Crock III DATE 11-19-2021
43 WITNESS SELLER Pamela Hendrickson DATE 11/19/2021 | 6
44 WITNESS SELLER DATE

CHANGE IN TERMS ADDENDUM TO AGREEMENT OF SALE

CTA

This form recommended and approved for, but not restricted to use by, the members of the Pennsylvania Association of Realtors® (PAR).

1 PROPERTY 49.26 acres +/- York Rd, Carlisle, PA 17015
2 SELLER William A Crock III, Pamela Hendrickson
3 BUYER Keystone FC

4 The following terms of the Agreement of Sale are changed as stated below:

5 1. REPAIRS

6 Seller, at Seller's expense, will complete the following repairs no later than ___ days prior to Settlement Date (prior to
7 settlement, if not specified), in a workmanlike manner, with all required permits, according to the attached contractor's proposal(s),
8 if any, the terms of which, including the persons and specifications contained therein, shall become part of this Agreement:

9-23 [Blank lines for repair details]

24 2. SELLER ASSIST

25 Seller Assist is changed to \$ ____, or ____% of the Purchase price, maximum, toward Buyer's costs as per-
26 mitted by the mortgage lender, if any. Seller is only obligated to pay up to the amount or percentage which is approved by mortgage
27 lender.

28 3. PURCHASE PRICE

29 Purchase price is changed from \$ ____ to \$ ____.

30 4. ACCEPTANCE & SETTLEMENT

31 (A) Written acceptance of all parties will be on or before: _____
32 (B) Settlement Date is changed from February 28, 2023 to September 29, 2023

33 5. MORTGAGE TERMS

34 (A) Mortgage Type is changed from _____ to _____

35 (B) Mortgage amount

36 1. First mortgage amount is changed from \$ ____ to \$ ____
37 2. Second mortgage amount is changed from \$ ____ to \$ ____

38 (C) Mortgage Lender

39 1. First mortgage lender is changed to _____
40 2. Second mortgage lender is changed to _____
41 3. Buyer will submit a completed, written mortgage application to the identified lender(s), if any, according to the terms of the
42 Mortgage Contingency paragraph of the Agreement of Sale on or before: _____

43 (D) Loan-To-Value (LTV) ratio (For conventional loans)

44 First mortgage LTV ratio not to exceed ____% Second mortgage LTV ratio not to exceed ____%

45 (E) Date for Buyer to deliver documentation of lender's approval of Buyer's mortgage, whether conditional or outright, is
46 changed from _____ to _____

47 Buyer Initials: DMW

Seller Initials: PA



48 **6. TIME PERIODS**

49 (A) The time period in paragraph 7, line 90 of Agreement of Sale is changed to September 7, 2023.

50 The time period in paragraph 11, line 196 of Agreement of Sale is changed to 665 days.

51 The time period in paragraph _____, line _____ of Agreement of Sale is changed to _____.

52 The time period in paragraph _____, line _____ of Agreement of Sale is changed to _____.

53 The time period in paragraph _____, line _____ of Agreement of Sale is changed to _____.

54 (B) The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.

55 The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.

56 The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.

57 The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.

58 The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.

59 **7. OTHER**

60 Seller shall have the right to harvest crops planted on the Property, at any time prior to 12/31/2023.

61 _____

62 _____

63 _____

64 _____

65 _____

66 _____

67 _____

68 All other terms and conditions of the Agreement, including all other time periods, remain unchanged and in full force and effect.

69	BUYER	<u>Dawn Waterman</u>	<u>Keystone FC</u>	DATE	<u>2/10/2023</u>
70	BUYER	<small>94CD524594F8415...</small>		DATE	
71	BUYER			DATE	
72	SELLER	<u>William A Crock III</u>		DATE	
73	SELLER	<u>Pamela Hendrickson</u>		DATE	<u>2/7/23</u>
74	SELLER			DATE	

CHANGE IN TERMS ADDENDUM TO AGREEMENT OF SALE

CTA

This form recommended and approved for, but not restricted to use by, the members of the Pennsylvania Association of Realtors® (PAR).

1 **PROPERTY** 49.26 acres +/- York Rd, Carlisle, PA 17015

2 **SELLER** William A Crock III, Pamela Hendrickson

3 **BUYER** Keystone FC

4 **The following terms of the Agreement of Sale are changed as stated below:**

5 **1. REPAIRS**

6 Seller, at Seller's expense, will complete the following repairs no later than _____ days prior to Settlement Date (prior to
7 settlement, if not specified), in a workmanlike manner, with all required permits, according to the attached contractor's proposal(s),
8 if any, the terms of which, including the persons and specifications contained therein, shall become part of this Agreement:

9 _____

10 _____

11 _____

12 _____

13 _____

14 _____

15 _____

16 _____

17 _____

18 _____

19 _____

20 _____

21 _____

22 _____

23 _____

24 **2. SELLER ASSIST**

25 Seller Assist is changed to \$ _____, or _____ % of the Purchase price, maximum, toward Buyer's costs as per-
26 mitted by the mortgage lender, if any. Seller is only obligated to pay up to the amount or percentage which is approved by mortgage
27 lender.

28 **3. PURCHASE PRICE**

29 Purchase price is changed from \$ _____ to \$ _____.

30 **4. ACCEPTANCE & SETTLEMENT**

31 (A) Written acceptance of all parties will be on or before: _____

32 (B) Settlement Date is changed from February 28, 2023 to September 29, 2023

33 **5. MORTGAGE TERMS**

34 (A) **Mortgage Type** is changed from _____ to _____

35 (B) **Mortgage amount**

36 1. First mortgage amount is changed from \$ _____ to \$ _____

37 2. Second mortgage amount is changed from \$ _____ to \$ _____

38 (C) **Mortgage Lender**

39 1. First mortgage lender is changed to _____

40 2. Second mortgage lender is changed to _____

41 3. Buyer will submit a completed, written mortgage application to the identified lender(s), if any, according to the terms of the
42 Mortgage Contingency paragraph of the Agreement of Sale on or before: _____

43 (D) **Loan-To-Value (LTV) ratio** (For conventional loans)

44 First mortgage LTV ratio not to exceed _____ % Second mortgage LTV ratio not to exceed _____ %

45 (E) **Date for Buyer to deliver documentation** of lender's approval of Buyer's mortgage, whether conditional or outright, is
46 changed from DMW to _____

47 **Buyer Initials:** _____

CTA Page 1 of 2

Seller Initials: WAC



48 **6. TIME PERIODS**

49 (A) The time period in paragraph 7, line 90 of Agreement of Sale is changed to September 7, 2023.

50 The time period in paragraph 11, line 196 of Agreement of Sale is changed to 665 days.

51 The time period in paragraph _____, line _____ of Agreement of Sale is changed to _____.

52 The time period in paragraph _____, line _____ of Agreement of Sale is changed to _____.

53 The time period in paragraph _____, line _____ of Agreement of Sale is changed to _____.

54 (B) The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.

55 The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.

56 The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.

57 The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.

58 The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.

59 **7. OTHER**

60 Seller shall have the right to harvest crops planted on the Property, at any time prior to 12/31/2023.

61 _____

62 Should Buyer elect to terminate this Agreement of Sale for any reason, Seller shall have the right to retain \$5000 of the

63 Deposit held by Keller Williams of Central PA. The remaining Deposit shall be handled in accordance with the

64 original Agreement of Sale.

65 _____

66 _____

67 _____

68 **All other terms and conditions of the Agreement, including all other time periods, remain unchanged and in full force and effect.**

69 BUYER Dawn Waterman Keystone FC DATE 2/10/2023

70 BUYER _____ 94CD524594F8415... _____ DATE _____

71 BUYER _____ _____ DATE _____

72 SELLER William A. Crock III William A Crock III DATE 2-7-2023

73 SELLER _____ Pamela Hendrickson _____ DATE _____

74 SELLER _____ _____ DATE _____

CHANGE IN TERMS ADDENDUM TO AGREEMENT OF SALE

CTA

This form recommended and approved for, but not restricted to use by, the members of the Pennsylvania Association of Realtors® (PAR).

1 **PROPERTY 49.26 acres +/- York Rd, Carlisle, PA 17015**
2 **SELLER William A Crock III, Pamela Hendrickson**
3 **BUYER Keystone FC**

4 **The following terms of the Agreement of Sale are changed as stated below:**

5 **1. REPAIRS**

6 Seller, at Seller's expense, will complete the following repairs no later than _____ days prior to Settlement Date (prior to
7 settlement, if not specified), in a workmanlike manner, with all required permits, according to the attached contractor's proposal(s),
8 if any, the terms of which, including the persons and specifications contained therein, shall become part of this Agreement:
9 _____
10 _____
11 _____
12 _____
13 _____
14 _____
15 _____
16 _____
17 _____
18 _____
19 _____
20 _____
21 _____
22 _____
23 _____

24 **2. SELLER ASSIST**

25 Seller Assist is changed to \$ _____, or _____ % of the Purchase price, maximum, toward Buyer's costs as per-
26 mitted by the mortgage lender, if any. Seller is only obligated to pay up to the amount or percentage which is approved by mortgage
27 lender.

28 **3. PURCHASE PRICE**

29 Purchase price is changed from \$ _____ to \$ _____.

30 **4. ACCEPTANCE & SETTLEMENT**

31 (A) Written acceptance of all parties will be on or before: _____
32 (B) Settlement Date is changed from **September 29, 2023** to **March 5, 2024**

33 **5. MORTGAGE TERMS**

34 (A) **Mortgage Type** is changed from _____ to _____

35 **(B) Mortgage amount**

- 36 1. First mortgage amount is changed from \$ _____ to \$ _____
- 37 2. Second mortgage amount is changed from \$ _____ to \$ _____

38 **(C) Mortgage Lender**


- 39 1. First mortgage lender is changed to _____
- 40 2. Second mortgage lender is changed to _____
- 41 3. Buyer will submit a completed, written mortgage application to the identified lender(s), if any, according to the terms of the
42 Mortgage Contingency paragraph of the Agreement of Sale on or before: _____

43 **(D) Loan-To-Value (LTV) ratio** (For conventional loans)

44 First mortgage LTV ratio not to exceed _____ % Second mortgage LTV ratio not to exceed _____ %

45 **(E) Date for Buyer to deliver documentation** of lender's approval of Buyer's mortgage, whether conditional or outright, is
46 changed from _____ to _____

47 Buyer Initials: _____

Seller Initials: _____ 



48 **6. TIME PERIODS**

- 49 (A) The time period in paragraph 7, line 90 of Agreement of Sale is changed to Mar 5, 2024.
- 50 The time period in paragraph 11, line 196 of Agreement of Sale is changed to 845 days.
- 51 The time period in paragraph _____, line _____ of Agreement of Sale is changed to _____.
- 52 The time period in paragraph _____, line _____ of Agreement of Sale is changed to _____.
- 53 The time period in paragraph _____, line _____ of Agreement of Sale is changed to _____.
- 54 (B) The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.
- 55 The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.
- 56 The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.
- 57 The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.
- 58 The time period in paragraph _____, line _____ of the _____ Addendum is changed to _____.

59 **7. OTHER**

60 Seller shall have the right to harvest crops planted on the Property, at any time prior to 12/31/2023.

61 _____

62 ~~_____~~

63 ~~_____~~

64 ~~Original Agreement of Sale~~

65 _____

66 _____

67 _____

68 All other terms and conditions of the Agreement, including all other time periods, remain unchanged and in full force and effect.

69	BUYER	_____	Keystone FC	DATE	_____
70	BUYER	_____	_____	DATE	_____
71	BUYER	_____	_____	DATE	_____
72	SELLER	_____	William A Crock III	DATE	_____
73	SELLER	<i>Pamela Hendrickson</i>	Pamela Hendrickson	DATE	7/10/2023 11:56 AM EDT
74	SELLER	_____	_____	DATE	_____

VICINITY MAP
SCALE: 1" = 2000' USGS MAPS (Carlisle and Mechanicsburg, PA 2016)



SHEET INDEX

TYPE	NUMBER	TITLE
C-001	SHEET 01	COVER
C-101	SHEET 02	SITE & LANDSCAPE PLAN
C-102	SHEET 03	GRADING PLAN

ENGINEER'S CERTIFICATION

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Pennsylvania. This Engineer has been to the site and observed the present condition and the plan indicates that actual condition of the plan, and to the best of my knowledge and belief it is true and correct, and the bearings may vary upon the accuracy thereof.

Justin T. Doty (Professional Seal No. 14113) Date: June 5, 2023

Justin T. Doty
Professional Engineer
License No. PE 08013
Expiration Date: 9/30/2025



GENERAL USE DESCRIPTION

The purpose of this plan is to subdivide, reconstitute and then develop the approximately 68 acre parcels located at 842 York Road. The proposed development within this Agricultural and Conservation (AC) District is a Non-Municipal Outdoor Recreational Facility consisting of soccer fields with supporting features such as concessions, parking areas and stormwater management facilities.

GENERAL NOTES

- Fields surveys were performed by Fradette, Siebert and Associates in April 2022, and all bearings shown herein are in state plane coordinate system, PA South Zone, North American Datum of 1983 (NAD83).
- According to FEMA Flood Insurance Rate Map (FIRM) Community Panel NO. 42041C0242E, this property is located in within a 100 year floodplain.
- https://www.fema.gov/flood-maps/national-flood-hazard-layer
- According to the US Fish & Wildlife Service National Wetlands Inventory, wetlands are not present on this site. https://www.fws.gov/nwfi/land/land/mapper.html
- FSA, Inc. assumes no liability for the location of any above ground and below ground utilities. Existing utilities, if any, are shown from the best available information.
- There is no proposed state road access associated with this subdivision plan. Before access to any state road is to be constructed, a Highway Occupancy Permit is required from PennDOT.

WAIVERS

A waiver has been requested by the South Middleton Township Board of Supervisors for the following:

- Section 706.F For any land use where the total number of parking spaces exceeds 50 (fifty) stalls, aisles shall be provided between every ten (10) parking spaces or at the end of each parking row.
- Section 711.b.2.a.ii The interior of each parking lot shall have at least one (1) three-inch (3") colored decorative stripe line for every ten (10) parking spaces.
- Section 711.b.2.a.iii A minimum of 10 percent of any parking lot facility over 2,000 square feet in gross area (measured from the outside edge of paving to outside edge of paving) shall be devoted to landscaping. This landscaping shall include a minimum of one tree per 20 parking spaces and all planting beds within a parking lot shall be surfaced in lawn or ground cover planting.

CONDITIONAL USE PLAN FOR WOLF FARM SOCCER FIELDS

SITUATED APPROXIMATELY 500 FEET WEST OF THE INTERSECTION
OF SOUTH MIDDLESEX ROAD AND YORK ROAD (PA SR 74)
SOUTH MIDDLETON TOWNSHIP
CUMBERLAND COUNTY, PENNSYLVANIA

EQUITABLE OWNER/DEVELOPER:
KEYSTONE FC
P.O. Box 1332
MECHANICSBURG, PA 17055

CIVIL ENGINEER / SURVEYOR:
FSA INC.
505 SOUTH HANOVER STREET
CARLISLE, PA 17013

C/O: SEAN COCHRAN
EMAIL: scochran@keystonefc.com
PHONE: (717) 329-8201

PROJECT MANAGER: JUSTIN DOTY
EMAIL: jdoty@fsa-inc.com
PHONE: (717) 701-8111



EXHIBIT

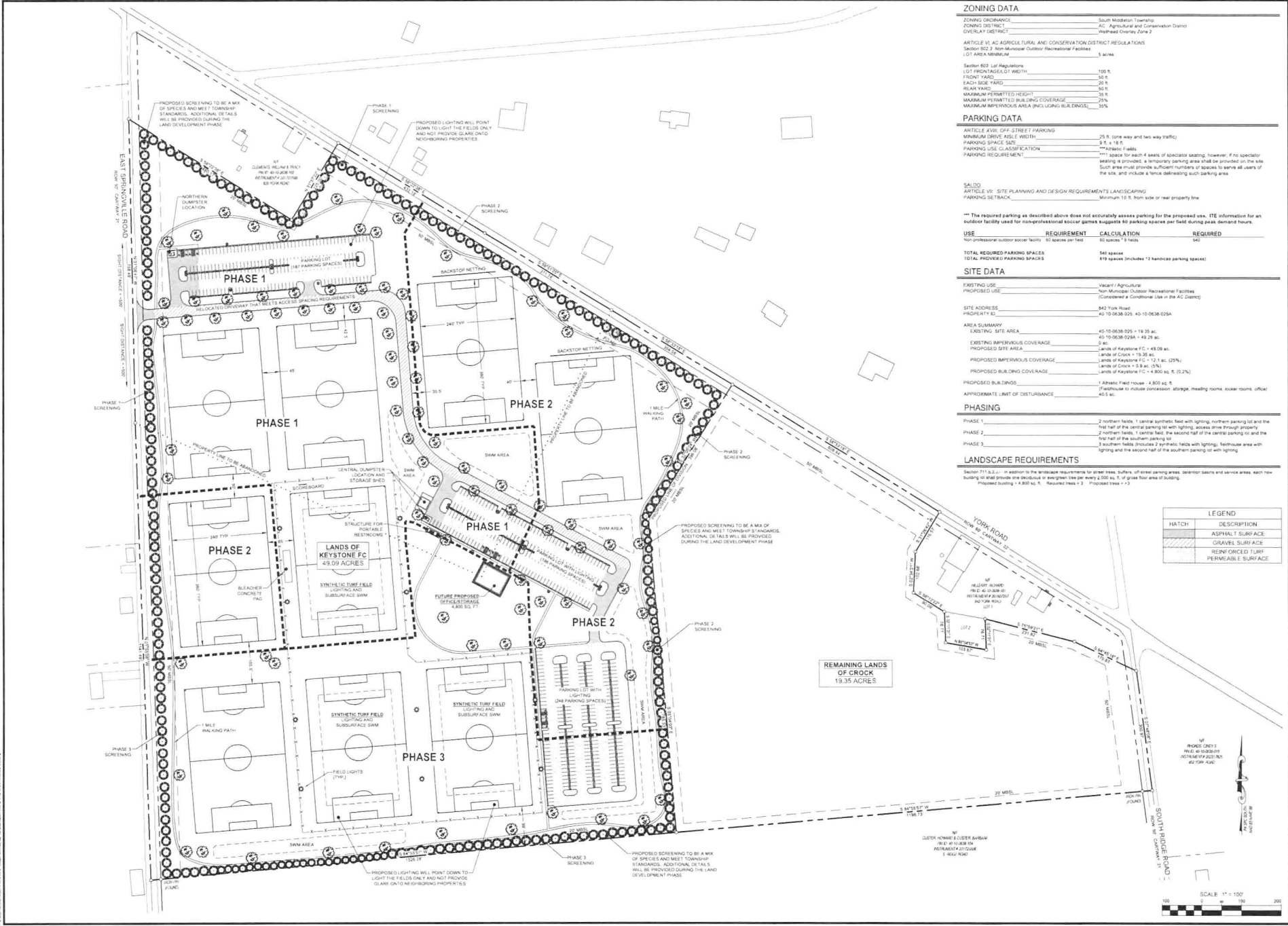
A-4



WOLF FARM SOCCER FIELDS
SITUATED APPROXIMATELY 500 FEET WEST OF THE INTERSECTION
OF SOUTH MIDDLESEX ROAD AND YORK ROAD
SOUTH MIDDLETON TOWNSHIP
CUMBERLAND COUNTY, PENNSYLVANIA
KEYSTONE FC, C/O SEAN COCHRAN
PO BOX 1332 MECHANICSBURG, PA 17055

PROJECT NO.	70131
DATE	6-5-2023
PROJECT MANAGER	JTD
EMAIL	jdoty@fsa-inc.com
PROJECT NO.	42-10-003-025, 42-10-003-025A
SCALE	AS SHOWN
SHEET NO.	

COVER
C-001
SHEET 1 OF 3



ZONING DATA

ZONING ORDINANCE	South Middleton Township
ZONING DISTRICT	AC - Agricultural and Conservation District
OVERLAY DISTRICT	Proposed Overlay Zone 2
ARTICLE VI. AC AGRICULTURAL AND CONSERVATION DISTRICT REGULATIONS	
LOT AREA MINIMUM	5 acres
Section 603 Lot Regulations	
LOT FRONTAGE/LOT WIDTH	100 ft.
FRONT YARD	5 ft. x 18 ft.
EACH SIDE YARD	20 ft.
REAR YARD	20 ft.
MAXIMUM PERMITTED HEIGHT	35 ft.
MAXIMUM PERMITTED BUILDING COVERAGE	25%
MAXIMUM IMPERVIOUS AREA (INCLUDING BUILDINGS)	25%

PARKING DATA

ARTICLE VIII. OFF-STREET PARKING	25 ft. (one-way and two-way traffic)
MINIMUM DRIVE AISLE WIDTH	5 ft. x 18 ft.
PARKING SPACE SIZE	77' x 26' x 16'
PARKING USE CLASSIFICATION	77' x 26' x 16'
PARKING REQUIREMENT	1111 spaces for each 4 seats of spectator seating. However, if no spectator seating is provided, a temporary parking area shall be provided on the site. Such area must provide sufficient numbers of spaces to serve all users of the site, and include a fence delineating such parking area.

LANDSCAPE DATA

ARTICLE VI. SITE PLANNING AND DESIGN REQUIREMENTS LANDSCAPING	Minimum 10 ft. from side or rear property line
---------------------------------------------------------------	------------------------------------------------

*** The required parking as described above does not accurately assess parking for the proposed use. ITE information for an outdoor facility used for non-professional soccer games suggests 60 parking spaces per field during peak demand hours.

USE	REQUIREMENT	CALCULATION	REQUIRED
Non-professional outdoor soccer facility	60 spaces per field	60 spaces * 9 fields	540
TOTAL REQUIRED PARKING SPACES			540 spaces
TOTAL PROVIDED PARKING SPACES			479 spaces (includes 7 handicap parking spaces)

SITE DATA

EXISTING USE	Vacant / Agriculture
PROPOSED USE	Non-Municipal Outdoor Recreational Facilities (Considered a Conditional Use in the AC District)
SITE ADDRESS	842 York Road
PROPOSED SITE	40-10-0638-025; 40-10-0638-026A
AREA BOUNDARY	
EXISTING SITE AREA	40-10-0638-025 - 19.35 ac.
EXISTING IMPERVIOUS COVERAGE	40-10-0638-026A - 43.29 ac.
PROPOSED SITE AREA	40-10-0638-025 - 19.35 ac.
PROPOSED IMPERVIOUS COVERAGE	40-10-0638-026A - 43.29 ac.
PROPOSED BUILDING COVERAGE	40-10-0638-025 - 19.35 ac. (25%) 40-10-0638-026A - 43.29 ac. (25%)
PROPOSED BUILDINGS	1 Athletic Field house - 4,800 sq. ft. Facilities to include concession stands, meeting rooms, locker rooms, office
APPROXIMATE LIMIT OF DISTURBANCE	40.5 ac.

PHASING

PHASE 1	2 northern fields, 1 central synthetic field with lighting, northern parking lot and the first half of the central parking lot with lighting, access drive through lot and the first half of the southern parking lot
PHASE 2	2 northern fields, 1 central field, the second half of the central parking lot and the first half of the southern parking lot
PHASE 3	3 southern fields (includes 2 synthetic fields with lighting), fieldhouse area with lighting and the second half of the southern parking lot with lighting

LANDSCAPE REQUIREMENTS

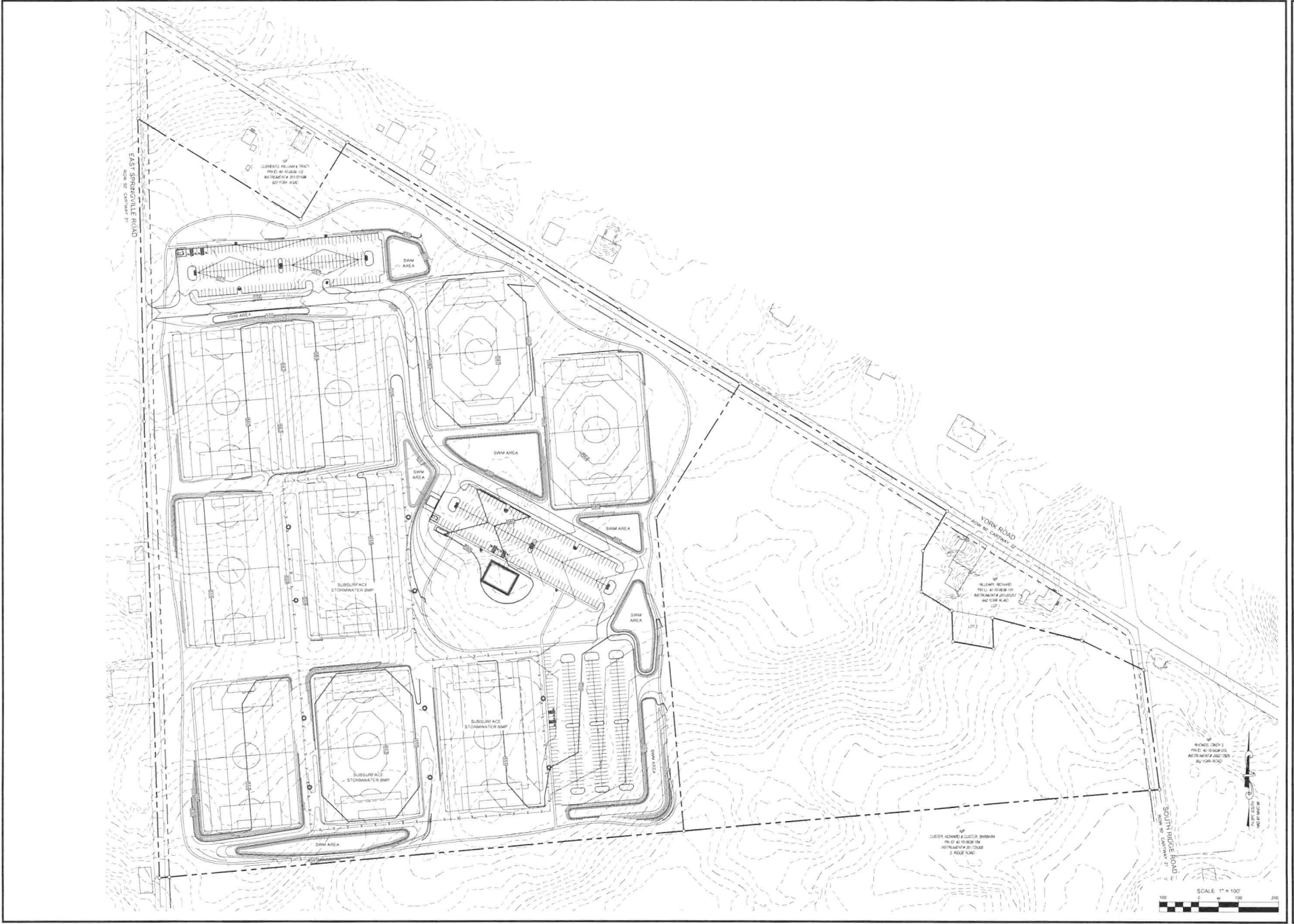
Section 711.8.2.2 - In addition to the landscape requirements for other trees, buffers, off-street parking areas, admission building and service areas, each new building or wall provide one deciduous or evergreen tree per every 2,000 sq. ft. of gross floor area of building.
Proposed building = 4,800 sq. ft. Required trees = 3. Proposed trees = 3.

HATCH	DESCRIPTION
[Solid Grey]	ASPHALT SURFACE
[Diagonal Lines]	GRAVEL SURFACE
[Cross-hatch]	REINFORCED TURF PERMISSIBLE SURFACE

FSAP
 PROFESSIONAL SERVICE AGREEMENT
 I, the undersigned, hereby authorize the use of the above information for the project described herein. I understand that this information is confidential and shall remain the property of the undersigned. I agree to indemnify and hold the undersigned harmless from and against all claims, damages, costs and expenses, including reasonable attorneys' fees, that may be asserted against or incurred by the undersigned in connection with the use of the above information for the project described herein.

WOLF FARM SOCCER FIELDS
 SITUATED APPROXIMATELY 500 FEET WEST OF THE INTERSECTION OF SOUTH MIDDLTON ROAD AND YORK ROAD (PA 89)
 CUMBERLAND COUNTY, PENNSYLVANIA
 PROJECT NO. 2023.1
 SHEET NO. 1 OF 3
 DATE: 6-2-2023
 PROJECT MANAGER: JTD
 EMAIL: JTD@FSAP-PA.COM
 PROPERTY ID: 40-10-0638-025, 40-10-0638-026A
 SCALE: 1" = 100'
 SHEET FILE: 2023.1-01

SITE & LANDSCAPE PLAN
C-101
 SHEET 2 OF 3



NO.	REVISION

FSAC
 FREDERICK SEBERT & ASSOCIATES, INC.
 1500 HUNTERS CREEK DRIVE, SUITE 100
 HUNTERS CREEK, PENNSYLVANIA 17033

WOLF FARM SOCCER FIELDS
 SITUATED APPROXIMATELY 600 FEET WEST OF THE INTERSECTION
 OF YORK ROAD AND CARTRAY CT
 SOUTH RIDGE, TOWNSHIP
 CUMBERLAND COUNTY, PENNSYLVANIA
 PROJECT NO. 42-15-0638-CR-2023
 DATE 8-2-2023
 PROJECT MANAGER JTD
 DRAWN BY JTD
 CHECKED BY JTD
 SCALE 1" = 100'
 SHEET 3 OF 3

Prepared by:



FREDERICK, SEIBERT & ASSOCIATES, INC.

Civil Engineering

Land Surveying

Landscape Architecture

PRECEDENT PROJECT NARRATIVE

for

WOLF FARM SOCCER FIELDS

SOUTH MIDDLETON TOWNSHIP
CUMBERLAND COUNTY, PENNSYLVANIA

CMC

Job #: 70213.1

Date: January 2023

OFFICE LOCATIONS

5201 Spring Road 128 South Potomac Street
Shermans Dale, PA 17090 Hagerstown, MD 21740
717.567.3680

20 West Baltimore Street 505 S
Greencastle, PA 17225 C
717.597.1007

EXHIBIT

A-5

tabbles

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PURPOSE

The examples included in this report are meant to inform on the required and provided parking for similar types of soccer field facilities. Also, additional information and pictures are provided for each to convey what can be expected for this type of development as the Keystone FC facility will be similar in scope, site design, field construction, etc.

UNITED SPORTS TRAINING CENTER

1426 Marshallton Thorndale Rd, Downingtown, PA 19335

Below are site photos and property information of a similar type complex in Downingtown. This facility includes 10 fields with a 127,000 sq. ft. fieldhouse that includes an indoor turf field.

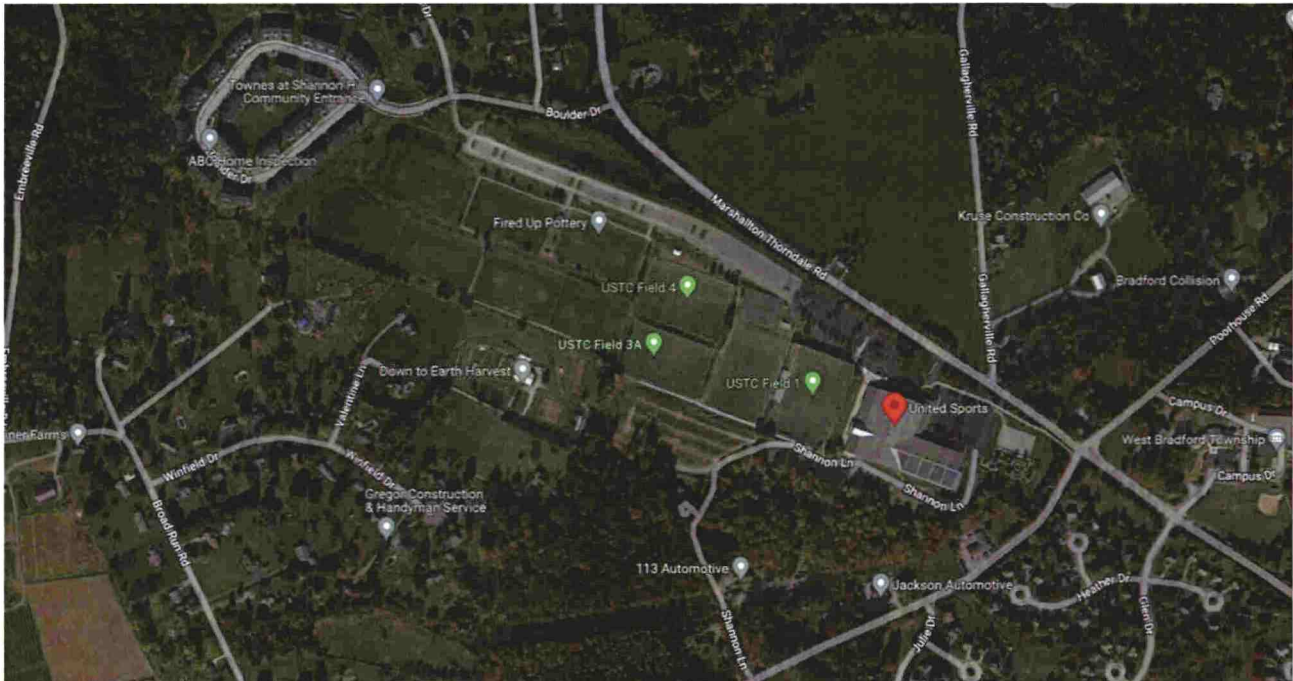
Development Information

1. West Bradford Township
2. Zoning District = I-Industrial
3. Conditional Use = Sports complex development
4. Parking requirement as required for conditional use = No special event shall be held which will result in parking demand in excess of the number of parking spaces provided at the sports complex development for all uses.

Parking Information

Parking total = 550 parking spaces

Average spaces per field = 55





UKRANIAN AMERICAN SPORTS CENTER

1 Lower State Rd, North Wales, PA 19454

Below are site photos and property information of a similar type complex in North Wales. This facility includes 5 fields and an 8,000 sq. ft. restaurant and event center.

Development Information

1. Horsham Township
2. Zoning District = R-2 Low Density Residential
3. Approved Use = Municipal park or recreation area
4. Parking classification = Outdoor recreation and parks
5. Parking requirement = parking needs for this use will fluctuate depending on the nature of the recreational activities offered. For that reason, the number of parking spaces to be provided shall be determined by Council in consultation with the latest edition of the Institute for Transportation Engineers' Parking Generation Rates publication.

Parking Information

Parking total = 320 parking spaces

Average spaces per field = 64 parking spaces





BRYAN MULTI-SPORTS COMPLEX

501 S Oak Forest Rd, Goldsboro, NC 27534

Below are site photos and property information of a similar type complex in Goldsboro. This facility includes 8 fields and a 5,000 sq. ft. fields house with playgrounds.

Development Information

1. City of Goldsboro
2. Zoning District = R-16 Residential
3. Special Use (Council Review) = Outdoor recreational facility privately owned
4. Parking classification = Outdoor recreational area privately owned
5. Parking requirement = Minimum is 18 spaces per playing field, plus 1 space for every four available seats and maximum is 36 spaces per playing field, plus 1 space for every two available seats.

Parking Information

Parking total = 400 parking spaces

Average spaces per field = 50 parking spaces





WRAL SOCCER PARK

7700 Perry Creek Rd, Raleigh, NC 27616

Below are site photos and property information of a similar type complex in Raleigh. This facility includes 22 fields and 13,000 sq. ft. clubhouse and fitness center.

Development Information

1. City of Raleigh
2. Zoning District = R-6 Residential
3. Special Use = Outdoor sports or entertainment facility > 250 seats
4. Parking classification = Outdoor sports or entertainment facility
5. Parking requirement = No maximum or minimum required

Parking Information

Parking total = 1025 parking spaces

Average spaces per field = 46.5 parking spaces



WRAL SOCCER PARK

7700 Perry Creek Road Raleigh, NC 27616

Greenway access

Walking trail

Clubhouse

Fitness Center

US 1

Perry Creek Rd

US 401

Exit only

Enter only

FIELD & SHELTER NAMES

1 DICK'S SPORTSHOES	4 ACCENTUATE STAFFING	14 SportClips HAIRCUTS
2 CIRCLE K	5 FIRST WATCH THE DAYTIME CAFE	15 FIRST HORIZON
3 Ricky Horwitz	6 McDonald's Gunter Family	16 CHOW
	7 urbanAir AIRCOURT PARK	17 Newcomb and Company PLUMBING
	8 Pet Mania	18 BAKER ROOFING
	9 visitRaleigh	19 Harrie Teeter Professional Paint & Decorating
	10 INDULOR The Popcorn Store	20 BUMGARDNER & MARTIN OPTHOPTICS
	11 InStat	21 JenSellsRaleigh
	12 SOCCER.COM UNMATCHED	22 raleigh radiology
	13 WVA Workers Insurance Agency	

A **SHERWIN WILLIAMS**

B **MARSHFIELD CAMPBELL** INSURANCE GROUP

C **Leith Volkswagen** of Raleigh

FITNESS CENTER athletic lab

RICHMOND STRIKER PARK

4801 Pouncey Tract Rd, Glen Allen, VA 23059

Below are site photos and property information of a similar type complex in Raleigh. This facility includes 11 fields and walking trail.

Development Information

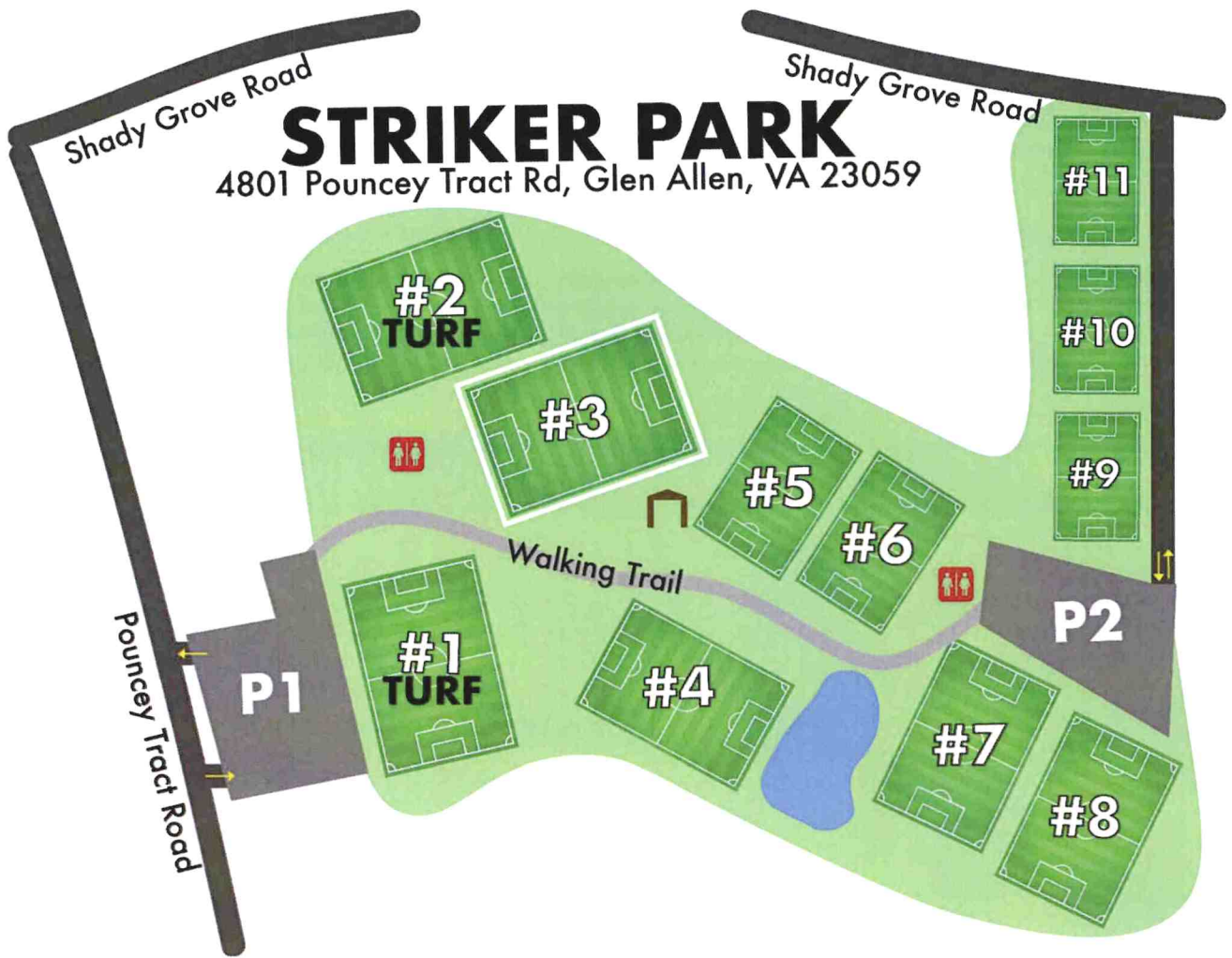
1. Henrico County
2. Zoning District = A-1 Agricultural
3. Permitted Use = Amusement park, sports park, or water park
4. Parking classification = Amusement park, sports park, or water park
5. Parking requirement = 5 space per 1,000 sq. ft. of activity area

Parking Information

Parking total = 466 parking spaces

Average spaces per field = 42.3 parking spaces





DELAWARE TURF SPORTS COMPLEX

4000 Bay Rd, Frederica, DE 19946

Below are site photos and property information of a similar type complex in Raleigh. This facility includes 12 fields, a 5,400 sq. ft. administrative building and multiple concession and restroom buildings.

Development Information

1. Kent County
2. Zoning District = A-C Agricultural Conservation District
3. Conditional Use = Recreation uses
4. Parking classification = Swimming pool or other recreational activity (Community)
5. Parking requirement = 1 space for each 8 persons based on the facility's design capacity and 1 space for each employee, except when the facility is a neighborhood one and is located within the neighborhood served -only 10 parking spaces shall be required

Parking Information

Parking total = 943 parking spaces

Average spaces per field = 78.5 parking spaces





SPRING MEADOWS PARK

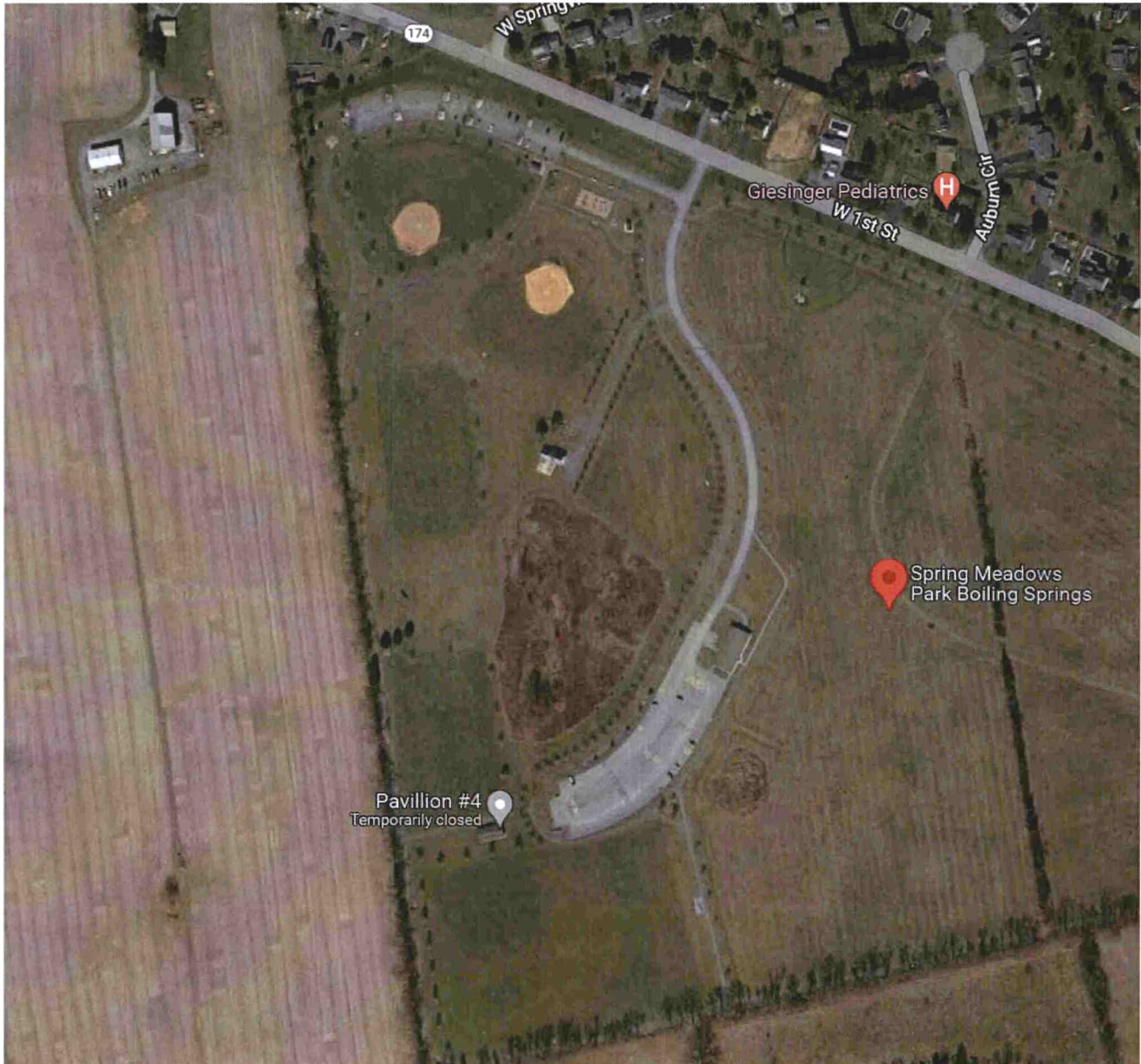
640 W 1st St, Boiling Springs, PA 17007

Below are some site photos of Spring Meadows Park to show a similar type of development within South Middleton Township for reference. This facility includes 8 fields with 531 parking spaces.

Parking Information

Parking total = 531 parking spaces

Average spaces per field = 66.3 parking spaces



Justin T. Doty, PE
VICE PRESIDENT / OWNER



Education:

Bachelor of Science / Civil Engineering,
Pennsylvania State University, 2007

Registrations/Certifications:

2013 – Professional Engineer
PA Reg #PE080613
2013 – Professional Engineer
MD Reg #43404

Years' Experience:

14 years with FSA
1 year construction management with
Whiting-Turner

Professional Affiliations:

American Society of Civil Engineers
Pennsylvania Society of Civil Engineers
Rotary Club of Carlisle
- Board Member, President
Bubbler Foundation
- Vice President
Carlisle Borough Municipal Authority
- Board Member, Chairman

SELECTED WORKS

Chick-Fil-A and Broad Reach Retail Development - Carlisle, PA

With prime location in the downtown section of Carlisle, this development required not only site engineering to meet the redevelopment needs of an abandon Tractor Supply site but also specific design coordination with the Borough of Carlisle, Chick-Fil-A and Broad Reach Retail to maximize site aesthetic improvements and meet the needs/wants of all involved. Also included was an extensive utility and stormwater study to connect all updated site utilities and runoff to the existing urban grid.

York-Trindle Urban Collector - Cumberland County, PA

Worked with client and Cumberland Area Economic Development Corporation (CAEDC) to secure \$2.6M in MTF grants through PennDOT and DCED for a mile long urban collector road in South Middleton Township. Project requires coordination with multiple parties involved including another engineering firm representing the adjacent stakeholder. Project includes incorporation of a multi-use path for pedestrian and bicycle traffic. Road design, stormwater management, hydrology/hydraulics, utilities and infrastructure, regional traffic consideration, coordination with multiple agencies and presentations at many public meetings.

Williamsport Retirement Village – Williamsport, MD

A beautiful, unique facility with challenging terrain at the confluence of the Conococheague Creek and Potomac River. Campus master planning, site design and redevelopment, stormwater management, site grading, utility mapping and design, plan phasing strategies.

Wenger Court – Carlisle, PA

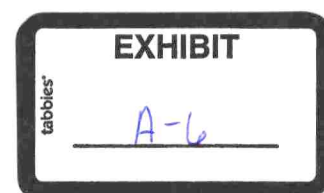
Subdivision, road design for a signalized intersection, stormwater management, Individual NPDES permitting, Highway Occupancy Permit through PennDOT, extension of water and sewer utilities, coordination with neighboring church for property exchange, multiple public meetings.

ATAPCO Properties – Antrim Township, PA

Stream restoration and flood study for master planning of large industrial complex, hydrology / hydraulics, Natural Channel Design, permitting through Franklin County Conservation District, Antrim Township, PA DEP, US Army Corps of Engineers, FEMA.

Walgreens Pharmacy – Hagerstown, MD and Washington County, MD

Two redevelopment sites simultaneously. Underground/urban stormwater management, utilities, grading, retaining walls. Coordination and approvals necessary by Maryland State Highway.



FREDERICK, SEIBERT AND ASSOCIATES, INC. (FSA)

FSA is a multidisciplinary firm headquartered in Hagerstown, Maryland with a branch offices in Greencastle, Carlisle and New Bloomfield, Pennsylvania. The firm is well known in the four state area of Maryland, Pennsylvania, Virginia and West Virginia for its expertise in land surveying, civil engineering, land planning, landscape architecture and environmental engineering/design.

Frederick, Seibert and Associates was established in 1941, and over eighty years later continues to pride itself on engineering excellence, hard work and a commitment to service for our clients. FSA's clients come from both the public and private sectors. Our private sector work ranges from individual land owners to large regional, national and multi-national corporations. FSA's public sector work ranges from towns and boroughs to the Federal Government.

Our registered engineers, surveyors and landscape architects work in teams as needed to complete each job to each client's program and satisfaction. Each team of engineers, surveyors and landscape architects use state of the art equipment in order to deliver to our clients the best and most complete final product.

FSA prides itself in facilitating each project from initial concept through detailed engineering and design to final agency approvals necessary for construction to begin. FSA's team of engineers, surveyors and design technicians have years of experience with the local and State review agencies and the regulations presently in effect. This knowledge and experience help FSA to engineer and execute each project efficiently and subsequently submit for review and gain any approvals in a timely manner. The most time consuming part of a site engineering plan is the review and approval process. To facilitate the process, FSA has staff dedicated solely to submitting, processing, and tracking the approval of each project. In order to meet our client's needs and provide important energy and environmental design services, FSA has worked on many projects whose goal was LEED certification. The following projects are examples of site engineering in which FSA participated in LEED design and/or certification: Potomac Investment Headquarters at the time (Frederick, MD) registered for Platinum certification; Susquehanna Bank at the time (Dual Highway, Hagerstown Maryland) achieved Silver certification, Shepherd University Phase II Center for Contemporary Arts achieved Silver certification; Fort Ritchie Community Center for COPT achieved LEED Gold certification.

Post agency approval, Frederick, Seibert and Associates offers construction stakeout, construction supervision and as built surveys and certifications as needed and requested.

Example of Clients:

PUBLIC	PRIVATE
<ul style="list-style-type: none"> - Borough of Carlisle - Borough of Greencastle - Borough of Chambersburg - Hagerstown Community College - University of Maryland (H.E.C.) - Shepherd University - The U.S. Department of Defense - U.S. National Park Service - Maryland State Highway Administration - Washington County Commissioners - The City of Hagerstown - City of Hagerstown Water Pollution Control - Washington County Department of Water Quality - Washington County Board of Education 	<ul style="list-style-type: none"> - Summit Health - Beazer Homes - Fed Ex Ground - Meritus Medical Center - Frederick Memorial Hospital - Manekin Corporation - Homewood Retirement Centers - Meritus Health Services - Phoenix Color Corporation - JLG Industries - ATAPCO - Bowman Development - A C & T - Cumberland County Rails/Trails - PenMar Development Corp - Volvo Construction Letterkenny

Our work for these and numerous other clients has ranged from the initial concept stages through complete design, agency approval process, construction stakeout and project supervision. Our services have covered engineering feasibility studies, field surveys, concept plans, site planning and engineering, land planning and subdivision, landscape planting plans, water resources, wetlands analysis, storm water management, sediment and erosion control, roadway and utility design, construction stakeout, construction supervision, as-built drawings, and final lending institution inspections. In addition, we have assisted many of our clients in the preparation of materials used in their marketing programs.

Services:

<p>CIVIL ENGINEERING</p>	<ul style="list-style-type: none"> - Municipal design and engineering - Street and highway design - Water distribution systems - Sanitary sewer systems - Stormwater management - Engineering feasibility services - Site planning - Full construction documentation
<p>LANDSCAPE ARCHITECTURE / ENVIRONMENTAL</p> <ul style="list-style-type: none"> - Site and landscape design - Streetscape design - Urban redevelopment - Greenway design - Master Planning - Wetlands delineation - Grading plans and studies - Feasibility studies - Parks and recreation facilities - Stream restoration and water resources - Forest conservation 	<p>SURVEYING</p>
<p>LAND PLANNING</p> <ul style="list-style-type: none"> - Neighborhood development - Business parks - Mixed use development - PUD's - Subdivisions - Residential community master plans 	<ul style="list-style-type: none"> - Property line surveys - Topographic surveys - Construction stakeouts - House location (mortgage) - Geographic Information System (GIS) - ALTA / ACSM surveys - GPS surveys

MEMO — 6-5-2023 **SUBJECT —** Conditional Use Plan for Wolf Farm Soccer Fields
TO — Timothy Duerr
CC — Brian O'Neill
FROM — Justin Doty, PE

REMARKS: Below is an update to the proposed phasing for the Keystone Soccer fields at Wolf Farm.

Phase 1

1. Two northwestern soccer fields
2. The main central synthetic turf soccer field with nighttime lighting
3. Northern parking lot with nighttime lighting
4. Western half of the central parking lot with nighttime lighting
5. Main access drive through the property connecting the central parking lot and the entrance
6. Corresponding phase landscaping, screening and stormwater

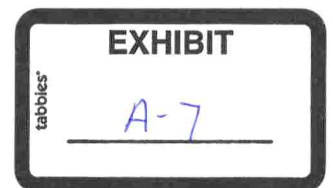
Phase 2

1. Two northeastern soccer fields
2. One central soccer field
3. Eastern half of the central parking lot with nighttime lighting
4. Northern half of the southern parking lot with nighttime lighting
5. Corresponding phase landscaping, screening and stormwater

Phase 3

1. One southern soccer field
2. The two remaining southern synthetic turf soccer fields
3. Southern half of the southern parking lot with nighttime lighting
4. Fieldhouse area
5. Corresponding phase landscaping, screening and stormwater

If you have any questions or concerns, please feel free to reach me by email at jdoty@fsa-inc.com.



MEMO — 3/27/23 **SUBJECT —** Wolf Farms Soccer Fields – Stormwater Management

FROM — Justin Doty, P.E. – Frederick, Seibert and Associates

The purpose of this memo is to describe the preliminary analysis of stormwater management requirements and BMP design for Wolf Farms Soccer Fields in South Middleton Township, PA. The project is situated approximately 500 feet west of the intersection of South Middlesex Road and York Road (PA SR 74) in South Middleton Township in Cumberland County. After proposed subdivision, the site will consist of a 51.2 acre area (including access easement). For this analysis the limit of disturbance has been assumed to be the proposed property line (excluding ROW) as well as the access easement. This tentative LOD totals 49.33 acres. Soil research has been done on the site to determine the Hydrological soil groups, takeoffs have been performed in preconstruction conditions and proposed post construction conditions, and BMP's have been approximately sized.

Soils:

Soils on this site have been researched using Web Soil Survey. The site is primarily composed of Hagerstown and Huntington soils with small areas of Penlaw and Duffield soils on the south edge of the site. Hagerstown, Huntington, and Duffield soils on site are all Hydrologic Soil Group B soils. Penlaw is considered Hydrologic Soil Group C/D depending on the compaction and saturation of the particular soil. Since this site has historically been farmland, it has been properly tilled and no signs are present of overly saturated conditions. For this reason, the areas of Penlaw Soil were considered to be C soils in the volume analysis of this site.

Karst Geology:

The geology of the property in question, as well as much of the region, consists of carbonate rock and is susceptible to sinkhole formation. In order to minimize the risk of sinkhole formation for this project, several design principles will be implemented. Existing drainage patterns will be maintained as much as possible, stormwater management will be directed away from known sinkhole formations, volume runoff and velocity will be minimized by maximizing pervious surfaces, only broad, shallow basins will be considered for BMPs (ponding less than 2 ft.), and operation and maintenance notes will be added to future land development plans to provide the owner with instructions to maintain BMP's and repair them if needed. Employing these design principles will reduce the risk of sinkhole formation and thus reduce the risk of groundwater intrusion by untreated stormwater runoff. A complete geotechnical assessment will be performed at the time of land development plan preparation.

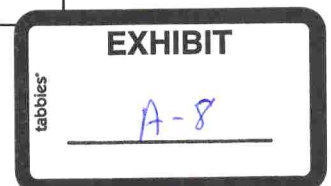
Preconstruction:

In preconstruction, the site is mainly farmland. Analysis was performed for this site as if it were meadow, and a second analysis was performed with it as contoured row crop farmland (more accurately reflecting site conditions). Farmland can have various CN values, but choosing contoured row crop farmland produces one of the lowest CN values in this series of cover conditions. This is the conservative option since lower preconstruction volumes result in a higher treatment burden when compared to the post construction volume. When a volume analysis was run using the takeoffs of this area in the 2-year/24-hour storm, a preconstruction runoff volume of 42,351 ft³ was found to be generated by this site when it is considered meadow. If it is considered contoured farmland, the runoff volume is 157,810 ft³. A summary for each condition is shown below.

Cover Type/Condition	Soil Type	Area (sf)	Area (Ac)	CN	S	Ia (0.2*S)	Q	Runoff
							Runoff (In)	Volume (ft3)
Meadow	B	2133608	48.98	58	7.24	1.45	0.23	41485
Meadow	C	15129	0.35	71	4.08	0.82	0.69	866
Total			49.33					42351

Weighted
C.N. = 58.1

Table 1- Runoff volume assuming a pre-development condition of meadow



Cover Type/Condition	Soil Type	Area (sf)	Area (Ac)	CN	S	Ia (0.2*S)	Q	Runoff
							Runoff (In)	Volume (ft3)
Contoured Farm Land	B	2133608	48.98	75	3.33	0.67	0.88	155900
Contoured Farm Land	C	15129	0.35	82	2.20	0.44	1.28	1611
Total			49.33					157510

Weighted
C.N. = 75.0

Table 2- Runoff volume assuming a pre-development condition of contoured row crop farm land

Post Construction:

In the post construction condition, the same limit of disturbance was considered. Takeoffs were performed for all new parking asphalt, driveway, and buildings. Three of the soccer fields will be artificial turf, so these were also considered impervious for these takeoffs. In order to reduce impervious, the developer is considering using reinforced turf for large portions of parking which will not only reduce runoff, but will provide additional treatment volume. Runoff volumes were calculated for these areas being reinforced turf as well as if they were to be paved/gravel in the charts below.

Cover Type/Condition	Soil Type	Area (sf)	Area (Ac)	CN	S	Ia (0.2*S)	Q	Runoff
							Runoff (In)	Volume (ft3)
Meadow	B	75857	1.74	58	7.24	1.45	0.23	1475
Open Space	B	1504227	34.53	61	6.39	1.28	0.32	39754
Open Space	C	9182	0.21	74	3.51	0.70	0.83	633
Impervious	B	367067	8.43	98	0.20	0.04	2.64	80719
Impervious	C	5587	0.13	98	0.20	0.04	2.64	1229
Reinforced Turf	B	186817	4.289	61	6.39	1.28	0.32	4937
Total			49.33					128746

Weighted
C.N. = 67.4

Table 3- Post development condition assuming parking is reinforced turf

Cover Type/Condition	Soil Type	Area (sf)	Area (Ac)	CN	S	Ia (0.2*S)	Q	Runoff
							Runoff (In)	Volume (ft3)
Meadow	B	75857	1.74	58	7.24	1.45	0.23	1475
Open Space	B	1504227	34.53	61	6.39	1.28	0.32	39754
Open Space	C	9182	0.21	74	3.51	0.70	0.83	633
Impervious	B	367067	8.43	98	0.20	0.04	2.64	80719
Impervious	C	5587	0.13	98	0.20	0.04	2.64	1229
Reinforced Turf as Imp.	B	186817	4.289	98	0.20	0.04	2.64	41082
Total			49.33					164891

Weighted
C.N. = 70.6

Table 4- Post development condition assuming turf fields and parking are impervious

BMP (Best Management Practice) Sizing:

An initial sizing has been performed for the BMPs on this site. The volume requirement is established by subtracting the preconstruction volume from the post construction volume. The requirements for the different combinations of preconstruction covers and post construction conditions are as follows:

Preconstruction as Meadow and Post Construction with Reinforced Turf- 86,395 ft³
 Preconstruction as Meadow and Post Construction w/o Reinforced Turf - 122,540 ft³
 Preconstruction as Contoured Farmland and Post Construction with Reinforced Turf - Net Volume Decrease
 Preconstruction as Contoured Farmland and Post Construction w/o Reinforced Turf - 7,381 ft³

For this BMP sizing, three subsurface infiltration BMPs and 6 surface BMPs were taken account for. Each of the turf fields will have a subsurface infiltration bed. The chosen design criteria is shown below.

3 Subsurface Infiltration BMPs under turf fields:

Surface Area: 50,943.44 ft²
 Assumed Media Depth: 1 ft
 Porosity: 0.3
 Storage per BMP: 15,283 ft³
 Total Volume of 3: 45,849 ft³

Four surface infiltration BMPs are also proposed. The initial design criteria is shown below.

4 Surface BMPs

Total Surface Area: 75,857 ft²
 Storage depth to first outlet stage: 0.75 ft
 Assumed media depth: 1 ft
 Porosity: 0.3
 Total volume of surface BMPs: 79,650 ft³

When these provided volumes are added together, we are providing 125,499 ft³ of volume which exceeds the highest possible requirement of 122,540 ft³.

If any other combination is to be considered the requirement, BMPs could be removed or made shallower to suit the requirements.

Peak Rates:

A rough peak rate analysis was done taking into account land cover changes and approximate slope changes. For this analysis, BMP routing was not performed. See peak rates in summary below.

Storm Event	Pre-Development Meadow Peak Flow (cfs)	Pre-Development Contoured Peak Flow (cfs)	Post-Development Reinforced Turf Peak Flow (cfs)	Post-Development Paved Parking Peak Flow (cfs)
2 Year	3.12	24.74	10.02	14.80
10 Year	17.45	55.42	29.68	37.52
50 Year	51.59	105.42	65.99	76.76
100 Year	74.73	135.08	88.64	100.57

Peak rate analysis shows that if pre-development conditions are considered to be meadow, some routing will have to take place in order to reduce peak flow. If pre-construction conditions are considered to be contoured farmland, the land cover and changes to time of concentration from flattening out the site in order to provide soccer fields will reduce peak flow without routing it into BMPs.

Miscellaneous Items:

In addition to the above items, additional volume credit is given by the DEP for trees added on a site. The DEP gives 10 ft³ of credit for each evergreen tree planted and 6 ft³ for each deciduous tree planted. The applicant tentatively plans to plant approximately 300 trees. Initial estimates show approximately half of the trees planted would be evergreen and half would be deciduous. This would result in an additional 2,400 ft³ of volume credit unaccounted for in the above calculations. Woody vegetation increases evapotranspiration and decreases runoff, which would be an improvement over the existing condition.

Conclusions:

The proposed soccer complex will not increase the 2-year runoff volume or peak rates up to the 100-year storm. Most of the proposed condition is pervious cover, and in theory, is more pervious than the existing conditions. Runoff will not accumulate in great quantities and will infiltrate across the site as much as the native soils will allow. The conservative methods of pre to post development stormwater management calculations required by the PA DEP and the Township ordinance will require some forms of stormwater runoff treatment, over and above the infiltration on the turf fields and the reinforced turf parking areas. This calculated runoff will be managed in BMPs designed in accordance with the PA PCSM Manual. These BMPs will be designed with relatively low loading ratios (Impervious to BMP surface) because almost all of the surface runoff is generated by a small percentage of impervious cover. Much of the impervious cover being accounted for is turf fields, which have very high porosity and will generate relatively little runoff. Most of the parking lots will be installed with reinforced turf, reducing runoff and storing runoff volume. The small concentration of stormwater runoff across the property and implementation of the design principles discussed in the Karst section above will reduce the likelihood of sinkhole formation and impacts to the groundwater and will prevent surface runoff from impacting downstream properties.

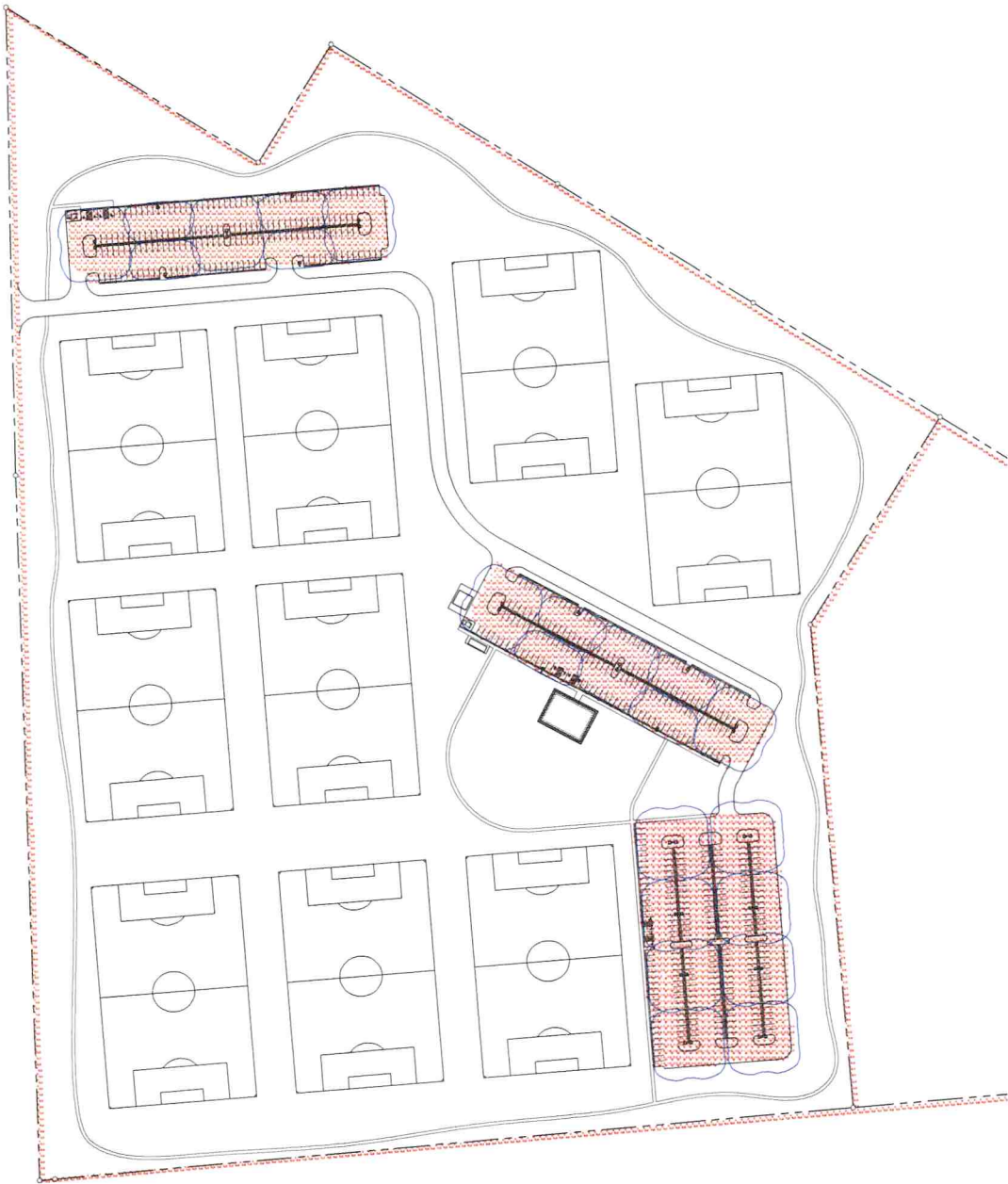
If you have any questions or concerns, please feel free to call me at (717) 609-7513 or reach me by email at jdoty@fsa-inc.com.



Professional Certification

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Pennsylvania, License No. PE080613, Expiration Date: 09-30-2023

Justin T. Doty Digitally signed by Justin T. Doty
Date: 2023.03.30 15:00:40 -04'00'



Symbol	Level	Image	QTY	Manufacturer	Ceiling	Description	Number	Lamp	LLF	Input	Power
□	A		6	EATON - MCGRAW-EDISON (FORMER COOPER LIGHTING)	GLEON AF 64-LED E1-SL4-HES	GALLEON AREA AND ROADWAY LUMINAIRE (4) 75 CHL 4000K 1000MA LIGHT SQUARES WITH 16 LEDs EACH AND TYPE IV SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD.	64	304	0.93	450	Panel Fix
□	B		8	EATON - MCGRAW-EDISON (FORMER COOPER LIGHTING)	GLEON AF 64-LED E1-SL4-HES	GALLEON AREA AND ROADWAY LUMINAIRE (4) 75 CHL 4000K 1000MA LIGHT SQUARES WITH 16 LEDs EACH AND TYPE IV SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD.	64	304	0.93	225	Panel Fix

Statistics						
Description	Symbol	Avg	Max	Min	Max/min	Angle/m
Footcandle	+	2.0 f.c.	0.0 f.c.	0.0 f.c.	N/A	N/A
SP/Lot	+	2.4 f.c.	4.8 f.c.	0.4 f.c.	12:2.1	0:0.1
NE/Lot	+	2.4 f.c.	3.3 f.c.	0.8 f.c.	6:1.1	2:7.1

- Note
1. Fixtures mounted at 28' above grade
 2. FC measured at grade

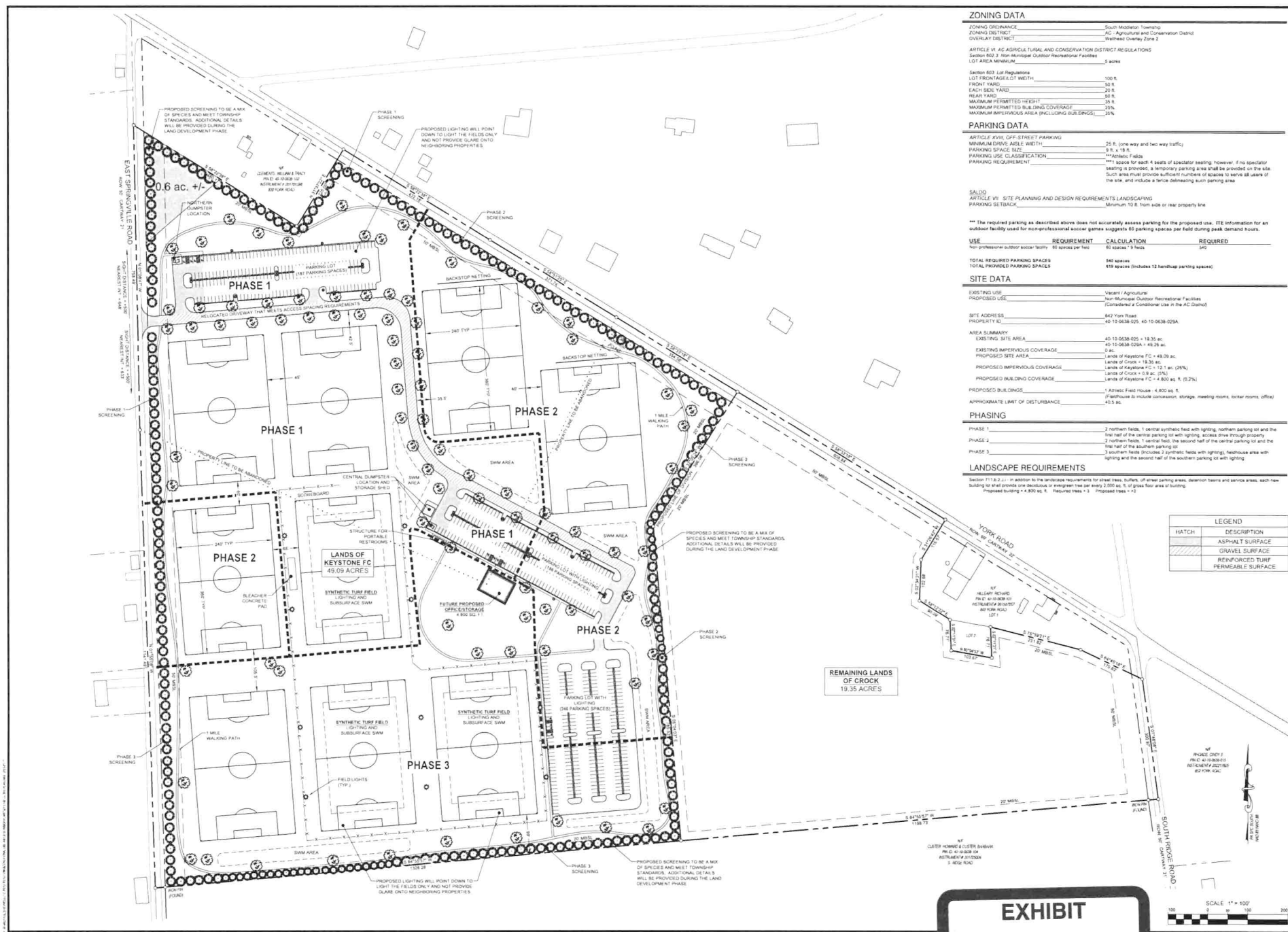
EXHIBIT

A-9

FSA
 FARM SERVICE AGENCIES, INC.
 1000 MARKET STREET
 HARRISBURG, PA 17104

WOLF FARM SOCCER FIELDS
 SITUATED APPROXIMATELY 1.5 MILES WEST OF THE INTERSECTION
 OF SOUTH HARRISBURG ROAD AND YORK ROAD (PA 81 Y)
 CUMBERLAND COUNTY, PENNSYLVANIA
 PROJECT NO. 40-15-0638-025
 DATE: 04-20-2025
 DRAWN BY: JLD/MLC
 CHECKED BY: JLD/MLC
 PROJECT MANAGER: JLD
 EMAIL: JLD@fwsa-inc.com
 FAX: 717-653-1111
 40-15-0638-025-40-15-0638-025A
 SCALE: NTS
 SHEET TITLE: LIGHTING PLAN

PH-001
 SHEET 1 OF 1



ZONING DATA

ZONING ORDINANCE	South Middleton Township
ZONING DISTRICT	AC - Agriculture and Conservation District
OVERLAY DISTRICT	Wildlife Overlay Zone 2
ARTICLE VI: AC AGRICULTURAL AND CONSERVATION DISTRICT REGULATIONS	
Section 602.2: Non-Municipal Outdoor Recreational Facilities	
LOT AREA MINIMUM	5 acres
Section 603: Lot Regulations	
LOT FRONTAGE/LOT WIDTH	100 ft
FRONT YARD	50 ft
EACH SIDE YARD	20 ft
REAR YARD	20 ft
MAXIMUM PERMITTED HEIGHT	20 ft
MAXIMUM PERMITTED BUILDING COVERAGE	20%
MAXIMUM IMPERVIOUS AREA (INCLUDING BUILDINGS)	25%

PARKING DATA

ARTICLE VIII: OFF-STREET PARKING	25 ft. (one-way and two-way traffic)
MINIMUM DRIVE ABLE WIDTH	8 ft. x 18 ft.
PARKING SPACE SIZE	***Assthetic Fields
PARKING USE CLASSIFICATION	***Assthetic Fields
PARKING REQUIREMENT	*** spaces for each 4 seats of spectator seating however if no spectator seating is provided, a temporary parking area shall be provided on the site. Such area must provide sufficient number of spaces to serve all users of the site, and include a fence delineating such parking area.
SOLID ARTICLE VII: SITE PLANNING AND DESIGN REQUIREMENTS LANDSCAPING	
PARKING REQUIREMENT	Minimum 19 ft. from side or rear property line

USE REQUIREMENT CALCULATION REQUIRED

Non-professional outdoor soccer facility	10 spaces per field	40 spaces	40
TOTAL REQUIRED PARKING SPACES		40 spaces	
TOTAL PROVIDED PARKING SPACES		419 spaces (includes 12 handicap parking spaces)	

SITE DATA

EXISTING USE	Wheat / Agriculture
PROPOSED USE	Non-Municipal Outdoor Recreational Facilities (Considered a Conditional Use in the AC District)
BTI ADDRESS	643 York Road
PROPERTY #	40-10-0638-025, 40-10-0638-025A
AREA SUMMARY	
EXISTING SITE AREA	40-10-0638-025 = 18.35 ac.
EXISTING IMPERVIOUS COVERAGE	40-10-0638-025A = 49.29 ac.
PROPOSED SITE AREA	0 ac.
PROPOSED IMPERVIOUS COVERAGE	1/3 of Keystone FC = 49.29 ac.
PROPOSED IMPERVIOUS COVERAGE	1/3 of Crick = 19.35 ac.
PROPOSED IMPERVIOUS COVERAGE	1/3 of Crick = 19.35 ac. (25%)
PROPOSED BUILDING COVERAGE	1/3 of Keystone FC = 0.9 ac. (5%)
PROPOSED BUILDING COVERAGE	1/3 of Keystone FC = 4.80 ac. (6.2%)
PROPOSED BUILDINGS	1 Athletic Field House = 4,800 sq. ft.
APPROXIMATE LIMIT OF DISTURBANCE	1/3 of Crick to include compression, storage, meeting rooms, locker rooms, office
	40.5 ac.

PHASING

PHASE 1	2 northern fields, 1 central synthetic field with lighting, northern parking lot and the first half of the central parking lot with lighting, access drive through property
PHASE 2	2 northern fields, 1 central field, the second half of the central parking lot and the first half of the southern parking lot
PHASE 3	2 southern fields (includes 2 synthetic fields with lighting), restrooms area with lighting and the second half of the southern parking lot with lighting

LANDSCAPE REQUIREMENTS

Section 11.18.2.1	In addition to the landscape requirements for street trees, buffers, off street parking areas, pedestrian barriers and service areas, each new building shall provide one deciduous or evergreen tree per every 2,000 sq. ft. of gross floor area of building.
Proposed building = 4,800 sq. ft.	Required trees = 3
Proposed trees = 3	Required trees = 3

LEGEND

HATCH	DESCRIPTION
[Hatch pattern]	ASPHALT SURFACE
[Hatch pattern]	GRAVEL SURFACE
[Hatch pattern]	REINFORCED TURF PERMEABLE SURFACE

EXHIBIT
A-10

FS&A
THE FRENCH CONNECTION ASSOCIATES, INC.
1000 W. MARKET STREET, SUITE 200
HARRISBURG, PA 17104
TEL: 717.634.1111
WWW.FS&A.COM

WOLF FARM SOCCER FIELDS
SITUATED APPROXIMATELY 900 FEET WEST OF THE INTERSECTION OF 8001 MILLERS ROAD AND YORK ROAD (RTE 97) IN CUMBERLAND COUNTY, PENNSYLVANIA
PROJECT NO: 780131
DATE: 6-2-2023
SCALE: 1" = 100'

SITE & LANDSCAPE PLAN
C-101
SHEET 2 OF 3

VICINITY MAP
SCALE: 1" = 2000' USGS MAPS (Carlisle and Mechanicsburg, PA 2019)



SHEET INDEX

SYD NUMBER	TITLE
C-001	SHEET 01 COVER
C-101	SHEET 02 SITE & LANDSCAPE PLAN
C-102	SHEET 03 GRADING PLAN

ENGINEER'S CERTIFICATION

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Pennsylvania. The Engineer has seen to the site and observed the present condition and the user releases that actual condition of the plan, and to the best of my knowledge and belief it is true and correct, and the township may rely upon the accuracy thereof.

Justin T. Doty
Professional Engineer
License No. PE000013
Expiration Date: 8/30/2023



GENERAL USE DESCRIPTION

The purpose of this plan is to subdivide, consolidate and develop the approximately 68 acre parcels located at 842 York Road. The proposed development within the Agricultural and Conservation (AC) District is a Non-Municipal Outdoor Recreational facility consisting of soccer fields with supporting features such as concessions, parking areas and stormwater management facilities.

GENERAL NOTES

- Field surveys were performed by Frederick, Seibert and Associates in April 2022, and all bearings shown herein are in state plan coordinate system, PA South Zone, North American Datum of 1983 (NAD83).
- According to FEMA Flood Insurance Rate Map (FIRM) Community Panel No. 420410042E, this property is located in within a 100 year floodplain.
- Visit <https://www.fema.gov/flood-maps/flood-hazard-appeals>
- According to the US Fish & Wildlife Service National Wetlands Inventory, wetlands are not present on this site. <https://www.fws.gov/nwis/inventory/>
- FSA, Inc. assumes no liability for the location of any above ground and below ground utilities. Existing utilities, if any, are shown from the best available information.
- There is no proposed state road access associated with this subdivision plan. Before access to any state road is to be constructed, a Highway Occupancy Permit is required from PennDOT.

WAIVERS

- A waiver has been requested by the South Middleton Township Board of Supervisors for the following:
- Section 706.F For any land use where the total number of parking spaces exceeds 50 (fifty) vehicle spaces shall be provided between every ten (10) parking spaces or at the end of each parking row.
 - Section 711.9.2.a.iii. The interior of each parking lot shall have at least one (1) three-inch (3") caliper deciduous shade tree for every five (5) parking spaces.
 - Section 716.B.2.c. Spacing between existing access points (driveways or driveways) and all new access points (driveways or driveways) intersecting an Urban Collector road shall, at a minimum, be in accordance with the requirements set forth in Table 716-10 (385 ft) for roads 40 mph or less).
 - Section 711.9.2.a.ii. A minimum of 10 percent of any parking lot facility over 2,000 square feet in gross area (measured from the outside edge of paving to outside edge of paving) shall be devoted to landscaping. This landscaping shall include a minimum of one tree per 20 parking spaces and all planting beds within a parking lot shall be surfaced in lawn or ground cover planting.

CONDITIONAL USE PLAN

FOR

WOLF FARM SOCCER FIELDS - ALTERNATE ACCESS

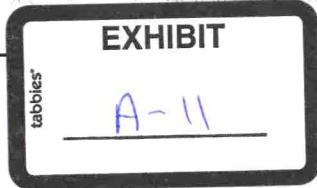
SITUATED APPROXIMATELY 500 FEET WEST OF THE INTERSECTION
OF SOUTH MIDDLESEX ROAD AND YORK ROAD (PA SR 74)
SOUTH MIDDLETON TOWNSHIP
CUMBERLAND COUNTY, PENNSYLVANIA

EQUITABLE OWNER/DEVELOPER:
KEYSTONE FC
P.O. Box 1332
MECHANICSBURG, PA 17055

CIVIL ENGINEER / SURVEYOR:
FSA INC.
505 SOUTH HANOVER STREET
CARLISLE, PA 17013

C/O: SEAN COCHRAN
EMAIL: scochran@keystonefc.com
PHONE: (717) 329-8201

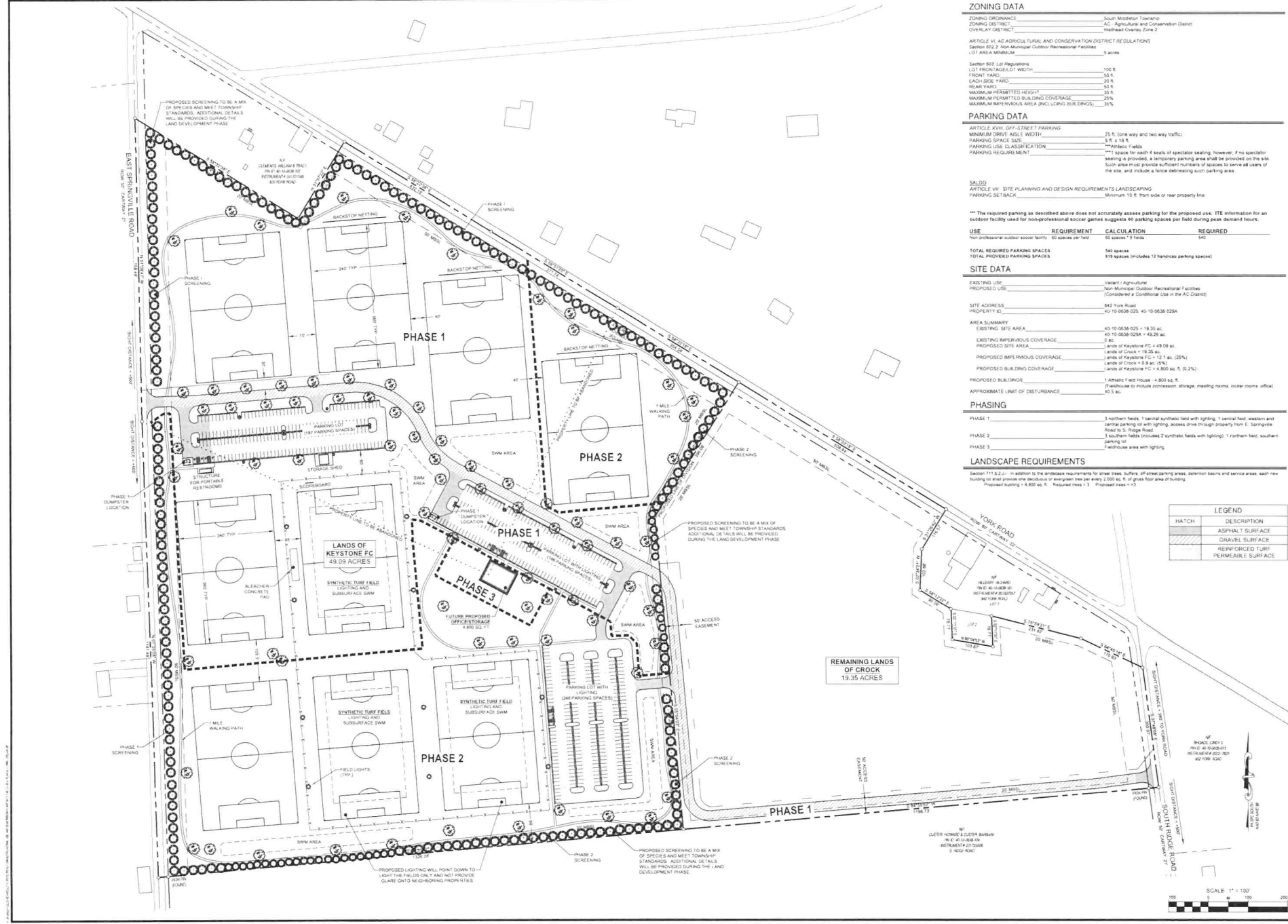
PROJECT MANAGER: JUSTIN DOTY
EMAIL: jdoty@fsa-inc.com
PHONE: (717) 701-8111



WOLF FARM SOCCER FIELDS-ALTERNATE ACCESS
SITUATED APPROXIMATELY 500 FEET WEST OF THE INTERSECTION
OF SOUTH MIDDLESEX ROAD AND YORK ROAD (PA SR 74)
SOUTH MIDDLETON TOWNSHIP
CUMBERLAND COUNTY, PENNSYLVANIA
EQUITABLE OWNER/DEVELOPER:
KEYSTONE FC, C/O SEAN COCHRAN
P.O. BOX 1332, MECHANICSBURG, PA 17055

PROJECT NO.	70213.1
DRAWN BY	SDC
CHECKED BY	JTD
DATE	6-2-2023
PROJECT MANAGER	JUSTIN DOTY
PROJECT NO.	70213.1
PROPERTY	40-10-0038-025, 40-10-0038-026A
TITLE	AS SHOWN
SHEET TITLE	

COVER
C-001
SHEET 1 OF 3



ZONING DATA

ZONING JURISDICTION	South Middleton Township
ZONING DISTRICT	AC - Agricultural and Conservation District
OVERLAY DISTRICT	WOLFAC Overlay Zone 2
ARTICLE VI. AGRICULTURAL AND CONSERVATION DISTRICT REGULATIONS	
Section 602. Non-Municipal Outdoor Recreational Facilities	
LOT AREA MINIMUM	3 acres
Section 603. Lot Regulations	
LOT FRONTAGE/LOT WIDTH	100 ft
FRONT YARD	20 ft
EACH SIDE YARD	20 ft
REAR YARD	20 ft
MAXIMUM PERMITTED HEIGHT	20 ft
MAXIMUM PERMITTED BUILDING COVERAGE	25%
MAXIMUM IMPERVIOUS AREA (INCL. LOUNG BUILDINGS)	30%

PARKING DATA

ARTICLE XVII. OFF-STREET PARKING			
MINIMUM DRIVE AISLE WIDTH	25 ft. (one way and two way traffic)		
PARKING SPACE SIZE	3.8 x 18 ft.		
PARKING USE CLASSIFICATION	**Asphalt Fields		
PARKING REQUIREMENT	*** 1 space for each 4 seats of spectator seating. However, if no spectator seating is provided, a temporary parking area shall be provided on the site. Such area must provide sufficient numbers of spaces to serve all users of the site, and include a fence delineating such parking area.		

VALID
 ARTICLE VII. SITE PLANNING AND DESIGN REQUIREMENTS LANDSCAPING
 PARKING SETBACK: Minimum 10 ft. from side or rear property line

*** The required parking as described above does not accurately assess parking for the proposed use. ITE information for an outdoor facility used for non-professional soccer games suggests 40 parking spaces per field during peak demand hours.

USE	REQUIREMENT	CALCULATION	REQUIRED
Non-professional outdoor soccer facility	40 spaces per field	40 spaces / 3 fields	120
TOTAL REQUIRED PARKING SPACES			120 spaces
TOTAL PROPOSED PARKING SPACES			118 spaces (includes 12 handicap parking spaces)

SITE DATA

EXISTING USE	Vacant - Agriculture
PROPOSED USE	Non-Municipal Outdoor Recreational Facilities (Considered a Conditional Use in the AC District)
SITE ADDRESS	842 York Road 40-10-0638-025, 40-10-0638-026A
AREA SUMMARY	
EXISTING SITE AREA	40-10-0638-025 + 19.35 ac.
EXISTING IMPERVIOUS COVERAGE	40-10-0638-026A + 43.29 ac.
PROPOSED SITE AREA	0 ac.
PROPOSED IMPERVIOUS COVERAGE	1 acre of Keystone FC + 4.89 ac. (12.2%) 1 acre of Crook + 0.9 ac. (2.2%) 1 acre of Keystone FC + 4,800 sq. ft. (0.2%)
PROPOSED BUILDINGS	1 Athletic Field House - 4,800 sq. ft. 2 Warehouse to include concession, storage, meeting rooms, locker rooms, office
APPROXIMATE LIMIT OF DISTURBANCE	40.5 ac.

PHASING

- PHASE 1: 3 northern fields, 1 central synthetic field with lighting, 1 central field western and central parking lot with lighting, access drive through property from E. Springville Road to S. Ridge Road.
- PHASE 2: 3 southern fields (includes 2 synthetic fields with lighting), 1 northern field, southern parking lot with lighting.
- PHASE 3: 1 synthetic field with lighting.

LANDSCAPE REQUIREMENTS

Section 711.8.2.2 - In addition to the landscape requirements for street trees, buffers, off-street parking areas, exterior seating and service areas, each new building shall provide one deciduous or evergreen tree per every 2,000 sq. ft. of gross floor area of building.
 Proposed Building = 4,800 sq. ft. Required trees = 2.4
 Proposed trees = 3

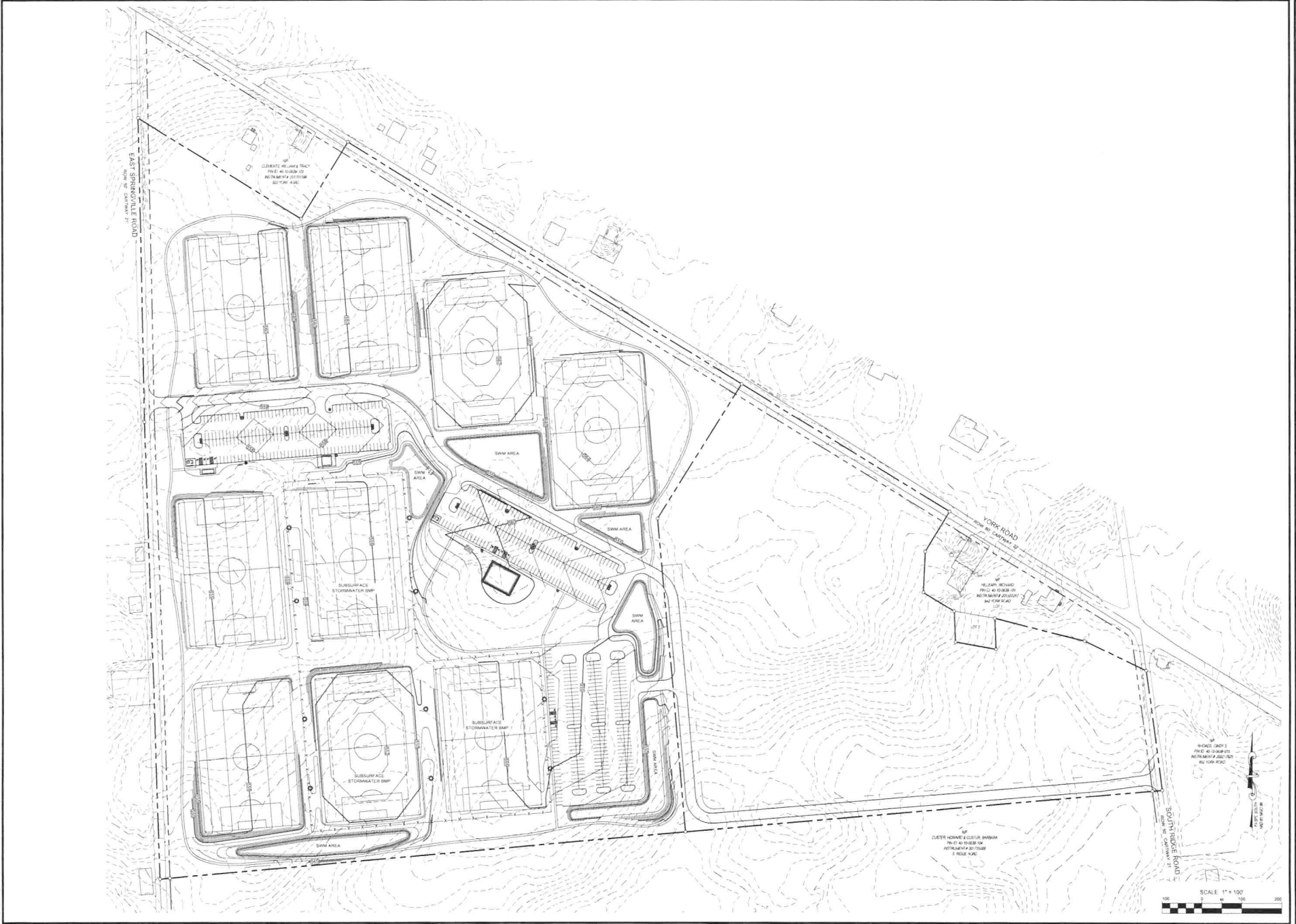
HATCH	DESCRIPTION
[Solid Grey]	ASPHALT SURFACE
[Diagonal Lines]	GRAVEL SURFACE
[Cross-hatch]	REINFORCED TURF PERMEABLE SURFACE

FSAC
 FEDERAL, STATE AND COUNTY
 FEDERAL REGISTER & ASSOCIATES, INC.
 1000 MARKET STREET, SUITE 200
 PHILADELPHIA, PA 19102
 TEL: 215-562-1000
 FAX: 215-562-1001

WOLF FARM SOCCER FIELDS-ALTERNATE ACCESS
 SITUATED APPROXIMATELY 3/4 MILE WEST OF THE INTERSECTION OF YORK ROAD AND LEHIGH VALLEY ROAD IN SOUTH MIDDLETON TOWNSHIP, CUMBERLAND COUNTY, PENNSYLVANIA
 KEYSTONE FC, 600 BEAN COOKING, PHILADELPHIA, PA 19102

PROJECT NO: 70213-1
 SWM BY: CAC
 DATE: 6-2-2023
 PROJECT NUMBER: 210
 NAME: ZONING/PERMITS
 PROJECT ID: 40-10-0638-025, 40-10-0638-026A
 SCALE: 1" = 100'
 SHEET NO:

SITE & LANDSCAPE PLAN
C-101
 SHEET 2 OF 3



FSAG
 FREDERICKS, SEIBERT & ASSOCIATES, P.C.
 CIVIL ENGINEER, LANDSCAPE ARCHITECT & PLANNING
 1500 WASHINGTON STREET, SUITE 200
 HARTFORD, CT 06103
 TEL: 860.234.1111
 FAX: 860.234.1112

WOLF FARM SOCCER FIELDS-ALTERNATE ACCESS
 BEHAVIOR APPROXIMATELY 500 FEET WEST OF THE INTERSECTION
 OF SOUTH WOLFERS ROAD AND YORK ROAD (P&S 14)
 CUMBERLAND COUNTY, PENNSYLVANIA
 PROJECT NO. 70213.1
 SHEET NO. 62-003
 PROJECT NUMBER 270
 DATE 02/28/2023
 PROPERTY OWNER
 40-15-0638-0234
 SCALE 1" = 100'
 SHEET NO. 3 OF 3

DATE: 02/28/2023

PROJECT NO: 70213.1

SHEET NO: 62-003

PROJECT NUMBER: 270

DATE: 02/28/2023

PROPERTY OWNER: 40-15-0638-0234

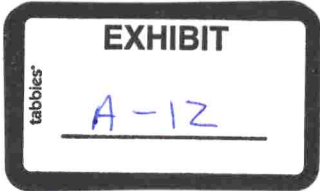
SCALE: 1" = 100'

SHEET NO: 3 OF 3

GRADING PLAN

C-102

SHEET 3 OF 3



JARRED L. NEAL, PE

Project Manager

YEARS OF EXPERIENCE

16 Years

EDUCATION

Pennsylvania College of Technology
B.S.C.E.T. / 2004 / Civil Engineering

Pennsylvania College of Technology
A.S. Survey Tech. / 2004 / Land Surveying

REGISTRATIONS

Professional Engineer – PA, VA, and MD

PA License # PE083971

VA License # 0402052156

MD License #45846

PROFESSIONAL AFFILIATIONS

Mid-Atlantic Section of the Institute of Transportation Engineers (MASITE)

Institute of Transportation Engineers (ITE), member

CONTINUING EDUCATION

The Bentley Institute, Microstation Design Basics, 2007

ASCE, Sediment Control, Erosion Prevention and Soil Stabilization, 2007

Transoft Solutions, Technical Presentations on Design, 2015

ITE, Focus on Pedestrians: Sidewalks and Crosswalks, 2015

PennDOT, Traffic Signals, 2016

PERSONAL EXPERIENCE

Mr. Neal has experience in traffic engineering, transportation planning, and highway/signal design. His experience includes data collection, sight distance analyses, capacity analyses, signal-warrant analyses, queue length analyses, turn lane analyses, and parking/trip generation studies. He has also been responsible for managing and processing tasks associated with the Highway Occupancy Permit Review Assistance contract with PennDOT District 8-0. He also has worked on numerous Transportation Impact Studies and assists with PennDOT coordination and review of design projects.

PROJECT EXPERIENCE

Transportation Impact Studies and Signal Design Studies, District-wide (District 8-0)

Preparation of traffic impact studies including signal warrant analysis, trip generation calculations, traffic modeling and simulation, parking studies, sight distance calculations and analysis, determination of traffic improvements and mitigation measures, auxiliary turn lane warrants, data collection, capacity analysis, queue length analysis, report preparation and interaction with project team, clients and reviewing agencies.. In addition, Mr. Neal is also responsible for proposal and addendums, project scheduling and project billing.

Highway Occupancy Permit Review Assistance District-wide (District 8-0)

Responsible for the review of highway design plan sets and stormwater reports for Highway Occupancy Permit Applications in Adams, Cumberland, Dauphin, Franklin, Lancaster, Lebanon, Perry and York Counties.

GIANT Food Store Development

Hampden Township, Cumberland County, PA
Traffic Study, Highway Design, Traffic Signal Design

West Shore Cancer Center

Hampden Township, Cumberland County, PA
Traffic Study

GIANT Food Store Development

Manheim Township, Lancaster County, PA
Traffic Study, Highway Design, Parking Study

Martin Elementary School

Lancaster Township, Lancaster County, PA
Traffic Study, Highway Design, Traffic Signal Design

Members 1st Federal Credit Union

West Lampeter Township, Lancaster County, PA
Traffic Study, Highway Design

Urban Outfitters Warehouse

Salisbury Township, Lancaster County, PA
Traffic Study

Belmont Shopping Center









Mahheim Township, Lancaster PA
Traffic Study, Highway Design, Traffic Signal Design, ROW



Traffic Planning and Design, Inc.

Firm Profile

PROFESSIONAL SERVICES

-  Transportation Planning & Permitting
-  Multimodal, Complete Streets, & Mobility Services
-  Landscape Architecture & Planning
-  Bridge Design & Inspection
-  Traffic Signal & ITS Systems Design
-  Environmental Services & Permitting
-  Construction Management & Inspection
-  Highway Design
-  Expert Witness Support for Crash Investigations

Founded in 1989, TPD is a multi-disciplined A/E/C firm, delivering projects throughout the eastern United States. We are a client-focused, team-oriented firm that prides itself on providing sustainable solutions for our clients and teaming partners. Working seamlessly as "One Company with Multiple Locations," TPD is able to leverage our local knowledge, continuous investment in technology, and emphasis on individual accountability to provide a high level of responsiveness and solutions appropriate for each individual project on a case-by-case basis.

We take pride in our work, as well as the "road, bridge, or trail" we've taken to get there. TPD has been recognized at both the regional and national levels for not only our engineering accomplishments, but our corporate practices and dedication to professional development. TPD is currently ranked the #17 Best Civil Engineering Firm to Work for in the Nation by the Zweig Group. Additionally, we have been recognized for our efforts in sustainability, as well as for our support of the National Guard and Military Reserve by the U.S. Government.

We also take our corporate citizenship seriously with numerous employees serving on several volunteer boards, and previously ranked as the #1 engineering firm in the Tri-State area by the Philadelphia Business Journal in terms of Corporate Philanthropy.

SELECTION OF RECENT AWARDS



LOCATIONS

Pottstown | HQ
2500 East High Street, Suite 650
Pottstown, PA 19464
610.326.3100

Asheville
1293 Hendersonville Road
Building A, Suite 9
Asheville, NC 28803
825.575.0133

Bethlehem
1720 Spillman Drive, Suite 260
Bethlehem, PA 18015
610.625.4242

Doylestown
2003 Lower State Street, Suite 122
Doylestown, PA 18901
215.622.2525

Camden
2 Riverside Drive, Suite 506
Camden, NJ 08103
856.966.4242

Harrisburg | Office Performing Work
4000 Crums Mill Road, Suite 102
Harrisburg, PA 17112
717.234.1430

Elkton
111 E. Main Street, Suite A
Elkton, MD 21921
443.993.5791

Philadelphia
One Penn Center @
Suburban Station
1617 JFK Boulevard, Suite 1230
Philadelphia, PA 19130
215.622.2525

Pittsburgh
1370 Washington Pike, Suite 515
Bridgeville, PA 15017
412.765.3717

West Chester
1025 Andrew Drive, Suite 110
West Chester, PA 19380
610.326.3100





TRAFFIC PLANNING AND DESIGN, INC.

WWW.TRAFFICPD.COM

MEMORANDUM

To: Justin Doty, P.E.
Frederick, Seibert & Associates, Inc.
15 East Main Street,
New Bloomfield, PA 17068

From: Jarred L. Neal, P.E.

Revision Date: June 5, 2023

Re: **Wolf Farm (Keystone FC) – Traffic Impact Evaluation**
South Middleton Township, Cumberland County, PA
TPD# FSAI.00029



The purpose of this Traffic Evaluation is to assess the proposed driveway configurations and determine potential off-site intersection improvements necessary to accommodate Phase 1 and full build-out of the Wolf Farm – (Keystone FC) soccer complex.

INTRODUCTION

The site is located on the southern side of York Road (SR 0074) between E Springville Road and S Ridge Road. Phase 1 of the Wolf Farms Keystone Football Club development will consist of three (3) soccer fields and full build-out will consist of nine (9) soccer fields.

The site will be served by the following access connections:

- » The proposed complex will be served by one (1) full-movement driveway to access E Springville Road approximately 755' south of York Road (SR 0074).

EXISTING TRAFFIC CONDITIONS

Manual traffic counts were conducted on 15-minute intervals during the weekday morning (6:00 to 9:00 A.M.), weekday evening (3:00 to 6:00 P.M.), and Saturday midday (11:00 A.M. to 1:00 P.M.) peak periods. Data pertaining to heavy vehicles, pedestrians and transit vehicles were observed during the manual counts. Peak hours and count dates for the study area intersections are identified in **Table 1**.

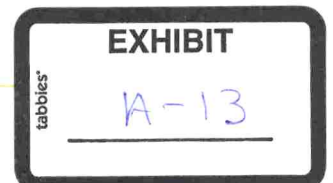


TABLE 1
MANUAL TRAFFIC COUNT INFORMATION

Intersection	Date of Traffic Counts	Time Period	Intersection Peak Hour ¹
York Road (SR 0074) & E Springville Road	Thursday, June 2, 2022	Weekday A.M.	7:15 to 8:15 A.M.
		Weekday P.M.	3:30 to 4:30 P.M.
	Saturday, June 4, 2022	Saturday Midday	11:45 A.M. to 12:45 P.M.
York Road (SR 0074) & S Middlesex Road/ S. Ridge Road	Thursday, June 2, 2022	Weekday A.M.	7:15 to 8:15 A.M.
		Weekday P.M.	3:15 to 4:15 P.M.
	Saturday, June 4, 2022	Saturday Midday	11:00 A.M. to 12:00 P.M.
York Road (SR 0074) & Shugart Road	Thursday, June 2, 2022	Weekday A.M.	7:15 to 8:15 A.M.
		Weekday P.M.	3:30 to 4:30 P.M.
	Saturday, June 4, 2022	Saturday Midday	11:00 A.M. to 12:00 P.M.

Peak Hour consists of the four consecutive 15-minute intervals where the highest traffic volumes occur.

The existing condition traffic volumes for the weekday A.M., weekday P.M., and Saturday midday peak hours are illustrated in **Figure 3**. Manual traffic count data sheets are provided in **Appendix B**.

BASE (NO-BUILD) CONDITIONS

Base (No-Build) Volumes

In order to develop future base (no-build) traffic volumes, a background growth factor was developed based on growth rates obtained from the PennDOT Bureau of Planning and Research (BPR). A background growth rate of 0.69% per year is recommended for rural non-interstate roadways in Cumberland County. This background growth rate was applied annually to the existing 2022 volumes to yield traffic volumes for the 2025 and 2030 base (no-build) analysis years.

Nearby Planned Developments

Base (no-build) traffic conditions were calculated to include traffic volumes from proposed developments, which, though not operating under existing conditions, may be operating by the full build-out year (2030) of the proposed development. The following nearby planned developments were specifically included in this study:

- ▶ **Wheatstone** is a proposed 258-unit senior adult detached housing development located east of and adjacent to Springville Road and south of Lindsey Road. Trip Distributions for the proposed site were taken from the Transportation Impact Study for Wheatstone, dated October 2021. This development is shown in **Appendix C**.
- ▶ **Georgetown** is a proposed development located along Ridge Road, south of Lindsey Road. Trip distributions for the proposed development were taken from the Transportation Impact Study for Georgetown Development. This development is shown in **Appendix C**.

TRIP GENERATION

The trip generation rates for the proposed development were obtained from the manual Trip Generation, Eleventh Edition, 2022, an Institute of Transportation Engineers (ITE) Informational Report. The data are

categorized by Land Use Codes, with total vehicular trips for a given land use estimated using an independent variable and statistically generated rates or equations.

For the proposed development, Land Use Code 488 (Soccer Complex) from the Trip Generation Manual was used to calculate the number of vehicular trips the development will generate during the following time periods: (1) Average weekday; (2) Weekday A.M. peak hour; (3) Weekday P.M. peak hour and (4) Saturday Midday peak hour. **Table 2** shows the ITE trip generation data for the analyzed time periods.

TABLE 2
ITE TRIP GENERATION DATA

Land Use	ITE #	Time Period	Equations	Splits	
				Enter %	Exit %
Soccer Complex	488	Average Weekday	$T = 71.33(X)$	50%	50%
		Weekday A.M. Peak Hour	$T = 0.99(X)$	61%	39%
		Weekday P.M. Peak Hour	$T = 13.92(X) + 35.13$	66%	34%
		SAT Midday Peak Hour	$T = 26.09(X) + 156.36$	48%	52%

T = number of site-generated vehicular trips
X = independent variable (# of fields)

Table 3 summarizes the trip generation of the proposed development for the analyzed time periods.

TABLE 3
TRIP GENERATION SUMMARY

Time Period	Total Trips		
	Total	Enter	Exit
Phase 1 (3 Fields)			
Average Weekday	214	107	107
Weekday A.M. Peak Period	3	2	1
Weekday P.M. Peak Period	77	51	26
SAT Midday Peak Hour	235	113	122
Full Build-Out (9 Fields)			
Average Weekday	642	321	321
Weekday A.M. Peak Period	9	5	4
Weekday P.M. Peak Period	160	106	54
SAT Midday Peak Hour	391	188	203

As shown in **Table 3**, the Phase 1 of the proposed development is anticipated to result in 3 new trips during the weekday A.M. peak hour, 77 new trips during the weekday P.M. peak hour, and 235 new trips during the Saturday peak hour. Upon full build-out the proposed development is anticipated to result in 9 new trips during the weekday A.M. peak hour, 160 new trips during the weekday P.M. peak hour, and 391 new trips during the Saturday peak hour.

TRIP DISTRIBUTION

The distribution of trips generated by the proposed development was based on the local road network, the existing traffic patterns, the proposed uses of the site, and the site driveway locations/configurations.

TABLE 4
TRIP DISTRIBUTION PERCENTAGES – NEW TRIPS

Direction - To/From	Assignment (To/From)	Distribution Percentage
West	Via York Road (SR 0074)	41%
East	Via York Road (SR 0074)	30%
North	Via S Middlesex Road	14%
North	Via Shughart Road	4%
South	Via E Springville Road	11%

The new trips for the proposed development were distributed to the local roadway network based on the percentages shown in **Table 4**.

PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES

The site-generated trips for phase 1 were added to the 2025 base condition traffic volumes to develop 2025 projected condition traffic volumes. The site-generated trips for full build-out were added to the 2030 base condition traffic volumes to develop 2030 projected condition traffic volumes.

SIGHT DISTANCE ANALYSIS

A sight distance analysis was prepared for the proposed access location. In general, recommended safe sight distances depend upon the posted speed limit and roadway grades. The existing sight distances at the proposed driveways were measured in accordance with PennDOT Publication 282 Highway Occupancy Permit Guidelines and compared to PennDOT’s Desirable criteria. In addition, measured sight distances at the proposed driveways were compared to PennDOT’s safe stopping sight distance standard, which is calculated by the following equation:

$$SSSD = 1.47VT + V^2/[30(f\pm g)]$$

- SSSD = safe stopping sight distance (acceptable sight distance)
- V = Vehicle Speed
- T = Perception Reaction Time of Driver (2.5 seconds)
- f = Coefficient of Friction for Wet Pavements
- g = Percent of Roadway Grade Divided by 100

Table 5 shows the desirable (DES), safe stopping (SSSD), and measured sight distances at the proposed local roadway locations for vehicles entering and exiting the site.



TABLE 5
SIGHT DISTANCE ANALYSIS

	Direction	Speed	Grade ¹	Sight Distances (feet)		
				DES	SSSD	EXIST
E Springville Road & Proposed Site Driveway (~755' south of York Road intersection)						
Exiting Movements	To the left	35 mph	+1%	440'	245'	500'
	To the right	35 mph	0%	350'	249'	450'
Entering Left Turns	Approaching same direction	35 mph	0%	N/A	249'	500'
	Approaching opposite direction	35 mph	+1%	300'	245'	500'

DES = PennDOT Desirable Sight Distance
SSSD = PennDOT Safe Stopping Sight Distance

¹ = Roadway Grade Approaching Driveway
EXIST = Existing (measured) Sight Distance

As shown in **Table 5** above, the measured sight distances at the proposed driveway location will exceed the applicable sight distance standards.

TURNING LANE WARRANTS

Methodology

TPD evaluated auxiliary turn lane warrants at the site access intersections. The warrant analysis methodology contained within Chapter 11 of PennDOT's *Publication 46*, Section 11.17.

Findings

Table 6 summarizes the results of the auxiliary turn lane analysis at the site access intersections.

TABLE 6
AUXILIARY TURN LANE WARRANT ANALYSIS SUMMARY – FULL BUILD-OUT

Intersection	Time Periods	Auxiliary Lane	Warrant Satisfied?	Required Lane Length	Proposed Lane Length
E Springville Road & Proposed Site Driveway	AM	SB Left Turn Lane	No	--	--
	PM		No	--	--
	SAT		No	--	--
	AM	NB Right Turn Lane	No	--	--
	PM		No	--	--
	SAT		No	--	--

The results of this analysis indicate that auxiliary turn lanes are not warranted approaching the site driveway to E Springville Road with full build-out of the proposed development.

CAPACITY ANALYSIS METHODOLOGY

Capacity analyses was conducted for the weekday A.M., P.M., and Saturday midday peak hours at the study area intersections. These analyses were conducted according to the methodologies contained in the *Highway Capacity Manual, 6th Ed.* (HCM) using *Synchro 11* software, a Trafficware product. The capacity analysis results are summarized in **Table 7-9** for the analyzed peak hours.

The following conditions was analyzed, as applicable:

- » 2022 Existing Conditions;
- » 2025 Base (No-Build) Conditions;
- » 2025 Projected (Opening year with Phase 1 of development);
- » 2025 Projected (Opening year with Phase 1 of development) conditions with improvements.
- » 2030 Base (No-Build) Conditions;
- » 2030 Projected (Design year with full build-out of development);
- » 2030 Projected (Design year with full build-out of development) conditions with improvements.

TABLE 7
LEVEL OF SERVICE SUMMARY (DELAY): WEEKDAY A.M. PEAK HOUR

Intersection	Approach/ Movement	Weekday A.M. Peak Hour						
		2022 Existing	Opening Year 2025 (Phase 1)			Design Year 2030 (Full Build-Out)		
			Base	Projected	Projected ¹	Base	Projected	Projected ¹
York Road (SR 0074) & E Springville Road	EB T/R	--	--	--	--	--	--	A
	WB L/T	A	A	A	--	A	A	A
	NB L/R	B	C	C	--	C	C	B
	ILOS	A (1.6)	A (3.0)	A (3.1)	--	A (3.1)	A (3.2)	A (7.1)
York Road (SR 0074) & Shughart Road	EB L/T	A	B	B	--	B	B	--
	SB L/R	B	B	B	--	B	B	--
	ILOS	A (3.9)	A (3.8)	A (3.8)	--	A (3.9)	A (3.9)	--
York Road (SR 0074) & S Middlesex Road	EB L/T/R	A	A	A	--	A	A	--
	WB L/T/R	A	A	A	--	A	A	--
	NB L/T/R	C	C	C	--	C	C	--
	SB L/T/R	B	C	C	--	C	C	--
	ILOS	A (1.6)	A (3.4)	A (3.4)	--	A (3.5)	A (3.5)	--
E Springville Road & Proposed Site Driveway	WB L/R	--	--	A	--	--	A	--
	SB L/T	--	--	A	--	--	A	--
	ILOS	--	--	A (0.1)	--	--	A (0.3)	--

Base = No-Build scenario Projected = Build scenario ILOS = Overall Intersection Level of Service
1 = Projected conditions with implementation of recommended improvements

TABLE 8
LEVEL OF SERVICE SUMMARY (DELAY): WEEKDAY P.M. PEAK HOUR

Intersection	Approach/ Movement	Weekday P.M. Peak Hour						
		2022 Existing	Opening Year 2025 (Phase 1)			Design Year 2030 (Full Build-Out)		
			Base	Projected	Projected ¹	Base	Projected	Projected ¹
York Road (SR 0074) & E Springville Road	EB T/R	--	--	--	--	--	--	A
	WB L/T	B	B	B	--	B	B	A
	NB L/R	C	E	F (61.9)	--	E	F (150.5)	C
	ILOS	A (1.7)	A (3.4)	A (6.2)	--	A (3.8)	C (16.1)	A (9.9)
York Road (SR 0074) & Shughart Road	EB L/T	A	B	B	--	B	B	--
	SB L/R	B	B	B	--	B	B	--
	ILOS	A (3.7)	A (3.5)	A (3.6)	--	A (3.6)	A (3.9)	--
York Road (SR 0074) & S Middlesex Road	EB L/T/R	A	A	A	--	A	A	--
	WB L/T/R	A	A	A	--	A	A	--
	NB L/T/R	C	C	D	--	D	D	--
	SB L/T/R	C	C	C	--	C	D	--
	ILOS	A (2.1)	A (4.1)	A (4.2)	--	A (4.2)	A (4.4)	--
E Springville Road & Proposed Site Driveway	WB L/R	--	--	A	--	--	A	--
	SB L/T	--	--	A	--	--	A	--
	ILOS	--	--	A (1.8)	--	--	A (3.0)	--

Base = No-Build scenario Projected = Build scenario ILOS = Overall Intersection Level of Service
1 = Projected conditions with implementation of recommended improvements



TABLE 9
LEVEL OF SERVICE SUMMARY (DELAY): SATURDAY MIDDAY PEAK HOUR

Intersection	Approach/ Movement	Saturday Midday Peak Hour						
		2022 Existing	Opening Year 2025 (Phase 1)			Design Year 2030 (Full Build-Out)		
			Base	Projected	Projected ¹	Base	Projected	Projected ¹
York Road (SR 0074) & E Springville Road	EB T/R	--	--	--	A	--	--	A
	WB L/T	A	A	B	A	A	B	C
	NB L/R	B	C	F (76.6)	B	C	F (304.5)	D
	ILOS	A (2.0)	A (3.1)	B (14.9)	B (10.7)	A (3.2)	F (66.3)	C (21.6)
York Road (SR 0074) & Shughart Road	EB L/T	A	A	A	--	A	B	--
	SB L/R	B	B	B	--	B	B	--
	ILOS	A (2.5)	A (2.4)	A (2.6)	--	A (2.4)	A (2.9)	--
York Road (SR 0074) & S Middlesex Road	EB L/T/R	A	A	A	--	A	A	--
	WB L/T/R	A	A	A	--	A	A	--
	NB L/T/R	C	C	D	--	D	D	--
	SB L/T/R	C	C	C	--	C	C	--
	ILOS	A (2.0)	A (3.8)	A (4.0)	--	A (4.0)	A (4.6)	--
E Springville Road & Proposed Site Driveway	WB L/R	--	--	A	--	--	B	--
	SB L/T	--	--	A	--	--	A	--
	ILOS	--	--	A (4.3)	--	--	A (5.8)	--

Base = No-Build scenario Projected = Build scenario ILOS = Overall Intersection Level of Service
1 = Projected conditions with implementation of recommended improvements

95th PERCENTILE QUEUE ANALYSIS

Queue analyses were conducted at the study area intersections using *Synchro 11* software. For this analysis, the 95th percentile queue is defined as the queue length that is exceeded in 5% of the signal cycles. As an example, for a signal with a 90-second cycle, this means that the 95th percentile queue length will be exceeded during 2 of the 40 signal cycles that occur during the peak hour. The queue analysis results are summarized in **Table 10-12** for the analyzed peak hours.

TABLE 10
 QUEUE ANALYSIS: WEEKDAY A.M. PEAK HOUR

Approach/ Movement	Available/ Proposed Storage	Design Year 2030: No-Build			Design Year 2030: Build			Design Year 2030: Build with Improvements ¹		
		Synchro 50 th	Synchro 95 th	HCM 95 th	Synchro 50 th	Synchro 95 th	HCM 95 th	Synchro 50 th	Synchro 95 th	HCM 95 th
York Road (SR 0074) & E Springville Road										
EB T/R	500+	--	--	--	--	--	--	41	103	13
WB L/T	320	--	--	3	--	--	3	91	225	40
NB L/R	500+	--	--	48	--	--	48	23	78	43
York Road (SR 0074) & Shughart Road										
EB L/T	320	--	--	18	--	--	18	--	--	--
SB L/R	500+	--	--	25	--	--	25	--	--	--
York Road (SR 0074) & S Middlesex Road										
EB L/T/R	500+	--	--	0	--	--	0	--	--	--
WB L/T/R	500+	--	--	0	--	--	0	--	--	--
NB L/T/R	500+	--	--	30	--	--	30	--	--	--
SB L/T/R	500+	--	--	10	--	--	10	--	--	--
E Springville Road & Proposed Site Driveway										
WB L/R	50	--	--	--	--	--	0	--	--	--
SB L/T	500+	--	--	--	--	--	0	--	--	--

¹ = Projected (Build) Conditions with recommended improvements

TABLE 11
 QUEUE ANALYSIS: WEEKDAY P.M. PEAK HOUR

Approach/ Movement	Available/ Proposed Storage	Design Year 2030: No-Build			Design Year 2030: Build			Design Year 2030: Build with Improvements ¹		
		Synchro 50 th	Synchro 95 th	HCM 95 th	Synchro 50 th	Synchro 95 th	HCM 95 th	Synchro 50 th	Synchro 95 th	HCM 95 th
York Road (SR 0074) & E Springville Road										
EB T/R	500+	--	--	--	--	--	--	183	322	123
WB L/T	320	--	--	8	--	--	18	156	428	88
NB L/R	500+	--	--	75	--	--	210	38	131	98
York Road (SR 0074) & Shughart Road										
EB L/T	320	--	--	23	--	--	25	--	--	--
SB L/R	500+	--	--	28	--	--	35	--	--	--
York Road (SR 0074) & S Middlesex Road										
EB L/T/R	500+	--	--	0	--	--	0	--	--	--
WB L/T/R	500+	--	--	0	--	--	0	--	--	--
NB L/T/R	500+	--	--	30	--	--	35	--	--	--
SB L/T/R	500+	--	--	33	--	--	35	--	--	--
E Springville Road & Proposed Site Driveway										
WB L/R	50	--	--	--	--	--	5	--	--	--
SB L/T	500+	--	--	--	--	--	8	--	--	--

¹ = Projected (Build) Conditions with recommended improvements

TABLE 12
 QUEUE ANALYSIS: SATURDAY MIDDAY PEAK HOUR

Approach/ Movement	Available/ Proposed Storage	Design Year 2030: No-Build			Design Year 2030: Build			Design Year 2030: Build with Improvements ¹		
		Synchro 50 th	Synchro 95 th	HCM 95 th	Synchro 50 th	Synchro 95 th	HCM 95 th	Synchro 50 th	Synchro 95 th	HCM 95 th
York Road (SR 0074) & E Springville Road										
EB T/R	500+	--	--	--	--	--	--	133	218	175
WB L/T	320	--	--	5	--	--	20	219	474	333
NB L/R	500+	--	--	50	--	--	513	125	279	293
York Road (SR 0074) & Shughart Road										
EB L/T	320	--	--	13	--	--	18	--	--	--
SB L/R	500+	--	--	15	--	--	25	--	--	--
York Road (SR 0074) & S Middlesex Road										
EB L/T/R	500+	--	--	0	--	--	0	--	--	--
WB L/T/R	500+	--	--	0	--	--	0	--	--	--
NB L/T/R	500+	--	--	40	--	--	55	--	--	--
SB L/T/R	500+	--	--	18	--	--	23	--	--	--
E Springville Road & Proposed Site Driveway										
WB L/R	50	--	--	--	--	--	28	--	--	--
SB L/T	500+	--	--	--	--	--	15	--	--	--

¹ = Projected (Build) Conditions with recommended improvements

SIGNAL WARRANT ANALYSIS

A preliminary traffic signal warrant analysis was conducted at the intersection of York Road (SR 0074) & E Springville Road in accordance with PennDOT Publication 212, *Official Traffic Control Devices*, Subchapter D, "Highway Traffic Signals". TPD used the 2022 existing condition traffic volumes to determine if any of the following MUTCD signal warrants are satisfied based on existing traffic volumes.

- » Warrant 1, Eight-Hour Volume Warrant;
- » Warrant 2, Four-Hour Volume Warrant;
- » Warrant 3, Peak Hour Volume Warrant.

Based on the analyses performed, the following are the results of the traffic signal warrants:

York Road (SR 0074) & E. Springville Road – 2022 Existing Conditions (without Soccer Complex)

- » Warrant 1: exceeds threshold volumes for 8 hours, 8 hours needed **(satisfied)**
- » Warrant 2: exceeds threshold volumes for 5 hours, 4 hours needed **(satisfied)**
- » Warrant 3: exceeds threshold volumes for 1 hour, 1 hour needed **(satisfied)**

As outlined above, traffic signal warrants are currently satisfied at the intersection of York Road (SR 0074) and E Springville Road under 2022 existing conditions without development of the Soccer Complex. It should be noted that this intersection was identified for improvements within the Townships Active



Transportation Plan 2021 and that several planned developments in the area will contribute to the traffic volumes at this intersection, which were not included in the traffic counts for this warrant analysis.

It is understood the Township has implemented a “fair-share” contribution impact fee to construct the needed improvements at this intersection of York Road (SR 0074) & E. Springville Road. The applicant has agreed to contribute a “fair-share” amount for the improvements. Based on previous discussions with the Township, the total volume of the intersection is not to be considered when calculating the percentage of impact, but rather the development’s increase in minor street volumes during the Weekday P.M. peak period. As such, below is a breakdown of the minor street volumes relative to the existing traffic volumes and each nearby proposed development.

**TABLE 13
MINOR STREET VOLUMES**

Time Period	Total Trips		
	Minor Street Volume	Total Intersection Traffic	Percentage of minor Street Impact ¹
Existing Conditions	171	1135	43%
Wheatstone Res Dev	56	56	14%
Georgetown Res Dev	32	107	8%
Keystone FC Complex	142	142	35%

¹Percentage of minor Street Impact = minor street volume/total minor street volume

The percentages in **Table 13** reflect the calculations based on minor street impact to the intersection as directed by the Township. Based on documentation provided by Grove Miller Engineering, as part of the Wheatstone Residential Development and Georgetown Residential Development Conditional Use Hearings, the total intersection improvements (traffic signal and roadway realignment) cost “could” be as much as \$975,000.

When using the percentage of minor street impact and calculating a pro rata contribution per development, the “fair-share” contribution impact fee for this project would be **\$341,250.00**.

It is also important to note that PennDOT has jurisdiction over all traffic signalization in the state of Pennsylvania; and thus, PennDOT will need to review and approve the traffic signal plans. In addition, in Pennsylvania, municipalities own and maintain the signal equipment; and thus, the municipality must be the Applicant to PennDOT for the signalization.

CONCLUSIONS AND RECOMMENDATIONS

- The measured sight distances at the proposed driveway location will exceed the applicable sight distance standards.



- » During the Phase 1 scenario the intersection of York Road (SR 0074) & E Springville Road will experience an overall intersection level of service drop during the Saturday midday peak hour. TPD offers the following for consideration:
 - The peak hour of the manual traffic counts during the weekday p.m. peak hour is 3:30 – 4:30 p.m. Per discussions with the applicant, weekday soccer related events/practices are not anticipated to begin until after this analyzed peak hour. Thus, this analysis conservatively assumes that the weekday p.m. peak soccer events will occur at the same time as the current p.m. peak hour of adjacent street.
 - During the Saturday midday peak hour, while congestion may occur with the occasional event, it will be limited to a brief period of time during the peak arrival/departure times. While the applicant, has agreed to provide a fair-share contribution to the future signalization of this intersection, it is likely that Phase 1 will be operational prior to signalization. Until signalization is implemented, the applicant will provide/utilize a traffic control specialist (flagger) at this intersection to manage event traffic during the peak arrival and departure times.
- » During the Full build-out scenario the intersection of York Road (SR 0074) & E Springville Road will experience an overall intersection level of service drop during the weekday p.m. and Saturday midday peak hours. TPD offers the following for consideration:
 - The peak hour of the manual traffic counts during the weekday p.m. peak hour is 3:30 – 4:30 p.m. Per discussions with the applicant, weekday soccer related events/practices are not anticipated to begin until after this analyzed peak hour. Thus, this analysis conservatively assumes that the weekday p.m. peak soccer events will occur at the same time as the current p.m. peak hour of adjacent street.
 - During the Saturday midday peak hour, while congestion may occur with the occasional event, it will be limited to a brief period of time during the peak arrival/departure times. The applicant has agreed to provide a fair-share contribution to the future signalization of this intersection, it is likely that signalization will be implemented by the Township prior to full build-out of the proposed development. Until signalization is implemented, the applicant will provide/utilize a traffic control specialist (flagger) at this intersection to manage event traffic during the peak arrival and departure times.
- » Auxiliary turn lanes are not warranted approaching the site driveway of E Springville Road.
- » Traffic Planning and Design Inc. (TPD) recommends the following roadway improvements as outlined at the study area intersections:

E. Springville Road & Site Driveway

- Provide a Stop sign (PennDOT designation R1-1) to control exiting traffic on the egress site-driveway approach;
- Provide one entering lane and one exiting lane;
- Provide and perpetually maintain required sight distances.

York Road (SR 0074) & E. Springville Road

- In conjunction with build-out of Phase 1 of the Wolf Farm Soccer Fields the applicant will provide/utilize a traffic control specialist (flagger) at this intersection to manage event traffic during the peak arrival and departure times.
- It is anticipated the Township will implement traffic signalization at this intersection prior to full build-out of the Wolf Farm Soccer Fields, this improvement will be funded by a "fair-share" contribution impact fee.



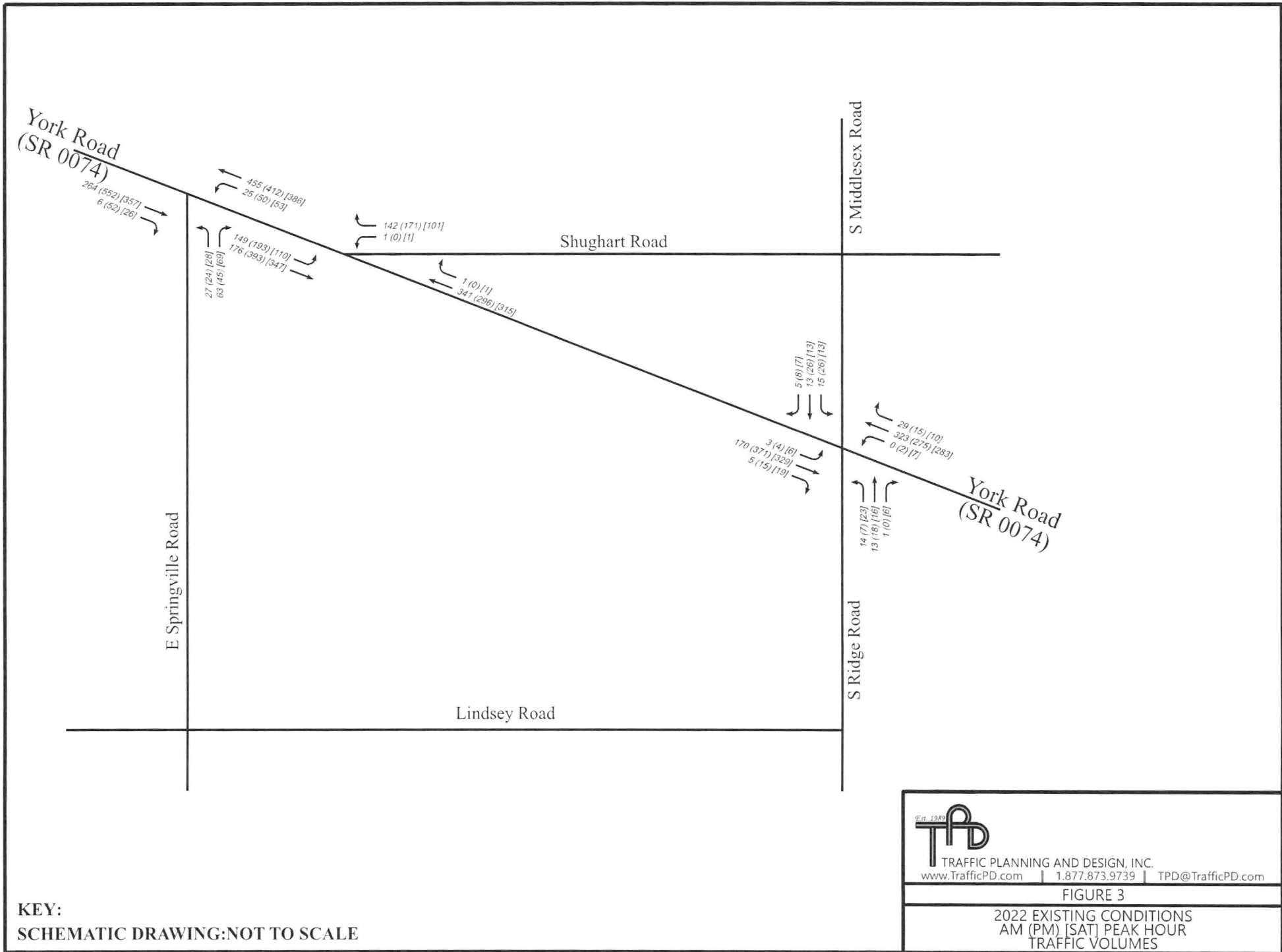
**PROPOSED
SITE**



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FIGURE 1

LOCATION MAP



KEY:
SCHEMATIC DRAWING: NOT TO SCALE



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FIGURE 3

2022 EXISTING CONDITIONS
 AM (PM) [SAT] PEAK HOUR
 TRAFFIC VOLUMES



York Road
(SR 0074)

284 610 (410)
28 110 (69)

505 450 (423)
26 51 (34)

152 197 (112)
194 447 (400)
78 56 (69)
64 46 (70)

145 175 (103)
1 0 (1)

1 0 (1)
389 331 (351)

Shughart Road

S Middlesex Road

3 4 (6)
174 379 (336)
19 61 (65)

5 8 (7)
20 48 (29)
15 27 (13)

30 15 (10)
330 281 (289)
4 11 (12)

York Road
(SR 0074)

55 36 (52)
30 29 (27)
9 6 (11)

E Springville Road

Lindsey Road

S Ridge Road

KEY:
SCHEMATIC DRAWING: NOT TO SCALE



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FIGURE 4

2025 BASE (NO-BUILD) CONDITIONS
AM (PM) [SAT] PEAK HOUR
TRAFFIC VOLUMES



York Road
(SR 0074)

293 (620) [423]
28 (112) [69]

522 (464) [437]
26 (53) [56]

157 (204) [116]
200 (461) [413]

150 (181) [107]
1 (0) [1]

1 (0) [1]
401 (342) [362]

79 (56) [60]
67 (46) [73]

5 (8) [7]
21 (48) [30]
16 (27) [14]

3 (4) [6]
180 (392) [343]
19 (62) [66]

31 (16) [11]
341 (291) [299]
4 (11) [12]

56 (36) [53]
31 (30) [28]
9 (6) [11]

E Springville Road

Shughart Road

S Middlesex Road

York Road
(SR 0074)

Lindsey Road

S Ridge Road

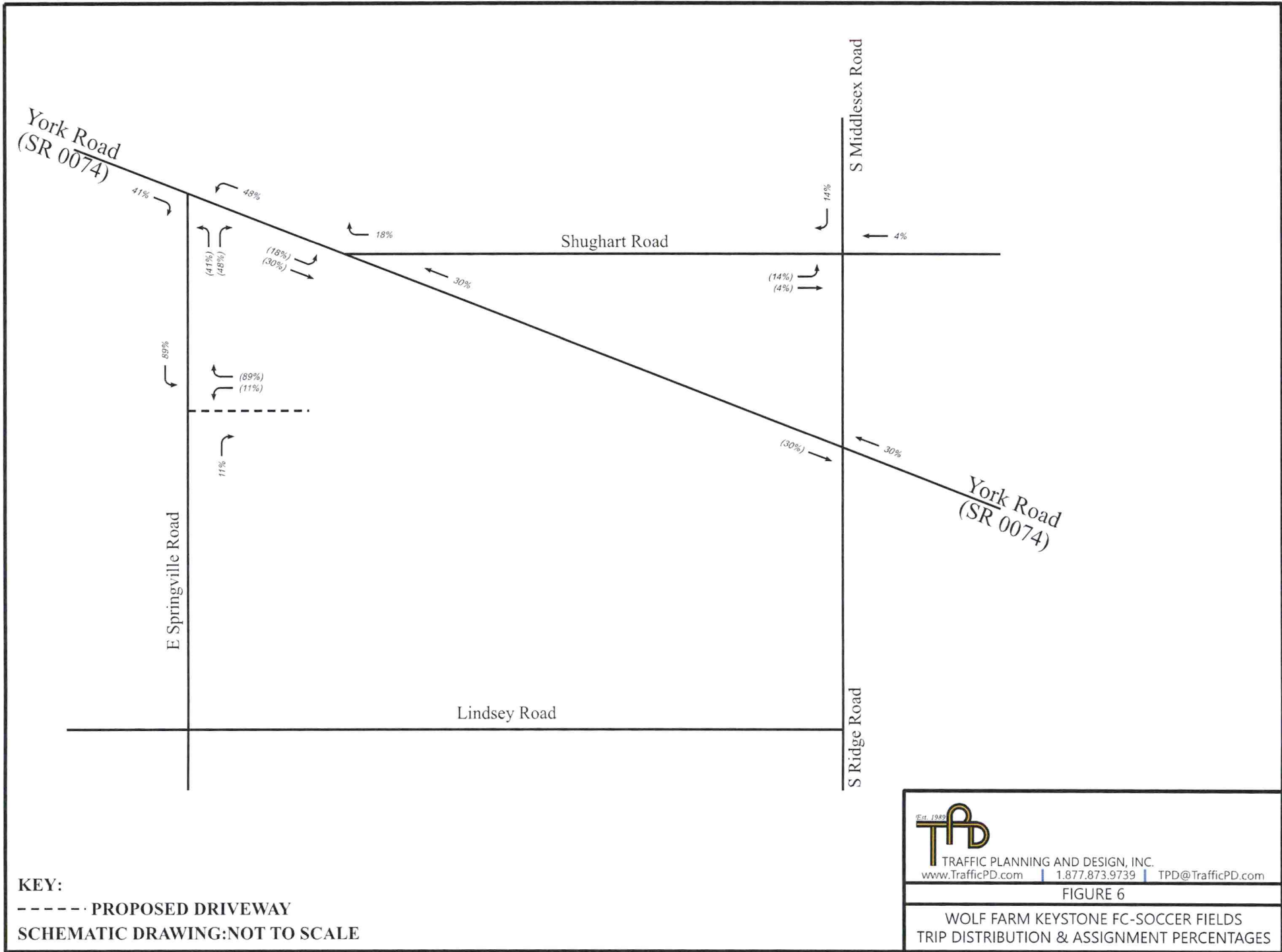


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FIGURE 5

2030 BASE (NO-BUILD) CONDITIONS
AM (PM) [SAT] PEAK HOUR
TRAFFIC VOLUMES

KEY:
SCHEMATIC DRAWING: NOT TO SCALE



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FIGURE 6

WOLF FARM KEYSTONE FC-SOCCER FIELDS
 TRIP DISTRIBUTION & ASSIGNMENT PERCENTAGES



York Road
(SR 0074)

1 (21) [46]

1 (24) [55]

1 (11) [50]
(12) [58]

(4) [22]
(8) [37]

(9) [21]

1 (15) [34]

Shughart Road

(7) [16]

S Middlesex Road

(2) [5]

(3) [17]
(1) [5]

2 (45) [101]

E Springville Road

1 (23) [109]
(3) [13]

	Enter	Exit
AM	2	1
PM	51	26
SAT	113	122

(6) [12]

(8) [37]

(3) [17]
(1) [5]

(8) [37]

S Ridge Road

1 (15) [34]

York Road
(SR 0074)

Lindsey Road

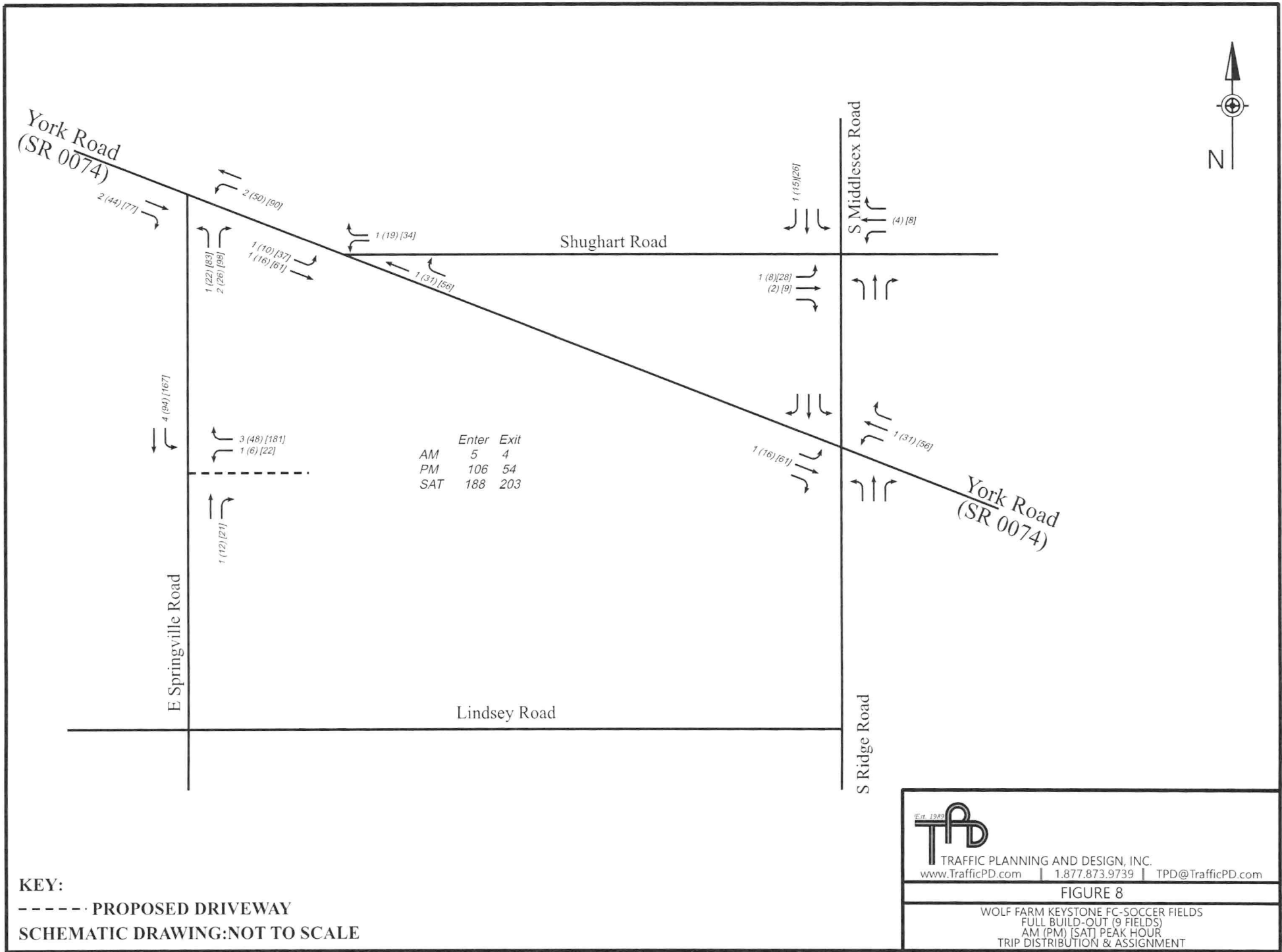
KEY:
 - - - - - PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE



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FIGURE 7

WOLF FARM KEYSTONE FC-SOCCER FIELDS
 PHASE 1 (3 FIELDS)
 AM (PM) [SAT] PEAK HOUR
 TRIP DISTRIBUTION & ASSIGNMENT



KEY:
 - - - - - PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE


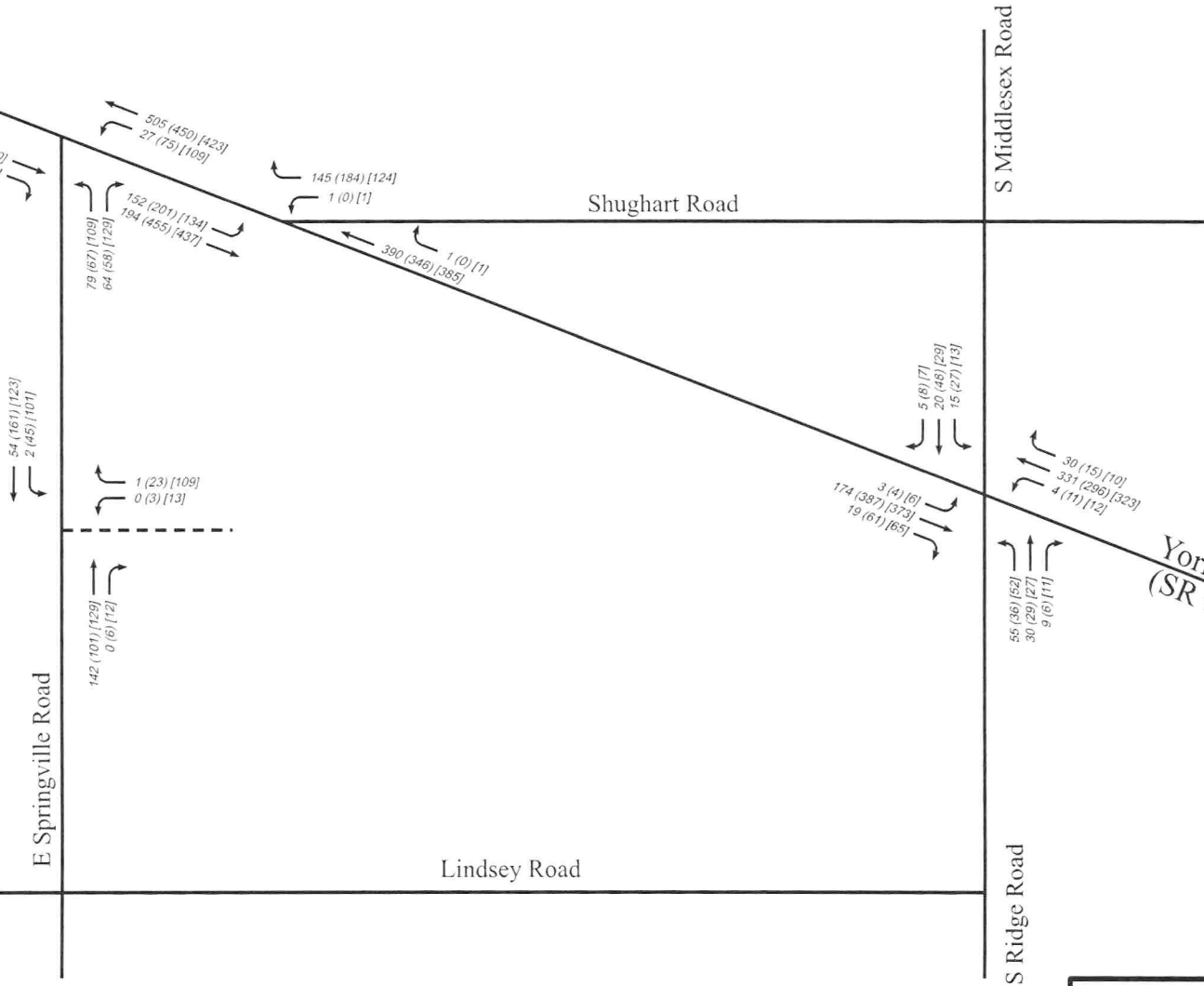

 TRAFFIC PLANNING AND DESIGN, INC.
 www.TrafficPD.com | 1.877.873.9739 | TPD@TrafficPD.com

FIGURE 8

WOLF FARM KEYSTONE FC-SOCCER FIELDS
 FULL BUILD-OUT (9 FIELDS)
 AM (PM) [SAT] PEAK HOUR
 TRIP DISTRIBUTION & ASSIGNMENT



York Road
(SR 0074)



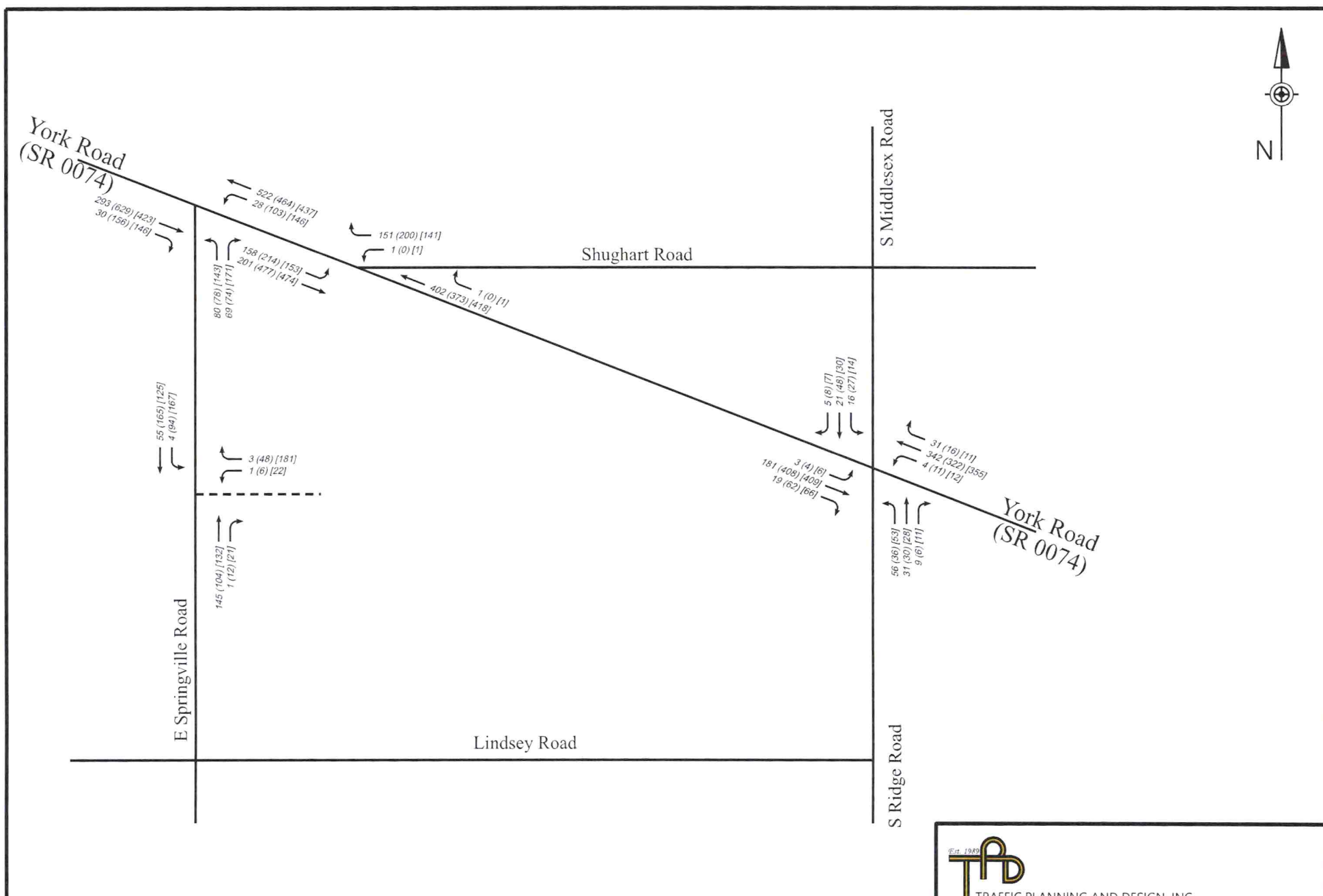
KEY:
 - - - - - PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE



TRAFFIC PLANNING AND DESIGN, INC.
 www.TrafficPD.com | 1.877.873.9739 | TPD@TrafficPD.com

FIGURE 9

2025 PROJECTED (PHASE 1 BUILD) CONDITION
 AM (PM) [SAT] PEAK HOUR
 TRAFFIC VOLUMES



KEY:
 - - - - - PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE



TRAFFIC PLANNING AND DESIGN, INC.
 www.TrafficPD.com | 1.877.873.9739 | TPD@TrafficPD.com

FIGURE 10

2030 PROJECTED (FULL BUILD-OUT) CONDITION
 AM (PM) [SAT] PEAK HOUR
 TRAFFIC VOLUMES

APPENDIX A:

Existing Roadway Conditions



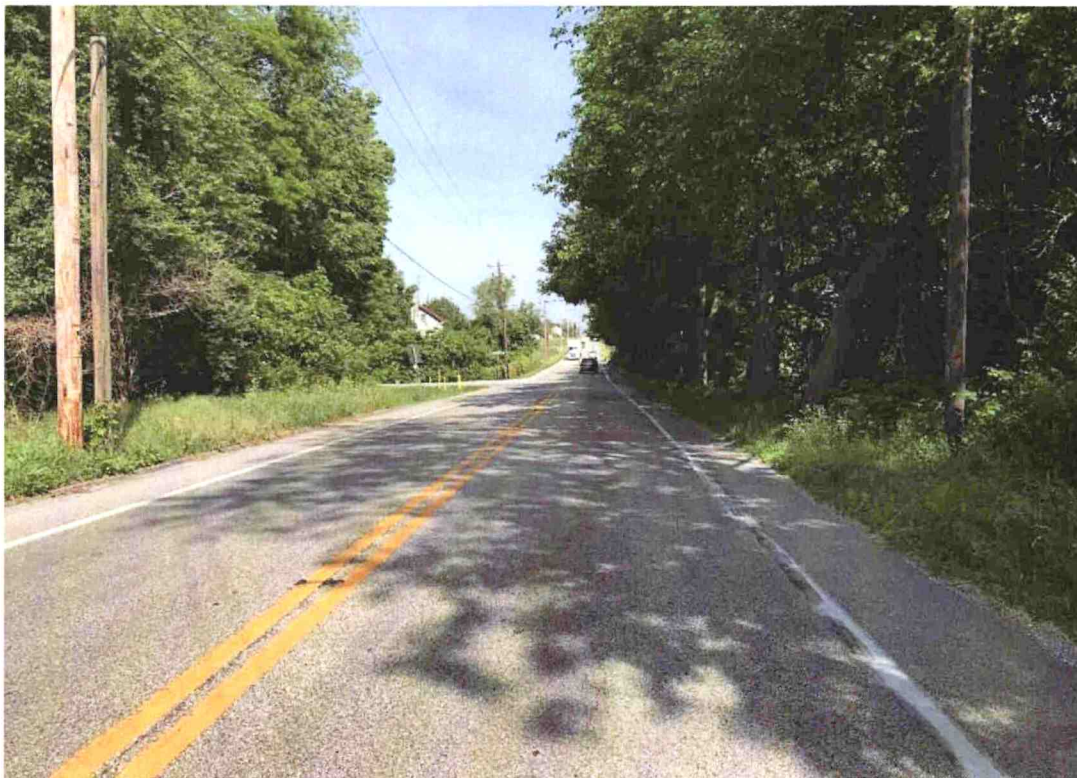
Direction / Road: EB York Road (SR 0074)
Approach / Departure: Approaching E Springville Road
Distance: 50 Feet



Direction / Road: EB York Road (SR 0074)
Approach / Departure: Approaching E Springville Road
Distance: 200 Feet



Direction / Road: WB York Road (SR 0074)
Approach / Departure: Approaching E Springville Road
Distance: 50 feet



Direction / Road: WB York Road (SR 0074)
Approach / Departure: Approaching E Springville Road
Distance: 200 Feet



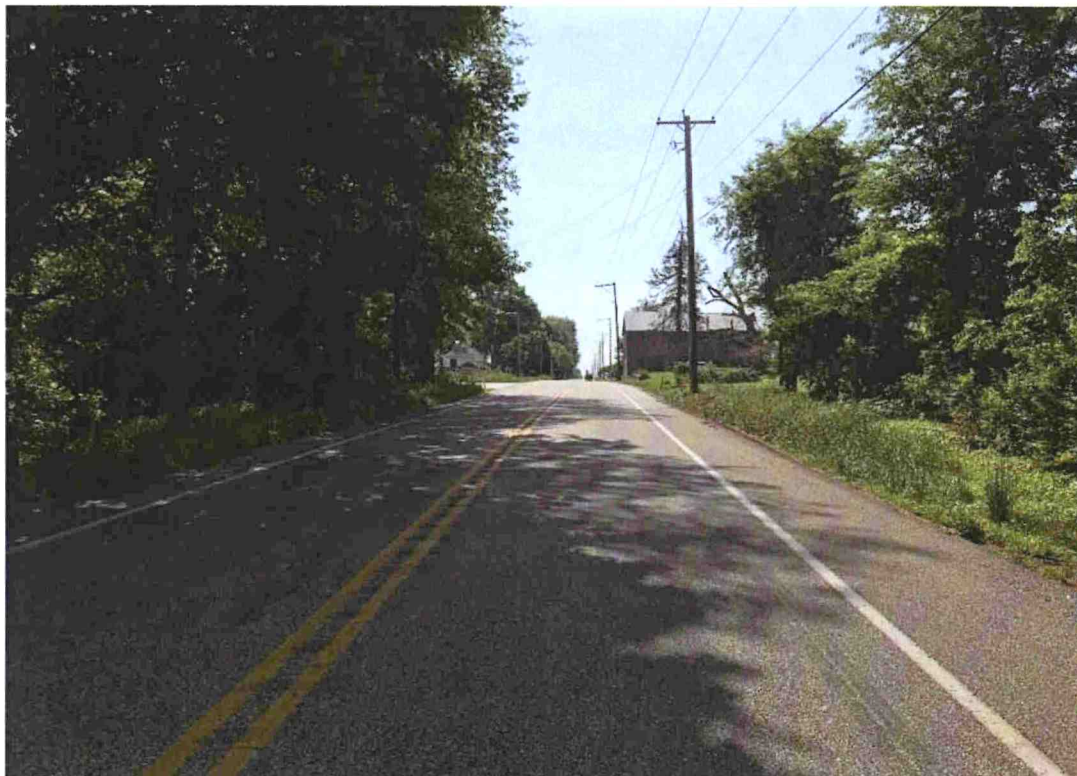
Direction / Road: NB E Springville Road
Approach / Departure: Approaching York Road (SR 0074)
Distance: 50 feet



Direction / Road: NB E Springville Road
Approach / Departure: Approaching York Road (SR 0074)
Distance: 200 Feet



Direction / Road: EB York Road (SR 0074)
Approach / Departure: Approaching Shughart Road
Distance: 50 feet



Direction / Road: EB York Road (SR 0074)
Approach / Departure: Approaching Shughart Road
Distance: 200 Feet



Direction / Road: WB York Road (SR 0074)
Approach / Departure: Approaching Shughart Road
Distance: 50 feet



Direction / Road: WB York Road (SR 0074)
Approach / Departure: Approaching Shughart Road
Distance: 200 Feet



Direction / Road: SB Shughart Road
Approach / Departure: Approaching York Road (SR 0074)
Distance: 50 feet



Direction / Road: SB Shughart Road
Approach / Departure: Approaching York Road (SR 0074)
Distance: 200 Feet



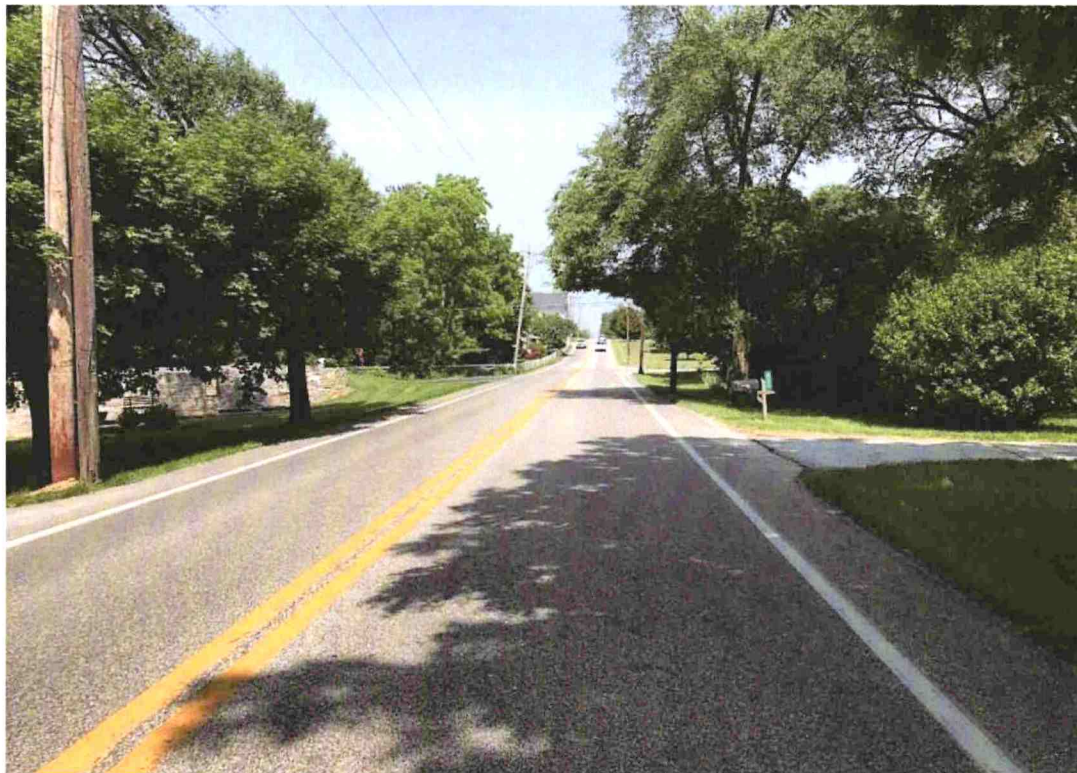
Direction / Road: EB York Road (SR 0074)
Approach / Departure: Approaching S Ridge Road & S Middlesex Road
Distance: 50 feet



Direction / Road: EB York Road (SR 0074)
Approach / Departure: Approaching S Ridge Road & S Middlesex Road
Distance: 200 Feet



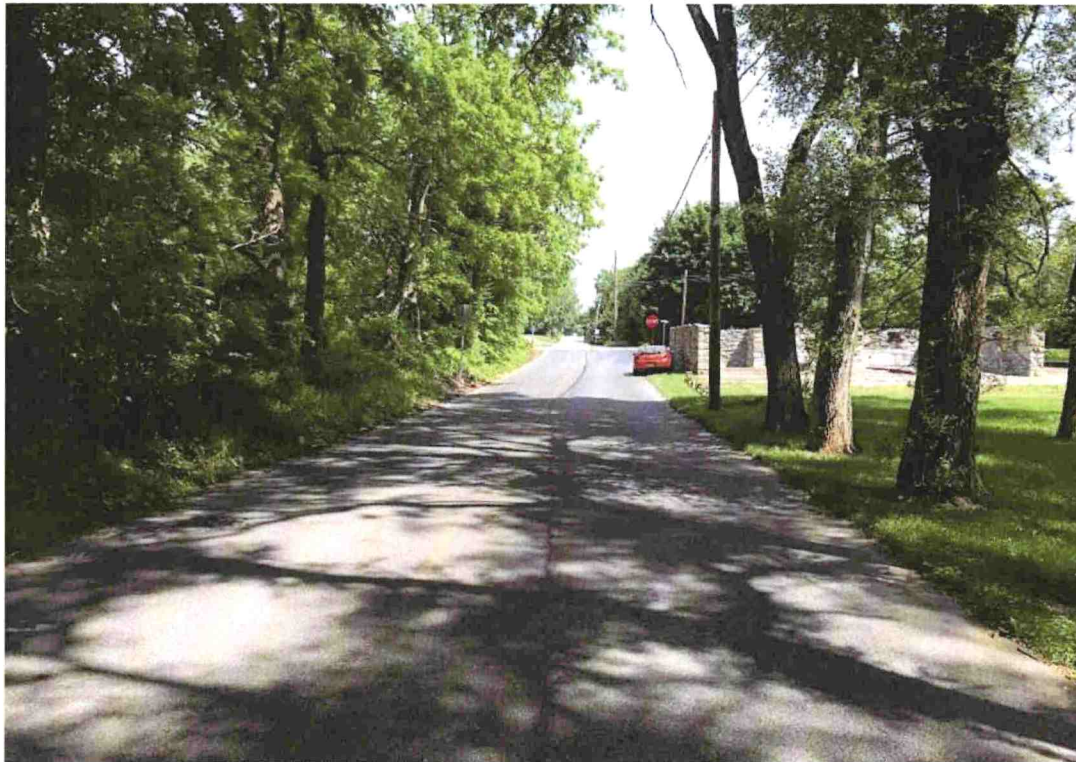
Direction / Road: WB York Road (SR 0074)
Approach / Departure: Approaching S Ridge Road & S Middlesex Road
Distance: 50 feet



Direction / Road: WB York Road (SR 0074)
Approach / Departure: Approaching S Ridge Road & S Middlesex Road
Distance: 200 Feet



Direction / Road: NB S Ridge Road
Approach / Departure: Approaching York Road (SR 0074)
Distance: 50 feet



Direction / Road: NB S Ridge Road
Approach / Departure: Approaching York Road (SR 0074)
Distance: 200 Feet



Direction / Road: SB S Middlesex Road
Approach / Departure: Approaching York Road (SR 0074)
Distance: 50 feet



Direction / Road: SB S Middlesex Road
Approach / Departure: Approaching York Road (SR 0074)
Distance: 200 Feet

INTERSECTION WORKSHEET

Traffic Planning and Design, Inc.

TPD Project # FSAI.00029
 Date 06/1/2022
 Analyst TPD

Signalized Un-signalized Two-Way Stop Control All-Way Stop Control Offset Other

Area Type (circle one): Urban Suburban Rural CBD

Streets: (N-S) E Springville Road (E-W) York Road (SR 0074)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		1	< 0	0	> 1		0	> 0	< 0			
Lane Width		10'		10'			9'					
Storage Length												
Grade (approaching intersection) + uphill, - downhill		+1%		-1%			+2%					
Channelized Right? If so, is lane > 75'?												
Shoulder width		3'		3'			0'					
Pavement condition*	<input checked="" type="radio"/> Good	<input type="radio"/> Fair	<input type="radio"/> Poor	<input checked="" type="radio"/> Good	<input type="radio"/> Fair	<input type="radio"/> Poor	<input checked="" type="radio"/> Good	<input type="radio"/> Fair	<input type="radio"/> Poor	<input type="radio"/> Good	<input type="radio"/> Fair	<input type="radio"/> Poor
Lane marking condition*	<input checked="" type="radio"/> Good	<input type="radio"/> Fair	<input type="radio"/> Poor	<input checked="" type="radio"/> Good	<input type="radio"/> Fair	<input type="radio"/> Poor	<input checked="" type="radio"/> Good	<input type="radio"/> Fair	<input type="radio"/> Poor	<input type="radio"/> Good	<input type="radio"/> Fair	<input type="radio"/> Poor
Posted speed limit		50 mph		50 mph			35 mph					
Driveways on approach?		Y <input checked="" type="radio"/> N		Y <input checked="" type="radio"/> N			Y <input checked="" type="radio"/> N			Y	N	
Bus Stops?	Y <input checked="" type="radio"/> N	Route #:		Y <input checked="" type="radio"/> N	Route #:		Y <input checked="" type="radio"/> N	Route #:		Y	N	Route #:
Parking?		Y <input checked="" type="radio"/> N		Y <input checked="" type="radio"/> N			Y <input checked="" type="radio"/> N			Y	N	
Pedestrian Curb Ramps?	Y <input checked="" type="radio"/> N	/ L R		Y <input checked="" type="radio"/> N	/ L R		Y <input checked="" type="radio"/> N	/ L R		Y	N	/ L R
Sidewalk?	Y <input checked="" type="radio"/> N	/ L R		Y <input checked="" type="radio"/> N	/ L R		Y <input checked="" type="radio"/> N	/ L R		Y	N	/ L R
Crosswalks?		Y <input checked="" type="radio"/> N		Y <input checked="" type="radio"/> N			Y <input checked="" type="radio"/> N			Y	N	

Unsignalized Intersections:

Sign Control (circle)	Stop Yield <input checked="" type="radio"/> None	Stop Yield <input checked="" type="radio"/> None	<input checked="" type="radio"/> Stop Yield None	Stop Yield None
Sight Distance* (Stop-Controlled Approach)	<input checked="" type="radio"/> Good Fair Poor	<input checked="" type="radio"/> Good Fair Poor	<input checked="" type="radio"/> Good Fair Poor	Good Fair Poor

Signalized Intersections:

No Turn on Red posted?	Y N	Y N	Y N	Y N
Ped Button?	Y N	Y N	Y N	Y N
Left Turn Phase	Y N / 3 4 5 head	Y N / 3 4 5 head	Y N / 3 4 5 head	Y N / 3 4 5 head
Actuated Lanes	L T R	L T R	L T R	L T R

Photos: All approaches (50' & 200'), departures, unusual characteristics, and corners/sidewalks (pedestrian facilities).

* Good, Fair or Poor. If sight distance is Poor, what is limiting the sight distance, and take a picture in that direction.

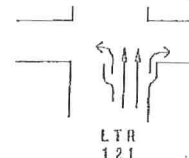
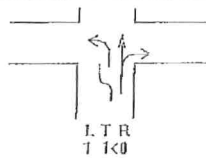
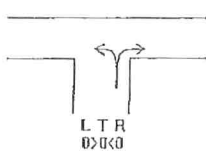
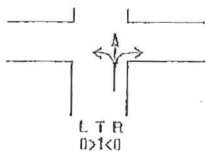
If pavement or lane markings are in Poor condition, take picture of Poor area(s).

*Pedestrian Accommodations

Comments (please be as specific as possible):

Please Note the location of any inlets & utility poles at the intersection. Make notes on next page (intersection diagram)

Please Note Land Uses (Residential, Retail, Commercial, etc.):



INTERSECTION WORKSHEET

Traffic Planning and Design, Inc.

TPD Project # FSAI.00026
 Date 06/1/2022
 Analyst TPD

Signalized Un-signalized Two-Way Stop Control All-Way Stop Control Offset Other

Area Type (circle one): Urban Suburban Rural CBD

Streets: (N-S) Middlesex Road/Ridge Road (E-W) York Road (SR 0074)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0 > 1 < 0			0 > 1 < 0			0 > 1 < 0			0 > 1 < 0		
Lane Width	10'			10'			9'			9'		
Storage Length												
Grade (approaching intersection) + uphill, - downhill	-1%			+1%			+4%			+3%		
Channelized Right? If so, is lane > 75'?												
Shoulder width	3'			3'			0'			0'		
Pavement condition*	<u>Good</u> Fair Poor			<u>Good</u> Fair Poor			<u>Good</u> Fair Poor			<u>Good</u> Fair Poor		
Lane marking condition*	<u>Good</u> Fair Poor None			<u>Good</u> Fair Poor None			<u>Good</u> Fair Poor None			<u>Good</u> Fair Poor None		
Posted speed limit	50 mph			50 mph			35 mph			35 mph		
Driveways on approach?	Y <u>(N)</u>			Y <u>(N)</u>			Y <u>(N)</u>			Y <u>(N)</u>		
Bus Stops?	Y <u>(N)</u> Route #: _____			Y <u>(N)</u> Route #: _____			Y <u>(N)</u> Route #: _____			Y <u>(N)</u> Route #: _____		
Parking?	Y <u>(N)</u>			Y <u>(N)</u>			Y <u>(N)</u>			Y <u>(N)</u>		
Pedestrian Curb Ramps?	Y <u>(N)</u> / L R			Y <u>(N)</u> / L R			Y <u>(N)</u> / L R			Y <u>(N)</u> / L R		
Sidewalk?	Y <u>(N)</u> / L R			Y <u>(N)</u> / L R			Y <u>(N)</u> / L R			Y <u>(N)</u> / L R		
Crosswalks?	Y <u>(N)</u>			Y <u>(N)</u>			Y <u>(N)</u>			Y <u>(N)</u>		
Unsignalized Intersections:												
Sign Control (circle)	Stop Yield <u>(None)</u>			Stop Yield <u>(None)</u>			Stop Yield None			Stop Yield None		
Sight Distance* (Stop-Controlled Approach)	<u>(Good)</u> Fair Poor			<u>(Good)</u> Fair Poor			<u>(Good)</u> Fair Poor			<u>(Good)</u> Fair Poor		
Signalized Intersections:												
No Turn on Red posted?	Y N			Y N			Y N			Y N		
Ped Button?	Y N			Y N			Y N			Y N		
Left Turn Phase	Y N / 3 4 5 head			Y N / 3 4 5 head			Y N / 3 4 5 head			Y N / 3 4 5 head		
Actuated Lanes	L T R			L T R			L T R			L T R		

Photos: All approaches (50' & 200'), departures, unusual characteristics, and corners/sidewalks (pedestrian facilities).

* Good, Fair or Poor. If sight distance is Poor, what is limiting the sight distance, and take a picture in that direction.

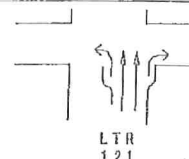
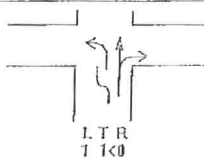
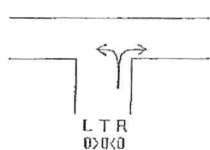
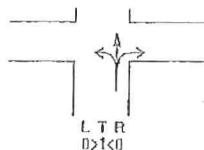
If pavement or lane markings are in Poor condition, take picture of Poor area(s).

*Pedestrian Accommodations

Comments (please be as specific as possible):

Please Note the location of any inlets & utility poles at the intersection. Make notes on next page (intersection diagram)

Please Note Land Uses (Residential, Retail, Commercial, etc.):



INTERSECTION WORKSHEET

Traffic Planning and Design, Inc.

TPD Project # FSAI.00026

Date 06/1/2022

Analyst TPD

Signalized Un-signalized Two-Way Stop Control All-Way Stop Control Offset Other

Area Type (circle one): Urban Suburban Rural CBD

Streets: (N-S) Shuhgart Road (E-W) York Road (SR 0074)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0 > 2			1 < 0						0 > 0 < 0		
Lane Width	10'			10'						9'		
Storage Length												
Grade (approaching intersection) + uphill, - downhill	+1%			-1%						+4%		
Channelized Right? If so, is lane > 75'?												
Shoulder width	3'			3'						0'		
Pavement condition*	<input checked="" type="radio"/> Good	Fair	Poor	<input checked="" type="radio"/> Good	Fair	Poor	Good	Fair	Poor	<input checked="" type="radio"/> Good	Fair	Poor
Lane marking condition*	<input checked="" type="radio"/> Good	Fair	Poor	None	<input checked="" type="radio"/> Good	Fair	Poor	None	Good	Fair	Poor	None
Posted speed limit	50 mph			50 mph						35 mph		
Driveways on approach?	Y <input checked="" type="radio"/> N			Y <input checked="" type="radio"/> N			Y N			Y <input checked="" type="radio"/> N		
Bus Stops?	Y <input checked="" type="radio"/> N Route #: _____			Y <input checked="" type="radio"/> N Route #: _____			Y N Route #: _____			Y <input checked="" type="radio"/> N Route #: _____		
Parking?	Y <input checked="" type="radio"/> N			Y <input checked="" type="radio"/> N			Y N			Y <input checked="" type="radio"/> N		
Pedestrian Curb Ramps?	Y <input checked="" type="radio"/> N / L R			Y <input checked="" type="radio"/> N / L R			Y N / L R			Y <input checked="" type="radio"/> N / L R		
Sidewalk?	Y <input checked="" type="radio"/> N / L R			Y <input checked="" type="radio"/> N / L R			Y N / L R			Y <input checked="" type="radio"/> N / L R		
Crosswalks?	Y <input checked="" type="radio"/> N			Y <input checked="" type="radio"/> N			Y N			Y <input checked="" type="radio"/> N		
Unsignalized Intersections:												
Sign Control (circle)	Stop Yield <input checked="" type="radio"/> None			Stop Yield <input checked="" type="radio"/> None			Stop Yield None			<input checked="" type="radio"/> Stop Yield None		
Sight Distance* (Stop-Controlled Approach)	<input checked="" type="radio"/> Good Fair Poor			<input checked="" type="radio"/> Good Fair Poor			Good Fair Poor			<input checked="" type="radio"/> Good Fair Poor		
Signalized Intersections:												
No Turn on Red posted?	Y N			Y N			Y N			Y N		
Ped Button?	Y N			Y N			Y N			Y N		
Left Turn Phase	Y N / 3 4 5 head			Y N / 3 4 5 head			Y N / 3 4 5 head			Y N / 3 4 5 head		
Actuated Lanes	L	T	R	L	T	R	L	T	R	L	T	R

Photos: All approaches (50' & 200'), departures, unusual characteristics, and corners/sidewalks (pedestrian facilities).

* Good, Fair or Poor. If sight distance is Poor, what is limiting the sight distance, and take a picture in that direction.

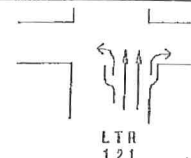
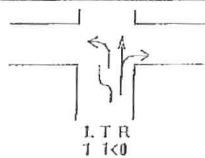
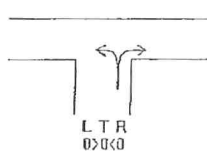
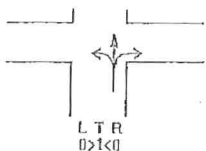
If pavement or lane markings are in Poor condition, take picture of Poor area(s).

*Pedestrian Accommodations

Comments (please be as specific as possible):

Please Note the location of any inlets & utility poles at the intersection. Make notes on next page (intersection diagram)

Please Note Land Uses (Residential, Retail, Commercial, etc.):



DRIVEWAY SIGHT DISTANCE MEASUREMENTS

(FOR LOCAL ROADS, USE PENNDOT PUB 70)

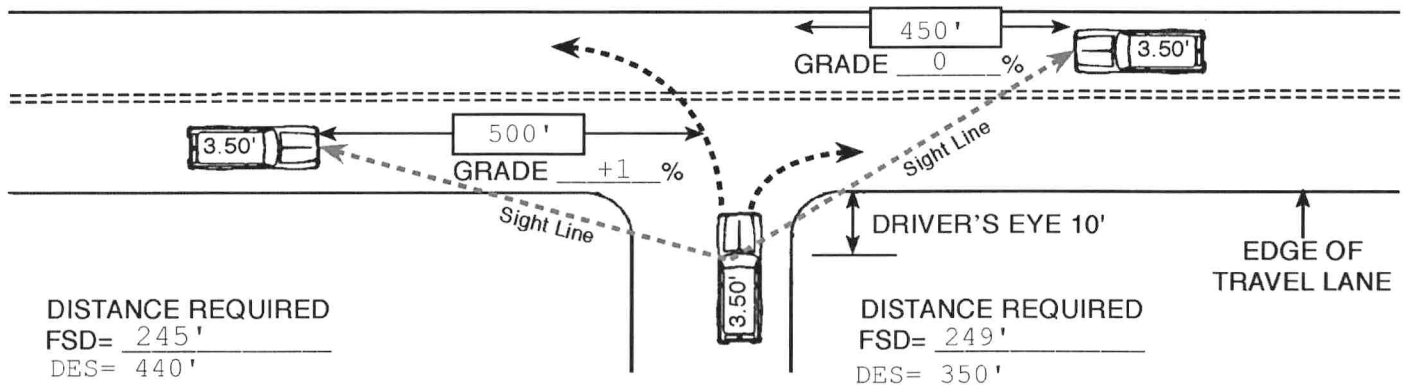
APPLICANT Wolf Farm Soccer Field APPLICATION NO. FSAI.00029

S.R. _____ SEG. _____ OFFSET _____ LEGAL SPEED LIMIT 35 mph

MEASURED BY TPD DATE 04/24/2023

FOR DEPARTMENT USE ONLY: Safe-Running Speed _____ 85th Percentile Speed _____

A E Springville Road & Proposed Site Driveway (~755' south of York Rd)

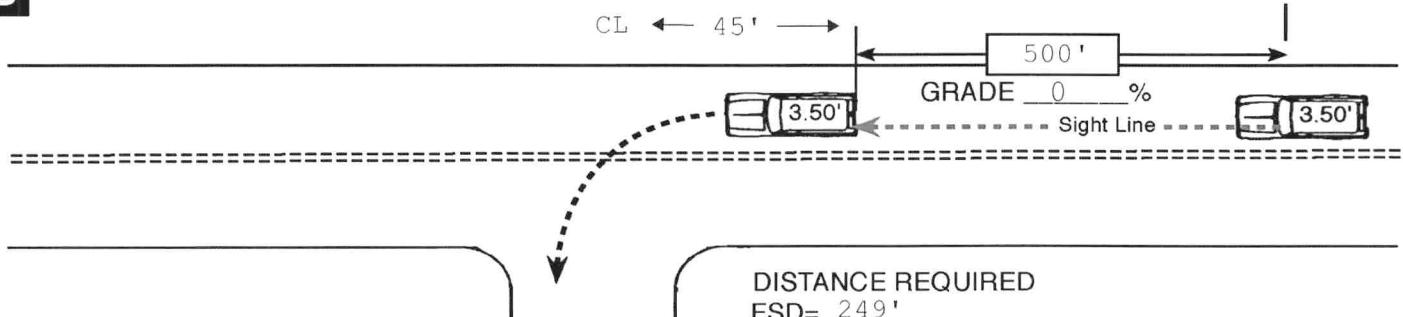


DISTANCE REQUIRED
FSD= 245'
DES= 440'

DISTANCE REQUIRED
FSD= 249'
DES= 350'

THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER AT A DRIVEWAY LOCATION CAN CONTINUOUSLY SEE ANOTHER VEHICLE APPROACHING ON THE ROADWAY.

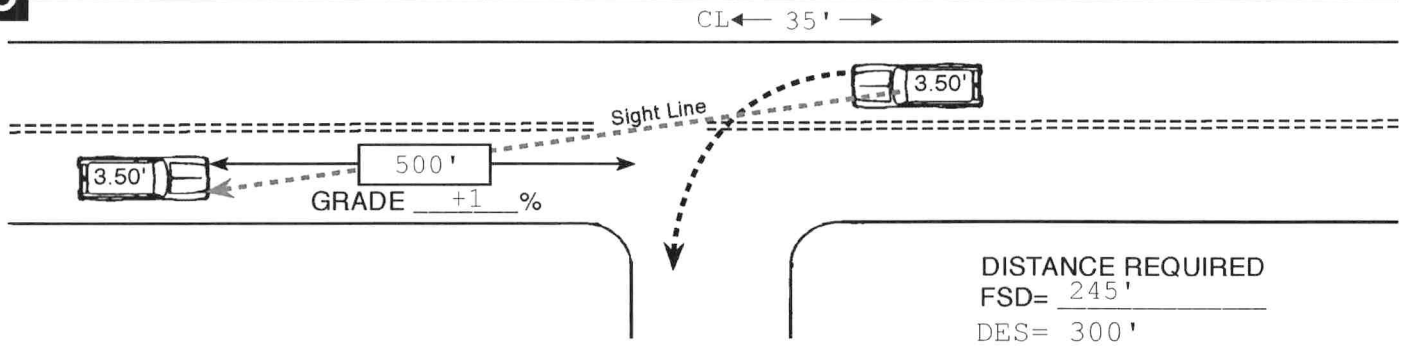
B



DISTANCE REQUIRED
FSD= 249'

THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER ON THE ROADWAY CAN CONTINUOUSLY SEE THE REAR OF A VEHICLE WHICH IS LOCATED IN THE DRIVER'S TRAVEL LANE AND WHICH IS POSITIONED TO MAKE A LEFT TURN INTO A DRIVEWAY.

C



DISTANCE REQUIRED
FSD= 245'
DES= 300'

THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER OF A VEHICLE INTENDING TO MAKE A LEFT TURN INTO A DRIVEWAY CAN CONTINUOUSLY SEE A VEHICLE APPROACHING FROM THE OPPOSITE DIRECTION.

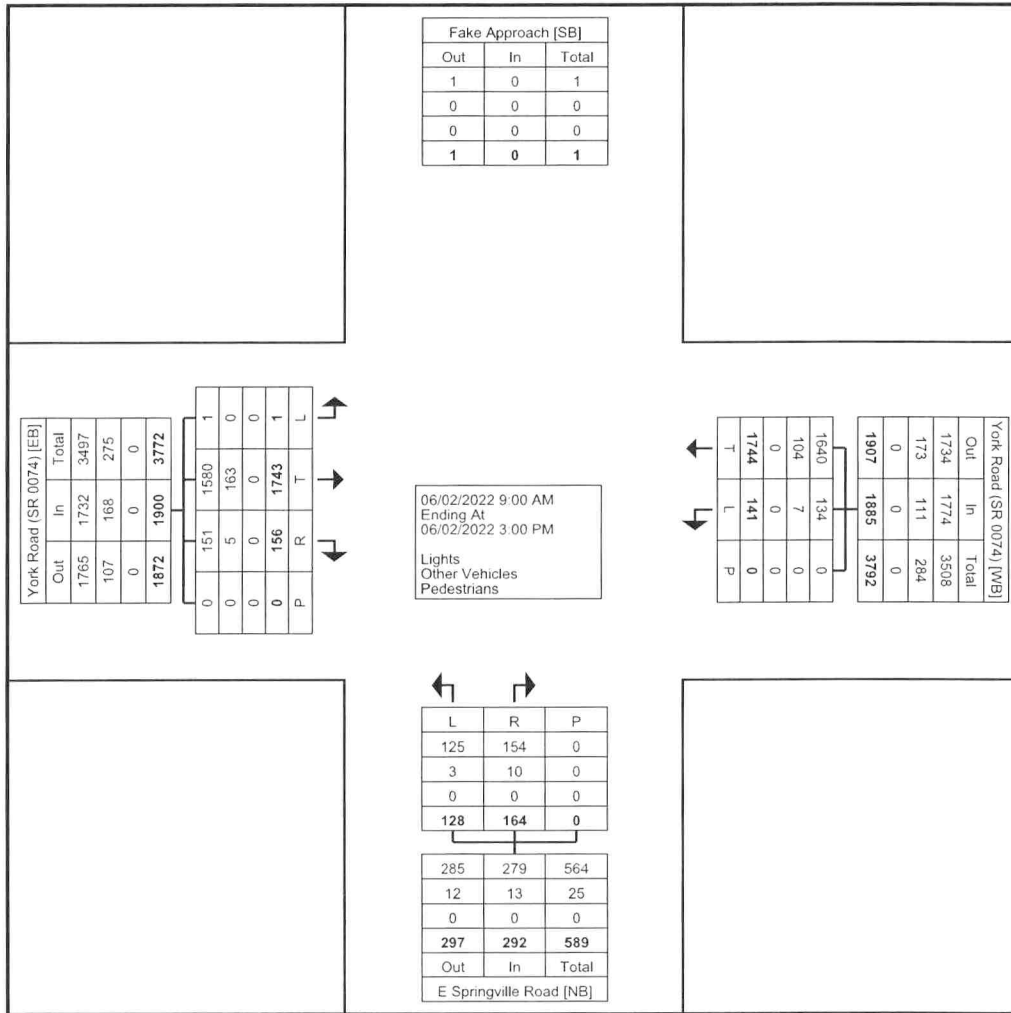
APPENDIX B:

Manual Traffic Count Data



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 dzerphey@trafficpd.com

Count Name: MID York Road
 (SR 0074) & E Springville Road
 Site Code: York Road (SR 0074)
 & E Springville Road
 Start Date: 06/02/2022
 Page No: 2

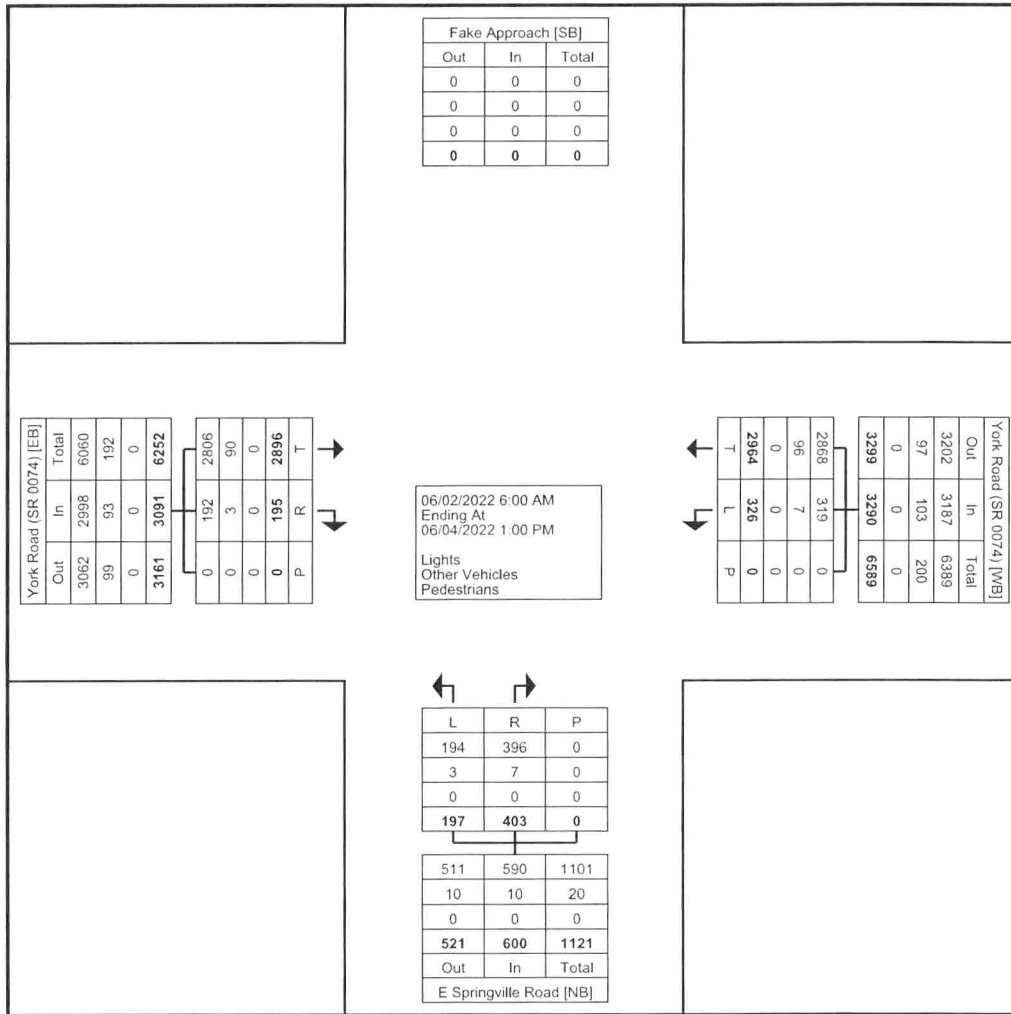


Turning Movement Data Plot



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 dzerphey@trafficpd.com

Count Name: AM PM York Road
 (SR 0074) & E Springville Road
 Site Code: York Road (SR
 0074) & E Springville Road
 Start Date: 06/02/2022
 Page No: 2

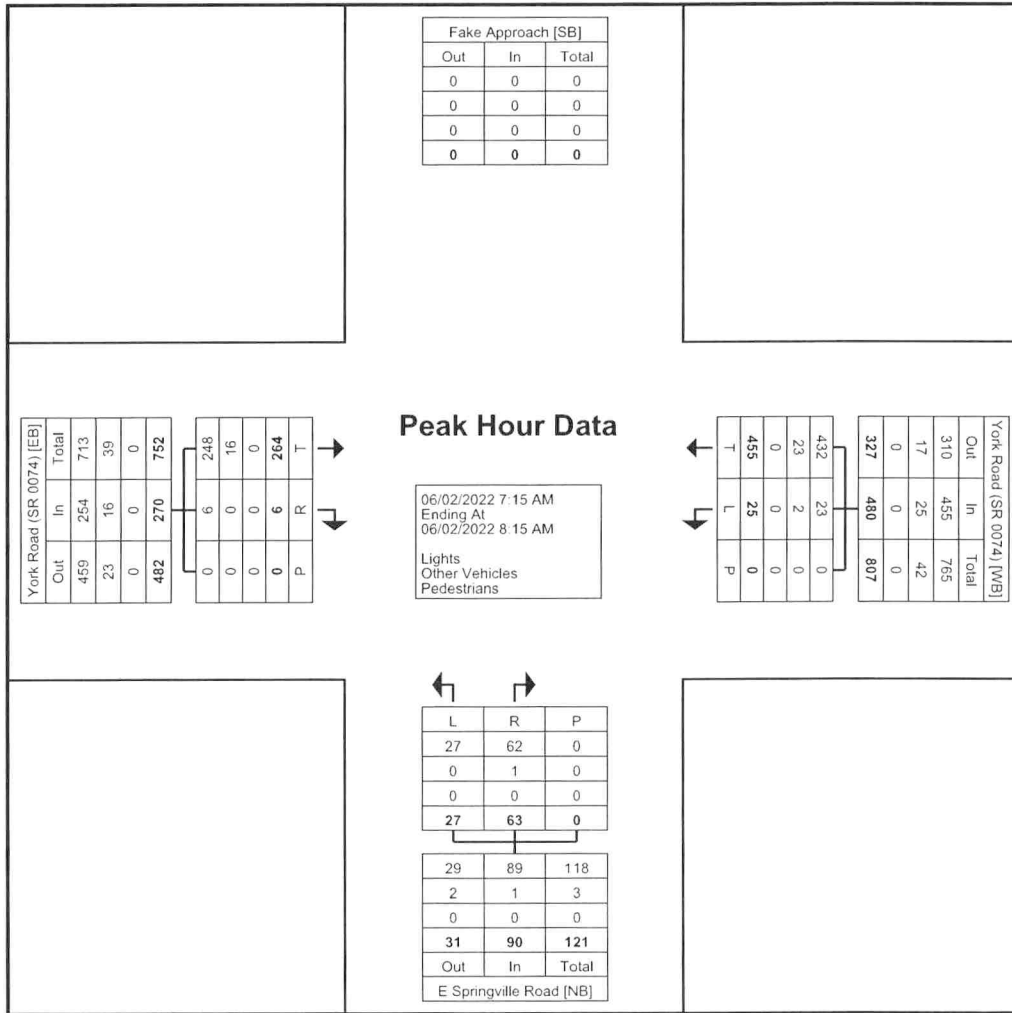


Turning Movement Data Plot



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 dzerphey@trafficpd.com

Count Name: AM PM York Road
 (SR 0074) & E Springville Road
 Site Code: York Road (SR
 0074) & E Springville Road
 Start Date: 06/02/2022
 Page No: 4

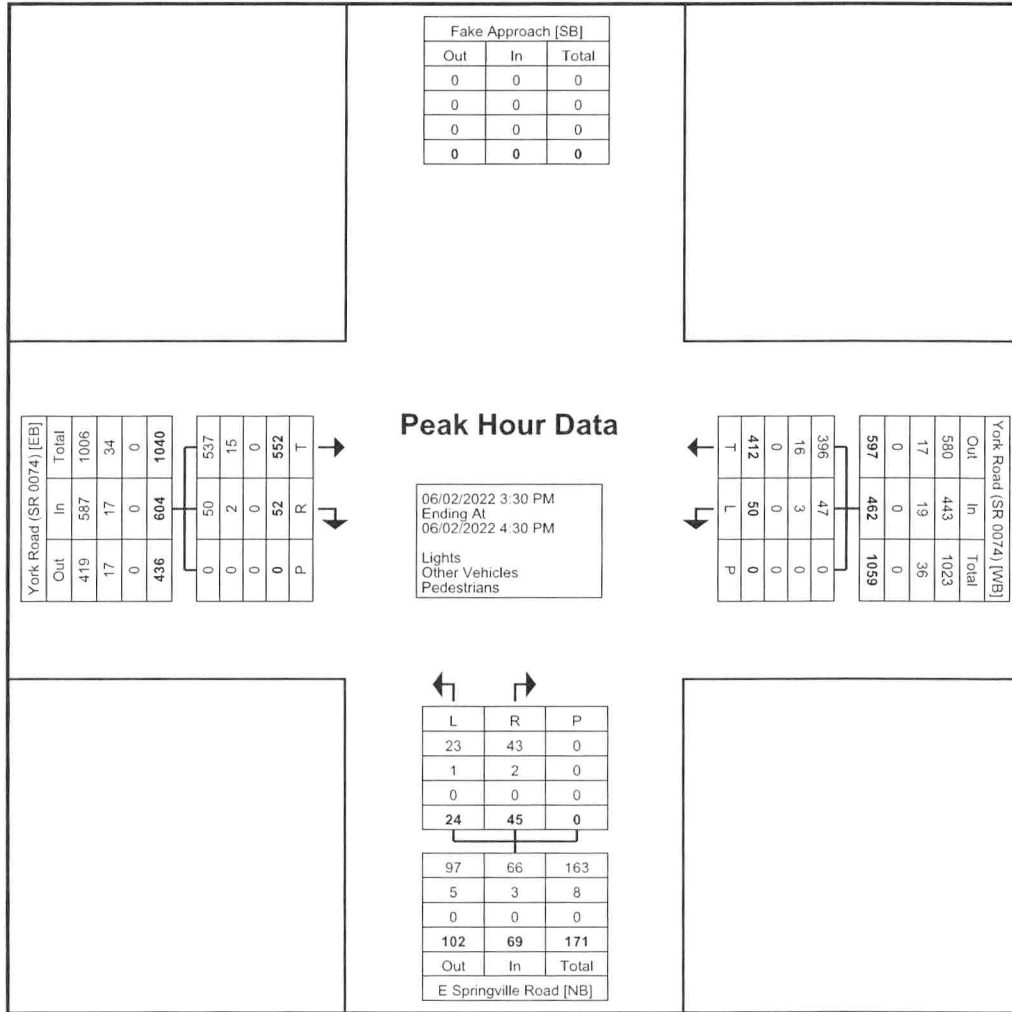


Turning Movement Peak Hour Data Plot (7:15 AM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 dzerphey@trafficpd.com

Count Name: AM PM York Road
 (SR 0074) & E Springville Road
 Site Code: York Road (SR
 0074) & E Springville Road
 Start Date: 06/02/2022
 Page No: 6

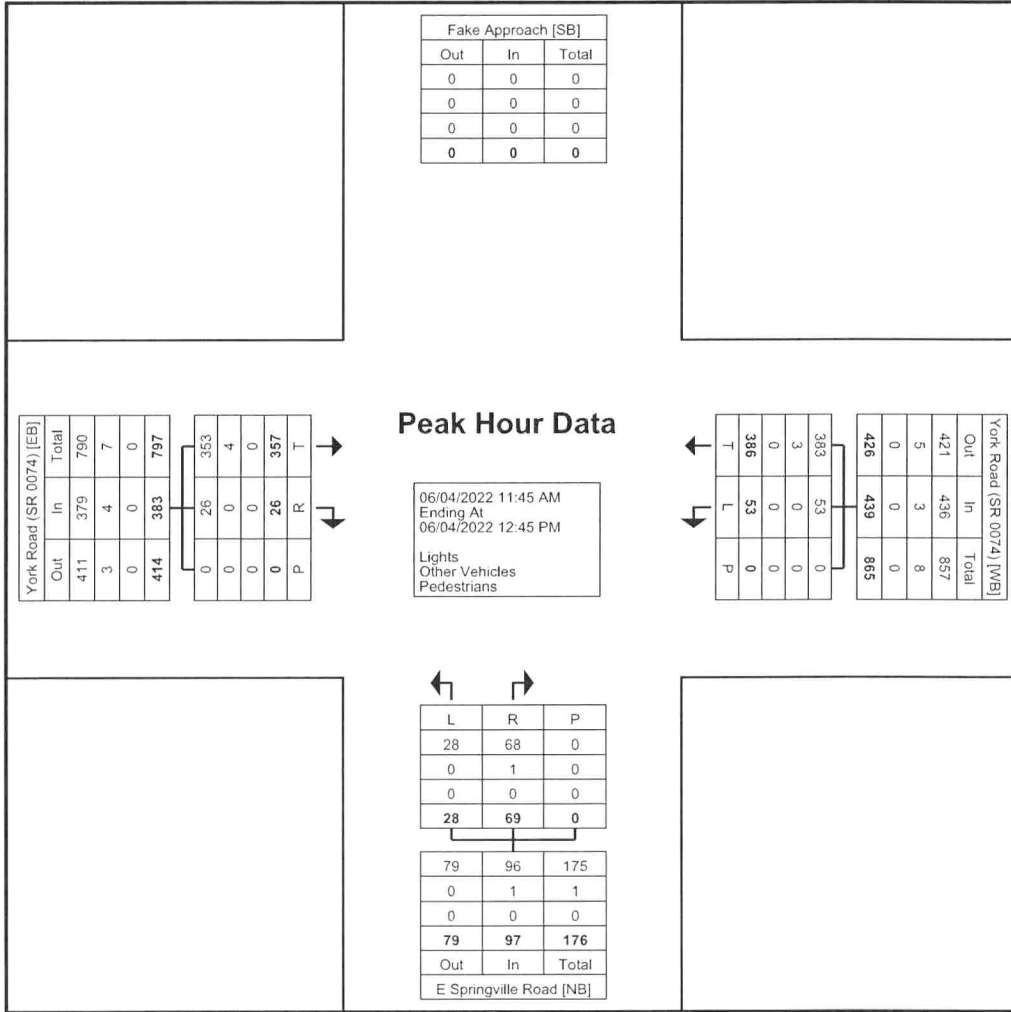


Turning Movement Peak Hour Data Plot (3:30 PM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 dzerphey@trafficpd.com

Count Name: AM PM York Road
 (SR 0074) & E Springville Road
 Site Code: York Road (SR
 0074) & E Springville Road
 Start Date: 06/02/2022
 Page No: 8

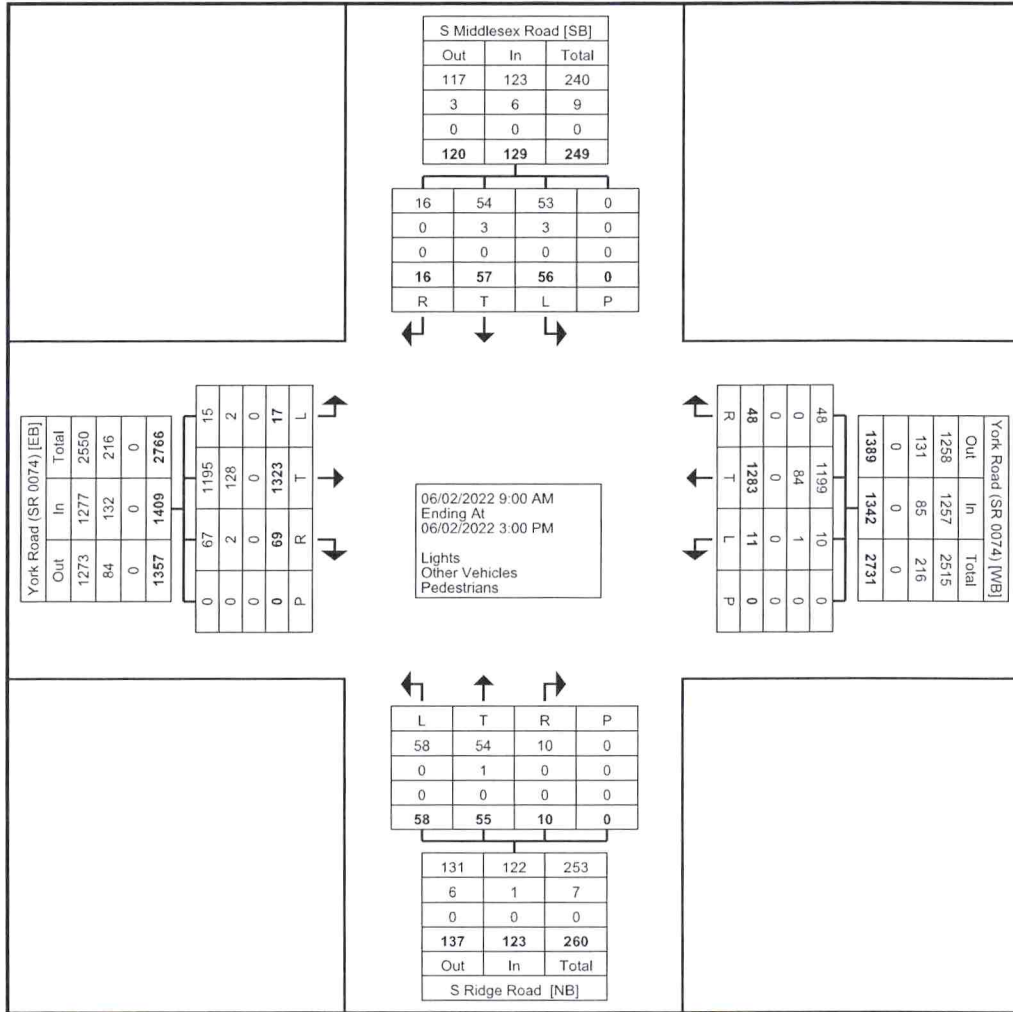


Turning Movement Peak Hour Data Plot (11:45 AM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 dzerphey@trafficpd.com

Count Name: MID York Road
 (SR 0074) & S Ridge
 Road/Middlesex Road
 Site Code: York Road (SR 0074)
 & S Ridge Road/Middlesex
 Road
 Start Date: 06/02/2022
 Page No: 2

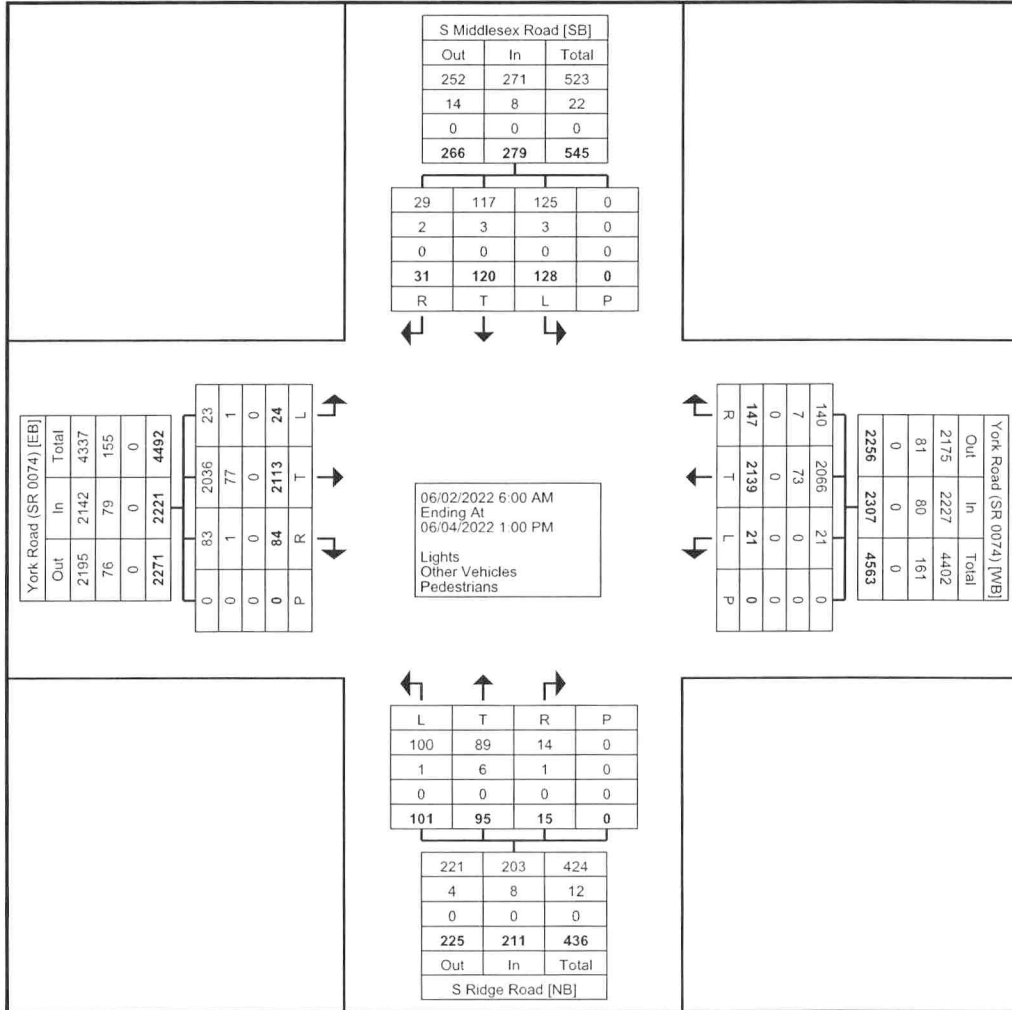


Turning Movement Data Plot



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 dzerphey@trafficpd.com

Count Name: AM PM York Road
 (SR 0074) & S Middlesex
 Road/S Ridge Road
 Site Code: York Road (SR 0074)
 & S Middlesex Road/S Ridge Ro
 Start Date: 06/02/2022
 Page No: 2

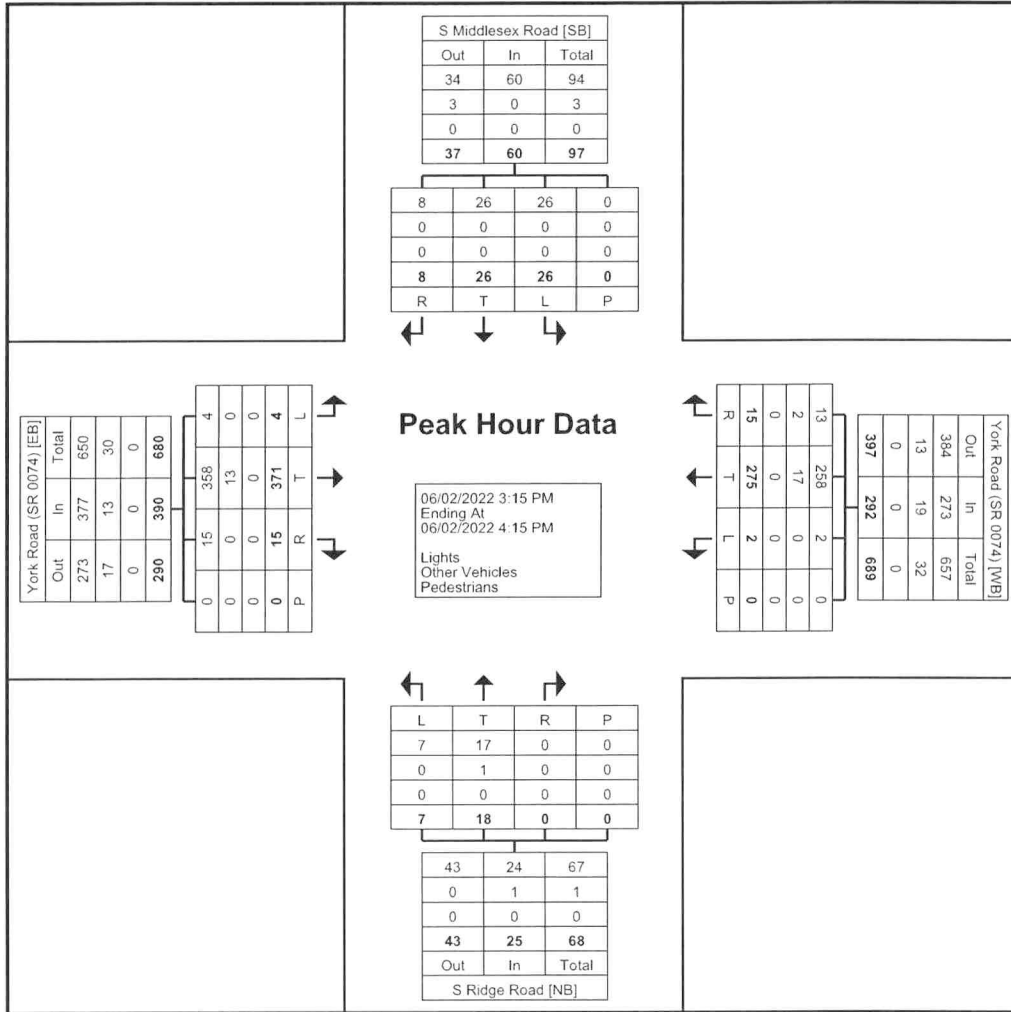


Turning Movement Data Plot



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 dzerphey@trafficpd.com

Count Name: AM PM York Road
 (SR 0074) & S Middlesex
 Road/S Ridge Road
 Site Code: York Road (SR 0074)
 & S Middlesex Road/S Ridge Ro
 Start Date: 06/02/2022
 Page No: 6

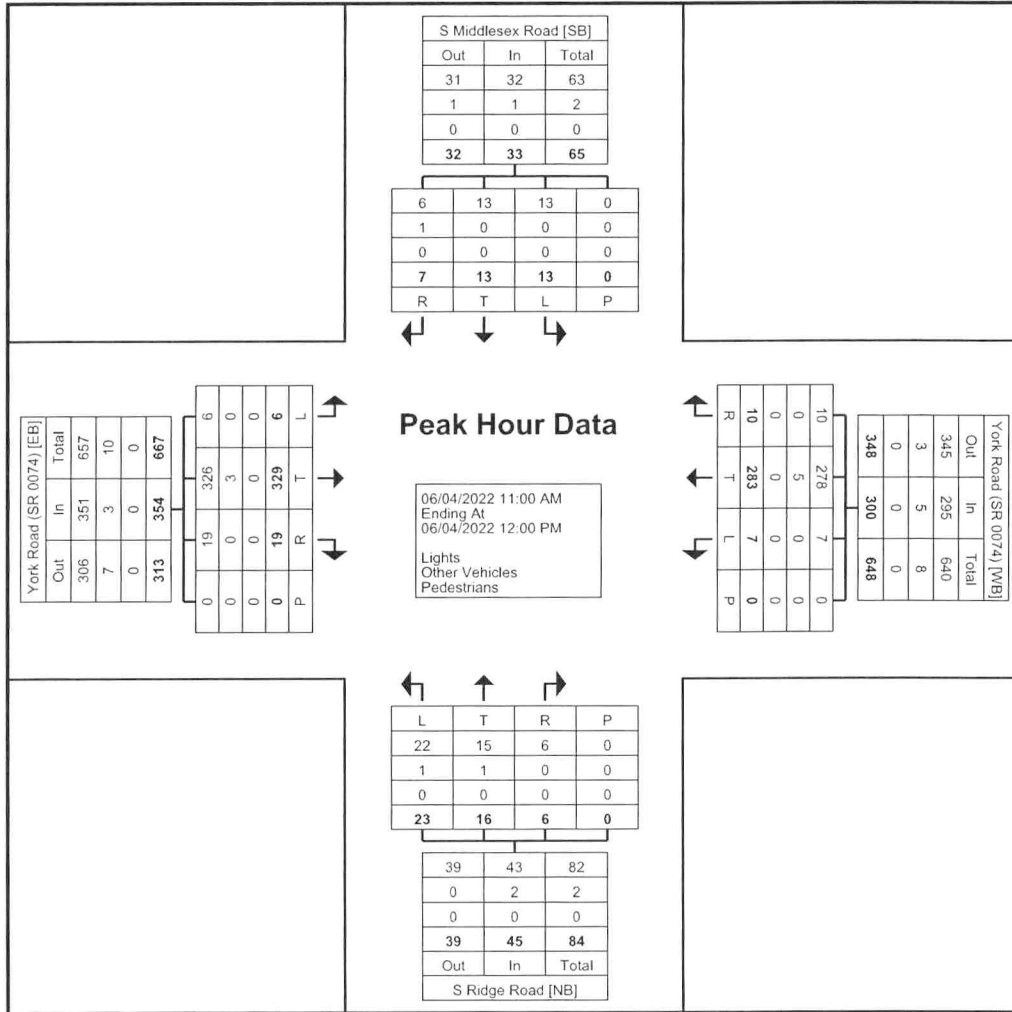


Turning Movement Peak Hour Data Plot (3:15 PM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 dzerphey@trafficpd.com

Count Name: AM PM York Road
 (SR 0074) & S Middlesex
 Road/S Ridge Road
 Site Code: York Road (SR 0074)
 & S Middlesex Road/S Ridge Ro
 Start Date: 06/02/2022
 Page No: 8

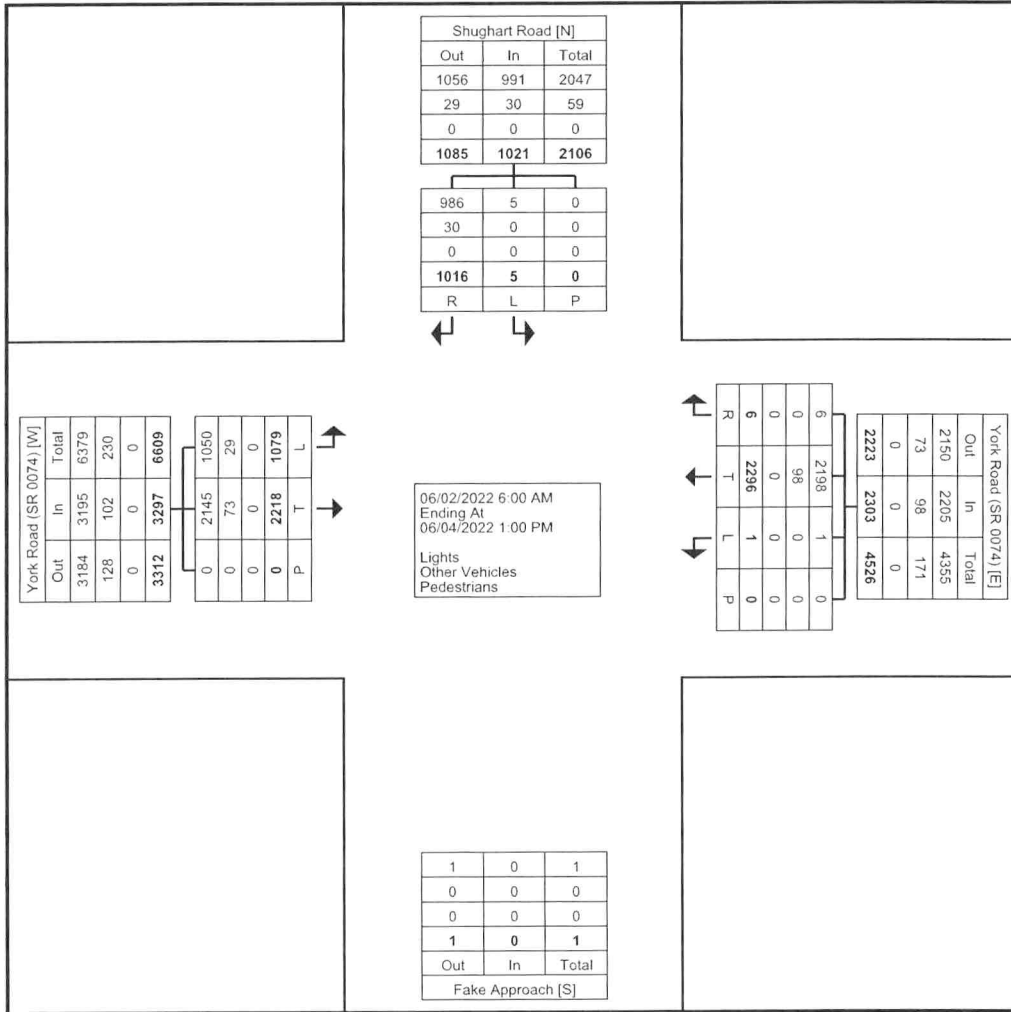


Turning Movement Peak Hour Data Plot (11:00 AM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 jwheeler@trafficpd.com

Count Name: AM PM York Road
 (SR 0074) & Shughart Road
 Site Code: York Road (SR 0074)
 & Shughart Road
 Start Date: 06/02/2022
 Page No: 2

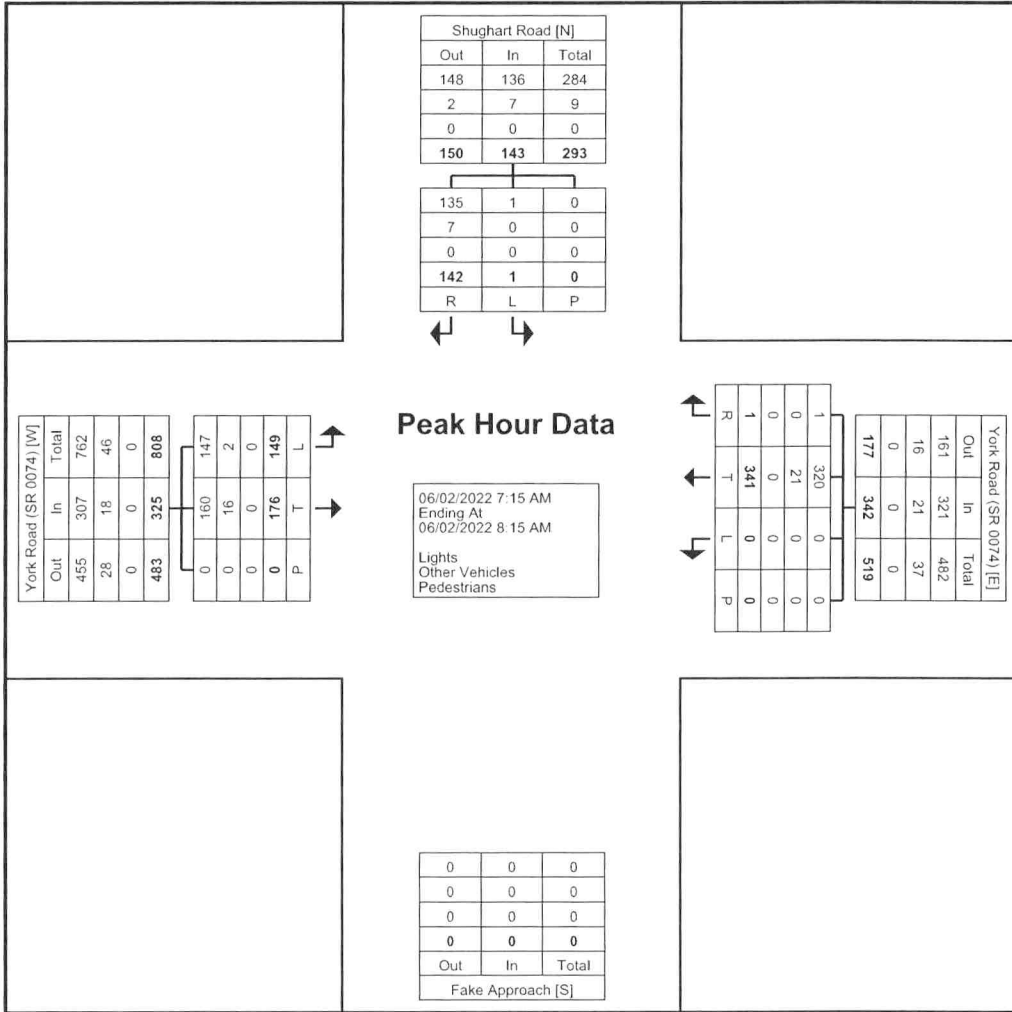


Turning Movement Data Plot



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 jwheeler@trafficpd.com

Count Name: AM PM York Road
 (SR 0074) & Shughart Road
 Site Code: York Road (SR 0074)
 & Shughart Road
 Start Date: 06/02/2022
 Page No: 4

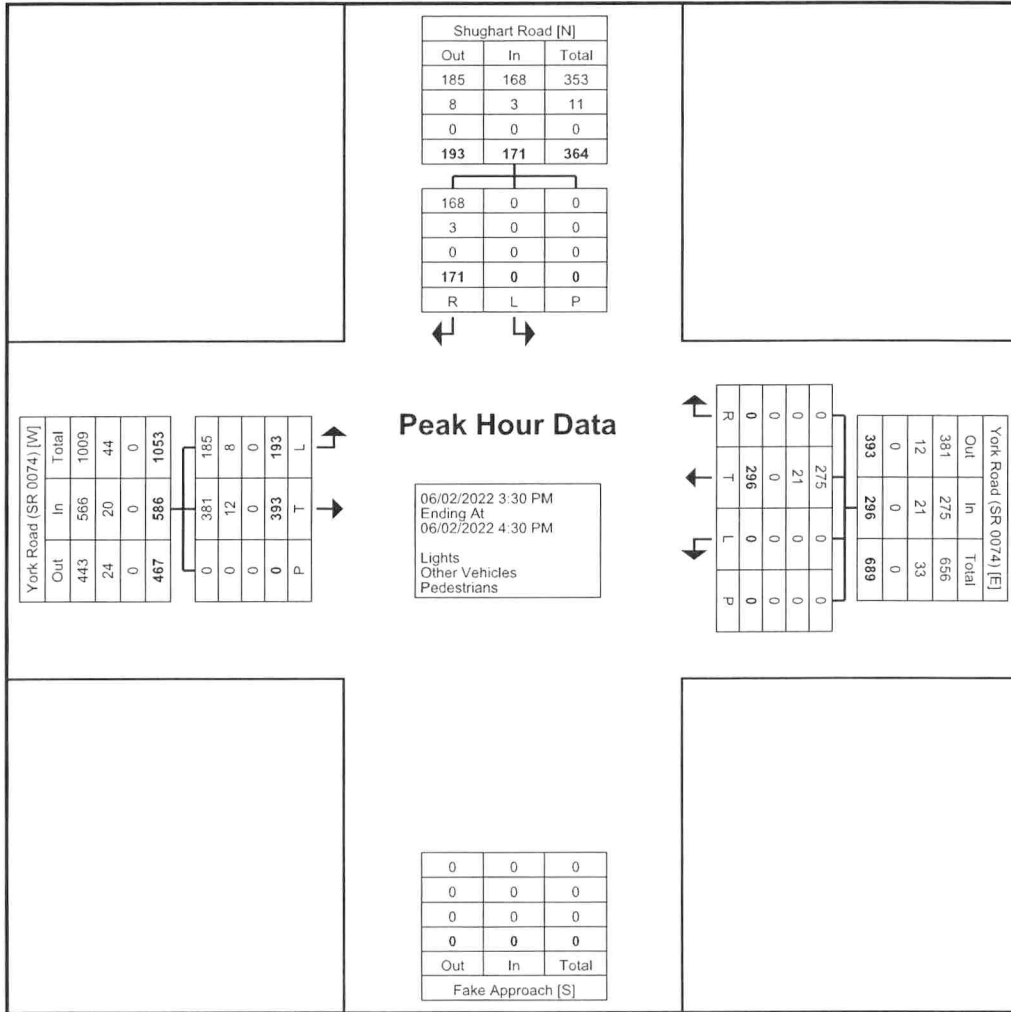


Turning Movement Peak Hour Data Plot (7:15 AM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 jwheeler@trafficpd.com

Count Name: AM PM York Road
 (SR 0074) & Shughart Road
 Site Code: York Road (SR 0074)
 & Shughart Road
 Start Date: 06/02/2022
 Page No: 6

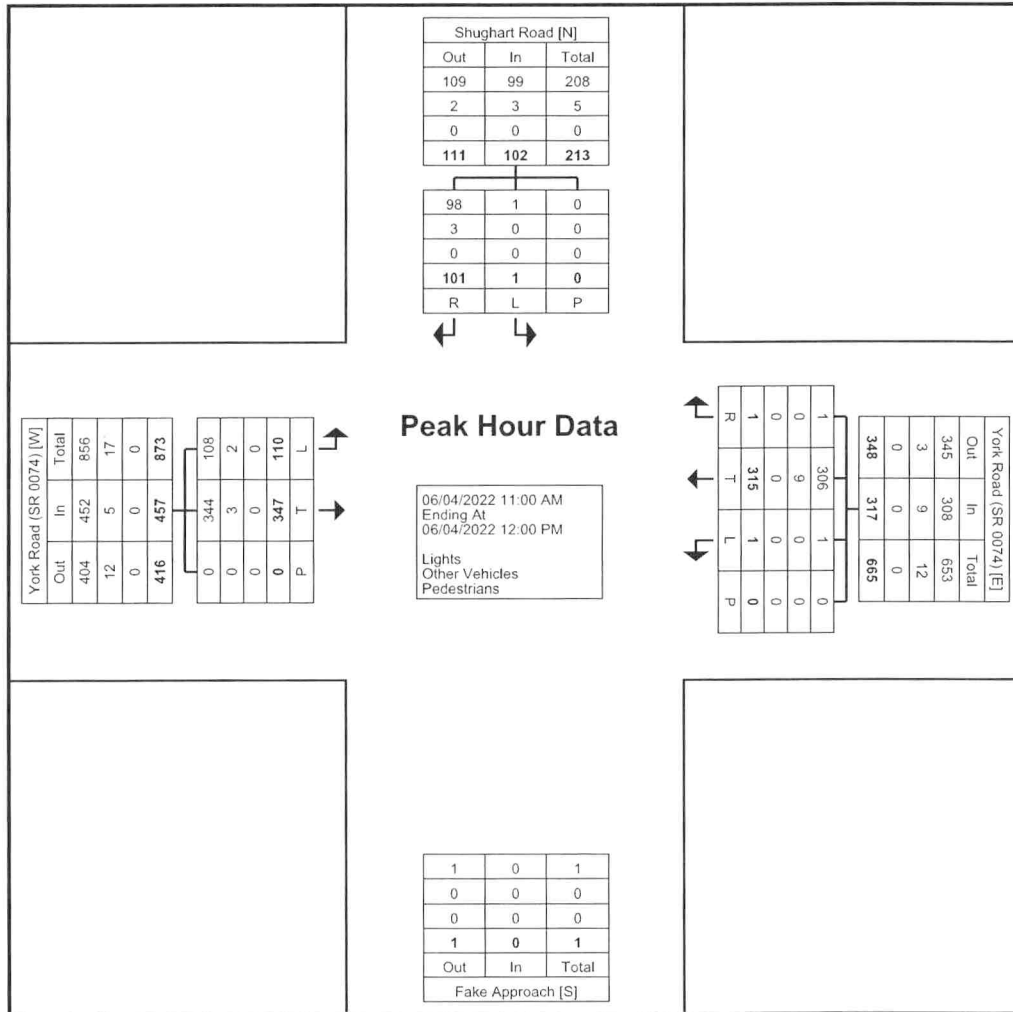


Turning Movement Peak Hour Data Plot (3:30 PM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 jwheeler@trafficpd.com

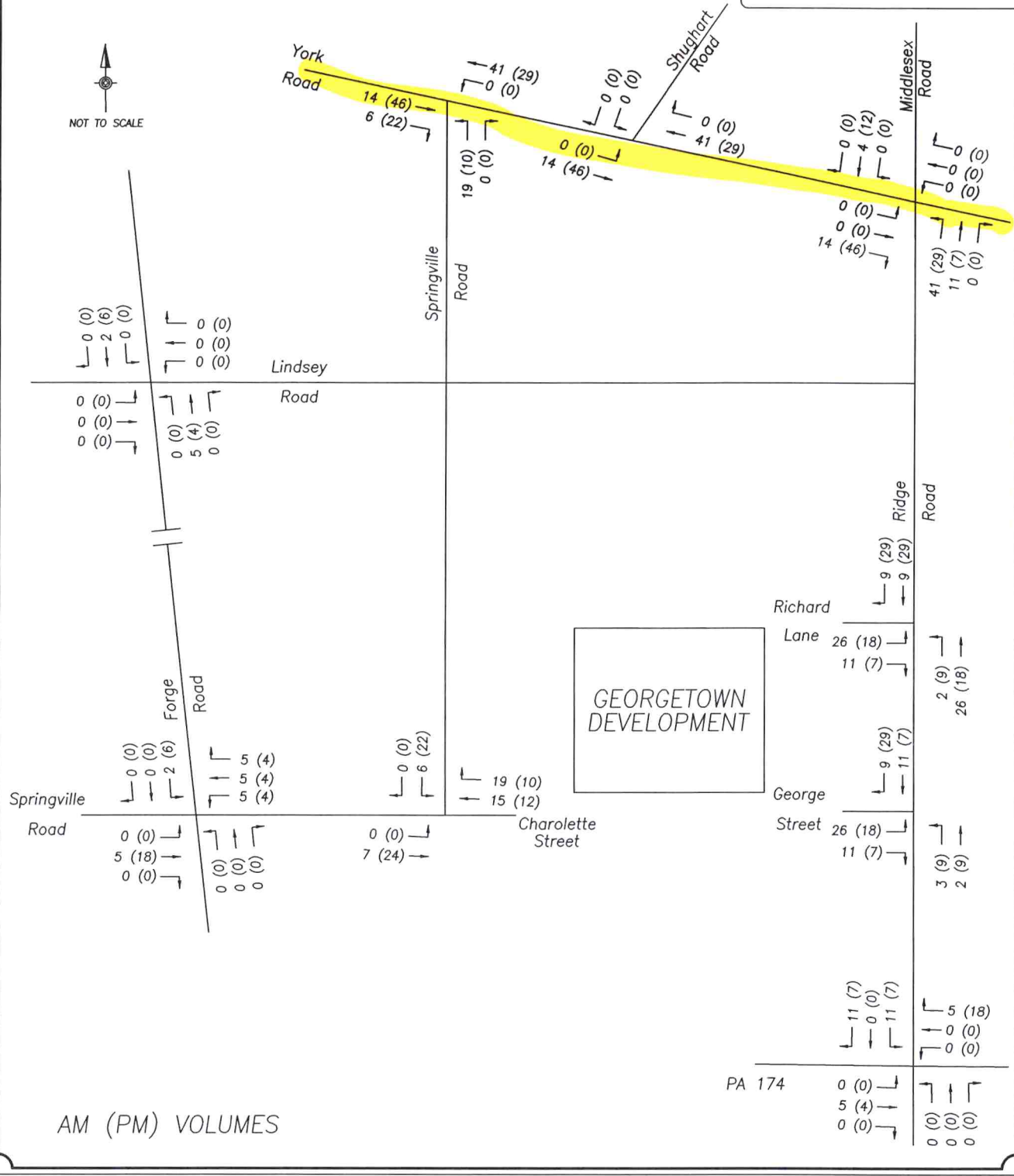
Count Name: AM PM York Road
 (SR 0074) & Shughart Road
 Site Code: York Road (SR 0074)
 & Shughart Road
 Start Date: 06/02/2022
 Page No: 8



Turning Movement Peak Hour Data Plot (11:00 AM)

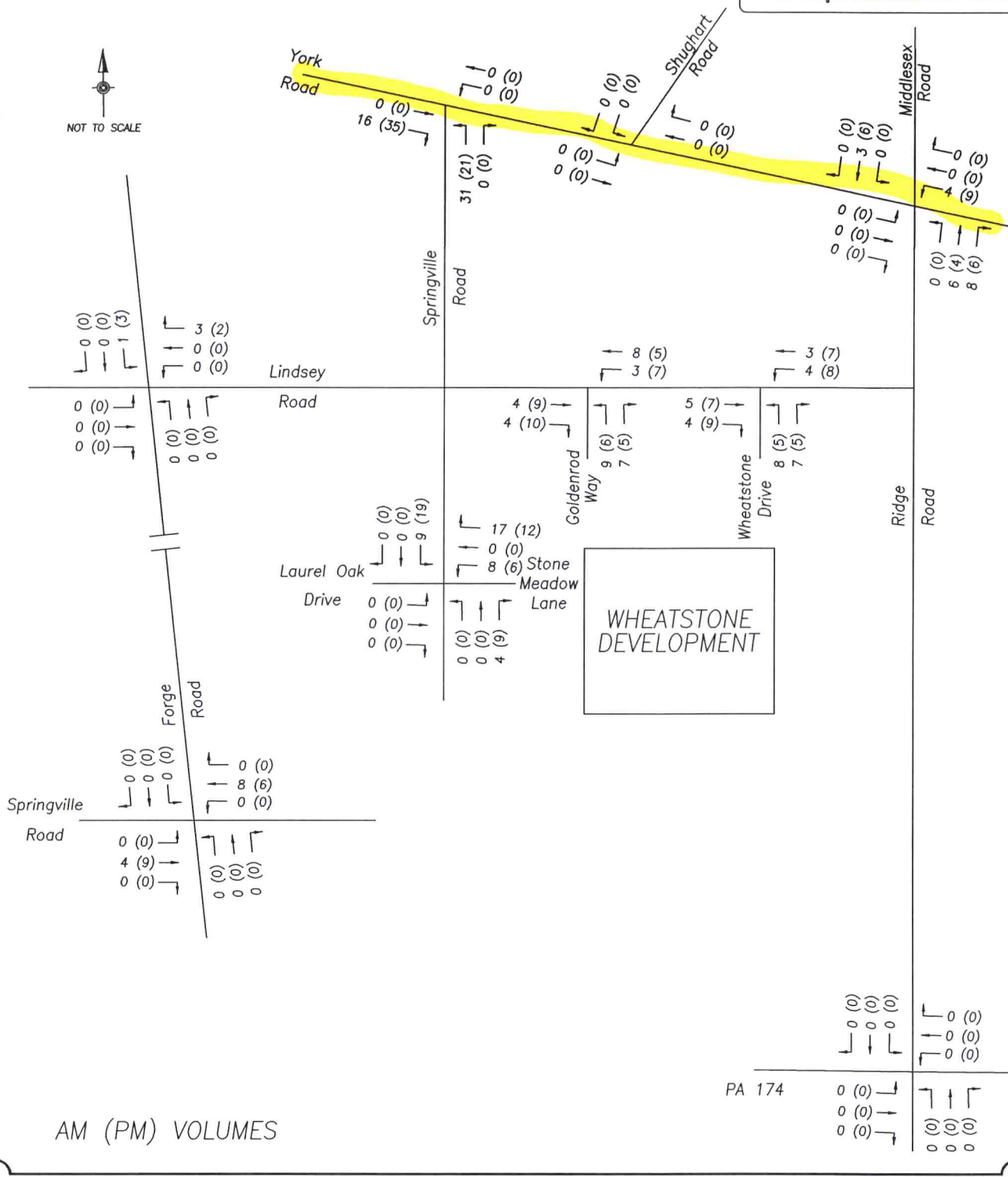
APPENDIX C:

Nearby Developments



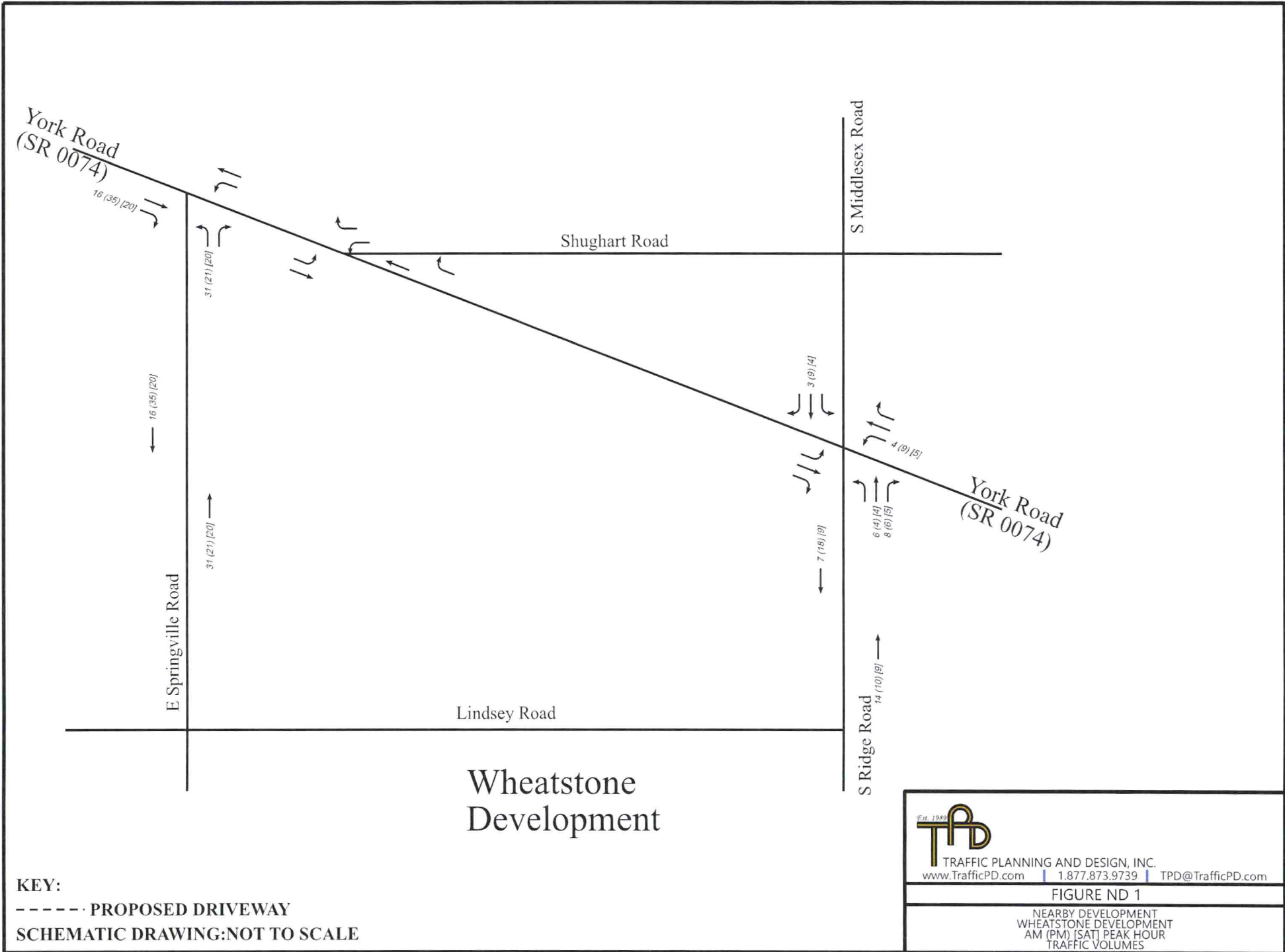
TRANSPORTATION IMPACT STUDY
 GEORGETOWN DEVELOPMENT
 South Middleton Township, Cumb. County

FIGURE 4
 TRIP DISTRIBUTION FOR GEORGETOWN



TRANSPORTATION IMPACT STUDY
 WHEATSTONE DEVELOPMENT
 South Middleton Township, Cumb. County

FIGURE 4
 TRIP DISTRIBUTION FOR WHEATSTONE



KEY:
 - - - - - PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE



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FIGURE ND 1

NEARBY DEVELOPMENT
 WHEATSTONE DEVELOPMENT
 AM (PM) [SAT] PEAK HOUR
 TRAFFIC VOLUMES

York Road
(SR 0074)

14 (46) [46]
6 (22) [22]

6 (22) [22]

E Springville Road

19 (10) [10]

19 (10) [10]

41 (29) [29]

14 (46) [46]

41 (29) [29]

Shughart Road

S Middlesex Road

4 (12) [12]

14 (46) [46]

18 (58) [58]

York Road
(SR 0074)

41 (29) [29]
11 (7) [7]

S Ridge Road
52 (36) [36]

Lindsey Road

Georgetown Development

KEY:
----- PROPOSED DRIVEWAY
SCHEMATIC DRAWING: NOT TO SCALE



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FIGURE ND 2

NEARBY DEVELOPMENT
GEORGETOWN DEVELOPMENT
AM (PM) [SAT] PEAK HOUR
TRAFFIC VOLUMES

APPENDIX D:

Volume Development

Worksheets

Phase 1

TPD# FSAI.00029 - Phase 1
6/1/2023

Traffic Volumes Worksheet

Intersection:

York Road (SR 0074) & Springville Road

Synchro Node:

1 Adjacent intersections: West 0 East 0 North 0 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts		264	6	25	455		27		63				840
Balancing													0
Existing Volumes (Balanced)	0	264	6	25	455	0	27	0	63	0	0	0	840
Base growth (0.69% compounded for 3 yrs)	0	6	0	1	9	0	1	0	1	0	0	0	18
Wheatstone Dev			16				31						47
Georgetown Dev		14	6		41		19						80
2025 Base Volumes	0	284	28	26	505	0	78	0	64	0	0	0	985
New Trips			1	1			1						3
Total Trip Distribution	0	0	1	1	0	0	1	0	0	0	0	0	3
2025 Projected Volumes	0	284	29	27	505	0	79	0	64	0	0	0	988

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts		552	52	50	412		24		45				1135
Balancing													0
Existing Volumes (Balanced)	0	552	52	50	412	0	24	0	45	0	0	0	1135
Base growth (0.69% compounded for 3 yrs)	0	12	1	1	9	0	1	0	1	0	0	0	25
Wheatstone Dev			35				21						56
Georgetown Dev		46	22		29		10						107
2025 Base Volumes	0	610	110	51	450	0	56	0	46	0	0	0	1323
New Trips			21	24			11		12				68
Total Trip Distribution	0	0	21	24	0	0	11	0	12	0	0	0	68
2025 Projected Volumes	0	610	131	75	450	0	67	0	58	0	0	0	1391

Time Period: Saturday Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts		357	26	53	386		28		69				919
Balancing													0
Existing Volumes (Balanced)	0	357	26	53	386	0	28	0	69	0	0	0	919
Base growth (0.69% compounded for 3 yrs)	0	7	1	1	8	0	1	0	1	0	0	0	19
Wheatstone Dev			20				20						40
Georgetown Dev		46	22		29		10						107
2025 Base Volumes	0	410	69	54	423	0	59	0	70	0	0	0	1085
New Trips			46	55			50		59				210
Total Trip Distribution	0	0	46	55	0	0	50	0	59	0	0	0	210
2025 Projected Volumes	0	410	115	109	423	0	109	0	129	0	0	0	1295

TPD# FSAI.00029 - Phase 1

6/1/2023

Traffic Volumes Worksheet

Intersection:

York Road (SR 0074) & Shughart Road

Synchro Node:

2 Adjacent intersections: West 0 East 0 North 0 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts	149	176			341	1				1		142	810
Balancing													0
Existing Volumes (Balanced)	149	176	0	0	341	1	0	0	0	1	0	142	810
Base growth (0.69% compounded for 3 yrs)	3	4	0	0	7	0	0	0	0	0	0	3	17
Wheatstone Dev													0
Georgetown Dev		14			41								55
2025 Base Volumes	152	194	0	0	389	1	0	0	0	1	0	145	882
New Trips					1								1
Total Trip Distribution	0	0	0	0	1	0	0	0	0	0	0	0	1
2025 Projected Volumes	152	194	0	0	390	1	0	0	0	1	0	145	883

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts	193	393			296							171	1053
Balancing													0
Existing Volumes (Balanced)	193	393	0	0	296	0	0	0	0	0	0	171	1053
Base growth (0.69% compounded for 3 yrs)	4	8	0	0	6	0	0	0	0	0	0	4	22
Wheatstone Dev													0
Georgetown Dev		46			29								75
2025 Base Volumes	197	447	0	0	331	0	0	0	0	0	0	175	1150
New Trips	4	8			15							9	36
Total Trip Distribution	4	8	0	0	15	0	0	0	0	0	0	9	36
2025 Projected Volumes	201	455	0	0	346	0	0	0	0	0	0	184	1186

Time Period: Saturday Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts	110	347		1	315	1				1		101	876
Balancing													0
Existing Volumes (Balanced)	110	347	0	1	315	1	0	0	0	1	0	101	876
Base growth (0.69% compounded for 3 yrs)	2	7	0	0	7	0	0	0	0	0	0	2	18
Wheatstone Dev													0
Georgetown Dev		46			29								75
2025 Base Volumes	112	400	0	1	351	1	0	0	0	1	0	103	969
New Trips	22	37			34							21	114
Total Trip Distribution	22	37	0	0	34	0	0	0	0	0	0	21	114
2025 Projected Volumes	134	437	0	0	385	1	0	0	0	1	0	124	1082

TPD# FSAI.00029 - Phase 1

6/1/2023

Traffic Volumes Worksheet

Intersection:

York Road (SR 0074) & Middlesex/Ridge Road

Synchro Node:

3 Adjacent intersections: West 0 East 0 North 0 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts	3	170	5	0	323	29	14	13	1	15	13	5	591
Balancing													0
Existing Volumes (Balanced)	3	170	5	0	323	29	14	13	1	15	13	5	591
Base growth (0.69% compounded for 3 yrs)	0	4	0	0	7	1	0	0	0	0	0	0	12
Wheatstone Dev				4				6	8		3		21
Georgetown Dev			14				41	11			4		70
2025 Base Volumes	3	174	19	4	330	30	55	30	9	15	20	5	694
New Trips					1								1
Total Trip Distribution	0	0	0	0	1	0	0	0	0	0	0	0	1
2025 Projected Volumes	3	174	19	4	331	30	55	30	9	15	20	5	695

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts	4	371	15	2	275	15	7	18	0	26	26	8	767
Balancing													0
Existing Volumes (Balanced)	4	371	15	2	275	15	7	18	0	26	26	8	767
Base growth (0.69% compounded for 3 yrs)	0	8	0	0	6	0	0	0	0	1	1	0	16
Wheatstone Dev				9				4	6		9		28
Georgetown Dev			46				29	7			12		94
2025 Base Volumes	4	379	61	11	281	15	36	29	6	27	48	8	905
New Trips		8			15								23
Total Trip Distribution	0	8	0	0	15	0	0	0	0	0	0	0	23
2025 Projected Volumes	4	387	61	11	296	15	36	29	6	27	48	8	928

Time Period: Saturday Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts	6	329	19	7	283	10	23	16	6	13	13	7	732
Balancing													0
Existing Volumes (Balanced)	6	329	19	7	283	10	23	16	6	13	13	7	732
Base growth (0.69% compounded for 3 yrs)	0	7	0	0	6	0	0	0	0	0	0	0	13
Wheatstone Dev				5				4	5		4		18
Georgetown Dev			46				29	7			12		94
2025 Base Volumes	6	336	65	12	289	10	52	27	11	13	29	7	857
New Trips		37			34								71
Total Trip Distribution	0	37	0	0	34	0	0	0	0	0	0	0	71
2025 Projected Volumes	6	373	65	12	323	10	52	27	11	13	29	7	928

TPD# FSAI.00029 - Phase 1

6/1/2023

Traffic Volumes Worksheet

Intersection:

E Springville Road & Propsed Site DW									
--------------------------------------	--	--	--	--	--	--	--	--	--

Synchro Node:

4	Adjacent intersections:	West	0	East	0	North	0	South	0
---	-------------------------	------	---	------	---	-------	---	-------	---

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts								90			31		121
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	90	0	0	31	0	121
Base growth (0.69% compounded for 3 yrs)	0	0	0	0	0	0	0	2	0	0	1	0	3
Wheatstone Dev								31			16		47
Georgetown Dev								19			6		25
2025 Base Volumes	0	0	0	0	0	0	0	142	0	0	54	0	196
New Trips						1				2			3
Total Trip Distribution	0	0	0	0	0	1	0	0	0	2	0	0	3
2025 Projected Volumes	0	0	0	0	0	1	0	142	0	2	54	0	199

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts								69			102		171
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	69	0	0	102	0	171
Base growth (0.69% compounded for 3 yrs)	0	0	0	0	0	0	0	1	0	0	2	0	3
Wheatstone Dev								21			35		56
Georgetown Dev								10			22		32
2025 Base Volumes	0	0	0	0	0	0	0	101	0	0	161	0	262
New Trips				3		23			6	45			77
Total Trip Distribution	0	0	0	3	0	23	0	0	6	45	0	0	77
2025 Projected Volumes	0	0	0	3	0	23	0	101	6	45	161	0	339

Time Period: Saturday Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts								97			79		176
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	97	0	0	79	0	176
Base growth (0.69% compounded for 3 yrs)	0	0	0	0	0	0	0	2	0	0	2	0	4
Wheatstone Dev								20			20		40
Georgetown Dev								10			22		32
2025 Base Volumes	0	0	0	0	0	0	0	129	0	0	123	0	252
New Trips				13		109			12	101			235
Total Trip Distribution	0	0	0	13	0	109	0	0	12	101	0	0	235
2025 Projected Volumes	0	0	0	13	0	109	0	129	12	101	123	0	487

Full Build-Out

TPD# FSAI.00029 - Full Build-Out
6/1/2023

Traffic Volumes Worksheet

Intersection:

York Road (SR 0074) & Springville Road									
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Synchro Node:

1	Adjacent intersections:	West	0	East	0	North	0	South	0
---	-------------------------	------	---	------	---	-------	---	-------	---

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts		264	6	25	455	0	27	0	63				840
Balancing													0
Existing Volumes (Balanced)	0	264	6	25	455	0	27	0	63	0	0	0	840
Base growth (0.69% compounded for 8 yrs)	0	15	0	1	26	0	2	0	4	0	0	0	48
Wheatstone Dev			16				31						47
Georgetown Dev		14	6		41		19						80
2030 Base Volumes	0	293	28	26	522	0	79	0	67	0	0	0	1015
New Trips			2	2			1		2				7
Total Trip Distribution	0	0	2	2	0	0	1	0	2	0	0	0	7
2030 Projected Volumes	0	293	30	28	522	0	80	0	69	0	0	0	1022

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts		552	52	50	412		24		45				1135
Balancing													0
Existing Volumes (Balanced)	0	552	52	50	412	0	24	0	45	0	0	0	1135
Base growth (0.69% compounded for 8 yrs)	0	31	3	3	23	0	1	0	3	0	0	0	64
Wheatstone Dev			35				21						56
Georgetown Dev		46	22		29		10						107
2030 Base Volumes	0	629	112	53	464	0	56	0	48	0	0	0	1362
New Trips			44	50			22		26				142
Total Trip Distribution	0	0	44	50	0	0	22	0	26	0	0	0	142
2030 Projected Volumes	0	629	156	103	464	0	78	0	74	0	0	0	1504

Time Period: Saturday Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts		357	26	53	386		28		69				919
Balancing													0
Existing Volumes (Balanced)	0	357	26	53	386	0	28	0	69	0	0	0	919
Base growth (0.69% compounded for 8 yrs)	0	20	1	3	22	0	2	0	4	0	0	0	52
Wheatstone Dev			20				20						40
Georgetown Dev		46	22		29		10						107
2030 Base Volumes	0	423	69	56	437	0	60	0	73	0	0	0	1118
New Trips			77	90			83		98				348
Total Trip Distribution	0	0	77	90	0	0	83	0	98	0	0	0	348
2030 Projected Volumes	0	423	146	146	437	0	143	0	171	0	0	0	1466

TPD# FSAI.00029 - Full Build-Out
6/1/2023

Traffic Volumes Worksheet

Intersection:

York Road (SR 0074) & Shughart Road

Synchro Node:

2 Adjacent intersections: West 0 East 0 North 0 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts	149	176			341	1				1		142	810
Balancing													0
Existing Volumes (Balanced)	149	176	0	0	341	1	0	0	0	1	0	142	810
Base growth (0.69% compounded for 8 yrs)	8	10	0	0	19	0	0	0	0	0	0	8	45
Wheatstone Dev													0
Georgetown Dev		14			41								55
2030 Base Volumes	157	200	0	0	401	1	0	0	0	1	0	150	910
New Trips	1	1			1							1	4
Total Trip Distribution	1	1	0	0	1	0	0	0	0	0	0	1	4
2030 Projected Volumes	158	201	0	0	402	1	0	0	0	1	0	151	914

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts	193	393			296							171	1053
Balancing													0
Existing Volumes (Balanced)	193	393	0	0	296	0	0	0	0	0	0	171	1053
Base growth (0.69% compounded for 8 yrs)	11	22	0	0	17	0	0	0	0	0	0	10	60
Wheatstone Dev													0
Georgetown Dev		46			29								75
2030 Base Volumes	204	461	0	0	342	0	0	0	0	0	0	181	1188
New Trips	10	16			31							19	76
Total Trip Distribution	10	16	0	0	31	0	0	0	0	0	0	19	76
2030 Projected Volumes	214	477	0	0	373	0	0	0	0	0	0	200	1264

Time Period: Saturday Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts	110	347		1	315	1				1		101	876
Balancing													0
Existing Volumes (Balanced)	110	347	0	1	315	1	0	0	0	1	0	101	876
Base growth (0.69% compounded for 8 yrs)	6	20	0	0	18	0	0	0	0	0	0	6	50
Wheatstone Dev													0
Georgetown Dev		46			29								75
2030 Base Volumes	116	413	0	1	362	1	0	0	0	1	0	107	1001
New Trips	37	61			56							34	188
Total Trip Distribution	37	61	0	0	56	0	0	0	0	0	0	34	188
2030 Projected Volumes	153	474	0	0	418	1	0	0	0	1	0	141	1188

TPD# FSAI.00029 - Full Build-Out
6/1/2023

Traffic Volumes Worksheet

Intersection:

York Road (SR 0074) & Middlesex/Ridge Road											
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Synchro Node:

3	Adjacent intersections:	West	0	East	0	North	0	South	0
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Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts	3	170	5	0	323	29	14	13	1	15	13	5	591
Balancing													0
Existing Volumes (Balanced)	3	170	5	0	323	29	14	13	1	15	13	5	591
Base growth (0.69% compounded for 8 yrs)	0	10	0	0	18	2	1	1	0	1	1	0	34
Wheatstone Dev				4				6	8		3		21
Georgetown Dev			14				41	11			4		70
2030 Base Volumes	3	180	19	4	341	31	56	31	9	16	21	5	716
New Trips		1			1								2
Total Trip Distribution	0	1	0	0	1	0	0	0	0	0	0	0	2
2030 Projected Volumes	3	181	19	4	342	31	56	31	9	16	21	5	718

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts	4	371	15	2	275	15	7	18	0	26	26	8	767
Balancing													0
Existing Volumes (Balanced)	4	371	15	2	275	15	7	18	0	26	26	8	767
Base growth (0.69% compounded for 8 yrs)	0	21	1	0	16	1	0	1	0	1	1	0	42
Wheatstone Dev				9				4	6		9		28
Georgetown Dev			46				29	7			12		94
2030 Base Volumes	4	392	62	11	291	16	36	30	6	27	48	8	931
New Trips		16			31								47
Total Trip Distribution	0	16	0	0	31	0	0	0	0	0	0	0	47
2030 Projected Volumes	4	408	62	11	322	16	36	30	6	27	48	8	978

Time Period: Saturday Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts	6	329	19	7	283	10	23	16	6	13	13	7	732
Balancing													0
Existing Volumes (Balanced)	6	329	19	7	283	10	23	16	6	13	13	7	732
Base growth (0.69% compounded for 8 yrs)	0	19	1	0	16	1	1	1	0	1	1	0	41
Wheatstone Dev				5				4	5		4		18
Georgetown Dev			46				29	7			12		94
2030 Base Volumes	6	348	66	12	299	11	53	28	11	14	30	7	885
New Trips		61			56								117
Total Trip Distribution	0	61	0	0	56	0	0	0	0	0	0	0	117
2030 Projected Volumes	6	409	66	12	355	11	53	28	11	14	30	7	1002

TPD# FSAI.00029 - Full Build-Out

6/1/2023

Traffic Volumes Worksheet

Intersection:

E Springville Road & Propsed Site DW									
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Synchro Node:

4	Adjacent intersections:	West	0	East	0	North	0	South	0
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Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts								90			31		121
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	90	0	0	31	0	121
Base growth (0.69% compounded for 8 yrs)	0	0	0	0	0	0	0	5	0	0	2	0	7
Wheatstone Dev								31			16		47
Georgetown Dev								19			6		25
2030 Base Volumes	0	0	0	0	0	0	0	145	0	0	55	0	200
New Trips				1		3			1	4			9
Total Trip Distribution	0	0	0	1	0	3	0	0	1	4	0	0	9
2030 Projected Volumes	0	0	0	1	0	3	0	145	1	4	55	0	209

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts								69			102		171
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	69	0	0	102	0	171
Base growth (0.69% compounded for 8 yrs)	0	0	0	0	0	0	0	4	0	0	6	0	10
Wheatstone Dev								21			35		56
Georgetown Dev								10			22		32
2030 Base Volumes	0	0	0	0	0	0	0	104	0	0	165	0	269
New Trips				6		48			12	94			160
Total Trip Distribution	0	0	0	6	0	48	0	0	12	94	0	0	160
2030 Projected Volumes	0	0	0	6	0	48	0	104	12	94	165	0	429

Time Period: Saturday Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2022 Existing Counts								97			79		176
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	97	0	0	79	0	176
Base growth (0.69% compounded for 8 yrs)	0	0	0	0	0	0	0	5	0	0	4	0	9
Wheatstone Dev								20			20		40
Georgetown Dev								10			22		32
2030 Base Volumes	0	0	0	0	0	0	0	132	0	0	125	0	257
New Trips				22		181			21	167			391
Total Trip Distribution	0	0	0	22	0	181	0	0	21	167	0	0	391
2030 Projected Volumes	0	0	0	22	0	181	0	132	21	167	125	0	648

APPENDIX E:

Capacity Analysis Worksheets

York Road (SR 0074) & E Springville Road

CRITICAL HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46

$$t_{c,x} = t_{c,base} + t_{c,HV} * P_{HV} + t_{c,G} * G - t_{3,LT}$$

where:

- $t_{c,x}$ = critical headway for movement x (s)
- $t_{c,base}$ = base critical headway from Chapter 10 of PennDOT Publication 46
- $t_{c,HV}$ = adjustment factor for heavy vehicles (1.0 for major streets with one lane in each direction; 2.0 for major streets with two or three lanes in each direction) (s)
- P_{HV} = proportion of heavy vehicles for movement (expressed as a decimal; e.g., $P_{HV}=0.02$ for 2% heavy vehicles)
- $t_{c,G}$ = adjustment factor for grade (0.1 for Movement 9 and 12; 0.2 for Movements 7,8,10, and 11) (s)
- G = percent grade (expressed as an integer; e.g., $G=-2$ for a 2% downhill grade)
- $t_{c,base}$ = adjustment factor for intersection geometry (0.7 for minor street left-turn movement at three-leg intersections; 0.0 otherwise) (s)



LEFT TURN FROM MAJOR ROADWAY - TWO LANES ($t_{c,base} = 4.3$)																					
GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
5	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
8	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
9	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
10	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4

LEFT TURN FROM MINOR ROADWAY - TWO LANES - 3-LEG INTERSECTION ($t_{c,base} = 7.1$)																					
GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
1	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
2	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
3	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
4	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
5	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
6	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
7	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
8	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
9	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
10	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5

RIGHT TURN FROM MINOR ROADWAY - TWO LANES ($t_{c,base} = 6.2$)																					
GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
1	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
2	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
3	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
4	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
5	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
6	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
7	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
8	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
9	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
10	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3

York Road (SR 0074) & S Ridge Road/S Middlesex

CRITICAL HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46

$$t_{c,x} = t_{c,base} + t_{c,HV} * P_{HV} + t_{c,G} * G - t_{3,LT}$$

where:

- $t_{c,x}$ = critical headway for movement x (s)
- $t_{c,base}$ = base critical headway from Chapter 10 of PennDOT Publication 46
- $t_{c,HV}$ = adjustment factor for heavy vehicles (1.0 for major streets with one lane in each direction; 2.0 for major streets with two or three lanes in each direction) (s)
- P_{HV} = proportion of heavy vehicles for movement (expressed as a decimal; e.g., $P_{HV}=0.02$ for 2% heavy vehicles)
- $t_{c,G}$ = adjustment factor for grade (0.1 for Movement 9 and 12; 0.2 for Movements 7,8,10, and 11) (s)
- G = percent grade (expressed as an integer; e.g., $G=-2$ for a 2% downhill grade)
- $t_{c,base}$ = adjustment factor for intersection geometry (0.7 for minor street left-turn movement at three-leg intersections; 0.0 otherwise) (s)

LEFT TURN FROM MAJOR ROADWAY - TWO LANES ($t_{c,base} = 4.3$)																					
GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
5	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
8	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
9	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
10	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4

LEFT TURN FROM MINOR ROADWAY - TWO LANES - 4-LEG INTERSECTION ($t_{c,base} = 7.1$)																					
GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
1	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
2	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
3	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
4	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
5	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
6	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
7	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
8	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
9	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
10	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2

THROUGH TRAFFIC ON MINOR ROADWAY - TWO LANES ($t_{c,base} = 6.5$)																					
GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
1	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
2	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
3	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
4	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
5	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
6	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
7	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
8	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
9	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
10	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6

RIGHT TURN FROM MINOR ROADWAY - TWO LANES ($t_{c,base} = 6.2$)																					
GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.7	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
1	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
2	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
3	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
4	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
5	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
6	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
7	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
8	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
9	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
10	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3

York Road (SR 0074) & Shughart Road

CRITICAL HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46

$$t_{c,x} = t_{c,base} + t_{c,HV} * P_{HV} + t_{c,G} * G - t_{3,LT}$$

where:

- $t_{c,x}$ = critical headway for movement x (s)
- $t_{c,base}$ = base critical headway from Chapter 10 of PennDOT Publication 46
- $t_{c,HV}$ = adjustment factor for heavy vehicles (1.0 for major streets with one lane in each direction; 2.0 for major streets with two or three lanes in each direction) (s)
- P_{HV} = proportion of heavy vehicles for movement (expressed as a decimal; e.g., $P_{HV}=0.02$ for 2% heavy vehicles)
- $t_{c,G}$ = adjustment factor for grade (0.1 for Movement 9 and 12; 0.2 for Movements 7,8,10, and 11) (s)
- G = percent grade (expressed as an integer; e.g., G= -2 for a 2% downhill grade)
- $t_{c,base}$ = adjustment factor for intersection geometry (0.7 for minor street left-turn movement at three-leg intersections; 0.0 otherwise) (s)



LEFT TURN FROM MAJOR ROADWAY - TWO LANES ($t_{c,base} = 4.3$)																					
GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
5	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
8	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
9	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
10	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	

LEFT TURN FROM MINOR ROADWAY - TWO LANES - 3-LEG INTERSECTION ($t_{c,base} = 7.1$)																					
GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
1	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
2	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
3	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
4	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
5	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
6	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
7	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
8	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
9	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
10	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5

RIGHT TURN FROM MINOR ROADWAY - TWO LANES ($t_{c,base} = 6.2$)																					
GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
1	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
2	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
3	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
4	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
5	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
6	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
7	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
8	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
9	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
10	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3

E Springville Road & Proposed Site DW

CRITICAL HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46

$$t_{c,x} = t_{c,base} + t_{c,HV} * P_{HV} + t_{c,G} * G - t_{3,LT}$$

where:

- $t_{c,x}$ = critical headway for movement x (s)
- $t_{c,base}$ = base critical headway from Chapter 10 of PennDOT Publication 46
- $t_{c,HV}$ = adjustment factor for heavy vehicles (1.0 for major streets with one lane in each direction; 2.0 for major streets with two or three lanes in each direction) (s)
- P_{HV} = proportion of heavy vehicles for movement (expressed as a decimal; e.g., $P_{HV}=0.02$ for 2% heavy vehicles)
- $t_{c,G}$ = adjustment factor for grade (0.1 for Movement 9 and 12; 0.2 for Movements 7,8,10, and 11) (s)
- G = percent grade (expressed as an integer; e.g., $G= -2$ for a 2% downhill grade)
- $t_{c,base}$ = adjustment factor for intersection geometry (0.7 for minor street left-turn movement at three-leg intersections; 0.0 otherwise) (s)



LEFT TURN FROM MAJOR ROADWAY - TWO LANES ($t_{c,base} = 4.3$)																					
GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
5	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
8	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
9	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
10	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	

LEFT TURN FROM MINOR ROADWAY - TWO LANES - 3-LEG INTERSECTION ($t_{c,base} = 7.1$)																					
GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
1	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
2	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
3	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
4	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
5	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
6	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
7	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
8	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
9	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
10	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5

RIGHT TURN FROM MINOR ROADWAY - TWO LANES ($t_{c,base} = 6.2$)																					
GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
1	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
2	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
3	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
4	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
5	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
6	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
7	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
8	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
9	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
10	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3

2022 Existing Conditions
 Timing Plan: AM Peak Hour

1: E Springville Road & York Road (SR 0074)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	264	6	25	455	27	63
Future Volume (vph)	264	6	25	455	27	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	8%	5%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	287	0	0	511	96	0
Sign Control	Free			Free	Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

2022 Existing Conditions
Timing Plan: AM Peak Hour

1: E Springville Road & York Road (SR 0074)

Intersection

Int Delay, s/veh 1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	264	6	25	455	27	63
Future Vol, veh/h	264	6	25	455	27	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	0	8	5	0	2
Mvmt Flow	281	6	27	484	29	67

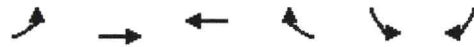
Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	287	0	822 284
Stage 1	-	-	-	-	284 -
Stage 2	-	-	-	-	538 -
Critical Hdwy	-	-	4.4	-	6.8 6.42
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	-	-	3.1	-	3 3.1
Pot Cap-1 Maneuver	-	-	923	-	351 789
Stage 1	-	-	-	-	853 -
Stage 2	-	-	-	-	626 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	923	-	337 789
Mov Cap-2 Maneuver	-	-	-	-	337 -
Stage 1	-	-	-	-	853 -
Stage 2	-	-	-	-	601 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	563	-	-	923	-
HCM Lane V/C Ratio	0.17	-	-	0.029	-
HCM Control Delay (s)	12.7	-	-	9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

2022 Existing Conditions
 Timing Plan: AM Peak Hour

2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	149	176	341	1	1	142
Future Volume (vph)	149	176	341	1	1	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	9%	6%	0%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	346	364	0	152	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2022 Existing Conditions
Timing Plan: AM Peak Hour

2: York Road (SR 0074) & Shughart Road

Intersection

Int Delay, s/veh 3.9

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations		↕	↔		↕	
Traffic Vol, veh/h	149	176	341	1	1	142
Future Vol, veh/h	149	176	341	1	1	142
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	9	6	0	0	5
Mvmt Flow	159	187	363	1	1	151

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	364	0	-	0	869	364
Stage 1	-	-	-	-	364	-
Stage 2	-	-	-	-	505	-
Critical Hdwy	4.3	-	-	-	7.2	6.65
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	901	-	-	-	297	691
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	616	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	901	-	-	-	238	691
Mov Cap-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	616	-

Approach EB WB SB

















HCM Control Delay, s	4.5	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	901	-	-	-	682
HCM Lane V/C Ratio	0.176	-	-	-	0.223
HCM Control Delay (s)	9.8	0	-	-	11.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.6	-	-	-	0.8

2022 Existing Conditions
 Timing Plan: AM Peak Hour

3: S Ridge Road/S Middlesex & York Road (SR 0074)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	170	5	0	323	29	14	13	1	15	13	5
Future Volume (vph)	3	170	5	0	323	29	14	13	1	15	13	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%			3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		2637			680			298			687	
Travel Time (s)		36.0			9.3			5.8			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	11%	0%	0%	5%	0%	0%	15%	100%	0%	8%	20%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	195	0	0	387	0	0	30	0	0	35	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

2022 Existing Conditions
Timing Plan: AM Peak Hour

3: S Ridge Road/S Middlesex & York Road (SR 0074)

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	170	5	0	323	29	14	13	1	15	13	5
Future Vol, veh/h	3	170	5	0	323	29	14	13	1	15	13	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	11	0	0	5	0	0	15	100	0	8	20
Mvmt Flow	3	187	5	0	355	32	15	14	1	16	14	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	387	0	0	192	0	0	577	583	190	574	569	371
Stage 1	-	-	-	-	-	-	196	196	-	371	371	-
Stage 2	-	-	-	-	-	-	381	387	-	203	198	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.9	7.45	7.6	7.7	7.18	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.9	6.45	-	6.7	6.18	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.9	6.45	-	6.7	6.18	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.135	3.2	3	4.072	3.2
Pot Cap-1 Maneuver	884	-	-	1032	-	-	426	357	819	442	385	662
Stage 1	-	-	-	-	-	-	893	684	-	699	573	-
Stage 2	-	-	-	-	-	-	675	539	-	894	702	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	884	-	-	1032	-	-	409	356	819	427	383	662
Mov Cap-2 Maneuver	-	-	-	-	-	-	409	356	-	427	383	-
Stage 1	-	-	-	-	-	-	889	681	-	696	573	-
Stage 2	-	-	-	-	-	-	653	539	-	871	699	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	15	14.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	389	884	-	-	1032	-	-	431
HCM Lane V/C Ratio	0.079	0.004	-	-	-	-	-	0.084
HCM Control Delay (s)	15	9.1	0	-	0	-	-	14.1
HCM Lane LOS	C	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.3

2022 Existing Conditions
 Timing Plan: PM Peak Hour

1: E Springville Road & York Road (SR 0074)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Volume (vph)	552	52	50	412	24	45
Future Volume (vph)	552	52	50	412	24	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	4%	6%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	642	0	0	491	74	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2022 Existing Conditions
 Timing Plan: PM Peak Hour

1: E Springville Road & York Road (SR 0074)

Intersection

Int Delay, s/veh 1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕		↕		↕	
Traffic Vol, veh/h	552	52	50	412	24	45
Future Vol, veh/h	552	52	50	412	24	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	3	4	6	4	4	4
Mvmt Flow	587	55	53	438	26	48

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	642	0	1159
Stage 1	-	-	-	-	615
Stage 2	-	-	-	-	544
Critical Hdwy	-	-	4.4	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	3.1	-	3
Pot Cap-1 Maneuver	-	-	690	-	207
Stage 1	-	-	-	-	566
Stage 2	-	-	-	-	618
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	690	-	186
Mov Cap-2 Maneuver	-	-	-	-	186
Stage 1	-	-	-	-	566
Stage 2	-	-	-	-	555

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	19.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	315	-	-	690	-
HCM Lane V/C Ratio	0.233	-	-	0.077	-
HCM Control Delay (s)	19.9	-	-	10.7	0
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.9	-	-	0.2	-

2022 Existing Conditions
 Timing Plan: PM Peak Hour

2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	193	393	296	0	0	171
Future Volume (vph)	193	393	296	0	0	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	3%	7%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	623	315	0	182	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2022 Existing Conditions
Timing Plan: PM Peak Hour

2: York Road (SR 0074) & Shughart Road

Intersection

Int Delay, s/veh 3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	193	393	296	0	0	171
Future Vol, veh/h	193	393	296	0	0	171
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	3	7	0	0	2
Mvmt Flow	205	418	315	0	0	182













Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	315	0	0
Stage 1	-	-	315
Stage 2	-	-	828
Critical Hdwy	4.3	-	7.2
Critical Hdwy Stg 1	-	-	6.2
Critical Hdwy Stg 2	-	-	6.2
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	937	-	189
Stage 1	-	-	793
Stage 2	-	-	399
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	937	-	135
Mov Cap-2 Maneuver	-	-	135
Stage 1	-	-	567
Stage 2	-	-	399

Approach	EB	WB	SB
HCM Control Delay, s	3.3	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	937	-	-	-	743
HCM Lane V/C Ratio	0.219	-	-	-	0.245
HCM Control Delay (s)	9.9	0	-	-	11.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.8	-	-	-	1

2022 Existing Conditions
 Timing Plan: PM Peak Hour

3: S Ridge Road/S Middlesex & York Road (SR 0074)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	4	371	15	2	275	15	7	18	0	26	26	8
Future Volume (vph)	4	371	15	2	275	15	7	18	0	26	26	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%				3%
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35				35
Link Distance (ft)		2637			680			298				687
Travel Time (s)		36.0			9.3			5.8				13.4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	0%	0%	6%	13%	0%	6%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	411	0	0	307	0	0	26	0	0	62	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

2022 Existing Conditions
Timing Plan: PM Peak Hour

3: S Ridge Road/S Middlesex & York Road (SR 0074)

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	371	15	2	275	15	7	18	0	26	26	8
Future Vol, veh/h	4	371	15	2	275	15	7	18	0	26	26	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	4	0	0	6	13	0	6	0	0	0	0
Mvmt Flow	4	391	16	2	289	16	7	19	0	27	27	8

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	305	0	0	407	0	0	726	716	399	718	716	297
Stage 1	-	-	-	-	-	-	407	407	-	301	301	-
Stage 2	-	-	-	-	-	-	319	309	-	417	415	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.9	7.36	6.6	7.7	7.1	6.5
Critical Hdwy Stg 1	-	-	-	-	-	-	6.9	6.36	-	6.7	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.9	6.36	-	6.7	6.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.054	3.1	3	4	3.1
Pot Cap-1 Maneuver	944	-	-	870	-	-	325	299	660	343	318	770
Stage 1	-	-	-	-	-	-	649	539	-	775	636	-
Stage 2	-	-	-	-	-	-	741	609	-	654	556	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	944	-	-	870	-	-	298	297	660	324	315	770
Mov Cap-2 Maneuver	-	-	-	-	-	-	298	297	-	324	315	-
Stage 1	-	-	-	-	-	-	646	536	-	771	634	-
Stage 2	-	-	-	-	-	-	699	607	-	628	553	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	18.3	17.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	297	944	-	-	870	-	-	346
HCM Lane V/C Ratio	0.089	0.004	-	-	0.002	-	-	0.183
HCM Control Delay (s)	18.3	8.8	0	-	9.1	0	-	17.7
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.7

2022 Existing Conditions
 Timing Plan: SAT Peak Hour

1: E Springville Road & York Road (SR 0074)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	357	26	53	386	28	69
Future Volume (vph)	357	26	53	386	28	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	403	0	0	462	102	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2022 Existing Conditions
Timing Plan: SAT Peak Hour

1: E Springville Road & York Road (SR 0074)

Intersection

Int Delay, s/veh 2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	357	26	53	386	28	69
Future Vol, veh/h	357	26	53	386	28	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	0	0	1	0	1
Mvmt Flow	376	27	56	406	29	73

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	403
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	4.3	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	873	308
Stage 1	-	-	750
Stage 2	-	-	641
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	873	282
Mov Cap-2 Maneuver	-	-	282
Stage 1	-	-	750
Stage 2	-	-	588

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	484	-	-	873	-
HCM Lane V/C Ratio	0.211	-	-	0.064	-
HCM Control Delay (s)	14.4	-	-	9.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.2	-

2022 Existing Conditions
 Timing Plan: SAT Peak Hour

2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	110	347	315	1	1	101
Future Volume (vph)	110	347	315	1	1	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	3%	0%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	491	340	0	110	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2022 Existing Conditions
Timing Plan: SAT Peak Hour

2: York Road (SR 0074) & Shughart Road

Intersection

Int Delay, s/veh 2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	110	347	315	1	1	101
Future Vol, veh/h	110	347	315	1	1	101
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	1	3	0	0	3
Mvmt Flow	118	373	339	1	1	109

Major/Minor

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	340	0	949
Stage 1	-	-	340
Stage 2	-	-	609
Critical Hdwy	4.3	-	7.2
Critical Hdwy Stg 1	-	-	6.2
Critical Hdwy Stg 2	-	-	6.2
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	918	-	260
Stage 1	-	-	767
Stage 2	-	-	536
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	918	-	218
Mov Cap-2 Maneuver	-	-	218
Stage 1	-	-	643
Stage 2	-	-	536

Approach













Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	918	-	-	-	700
HCM Lane V/C Ratio	0.129	-	-	-	0.157
HCM Control Delay (s)	9.5	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.6

2022 Existing Conditions
 Timing Plan: SAT Peak Hour

3: S Ridge Road/S Middlesex & York Road (SR 0074)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	6	329	19	7	283	10	23	16	6	13	13	7
Future Volume (vph)	6	329	19	7	283	10	23	16	6	13	13	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%			3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		2637			680			298			687	
Travel Time (s)		36.0			9.3			5.8			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	4%	6%	0%	0%	0%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	380	0	0	323	0	0	48	0	0	36	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

2022 Existing Conditions
 Timing Plan: SAT Peak Hour

3: S Ridge Road/S Middlesex & York Road (SR 0074)

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	329	19	7	283	10	23	16	6	13	13	7
Future Vol, veh/h	6	329	19	7	283	10	23	16	6	13	13	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	1	0	0	2	0	4	6	0	0	0	14
Mvmt Flow	6	354	20	8	304	11	25	17	6	14	14	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	315	0	0	374	0	0	713	707	364	714	712	310
Stage 1	-	-	-	-	-	-	376	376	-	326	326	-
Stage 2	-	-	-	-	-	-	337	331	-	388	386	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.94	7.36	6.6	7.7	7.1	6.64
Critical Hdwy Stg 1	-	-	-	-	-	-	6.94	6.36	-	6.7	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.94	6.36	-	6.7	6.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.054	3.1	3	4	3.2
Pot Cap-1 Maneuver	937	-	-	893	-	-	330	303	694	346	320	727
Stage 1	-	-	-	-	-	-	677	561	-	747	617	-
Stage 2	-	-	-	-	-	-	719	593	-	682	575	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	937	-	-	893	-	-	311	297	694	323	314	727
Mov Cap-2 Maneuver	-	-	-	-	-	-	311	297	-	323	314	-
Stage 1	-	-	-	-	-	-	672	557	-	741	610	-
Stage 2	-	-	-	-	-	-	688	586	-	650	570	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	17.8	16
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	330	937	-	-	893	-	-	362
HCM Lane V/C Ratio	0.147	0.007	-	-	0.008	-	-	0.098
HCM Control Delay (s)	17.8	8.9	0	-	9.1	0	-	16
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.3

Phase 1

2025 Base (No-Build) Conditions
 Timing Plan: AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩			↩	↩	
Traffic Volume (vph)	284	28	26	505	78	64
Future Volume (vph)	284	28	26	505	78	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	8%	5%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	332	0	0	565	151	0
Sign Control	Free			Free	Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

Intersection						
Int Delay, s/veh	3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	284	28	26	505	78	64
Future Vol, veh/h	284	28	26	505	78	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	0	8	5	0	2
Mvmt Flow	302	30	28	537	83	68

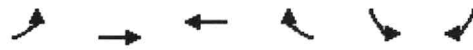
Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	332	0	910
Stage 1	-	-	-	-	317
Stage 2	-	-	-	-	593
Critical Hdwy	-	-	4.4	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	3.1	-	3
Pot Cap-1 Maneuver	-	-	890	-	307
Stage 1	-	-	-	-	819
Stage 2	-	-	-	-	585
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	890	-	293
Mov Cap-2 Maneuver	-	-	-	-	293
Stage 1	-	-	-	-	819
Stage 2	-	-	-	-	559

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	19.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	404	-	-	890	-
HCM Lane V/C Ratio	0.374	-	-	0.031	-
HCM Control Delay (s)	19.1	-	-	9.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-

2025 Base (No-Build) Conditions
 Timing Plan: AM Peak Hour

Phase 1
 2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	152	194	389	1	1	145
Future Volume (vph)	152	194	389	1	1	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	9%	6%	0%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	368	415	0	155	0
Sign Control		Free	Free		Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

Intersection

Int Delay, s/veh 3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	152	194	389	1	1	145
Future Vol, veh/h	152	194	389	1	1	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	9	6	0	0	5
Mvmt Flow	162	206	414	1	1	154

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	415	0	0
Stage 1	-	-	415
Stage 2	-	-	530
Critical Hdwy	4.3	-	7.2
Critical Hdwy Stg 1	-	-	6.2
Critical Hdwy Stg 2	-	-	6.2
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	865	-	262
Stage 1	-	-	695
Stage 2	-	-	596
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	865	-	206
Mov Cap-2 Maneuver	-	-	206
Stage 1	-	-	548
Stage 2	-	-	596

Approach	EB	WB	SB
HCM Control Delay, s	4.4	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	865	-	-	-	633
HCM Lane V/C Ratio	0.187	-	-	-	0.245
HCM Control Delay (s)	10.1	0	-	-	12.5
HCM Lane LOS	B	A	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1

2025 Base (No-Build) Conditions
 Timing Plan: AM Peak Hour

Phase 1
 3: S Ridge Road/S Middlesex & York Road (SR 0074)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	3	174	19	4	330	30	55	30	9	15	20	5
Future Volume (vph)	3	174	19	4	330	30	55	30	9	15	20	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%			3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		2637			680			298			687	
Travel Time (s)		36.0			9.3			5.8			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	11%	0%	0%	5%	0%	0%	15%	100%	0%	8%	20%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	215	0	0	400	0	0	103	0	0	43	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2025 Base (No-Build) Conditions
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	174	19	4	330	30	55	30	9	15	20	5
Future Vol, veh/h	3	174	19	4	330	30	55	30	9	15	20	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	11	0	0	5	0	0	15	100	0	8	20
Mvmt Flow	3	191	21	4	363	33	60	33	10	16	22	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	396	0	0	212	0	0	609	612	202	617	606	380
Stage 1	-	-	-	-	-	-	208	208	-	388	388	-
Stage 2	-	-	-	-	-	-	401	404	-	229	218	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.9	7.45	7.6	7.7	7.18	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.9	6.45	-	6.7	6.18	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.9	6.45	-	6.7	6.18	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.135	3.2	3	4.072	3.2
Pot Cap-1 Maneuver	878	-	-	1016	-	-	402	342	802	410	365	654
Stage 1	-	-	-	-	-	-	877	674	-	682	561	-
Stage 2	-	-	-	-	-	-	655	528	-	861	686	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	878	-	-	1016	-	-	377	339	802	372	362	654
Mov Cap-2 Maneuver	-	-	-	-	-	-	377	339	-	372	362	-
Stage 1	-	-	-	-	-	-	873	671	-	679	558	-
Stage 2	-	-	-	-	-	-	621	525	-	805	683	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.1			17.8			15.5		
HCM LOS	C			C			C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	383	878	-	-	1016	-	-	388
HCM Lane V/C Ratio	0.27	0.004	-	-	0.004	-	-	0.113
HCM Control Delay (s)	17.8	9.1	0	-	8.6	0	-	15.5
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.1	0	-	-	0	-	-	0.4

2025 Base (No-Build) Conditions
 Timing Plan: PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	610	110	51	450	56	46
Future Volume (vph)	610	110	51	450	56	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	4%	6%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	766	0	0	533	109	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖		↘	
Traffic Vol, veh/h	610	110	51	450	56	46
Future Vol, veh/h	610	110	51	450	56	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	3	4	6	4	4	4
Mvmt Flow	649	117	54	479	60	49

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	766
Stage 1	-	-	708
Stage 2	-	-	587
Critical Hdwy	-	4.4	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	3.1	3
Pot Cap-1 Maneuver	-	622	168
Stage 1	-	-	504
Stage 2	-	-	585
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	622	148
Mov Cap-2 Maneuver	-	-	148
Stage 1	-	-	504
Stage 2	-	-	516

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	38.8
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	-	-	622	-
HCM Lane V/C Ratio	0.514	-	-	0.087	-
HCM Control Delay (s)	38.8	-	-	11.3	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	2.6	-	-	0.3	-

2025 Base (No-Build) Conditions
 Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	197	447	331	0	0	175
Future Volume (vph)	197	447	331	0	0	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	3%	7%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	686	352	0	186	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 3.5

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations		↕	↔		↕	
Traffic Vol, veh/h	197	447	331	0	0	175
Future Vol, veh/h	197	447	331	0	0	175
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	3	7	0	0	2
Mvmt Flow	210	476	352	0	0	186

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	352	0	-	0	1248	352
Stage 1	-	-	-	-	352	-
Stage 2	-	-	-	-	896	-
Critical Hdwy	4.3	-	-	-	7.2	6.62
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	909	-	-	-	159	705
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	364	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	909	-	-	-	109	705
Mov Cap-2 Maneuver	-	-	-	-	109	-
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	364	-

Approach EB WB SB

















HCM Control Delay, s	3.1	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	909	-	-	-	705
HCM Lane V/C Ratio	0.231	-	-	-	0.264
HCM Control Delay (s)	10.1	0	-	-	11.9
HCM Lane LOS	B	A	-	-	B
HCM 95th %tile Q(veh)	0.9	-	-	-	1.1

2025 Base (No-Build) Conditions
Timing Plan: PM Peak Hour

Phase 1
3: S Ridge Road/S Middlesex & York Road (SR 0074)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	379	61	11	281	15	36	29	6	27	48	8
Future Volume (vph)	4	379	61	11	281	15	36	29	6	27	48	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%			3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		2637			680			298			687	
Travel Time (s)		36.0			9.3			5.8			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	0%	0%	6%	13%	0%	6%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	467	0	0	324	0	0	75	0	0	87	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	379	61	11	281	15	36	29	6	27	48	8
Future Vol, veh/h	4	379	61	11	281	15	36	29	6	27	48	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	4	0	0	6	13	0	6	0	0	0	0
Mvmt Flow	4	399	64	12	296	16	38	31	6	28	51	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	312	0	0	463	0	0	797	775	431	786	799	304
Stage 1	-	-	-	-	-	-	439	439	-	328	328	-
Stage 2	-	-	-	-	-	-	358	336	-	458	471	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.9	7.36	6.6	7.7	7.1	6.5
Critical Hdwy Stg 1	-	-	-	-	-	-	6.9	6.36	-	6.7	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.9	6.36	-	6.7	6.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.054	3.1	3	4	3.1
Pot Cap-1 Maneuver	939	-	-	832	-	-	286	273	631	304	281	762
Stage 1	-	-	-	-	-	-	618	518	-	745	616	-
Stage 2	-	-	-	-	-	-	699	589	-	616	520	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	939	-	-	832	-	-	239	267	631	270	275	762
Mov Cap-2 Maneuver	-	-	-	-	-	-	239	267	-	270	275	-
Stage 1	-	-	-	-	-	-	614	515	-	741	606	-
Stage 2	-	-	-	-	-	-	623	579	-	570	517	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			23.9			22.6		
HCM LOS	C			C			C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	264	939	-	-	832	-	-	291
HCM Lane V/C Ratio	0.283	0.004	-	-	0.014	-	-	0.3
HCM Control Delay (s)	23.9	8.9	0	-	9.4	0	-	22.6
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.1	0	-	-	0	-	-	1.2

2025 Base (No-Build) Conditions
 Timing Plan: SAT Peak Hour

Phase 1
 1: E Springville Road & York Road (SR 0074)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	410	69	54	423	59	70
Future Volume (vph)	410	69	54	423	59	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	505	0	0	502	136	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

Intersection

Int Delay, s/veh	3.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↷	↶	↷
Traffic Vol, veh/h	410	69	54	423	59	70
Future Vol, veh/h	410	69	54	423	59	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	0	0	1	0	1
Mvmt Flow	432	73	57	445	62	74

Major/Minor

	Major1		Major2		Minor1	
Conflicting Flow All	0	0	505	0	1028	469
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	559	-
Critical Hdwy	-	-	4.3	-	6.8	6.41
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	804	-	256	612
Stage 1	-	-	-	-	681	-
Stage 2	-	-	-	-	610	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	804	-	232	612
Mov Cap-2 Maneuver	-	-	-	-	232	-
Stage 1	-	-	-	-	681	-
Stage 2	-	-	-	-	553	-

Approach

	EB	WB	NB
HCM Control Delay, s	0	1.1	21.7
HCM LOS			C

Minor Lane/Major Mvmt

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	350	-	-	804	-
HCM Lane V/C Ratio	0.388	-	-	0.071	-
HCM Control Delay (s)	21.7	-	-	9.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0.2	-

2025 Base (No-Build) Conditions
 Timing Plan: SAT Peak Hour

Phase 1
 2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	112	400	351	1	1	103
Future Volume (vph)	112	400	351	1	1	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	3%	0%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	550	378	0	112	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

Intersection

Int Delay, s/veh 2.4

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations		↖	↗		↘	
Traffic Vol, veh/h	112	400	351	1	1	103
Future Vol, veh/h	112	400	351	1	1	103
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	1	3	0	0	3
Mvmt Flow	120	430	377	1	1	111

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	378	0	-	0	1048	378
Stage 1	-	-	-	-	378	-
Stage 2	-	-	-	-	670	-
Critical Hdwy	4.3	-	-	-	7.2	6.63
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	891	-	-	-	221	678
Stage 1	-	-	-	-	730	-
Stage 2	-	-	-	-	494	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	891	-	-	-	182	678
Mov Cap-2 Maneuver	-	-	-	-	182	-
Stage 1	-	-	-	-	601	-
Stage 2	-	-	-	-	494	-

Approach EB WB SB

















HCM Control Delay, s	2.1	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	891	-	-	-	661
HCM Lane V/C Ratio	0.135	-	-	-	0.169
HCM Control Delay (s)	9.7	0	-	-	11.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.6

2025 Base (No-Build) Conditions
 Timing Plan: SAT Peak Hour

Phase 1
 3: S Ridge Road/S Middlesex & York Road (SR 0074)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	336	65	12	289	10	52	27	11	13	29	7
Future Volume (vph)	6	336	65	12	289	10	52	27	11	13	29	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%			3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		2637			680			298			687	
Travel Time (s)		36.0			9.3			5.8			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	4%	6%	0%	0%	0%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	437	0	0	335	0	0	97	0	0	53	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

Intersection

Int Delay, s/veh 3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	336	65	12	289	10	52	27	11	13	29	7
Future Vol, veh/h	6	336	65	12	289	10	52	27	11	13	29	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	1	0	0	2	0	4	6	0	0	0	14
Mvmt Flow	6	361	70	13	311	11	56	29	12	14	31	8










Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	322	0	0	431
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.3	-	-	4.3
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3	-	-	3
Pot Cap-1 Maneuver	931	-	-	854
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	931	-	-	854
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.4	23.7	19.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	288	931	-	-	854	-	-	304
HCM Lane V/C Ratio	0.336	0.007	-	-	0.015	-	-	0.173
HCM Control Delay (s)	23.7	8.9	0	-	9.3	0	-	19.3
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	0.6

2025 Projected Build Conditions
 Timing Plan: AM Peak Hour

Phase 1
 1: E Springville Road & York Road (SR 0074)

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	284	29	27	505	79	64
Future Volume (vph)	284	29	27	505	79	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	8%	5%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	333	0	0	566	152	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2025 Projected Build Conditions
Timing Plan: AM Peak Hour

Phase 1
1: E Springville Road & York Road (SR 0074)

Intersection

Int Delay, s/veh 3.1

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↶			↷	↷	
Traffic Vol, veh/h	284	29	27	505	79	64
Future Vol, veh/h	284	29	27	505	79	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	0	8	5	0	2
Mvmt Flow	302	31	29	537	84	68

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	333	0	913	318
Stage 1	-	-	-	-	318	-
Stage 2	-	-	-	-	595	-
Critical Hdwy	-	-	4.4	-	6.8	6.42
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	3.1	-	3	3.1
Pot Cap-1 Maneuver	-	-	889	-	305	753
Stage 1	-	-	-	-	818	-
Stage 2	-	-	-	-	584	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	889	-	291	753
Mov Cap-2 Maneuver	-	-	-	-	291	-
Stage 1	-	-	-	-	818	-
Stage 2	-	-	-	-	557	-

Approach EB WB NB

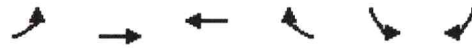
HCM Control Delay, s	0	0.5	19.4
HCM LOS			C

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	401	-	-	889	-
HCM Lane V/C Ratio	0.379	-	-	0.032	-
HCM Control Delay (s)	19.4	-	-	9.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-

2025 Projected Build Conditions
 Timing Plan: AM Peak Hour

Phase 1
 2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	152	194	390	1	1	145
Future Volume (vph)	152	194	390	1	1	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	9%	6%	0%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	368	416	0	155	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	152	194	390	1	1	145
Future Vol, veh/h	152	194	390	1	1	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	9	6	0	0	5
Mvmt Flow	162	206	415	1	1	154


















Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	416	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3	-	-
Pot Cap-1 Maneuver	864	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	864	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	4.4	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	864	-	-	-	632
HCM Lane V/C Ratio	0.187	-	-	-	0.246
HCM Control Delay (s)	10.1	0	-	-	12.5
HCM Lane LOS	B	A	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1

2025 Projected Build Conditions
 Timing Plan: AM Peak Hour

Phase 1
 3: S Ridge Road/S Middlesex & York Road (SR 0074)

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	3	174	19	4	331	30	55	30	9	15	20	5	
Future Volume (vph)	3	174	19	4	331	30	55	30	9	15	20	5	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9	
Grade (%)		-1%			1%			4%				3%	
Storage Length (ft)	0		0	0		0	0		0	0		0	
Storage Lanes	0		0	0		0	0		0	0		0	
Taper Length (ft)	25			25			25			25			
Link Speed (mph)		50			50			35				35	
Link Distance (ft)		2637			680			298				687	
Travel Time (s)		36.0			9.3			5.8				13.4	
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
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	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	0%	11%	0%	0%	5%	0%	0%	15%	100%	0%	8%	20%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%				0%	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	215	0	0	401	0	0	103	0	0	43	0	
Sign Control		Free			Free			Stop				Stop	
Intersection Summary													
Area Type:	Other												
Control Type:	Unsignalized												

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	174	19	4	331	30	55	30	9	15	20	5
Future Vol, veh/h	3	174	19	4	331	30	55	30	9	15	20	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	11	0	0	5	0	0	15	100	0	8	20
Mvmt Flow	3	191	21	4	364	33	60	33	10	16	22	5

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	397	0	0	212	0	0	610	613	202	618	607	381
Stage 1	-	-	-	-	-	-	208	208	-	389	389	-
Stage 2	-	-	-	-	-	-	402	405	-	229	218	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.9	7.45	7.6	7.7	7.18	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.9	6.45	-	6.7	6.18	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.9	6.45	-	6.7	6.18	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.135	3.2	3	4.072	3.2
Pot Cap-1 Maneuver	877	-	-	1016	-	-	401	341	802	409	364	653
Stage 1	-	-	-	-	-	-	877	674	-	681	560	-
Stage 2	-	-	-	-	-	-	654	527	-	861	686	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	877	-	-	1016	-	-	377	338	802	371	361	653
Mov Cap-2 Maneuver	-	-	-	-	-	-	377	338	-	371	361	-
Stage 1	-	-	-	-	-	-	873	671	-	678	557	-
Stage 2	-	-	-	-	-	-	620	524	-	805	683	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	17.9	15.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	382	877	-	-	1016	-	-	387
HCM Lane V/C Ratio	0.27	0.004	-	-	0.004	-	-	0.114
HCM Control Delay (s)	17.9	9.1	0	-	8.6	0	-	15.5
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.1	0	-	-	0	-	-	0.4

2025 Projected Build Conditions
 Timing Plan: AM Peak Hour

Phase 1
 4: E Springville Road & Proposed Driveway



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	1	142	0	2	54
Future Volume (vph)	0	1	142	0	2	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	10	10
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Link Speed (mph)	25		35			35
Link Distance (ft)	500		353			767
Travel Time (s)	13.6		6.9			14.9
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	1%	2%	2%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	0	158	0	0	62
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2025 Projected Build Conditions
Timing Plan: AM Peak Hour

Phase 1
4: E Springville Road & Proposed Driveway

Intersection

Int Delay, s/veh 0.1

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations						
Traffic Vol, veh/h	0	1	142	0	2	54
Future Vol, veh/h	0	1	142	0	2	54
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	1	2	2	6
Mvmt Flow	0	1	158	0	2	60

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	222	158	0	0	158	0
Stage 1	158	-	-	-	-	-
Stage 2	64	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	885	945	-	-	1060	-
Stage 1	1010	-	-	-	-	-
Stage 2	1119	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	883	945	-	-	1060	-
Mov Cap-2 Maneuver	883	-	-	-	-	-
Stage 1	1010	-	-	-	-	-
Stage 2	1117	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s 8.8 0 0.3
HCM LOS A

Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT

Capacity (veh/h)	-	-	945	1060	-
HCM Lane V/C Ratio	-	-	0.001	0.002	-
HCM Control Delay (s)	-	-	8.8	8.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

2025 Projected Build Conditions
Timing Plan: PM Peak Hour

Phase 1
1: E Springville Road & York Road (SR 0074)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	610	131	75	450	67	58
Future Volume (vph)	610	131	75	450	67	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	4%	6%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	788	0	0	559	133	0
Sign Control	Free			Free	Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

2025 Projected Build Conditions
Timing Plan: PM Peak Hour

Phase 1
1: E Springville Road & York Road (SR 0074)

Intersection

Int Delay, s/veh 6.2

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	610	131	75	450	67	58
Future Vol, veh/h	610	131	75	450	67	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	3	4	6	4	4	4
Mvmt Flow	649	139	80	479	71	62

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	788	0	1358	719
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	639	-
Critical Hdwy	-	-	4.4	-	6.84	6.44
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	3.1	-	3	3.1
Pot Cap-1 Maneuver	-	-	611	-	152	430
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	549	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	611	-	125	430
Mov Cap-2 Maneuver	-	-	-	-	125	-
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	451	-

Approach EB WB NB

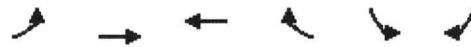
HCM Control Delay, s	0	1.7	61.9
HCM LOS			F

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	186	-	-	611	-
HCM Lane V/C Ratio	0.715	-	-	0.131	-
HCM Control Delay (s)	61.9	-	-	11.8	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	4.5	-	-	0.4	-

2025 Projected Build Conditions
Timing Plan: PM Peak Hour

Phase 1
2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	201	455	346	0	0	184
Future Volume (vph)	201	455	346	0	0	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	3%	7%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	698	368	0	196	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2025 Projected Build Conditions
Timing Plan: PM Peak Hour

Phase 1
2: York Road (SR 0074) & Shughart Road

Intersection

Int Delay, s/veh 3.6

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations		↕	↔		↕	
Traffic Vol, veh/h	201	455	346	0	0	184
Future Vol, veh/h	201	455	346	0	0	184
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	3	7	0	0	2
Mvmt Flow	214	484	368	0	0	196

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	368	0	-	0	1280	368
Stage 1	-	-	-	-	368	-
Stage 2	-	-	-	-	912	-
Critical Hdwy	4.3	-	-	-	7.2	6.62
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	898	-	-	-	151	689
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	356	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	898	-	-	-	102	689
Mov Cap-2 Maneuver	-	-	-	-	102	-
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	356	-

Approach EB WB SB

















HCM Control Delay, s	3.1	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	898	-	-	-	689
HCM Lane V/C Ratio	0.238	-	-	-	0.284
HCM Control Delay (s)	10.3	0	-	-	12.3
HCM Lane LOS	B	A	-	-	B
HCM 95th %tile Q(veh)	0.9	-	-	-	1.2

2025 Projected Build Conditions
Timing Plan: PM Peak Hour

Phase 1
3: S Ridge Road/S Middlesex & York Road (SR 0074)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	387	61	11	296	15	36	29	6	27	48	8
Future Volume (vph)	4	387	61	11	296	15	36	29	6	27	48	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%			3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		2637			680			298			687	
Travel Time (s)		36.0			9.3			5.8			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	0%	0%	6%	13%	0%	6%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	475	0	0	340	0	0	75	0	0	87	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

2025 Projected Build Conditions
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	387	61	11	296	15	36	29	6	27	48	8
Future Vol, veh/h	4	387	61	11	296	15	36	29	6	27	48	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	4	0	0	6	13	0	6	0	0	0	0
Mvmt Flow	4	407	64	12	312	16	38	31	6	28	51	8










Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	328	0	0	471	0	0	821	799	439	810	823	320
Stage 1	-	-	-	-	-	-	447	447	-	344	344	-
Stage 2	-	-	-	-	-	-	374	352	-	466	479	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.9	7.36	6.6	7.7	7.1	6.5
Critical Hdwy Stg 1	-	-	-	-	-	-	6.9	6.36	-	6.7	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.9	6.36	-	6.7	6.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.054	3.1	3	4	3.1
Pot Cap-1 Maneuver	927	-	-	827	-	-	273	263	624	292	271	746
Stage 1	-	-	-	-	-	-	610	513	-	728	605	-
Stage 2	-	-	-	-	-	-	682	578	-	608	515	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	927	-	-	827	-	-	226	257	624	258	264	746
Mov Cap-2 Maneuver	-	-	-	-	-	-	226	257	-	258	264	-
Stage 1	-	-	-	-	-	-	606	510	-	724	594	-
Stage 2	-	-	-	-	-	-	606	568	-	562	512	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			25.2			23.7		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	252	927	-	-	827	-	-	279
HCM Lane V/C Ratio	0.297	0.005	-	-	0.014	-	-	0.313
HCM Control Delay (s)	25.2	8.9	0	-	9.4	0	-	23.7
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-	-	1.3

2025 Projected Build Conditions
Timing Plan: PM Peak Hour

Phase 1
4: E Springville Road & Proposed Driveway

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	3	23	101	6	45	161
Future Volume (vph)	3	23	101	6	45	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	10	10
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Link Speed (mph)	25		35			35
Link Distance (ft)	500		353			767
Travel Time (s)	13.6		6.9			14.9
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	4%	2%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	0	119	0	0	229
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	23	101	6	45	161
Future Vol, veh/h	3	23	101	6	45	161
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	4	2	2	5
Mvmt Flow	3	26	112	7	50	179

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	395	116	0	0	119	0
Stage 1	116	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	696	999	-	-	1093	-
Stage 1	1057	-	-	-	-	-
Stage 2	884	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	661	999	-	-	1093	-
Mov Cap-2 Maneuver	661	-	-	-	-	-
Stage 1	1057	-	-	-	-	-
Stage 2	839	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	1.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	943	1093
HCM Lane V/C Ratio	-	-	0.031	0.046
HCM Control Delay (s)	-	-	8.9	8.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1

2025 Projected Build Conditions
 Timing Plan: SAT Peak Hour

Phase 1
 1: E Springville Road & York Road (SR 0074)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↘	
Traffic Volume (vph)	410	115	109	423	109	129
Future Volume (vph)	410	115	109	423	109	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	553	0	0	560	251	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2025 Projected Build Conditions
Timing Plan: SAT Peak Hour

Intersection						
Int Delay, s/veh	14.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	410	115	109	423	109	129
Future Vol, veh/h	410	115	109	423	109	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	0	0	1	0	1
Mvmt Flow	432	121	115	445	115	136

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	553	0	1168
Stage 1	-	-	-	-	493
Stage 2	-	-	-	-	675
Critical Hdwy	-	-	4.3	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	3	-	3
Pot Cap-1 Maneuver	-	-	774	-	207
Stage 1	-	-	-	-	661
Stage 2	-	-	-	-	529
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	774	-	166
Mov Cap-2 Maneuver	-	-	-	-	166
Stage 1	-	-	-	-	661
Stage 2	-	-	-	-	425

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	76.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	272	-	-	774	-
HCM Lane V/C Ratio	0.921	-	-	0.148	-
HCM Control Delay (s)	76.6	-	-	10.5	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	8.4	-	-	0.5	-

2025 Projected Build Conditions
 Timing Plan: SAT Peak Hour

Phase 1
 2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	134	437	385	1	1	124
Future Volume (vph)	134	437	385	1	1	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	3%	0%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	614	415	0	134	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2025 Projected Build Conditions
Timing Plan: SAT Peak Hour

Phase 1
2: York Road (SR 0074) & Shughart Road

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	134	437	385	1	1	124
Future Vol, veh/h	134	437	385	1	1	124
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	1	3	0	0	3
Mvmt Flow	144	470	414	1	1	133

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	415	0	0
Stage 1	-	-	415
Stage 2	-	-	758
Critical Hdwy	4.3	-	7.2
Critical Hdwy Stg 1	-	-	6.2
Critical Hdwy Stg 2	-	-	6.2
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	865	-	180
Stage 1	-	-	695
Stage 2	-	-	439
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	865	-	140
Mov Cap-2 Maneuver	-	-	140
Stage 1	-	-	539
Stage 2	-	-	439

Approach

















	EB	WB	SB
HCM Control Delay, s	2.3	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	865	-	-	-	625
HCM Lane V/C Ratio	0.167	-	-	-	0.215
HCM Control Delay (s)	10	0	-	-	12.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.6	-	-	-	0.8

2025 Projected Build Conditions
Timing Plan: SAT Peak Hour

Phase 1
3: S Ridge Road/S Middlesex & York Road (SR 0074)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	373	65	12	323	10	52	27	11	13	29	7
Future Volume (vph)	6	373	65	12	323	10	52	27	11	13	29	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%			3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		2637			680			298			687	
Travel Time (s)		36.0			9.3			5.8			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	4%	6%	0%	0%	0%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	477	0	0	371	0	0	97	0	0	53	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

2025 Projected Build Conditions
Timing Plan: SAT Peak Hour

Phase 1
3: S Ridge Road/S Middlesex & York Road (SR 0074)

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	373	65	12	323	10	52	27	11	13	29	7
Future Vol, veh/h	6	373	65	12	323	10	52	27	11	13	29	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	1	0	0	2	0	4	6	0	0	0	14
Mvmt Flow	6	401	70	13	347	11	56	29	12	14	31	8

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	358	0	0	471
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.3	-	-	4.3
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3	-	-	3
Pot Cap-1 Maneuver	905	-	-	827
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	905	-	-	827
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	27.9	21.5
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	252	905	-	-	827	-	-	270
HCM Lane V/C Ratio	0.384	0.007	-	-	0.016	-	-	0.195
HCM Control Delay (s)	27.9	9	0	-	9.4	0	-	21.5
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.7	0	-	-	0	-	-	0.7

2025 Projected Build Conditions
 Timing Plan: SAT Peak Hour

Phase 1
 4: E Springville Road & Proposed Driveway



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	13	109	129	12	101	123
Future Volume (vph)	13	109	129	12	101	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	10	10
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Link Speed (mph)	25		35			35
Link Distance (ft)	500		353			767
Travel Time (s)	13.6		6.9			14.9
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	1%	2%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	135	0	156	0	0	249
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 4.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	13	109	129	12	101	123
Future Vol, veh/h	13	109	129	12	101	123
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	1	2	2	0
Mvmt Flow	14	121	143	13	112	137

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	511	150	0
Stage 1	150	-	-
Stage 2	361	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3	3.1	-
Pot Cap-1 Maneuver	592	955	-
Stage 1	1019	-	-
Stage 2	807	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	525	955	-
Mov Cap-2 Maneuver	525	-	-
Stage 1	1019	-	-
Stage 2	715	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	878	1062
HCM Lane V/C Ratio	-	-	0.154	0.106
HCM Control Delay (s)	-	-	9.8	8.8
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.4

2025 Projected Build Conditions w/Imp
Timing Plan: SAT Peak Hour

With Event Management "Flaggers"
1: E Springville Road & York Road (SR 0074)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	410	115	109	423	109	129
Future Volume (vph)	410	115	109	423	109	129
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	1148	
Travel Time (s)	4.8			4.1	22.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	553	0	0	560	251	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	24.0		24.0	24.0	24.0	
Total Split (s)	61.0		61.0	61.0	29.0	
Total Split (%)	67.8%		67.8%	67.8%	32.2%	
Maximum Green (s)	55.0		55.0	55.0	23.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Minimum Gap (s)	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0		0.0	0.0	0.0	
Recall Mode	None		None	None	Min	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
v/c Ratio	0.62			0.82	0.59	
Control Delay	11.8			22.3	23.3	

2025 Projected Build Conditions w/Imp
 Timing Plan: SAT Peak Hour

With Event Management "Flaggers"
 1: E Springville Road & York Road (SR 0074)

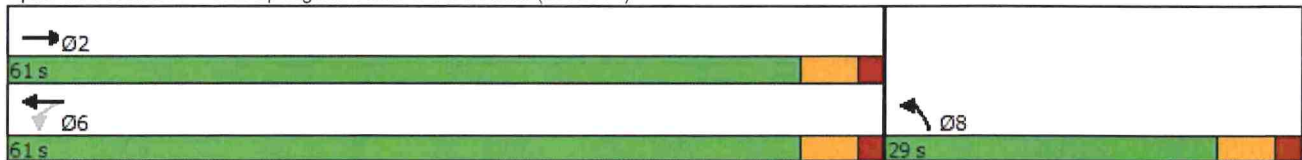


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0			0.0	0.0	
Total Delay	11.8			22.3	23.3	
Queue Length 50th (ft)	100			130	52	
Queue Length 95th (ft)	240			337	170	
Internal Link Dist (ft)	273			222	1068	
Turn Bay Length (ft)						
Base Capacity (vph)	1421			1099	707	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.39			0.51	0.36	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 58.6
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated

Splits and Phases: 1: E Springville Road & York Road (SR 0074)



2025 Projected Build Conditions w/Imp
Timing Plan: SAT Peak Hour

With Event Management "Flaggers"
1: E Springville Road & York Road (SR 0074)












Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	410	115	109	423	109	129
Future Volume (veh/h)	410	115	109	423	109	129
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1780	1794	1837	1823	1707	1693
Adj Flow Rate, veh/h	432	121	115	445	115	136
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	0	1	0	1
Cap, veh/h	737	206	189	628	167	197
Arrive On Green	0.55	0.53	0.53	0.55	0.24	0.22
Sat Flow, veh/h	1338	375	179	1141	695	822
Grp Volume(v), veh/h	0	553	560	0	252	0
Grp Sat Flow(s),veh/h/ln	0	1713	1319	0	1524	0
Q Serve(g_s), s	0.0	10.3	7.5	0.0	7.2	0.0
Cycle Q Clear(g_c), s	0.0	10.3	17.8	0.0	7.2	0.0
Prop In Lane		0.22	0.21		0.46	0.54
Lane Grp Cap(c), veh/h	0	943	790	0	365	0
V/C Ratio(X)	0.00	0.59	0.71	0.00	0.69	0.00
Avail Cap(c_a), veh/h	0	2009	1702	0	766	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	7.2	8.6	0.0	16.8	0.0
Incr Delay (d2), s/veh	0.0	0.6	1.2	0.0	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	3.5	4.1	0.0	4.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	7.8	9.8	0.0	19.1	0.0
LnGrp LOS	A	A	A	A	B	A
Approach Vol, veh/h	553			560	252	
Approach Delay, s/veh	7.8			9.8	19.1	
Approach LOS	A			A	B	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		31.3			31.3	16.4
Change Period (Y+Rc), s		6.0			6.0	6.0
Max Green Setting (Gmax), s		55.0			55.0	23.0
Max Q Clear Time (g_c+I1), s		12.3			19.8	9.7
Green Ext Time (p_c), s		5.0			5.5	0.7
Intersection Summary						
HCM 6th Ctrl Delay			10.7			
HCM 6th LOS			B			
Notes						
User approved volume balancing among the lanes for turning movement.						

Full Build-Out

2030 Base (No-Build) Conditions
 Timing Plan: AM Peak Hour

Full Build-Out
 1: E Springville Road & York Road (SR 0074)

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	293	28	26	522	79	67
Future Volume (vph)	293	28	26	522	79	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	8%	5%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	342	0	0	583	155	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↷	↶	↷
Traffic Vol, veh/h	293	28	26	522	79	67
Future Vol, veh/h	293	28	26	522	79	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	0	8	5	0	2
Mvmt Flow	312	30	28	555	84	71

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	342	0	938
Stage 1	-	-	-	-	327
Stage 2	-	-	-	-	611
Critical Hdwy	-	-	4.4	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	3.1	-	3
Pot Cap-1 Maneuver	-	-	883	-	294
Stage 1	-	-	-	-	809
Stage 2	-	-	-	-	572
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	883	-	280
Mov Cap-2 Maneuver	-	-	-	-	280
Stage 1	-	-	-	-	809
Stage 2	-	-	-	-	546

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	20.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	392	-	-	883	-
HCM Lane V/C Ratio	0.396	-	-	0.031	-
HCM Control Delay (s)	20.1	-	-	9.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.9	-	-	0.1	-

2030 Base (No-Build) Conditions
 Timing Plan: AM Peak Hour

Full Build-Out
 2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	157	200	401	1	1	150
Future Volume (vph)	157	200	401	1	1	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	9%	6%	0%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	380	428	0	161	0
Sign Control		Free	Free		Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

2030 Base (No-Build) Conditions
 Timing Plan: AM Peak Hour

Full Build-Out
 2: York Road (SR 0074) & Shughart Road

Intersection

Int Delay, s/veh 3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	157	200	401	1	1	150
Future Vol, veh/h	157	200	401	1	1	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	9	6	0	0	5
Mvmt Flow	167	213	427	1	1	160

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	428	0	-	0	975 428
Stage 1	-	-	-	-	428 -
Stage 2	-	-	-	-	547 -
Critical Hdwy	4.3	-	-	-	7.2 6.65
Critical Hdwy Stg 1	-	-	-	-	6.2 -
Critical Hdwy Stg 2	-	-	-	-	6.2 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	856	-	-	-	249 630
Stage 1	-	-	-	-	683 -
Stage 2	-	-	-	-	582 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	856	-	-	-	194 630
Mov Cap-2 Maneuver	-	-	-	-	194 -
Stage 1	-	-	-	-	532 -
Stage 2	-	-	-	-	582 -

Approach













	EB	WB	SB
HCM Control Delay, s	4.5	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	856	-	-	-	621
HCM Lane V/C Ratio	0.195	-	-	-	0.259
HCM Control Delay (s)	10.2	0	-	-	12.8
HCM Lane LOS	B	A	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1

2030 Base (No-Build) Conditions
 Timing Plan: AM Peak Hour

Full Build-Out
 3: S Ridge Road/S Middlesex & York Road (SR 0074)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	3	180	19	4	341	31	56	31	9	16	21	5
Future Volume (vph)	3	180	19	4	341	31	56	31	9	16	21	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%			3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		2637			680			298			687	
Travel Time (s)		36.0			9.3			5.8			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	11%	0%	0%	5%	0%	0%	15%	100%	0%	8%	20%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	222	0	0	413	0	0	106	0	0	46	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

Intersection

Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	180	19	4	341	31	56	31	9	16	21	5
Future Vol, veh/h	3	180	19	4	341	31	56	31	9	16	21	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	11	0	0	5	0	0	15	100	0	8	20
Mvmt Flow	3	198	21	4	375	34	62	34	10	18	23	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	409	0	0	219	0	0	629	632	209	637	625	392
Stage 1	-	-	-	-	-	-	215	215	-	400	400	-
Stage 2	-	-	-	-	-	-	414	417	-	237	225	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.9	7.45	7.6	7.7	7.18	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.9	6.45	-	6.7	6.18	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.9	6.45	-	6.7	6.18	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.135	3.2	3	4.072	3.2
Pot Cap-1 Maneuver	869	-	-	1011	-	-	388	331	793	396	355	642
Stage 1	-	-	-	-	-	-	868	668	-	670	553	-
Stage 2	-	-	-	-	-	-	642	519	-	851	681	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	869	-	-	1011	-	-	363	328	793	358	352	642
Mov Cap-2 Maneuver	-	-	-	-	-	-	363	328	-	358	352	-
Stage 1	-	-	-	-	-	-	865	665	-	667	550	-
Stage 2	-	-	-	-	-	-	607	516	-	794	678	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.1			18.6			15.9		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	369	869	-	-	1011	-	-	375
HCM Lane V/C Ratio	0.286	0.004	-	-	0.004	-	-	0.123
HCM Control Delay (s)	18.6	9.2	0	-	8.6	0	-	15.9
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-	-	0.4

2030 Base (No-Build) Conditions
 Timing Plan: PM Peak Hour

Full Build-Out
 1: E Springville Road & York Road (SR 0074)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Volume (vph)	629	112	53	464	56	48
Future Volume (vph)	629	112	53	464	56	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	4%	6%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	788	0	0	550	111	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2030 Base (No-Build) Conditions
 Timing Plan: PM Peak Hour

Full Build-Out
 1: E Springville Road & York Road (SR 0074)

Intersection

Int Delay, s/veh 3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖		↘	
Traffic Vol, veh/h	629	112	53	464	56	48
Future Vol, veh/h	629	112	53	464	56	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	3	4	6	4	4	4
Mvmt Flow	669	119	56	494	60	51

Major/Minor

	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	788	0	1335
Stage 1	-	-	-	-	729
Stage 2	-	-	-	-	606
Critical Hdwy	-	-	4.4	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	3.1	-	3
Pot Cap-1 Maneuver	-	-	611	-	157
Stage 1	-	-	-	-	491
Stage 2	-	-	-	-	572
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	611	-	137
Mov Cap-2 Maneuver	-	-	-	-	137
Stage 1	-	-	-	-	491
Stage 2	-	-	-	-	500

Approach

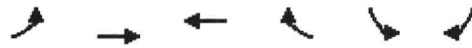
	EB	WB	NB
HCM Control Delay, s	0	1.2	43.6
HCM LOS	E		

Minor Lane/Major Mvmt

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	199	-	-	611	-
HCM Lane V/C Ratio	0.556	-	-	0.092	-
HCM Control Delay (s)	43.6	-	-	11.5	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	3	-	-	0.3	-

2030 Base (No-Build) Conditions
Timing Plan: PM Peak Hour

Full Build-Out
2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	204	461	342	0	0	181
Future Volume (vph)	204	461	342	0	0	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	3%	7%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	707	364	0	193	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2030 Base (No-Build) Conditions
Timing Plan: PM Peak Hour

Full Build-Out
2: York Road (SR 0074) & Shughart Road

Intersection

Int Delay, s/veh 3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	204	461	342	0	0	181
Future Vol, veh/h	204	461	342	0	0	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	3	7	0	0	2
Mvmt Flow	217	490	364	0	0	193













Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	364	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3	-	-
Pot Cap-1 Maneuver	901	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	901	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	901	-	-	-	693
HCM Lane V/C Ratio	0.241	-	-	-	0.278
HCM Control Delay (s)	10.3	0	-	-	12.2
HCM Lane LOS	B	A	-	-	B
HCM 95th %tile Q(veh)	0.9	-	-	-	1.1

2030 Base (No-Build) Conditions
Timing Plan: PM Peak Hour

Full Build-Out
3: S Ridge Road/S Middlesex & York Road (SR 0074)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	4	392	62	11	291	16	36	30	6	27	48	8
Future Volume (vph)	4	392	62	11	291	16	36	30	6	27	48	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%			3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		2637			680			298			687	
Travel Time (s)		36.0			9.3			5.8			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	0%	0%	6%	13%	0%	6%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	482	0	0	335	0	0	76	0	0	87	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

2030 Base (No-Build) Conditions
Timing Plan: PM Peak Hour

Full Build-Out
3: S Ridge Road/S Middlesex & York Road (SR 0074)

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	392	62	11	291	16	36	30	6	27	48	8
Future Vol, veh/h	4	392	62	11	291	16	36	30	6	27	48	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	4	0	0	6	13	0	6	0	0	0	0
Mvmt Flow	4	413	65	12	306	17	38	32	6	28	51	8

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	323	0	0	478	0	0	822	801	446	812	825	315
Stage 1	-	-	-	-	-	-	454	454	-	339	339	-
Stage 2	-	-	-	-	-	-	368	347	-	473	486	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.9	7.36	6.6	7.7	7.1	6.5
Critical Hdwy Stg 1	-	-	-	-	-	-	6.9	6.36	-	6.7	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.9	6.36	-	6.7	6.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.054	3.1	3	4	3.1
Pot Cap-1 Maneuver	931	-	-	822	-	-	273	262	617	291	270	751
Stage 1	-	-	-	-	-	-	604	509	-	733	608	-
Stage 2	-	-	-	-	-	-	688	581	-	602	511	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	931	-	-	822	-	-	226	256	617	256	264	751
Mov Cap-2 Maneuver	-	-	-	-	-	-	226	256	-	256	264	-
Stage 1	-	-	-	-	-	-	600	506	-	729	597	-
Stage 2	-	-	-	-	-	-	612	571	-	555	508	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	25.3	23.7
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	252	931	-	-	822	-	-	279
HCM Lane V/C Ratio	0.301	0.005	-	-	0.014	-	-	0.313
HCM Control Delay (s)	25.3	8.9	0	-	9.4	0	-	23.7
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-	-	1.3

2030 Base (No-Build) Conditions
 Timing Plan: SAT Peak Hour

Full Build-Out
 1: E Springville Road & York Road (SR 0074)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	423	69	56	437	60	73
Future Volume (vph)	423	69	56	437	60	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	518	0	0	519	140	0
Sign Control	Free			Free	Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

2030 Base (No-Build) Conditions
 Timing Plan: SAT Peak Hour

Full Build-Out
 1: E Springville Road & York Road (SR 0074)

Intersection

Int Delay, s/veh 3.2

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↶			↷	↶	↷
Traffic Vol, veh/h	423	69	56	437	60	73
Future Vol, veh/h	423	69	56	437	60	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	0	0	1	0	1
Mvmt Flow	445	73	59	460	63	77

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	518	0	1060	482
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	578	-
Critical Hdwy	-	-	4.3	-	6.8	6.41
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	796	-	244	601
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	596	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	796	-	220	601
Mov Cap-2 Maneuver	-	-	-	-	220	-
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	536	-

Approach EB WB NB

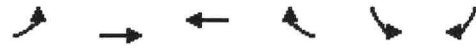
HCM Control Delay, s 0 1.1 23.1
 HCM LOS C

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	337	-	-	796	-
HCM Lane V/C Ratio	0.415	-	-	0.074	-
HCM Control Delay (s)	23.1	-	-	9.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2	-	-	0.2	-

2030 Base (No-Build) Conditions
 Timing Plan: SAT Peak Hour

Full Build-Out
 2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	116	413	362	1	1	107
Future Volume (vph)	116	413	362	1	1	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	3%	0%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	569	390	0	116	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2030 Base (No-Build) Conditions
Timing Plan: SAT Peak Hour

Full Build-Out
2: York Road (SR 0074) & Shughart Road

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	116	413	362	1	1	107
Future Vol, veh/h	116	413	362	1	1	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	1	3	0	0	3
Mvmt Flow	125	444	389	1	1	115

















Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	390	0	-	0	1084 390
Stage 1	-	-	-	-	390 -
Stage 2	-	-	-	-	694 -
Critical Hdwy	4.3	-	-	-	7.2 6.63
Critical Hdwy Stg 1	-	-	-	-	6.2 -
Critical Hdwy Stg 2	-	-	-	-	6.2 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	882	-	-	-	209 667
Stage 1	-	-	-	-	718 -
Stage 2	-	-	-	-	478 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	882	-	-	-	170 667
Mov Cap-2 Maneuver	-	-	-	-	170 -
Stage 1	-	-	-	-	583 -
Stage 2	-	-	-	-	478 -

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	882	-	-	-	649
HCM Lane V/C Ratio	0.141	-	-	-	0.179
HCM Control Delay (s)	9.8	0	-	-	11.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.6

2030 Base (No-Build) Conditions
Timing Plan: SAT Peak Hour

Full Build-Out
3: S Ridge Road/S Middlesex & York Road (SR 0074)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	348	66	12	299	11	53	28	11	14	30	7
Future Volume (vph)	6	348	66	12	299	11	53	28	11	14	30	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%			3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		2637			680			298			687	
Travel Time (s)		36.0			9.3			5.8			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	4%	6%	0%	0%	0%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	451	0	0	347	0	0	99	0	0	55	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	348	66	12	299	11	53	28	11	14	30	7
Future Vol, veh/h	6	348	66	12	299	11	53	28	11	14	30	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	1	0	0	2	0	4	6	0	0	0	14
Mvmt Flow	6	374	71	13	322	12	57	30	12	15	32	8

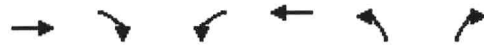
Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	334	0	0	445
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.3	-	-	4.3
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3	-	-	3
Pot Cap-1 Maneuver	922	-	-	844
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	922	-	-	844
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	25.4	20.2
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	274	922	-	-	844	-	-	291
HCM Lane V/C Ratio	0.361	0.007	-	-	0.015	-	-	0.188
HCM Control Delay (s)	25.4	8.9	0	-	9.3	0	-	20.2
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.6	0	-	-	0	-	-	0.7

2030 Projected Build Conditions
 Timing Plan: AM Peak Hour

Full Build-Out
 1: E Springville Road & York Road (SR 0074)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	293	30	28	522	80	69
Future Volume (vph)	293	30	28	522	80	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	8%	5%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	344	0	0	585	158	0
Sign Control	Free			Free	Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

2030 Projected Build Conditions
Timing Plan: AM Peak Hour

Full Build-Out
1: E Springville Road & York Road (SR 0074)

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷		↶	
Traffic Vol, veh/h	293	30	28	522	80	69
Future Vol, veh/h	293	30	28	522	80	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	0	8	5	0	2
Mvmt Flow	312	32	30	555	85	73

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	344	0	943
Stage 1	-	-	-	-	328
Stage 2	-	-	-	-	615
Critical Hdwy	-	-	4.4	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	3.1	-	3
Pot Cap-1 Maneuver	-	-	881	-	292
Stage 1	-	-	-	-	809
Stage 2	-	-	-	-	569
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	881	-	278
Mov Cap-2 Maneuver	-	-	-	-	278
Stage 1	-	-	-	-	809
Stage 2	-	-	-	-	541

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	20.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	391	-	-	881	-
HCM Lane V/C Ratio	0.405	-	-	0.034	-
HCM Control Delay (s)	20.3	-	-	9.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.9	-	-	0.1	-

2030 Projected Build Conditions
 Timing Plan: AM Peak Hour

Full Build-Out
 2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	158	201	402	1	1	151
Future Volume (vph)	158	201	402	1	1	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	9%	6%	0%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	382	429	0	162	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2030 Projected Build Conditions
Timing Plan: AM Peak Hour

Full Build-Out
2: York Road (SR 0074) & Shughart Road

Intersection

Int Delay, s/veh 3.9

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	158	201	402	1	1	151
Future Vol, veh/h	158	201	402	1	1	151
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	9	6	0	0	5
Mvmt Flow	168	214	428	1	1	161

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	429	0	-	0	979	429
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	550	-
Critical Hdwy	4.3	-	-	-	7.2	6.65
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	855	-	-	-	248	629
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	580	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	855	-	-	-	193	629
Mov Cap-2 Maneuver	-	-	-	-	193	-
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	580	-

Approach EB WB SB













HCM Control Delay, s 4.5 0 12.8
HCM LOS B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	855	-	-	-	620
HCM Lane V/C Ratio	0.197	-	-	-	0.261
HCM Control Delay (s)	10.2	0	-	-	12.8
HCM Lane LOS	B	A	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1

2030 Projected Build Conditions
 Timing Plan: AM Peak Hour

Full Build-Out
 3: S Ridge Road/S Middlesex & York Road (SR 0074)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	3	181	19	4	342	31	56	31	9	16	21	5
Future Volume (vph)	3	181	19	4	342	31	56	31	9	16	21	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%				3%
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35				35
Link Distance (ft)		2637			680			298				687
Travel Time (s)		36.0			9.3			5.8				13.4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	11%	0%	0%	5%	0%	0%	15%	100%	0%	8%	20%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	223	0	0	414	0	0	106	0	0	46	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

2030 Projected Build Conditions
 Timing Plan: AM Peak Hour

Full Build-Out
 3: S Ridge Road/S Middlesex & York Road (SR 0074)

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	181	19	4	342	31	56	31	9	16	21	5
Future Vol, veh/h	3	181	19	4	342	31	56	31	9	16	21	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	11	0	0	5	0	0	15	100	0	8	20
Mvmt Flow	3	199	21	4	376	34	62	34	10	18	23	5










Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	410	0	0	220	0	0	631	634	210	639	627	393
Stage 1	-	-	-	-	-	-	216	216	-	401	401	-
Stage 2	-	-	-	-	-	-	415	418	-	238	226	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.9	7.45	7.6	7.7	7.18	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.9	6.45	-	6.7	6.18	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.9	6.45	-	6.7	6.18	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.135	3.2	3	4.072	3.2
Pot Cap-1 Maneuver	868	-	-	1010	-	-	386	330	792	395	353	641
Stage 1	-	-	-	-	-	-	867	668	-	669	552	-
Stage 2	-	-	-	-	-	-	641	518	-	850	680	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	868	-	-	1010	-	-	361	327	792	357	350	641
Mov Cap-2 Maneuver	-	-	-	-	-	-	361	327	-	357	350	-
Stage 1	-	-	-	-	-	-	864	665	-	666	549	-
Stage 2	-	-	-	-	-	-	606	515	-	793	677	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	18.7	16
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	367	868	-	-	1010	-	-	373
HCM Lane V/C Ratio	0.287	0.004	-	-	0.004	-	-	0.124
HCM Control Delay (s)	18.7	9.2	0	-	8.6	0	-	16
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-	-	0.4

2030 Projected Build Conditions
 Timing Plan: AM Peak Hour

Full Build-Out
 4: E Springville Road & Proposed Driveway

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	3	145	1	4	55
Future Volume (vph)	1	3	145	1	4	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	10	10
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Link Speed (mph)	25		35			35
Link Distance (ft)	500		353			767
Travel Time (s)	13.6		6.9			14.9
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	1%	2%	2%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	0	162	0	0	65
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	3	145	1	4	55
Future Vol, veh/h	1	3	145	1	4	55
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	1	2	2	6
Mvmt Flow	1	3	161	1	4	61

Major/Minor

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	231	162	0
Stage 1	162	-	-
Stage 2	69	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3	3.1	-
Pot Cap-1 Maneuver	874	940	-
Stage 1	1005	-	-
Stage 2	1113	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	871	940	-
Mov Cap-2 Maneuver	871	-	-
Stage 1	1005	-	-
Stage 2	1109	-	-

Approach

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	922	1057
HCM Lane V/C Ratio	-	-	0.005	0.004
HCM Control Delay (s)	-	-	8.9	8.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

2030 Projected Build Conditions
 Timing Plan: PM Peak Hour

Full Build-Out
 1: E Springville Road & York Road (SR 0074)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	629	156	103	464	78	74
Future Volume (vph)	629	156	103	464	78	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	4%	6%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	835	0	0	604	162	0
Sign Control	Free			Free	Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

Intersection

Int Delay, s/veh 16.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↷	↷	
Traffic Vol, veh/h	629	156	103	464	78	74
Future Vol, veh/h	629	156	103	464	78	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	3	4	6	4	4	4
Mvmt Flow	669	166	110	494	83	79

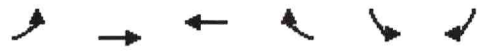
Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	835
Stage 1	-	-	752
Stage 2	-	-	714
Critical Hdwy	-	4.4	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	3.1	3
Pot Cap-1 Maneuver	-	587	128
Stage 1	-	-	477
Stage 2	-	-	500
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	587	95
Mov Cap-2 Maneuver	-	-	95
Stage 1	-	-	477
Stage 2	-	-	371

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	150.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	152	-	-	587	-
HCM Lane V/C Ratio	1.064	-	-	0.187	-
HCM Control Delay (s)	150.5	-	-	12.5	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	8.4	-	-	0.7	-

2030 Projected Build Conditions
 Timing Plan: PM Peak Hour

Full Build-Out
 2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	214	477	373	0	0	200
Future Volume (vph)	214	477	373	0	0	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	3%	7%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	735	397	0	213	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2030 Projected Build Conditions
 Timing Plan: PM Peak Hour

Full Build-Out
 2: York Road (SR 0074) & Shughart Road

Intersection

Int Delay, s/veh 3.9

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	214	477	373	0	0	200
Future Vol, veh/h	214	477	373	0	0	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	3	7	0	0	2
Mvmt Flow	228	507	397	0	0	213

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	397	0	-	0	1360	397
Stage 1	-	-	-	-	397	-
Stage 2	-	-	-	-	963	-
Critical Hdwy	4.3	-	-	-	7.2	6.62
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	877	-	-	-	132	661
Stage 1	-	-	-	-	711	-
Stage 2	-	-	-	-	332	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	877	-	-	-	84	661
Mov Cap-2 Maneuver	-	-	-	-	84	-
Stage 1	-	-	-	-	454	-
Stage 2	-	-	-	-	332	-

Approach EB WB SB

















HCM Control Delay, s	3.3	0	13
HCM LOS			B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	877	-	-	-	661
HCM Lane V/C Ratio	0.26	-	-	-	0.322
HCM Control Delay (s)	10.5	0	-	-	13
HCM Lane LOS	B	A	-	-	B
HCM 95th %tile Q(veh)	1	-	-	-	1.4

2030 Projected Build Conditions
Timing Plan: PM Peak Hour

Full Build-Out
3: S Ridge Road/S Middlesex & York Road (SR 0074)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	408	62	11	322	16	36	30	6	27	48	8
Future Volume (vph)	4	408	62	11	322	16	36	30	6	27	48	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%			3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		2637			680			298			687	
Travel Time (s)		36.0			9.3			5.8			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	0%	0%	6%	13%	0%	6%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	498	0	0	368	0	0	76	0	0	87	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

2030 Projected Build Conditions
Timing Plan: PM Peak Hour

Full Build-Out
3: S Ridge Road/S Middlesex & York Road (SR 0074)

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	408	62	11	322	16	36	30	6	27	48	8
Future Vol, veh/h	4	408	62	11	322	16	36	30	6	27	48	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	4	0	0	6	13	0	6	0	0	0	0
Mvmt Flow	4	429	65	12	339	17	38	32	6	28	51	8










Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	356	0	0	494
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.3	-	-	4.3
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3	-	-	3
Pot Cap-1 Maneuver	906	-	-	811
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	906	-	-	811
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	28.2	26.1
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	230	906	-	-	811	-	-	257
HCM Lane V/C Ratio	0.33	0.005	-	-	0.014	-	-	0.34
HCM Control Delay (s)	28.2	9	0	-	9.5	0	-	26.1
HCM Lane LOS	D	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	1.4

2030 Projected Build Conditions
 Timing Plan: PM Peak Hour

Full Build-Out
 4: E Springville Road & Proposed Driveway

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	48	104	12	94	165
Future Volume (vph)	6	48	104	12	94	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	10	10
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Link Speed (mph)	25		35			35
Link Distance (ft)	500		353			767
Travel Time (s)	13.6		6.9			14.9
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	4%	2%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	129	0	0	287
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	6	48	104	12	94	165
Future Vol, veh/h	6	48	104	12	94	165
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	4	2	2	5
Mvmt Flow	7	53	116	13	104	183










Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	514	123	0
Stage 1	123	-	-
Stage 2	391	-	-
Critical Hdwy	6.42	6.22	4.3
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3	3.1	3
Pot Cap-1 Maneuver	590	990	1085
Stage 1	1049	-	-
Stage 2	780	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	527	990	1085
Mov Cap-2 Maneuver	527	-	-
Stage 1	1049	-	-
Stage 2	697	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	3.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	902	1085
HCM Lane V/C Ratio	-	-	0.067	0.096
HCM Control Delay (s)	-	-	9.3	8.7
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.3

2030 Projected Build Conditions
Timing Plan: SAT Peak Hour

Full Build-Out
1: E Springville Road & York Road (SR 0074)

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	423	146	146	437	143	171
Future Volume (vph)	423	146	146	437	143	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	767	
Travel Time (s)	4.8			4.1	14.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	599	0	0	614	331	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2030 Projected Build Conditions
Timing Plan: SAT Peak Hour

Full Build-Out
1: E Springville Road & York Road (SR 0074)

Intersection

Int Delay, s/veh	66.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↘	
Traffic Vol, veh/h	423	146	146	437	143	171
Future Vol, veh/h	423	146	146	437	143	171
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	2	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	0	0	1	0	1
Mvmt Flow	445	154	154	460	151	180

Major/Minor

	Major1		Major2		Minor1	
Conflicting Flow All	0	0	599	0	1290	522
Stage 1	-	-	-	-	522	-
Stage 2	-	-	-	-	768	-
Critical Hdwy	-	-	4.3	-	6.8	6.41
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	745	-	171	569
Stage 1	-	-	-	-	638	-
Stage 2	-	-	-	-	471	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	745	-	~ 123	569
Mov Cap-2 Maneuver	-	-	-	-	~ 123	-
Stage 1	-	-	-	-	638	-
Stage 2	-	-	-	-	340	-

Approach

	EB	WB	NB
HCM Control Delay, s	0	2.8	\$ 304.5
HCM LOS			F

Minor Lane/Major Mvmt

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	215	-	-	745	-
HCM Lane V/C Ratio	1.537	-	-	0.206	-
HCM Control Delay (s)	\$ 304.5	-	-	11.1	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	20.5	-	-	0.8	-

Notes

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

2030 Projected Build Conditions
 Timing Plan: SAT Peak Hour

Full Build-Out
 2: York Road (SR 0074) & Shughart Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	153	474	418	1	1	141
Future Volume (vph)	153	474	418	1	1	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	9	9
Grade (%)		1%	-1%		4%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		50	50		35	
Link Distance (ft)		302	2637		857	
Travel Time (s)		4.1	36.0		16.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	3%	0%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	675	450	0	153	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2030 Projected Build Conditions
Timing Plan: SAT Peak Hour

Full Build-Out
2: York Road (SR 0074) & Shughart Road

Intersection

Int Delay, s/veh 2.9

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	153	474	418	1	1	141
Future Vol, veh/h	153	474	418	1	1	141
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	4	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	1	3	0	0	3
Mvmt Flow	165	510	449	1	1	152

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	450	0	-	0	1290	450
Stage 1	-	-	-	-	450	-
Stage 2	-	-	-	-	840	-
Critical Hdwy	4.3	-	-	-	7.2	6.63
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	841	-	-	-	148	612
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	393	-
Platoon blocked, %						
Mov Cap-1 Maneuver	841	-	-	-	107	612
Mov Cap-2 Maneuver	-	-	-	-	107	-
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	393	-

Approach EB WB SB

HCM Control Delay, s 2.5 0 13.2
HCM LOS B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	841	-	-	-	592
HCM Lane V/C Ratio	0.196	-	-	-	0.258
HCM Control Delay (s)	10.3	0	-	-	13.2
HCM Lane LOS	B	A	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1

2030 Projected Build Conditions
 Timing Plan: SAT Peak Hour

Full Build-Out
 3: S Ridge Road/S Middlesex & York Road (SR 0074)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	409	66	12	355	11	53	28	11	14	30	7
Future Volume (vph)	6	409	66	12	355	11	53	28	11	14	30	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	9	9	9	9	9	9
Grade (%)		-1%			1%			4%			3%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		50			50			35			35	
Link Distance (ft)		2637			680			298			687	
Travel Time (s)		36.0			9.3			5.8			13.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	4%	6%	0%	0%	0%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	517	0	0	407	0	0	99	0	0	55	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

2030 Projected Build Conditions
Timing Plan: SAT Peak Hour

Full Build-Out
3: S Ridge Road/S Middlesex & York Road (SR 0074)

Intersection

Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	409	66	12	355	11	53	28	11	14	30	7
Future Vol, veh/h	6	409	66	12	355	11	53	28	11	14	30	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	4	-	-	3	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	1	0	0	2	0	4	6	0	0	0	14
Mvmt Flow	6	440	71	13	382	12	57	30	12	15	32	8










Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	394	0	0	511
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.3	-	-	4.3
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3	-	-	3
Pot Cap-1 Maneuver	879	-	-	800
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	879	-	-	800
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	34.8	24.7
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	217	879	-	-	800	-	-	237
HCM Lane V/C Ratio	0.456	0.007	-	-	0.016	-	-	0.231
HCM Control Delay (s)	34.8	9.1	0	-	9.6	0	-	24.7
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.2	0	-	-	0	-	-	0.9

2030 Projected Build Conditions
 Timing Plan: SAT Peak Hour

Full Build-Out
 4: E Springville Road & Proposed Driveway

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	181	132	21	167	125
Future Volume (vph)	22	181	132	21	167	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	10	10
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Link Speed (mph)	25		35			35
Link Distance (ft)	500		353			767
Travel Time (s)	13.6		6.9			14.9
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	1%	2%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	225	0	170	0	0	325
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 5.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	22	181	132	21	167	125
Future Vol, veh/h	22	181	132	21	167	125
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	1	2	2	0
Mvmt Flow	24	201	147	23	186	139

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	670	159	0
Stage 1	159	-	-
Stage 2	511	-	-
Critical Hdwy	6.42	6.22	4.3
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3	3.1	3
Pot Cap-1 Maneuver	474	944	1050
Stage 1	1008	-	-
Stage 2	683	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	383	944	1050
Mov Cap-2 Maneuver	383	-	-
Stage 1	1008	-	-
Stage 2	552	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	5.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	815	1050
HCM Lane V/C Ratio	-	-	0.277	0.177
HCM Control Delay (s)	-	-	11.1	9.2
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.1	0.6

2030 Projected Build Conditions W Imp
Timing Plan: AM Peak Hour

Full Build-Out
1: E Springville Road & York Road (SR 0074)

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	
Traffic Volume (vph)	293	30	28	522	80	69
Future Volume (vph)	293	30	28	522	80	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	1148	
Travel Time (s)	4.8			4.1	22.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	8%	5%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	344	0	0	585	158	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	24.0		24.0	24.0	11.0	
Total Split (s)	59.0		59.0	59.0	21.0	
Total Split (%)	73.8%		73.8%	73.8%	26.3%	
Maximum Green (s)	53.0		53.0	53.0	15.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Minimum Gap (s)	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0		0.0	0.0	0.0	
Recall Mode	Min		Min	Min	None	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
v/c Ratio	0.34			0.58	0.43	
Control Delay	6.8			10.2	16.3	

2030 Projected Build Conditions W Imp
 Timing Plan: AM Peak Hour

Full Build-Out
 1: E Springville Road & York Road (SR 0074)

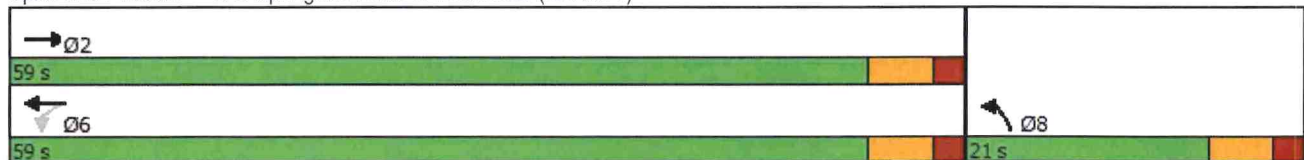


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0			0.0	0.0	
Total Delay	6.8			10.2	16.3	
Queue Length 50th (ft)	41			91	23	
Queue Length 95th (ft)	103			225	78	
Internal Link Dist (ft)	273			222	1068	
Turn Bay Length (ft)						
Base Capacity (vph)	1531			1528	563	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.22			0.38	0.28	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 45.6
 Natural Cycle: 40
 Control Type: Actuated-Uncoordinated

Splits and Phases: 1: E Springville Road & York Road (SR 0074)



2030 Projected Build Conditions W Imp
Timing Plan: AM Peak Hour

Full Build-Out
1: E Springville Road & York Road (SR 0074)



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	293	30	28	522	80	69
Future Volume (veh/h)	293	30	28	522	80	69
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1710	1794	1724	1766	1707	1680
Adj Flow Rate, veh/h	312	32	30	555	85	73
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	6	0	8	5	0	2
Cap, veh/h	783	80	139	871	141	121
Arrive On Green	0.51	0.48	0.48	0.51	0.17	0.14
Sat Flow, veh/h	1526	156	38	1697	822	706
Grp Volume(v), veh/h	0	344	585	0	159	0
Grp Sat Flow(s),veh/h/ln	0	1682	1735	0	1538	0
Q Serve(g_s), s	0.0	4.0	0.0	0.0	3.1	0.0
Cycle Q Clear(g_c), s	0.0	4.0	7.9	0.0	3.1	0.0
Prop In Lane		0.09	0.05		0.53	0.46
Lane Grp Cap(c), veh/h	0	864	956	0	263	0
V/C Ratio(X)	0.00	0.40	0.61	0.00	0.60	0.00
Avail Cap(c_a), veh/h	0	2866	2975	0	777	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	4.8	5.7	0.0	12.4	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.6	0.0	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.5	1.6	0.0	1.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	5.0	6.3	0.0	14.6	0.0
LnGrp LOS	A	A	A	A	B	A
Approach Vol, veh/h	344			585	159	
Approach Delay, s/veh	5.0			6.3	14.6	
Approach LOS	A			A	B	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		21.3			21.3	10.4
Change Period (Y+Rc), s		6.0			6.0	6.0
Max Green Setting (Gmax), s		53.0			53.0	15.0
Max Q Clear Time (g_c+I1), s		6.0			9.9	5.6
Green Ext Time (p_c), s		2.7			5.4	0.3
Intersection Summary						
HCM 6th Ctrl Delay			7.1			
HCM 6th LOS			A			
Notes						
User approved volume balancing among the lanes for turning movement.						

2030 Projected Build Conditions W Imp
Timing Plan: PM Peak Hour

Full Build-Out
1: E Springville Road & York Road (SR 0074)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	629	156	103	464	78	74
Future Volume (vph)	629	156	103	464	78	74
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	1148	
Travel Time (s)	4.8			4.1	22.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	4%	6%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	835	0	0	604	162	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	11.0		11.0	11.0	11.0	
Total Split (s)	63.0		63.0	63.0	17.0	
Total Split (%)	78.8%		78.8%	78.8%	21.3%	
Maximum Green (s)	57.0		57.0	57.0	11.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Minimum Gap (s)	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0		0.0	0.0	0.0	
Recall Mode	Min		Min	Min	None	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
v/c Ratio	0.78			0.85	0.60	
Control Delay	12.7			21.5	30.4	

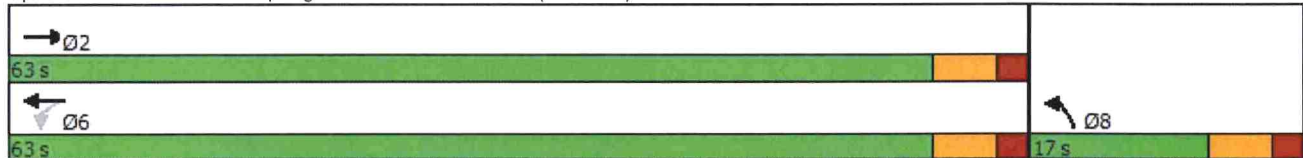


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0			0.0	0.0	
Total Delay	12.7			21.5	30.4	
Queue Length 50th (ft)	183			156	38	
Queue Length 95th (ft)	322			#428	#131	
Internal Link Dist (ft)	273			222	1068	
Turn Bay Length (ft)						
Base Capacity (vph)	1406			939	311	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.59			0.64	0.52	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 64.1
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: E Springville Road & York Road (SR 0074)



2030 Projected Build Conditions W Imp
Timing Plan: PM Peak Hour

Full Build-Out
1: E Springville Road & York Road (SR 0074)



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	629	156	103	464	78	74
Future Volume (veh/h)	629	156	103	464	78	74
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1752	1738	1752	1780	1653	1653
Adj Flow Rate, veh/h	669	166	110	494	83	79
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	4	6	4	4	4
Cap, veh/h	904	224	156	644	118	113
Arrive On Green	0.67	0.65	0.65	0.67	0.16	0.14
Sat Flow, veh/h	1355	336	121	966	756	720
Grp Volume(v), veh/h	0	835	604	0	163	0
Grp Sat Flow(s),veh/h/ln	0	1692	1087	0	1485	0
Q Serve(g_s), s	0.0	18.5	10.2	0.0	5.9	0.0
Cycle Q Clear(g_c), s	0.0	18.5	28.7	0.0	5.9	0.0
Prop In Lane		0.20	0.18		0.51	0.48
Lane Grp Cap(c), veh/h	0	1128	781	0	233	0
V/C Ratio(X)	0.00	0.74	0.77	0.00	0.70	0.00
Avail Cap(c_a), veh/h	0	1733	1257	0	315	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	6.3	7.1	0.0	22.9	0.0
Incr Delay (d2), s/veh	0.0	1.0	1.7	0.0	4.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	4.9	3.5	0.0	3.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	7.3	8.8	0.0	27.1	0.0
LnGrp LOS	A	A	A	A	C	A
Approach Vol, veh/h	835			604	163	
Approach Delay, s/veh	7.3			8.8	27.1	
Approach LOS	A			A	C	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		42.8			42.8	13.9
Change Period (Y+Rc), s		6.0			6.0	6.0
Max Green Setting (Gmax), s		57.0			57.0	11.0
Max Q Clear Time (g_c+I1), s		20.5			30.7	8.4
Green Ext Time (p_c), s		9.1			6.0	0.1
Intersection Summary						
HCM 6th Ctrl Delay			9.9			
HCM 6th LOS			A			
Notes						
User approved volume balancing among the lanes for turning movement.						

2030 Projected Build Conditions w/Imp
Timing Plan: SAT Peak Hour

Full Build-Out
1: E Springville Road & York Road (SR 0074)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	423	146	146	437	143	171
Future Volume (vph)	423	146	146	437	143	171
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	9	9
Grade (%)	1%			-1%	2%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	50			50	35	
Link Distance (ft)	353			302	1148	
Travel Time (s)	4.8			4.1	22.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	599	0	0	614	331	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	24.0		24.0	24.0	11.0	
Total Split (s)	57.0		57.0	57.0	23.0	
Total Split (%)	71.3%		71.3%	71.3%	28.8%	
Maximum Green (s)	51.0		51.0	51.0	17.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Minimum Gap (s)	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0		0.0	0.0	0.0	
Recall Mode	Min		Min	Min	None	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
v/c Ratio	0.60			0.93	0.83	
Control Delay	10.4			36.1	41.9	

2030 Projected Build Conditions w/Imp
 Timing Plan: SAT Peak Hour

Full Build-Out
 1: E Springville Road & York Road (SR 0074)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0			0.0	0.0	
Total Delay	10.4			36.1	41.9	
Queue Length 50th (ft)	133			219	125	
Queue Length 95th (ft)	218			#474	#279	
Internal Link Dist (ft)	273			222	1068	
Turn Bay Length (ft)						
Base Capacity (vph)	1208			803	428	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.50			0.76	0.77	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 71.2
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: E Springville Road & York Road (SR 0074)



2030 Projected Build Conditions w/Imp
Timing Plan: SAT Peak Hour

Full Build-Out
1: E Springville Road & York Road (SR 0074)



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	423	146	146	437	143	171
Future Volume (veh/h)	423	146	146	437	143	171
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1780	1794	1837	1823	1707	1693
Adj Flow Rate, veh/h	445	154	154	460	151	180
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	0	1	0	1
Cap, veh/h	776	269	200	554	172	205
Arrive On Green	0.61	0.60	0.60	0.61	0.25	0.23
Sat Flow, veh/h	1264	437	224	902	693	826
Grp Volume(v), veh/h	0	599	614	0	332	0
Grp Sat Flow(s),veh/h/ln	0	1702	1127	0	1523	0
Q Serve(g_s), s	0.0	15.3	22.3	0.0	15.2	0.0
Cycle Q Clear(g_c), s	0.0	15.3	37.6	0.0	15.2	0.0
Prop In Lane		0.26	0.25		0.45	0.54
Lane Grp Cap(c), veh/h	0	1045	739	0	378	0
V/C Ratio(X)	0.00	0.57	0.83	0.00	0.88	0.00
Avail Cap(c_a), veh/h	0	1219	880	0	378	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	8.4	14.4	0.0	26.5	0.0
Incr Delay (d2), s/veh	0.0	0.5	5.9	0.0	20.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	7.0	13.3	0.0	11.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	8.9	20.3	0.0	46.8	0.0
LnGrp LOS	A	A	C	A	D	A
Approach Vol, veh/h	599			614	332	
Approach Delay, s/veh	8.9			20.3	46.8	
Approach LOS	A			C	D	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		49.6			49.6	23.0
Change Period (Y+Rc), s		6.0			6.0	6.0
Max Green Setting (Gmax), s		51.0			51.0	17.0
Max Q Clear Time (g_c+I1), s		17.3			39.6	17.7
Green Ext Time (p_c), s		5.4			4.0	0.0

Intersection Summary

HCM 6th Ctrl Delay	21.6
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

APPENDIX F:
Auxiliary Turn Lane Warrant
Analysis

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="South Middleton Township"/> County: <input type="text" value="Cumberland County"/> PennDOT Engineering District: <input type="text" value="8"/>	Analysis Date: <input type="text" value="7/1/2022"/> Conducted By: <input type="text" value="DZ"/> Checked By: <input type="text" value="JW"/> Agency/Company Name: <input type="text" value="Traffic Planning and Design, Inc."/>
Intersection & Approach Description: <input type="text" value="E Springville Road & Proposed Site Driveway - Northbound Right"/>	
Analysis Period: <input type="text" value="2030 Projected Build"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	4	2.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Opposing Volume: <input type="text" value="N/A"/> Left Turn Volume: <input type="text" value="N/A"/>
	Through	-	55	6.0%	N/A	
	Right	Yes			N/A	
Opposing	Left	Yes			N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>
	Through	-	145	1.0%	N/A	
	Right	Yes	1	2.0%	N/A	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes			0	Advancing Volume: <input type="text" value="148"/> Right Turn Volume: <input type="text" value="2"/>
	Through	-	145	1.0%	146	
	Right	-	1	2.0%	2	

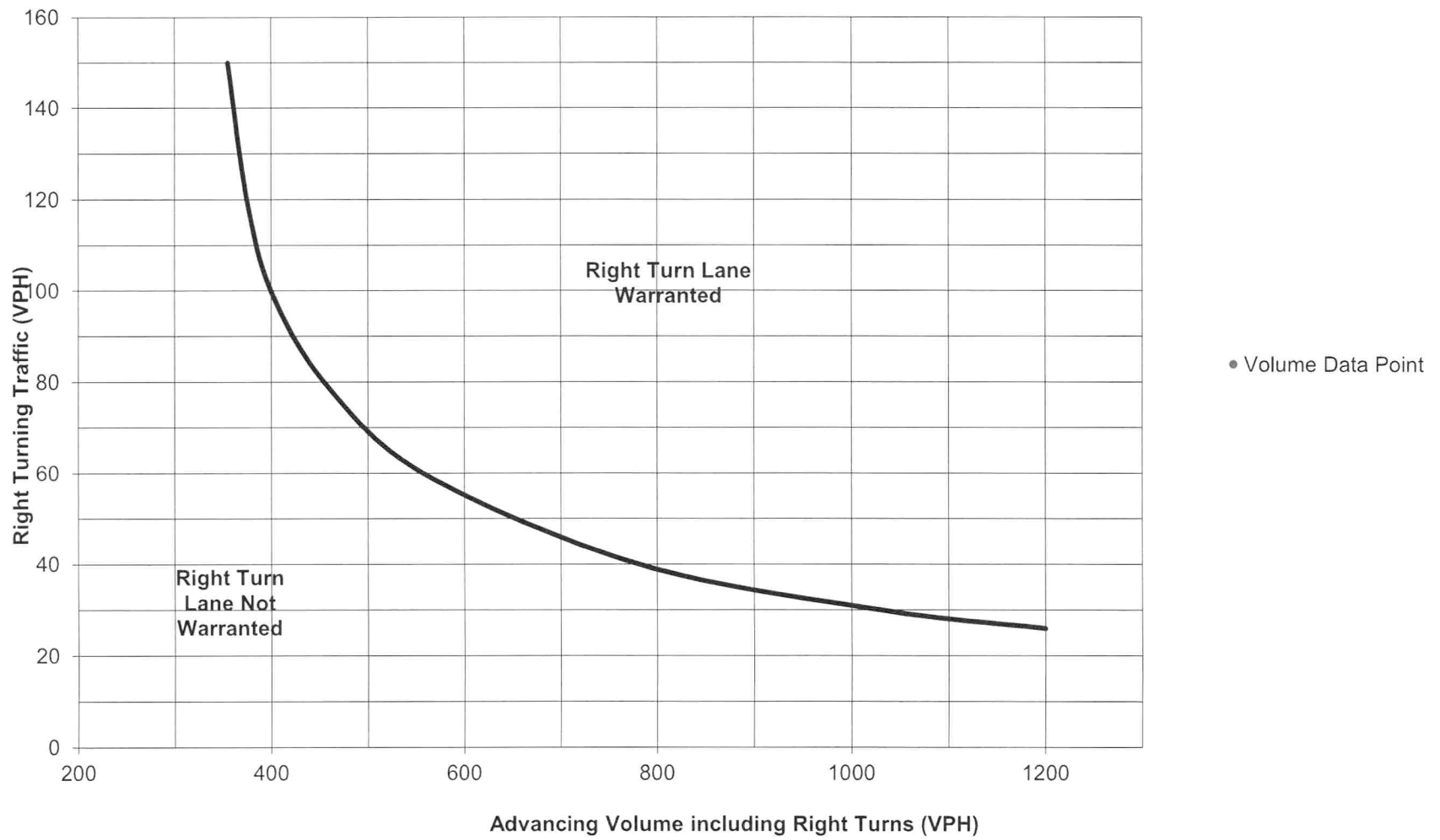
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/> Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="2"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; font-size: 8px;"> <thead> <tr> <th rowspan="3" style="width: 20%;">Type of Traffic Control</th> <th colspan="6" style="background-color: #f0f0f0;">Speed (MPH)</th> </tr> <tr> <th colspan="2" style="background-color: #f0f0f0;">25-35</th> <th colspan="2" style="background-color: #f0f0f0;">40-45</th> <th colspan="2" style="background-color: #f0f0f0;">50-60</th> </tr> <tr> <th colspan="6" style="background-color: #f0f0f0;">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Signalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> </tr> <tr> <td style="text-align: center;">Unsignalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">C</td> <td style="text-align: center;">B</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B</td> </tr> </tbody> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																								
	25-35		40-45		50-60																																				
	Turn Demand Volume																																								
	High	Low	High	Low	High	Low																																			
Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Right Turn Lane Storage Length, Condition A: <input type="text" value="N/A"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Right Turn Lane Storage Length: <input type="text" value="N/A"/> Feet																																									
Additional Findings: <input type="text" value="N/A"/>																																									
Additional Comments / Justifications: <input style="width: 100%; height: 40px;" type="text"/>																																									

Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="South Middleton Township"/>	Analysis Date: <input type="text" value="7/1/2022"/>
County: <input type="text" value="Cumberland County"/>	Conducted By: <input type="text" value="DZ"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text" value="JW"/>
	Agency/Company Name: <input type="text" value="Traffic Planning and Design, Inc."/>
Intersection & Approach Description: <input type="text" value="E Springville Road & Proposed Site Driveway - Southbound Left"/>	
Analysis Period: <input type="text" value="2030 Projected Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="35"/>	Type of Analysis
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	4	2.0%	5
	Through	-	55	6.0%	57
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	145	1.0%	146
	Right	Yes	1	2.0%	2
Advancing Volume: <input type="text" value="62"/>					
Opposing Volume: <input type="text" value="148"/>					
Left Turn Volume: <input type="text" value="5"/>					
% Left Turns in Advancing Volume: <input type="text" value="8.06%"/>					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-	145	1.0%	N/A
	Right	-	1	2.0%	N/A
Advancing Volume: <input type="text" value="N/A"/>					
Right Turn Volume: <input type="text" value="N/A"/>					

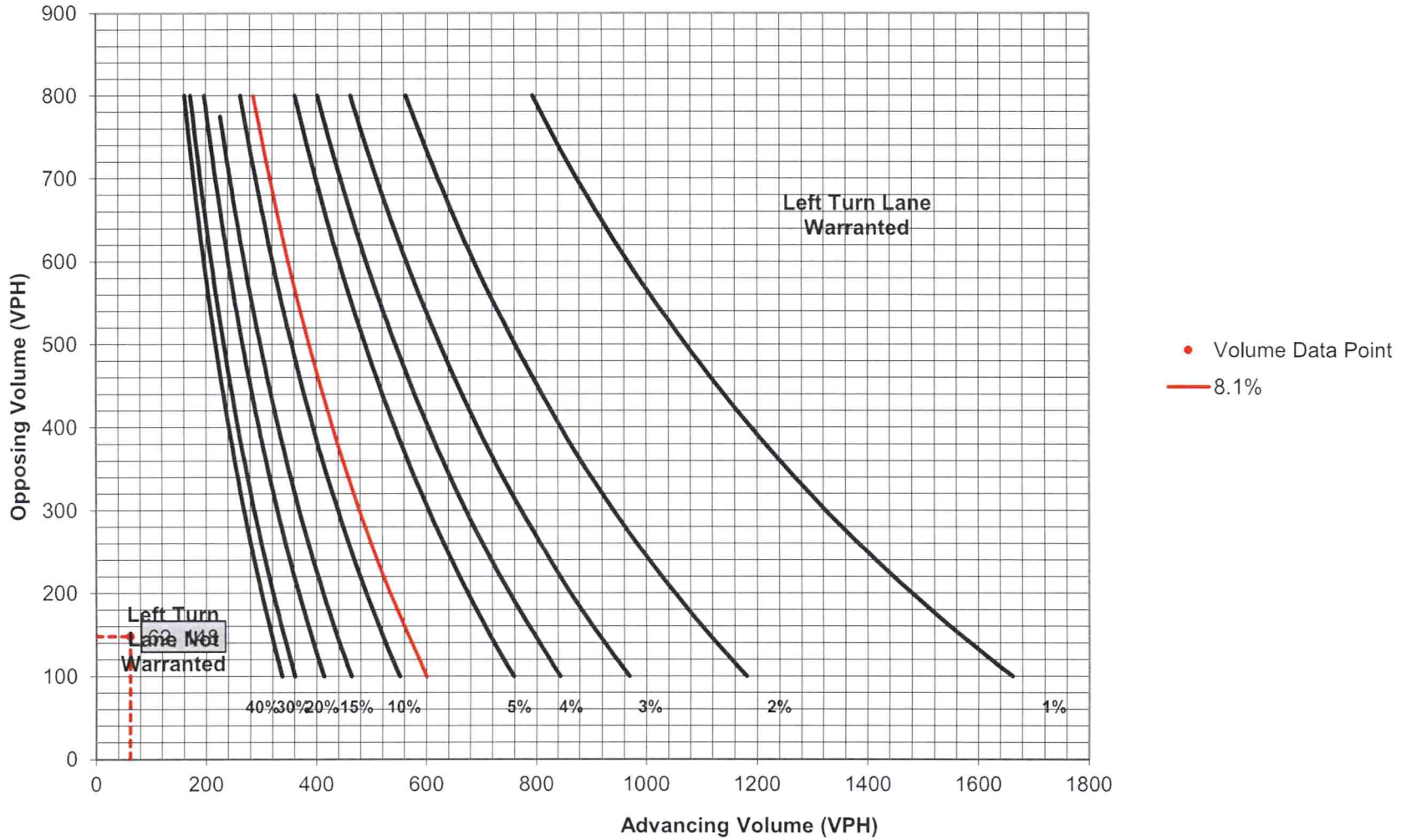
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="No"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>		
Design Hour Volume of Turning Lane: <input type="text" value="5"/>			
Cycles Per Hour (Assumed): <input type="text" value="60"/>			
Cycles Per Hour (If Known): <input type="text" value=""/>			
PennDOT Publication 46, Exhibit 11-6			
Speed (MPH)			
Type of Traffic Control	25-35	40-45	50-60
	Turn Demand Volume		
	High	Low	High
Signalized	A	A	B or C
Unsignalized	A	A	C
Left Turn Lane Storage Length, Condition A: <input type="text" value="N/A"/>		Feet	
Condition B: <input type="text" value="N/A"/>		Feet	
Condition C: <input type="text" value="N/A"/>		Feet	
Required Left Turn Lane Storage Length: <input type="text" value="N/A"/>		Feet	
Additional Findings: <input type="text" value="N/A"/>			
Additional Comments / Justifications:			

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="South Middleton Township"/> County: <input type="text" value="Cumberland County"/> PennDOT Engineering District: <input type="text" value="8"/>	Analysis Date: <input type="text" value="7/1/2022"/> Conducted By: <input type="text" value="DZ"/> Checked By: <input type="text" value="JW"/> Agency/Company Name: <input type="text" value="Traffic Planning and Design, Inc."/>
Intersection & Approach Description: <input type="text" value="E Springville Road & Proposed Site Driveway - Northbound Right"/>	
Analysis Period: <input type="text" value="2030 Projected Build"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Type of Analysis: Type of Analysis Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	94	2.0%	N/A
	Through	-	165	5.0%	N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-	104	4.0%	N/A
	Right	Yes	12	2.0%	N/A

Advancing Volume:	<input type="text" value="N/A"/>
Opposing Volume:	<input type="text" value="N/A"/>
Left Turn Volume:	<input type="text" value="N/A"/>
% Left Turns in Advancing Volume:	<input type="text" value="N/A"/>

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	104	4.0%	107
	Right	-	12	2.0%	13

Advancing Volume:	<input type="text" value="120"/>
Right Turn Volume:	<input type="text" value="13"/>

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/> Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="13"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------

PennDOT Publication 46, Exhibit 11-6

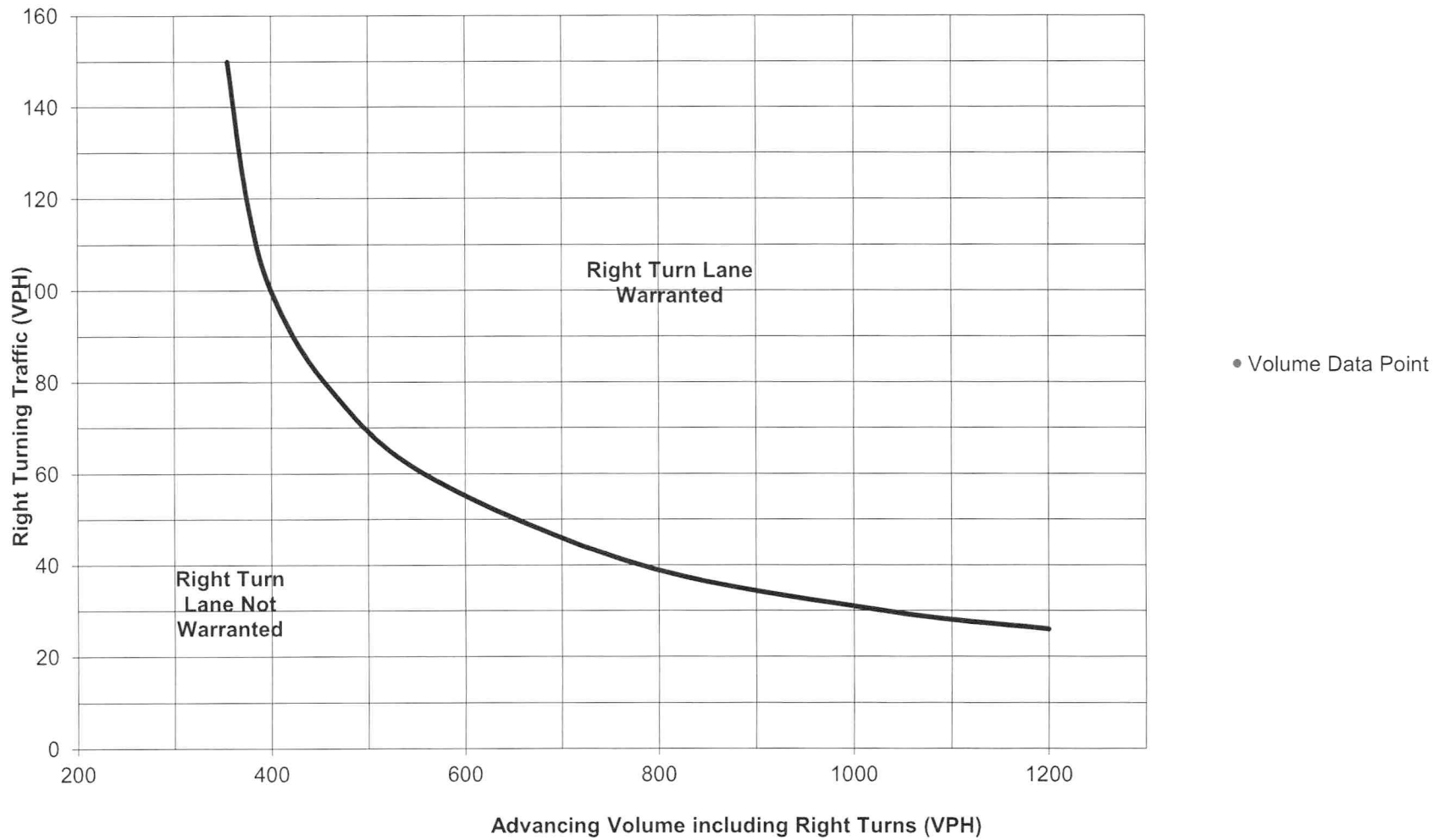
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="South Middleton Township"/>	Analysis Date: <input type="text" value="7/1/2022"/>
County: <input type="text" value="Cumberland County"/>	Conducted By: <input type="text" value="DZ"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text" value="JW"/>
	Agency/Company Name: <input type="text" value="Traffic Planning and Design, Inc."/>
Intersection & Approach Description: <input type="text" value="E Springville Road & Proposed Site Driveway - Southbound Left"/>	
Analysis Period: <input type="text" value="2030 Projected Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="35"/>	Type of Analysis
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	94	2.0%	95
	Through	-	165	5.0%	170
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	104	4.0%	107
	Right	Yes	12	2.0%	13

Advancing Volume:	<input type="text" value="265"/>
Opposing Volume:	<input type="text" value="120"/>
Left Turn Volume:	<input type="text" value="95"/>
% Left Turns in Advancing Volume: <input type="text" value="35.85%"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-	104	4.0%	N/A
	Right	-	12	2.0%	N/A

Advancing Volume:	<input type="text" value="N/A"/>
Right Turn Volume:	<input type="text" value="N/A"/>

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="No"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
Design Hour Volume of Turning Lane: <input type="text" value="95"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	

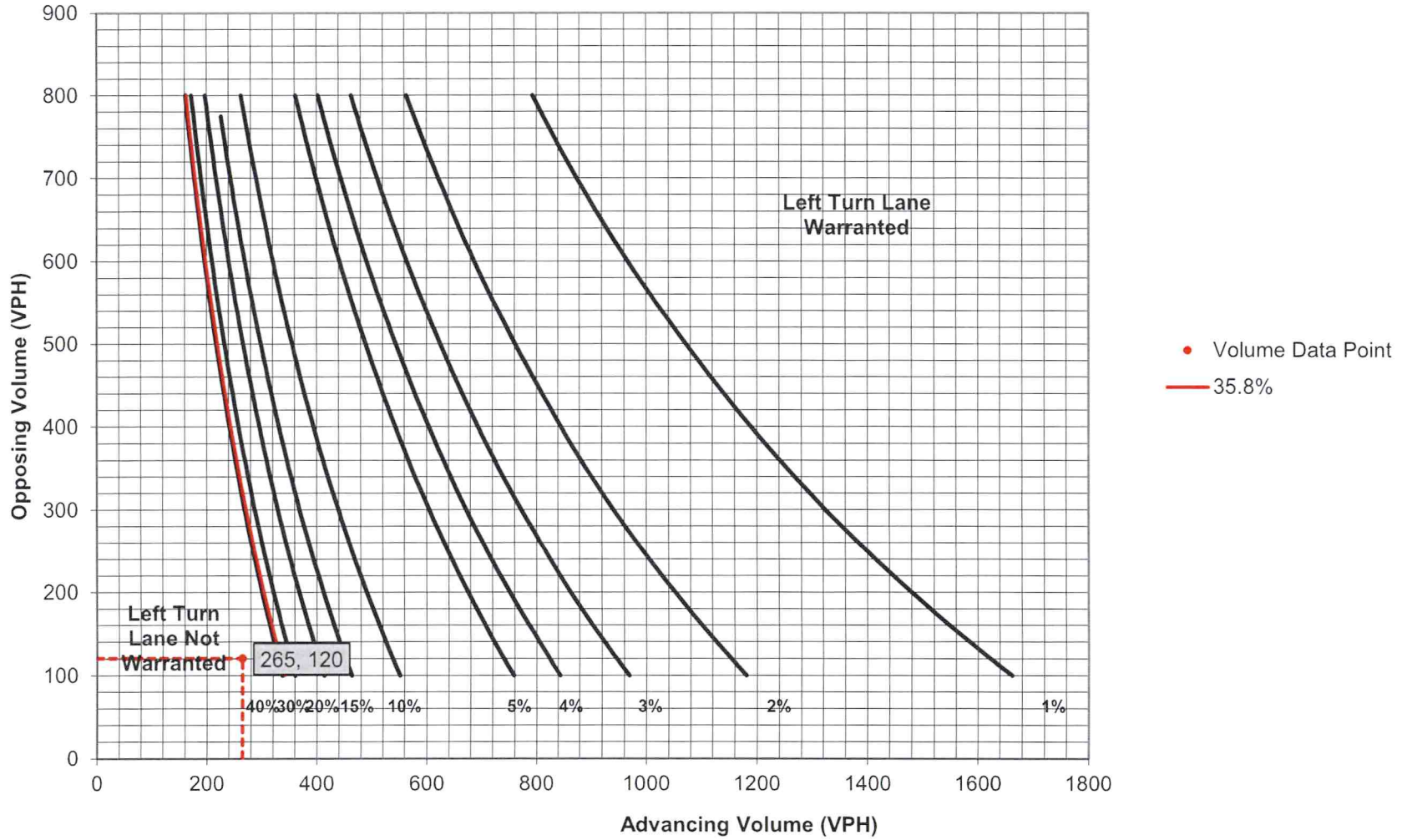
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="South Middleton Township"/>	Analysis Date: <input type="text" value="7/1/2022"/>
County: <input type="text" value="Cumberland County"/>	Conducted By: <input type="text" value="DZ"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text" value="JW"/>
	Agency/Company Name: <input type="text" value="Traffic Planning and Design, Inc."/>
Intersection & Approach Description: <input type="text" value="E Springville Road & Proposed Site Driveway - Northbound Right"/>	
Analysis Period: <input type="text" value="2030 Projected Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="SAT Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="35"/>	Type of Analysis
Type of Terrain: <input type="text" value="Level"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	167	2.0%	N/A
	Through	-	125	0.0%	N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-	132	1.0%	N/A
	Right	Yes	21	2.0%	N/A

Advancing Volume: <input type="text" value="N/A"/>
Opposing Volume: <input type="text" value="N/A"/>
Left Turn Volume: <input type="text" value="N/A"/>
% Left Turns in Advancing Volume: <input type="text" value="N/A"/>

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	132	1.0%	133
	Right	-	21	2.0%	22

Advancing Volume: <input type="text" value="155"/>
Right Turn Volume: <input type="text" value="22"/>

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
Design Hour Volume of Turning Lane: <input type="text" value="22"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	

PennDOT Publication 46, Exhibit 11-6

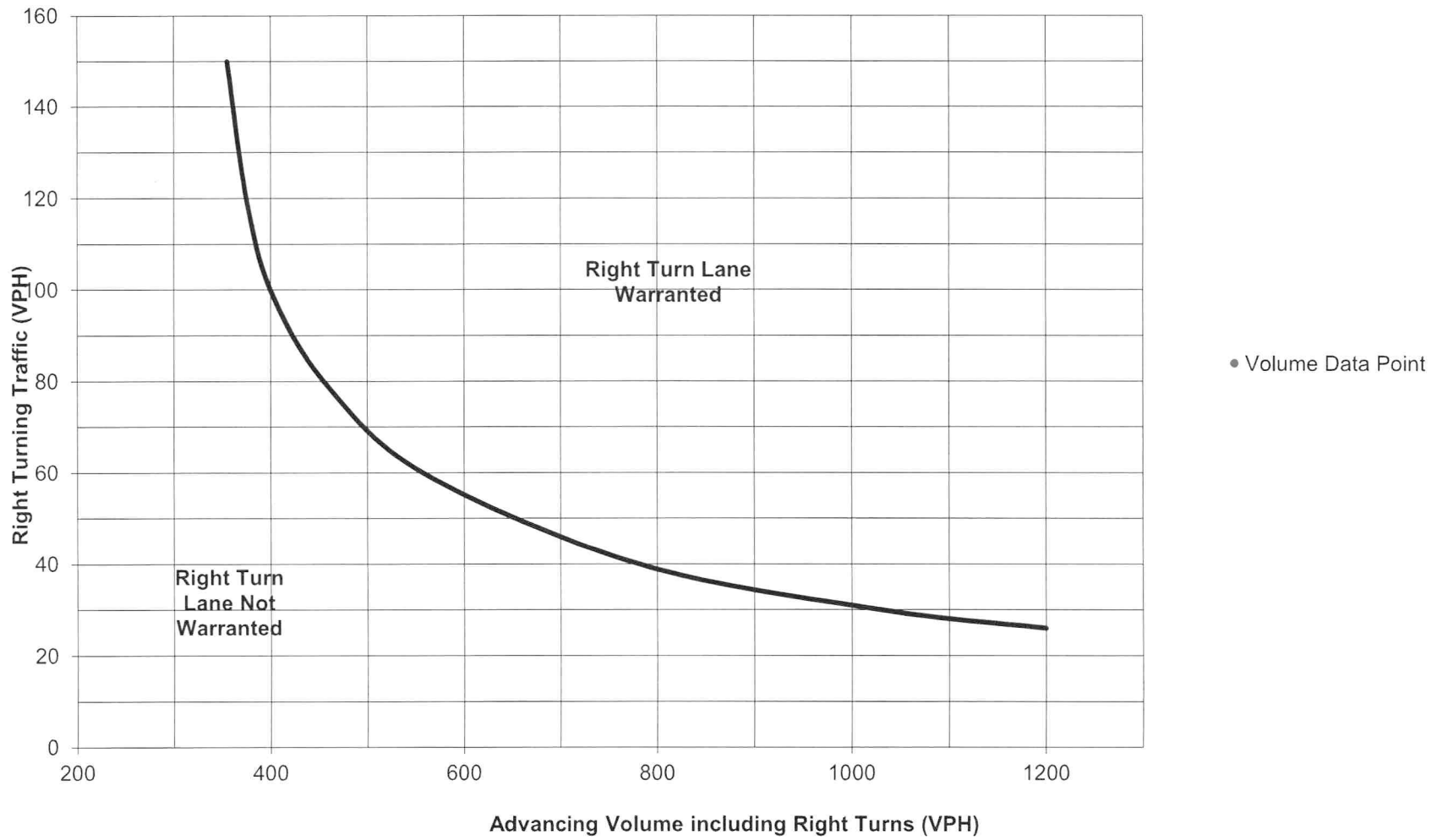
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A: <input type="text" value="N/A"/>	Feet
Condition B: <input type="text" value="N/A"/>	Feet
Condition C: <input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length: <input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="South Middleton Township"/>	Analysis Date: <input type="text" value="7/1/2022"/>
County: <input type="text" value="Cumberland County"/>	Conducted By: <input type="text" value="DZ"/>
PennDOT Engineering District: <input type="text" value="8"/>	Checked By: <input type="text" value="JW"/>
	Agency/Company Name: <input type="text" value="Traffic Planning and Design, Inc."/>
Intersection & Approach Description: <input type="text" value="E Springville Road & Proposed Site Driveway - Southbound Left"/>	
Analysis Period: <input type="text" value="2030 Projected Build"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="SAT Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="35"/>	
Type of Terrain: <input type="text" value="Level"/>	
	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	167	2.0%	169	Advancing Volume: <input type="text" value="294"/>	
	Through	-	125	0.0%	125		Opposing Volume: <input type="text" value="155"/>
	Right	Yes			0		Left Turn Volume: <input type="text" value="169"/>
Opposing	Left	Yes			0	% Left Turns in Advancing Volume: <input type="text" value="57.48%"/>	
	Through	-	132	1.0%	133		
	Right	Yes	21	2.0%	22		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes			N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	132	1.0%	N/A		Right Turn Volume: <input type="text" value="N/A"/>
	Right	-	21	2.0%	N/A		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="No"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
Design Hour Volume of Turning Lane: <input type="text" value="169"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	

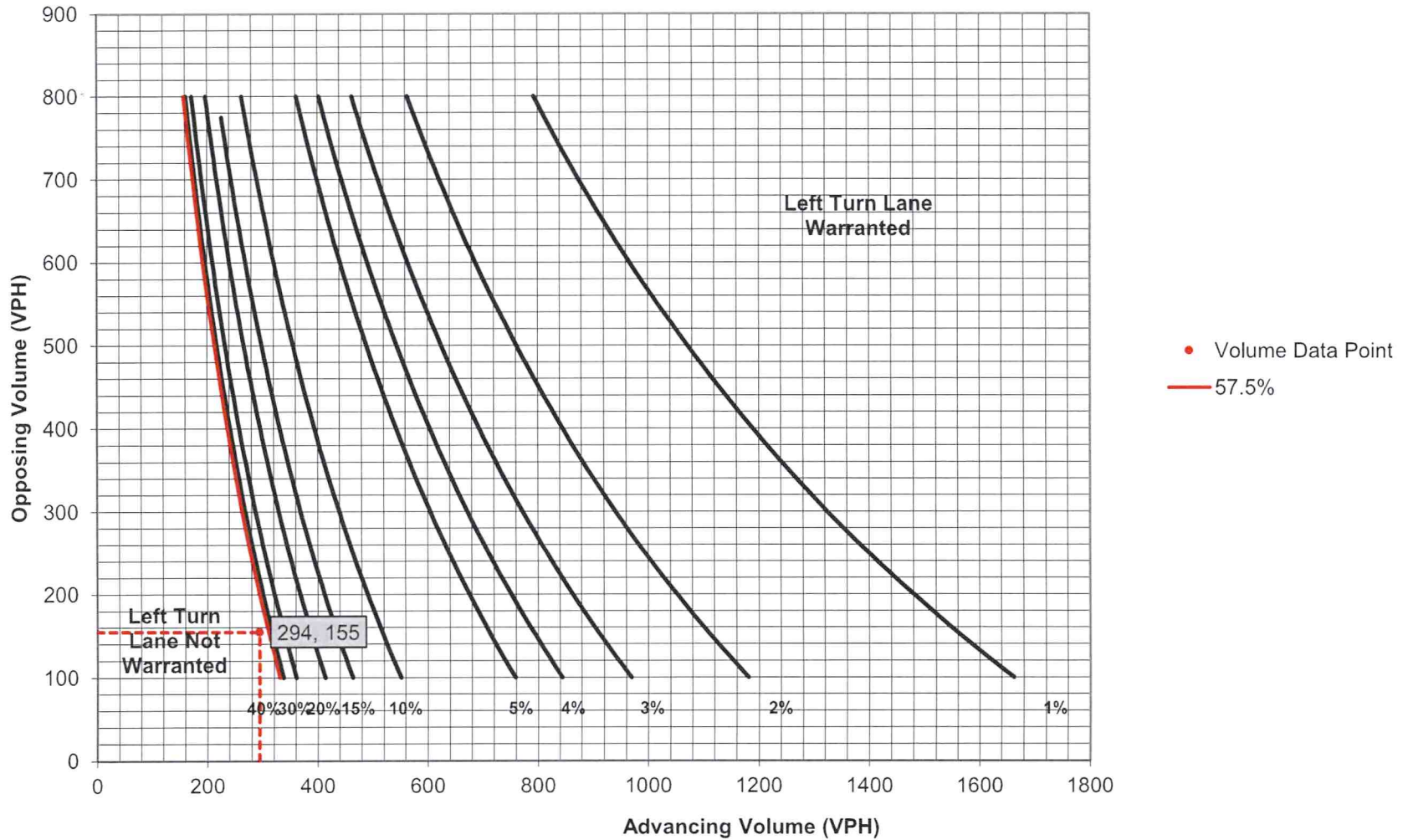
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



APPENDIX G:

Traffic Signal Warrant Analysis

Traffic Signal Warrant Analysis Workbook

4/3/2023

2022 Existing Conditions

STUDY AND ANALYSIS INFORMATION

Municipality:
 County:
 PennDOT Engineering District:

Analysis Date:
 Conducted By:
 Agency/Company Name:

Analysis Information

Data Collection Date:
 Day of the Week:

Is the intersection in a built-up area of an isolated community of <10,000 population?

Major Street Information

Major Street Name and Route Number:
 Major Street Approach #1 Direction:
 Major Street Approach #2 Direction:

Number of Lanes for Moving Traffic on Each Major Street Approach: LANE(S)
 Speed Limit or 85th Percentile Speed on the Major Street: MPH

Minor Street Information

Minor Street Name and Route Number:
 Minor Street Approach #1 Direction:
 Minor Street Approach #2 Direction:

Number of Lanes for Moving Traffic on Each Minor Street Approach: LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes
Warrant 3, Peak Hour	Yes	Yes
Warrant 4, Pedestrian Volume	No	N/A
Warrant 5, School Crossing	No	N/A
Warrant 6, Coordinated Signal System	No	N/A
Warrant 7, Crash Experience	No	N/A
Warrant 8, Roadway Network	No	N/A
Warrant 9, Intersection Near a Grade Crossing	No	N/A
Warrant PA-1, ADT Volume Warrant	No	N/A
Warrant PA-2, Midblock and Trail Crossings	No	N/A

Traffic Signal Warrant Analysis Workbook
 2022 Existing Conditions

4/3/2023

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (E-Bound)	Major Street Approach #2 (W-Bound)	Major Street Combined	Minor Street Approach #1 (N-Bound)	Minor Street Approach #2 (S-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM	41	57	98	10	
6:15 AM	6:29 AM	46	68	114	17	
6:30 AM	6:44 AM	64	119	183	20	
6:45 AM	6:59 AM	50	97	147	22	
7:00 AM	7:14 AM	64	87	151	15	
7:15 AM	7:29 AM	77	120	197	26	
7:30 AM	7:44 AM	71	123	194	25	
7:45 AM	7:59 AM	72	124	196	21	
8:00 AM	8:14 AM	50	113	163	18	
8:15 AM	8:29 AM	56	86	142	11	
8:30 AM	8:44 AM	59	101	160	19	
8:45 AM	8:59 AM	59	77	136	17	
9:00 AM	9:14 AM	70	96	166	14	
9:15 AM	9:29 AM	60	71	131	11	
9:30 AM	9:44 AM	82	88	170	11	
9:45 AM	9:59 AM	67	93	160	13	
10:00 AM	10:14 AM	76	84	160	4	
10:15 AM	10:29 AM	66	80	146	11	
10:30 AM	10:44 AM	79	79	158	11	
10:45 AM	10:59 AM	84	71	155	18	
11:00 AM	11:14 AM	74	55	129	14	
11:15 AM	11:29 AM	81	76	157	12	
11:30 AM	11:44 AM	66	77	143	11	
11:45 AM	11:59 AM	58	76	134	12	

Traffic Signal Warrant Analysis Workbook

4/3/2023

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (E-Bound)	Major Street Approach #2 (W-Bound)	Major Street Combined	Minor Street Approach #1 (N-Bound)	Minor Street Approach #2 (S-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM	71	79	150	17	
12:15 PM	12:29 PM	94	60	154	9	
12:30 PM	12:44 PM	71	85	156	9	
12:45 PM	12:59 PM	83	68	151	12	
1:00 PM	1:14 PM	94	62	156	15	
1:15 PM	1:29 PM	91	91	182	8	
1:30 PM	1:44 PM	83	77	160	13	
1:45 PM	1:59 PM	79	91	170	14	
2:00 PM	2:14 PM	72	75	147	6	
2:15 PM	2:29 PM	99	86	185	12	
2:30 PM	2:44 PM	88	88	176	15	
2:45 PM	2:59 PM	112	77	189	20	
3:00 PM	3:14 PM	120	98	218	9	
3:15 PM	3:29 PM	124	102	226	22	
3:30 PM	3:44 PM	158	108	266	11	
3:45 PM	3:59 PM	154	129	283	18	
4:00 PM	4:14 PM	141	128	269	22	
4:15 PM	4:29 PM	151	97	248	18	
4:30 PM	4:44 PM	145	103	248	14	
4:45 PM	4:59 PM	146	117	263	14	
5:00 PM	5:14 PM	128	93	221	13	
5:15 PM	5:29 PM	137	121	258	25	
5:30 PM	5:44 PM	95	87	182	10	
5:45 PM	5:59 PM	98	85	183	17	
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		4206	4325	8531	706	0

2022 Existing Conditions

MUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
-----------------------------------------------------------------------------------------------	-----

Combination of Conditions A and B Necessary?*: No

**Only applicable for Warrant 1 if after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems. See Section 4C.02 of the 2009 MUTCD for application.*

Condition A - Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or More	1	600	480	420	336	150	120	105	84
2 or More	2 or More	600	480	420	336	200	160	140	112
1	2 or More	500	400	350	280	200	160	140	112

Condition B - Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or More	1	900	720	630	504	75	60	53	42
2 or More	2 or More	900	720	630	504	100	80	70	56
1	2 or More	750	600	525	420	100	80	70	56

Condition A Evaluation

Number of Unique Hours Met: 0 Condition A Satisfied? No

Condition B Evaluation

Number of Unique Hours Met: 8 Condition B Satisfied? Yes

Combination of Condition A and Condition B Evaluation

Number of Unique Hours Met for Condition A: N/A

Number of Unique Hours Met for Condition B: N/A

Combination of Condition A and Condition B Satisfied? N/A

2022 Existing Conditions

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

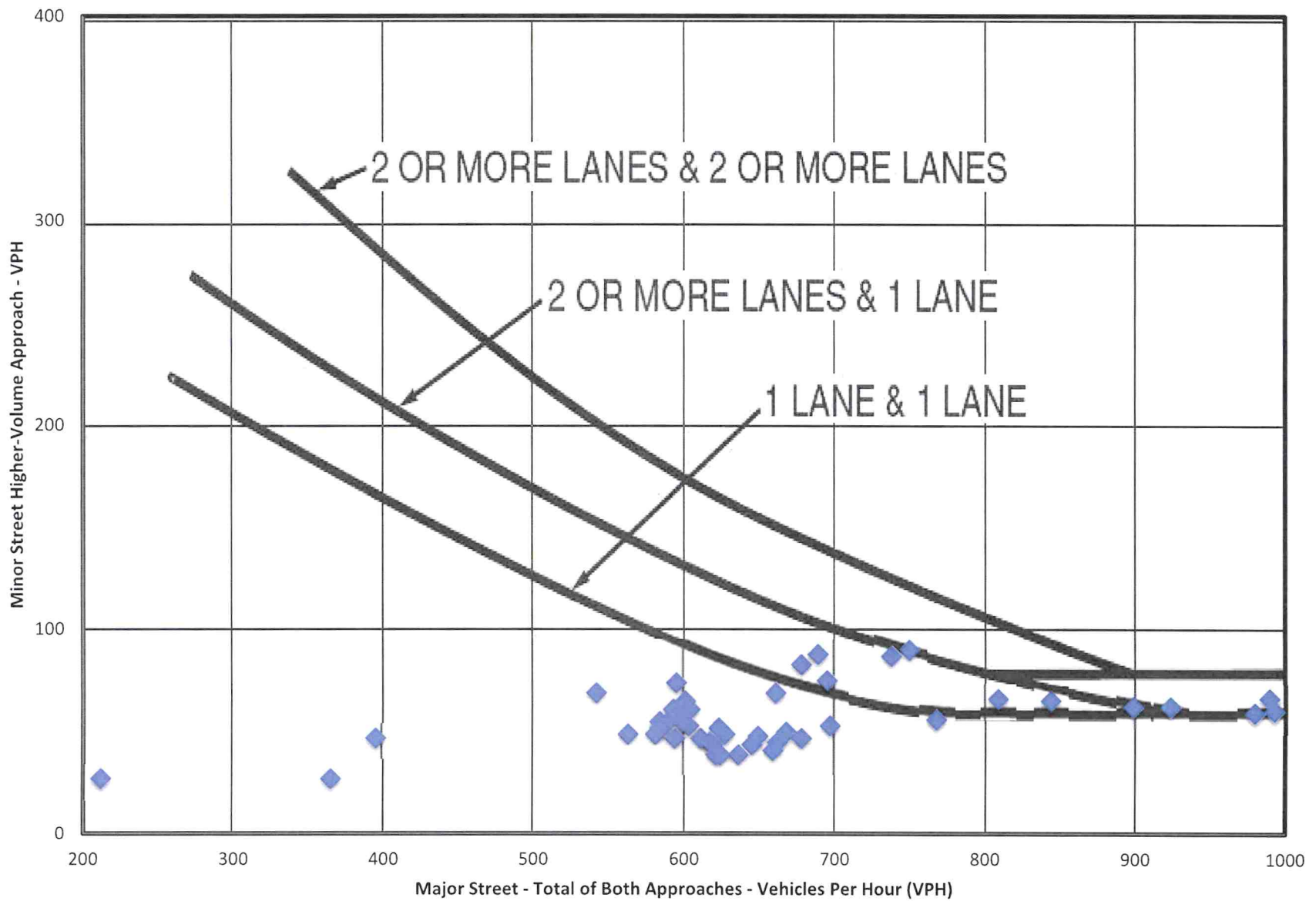
Total Number of Unique Hours Met On Figure 4C-2
5

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?
Yes

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	98	10	
5:30 AM	212	27	
5:45 AM	395	47	
6:00 AM	542	69	
6:15 AM	595	74	
6:30 AM	678	83	Met
6:45 AM	689	88	Met
7:00 AM	738	87	Met
7:15 AM	750	90	Met
7:30 AM	695	75	Met
7:45 AM	661	69	
8:00 AM	601	65	
8:15 AM	604	61	
8:30 AM	593	61	
8:45 AM	603	53	
9:00 AM	627	49	
9:15 AM	621	39	
9:30 AM	636	39	
9:45 AM	624	39	
10:00 AM	619	44	
10:15 AM	588	54	
10:30 AM	599	55	
10:45 AM	584	55	
11:00 AM	563	49	
11:15 AM	584	52	
11:30 AM	581	49	
11:45 AM	594	47	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 PM	611	47	
12:15 PM	617	45	
12:30 PM	645	44	
12:45 PM	649	48	
1:00 PM	668	50	
1:15 PM	659	41	
1:30 PM	662	45	
1:45 PM	678	47	
2:00 PM	697	53	
2:15 PM	768	56	
2:30 PM	809	66	Met
2:45 PM	899	62	Met
3:00 PM	993	60	Met
3:15 PM	1044	73	Met
3:30 PM	1066	69	Met
3:45 PM	1048	72	Met
4:00 PM	1028	68	Met
4:15 PM	980	59	
4:30 PM	990	66	Met
4:45 PM	924	62	Met
5:00 PM	844	65	Met
5:15 PM	623	52	
5:30 PM	365	27	
5:45 PM	183	17	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



2022 Existing Conditions

MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
-----------------------------------------------------------------------------------------------	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	Yes
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----

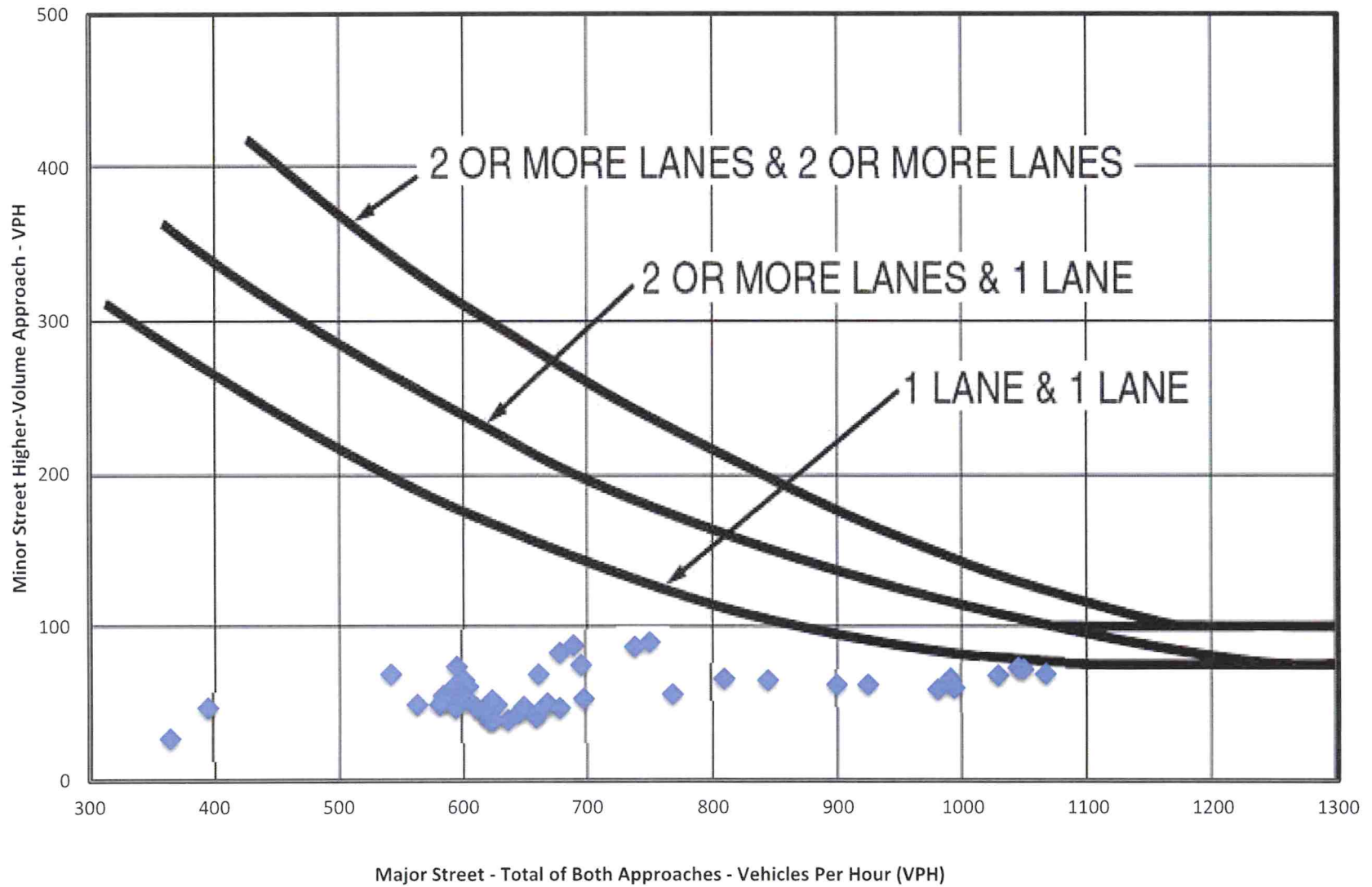
Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	N/A
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	N/A
<i>*If applicable, attach all supporting calculations and documentation.</i>	

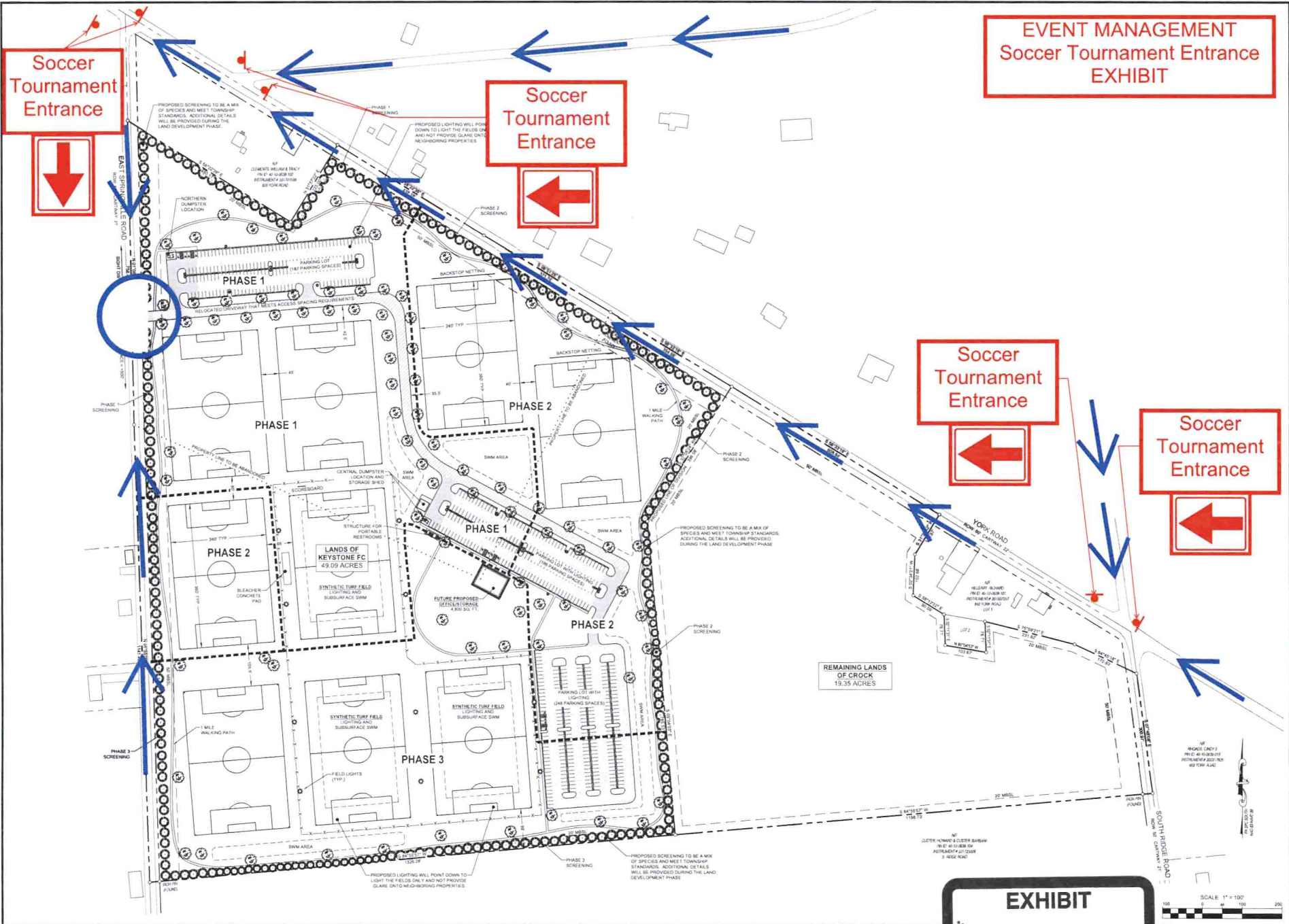
Total Number of Unique Hours Met On Figure 4C-4
1

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	98	10	
5:30 AM	212	27	
5:45 AM	395	47	
6:00 AM	542	69	
6:15 AM	595	74	
6:30 AM	678	83	
6:45 AM	689	88	
7:00 AM	738	87	
7:15 AM	750	90	
7:30 AM	695	75	
7:45 AM	661	69	
8:00 AM	601	65	
8:15 AM	604	61	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
8:30 AM	593	61	
8:45 AM	603	53	
9:00 AM	627	49	
9:15 AM	621	39	
9:30 AM	636	39	
9:45 AM	624	39	
10:00 AM	619	44	
10:15 AM	588	54	
10:30 AM	599	55	
10:45 AM	584	55	
11:00 AM	563	49	
11:15 AM	584	52	
11:30 AM	581	49	
11:45 AM	594	47	
12:00 PM	611	47	
12:15 PM	617	45	
12:30 PM	645	44	
12:45 PM	649	48	
1:00 PM	668	50	
1:15 PM	659	41	
1:30 PM	662	45	
1:45 PM	678	47	
2:00 PM	697	53	
2:15 PM	768	56	
2:30 PM	809	66	
2:45 PM	899	62	
3:00 PM	993	60	
3:15 PM	1044	73	Met
3:30 PM	1066	69	Met
3:45 PM	1048	72	Met
4:00 PM	1028	68	
4:15 PM	980	59	
4:30 PM	990	66	
4:45 PM	924	62	
5:00 PM	844	65	
5:15 PM	623	52	
5:30 PM	365	27	
5:45 PM	183	17	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)





Soccer
Tournament
Entrance



Soccer
Tournament
Entrance



EVENT MANAGEMENT
Soccer Tournament Entrance
EXHIBIT

Soccer
Tournament
Entrance



Soccer
Tournament
Entrance



EXHIBIT
A-14

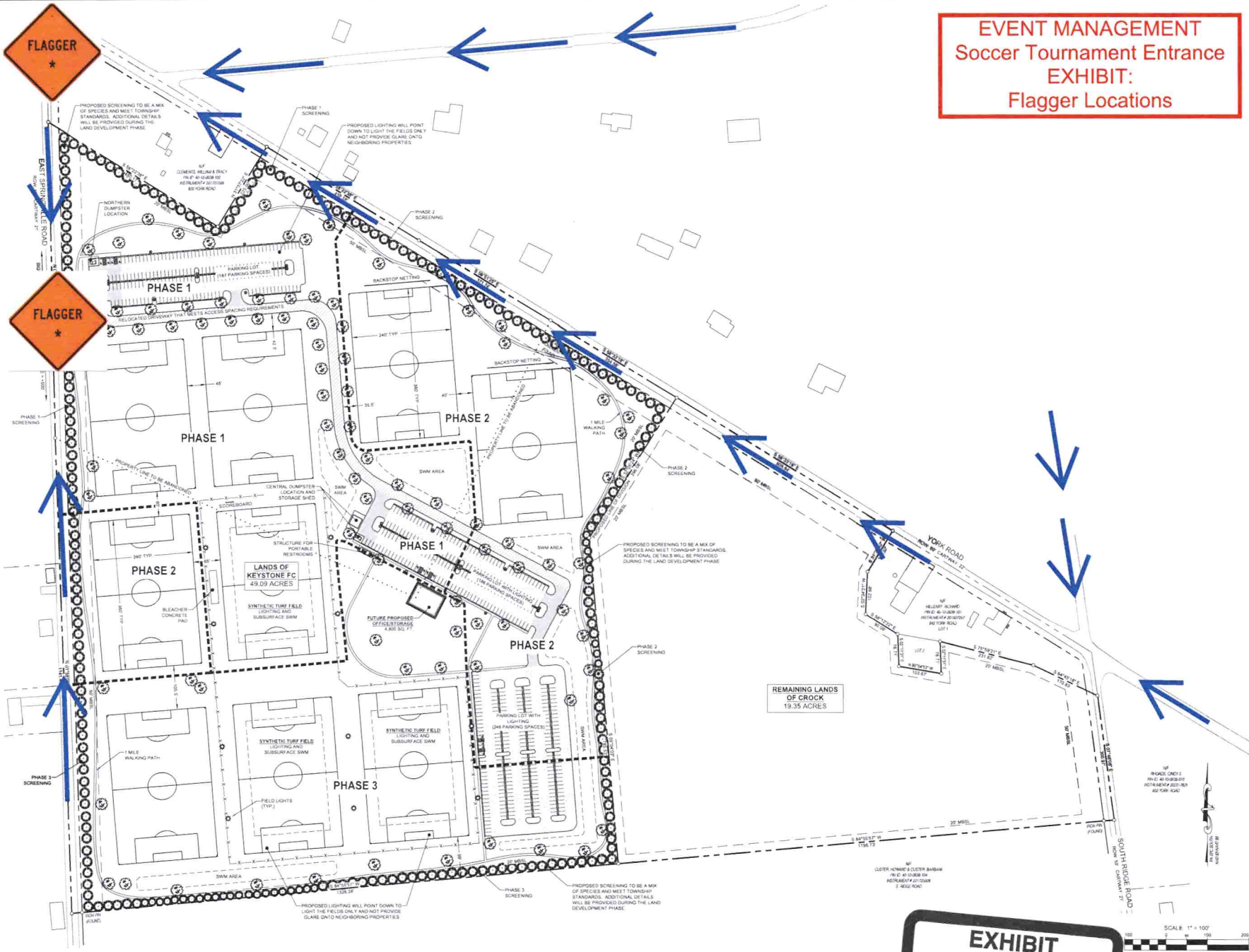
PROJECT NO. 2023-1
DATE 06-20-2023
PROJECT MANAGER JTO
DRAWN BY JTO/MS/MS
PROPERTY 40-10-0028-001, 40-10-0028-028A
SCALE 1" = 100'
SHEET TITLE

WOLF FARM SOCCER FIELDS
ESTIMATED APPROXIMATELY 500 FEET WEST OF THE INTERSECTION
OF SOUTH WILCOX ROAD AND YORK ROAD (PA 817 N)
CUMBERLAND COUNTY, PENNSYLVANIA
KEYSTONE FC, C/O DEAN COCHRAN
11112023

PROJECT NO. 2023-1
DATE 06-20-2023
PROJECT MANAGER JTO
DRAWN BY JTO/MS/MS
PROPERTY 40-10-0028-001, 40-10-0028-028A
SCALE 1" = 100'
SHEET TITLE

SITE &
LANDSCAPE PLAN
C-101
SHEET 2 OF 3

EVENT MANAGEMENT
Soccer Tournament Entrance
EXHIBIT:
Flagger Locations



FSAQ
 FEDERAL SERVICE ASSOCIATES, INC.
 1000 MARKET STREET, SUITE 200
 PHILADELPHIA, PA 19102
 TEL: 215-581-1000
 FAX: 215-581-1001

WOLF FARM SOCCER FIELDS
 SITUATED APPROXIMATELY 500 FEET WEST OF THE INTERSECTION
 OF SOUTH MIDDLEBURY ROAD AND YORK ROAD (PA 30)
 CUMBERLAND COUNTY, PENNSYLVANIA
 PROJECT NO. 170113.1
 DATE: 6-2-2023
 PROJECT MANAGER: JTD
 DRAWN BY: JONATHAN R. GIBSON
 PROPERTY ID: 40-15-0628-001, 40-15-0628-001A
 SCALE: 1" = 100'
 SHEET TITLE:
 SITE & LANDSCAPE PLAN
 C-101
 SHEET 2 OF 3

EXHIBIT
A-15



EDUCATION

*BS, Geology, Juniata College,
2003*

PROFESSIONAL EXPERIENCE

20 Years Total
18 Years Triad

REGISTRATIONS & LICENSES

- PG #PG004859
(Pennsylvania)

SKILLS

- 40-hour HAZWOPER
Certified 29 CFR
1910.120(e)
- Maryland Certified UST
Remover
MDIC 11-2036
- Confined Space Certified
- Maryland E&S
- RPC004726
- PA ESCGP-1 Certified
Pennsylvania
- PA Certified UST
Remover 5779
- Hands-On Electrical
Troubleshooting, Lewellyn
Technology

HIGHLIGHTS OF EXPERIENCE

As Senior Geologist/Hydrogeologist, Mr. Wolfe's technical expertise includes geologic and hydrogeological evaluations to include fracture trace analyses, ground water feasibility studies, sinkhole evaluations, geophysical surveys, evaluations of deep and surface mines, rock cut field investigations, hydrogeology evaluations, environmental risk assessments, regulatory compliance, underground storage tank (UST) assessments and removals, soil and groundwater assessments, Phase I and II Environmental Site Assessments, and remediation system development and design. Experience has included projects for state and local agencies, municipal water supplies, public schools, retail petroleum fueling stations, large petrochemical bulk plants and terminals, limestone quarries, and coal mines.

RELEVANT PROJECT EXPERIENCE

Indian Springs Water Resource Feasibility Study, Clear Spring, MD (03-22-0989)

Senior Geologist responsible for the assessment of several springs for the purpose of commercial use. The project has included a feasibility study and hydrogeological assessment with fracture trace analysis.

Queen Well Replacement, Wolfsville, MD (03-22-0911)

Senior Geologist responsible for the oversight of the replacement of a well due to impacts from a petroleum spill.

Mount St. Mary's Well Assessment Analysis, Frederick County, MD (03-22-0640)

Senior Geologist responsible assessing the site for a new water supply well. The project included review of historical information, hydrogeological assessment with fracture trace, and site visit.

Bonneauville Well Assessment, Bonneauville, PA (03-22-0480)

Senior Geologist responsible for the well testing and permitting of a new supply well for the municipality. The project included permitting and aquifer testing.

Buchannan Flats Moss Spring Assessment, Greencastle, PA (03-22-0275)

Senior Geologist responsible for the assessment of the site prior to development for impacts to the spring which is the main source of water supply for the municipality. The project consisted of hydrogeological assessment with fracture trace analysis, geophysics, well drilling, and groundwater monitoring.

New Kensington WWTP Dewatering Design, New Kensington, PA (03-21-0757)

Senior Geologist responsible for the oversight of the design of the dewatering system for the construction and upgrades at the wastewater treatment plant.

Hykes Farm Industrial Groundwater Assessment (03-21-0410)

Senior Geologist responsible for the assessment of the site prior to development. The project included hydrogeological assessment with fracture trace, drilling, and groundwater monitoring.

11159 Hopewell Road, Hagerstown, MD (03-21-0329)

Senior Geologist responsible for the assessment of the site prior to development and water supply assessment. The project consisted of hydrogeological study with fracture trace, well drilling, long term pumping test, GWUDI testing, and appropriation permitting.

Skycroft Sewage System Testing, Myersville, MD (03-21-0167)

Senior Geologist responsible for the oversight of the assessment of a large sewage disposal system greater than 10,000 gallons per day. The system evaluation included hydrogeological assessment including fracture trace, well drilling, perc testing, mounding analysis, groundwater modeling and permitting.

Bunker Hill Water Treatment Plant, Bunker Hill, WV (03-21-0092)

Senior Geologist responsible for assessing the spring to determine if construction activities associated with upgrading the water treatment system would impact the spring. The project consisted of a hydrogeological study with fracture trace, drilling wells and monitoring groundwater/spring levels.

Rock Spring Farm, Hagerstown, MD (03-21-0077)

Senior Geologist responsible for the assessment of the site prior to development. This project consisted of a hydrogeological desktop study with fracture trace analysis, the installation of monitoring wells, and groundwater monitoring prior to site construction.

1235 Walnut Bottom Road, Carlisle, PA (03-20-0935)

Senior Geologist responsible for the assessment of the site prior to development. A wellhead protection study was completed to determine if the development would have impact to a nearby municipal well. The project consisted of hydrogeological assessment, fracture trace analysis, test pits, geophysical testing, test pits, and air tract drilling.

AT&T Hearthstone Mountain, Clear Spring, MD (03-20-0899)

As the Senior Geologist performed hydrogeologic research and fracture trace analysis in search of an alternate water source for this facility. Also provided well assessment and yield testing to further evaluate a non-used well on site.

Jefferson Village Appropriations Assessment, Frederick County, MD (03-20-0747)

Senior Geologist responsible for the assessment of the site prior to development. The project consisted of completing a water supply feasibility study including hydrogeological assessment and fracture trace analysis.

1201 Walnut Bottom Road, Carlisle, PA (03-20-0679)

Senior Geologist responsible for the assessment of the site prior to development. A wellhead protection study was completed to determine if the development would have impact to a nearby municipal well. The project consisted of hydrogeological assessment, fracture trace analysis, test pits, geophysical testing, test pits, and air tract drilling.

Spring Development, Middleway, WV (03-20-0377)

Senior Geologist responsible for the assessment of a local spring for the purposes of bottled water production. The project included drilling a production test well and monitoring wells near the spring for aquifer testing. The aquifer was tested for approximately two weeks at a rate greater than 1,200 gpm.

I-81 Commerce Park Hydrogeologic Study, Shippensburg, PA (03-20-0032)

Project Geologist responsible for the development of groundwater for the supply of two proposed warehouse buildings. The project consisted of a fracture trace analysis, feasibility study, well drilling and well pump testing/development.

Franklin County Courthouse Judicial Center, Chambersburg, PA (03-19-0404)

Senior Geologist who provided a hydrogeological study in support of project to construct a new courthouse administration building. There was a concern that groundwater could be encountered during construction and our study helped determine the likelihood that groundwater would be encountered and the potential volumes. After the study, we provided dewatering design for the sub-slab groundwater drainage system.

Underground Injection Control (UIC) Permit, Berkeley County, WV (03-19-0388)

Senior Geologist who prepared and submitted an Underground Injection Control (UIC) Permit for injection well(s) to be used for the management of stormwater from this site. Services included map review of groundwater supply sources within a one-quarter mile radius of property boundary, review of proposed injection well system, preparation of a monitoring program, preparation of a plugging and abandonment plan as well as a Groundwater Protection Plan (GPP).

Greenmount Road Warehouse, State Line, PA (03-18-0770)

Senior Geologist responsible for conducting an assessment to determine the groundwater hydrology connection with onsite wetlands prior to the construction of a warehouse.

Startzmans Hardware, Hagerstown, MD (03-16-0508)

Project Manager and Certified UST Remover responsible for overseeing the project staff during the in situ closure of the

site's 1,000-gallon gasoline UST. Closure activities included cleaning the UST, filling the UST with flowable fill, performing the confirmatory sampling, and final reporting to the regulating authority.

Antrim Commons, Production Facility, Greencastle, PA (03-15-0682)

Project Environmental Geologist responsible for overseeing the drilling of nine wells and 72-hour pumping test for a proposed production facility. The facility required a yield of 1,500 gallons per minute (gpm). Several 100 plus gpm wells and one 500 plus well were located. The 500 plus well was tested for 72 hours.

Brook Lane New Well Assessment, Hagerstown, MD (03-15-0618)

Project Geologist responsible for the siting, drilling oversight, testing, permitting of a new production well for the facility.

14369 Dickeys Road – PA Act II, Mercersburg, PA (03-15-0590)

Project Geologist responsible for overseeing the clean-up of heating oil and submitting the information to the Pennsylvania Department of Environmental Protection for relief of liability. The project consisted of installing three monitoring wells, drilling soil borings, sampling drinking water wells, and testing for vapor intrusion.

Phase II ESA 1954 East 3rd Street, Williamsport, PA (03-15-0054)

Project Supervisor responsible for the oversight of the Phase II ESA. The project included ground penetrating radar (GPR) survey and a subsurface investigation. The GPR identified three USTs which were confirmed by completing a test pit dug by a backhoe.

Phase I and Phase II ESA 2024 Lincoln Way East, Chambersburg, PA (03-15-0637)

Project Supervisor responsible for the oversight of the Phase I Environmental Site Assessment (ESA) and the Phase II ESA. The Phase II ESA included the drilling of soil borings, soil sampling, and laboratory analysis.

Fracture Trace Analysis UBP Matrix Development, Shippensburg, PA (03-15-0478)

Project Geologist responsible for performing a fracture trace analysis to locate areas with an increased risk of sinkhole development. Approximately 46 fracture traces were identified across the site.

Valley Creek Estates Wastewater Treatment Plant, Mercersburg, PA (03-15-0187)

Project Manager responsible for the maintenance of a precast concrete package wastewater treatment plant. The plant has a max capacity of 13,500 gallons per day. The project includes the annual inspection of the entire system, reviewing and submitting regulatory documentation, and sump cleaning. Triad also provides emergency response to system failures which includes the replacement or repair of the system blowers and grinder pumps.

Riverside Industrial Park – Buildings 27 & 42 Phase I and Phase II, 975 Kelly Road, Cumberland, MD (03-15-0145)

4.53-acre site; Performed a Phase I Environmental Site Assessment and Phase II for the property. During the Phase I oil residue was found on the floor one of the buildings and was suspected to be polychlorinated biphenyls (PCBs). Sampling was completed per the U.S. EPA standards and practices.

Resh Road Landfill, Washington County, MD (03-15-0452)

Project Environmental Geologist responsible for overseeing the monitoring of methane gas from the capped municipal landfill prior to the construction of a utility scale solar field.

Former Annapolis Utilities Project, Annapolis, MD (03-15-0693)

Project Environmental Geologist/Hydrogeologist responsible for performing Enhanced Fluid Recovery (EFR) events, quarterly groundwater monitoring and reporting, and monitoring well abandonment. Triad obtained case closure for this petroleum release in 2014.

Maryland Solar Farm I, Washington County, MD (03-15-0135)

Project Environmental Geologist responsible for and assisted in the preparation of the Phase I ESA, Natural Resource Inventory Plan, and Routine Wetlands Delineation Study in general accordance with the U.S. Army Corps of Engineers (Corps) Wetlands Delineation Manual (Y-87-1), dated January 1987, and the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (ERDC/EL RT-10-9), dated July 2010.

Fibred Seep Investigation, Cumberland, MD (03-14-0503)

Project Geologist/Project Manager responsible for the investigation of numerous seeps from a soy fiber manufacturing facility found in the Potomac River. The project consisted of geological assessment, seep and river sampling, statistical analysis, well sampling, and fracture trace analysis to determine the potential cause of the seeps.

485 Clay Hill Road Remedial Excavation, Greencastle, PA (03-14-0412)

Project Manager responsible for the oversight during the emergency response of a heating oil tank spill in the basement of the residence. The project included the removal of approximately 15 tons of contaminated soil from the basement and treating contaminated groundwater flowing into the basement during the excavation.

Frederick County Public Schools Career and Technology Center, Frederick, MD (03-14-0649)

Environmental Services Manager responsible for the technical and administrative oversight during the removal of a 20,000-gallon heating oil UST, 500-gallon waste oil UST, and a 550-gallon waste oil UST. Mr. Wolfe supervised the technical staff during the removal of 4,952-gallons of LPH and contaminated water and 274 tons of impacted soil. The project additionally included a well survey, the installation of three recovery wells, and monthly groundwater gauging and quarterly groundwater sampling and reporting.

Former Consumer Product Safety Commission, Gaithersburg, MD (03-14-0350)

Environmental Services Manager responsible for the technical and administrative oversight for a Hazardous Materials Survey completed prior to the demolition of the site buildings. The Hazardous Materials Survey included lead and asbestos testing, digging test pits and collecting soil samples, a historical UST survey, and the removal of a 10,000-gallon fuel oil UST.

Glad Hill Estates, Housing Development, Monrovia, MD (03-14-0022)

Project Environmental Geologist responsible for the hydrogeologic testing required by the appropriation permit and oversaw the drilling of 27 wells. Mr. Wolfe located the pumping wells and monitoring wells. The testing required the pumping of three wells simultaneously to stress the aquifer beyond the anticipated usage. A hydrogeologic report was prepared based on the drilling and pumping data.

Municipal Electric Light Plant, Hagerstown, MD (03-14-0317 and 03-16-0004)

Environmental Services Manager responsible for the technical and administrative oversight during the demolition of the former City of Hagerstown Municipal Electric Light Plant. The project included NPDES sampling and proposed fill material characterization and E&S inspection for compliance.

Truck Enterprises, Inc., Hagerstown, MD (03-05-0062 and 03-16-0288)

Project Environmental Geologist/Hydrogeologist responsible for UST removal; liquid hydrocarbon recovery, groundwater remediation through the design and implementation of a dual-phase extraction treatment system, and quarterly groundwater monitoring and reporting. Triad obtained case closure from the MDE for this release in 2010.

Sharpsburg BP, Sharpsburg, MD (03-13-0037)

Environmental Services Manager responsible for the technical and administrative oversight during the installation, operation, and maintenance of a vapor mitigation system, sump pump remediation system, and removal of six registered USTs, two discovered USTs, and the removal of petroleum-impacted soil and water.

Boonsboro Elementary School, Boonsboro, MD (03-13-0221)

Project Environmental Geologist/Hydrogeologist responsible for preparing a Site Work Plan; preparing a Site Characterization Report (SCR); installing groundwater monitoring wells; performing Enhanced Fluid Recovery (EFR) events; and performing Quarterly Groundwater Monitoring and Reporting (GMR). Triad is currently still performing GMR and removal of Liquid Petroleum Hydrocarbons (LPH) through the use of a Ferret In-Well Separator Pump.

Clean Earth of Maryland, Hagerstown, MD (03-13-0412)

Project Environmental Geologist/Hydrogeologist responsible for annual groundwater monitoring and reporting as required by CleanEarth's Oil Control Permit. Monitoring reports are submitted to the MDE annually.

Southern Ionics, Production Well, Williamsport, MD (03-13-0116)

Project Environmental Geologist responsible for well siting, aquifer testing, and Maryland appropriation permit application submittal. The proposed chemical manufacturing plant required a consistent water source for production. Mr. Wolfe completed a fracture trace analysis to determine the best location for the well and monitoring wells. A 72-hour pumping test was performed on the aquifer to determine the hydrogeologic parameters. The testing and drilling data was present to the Maryland Department of the Environment for permit determination.

LaVale Shopping Center Phase I, LaVale, MD (03-13-0133)

8.35-acre site; Performed a Phase I Environmental Site Assessment for the property.

U.S. Silica Company Tonoloway Ridge Quarry, Washington County, MD (03-12-0035)

Project Environmental Geologist/Hydrogeologist responsible for performing a Hydrogeological Evaluation to obtain a water appropriation permit from the MDE. This evaluation included the construction of one test/production well and two monitoring wells; an approximate seven-hour, four stage step-test; and a 72-hour constant rate pump test.

Rude Carrier Corporation, Falling Waters, WV (03-11-0328)

4.3-acre site; Performed a Phase I Environmental Site Assessment for Trucking and refueling center.

Sun Chemical Phase I and Phase II, Hagerstown, MD (03-10-0067)

30-acre site; Performed a Phase I Environmental Site Assessment for Ink Manufacturer and recycler.

J&J Corner Store, Berryville, VA (07-10-0263)

Environmental Services Manager and Project Geologist/Hydrogeologist responsible for the installation and operation of a petroleum/ethanol recovery and treatment system. The system uses both traditional treatment technologies and non-conventional bioreactors enhanced with activated sludge for the treatment of the recovered liquid. The system has been in operation since September 2011 recovering dissolved phase hydrocarbons and ethanol to protect down gradient drinking water supply wells. The UST system was removed in winter of 2012.

Allegany College Access Road Phase I, Allegany County, MD (03-08-0262)

4-acre site; Performed a Phase I Environmental Site Assessment for the improvement of the front access road to the college.

Washington County Highway Department, Washington County, MD (03-08-0323)

Project Environmental Geologist/Hydrogeologist responsible for quarterly groundwater sampling and monitoring due to a release of petroleum from a leaking UST.

Wellhead Protection Area Desktop Study

Wolf Farm Soccer Fields E. Springville Rd and York Road (PA SR 74) South Middleton Township, PA



Triad Project No.: 03-23-0318

Prepared for:
KEYSTONE FC
P.O. Box 1332
Mechanicsburg, PA 17055
C/O: Mr. Sean Cochran

Prepared By:
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4999 Louise Drive, Suite 103
Mechanicsburg, PA 17055

April 29, 2023



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Appendix C	<i>Open-File Report 8902 Sinkholes and Karst-Related Features of Cumberland County, Pennsylvania</i>

SITE SUMMARY

Site Name:	Wolf Farm Soccer Fields
Latitude:	40°10'28.45"N (near center of site)
Longitude:	77° 7'47.98"W (near center of site)
Nearest Cross Street:	E. Spring Road and York Road (PA SR 74)
Municipality:	South Middleton Township
State:	Pennsylvania
Site Area:	49.09 acres
Proposed Improvements:	3 Turf/6 Grass Soccer Fields, Parking, Irrigation well, & Stormwater management
Estimated Water Usage:	1,663,200 to 1,995,840 gallons per year btw Apr./Oct.
Well Head Protection Zone:	Zone 3, Municipal Well No. 2 is located southwest approximately 9,400 feet from the site
Soils:	HaA, HaB, HcB, HcC, HuA, Pe
Site Geology:	Zullinger Formation
Site Topography:	Flat to gently rolling hills with majority of the site draining towards the south. Approximately 16% of the northern portion of the site drains to the north.
Surface Water:	None. Nearest surface water is Boiling Springs to the south.
Watersheds:	Middle Yellow Breeches Creek and Hogestown Run
Site Visit:	4/29/2023
Current Site Conditions:	Fallow agricultural fields/moderate to high vegetation
Closed Depressions:	23 within the site boundary
Open Sinkholes:	Two
Outcrops of bedrock:	Present
Surface Drainage into Ground:	None observed
"Ghost Lakes" after Rainfall	None observed
Fracture Traces:	6 mapped within the boundary of the site
Limonite Excavations/Quarries	None identified

1.0 INTRODUCTION

Triad Engineering, Inc. (Triad) was retained by Keystone FC to conduct a Wellhead Protection Area Desktop Study for the property located to the south of York Road (PA SR 74), west of South Ridge Road, north of Linsey Road, and west of East Springville Road, near Carlisle, Pennsylvania. The site comprises of approximately 49.09 acres. The site is located within South Middleton Township Wellhead Protection Area (WHPA) Zone No. 3. Municipal Well No. 2 is located approximately 9,400 feet (1.78 miles) or more to the southwest of the site. This Wellhead Protection Area Desktop Study has been completed in general accordance with the South Middleton Township Municipal Ordinance No. 2016-06, entitled Wellhead Protection Districts and South Middleton Township Municipal Order No. 01 of 2001 – updated April 15, 2019, entitled Subdivision & Land Development Ordinance (SALDO), Article 11 entitled Wellhead Protection Design Requirements.

These ordinances require a Pennsylvania licensed Professional Geologist to conduct the following prior to any land development within a Wellhead Protection Area (WHPA) Zones 2 and/or 3: a site visit, review aerial photographs, soils, geologic and other available related data including the Wellhead Protection Study as the data relates to the subject property, and to prepare a map of the site showing closed depressions, open sinkholes, surface drainage into ground, “ghost lakes” after rainfall, lineaments, faults, fracture traces, limonite excavations, and quarries.

2.0 SITE DESCRIPTION

The site is situated immediately to the southeast of the intersection of East Springville Road and York Road (PA SR 74) in South Middleton Township, Pennsylvania. A location/topography plan is attached to this report as **Figure 1**. The site consists of approximately 49.09 acres and at the time of this evaluation, the site is comprised of agricultural fields and forest. According to the Carlisle, PA, 7.5-Minute Topographic Quadrangle Map, the elevation of the site is between approximately 550-560 feet. The topography of the site generally slopes towards the south with approximately 16 percent of the site sloping towards the north.

The site is located at the northern edge of the WHPA, Zone 3 for municipal Well 2 which is located approximately 9,400 feet (1.78 miles) to the southwest. The WHPA is depicted on **Figure 2**. Municipal Well 2 is in Spring Meadows Park Boiling Springs which consists of approximately 91.16 acres with baseball fields, football fields, soccer fields, and additional park features.

Keystone FC is proposing to improve the site by constructing three synthetic turf fields, six grass fields, associated parking/facilities, and associated stormwater management features. A minimum of one irrigation well is proposed to provide watering as necessary for the grass fields. Based on water usage at similar size parks, it is estimated that approximately 1,663,200 to 1,995,840 gallons per year (gpy) of water will be needed for irrigation. The field irrigation needs will be directly related to precipitation and is typically needed between the months of April and October. This equates to approximately 237,600 to 285,120 gallons per month during the typical seven months of needed irrigation. The proposed site features are generally depicted in **Figure 3**.

2.1 Soils

According to the United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey (WSS), the site is underlain by eight soil types. The Web Soil Survey Map is included in **Appendix A**. The site is underlain by the following soil types, in order by the percent of coverage:

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HaA	Hagerstown silt loam, 0 to 3 percent slopes	13.4	27.9%
HaB	Hagerstown silt loam, 3 to 8 percent slopes	12.5	26.0%
HcB	Hagerstown silt loam, rocky, 3 to 8 percent slopes	0.9	1.9%
HcC	Hagerstown silt loam, rocky, 8 to 15 percent slopes	3.6	7.5%
HuA	Huntington silt loam, 0 to 5 percent slopes	17.5	36.4%
Pe	Penlaw silt loam	0.1	0.3%
Totals for Area of Interest		48.1	100.0%

2.2 Geology/Hydrogeology

According to the Pennsylvania GEOlogic Data Exploration website (PaGEODE), the site is underlain by one geological formation with the contact of another formation along the southern site boundary, the Zullinger Formation underlays the site, and the Elbrook Formation contacts the Zullinger Formation at the southern site boundary. It is noted that the municipal well, located near Spring Meadows Park Boiling Springs, approximately 9,400 feet (1.78 miles) southwest of the site, is underlain by the Elbrook formation. The site geology is depicted on **Figure 4** and on the *Plate 1. Bedrock Geologic Map Showing Hydrology of the Northern Part of the Cumberland Valley, Cumberland County, Pennsylvania*; 1981 is included as **Appendix B**.

The Zullinger formation, according to PaGEODE, “consists of well-bedded, interbanded medium-gray limestone and dolomite, interlaminated limestone and dolomite, stromatolitic limestone, and local thin quartz-sand beds. The beds are thin to thick bedded. It is probably 2,500 feet thick”.

According to PaGEODE, the Elbrook Formation is described as “consists of light-gray to yellowish-gray, finely laminated siliceous limestone having interbeds of dolomite, calcareous shale, and silty limestone. It is cherty and well bedded. The beds are mostly thick, but flaggy and massive beds also occur. It is about 3,000 feet thick”.

Open-File Report 8902 *Sinkholes and Karst-Related Features of Cumberland County, Pennsylvania*, included as **Appendix C**, was reviewed to evaluate the presence of karst activity in the site vicinity. The Report identifies karst features such as sinkholes, closed depressions, caverns, past mines, and underground openings on the topographic mapping quadrangle. The Map indicates numerous closed depressions within the site boundary.

According to the United States Geological Survey (USGS) 7.5-minute series topographic map of the Carlisle quadrangle, the site consists of gently rolling terrain, predominantly draining towards the south of the site. Groundwater flow direction is expected to flow to the south from the site, flowing downgradient, perpendicular to the topographic contours. Approximately 16 percent of the site does drain to the north and groundwater in this portion of the site most likely follows the topography to the north.

According to the EPA WATERS Geoviewer, the site is located within the Middle Yellow Breeches watershed to the south and the Hogestown Run watershed to the north, and the closest downgradient surface water is Boiling Springs, which is located approximately 8,350 feet southeast from the subject property boundary.

According to the map of *Bedrock Geologic Map Showing the Hydrology of the Northern Part of the Cumberland Valley, Cumberland County, Pennsylvania* by Albert E. Becher and Samuel I. Root, dated 1981, the Zullinger formation has a median specific capacity of 1.5 gallon per minute (gpm) per foot and calculated median sustained yield of 82 gpm. Distribution of yielding zones with depth varies little to 450 feet, the maximum depth for which data are available. The Elbrook formation has a median specific capacity of 3.8 gpm per foot and calculated median sustained yield of 218 gpm. An existing production well has a sustained yield of 2,000 gpm. Yielding zones decrease significantly below the depth of 150 feet.

3.0 FRACTURE TRACE ANALYSIS

A fracture trace analysis is utilized to identify surficial expressions of fracture concentration in the underlying bedrock. Groundwater wells that intercept these zones of fractures, or areas of conduit flow, generally provide higher yields. A fracture trace analysis relies primarily on the use of aerial photographs to delineate the presence of these subsurface fractures, paying particular attention to the specific locations where these fractures in the bedrock intersect. Google Earth is also used to help delineate the presence of subsurface features.

On the aerial photographs, the fracture traces are located by identifying natural linear features consisting of, but not necessarily limited to, tonal variation in soils and vegetation, alignment of vegetative patterns, straight stream segments, wind and water gaps, alignment of sinkholes and closed depressions, and gullies and tributary valleys oblique to local and/or regional topographic slope.

This fracture trace analysis utilized Google Earth Imagery (4/1994, 3/1995, 4/1999, 4/2003, 2/2004, 9/2005, 10/2006, 3/2007, 10/2008, 9/2010, 8/2012, 9/2013, 4/2016 and 3/2020) and stereo pair aerial photographs from 4/1938, 3/1968 and 2003 which were obtained from the United States Geological Survey (USGS) EarthExplorer website (explorer.usgs.gov) and Pennsylvania Imagery Navigator (maps.psiee.psu.edu). Based on the aerial photographs reviewed as part of this analysis, most of the site has remained undeveloped.

The fracture trace analysis performed for the site identified 12 fracture traces in the site vicinity and approximately six fracture trace intersections within the property boundary as depicted on the Fracture Trace Analysis and Karst Feature plan included as **Figure 5**.

4.0 SITE VISIT

The site visit was conducted on April 29, 2023, by Mr. Nicholas Wolfe, PG (PG004859). The site visit consisted of walking around the site to observe site features and document karst features observed. It is important to note that karst features may exist within inaccessible areas or concealed by vegetation and weren't documented during this site visit. The weather during the site visit was cloudy, with rain and temperatures at approximately 55 degrees Fahrenheit. Mapped karst features are depicted in **Figure 5**.

Observations:

General: The site consisted of fallow agricultural fields and woodlands with moderate to heavy vegetation.

Closed Depressions: Approximately 23 closed depressions were mapped, and field observed. No other closed depressions were observed.

Open Sinkholes: Two open sinkholes were observed.

Surface Drainage into Ground: No direct drainage was observed.

“Ghost Lakes” after Rainfall: None were observed.

Lineaments, Faults and Fracture Traces: Mapped fracture traces were verified.

Limonite Excavations and Quarries: None were observed.

5.0 DESIGN AND CONSTRUCTION RECOMMENDATIONS

5.1 Wellhead Protection Design

Municipal Ordinance No. 01 of 2001 – updated April 15, 2019, entitled Subdivision & Land Development Ordinance (SALDO), Article 11 entitled Wellhead Protection Design Requirements, Sections 1108 a.(8), (9), and (10) state:

- “Buildings, structures, impervious surfaces, utilities and swimming pools shall not be located within fifty feet (50') of any features identified in Section 1108(a.)(3.) unless detailed geotechnical work shows that there will be no negative impact on groundwater recharge or quality”.
- “Salt or de-icing storage areas, gasoline or other chemical storage areas and blasting shall not be located within one hundred feet (100') of any features identified in Section 1108 a.(3) unless detailed geotechnical work shows that there will be no negative impact on groundwater recharge or quality”.
- “Storm water facilities, including, but not limited to, detention basins, shall not be located within twenty-five feet (25') of any features identified in Section 1108 a (3.) unless special precautions are taken to protect groundwater recharge and quality, including the installation of lines, impermeable beds and concrete pipe utilizing O-ring joints”.

Based on this assessment, it is Triad's opinion that there will be no negative impact on groundwater recharge or quality if buildings, structures, impervious surfaces, utilities, salt or de-icing storage area, petroleum products or other chemical storage areas are built to, comply with, and maintained to any, and all, codes and regulations at the local, state, and/or federal level that pertain to each individual subject listed above.

Regarding blasting, a detailed grading plan has not been prepared at this time; however, based on the existing site topography we anticipate any required blasting would be at an absolute minimal. It is Triad's opinion that any necessary blasting will not have a negative impact on groundwater recharge or quality.

With respect to stormwater facilities, including, but not limited to, detention basins, it is Triad's opinion that there will be no negative impact on groundwater recharge or quality if storm water

facilities are built within 25 feet of any features identified in Section 1108 a.(3), or built anywhere on site, if any sinkholes identified in section 1108 a.(3) are remediated. We recommend that Triad be retained to provide on-site consulting and oversight services during remediation. A geotechnical engineer or geologist should be present full time during all remediation work to aid in directing the remediation contractor and to document all remediation activities.

Based on Figure 5 and Appendix C, there are concerns regarding closed depressions and sinkholes. The site is relatively flat and observed closed depressions were scattered across the site. The identified closed depressions are based on historical mapping and field verification; however, no level was used to verify the closed depressions to confirm that no outlet existed, only visual observations were utilized. Based on the abundance of closed depressions and sinkholes across the site, any proposed storm water retention facilities with respect to Municipal Ordinance No. 01 of 2001 – updated April 15, 2019 entitled Subdivision & Land Development Ordinance (SALDO), Article 11 entitled Wellhead Protection Design Requirements, Sections 1108 a.(12) which states that “Storm water shall not be directed into a sinkhole or closed depression”, Triad recommends all closed depressions and sinkholes within these areas be remediated via the methods described below. Any alternative methods proposed should be approved by a geotechnical engineer and/or geologist. The intent as stated in Municipal Ordinance No. 01 of 2001 – updated April 15, 2019 entitled Subdivision & Land Development Ordinance (SALDO), Article 11 entitled Wellhead Protection Design Requirements, Sections 1106, “is to minimize impervious surfaces and reduce storm water runoff; to provide storm water management practices that maintain groundwater recharge; and, protect and enhance surface and groundwater quality from the impacts of development on storm water quality utilizing Best Management Practices.” It is understood that the site has very low loading ratios and that storm water management runoff will be dispersed across the site to avoid specific concentrations.

Regarding the proposed use of an irrigation well that will need to produce approximately 1,663,200 to 1,995,840 gpy mainly during the period from the month of April through October. It is Triad’s opinion that this well will have a negligible impact on groundwater recharge or quality. The South Middleton Township Municipal Ordinance No. 2016-06, entitled Wellhead Protection Districts requires grouting and a sanitary seal for all at or below-grade well openings in Zones 2 and 3. The ordinance does not prohibit the use of wells; however, withdrawal of 100,000 gallons per day for any single use is prohibited. The proposed irrigation well will use less than 10,000 gallons per day during peak watering. It is recommended that a Triad geologist be retained to oversee the drilling and testing of the irrigation well.

5.2 Sinkhole Remediation

Repair of sinkholes should involve cleaning of the loose soil, soft rock, and miscellaneous debris to the throat of the sinkhole. The excavation should extend away from the center of the sinkhole, as necessary, to remove all loose soils. The throat of the sinkhole or solution channel should then be cleaned out such that the solution cavity and surrounding rock is exposed. A large excavator and possible hand excavations will likely be required to achieve this desired goal. Due to the differential weathering of the underlying bedrock and limited information regarding the subsurface strata, predicting the horizontal and vertical limits of the excavation is impossible. The contractor should be prepared to extend the vertical excavation a minimum of 20 feet and be prepared to excavate to greater depths if required. The contractor should also be prepared to hoe-ram large boulders and rock ledges. Upon completion of the excavation operations, the throat of the sinkhole and the surrounding excavation should be filled with either a concrete plug, reverse graded filter and/or a combination of the two. The final determination will be based on the depth to the throat and overall subsurface conditions encountered. However, it is generally recommended that concrete plug be utilized within building and pavement areas and a reverse graded filter be utilized within storm water management ponds.

For a concrete plug, we recommend that the throat of the sinkhole or channels and the surrounding bedrock be filled with lean-mix concrete (min. $f'_c=1,500$ psi). The initial mix should be stiff enough such that a plug can be developed in the throat of the feature. In lieu of this initial measure, competent large boulder(s), sized greater than or approximately equal to $B/2$, where "B" is the width of the throat, should be placed in the bottom, and concrete or grout can then be placed around the rock to form a massive plug. A diagram depicting a typical concrete plug bonded to rock section is included as **Figure 6**.

Construction of a reverse graded filter should involve placement of larger stone or boulders within the throat of the sinkhole. The diameter of the large stone or boulders should be at least one-half the diameter of the throat of the sinkhole. If the immediate throat cannot be fully exposed or if a significantly large throat is encountered, large boulders combined with lean-mix concrete may be required in the bottom of the excavation to serve as a very large conglomerate of resistant material. After placement of the larger stone/boulders and possible lean-mix concrete, the filter should consist of sequentially smaller graded stone, such as variable-sized rip rap followed by surge stone. The reverse graded filter should also be surrounded with a non-woven geotextile fabric. A diagram depicting a typical reverse graded filter section is included as **Figure 7**.

Upon completion of the concrete plug or filter placement, the remainder of the excavated area should be backfilled with low permeability clayey soil compacted to not less than 98 percent of

the maximum dry density based on the Standard Proctor moisture-density test (ASTM D 698). Fill materials should be placed in loose lifts not more than 6 inches for light compaction equipment and 10 inches for material compacted by heavy compaction equipment. Moisture contents of the fill materials should be adjusted, as necessary, to achieve the required compaction. Compaction testing should be performed on each lift of material placed.

We recommend that Triad be retained to provide on-site consulting and oversight services during remediation. A geotechnical engineer or geologist should be present full time during all remediation work to aid in directing the remediation contractor and to document all remediation activities.

5.3 Construction in Karst Considerations

Triad recommends the following procedures be used during construction activities (clearing and grubbing, trenching, blasting, boring or drilling) to limit potential impacts to karst features and related water resources.

1. Construction activities (clearing and grubbing, trenching, blasting, boring or drilling) be conducted in a manner that minimizes alteration of existing grade and hydrology of karst features:
 - In linear excavations adjacent to karst features, spoils be stockpiled and managed up-slope of the excavation, and runoff controlled according to the project specifications.
 - Surface water control measures, including, but not limited to, diversion (direct water flow into trench or off right-of-way areas past the area of concern), detention or collection and transportation, be utilized to prevent construction influenced surface water from free flowing into karst features.
 - Karst features will not be utilized for the disposal of water.
 - Excavations should be backfilled as soon as practically feasible to limit ponding of water and concentrated areas of surface water infiltration.

2. Blasting be conducted in a manner that will not compromise the structural integrity or alter the karst hydrology of known or inferred subsurface karst structures. If rock is required to be hammered or blasted, the following parameters should be adhered to:
 - The excavation be carefully inspected for voids or other openings, or signs of enhanced secondary porosity.
 - Blasting be conducted by a qualified blasting contractor, in accordance with the contractor's written and approved blasting plan.

- If a track drill is used to prepare the hole(s) for the explosive charge(s) and the boring encounters an open or clay-filled void, cave, or other signs of enhanced secondary porosity, Triad should be notified immediately to evaluate the encountered feature prior to any blasting.
3. The following general guidelines should be incorporated for construction practices in karst terrain:
- To reduce the risk of groundwater contamination, equipment should not be parked or left idling for extended periods of time (more than 12 hours), refueled, or serviced within 100 feet of any karst feature.
 - Equipment refueling should not be performed within flagged or marked buffer areas of streambeds, sinkholes, fissures, or areas draining into these or other karst features, except by hand-carried cans (5-gallon maximum capacity) when necessary.
 - Equipment servicing and maintenance areas should be sited outside of flagged or marked buffer areas of streambeds, sinkholes, fissures, or areas draining into these or other karst features.
 - Prevent runoff resulting from construction equipment washing operations to directly enter any karst feature by locating these operations outside of the buffer area.
 - Hazardous materials, chemicals, fuels, lubricating oils, and petroleum products should not be stored within 100 feet of any karst feature.
 - All equipment should be checked by a construction inspector daily for leaks prior to beginning work in karst areas. If any leaks are observed, or damaged or defective equipment is discovered, drip pans and other containment will be deployed immediately, and the equipment removed or repaired as soon as practical.
4. The intent of Erosion Sediment Control (ESC) and related Best Management Practices (BMPs) is to confine project-related disturbance to the LOD, protect sensitive karst features, and minimize erosion and enhance revegetation in those areas.
5. Discharge of hydrostatic testing water in karst areas will be avoided if practicable. If circumstances require hydrostatic testing water to be discharged in karst areas, we recommend a discharge location be selected in consideration of the following guidelines:
- Do not discharge hydrostatic testing water directly into flagged or marked buffer areas of karst features or channels or surface features that flow towards karst feature(s).

- Where possible, discharge hydrostatic test water down-gradient of karst features unless on-the-ground circumstances (e.g., manmade structures, terrain, and other sensitive resources) prevent such discharge.
 - i. If those circumstances occur, discharge water into uplands greater than 500 feet from flagged or marked buffer areas of karst features unless on-the-ground circumstances (e.g., manmade structures, terrain, other sensitive resources) prevent such discharge.
 - ii. If “i” above is not practicable, discharge water as far from flagged or marked karst features as practical and utilize additional sediment and water flow control devices to minimize effects.
- Control the rate and volume of discharge to prevent land erosion, sediment mobilization and ponding of water.

6.0 SUMMARY AND CONCLUSIONS

Triad was retained by Keystone FC to conduct a Wellhead Protection Area Desktop Study for the property Wolf Farm Soccer Fields site. Triad performed a desktop review and site reconnaissance at the site. Several fracture traces and karst features were identified.

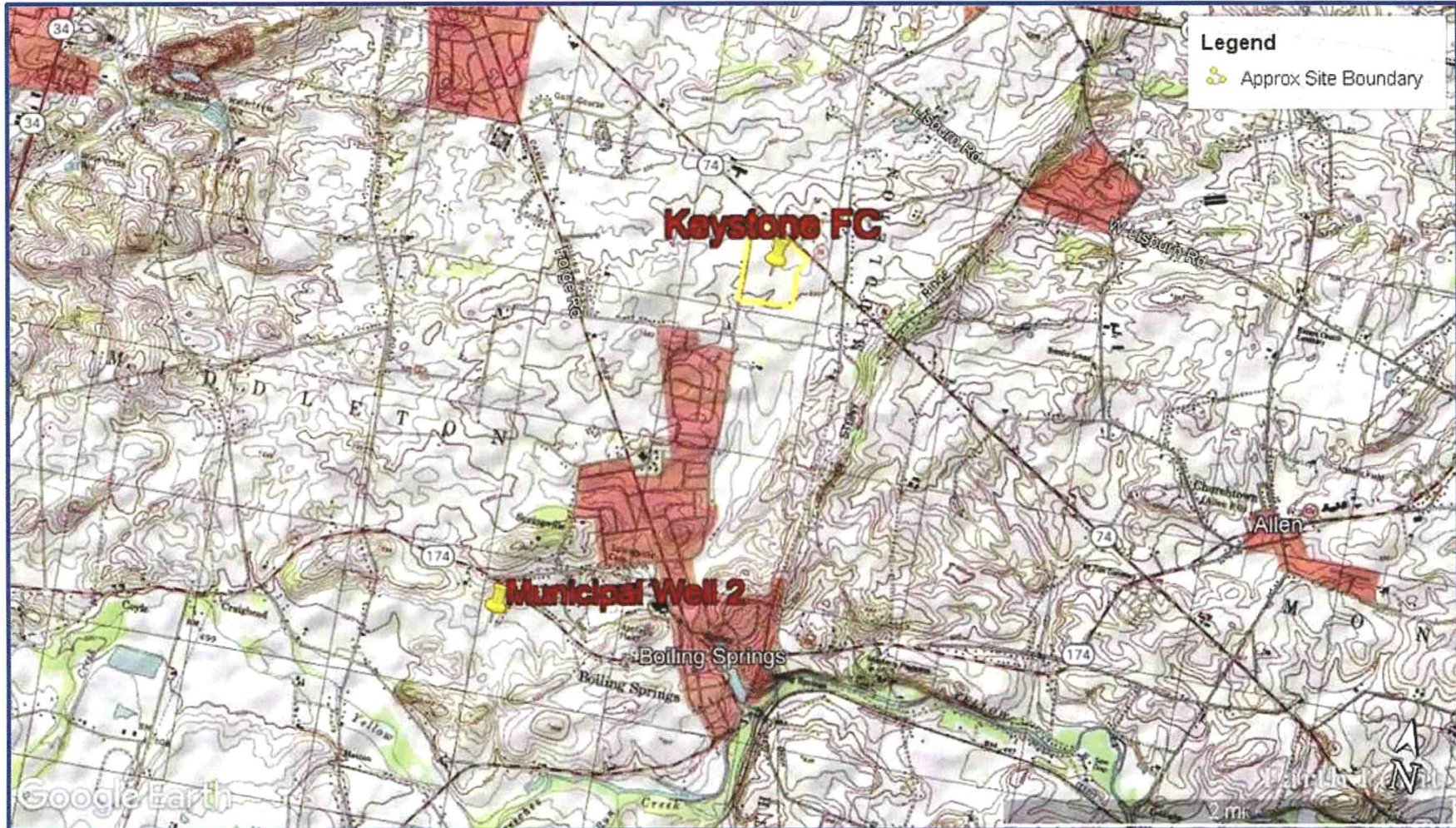
Based Triad’s findings from the services performed, it is Triad’s opinion that there will be no negative impact on groundwater recharge or quality if a well, buildings, structures, impervious surfaces, utilities, salt or de-icing storage area, petroleum products or other chemical storage areas are built to, comply with, and maintained to any and all codes and regulations at the local, state, and/or federal level that pertain to each individual subject listed above. Regarding blasting, it is Triad’s opinion that blasting will not have a negative impact on groundwater recharge or quality. With respect to storm water facilities, including, but not limited to, detention basins, it is Triad’s opinion that there will be no negative impact on groundwater recharge or quality if storm water facilities are built within 25 feet of any features identified in Section 1108 a.(3), or built anywhere on site, if any closed depressions and sinkholes identified in section 1108 a.(3) are remediated. Recommendations for sinkhole remediation are provided in this report. We recommend that Triad be retained to provide on-site consulting and oversight services during remediation. A geotechnical engineer or geologist should be present full time during all remediation work to aid in directing the remediation contractor and to document all remediation activities.

Figures

FIGURE 1 SITE LOCATION/TOPOGRAPHY PLAN

WOLF FARM SOCCER FIELDS
SOUTH MIDDLETON TOWNSHIP, PENNSYLVANIA

Triad Project Number: 03-23-0318

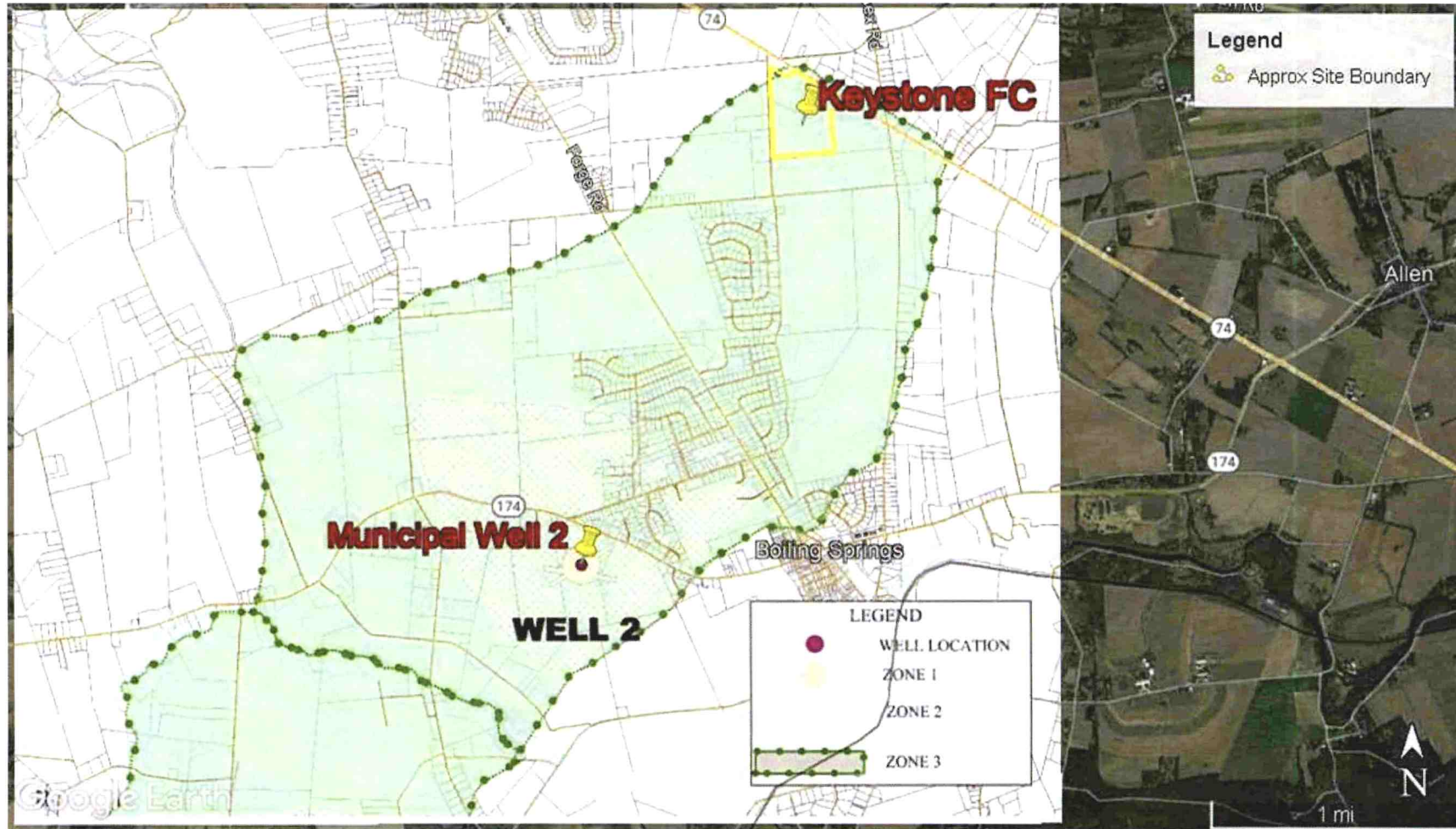


Source:
GoogleEarth, Earth Point Topo Map

FIGURE 2 WELLHEAD PROTECTION AREA MAP – WELL 2

WOLF FARM SOCCER FIELDS
SOUTH MIDDLETON TOWNSHIP, PENNSYLVANIA

Triad Project Number: 03-23-0318



Source:
South Middleton Township Municipal Ordinance No. 2016-06, entitled Wellhead Protection Districts
Google Earth

TRIAD
TRIAD ENGINEERING, INC.

FIGURE 3 PROPOSED SITE IMPROVEMENTS

WOLF FARM SOCCER FIELDS
SOUTH MIDDLETON TOWNSHIP, PENNSYLVANIA

Triad Project Number: 03-23-0318



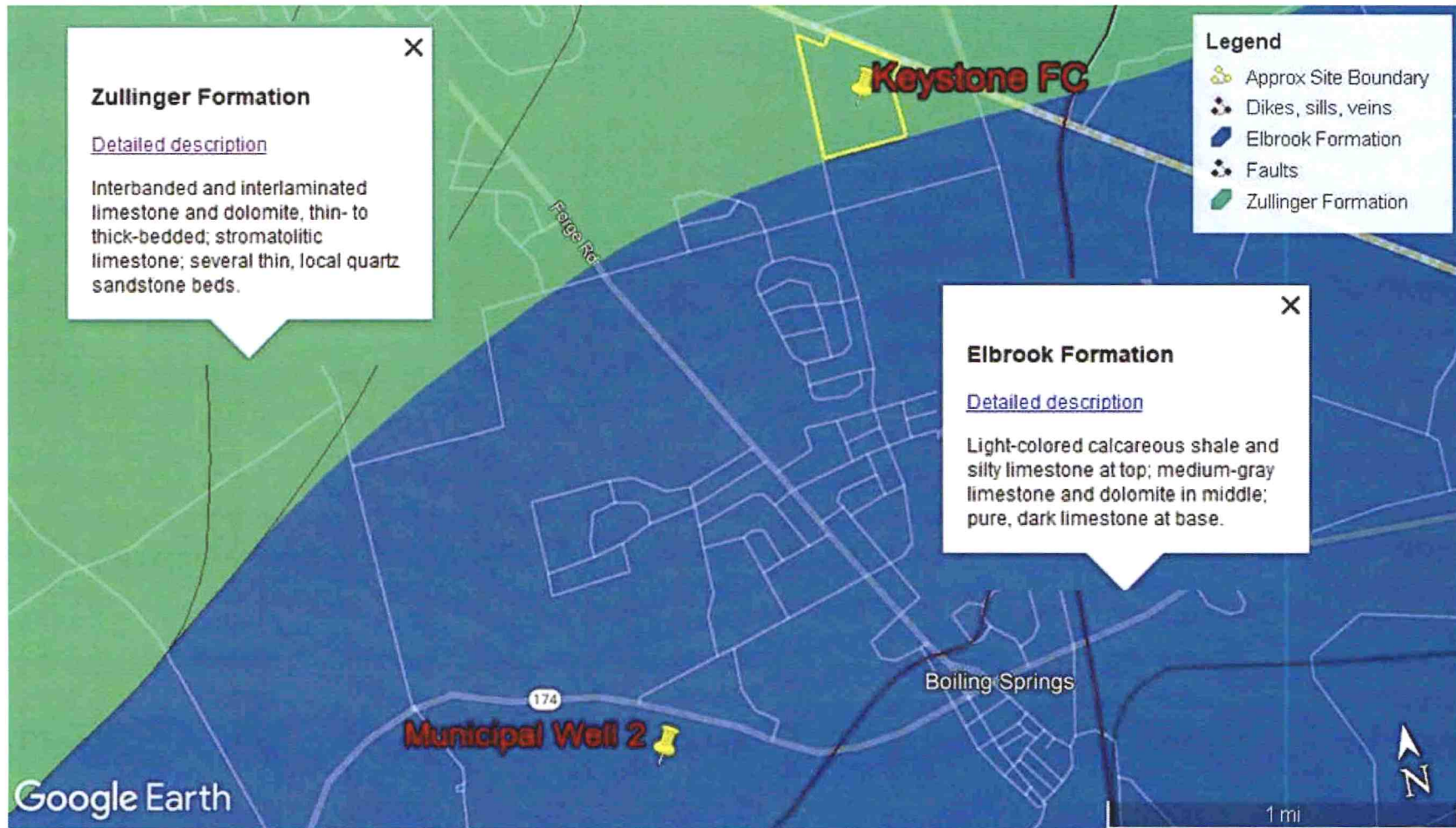
Source:
Frederick, Seibert, & Associates, Inc. Site & Landscape Plan (C-101),
GoogleEarth



FIGURE 4 SITE GEOLOGICAL MAP

WOLF FARM SOCCER FIELDS
SOUTH MIDDLETON TOWNSHIP, PENNSYLVANIA

Triad Project Number: 03-23-0318



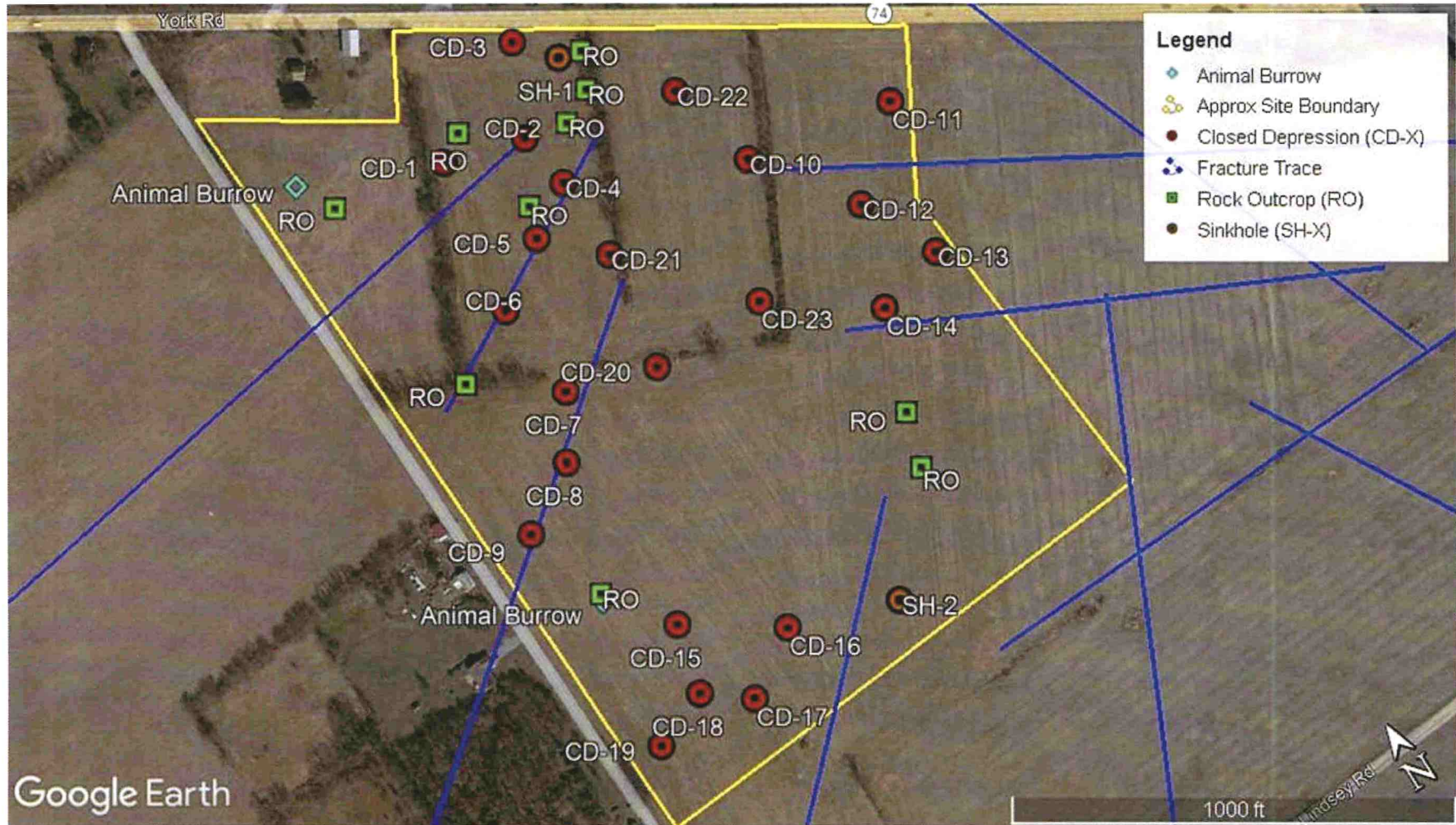
Source:
GoogleEarth

FIGURE 5

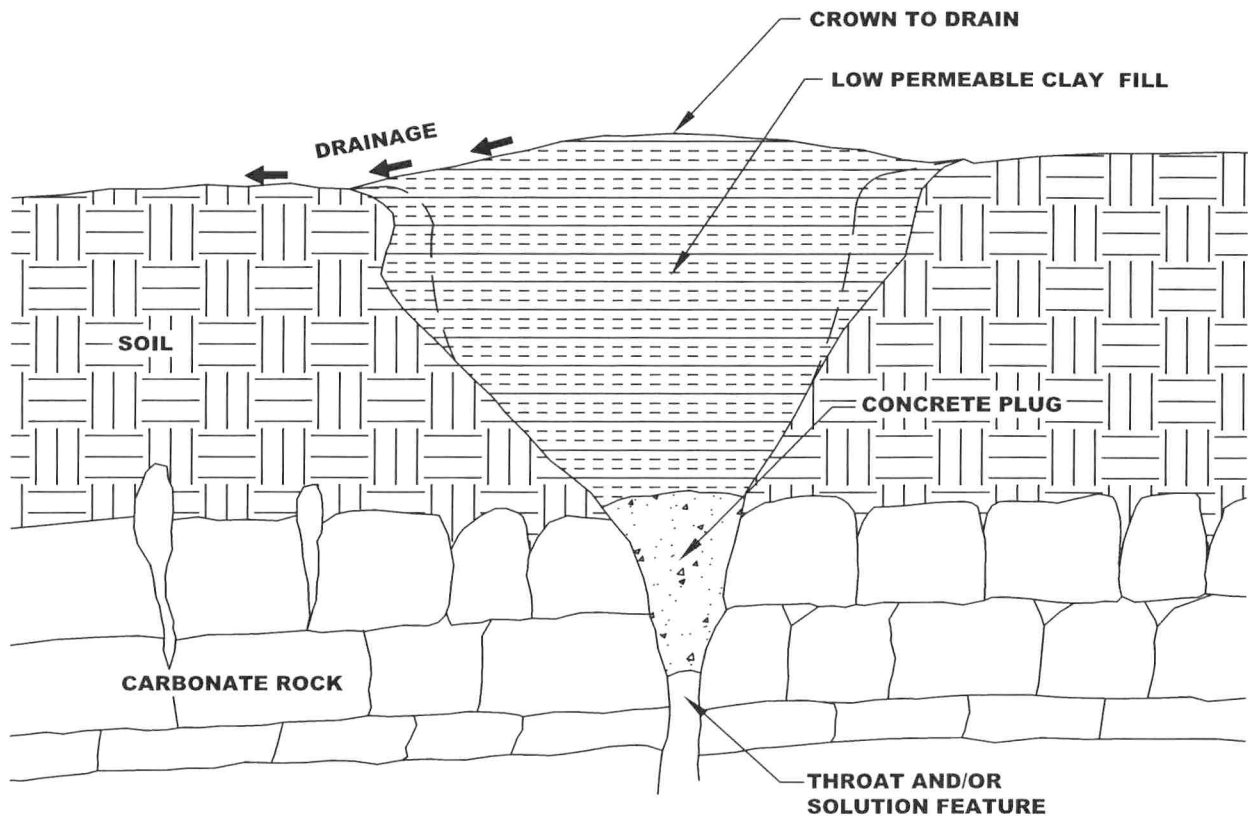
FRACTURE TRACE ANALYSIS AND KARST FEATURES PLAN

WOLF FARM SOCCER FIELDS
SOUTH MIDDLETON TOWNSHIP, PENNSYLVANIA

Triad Project Number: 03-23-0318



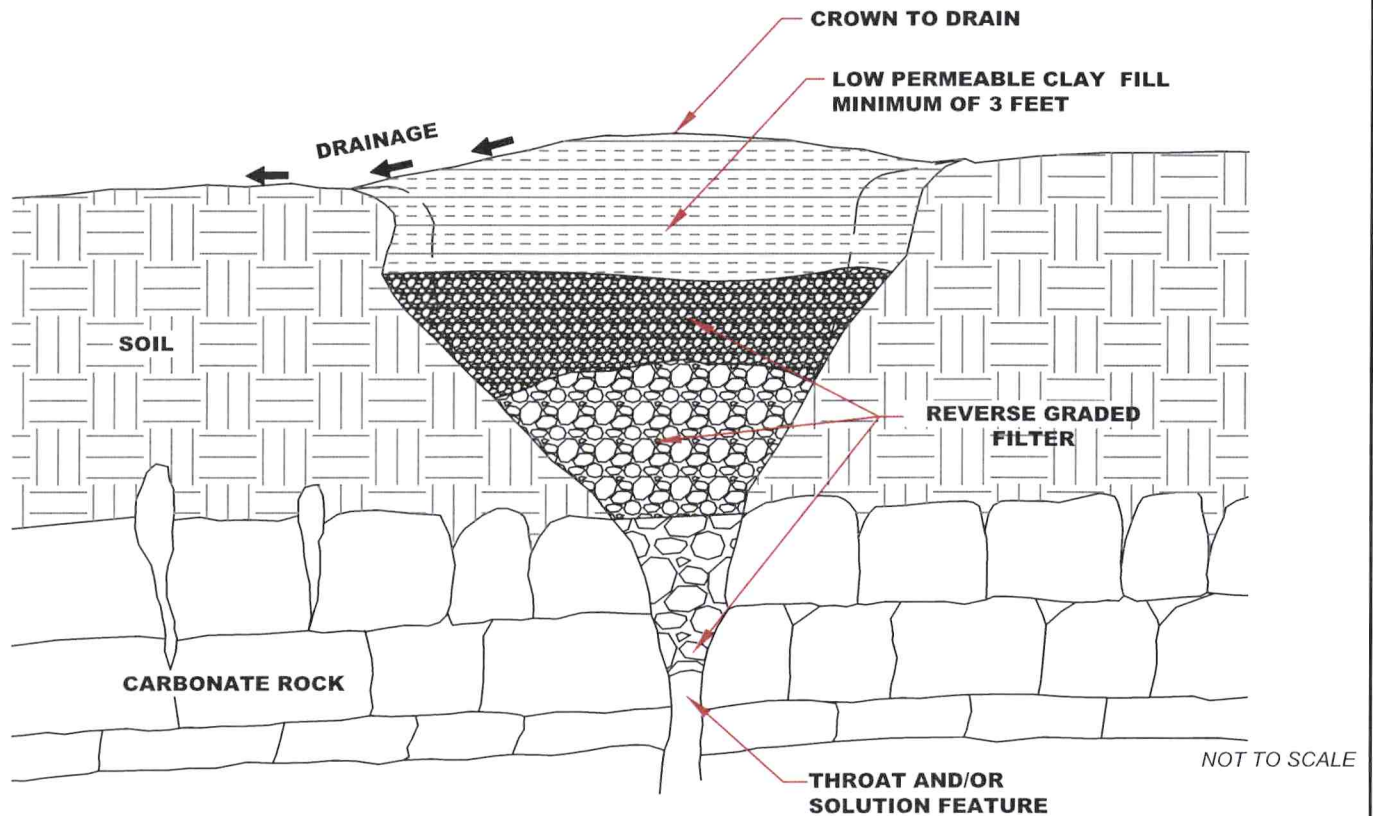
Source:
GoogleEarth



SINKHOLE REMEDIATION NOTES

1. IN GENERAL A RISK OF SINKHOLE DEVELOPMENT WITHIN THE SWM FACILITY AND SITE CAN BE ANTICIPATED DUE TO THE KARST GEOLOGY IN THE AREA.
2. REPAIR OF EXISTING SINKHOLES SHOULD INVOLVE CLEANING OF THE LOOSE SOIL, SOFT ROCK AND ANY DEBRIS TO THE THROAT OF THE SINKHOLE. THE EXCAVATIONS SHOULD EXTEND AWAY FROM THE CENTER OF THE SINKHOLE, AS NECESSARY, TO REMOVE ALL LOOSE SOIL AND EXPOSE ANY ADDITIONAL THROATS.
3. THE THROATS OF THE SINKHOLE OR SOLUTION CHANNELS SHOULD THEN BE CLEANED OUT SUCH THAT THE SOLUTION CAVITY AND AS MUCH SURROUNDING ROCK AS POSSIBLE IS EXPOSED. A LARGE TRACKHOE AND POSSIBLE HAND EXCAVATIONS WILL LIKELY BE REQUIRED TO ACHIEVE THIS DESIRED GOAL. TRIAD SHOULD HAVE A REPRESENTATIVE ON SITE TO OBSERVE THE EXCAVATION AND APPROVE.
4. DUE TO THE DIFFERENTIAL WEATHERING OF THE UNDERLYING BEDROCK AND LIMITED INFORMATION REGARDING THE SUBSURFACE STRATA, PREDICTING THE HORIZONTAL AND VERTICAL LIMITS OF THE EXCAVATION IS IMPOSSIBLE.
5. UPON COMPLETION OF THE EXCAVATION OPERATIONS, WE RECOMMEND THAT THE THROAT OF THE SINKHOLE OR CHANNELS AND THE SURROUNDING BEDROCK BE FILLED WITH LEAN MIX CONCRETE. THE INITIAL MIX SHOULD BE STIFF ENOUGH SUCH THAT A PLUG CAN BE DEVELOPED IN THE THROAT OF THE FEATURE.
6. IN LIEU OF THIS INITIAL MEASURE, COMPETENT LARGE BOULDER(S) SIZED GREATER THAN OR APPROXIMATELY EQUAL TO B/2 WHERE "B" IS THE WIDTH OF THE THROAT, SHOULD BE PLACED IN THE BOTTOM, AND CONCRETE OR GROUT CAN THEN BE PLACED AROUND THE ROCK TO FORM A MASSIVE PLUG.
7. UPON COMPLETION OF THE PLUG AND A MINIMUM OF 24 HOURS, THE REMAINDER OF THE EXCAVATED AREA (MINIMUM OF 4 FEET IN DEPTH) SHOULD BE BACKFILLED WITH A LOW PERMEABILITY CLAYEY SOIL COMPACTED TO NOT LESS THAN 95 PERCENT OF THE MAXIMUM DRY DENSITY BASED ON THE STANDARD PROCTOR MOISTURE-DENSITY TEST (ASTM D 698)

NOT TO SCALE

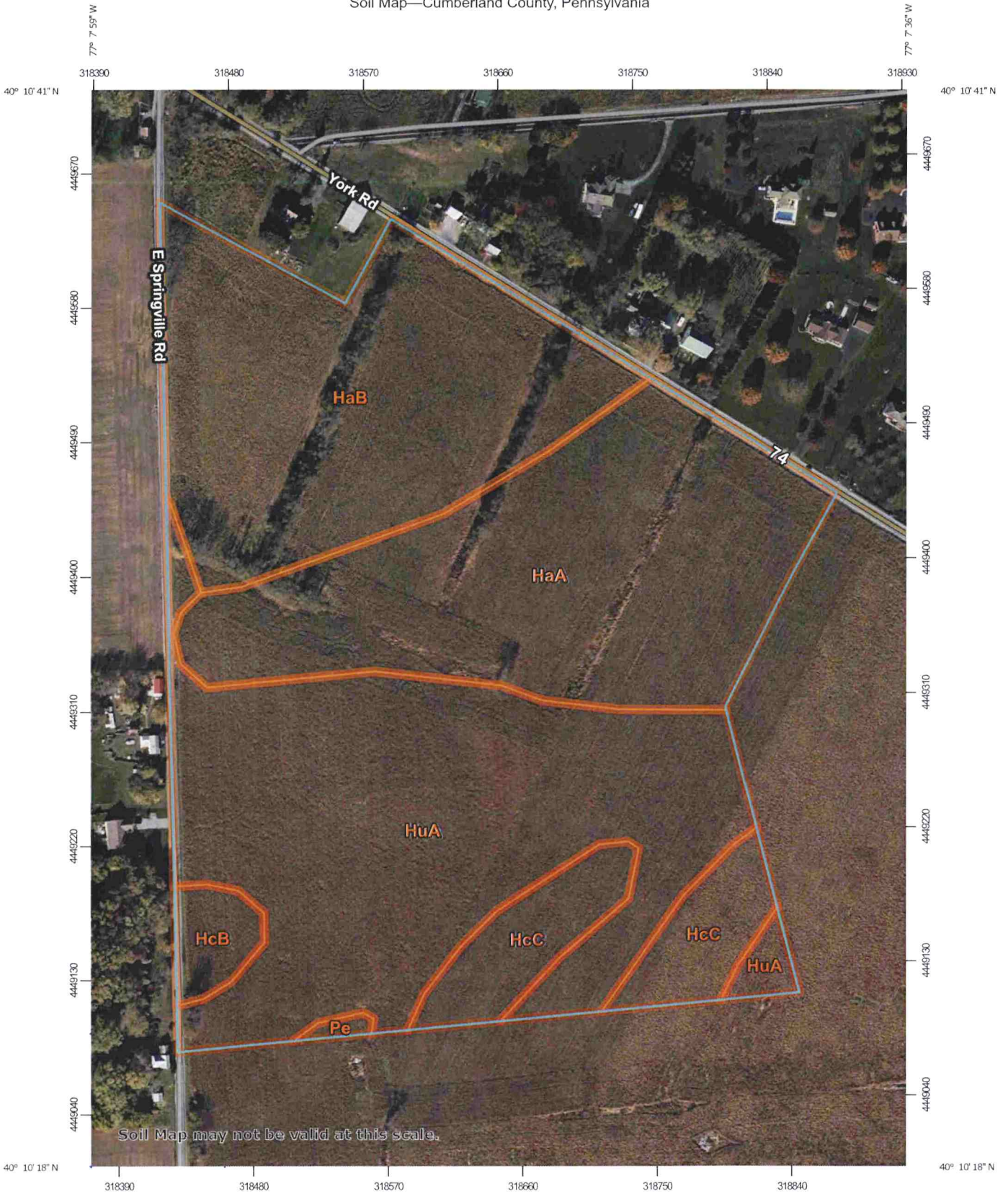


SINKHOLE REMEDIATION NOTES

1. IN GENERAL A RISK OF SINKHOLE DEVELOPMENT WITHIN THE SWM FACILITIES AND SITE CAN BE ANTICIPATED DUE TO THE KARST GEOLOGY IN THE AREA.
2. REPAIR OF EXISTING SINKHOLES SHOULD INVOLVE CLEANING OF THE LOOSE SOIL, SOFT ROCK AND ANY DEBRIS TO THE THROAT OF THE SINKHOLE. THE EXCAVATIONS SHOULD EXTEND AWAY FROM THE CENTER OF THE SINKHOLE, AS NECESSARY, TO REMOVE ALL LOOSE SOIL AND EXPOSE ANY ADDITIONAL THROATS.
3. THE THROATS OF THE SINKHOLE OR SOLUTION CHANNELS SHOULD THEN BE CLEANED OUT SUCH THAT THE SOLUTION CAVITY AND AS MUCH SURROUNDING ROCK AS POSSIBLE IS EXPOSED. A LARGE TRACKHOE AND POSSIBLE HAND EXCAVATIONS WILL LIKELY BE REQUIRED TO ACHIEVE THIS DESIRED GOAL. TRIAD SHOULD HAVE A REPRESENTATIVE ON SITE TO OBSERVE THE EXCAVATION AND APPROVE.
4. DUE TO THE DIFFERENTIAL WEATHERING OF THE UNDERLYING BEDROCK AND THE NATURE OF KARST GEOLOGY, PREDICTING THE HORIZONTAL AND VERTICAL LIMITS OF THE EXCAVATION IS IMPOSSIBLE.
5. UPON COMPLETION OF THE EXCAVATION OPERATIONS, THE THROAT OF THE SINKHOLE AND THE SURROUNDING BEDROCK SHOULD BE FILLED WITH A REVERSE GRADED FILTER. THE FILTER SHOULD INVOLVE PLACEMENT OF LARGER STONE OR BOULDERS WITHIN THE THROAT OF THE SINKHOLE.
6. THE DIAMETER OF THE LARGE STONE OR BOULDERS SHOULD BE AT LEAST ONE-HALF THE DIAMETER OF THE THROAT OF THE SINKHOLE. IF THE IMMEDIATE THROAT CAN NOT BE FULLY EXPOSED OR IF A SIGNIFICANTLY LARGE THROAT IS ENCOUNTERED, LARGE BOULDERS COMBINED WITH POSSIBLE LEAN CONCRETE MAY BE REQUIRED IN THE BOTTOM OF THE EXCAVATION TO SERVE AS A VERY LARGE CONGLOMERATE OF RESISTANT MATERIAL.
7. AFTER PLACEMENT OF THE LARGER STONE OR BOULDERS, THE FILTER SHOULD CONSIST OF SEQUENTIALLY SMALLER GRADED STONE SUCH AS VARIABLE SIZED RIP RAP FOLLOWED BY SURGE STONE. THE REVERSE GRADED FILTER SHOULD BE COVERED WITH A NON-WOVEN GEOTEXTILE FABRIC. THE REMAINDER OF THE EXCAVATED AREA (MINIMUM OF 3 FEET) SHOULD BE BACKFILLED WITH LOW PERMEABILITY ON-SITE CLAYEY SOIL COMPACTED TO NOT LESS THAN 95 PERCENT OF THE MAXIMUM DRY DENSITY BASED ON THE STANDARD PROCTOR MOISTURE-DENSITY TEST (ASTM D 698). TRIAD SHOULD BE ON SITE DURING THE REMEDIATION WORK TO MONITOR THE EXCAVATION AND PERFORM COMPACTION TESTING ON THE CLAY BACKFILL.

Appendix A

Soil Map—Cumberland County, Pennsylvania







































Soil Map may not be valid at this scale.

Map Scale: 1:3,510 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

- Area of Interest (AOI)**
-  Area of Interest (AOI)
- Soils**
-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points
- Special Point Features**
-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features
- Water Features**
-  Streams and Canals
- Transportation**
-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads
- Background**
-  Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.
 Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County, Pennsylvania
 Survey Area Data: Version 17, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 6, 2020—Nov 7, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HaA	Hagerstown silt loam, 0 to 3 percent slopes	13.4	27.9%
HaB	Hagerstown silt loam, 3 to 8 percent slopes	12.5	26.0%
HcB	Hagerstown silt loam, rocky, 3 to 8 percent slopes	0.9	1.9%
HcC	Hagerstown silt loam, rocky, 8 to 15 percent slopes	3.6	7.5%
HuA	Huntington silt loam, 0 to 5 percent slopes	17.5	36.4%
Pe	Penlaw silt loam	0.1	0.3%
Totals for Area of Interest		48.1	100.0%

Appendix B

Appendix C

