



**AGENDA**  
**MONTGOMERY TOWNSHIP**  
**BOARD OF SUPERVISORS**  
**FEBRUARY 8, 2021**

[www.montgomerytwp.org](http://www.montgomerytwp.org)

Tanya C. Bamford  
Candyce Fluehr Chimera  
Annette M. Long  
Matthew W. Quigg  
Beth A. Staab

Carolyn McCreary  
Township Manager

**ACTION MEETING – 7:00 PM**

1. Call Meeting to Order
2. Pledge of Allegiance
3. Public Comment
4. Announcements
5. Consent Agenda:
  - a. Consider Approval of Minutes of January 25, 2021 Meeting
  - b. Consider Payment of the Bills

**Planning & Zoning:**

6. Consider Authorization to Advertise Zoning Ordinance Text Amendment: Westrum Proposed Land Development
7. Escrow Releases:
  - a. Fire Fox Phase 3, Escrow Release No. 10 / Start of 18-month Maintenance Period
  - b. Fire Fox Phase 1, Escrow Release No. 13
  - c. Pete's Carwash, Escrow Release No. 2

**Administration & Finance:**

8. Consider Resolution Approving Volunteer Firefighter Stipend Based on 2020 Eligibility
9. Consider Authorization to Accept Quote for Engineering Services: Modernization of Route 309/Montgomery Mall Traffic Signals

**Other Business:**

10. Adjournment

**PLEASE NOTE: For the safety of all participants, masks must be worn in the Township building and meeting room. Social distancing measures have been put into place which reduces the number of people who can safely occupy the meeting room. You may be asked to wait in the lobby if the room capacity has been reached. Thank you for your patience and cooperation in working to keep everyone safe.**

**MONTGOMERY TOWNSHIP BOARD OF SUPERVISORS**  
**BOARD ACTION SUMMARY**  
Item # **3**

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**SUBJECT:** Public Comment  
**MEETING DATE:** February 8, 2021  
**BOARD LIAISON:**  
**INITIATED BY:**

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**BACKGROUND:**

Persons wishing to make public comment during this meeting on any items not listed on the agenda may do so at this time.

MONTGOMERY TOWNSHIP BOARD OF SUPERVISORS

BOARD ACTION SUMMARY

Item # 4

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SUBJECT: Announcements  
MEETING DATE: February 8, 2021  
BOARD LIAISON:  
INITIATED BY: Tanya C. Bamford, Chair

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- We want to remind our residents that the Montgomery Township Community and Recreation Center is open for business! Guidelines for safety are being implemented. Masks must be worn at all times.

Center hours are:

Monday to Friday: 5:30am to 7:30pm

Saturday and Sunday: 8:00am to 2:00pm

- The Fitness Gym and Walking Track are open for Personal Fitness and configured for safety
- The gymnasium is available for individual basketball shooting; call to schedule a time
- Two indoor Pickleball Courts are now available – special safety guidelines are required, call to register for a time slot
- Winter programs are happening now and include: ceramic workshops, pickleball lessons, arts & crafts for pre-school and youth, fitness fun programs, gaming night, chess club and many more new and fun activities. Check the website at [www.montcrc.com](http://www.montcrc.com) or follow their Facebook for new and exciting programming

MONTGOMERY TOWNSHIP BOARD OF SUPERVISORS

**BOARD ACTION SUMMARY**

Item # **5**

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<b>SUBJECT:</b>	Consent Agenda:
	Approval of Minutes of January 25, 2021 and Payment of Bills
<b>MEETING DATE:</b>	February 8, 2021
<b>BOARD LIAISON:</b>	
<b>INITIATED BY:</b>	

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**BACKGROUND:**

Please review and contact Deb Rivas on Monday, February 8, 2021 with any changes to the minutes. Also, attached are the list of bills for review for payment on February 8, 2021.

**MOTION TO APPROVE THE CONSENT AGENDA AS PRESENTED**



## MINUTES OF MEETING MONTGOMERY TOWNSHIP BOARD OF SUPERVISORS JANUARY 25, 2021

**1. Call to Order:** The January 25, 2021 action meeting of the Montgomery Township Board of Supervisors was held at the Montgomery Township Municipal Building, 1001 Stump Road, Montgomeryville, PA. Chair, Tanya C. Bamford called the meeting to order at 7:00 p.m.

**IN ATTENDANCE:**

Chair Tanya C. Bamford  
Vice Chair Matthew W. Quigg  
Supervisor Beth A. Staab  
Supervisor Annette M. Long  
Township Manager Carolyn McCreary  
Township Solicitor Sean Kilkenny, Esq.

**ALSO IN ATTENDANCE:**

Police Chief J. Scott Bendig  
Director of Finance Brian Shapiro  
Director of Planning & Zoning Bruce Shoupe  
Director of IT Rich Grier  
Director of Public Works Greg Reiff  
Recording Secretary Deborah A. Rivas

**ABSENT:**

Supervisor Candyce Fluehr Chimera

**2. & 3. Pledge of Allegiance and Public Comment:** Following the Pledge of Allegiance, there was no public comment.

**4. Announcements:** Ms. Bamford acknowledged the recent passing of long time Township resident and volunteer, Anne Roller. Mrs. Roller served on many volunteer activities of the Township over the years and the Board sends its heartfelt condolences to her husband, Richard Roller.

**5. Announcement of Executive Session:** Township Solicitor Sean Kilkenny, Esquire announced that the Board met in executive session at 6:30 p.m. this evening to discuss two (2) litigation and personnel matters.

**6. Presentation:** The Board recognized long-time resident, Mary Griffith-Alfarano, for her recent selection to serve as the Chairperson of the Chamber of Commerce for Greater Montgomery County, as well as her many years of service to the Township on various committees and boards.

**MOTION:** Upon motion by Ms. Bamford, seconded by Ms. Long and unanimously carried, Resolution #2021-14 recognized and congratulated Mary Griffith-Alfarano for being named Chairperson of the Chamber of Commerce for Greater Montgomery County.

**7 & 8. Consent Agenda:**

**MOTION:** Upon motion by Mr. Quigg, seconded by Ms. Long and unanimously carried, the minutes of the January 4, 2021 meeting and the Bills List dated January 25, 2021 were approved as presented.

**Public Works:**

**9. Authorization to Advertise for Bids – 2021 Curb and Sidewalk Project:**

**MOTION:** Upon motion by Ms. Bamford, seconded by Mr. Quigg and unanimously carried, the bid advertisement for the 2021 Curb and Sidewalk Project was authorized.

**10. Authorization to Advertise for Bids – 2021 Paving Project:**

**MOTION:** Upon motion by Ms. Bamford, seconded by Mr. Quigg and unanimously carried, the bid advertisement for the 2021 Paving Project was authorized.

**11. Authorization to Purchase Dump Truck under PA COSTARS Contract:**

**MOTION:** Upon motion by Mr. Quigg, seconded by Ms. Staab and unanimously carried, the purchase of a new 2021 Peterbilt Dump Truck from G.L. Sayre Peterbilt at a cost of \$147,016.00 and the purchase of a dump body, snowplow and installation from Triad Truck Equipment at a total cost of \$89,225.00 was approved.

**Planning & Zoning:**

**12. Authorization to Advertise for Conditional Use Hearing: Costco Gasoline Sales:**

**MOTION:** Upon motion by Ms. Bamford, seconded by Ms. Long and unanimously carried, the advertisement and scheduling of the required Conditional Use public hearing, upon receipt of an application from Costco for gasoline sales, was approved.

**13. Tree City USA Recertification and Growth Award Application:**

**MOTION:** Upon motion by Ms. Staab, seconded by Mr. Quigg and unanimously carried, the submission of the application for the 2020 Tree City USA Recertification and 2020 Growth Award was approved.

**13a. Board Positions for Zoning Hearing Board Application:** Director of Planning and Zoning Bruce Shoupe presented the two applications to be considered by the Zoning Hearing Board at their February meeting. The two applications are for 311 Stump Road for a lot subdivision and 102 Ashley Circle for an addition that does not meet the requirements for setback from the property line. The Board declined to intervene on either application.

**Public Safety:**

**14. Adoption of Amendment to Township Ordinance:** Police Chief J. Scott Bendig reported that staff is recommending the amendment of Section 9-A of the Township ordinance for Vehicles and Traffic, specifically governing the speed limit of Vilsmeier Road. The current speed limit is 35 mph. It is recommended that the speed limit be reduced to 25 mph.

**MOTION:** Upon motion by Ms. Bamford, seconded by Mr. Quigg and unanimously carried, the adoption of amendment to Chapter 222, Section 9-A, reducing the speed limit on Vilsmeier Road to 25 miles per hour was approved.

**15. Authorization to Purchase Replacement Police Vehicles:**

**MOTION:** Upon motion by Mr. Quigg, seconded by Ms. Staab and unanimously carried, the purchase of two 2021 Ford Police Interceptor Utility vehicles from Fred Beans Ford Lincoln at a total cost of \$71,184.00 and the purchase and installation of equipment for the vehicles from Havis, Inc. at a cost of \$24,214.35 was approved.

**Administration and Finance:**

**16. Escrow Release for Korean War Memorial and American-Korea Alliance Peace Park:** Ms. McCreary reported that the committee has requested the release of the financial security that was held by the Township for this project. Ms. Bamford announced the recent passing of the Architect for the project, Mr. Joseph Lavalle. Ms. Long stated that Mr. Lavalle served his community in Upper Moreland Township as a Commissioner for a long time. When he was approached about serving as the architect for this project, he did not hesitate to join the committee. Ms. Long said that it was his design work on the project that brought the concept to life. He will be sorely missed and we have this park because of him.

**MOTION:** Upon motion by Ms. Bamford, seconded by Mr. Quigg and unanimously carried, with Ms. Long abstaining, the Board authorized the release of \$70,000 of the financial security posted to ensure completion of the memorial.

**17. Affirm Tax Collector's Compensation:**

**MOTION:** Upon motion by Ms. Bamford, seconded by Mr. Quigg and unanimously carried, the Board affirmed and maintained the current salary of \$16,735.00 for the Montgomery Township tax collector.

**18. Approve Settlement of Board Assessment Appeals:** Ms. McCreary reported that the North Penn School District and the property owners of 988 Bethlehem Pike (OSJ of Montgomeryville LLC) and 913 Bethlehem Pike (Lukoil North America LLC) have reached an agreement as to the assessment appeals and reverse assessment appeals, which now require action by the Board of

Supervisors on behalf of the Township. Settlement of the appeal for 988 Bethlehem Pike will result in the Township refunding \$2,091.11 for the year 2020 and settlement of the appeal for 913 Bethlehem Pike would result in the Township reimbursing the tax payer \$1,365.62 for the years 2017 through 2020.

**MOTION: Upon motion by Ms. Bamford, seconded by Mr. Quigg and unanimously carried, the Board approved the stipulated settlements for the properties identified and authorized the Township Solicitor to execute the settlement stipulations.**

**19. Dissolution of Pension Committee for 401 and 457 Plans:** Ms. McCreary reported that the current plan administrator for the non-uniform pension plan and the divert compensation plan for the employees was recently changed to Empower Retirement which provides excellent investment options and customer service for employees. Based on this change, the increased oversight being provided by the Finance Director and staff, the updating of the plan policies and the increased direct contact by Empower with individual employees, it is recommended that the Board dissolve the non-uniform pension committee.

**MOTION: Upon motion by Ms. Bamford, seconded by Ms. Staab and unanimously carried, the Board dissolved the Money Purchase Plan/Deferred Compensation Plan Committee as permitted by the bylaws adopted by resolution of the Board of Supervisors on April 27, 2009.**

**20. Affirmation of Volunteer Firefighter Criteria for Qualified Active Member Status:** Ms. McCreary reported that the Board approved the First Responder Recruitment and Retention Stipend on April 13, 2020 to incentivize volunteer first responders for their service in 2019. Prior to adopting this resolution in 2021, for volunteer service in 2020, the Township must acknowledge the fire company's or EMS squad's written criteria for determining Qualified Active Member status. Per FDMT by-laws, active status is determined with a point system. Members accrue various points for fire calls, duty crew, drills and meetings, stipend shifts, public relations/community events and fundraisers. Members must achieve 20% of total points accumulated to be considered as an active member and status as a member in good standing.

**MOTION: Upon motion by Ms. Bamford, seconded by Mr. Quigg and unanimously carried, the Board affirmed the FDMT criteria for determining the Qualified Active Member status.**

**Other Business:**

**21. Department Reports:** Ms. Bamford announced that Department reports for the month of December were available in the packet. Ms. Bamford also reported that there were two items that staff were seeking further direction on from the Board.

Chief Bendig reported that over the past few weeks there has been an uptick in food truck activity within the Township. Currently, these trucks are being regulated through the current ordinance

governing peddling and soliciting. Discussions have been held regarding this issue and staff is requesting further direction from the Board regarding how they would like the staff to proceed regarding the regulation of food truck activity within the Township. Township Solicitor, Mr. Kilkenny, reported that two other municipalities that he represents have decided to regulate food trucks through zoning, providing certain zoning districts, or a zoning district for approved trucks which are permitted with appropriate regulations in that district. Mr. Kilkenny stated that he recommends that food trucks be regulated through zoning with at least one district where it will be permitted because a zoning classification ordinance is more likely to be challenged successfully, if you don't permit that use somewhere. Discussion followed. The Board expressed the need to be sensitive to current established brick and mortar food establishments as well as the strong interest and demand for the food trucks. Under public comment, Vince Tulio of 101 Glasgow Circle stated that he watched a food truck come to his cul-de-sac on an early afternoon. Many kids were still riding bikes in the neighborhood. A lot of traffic drove into and out of the cul-de-sac to pick up their orders. Mr. Tulio recommended that if the Board were to approve some kind of regulation, that it be mindful of the pedestrian traffic and location. The Board agreed to allow staff to come forward with a potential zoning solution for their consideration.

Ms. McCreary reported that a resident had reached out to Mr. Reiff about placing a bench in one of the parks in memory of a loved one who passed away. Mr. Reiff shared that it had been past practice to not allow it because the sentiment was that if the Township did it for one, it would have to do it for all requests. It was suggested that a plan could be created which would allow only a certain number of benches per park, type of low maintenance bench and a tasteful presentation. The Board was agreeable to entertaining a recommendation of a memorial bench program from staff.

**22. Committee Liaison Reports:** There were no committee reports discussed. Ms. Bamford reported that the Sewer Authority had met and discussed the latest BioBot study report. The numbers have come down slightly, but they are still very high. Everyone needs to continue to wear masks and stay socially distant.

**23. Adjournment:** Upon motion by Ms. Bamford and seconded by Ms. Staab, the meeting was adjourned at 8:00 p.m.

Respectfully submitted,

Deborah A. Rivas, Recording Secretary

02/05/2021 01:03 PM  
 User: msanders  
 DB: Montgomery Twp

CHECK REGISTER FOR MONTGOMERY TOWNSHIP  
 CHECK DATE FROM 01/26/2021 - 02/08/2021

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Check Date	Bank	Check	Vendor	Vendor Name	Amount
Bank 01 UNIVEST CHECKING					
01/26/2021	01	80640	00001132	FERGUSON & MCCANN, INC.	1,450.00
01/27/2021	01	80641	03214568	FULTON CARDMEMBER SERVICES	1,826.86
02/03/2021	01	80642	00000009	PETTY CASH	312.52
02/05/2021	01	80643	00000496	21ST CENTURY MEDIA NEWSPAPERS LLC	703.57
02/05/2021	01	80644	00000006	ACME UNIFORMS FOR INDUSTRY	167.22
02/05/2021	01	80645	100000892	ADAM ZWISLEWSKI	200.00
02/05/2021	01	80646	100000876	ALEXANDER J. DEANGELIS	15.00
02/05/2021	01	80647	100001548	ALLEN DOOR & SERVICE CORP.	2,194.00
02/05/2021	01	80648	100000814	AMAZON.COM SERVICES, INC	550.63
02/05/2021	01	80649	00001325	AMERICAN CANCER SOCIETY	100.00
02/05/2021	01	80650	100000888	ANDREW WEINER	35.00
02/05/2021	01	80651	00000031	AT&T	153.75
02/05/2021	01	80652	00001997	AUTOMATIC SYNC TECHNOLOGIES, LLC	387.36
02/05/2021	01	80653	100000247	BEN CROWLE SERVICES	1,340.00
02/05/2021	01	80654	00000043	BERGEY'S	146.40
02/05/2021	01	80655	00000209	BOUCHER & JAMES, INC.	12,225.87
02/05/2021	01	80656	100001244	BRANDI BLUSIEWICZ	90.00
02/05/2021	01	80657	100000979	BRANDON UZDZIENSKI	100.00
02/05/2021	01	80658	100000004	BUCKS COUNTY COMMUNITY COLLEGE	6,500.00
02/05/2021	01	80659	100000405	C.E.S.	456.53
02/05/2021	01	80660	100000319	CANDORIS	11,513.68
02/05/2021	01	80661	100000878	CARL HERR	100.00
02/05/2021	01	80662	00000363	COMCAST	41.59
02/05/2021	01	80663	100001660	COMMONWEALTH YOUTHCHOIRS	100.00
02/05/2021	01	80664	00000602	CONRAD SIEGEL	4,050.00
02/05/2021	01	80665	00000629	DAVIDHEISER'S INC.	78.95
02/05/2021	01	80666	00000118	DEL-VAL INTERNATIONAL TRUCKS, INC.	852.96
02/05/2021	01	80667	100000893	DONALD TUCKER	40.00
02/05/2021	01	80668	100001609	DONE-RITE BUILDING SERVICES, INC.	1,237.50
02/05/2021	01	80669	00000967	DVHT DELAWARE VALLEY HEALTH TRUST	157,489.60
02/05/2021	01	80670	00000152	ECKERT SEAMANS CHERIN &	2,090.00
02/05/2021	01	80671	100001602	FRANK BLUSIEWICZ	30.00
02/05/2021	01	80672	03214568	FULTON CARDMEMBER SERVICES	152.92
02/05/2021	01	80673	00001852	G.L. SAYRE, INC.	404.11
02/05/2021	01	80674	00000188	GALLS, AN ARAMARK CO., LLC	1,744.90
02/05/2021	01	80675	00000193	GEORGE ALLEN PORTABLE TOILETS, INC.	1,813.00
02/05/2021	01	80676	00000817	GILMORE & ASSOCIATES, INC.	38,271.08
02/05/2021	01	80677	00000817	VOID	0.00 V
02/05/2021	01	80678	00000817	VOID	0.00 V
02/05/2021	01	80679	00001323	GLICK FIRE EQUIPMENT COMPANY INC	2,007.80
02/05/2021	01	80680	00001323	GLICK FIRE EQUIPMENT COMPANY INC	949.56
02/05/2021	01	80681	00000219	GLOBAL EQUIPMENT COMPANY	436.44
02/05/2021	01	80682	00001784	GOOGLE INC.	30.00
02/05/2021	01	80683	00000608	GOOSE SQUAD L.L.C.	900.00
02/05/2021	01	80684	100001664	GORDON SHEARER	50.00
02/05/2021	01	80685	00000903	HOME DEPOT CREDIT SERVICES	130.93
02/05/2021	01	80686	00001095	IACP - INTERNATIONAL ASSOCIATION	190.00
02/05/2021	01	80687	100000882	JACOB MILLEVOI	100.00
02/05/2021	01	80688	100000889	JACOB WELTMAN	30.00
02/05/2021	01	80689	100001665	JEAN SHEARER	94.00
02/05/2021	01	80690	100000881	JOHN H. MOGENSEN	30.00
02/05/2021	01	80691	00000257	JOHN R. YOUNG & COMPANY	3,431.48
02/05/2021	01	80692	100000925	JOSEPH M. BENNETT	30.00
02/05/2021	01	80693	100000554	KEITH GRIERSON	15.00
02/05/2021	01	80694	100001254	KILCOYNE & KELM, LLC	195.00
02/05/2021	01	80695	100001592	KILKENNY LAW, LLC	5,696.00
02/05/2021	01	80696	100001661	KYLE STUMP	30.00
02/05/2021	01	80697	00000271	LANSDALE CHRYSLER PLYMOUTH INC.	192.50
02/05/2021	01	80698	100001666	LAURA POOLE	105.00
02/05/2021	01	80699	100001009	LEVAN MACHINE & TRUCK EQUIPMENT	1,562.47
02/05/2021	01	80700	00000055	MARK MANJARDI	284.00
02/05/2021	01	80701	00000201	MASTERTECH AUTO SERVICE, LLC	2,352.46
02/05/2021	01	80702	100000875	MICHAEL BEAN	45.00
02/05/2021	01	80703	100000885	MICHAEL SHEARER	60.00
02/05/2021	01	80704	00000771	MONTGOMERY TOWNSHIP HISTORICAL	12.60
02/05/2021	01	80705	1264	MORGAN STANLEY SMITH BARNEY INC	135,371.33
02/05/2021	01	80706	00002073	MORTON SALT INC	8,571.30
02/05/2021	01	80707	00002077	MSWAT-CR	3,500.00
02/05/2021	01	80708	100000358	NAT ALEXANDER COMPANY	1,070.00
02/05/2021	01	80709	00001054	NEW BRITAIN TOWNSHIP	100.00
02/05/2021	01	80710	100001650	NEW ERA TECHNOLOGY LI	700.00
02/05/2021	01	80711	00000356	NORTH WALES WATER AUTHORITY	24.00
02/05/2021	01	80712	100000728	NORTH WALES WATER AUTHORITY	21,437.50
02/05/2021	01	80713	00001134	OFFICE DEPOT, INC	658.88
02/05/2021	01	80714	100000995	PA UC FUND	2,271.40
02/05/2021	01	80715	100000890	PAUL MOGENSEN	180.00
02/05/2021	01	80716	00000399	PECO ENERGY	1,903.45
02/05/2021	01	80717	00000595	PENN VALLEY CHEMICAL COMPANY	532.54

02/05/2021 01:03 PM  
User: msanders  
DB: Montgomery Twp

CHECK REGISTER FOR MONTGOMERY TOWNSHIP  
CHECK DATE FROM 01/26/2021 - 02/08/2021

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Check Date	Bank	Check	Vendor	Vendor Name	Amount
02/05/2021	01	80718	100000754	PETROLEUM TRADERS CORP.	2,526.99
02/05/2021	01	80719	100000755	PETROLEUM TRADERS CORP.	813.11
02/05/2021	01	80720	00000945	PIPERSVILLE GARDEN CENTER, INC.	344.15
02/05/2021	01	80721	00000345	PRINTWORKS & COMPANY, INC.	1,211.06
02/05/2021	01	80722	00000430	REM-ARK ALLOYS, INC.	339.90
02/05/2021	01	80723	00000741	ROBERT E. LITTLE, INC.	231.96
02/05/2021	01	80724	00002013	RR DONNELLEY	120.00
02/05/2021	01	80725	100000873	RYAN ALLISON	30.00
02/05/2021	01	80726	100000884	RYAN RUDELL	30.00
02/05/2021	01	80727	00000452	S&S WORLDWIDE	155.45
02/05/2021	01	80728	00000653	SCATTON'S HEATING & COOLING, INC.	2,224.11
02/05/2021	01	80729	100000874	SEAN ALLISON	45.00
02/05/2021	01	80730	00001030	SIGNAL CONTROL PRODUCTS, INC.	1,600.00
02/05/2021	01	80731	100000856	SOUDERTON INDEPENDENT	49.00
02/05/2021	01	80732	100000701	STAPLES BUSINESS CREDIT	201.63
02/05/2021	01	80733	00003015	STEPHEN A. SPLENDIDO	30.00
02/05/2021	01	80734	00000485	SYRENA COLLISION CENTER, INC.	75.00
02/05/2021	01	80735	100001663	TISH LAWSON	66.00
02/05/2021	01	80736	00001984	TRAFFIC PLANNING AND DESIGN, INC.	5,068.32
02/05/2021	01	80737	100000897	TREVOR DALTON	15.00
02/05/2021	01	80738	MISC	TRINITY GENERATORS & ELECTRIC	85.00
02/05/2021	01	80739	0903444	TURNER SEMRAU	30.00
02/05/2021	01	80740	00000040	VERIZON	69.09
02/05/2021	01	80741	00000040	VERIZON	39.33
02/05/2021	01	80742	00000040	VERIZON	139.99
02/05/2021	01	80743	00000040	VERIZON	192.69
02/05/2021	01	80744	00000040	VERIZON	257.26
02/05/2021	01	80745	00000040	VERIZON	144.99
02/05/2021	01	80746	00000038	VERIZON WIRELESS SERVICES, LLC	480.12
02/05/2021	01	80747	100000854	VINAY SETTY	90.00
02/05/2021	01	80748	100000891	VINCENT ZIRPOLI	30.00
02/05/2021	01	80749	MISC	VOLPE ENTERPRISES	20.00
02/05/2021	01	80750	00001329	WELDON AUTO PARTS	562.91
02/05/2021	01	80751	00001084	WITMER ASSOCIATES, INC.	126.99
02/05/2021	01	80752	00000760	WM CORPORATE SERVICES, INC	1,577.41
02/05/2021	01	80753	100001042	ZACHARY EIDEN	30.00
02/05/2021	01	80754	00000550	ZEP MANUFACTURING COMPANY	788.41

01 TOTALS:

(2 Checks Voided)

Total of 113 Disbursements:

464,086.51

**Check Register Report For**  
**For Check Dates 01/26/2021 to 02/08/2021**

Check Date	Name	Description	Amount
1/27/2021	STATE OF PA	Tax Payment	9,673.60
2/1/2021	ICMA RC	DROP Payment	16,345.64
2/4/2021	PA SCDU	Withholding Payment	852.17
2/4/2021	MORGAN STANLEY SMITH BARNEY INC	Police Pension	7,341.54
2/4/2021	UNITED STATES TREASURY	941 Tax Payment	84,228.15
2/4/2021	CITY OF PHILADELPHIA	Tax Payment	509.11
2/4/2021	EMPOWER RETIREMENT	401 Plan	14,498.12
2/4/2021	EMPOWER RETIREMENT	457 Plan	15,257.59
2/4/2021	PBA	Withholding Payment	1,291.00
		<b>TOTAL</b>	<b>\$ 149,996.92</b>



MONTGOMERY TOWNSHIP BOARD OF SUPERVISORS

BOARD ACTION SUMMARY

Item # 6

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**SUBJECT:** Proposed Zoning Text Amendment for Development of 10 +/- acre vacant parcel behind the Roadway Inn, 969 Bethlehem Pike – Westrum Development Company – Lifestyle Apartments.

**MEETING DATE:** February 8, 2021

**BOARD LIAISON** Tanya C. Bamford, Chair

**INITIATED BY:** Bruce Shoupe, Director of Planning and Zoning

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**BACKGROUND:**

Staff has met with Westrum Development Company concerning the development of the vacant 10 +/- acre parcel of land behind the Roadway Inn on Bethlehem Pike for approximately 230+ Lifestyle Apartments. The Developer expresses that creating this new use would provide a variety of housing types where vacant Limited Industrial zoned land are under-utilized and suitable as a transition use adjacent to residential districts.

The Township Staff and Consultants have reviewed the information provided with some items still outstanding and under review (signage, traffic, and park and recreation).

**ZONING, SUBDIVISION OR LAND DEVELOPMENT IMPACT:** Presently the use is not allowed in the I-Industrial zoning district.

**RECOMMENDATION:** Provide staff direction with direction on how you wish us to proceed:

**MOTION/RESOLUTION:**

MOTION to authorize setting a public hearing date for the attached proposed Zoning Text Amendment Ordinance or;

MOTION to continue to work with Staff and Consultant on revising the proposed ordinance

MOTION \_\_\_\_\_ SECOND \_\_\_\_\_



Stone Manor Corporate Ctr.  
2700 Kelly Road Suite 300  
Warrington, PA 18976  
Tel (215) 345-7500 Fax (215) 345-7507  
www.foxrothschild.com

CARRIE B. NASE-POUST  
Direct No: 215.918.3646  
Email: CNase-Poust@FoxRothschild.com

February 4, 2021

**VIA EMAIL AND FEDERAL EXPRESS**

Carolyn McCreary, Township Manager  
Montgomery Township  
1001 Stump Road  
Montgomeryville, PA 18936

**Re: Proposed Lifestyle Apartments - Stump Road, Montgomery Township**

Dear Carolyn:

As you are aware, Westrum Development Co. (“**Westrum**”) is proposing to develop the property located at 13-17 Bethlehem Pike with a lifestyle apartment building. However, the property is located in the LI-Limited Industrial District, which does not currently permit this type of use. Therefore, Westrum is proposing a text amendment to the Montgomery Township Zoning Ordinance that would create a new Lifestyle Apartment use which would be permitted in the LI-Limited Industrial District by conditional use approval. To that end, enclosed please find the following documents:

1. Six (6) copies of the Application for Change in Zoning/Text Amendment, along with the proposed Ordinance Amendment;
2. Six (6) copies of the Zoning Plan, prepared by Kimley-Horn, dated January 8, 2021, showing how the property could be developed if the proposed Ordinance Amendment is adopted;
3. Six (6) copies of the Landscape Concept Rendering, prepared by Kimley-Horn, dated January 5, 2021; and
4. One (1) copy of the Traffic Impact Assessment, prepared by Heinrich & Klein Associates, Inc., dated December 22, 2020;
5. One (1) copy of the Deed for the property; and

A Pennsylvania Limited Liability Partnership

California Colorado Delaware District of Columbia Florida Georgia Illinois Minnesota Nevada  
New Jersey New York North Carolina **Pennsylvania** South Carolina Texas Virginia Washington



February 4, 2021

Page 2

6. One (1) copy of the first and signature page of the Agreement of Sale showing my client's equitable interest in the property.

Please note that a check for the filing fee in the amount of \$2,000 and a check for the escrow deposit in the amount of \$5,000, as well as a check payable to Montgomery County in the amount of \$1,000.00, will be sent directly to you from Michael Maier.

I am respectfully requesting that this matter be included on the agenda of the Board of Supervisors for their meeting on Monday, February 8, 2021, to discuss the proposed Ordinance Amendment.

Should you have any questions regarding this matter, or need additional information in order to process this request, please feel free to contact me.

Thank you for your assistance in this regard.

Sincerely,

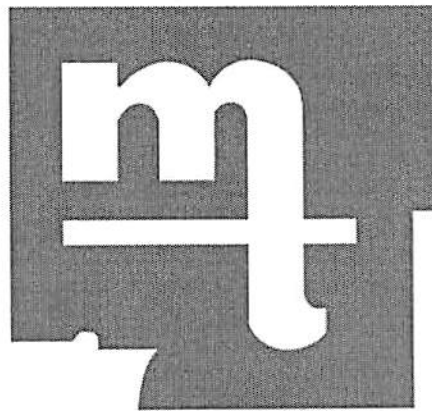
Carrie B. Nase-Poust

CBN:

Enclosures

cc: Sean Kilkenny, Esquire (w/encs. – via email)  
Bruce Shoupe, Director of Planning and Zoning (w/encs. – via email)  
Judy Stern Goldstein (w/encs. – via email)  
Michael Maier (w/encs. – via email)  
Brian McKenzie (w/encs. – via email)  
Anthony Caponigro, P.E. (w/encs. – via email)

# **Application for Change of Zoning/Text Amendment**



Montgomery Township  
1001 Stump Road  
Montgomeryville, PA 18936-9605

Telephone: 215-393-6920

Fax: 215-855-1498

[www.montgomerytwp.org](http://www.montgomerytwp.org)

1-2017

# Application for Change in Zoning/Text Amendment

Montgomery Township, Montgomery County, Pennsylvania

Date of Application: February 2, 2021

Application is hereby made for an amendment to the Code of the Township of Montgomery, Chapter 230 and the Montgomery Township Zoning Map.

Applicant's name: (Corporation) Westrum Development Co.

Person making application: Michael Maier

Applicant's address: 1300 Virginia Drive, Suite 215  
Fort Washington, PA

Phone # 215-620-5610 Fax # 215-283-0991

E-Mail mmaier@westrum.com

Owner's name (title holder) Neil C. Hopkins and Gregory Kessel  
- Attach copy of Deed

Owner's Address 20 Berkeley Court  
Doylestown, PA 18901

Phone # \_\_\_\_\_ Fax # \_\_\_\_\_

E-Mail \_\_\_\_\_

Equitable owner: Same as applicant  
- Attach copy of Deed and Agreement of Sale

Applicant's Attorney Carrie B. Nase-Poust, Esquire

Attorney's Address Fox Rothschild LLP  
2700 Kelly Road, Suite 300, Warrington, PA 18976

Phone # 215-918-3646 Fax # 215-345-7507

E-Mail cnase-poust@foxrothschild.com

## Description of Property Involved:

Location 13-17 Bethlehem Pike

Block & Unit # 46-00-00124-00-1

Present Zoning Classification LI - Limited Industrial

Parcel Size 10 acres

**Applicant's Reasons for Rezoning/Text Amendment Request:**

Applicant proposes to create a new Lifestyle Apartment use in order to provide a variety of housing types. Certain  
portions in the Township zoned LI located adjacent to residential districts that are vacant, under utilized and suitable  
for development for Lifestyle Apartments to transition uses along arterial corridors from single family communities  
to commercial uses.

Applicant requests that above referenced tract be changed in zoning classification ~~from a~~  
to allow Lifestyle Apartments by conditional use approval in the LI - Limited Industrial Zoning District. ~~district to a~~  
See attached proposed Ordinance Amendment. ~~district.~~

**Montgomery Township Rezoning/Text Amendment Application Checklist:**

1. Plans attached to Petitions shall contain the following information:
  - a) Plans to be prepared by a Registered Land Surveyor or Professional Engineer.
  - b) Name, date, address of the Surveyor or Engineer preparing the plans and description.
  - c) Complete scaled dimensions of property involved (all bearings and distances).
  - d) Block and unit number of property involved
  - e) Owners of record of all adjoining properties, including deed book and page number. Attach a separate list to petition.
  - f) Zoning classification of all adjoining properties.

- g) Existing use of all adjoining properties regardless of zoning classification.
  - h) Existing use of subject property involved regardless of zoning classification.
  - i) Description using the dimensions as shown on this plan.
  - j) Area of property involved to be shown in acreage and square feet.
  - k) If owner of tract, include a copy of the Deed with the application. If equitable owner, include a copy of the Deed and latest Agreement of Sale.
  - l) Width of abutting roadway (right-of-way, cartway, improved or unimproved).
  - m) If lot is in subdivision, show lot number(s), section number, name and recording information of the subdivision.
  - n) A detailed description of the proposed change(s) to the zoning code.
2. Any other information as may be required by the Zoning Officer of Montgomery Township.
  3. Six (6) paper sets of plans and descriptions, attached to the Rezoning/Text Amendment Petition, and folded to no larger than 8.5" x 11" and one plan set in electronic pdf format.
  4. One (1) paper copy and one (1) pdf version of a traffic study for the site (see Chapter 205, Article XVI for details) for rezoning request.
  5. All information must be provided to Montgomery Township in a pdf format.
  6. FEES: Two (2) checks made payable to "Montgomery Township".

Filing Fee	\$2,000.00
Escrow Deposit	\$5,000.00

- Administrative fee of 7% of charges incurred in conjunction therewith; if none incurred, minimum administrative fee of \$50.00.

All application fees paid are non-refundable and intended to cover all overhead, administrative and miscellaneous expenses of the Township. Escrow deposits will be returned to the applicant, without interest, after the proceedings are complete and after all appropriate charges have been made to the escrow account. In the event that the review costs exceed the deposited escrow amount, I hereby agree to make additional deposits to the escrow account. Should this balance fall below the minimum required amount, the Township has the authority to stop all reviews or take any other action it deems necessary.

One (1) check made payable to "Montgomery County" in the amount of \$1,000.00. The Township will forward to the County with the application.

I verify that the statements made in the above application are true and correct. I understand that false statements herein are made subject to penalties of 18PACS S4904 relating to unsworn falsification to authorities.

Cary B. New Point Aquatic attorney  
 (Corporation name, if applicable) *for applicant*  
 \_\_\_\_\_  
 (Applicant's or Corporation  
 Official's signature and title)

**MONTGOMERY TOWNSHIP  
MONTGOMERY COUNTY, PENNSYLVANIA**

**ORDINANCE NO. 2021-\_\_\_\_\_**

**AN ORDINANCE OF MONTGOMERY TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA, AMENDING THE MONTGOMERY TOWNSHIP ZONING CODE TO CREATE A DEFINITION FOR “LIFESTYLE APARTMENTS”; TO ALLOW LIFESTYLE APARTMENTS BY CONDITIONAL USE IN THE LI – LIMITED INDUSTRIAL DISTRICT; TO ADD AREA AND BULK REQUIREMENTS FOR LIFESTYLE APARTMENTS; AND PROVIDING A SEVERABILITY CLAUSE, A REPEALER CLAUSE AND AN EFFECTIVE DATE;**

**WHEREAS**, Section 230-187 of the Montgomery Township Zoning Code and Section 609 of the Pennsylvania Municipalities Planning Code, 53 P.S. § 10609, authorize the Board of Supervisors of Montgomery Township to enact amendments to the Montgomery Township Zoning Code; and

**WHEREAS**, the Board of Supervisors of Montgomery Township has determined that it is in the best interests of the residents of Montgomery Township to define and provide standards for a new use entitled “Lifestyle Apartments”, as such use is becoming more popular in the housing industry and provides positive economic, health and social benefits of the Township; and

**WHEREAS**, certain portions of the Montgomery Township LI-Limited Industrial District, being adjacent to the Township’s residential districts are vacant and suitable for the development of Lifestyle Apartments to transition the uses along arterial corridors from single family communities to commercial uses; and

**WHEREAS**, Lifestyle Apartments encourage the development of underutilized land within certain portions of the LI-Limited Industrial District; and

**WHEREAS**, a public hearing was held, following public notice, for the purpose of considering this amendment to the Montgomery Township Zoning Code; and,

**WHEREAS**, the Board of Supervisors of Montgomery Township, after public hearing, pursuant to public notice, and after receipt of recommendations from the Montgomery Township Planning Commission and the Montgomery County Planning Commission, deems it appropriate and proper that the Zoning Code be amended as set forth herein and that such amendment is in accordance with the spirit and the intent of the Montgomery Township Zoning Code.

**NOW, THEREFORE**, be it, and it is hereby **ORDAINED** by the Montgomery Township Board of Supervisors, and it is hereby **ENACTED** and **ORDAINED** by authority of same as follows:

**SECTION 1.** The Zoning Code of Montgomery Township, Section 230-5.B, shall be amended by adding a new definition for Lifestyle Apartments as subsection (2)(b) under the definition of “Dwelling”, as follows:

**(2)(b) LIFESTYLE APARTMENTS** – A multifamily dwelling offering communal



amenities to its residents, such as, but not limited to, an outdoor pool, a fitness center, a business center, a recreation area, a dog washing station and/or a dog run area.

**SECTION 2.** The Zoning Code of Montgomery Township, Section 230-103 shall be amended by adding a new subsection C(4) to allow Lifestyle Apartments in the LI zoning district by conditional use:

- (4) Lifestyle Apartments, provided that:
  - (a) The property to be developed as Lifestyle Apartments shall have a minimum gross site area of ten (10) acres.
  - (b) The use is located on a lot that is immediately adjacent to an existing residential zoning district.
  - (c) The use is located on a lot that has two points of access to arterial streets. Such access may be permitted via a permanent easement over adjacent properties, with the terms of such easement to be reasonably approved by the Township. If such an easement is utilized, the lot shall not be considered a flag lot and shall not be subject to the regulations contained within Section 230-156.5.

**SECTION 3.** The Zoning Code of Montgomery Township, Section 230-115 shall be amended by designating the existing paragraph as subsection A and adding a new subsection B, as follows:

B. The maximum height of a building used for Lifestyle Apartments shall be 30 feet; provided, however, the height of such building shall be permitted to increase by one (1) foot for each additional foot the building is setback beyond the required minimum side yard setback line, but in no event shall the building height exceed 65 feet.

**SECTION 4.** The Zoning Code of Montgomery Township, Section 230-117 shall be amended by designating the existing paragraph as subsection A and adding a new subsection B, as follows:

B. For Lifestyle Apartments, there shall be 1 parking space per dwelling unit, plus 0.33 parking spaces per bedroom. Parking may be permitted in the front yard of the subject property if the property does not have frontage immediately adjacent to a public right of way and/or in front of the proposed building; provided, however, parking shall be setback at least fifteen (15) feet from any property boundary line. In the event of a conflict between the requirements contained in this section and other requirements contained in this Chapter, the requirements of this §230-117.B shall supersede any requirements contained elsewhere in this Chapter.

**SECTION 5.** The Zoning Code of Montgomery Township, Section 230-118(B) is amended and

restated to read as follows:

B. Upon receipt of plans for any proposed use in the LI-Limited Industrial District, and recommendations thereon by the Board of Supervisors, the Board shall have the power of approval or disapproval of these plans. The Secretary of the Board of Supervisors shall notify, in writing, the Zoning Officer of its final decision and any special conditions agreed upon regarding any limited industrial use.

**SECTION 6.** The Zoning Code of Montgomery Township, Section 230-118 is amended by adding a new subsection C, as follow:

C. Plans for Lifestyle Apartments shall be submitted to the Board of Supervisors prior to the issuance of any zoning permit or certificate of occupancy as provided in Article XXII and such plans shall include, among other things, the following:

(1) An accurate plot plan, drawn to scale, of the lot, showing the location of all present and proposed buildings, driveways, parking areas, abutting streets, alleys, highways, grass areas and areas of plantings, and other constructional features on the lot and streams and other topographical features of the lot.

(2) Architectural plans for any proposed buildings.

**SECTION 7.** The Zoning Code of Montgomery Township, Section 230-127.A(9) shall be amended and restated as follows:

(9) Off-premises signs.

(a) Except as set forth in subsection (b) below, all off-premises signs permitted in these districts shall comply with the standards herein prescribed for on-premises signs in Section 230-126;

(b) For properties located in the LI District to be developed for Lifestyle Apartments that do not have frontage to a public street, but rather provides access to an arterial street via a permanent easement as permitted under Section 230-103.C(4)(c), one (1) freestanding, off-site sign shall be permitted at each access point to an arterial street, provided such sign complies with the requirements set forth in Section 230-127.A(4).

**SECTION 8. Severability.** If any sentence, clause, section or part of this Ordinance is for any reason found to be unconstitutional, illegal, or invalid, such unconstitutionality or invalidity shall not affect or impair any of the remaining provisions, sentences, or parts of this Ordinance. It is hereby declared to be the express intent of the Board of Supervisors that this Ordinance would have been adopted had such unconstitutional, illegal, or invalid sentence, clause, section, or parts thereof not

been included herein.

**SECTION 9. Repealer.** All Resolutions, Ordinances, or parts of Ordinances conflicting or inconsistent herewith are hereby repealed to the extent of the conflict or inconsistency.

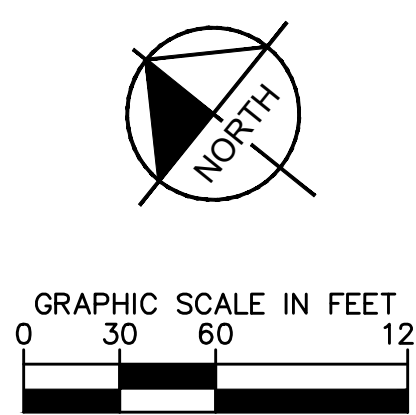
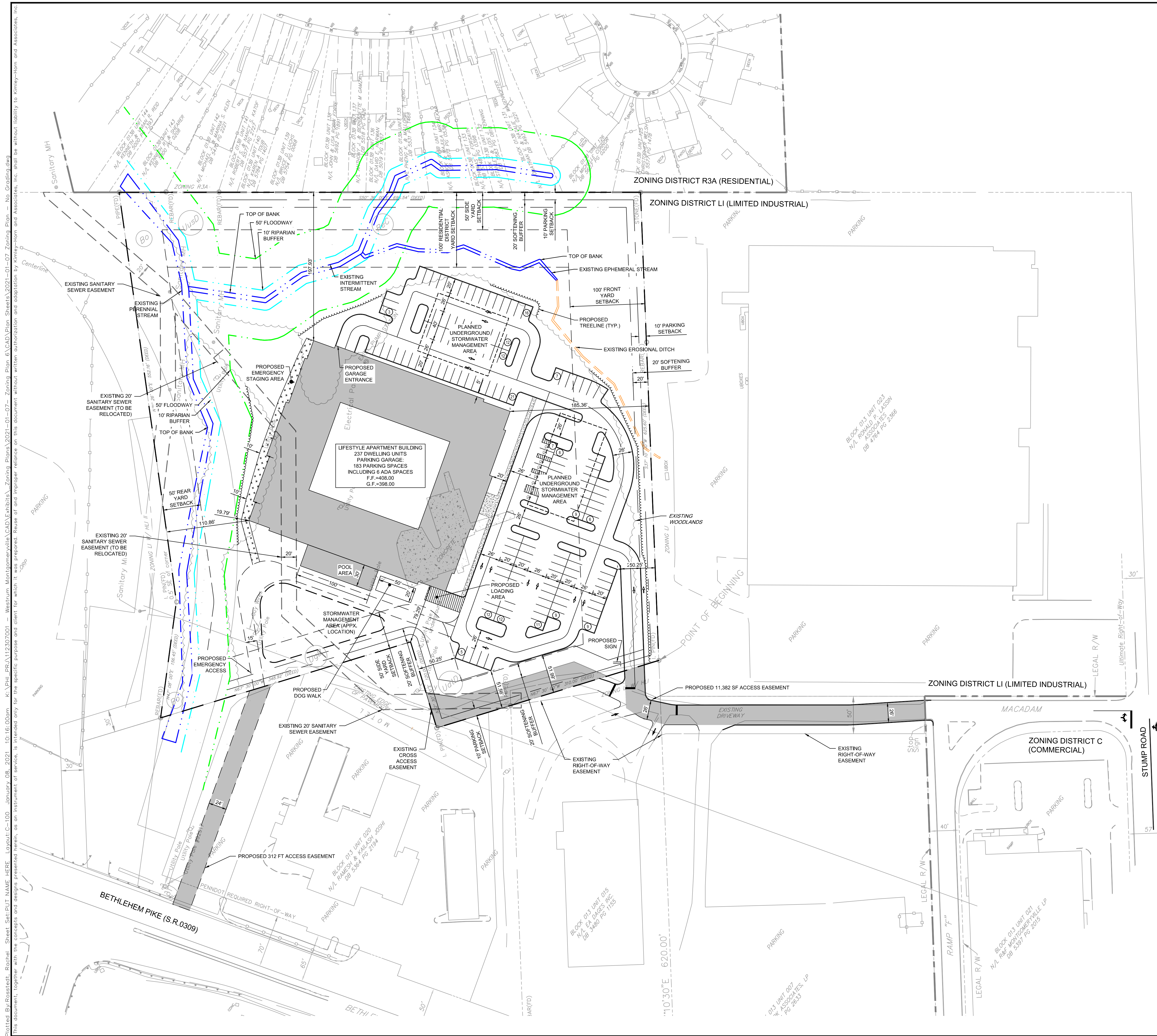
**SECTION 10. Effective Date.** This Ordinance shall become effective immediately after adoption by the Board of Supervisors for Montgomery Township, Montgomery County, Pennsylvania.

Enacted and ordained by the Board of Supervisors for Montgomery Township, Montgomery County, Pennsylvania this \_\_\_\_\_ day of \_\_\_\_\_, 2021.

MONTGOMERY TOWNSHIP  
BOARD OF SUPERVISORS

Attest: \_\_\_\_\_

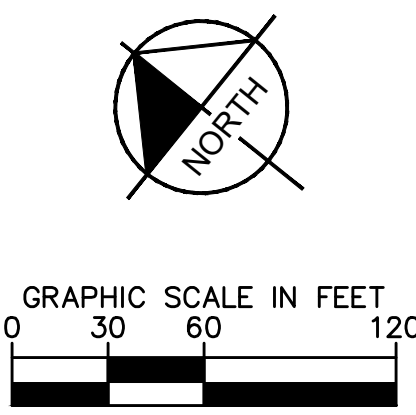




SHEET NUMBER <b>C-1</b>	PREPARED FOR:  <b>WESTRUM MONTGOMERYVILLE</b> 13-17 BETHLEHEM PIKE MONTGOMERYVILLE, PA 18936	<b>ZONING PLAN</b>	KHA PROJECT 112307001	A. A. CAPONIGRO		<b>Kimley»»Horn</b> © 2021 KIMLEY-HORN AND ASSOCIATES, INC. 50 SOUTH 16TH ST, TWO LIBERTY PLACE, SUITE 3010 PHILADELPHIA, PA 19102 PHONE: 267-687-0150 WWW.KIMLEY-HORN.COM	No.	DATE	BY
	SITUATED IN: MONTGOMERY TOWNSHIP, MONTGOMERY COUNTY PENNSYLVANIA		DATE 18/2021	SCALE AS SHOWN DESIGNED BY AAC DRAWN BY RAR CHECKED BY AAC	PROFESSIONAL ENGINEER PA LICENSE NO. PE080598				



This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



CALL BEFORE YOU DIG!  
PENNSYLVANIA LAW REQUIRES  
3 WORKING DAYS NOTICE FOR  
CONSTRUCTION PHASE AND 10 WORKING  
DAYS IN DESIGN PHASE - STOP CALL  
PA 1  
886-2171  
SERIAL NUMBER: 20220221910

PREPARED FOR: <b>WESTRUM MONTGOMERYVILLE</b> 13-17 BETHLEHEM PIKE MONTGOMERYVILLE, PA 18936 <small>SITUATED IN BETHLEHEM TOWNSHIP MONTGOMERY COUNTY PENNSYLVANIA</small>	DRAWING NAME: <b>LANDSCAPE CONCEPT RENDERING</b>	KHA PROJECT 112307001 DATE 1/7/2021 SCALE 1" = 60' DESIGNED BY KVH DRAWN BY FJM CHECKED BY RAR	<b>Kimley»Horn</b> © 2021 KIMLEY-HORN AND ASSOCIATES, INC. 50 SOUTH 16TH ST, TWO LIBERTY PLACE, SUITE 3010 PHILADELPHIA, PA 19102 PHONE: 267-687-0150 WWW.KIMLEY-HORN.COM	REVISIONS	DATE	BY
SHEET NUMBER <b>L-1</b>						





**HEINRICH & KLEIN  
ASSOCIATES, INC.**

**TRAFFIC ENGINEERING & PLANNING**

1134 Heinrich Lane • Ambler, Pennsylvania 19002

215-793-4177 • FAX 215-793-4179

**MEMORANDUM**

TO: Michael Maier, Vice President  
Westrum Development Company

FROM: Andreas Heinrich, P.E., P.T.O.E.

DATE: December 22, 2020

RE: Traffic Impact Assessment  
Montgomeryville Apartment Building  
Montgomery Township, Montgomery County, PA

As requested, please accept the results of this Traffic Impact Assessment for the proposed development of a 237-unit apartment building in the northwest quadrant of the intersection of Bethlehem Pike (PA Route 309) and Stump Road in Montgomery Township, Montgomery County, Pennsylvania. The site was formerly developed for industrial use. Access to the site will be provided via the jughandle ramp on the northwest corner of the intersection of Bethlehem Pike (PA Route 309) and Stump Road, with emergency access that will intersect Bethlehem Pike (PA Route 309) through the Rodeway Inn property south of the intersection with Knapp Road (Concept Plan attached).

It should be noted that this Traffic Impact Assessment assumes that 100% of the traffic to be generated by the proposed development will access the site via the Stump Road jughandle ramp. Access to the site is also, and will continue to be, available via right turn entry/right turn exit only to/from Bethlehem Pike (PA Route 309) through the adjacent Rodeway Inn property with its two driveways that intersect Bethlehem Pike (PA Route 309). To the extent that future residents use the Rodeway Inn access driveways for access to/from the proposed apartment development, less traffic will impact Stump Road and the jughandle ramp. Accordingly, this Traffic Impact Assessment considers the worst-case condition relative to the traffic impact to Stump Road and to the jughandle ramp.

The purpose of this Traffic Impact Assessment is to assess the potential traffic impact of the proposed residential development on the immediately adjacent roadways and

to comment on site access from the viewpoint of both traffic efficiency and safety. As such, our study has included:

- visits to the site to observe current traffic conditions and to note existing physical characteristics of the adjacent highways;
- completion and review of Turning Movement Traffic Counts on a typical weekday, adjusted for pre-Covid-19 conditions, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM at the intersections listed below:
  - Bethlehem Pike (PA Route 309) and Stump Road
  - Stump Road and NW Corner Jughandle Ramp
  - NW Corner Jughandle Ramp and Private Driveway;
- estimation of the anticipated traffic generation characteristics and potential travel patterns of new traffic generated by the proposed apartment building;
- completion of volume/capacity analyses of existing (2020) and future (2023) peak hour traffic before and after development of the proposed apartment building;
- review of the Concept Plan relative to the provision of safe and efficient access to the proposed apartment building.

### **Existing Transportation Setting**

Bethlehem Pike (S.R. 0309) is a two-way, multi-lane, divided State Highway. According to the PennDOT Traffic Information Repository (TIRe), Bethlehem Pike (PA Route 309) is classified as an Urban – Other Principal Arterial. Bethlehem Pike (PA Route 309) provides two travel lanes in each direction with a median divider to separate the two directions of travel, and paved shoulders along both sides of the highway. Bethlehem Pike (PA Route 309) is widened through the signalized intersection with Stump Road to provide a third through lane for right turns and for access to jughandle ramps for left turns on the northwest and southeast corners of the intersection. The posted speed limit along Bethlehem Pike (PA Route 309) is 45 miles per hour. Based on PennDOT's TIRe site, the average daily traffic volume along Bethlehem Pike (PA Route 309) is 40,993 vehicles per day (total both directions).

Stump Road is a two-way, two-lane local road. According to the PennDOT Traffic Information Repository (TIRe), Stump Road is classified as an Urban – Minor Arterial, Collector. Stump Road generally provides one travel lane in each direction. Stump Road is widened through the signalized intersection with Bethlehem Pike (PA Route 309) to provide a separate left turn lane on the northbound approach and dual left turn lanes on the westbound approach. The posted speed limit along Stump Road is 35 miles per hour. Based on PennDOT's TIRe site, the average daily traffic volume along Stump Road is 8,881 vehicles per day (total both directions).

Traffic traveling through the intersection of Bethlehem Pike (PA Route 309) and Stump Road is regulated by a multi-phased, actuated traffic control signal. The signalized intersection interconnected with 16 other intersections throughout the Township to provide Traffic Adaptive Operation; and, is programmed to operate on an approximate 170-second signal cycle during the weekday morning and weekday afternoon peak periods, and a 120-second or 150-second cycle during other time periods of the day or week.

Existing highway travel demand and traffic patterns in the vicinity of the site were determined from completion and review of Turning Movement Traffic Counts on a typical weekday from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM at the intersections listed below:

- Bethlehem Pike (PA Route 309) and Stump Road
- Stump Road and NW Corner Jughandle Ramp
- NW Corner Jughandle Ramp and Private Driveway;

Due to the effects of Covid-19 on driver habits including schools being out of session, traffic count data for the intersection of Bethlehem Pike (PA Route 309) and Stump Road is based on data collected in May 2016, which was subsequently factored using a background traffic growth of 0.64% per year compounded annually (3.24% total) and applied to the 2016 peak hour traffic volumes. The background traffic growth rate was obtained for Montgomery County from the Pennsylvania Department of Transportation Bureau of Planning and Research for the period August 2015 to July 2016, which was in effect at the time of the traffic counts. In addition, the specific traffic generation characteristics the Higher Rock Retail Development, now under construction and partially in operation, was added to the 2016 traffic count data, including traffic diversions for the Witchwood Drive Extension.

Figure 1 summarizes existing (2020) weekday morning and weekday afternoon peak hour traffic, respectively, at the study area intersections. A copy of the Traffic Count Summary Data sheets is attached. Worksheets illustrating the adjustments for background growth, Higher Rock Retail development traffic, and Witchwood Drive Extension traffic are attached in the Appendix.

### **Public Transportation**

There is no public transit in the immediate vicinity of the site. The nearest public transit is provided via S.E.P.T.A. bus routes 94, 96, and 132 which provide regularly scheduled bus service from the Montgomery Mall to Chestnut Hill (Route 94), the Norristown Transportation Center (Route 96), and Souderton/Telford (Route 132).

### **Pedestrian Facilities**

Existing pedestrian facilities in the vicinity of the site consist of sidewalks along the west side of Stump Road and intermittently along the east side of Stump Road, intermittently along the north side of Bethlehem Pike (PA Route 309) east of Stump Road and along the south side of Bethlehem Pike west of Stump Road. A crosswalk with curb



ramps, pedestrian pushbuttons and signal heads is provided across the north leg of the Stump Road at the signalized intersection with Bethlehem Pike (PA Route 309). Curb ramps are provided for the crossing of the jughandle ramp at the intersection with Stump Road.

### **Planned Roadway Improvements**

There are no known intersection or roadway improvements proposed in the immediate vicinity of the site.

### **Traffic Generation Characteristics**

As described previously, it is proposed to develop a 237-unit apartment building in the northwest quadrant of the intersection of Bethlehem Pike (PA Route 309) and Stump Road in Montgomery Township, Montgomery County, Pennsylvania. The site was formerly occupied by an industrial building but is now vacant. Development of the site will obviously generate some new traffic -- as might any development of the property. Indeed, traffic was formerly generated by the industrial building that formerly occupied the site.

Based on the size of the proposed new development, estimates of new traffic demand can be calculated for the proposed apartment building. The anticipated traffic generation of the proposed new development is estimated from trip generation data compiled by the Institute of Transportation Engineers and documented in the publication entitled Trip Generation Manual<sup>(1)</sup>. Table 1 presents the calculated vehicular trip generation rates for the proposed new development. Application of these rates to the size of the proposed development produces the daily and peak hourly traffic volumes presented in the bottom of Table 1.

As shown in Table 1, it is anticipated that the proposed apartments may generate a total of about 1,290 trips per day (total inbound and outbound), with 80 trips per hour during the weekday morning peak hour and 101 trips per hour during the weekday afternoon peak hour.

It is anticipated that traffic generated by and attracted to the proposed development will approach and depart the site according to existing traffic patterns along the roads in the vicinity of the site. It is anticipated that about 50% of site-generated traffic will be oriented to/from the east on Bethlehem Pike (PA Route 309), 33% will be oriented to/from the west on Bethlehem Pike (PA Route 309), 11% will be oriented to/from the north on Stump Road, and 6% will oriented to/from the south on Stump Road. The assignment of new trip generation for the proposed development is presented in Figure 2.

---

(1) Trip Generation Manual, 10<sup>th</sup> Edition, Institute of Transportation Engineers, Washington DC, September 2017.

**TABLE 1**  
**TRAFFIC GENERATION CHARACTERISTICS**  
**WESTRUM APARTMENTS**  
**MONTGOMERY TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA**

<u>TRIP RATES<sup>(1)</sup></u>							
<u>Description</u>	<u>Daily</u>	<u>Morning Peak Hour</u>			<u>Afternoon Peak Hour</u>		
		<u>In</u>	<u>Out</u>	<u>Total</u>	<u>In</u>	<u>Out</u>	<u>Total</u>
Multi-Family Mid-Rise (237 DU) <sup>(2)</sup>	5.44	0.09	0.25	0.34	0.26	0.17	0.43

<u>TRAFFIC VOLUMES</u>							
Multi-Family Mid-Rise (237 DU)	1290	21	59	80	62	39	101

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(1) *Trip Generation Manual*, 10th Edition, Institution of Transportation Engineers, Washington, D.C., 2017 (ITE Land Use Code 221).

(2) Trips per Dwelling Unit (DU).

### Volume/Capacity Analysis

While traffic volumes provide a measure of activity on the area road system, it is also important to calculate the ability of the road system to adequately accommodate the traffic demand. This involves a comparison of peak hour traffic demand with available roadway or intersection capacity. Intersections and driveways are usually the critical points in any road network. At intersections, conflicts occur between through, crossing and turning traffic. It is at intersections where congestion is most likely to occur.

A volume/capacity analysis was completed for the signalized and unsignalized intersections and driveways in the study area based upon the peak hour traffic volumes illustrated in Figure 1. The volume/capacity analysis was completed in accordance with the standard procedures contained in the "Highway Capacity Manual"<sup>(2)</sup>. By definition, vehicle capacity represents "the maximum number of vehicles that can pass a given point during a specified period under prevailing roadway, traffic and control conditions". The level of functioning of an intersection or a uniform section of lane or roadway can be expressed in terms of levels of service. A level of service is a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. Such measures include speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

In calculating the capacity of an unsignalized intersection, it is assumed that the through movements on the major street and the right turns from the major street are unimpeded and have the right-of-way over all minor street traffic and left turns from the major street. All other movements in the intersection cross, merge with, or are affected by other flows. For each movement, all conflicting flows are summed and a "critical gap" is determined. The control delay of a critical movement includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

At signalized intersections other factors affect the various approach capacities including width of approach, number of lanes, signal green time, turning percentages, truck volumes, etc. The relative functioning of an intersection is, therefore, based on the average control delay per vehicle for the various movements within the intersection. While volume/capacity relationships affect the capacity, there are other parameters that affect delay and must also be considered. It is possible under certain conditions to have excessive delays without exceeding roadway capacity. Conversely, a saturated approach may have relatively low vehicular delay under certain conditions. Thus, both capacity and control delay must be considered to evaluate the overall operation of a signalized intersection.

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(2) "Highway Capacity Manual", 6<sup>th</sup> Edition, Transportation Research Board of the National Academies, Washington, D.C., 2016.

**TABLE 2**  
**LEVEL OF SERVICE**  
**UNSIGNALIZED INTERSECTIONS**

At unsignalized intersections the criteria used to evaluate the quality of flow is the measure of the adequacy of the number of acceptable gaps in the through traffic stream for drivers facing a STOP or YIELD condition. Variables affecting the gaps are the distribution or arrival of vehicles in the through traffic stream, percentage of trucks, grades, and the amount of time it requires to enter the traffic stream from a stop position (critical gap size). The control delay of a critical movement includes the initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

As a result, the following criteria has been established:

<u>Level of Service</u>	<u>Control Delay Range (sec./veh/)</u>
A	less than 10
B	10 to 15
C	15 to 25
D	25 to 35
E	35 to 50
F	more than 50 and/or volume-to- capacity ratio greater than 1.0

**TABLE 3**  
**LEVEL OF SERVICE**  
**SIGNALIZED INTERSECTIONS**

Level of Service for signalized intersections is defined in terms of average stopped delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Delay at a traffic signal is a complex measure and is dependent on a number of variables including quality of progression, the cycle length, the green time ratio, the volume to capacity ratio for each lane group on each approach, trucks, pedestrians, and signal phasing.

The following has therefore been established by the Transportation Research Board as the average stopped delay in vehicles per second:

<u>LEVEL OF SERVICE</u>	<u>DESCRIPTION</u>	<u>AVERAGE STOPPED DELAY (sec./veh.)</u>
A	Very low delay, good progression; most vehicles do not stop at intersection.	less than 10.0
B	Generally good signal progression and/or short cycle length; more vehicles stop at intersection than level of service A.	10.1 to 20.0
C	Fair progression and/or longer cycle length; significant numbers of vehicles stop at intersection.	20.1 to 35.0
D	Congestion becomes noticeable; individual cycle failures; longer delay from unfavorable progression, long cycle length, or high volume/capacity ratio; most vehicles stop at intersection.	35.1 to 55.0
E	Considered limit of acceptable delay, indicative of poor progression, long cycle length, high volume/capacity ratio; frequent individual cycle failures.	55.1 to 80.0
F	Unacceptable delay, frequently an indication of oversaturation (i.e., arrival flow exceeds available capacity).	greater than 80.0 and/or volume-to- capacity ratio greater than 1.0

A descriptive mechanism has been developed which relates capacity with the expected traffic delay. This is known as Level of Service (LOS). Level of service for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. Level of service for a signalized intersection is defined in terms of delay. Table 2 provides the correlation between levels of service and the average total delay at unsignalized intersections. The correlation between levels of service and the stopped delay per vehicle at signalized intersections is provided in Table 3.

It should be noted that the analysis has been completed using Synchro 10 software incorporating the use of certain default values (PennDOT Publication 46 – Traffic Engineering Manual) for base saturation flow rates, start-up lost time and extension of effective green time at signalized intersections, base critical headways at unsignalized intersections, and base follow-up headways at unsignalized intersections.

The resultant levels of service calculated from the volume/capacity analysis of existing peak hour traffic conditions are illustrated in Figure 3 (volume/capacity analysis worksheets attached). The results of the analysis reveal that traffic on the Bethlehem Pike (PA Route 309) approaches to Stump Road is operating at LOS C during both peak hours, while traffic on both approaches of Stump Road is operating at LOS D, E or F during both peak hours. Overall, however, the intersection is operating at an acceptable LOS D during both peak hours. It should be noted that the lane utilization factors have been adjusted to reflect the use of the third through/right turn lanes carrying reduced traffic volume relative to the two major through lanes on both approaches of Bethlehem Pike (PA Route 309) (a worksheet is attached). All critical movements at the two unsignalized intersections are operating at an acceptable LOS C or better during both peak hours.

### **Future Conditions**

Development generated traffic was then added to existing peak hour traffic volumes. Existing (2020) peak hour traffic was first increased to account for background traffic growth and traffic generated by other new development in the vicinity of the site. It is anticipated that the proposed development will be open within about two to three years. Background traffic growth of 0.34% per year was applied to existing (2020) peak hour traffic volumes in the study area. The background traffic growth rate was obtained for Montgomery County from the Pennsylvania Department of Transportation Bureau of Planning and Research for the period August 2015 to July 2016 years (to be consistent with the adjustments described previously for existing conditions). The opening year traffic volumes were then based on projecting traffic three years to the year 2023. For the 2023 opening year, background traffic growth of about 2.0% was applied.

Future (2023) peak hour traffic volume without development of the site is presented in Figure 4. The resultant levels of service calculated from the volume/capacity analysis of future (2023) peak hour traffic conditions without development of the site are illustrated in Figure 5 (volume/capacity analysis worksheets attached). The results of the analysis reveal that traffic on the Bethlehem Pike (PA Route 309) approaches to Stump Road will continue

Road will continue to operate at LOS D, E or F during both peak hours. Overall, however, the intersection will continue to operate at an acceptable LOS D during both peak hours. It should be noted that the signal timing is optimized to favor the heavy volume of traffic to operate at LOS C during both peak hours, while traffic on both approaches of Stump along the Bethlehem Pike (PA Route 309) Corridor. All critical movements at the two unsignalized intersections will continue to operate at an acceptable LOS C or better during both peak hours.

Future (2023) peak hour traffic volume after development of the site is presented in Figure 6. The resultant levels of service calculated from the volume/capacity analysis of future (2023) peak hour traffic conditions after development of the site are illustrated in Figure 7 (volume/capacity analysis worksheets attached). The results of a Turn Lane Warrant Analysis (worksheets attached) reveal that widening/re-striping of Stump Road at the Jughandle intersection is warranted for a separate left turn lane 11 feet wide and 75 feet long with approach/departure tapers. Widening for a separate right turn deceleration lane is not warranted. It is also recommended that the private driveway be widened and repaved, from the site to the jughandle ramp, to a width of at least 24 feet to adequately accommodate two-way traffic.

The results of the analysis reveal that traffic on the Bethlehem Pike (PA Route 309) approaches to Stump Road will operate at LOS C/D during both peak hours, while traffic on both approaches of Stump Road will continue to operate at LOS D, E or F during both peak hours. Overall, however, the intersection will continue to operate at an acceptable LOS D during both peak hours. Again, it should be noted that the signal timing is optimized to favor the heavy volume of traffic along the Bethlehem Pike (PA Route 309) Corridor. All critical movements at the two unsignalized intersections will continue to operate at an acceptable LOS C or better during both peak hours. Table 4 summarizes the results of the volume/capacity analysis for the existing, future (2023) without development, and future (2023) after development scenarios. Table 5 summarizes the results of the queue analysis for the existing, future (2023) without development, and future (2023) after development scenarios.

The results of the analysis of future traffic conditions without and after re-development of the site for the development as proposed reveal that there will be very little change in levels of service due to the addition of new traffic generated by the proposed development. Further, the change in peak hour traffic delay will be such that there is no requirement for mitigation in accordance with the criteria set forth by the Pennsylvania Department of Transportation.

**TABLE 4**  
**LEVEL OF SERVICE (DELAY) SUMMARY/OPENING YEAR 2023**

Intersection	Approach	AM Peak Hour LOS (Delay sec./veh.)			PM Peak Hour LOS (Delay sec./veh.)		
		Existing	2023 W/O Development	2023 After Development	Existing	2023 W/O Development	2023 After Development
Bethlehem Pike (PA Route 309) & Stump Road	EB T	C(31.3)	C(32.7)	D(37.1)	C(22.4)	C(23.6)	C(26.1)
	EB T/R	C(33.0)	C(34.6)	D(39.4)	C(23.1)	C(24.3)	C(27.0)
	WB T	C(24.1)	C(25.8)	C(27.6)	C(29.1)	C(31.2)	D(35.5)
	WB T/R	C(25.0)	C(25.7)	C(28.8)	C(31.9)	C(34.4)	D(39.8)
	NB L	E(57.4)	E(57.1)	E(56.5)	E(57.0)	E(56.5)	D(54.8)
	NB T/R	F(94.0)	F(94.5)	F(93.7)	F(89.8)	F(90.3)	F(90.8)
	SB L	F(99.0)	F(102.6)	F(91.0)	F(92.7)	F(89.4)	F(89.5)
	SB T/R	D(52.8)	D(52.6)	D(50.8)	E(75.9)	E(74.1)	E(70.6)
	INTERSECTION	D(40.7)	D(41.9)	D(44.1)	D(39.3)	D(40.4)	D(43.5)
Stump Road & Jughandle	EB L/R	B(11.8)	B(11.9)	B(14.0)	C(18.7)	C(19.2)	C(20.4)
	NB L	A(9.9)	A(9.9)	B(10.0)	A(9.9)	A(9.9)	B(10.2)
	INTERSECTION	A(0.1)	A(0.1)	A(1.0)	A(0.6)	A(0.6)	A(1.6)
Jughandle & Private Driveway	EB T	A(0.0)	A(0.0)	A(9.7)	A(9.4)	A(9.4)	B(10.0)
	NB L/R	A(8.1)	A(8.1)	A(8.2)	A(8.1)	A(8.1)	A(8.6)
	INTERSECTION	A(1.9)	A(1.9)	A(6.9)	A(7.6)	A(7.6)	A(6.3)



**TABLE 5**  
**QUEUE ANALYSIS**

Intersection	Movement	Available/Proposed Storage	Existing	2023 w/o Devel.	2023 After Devel.
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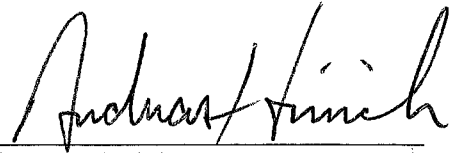
**AM Peak Hour/PM Peak Hour**

Bethlehem Pike (PA Route 309) & Stump Road	EB T	1000 <sup>+</sup> /1000 <sup>+</sup>	608'/403'	633'/423'	675'/450'
	EB T/R	400'/400'	840'/543'	878'/568'	938'/605''
	WB T	725'/725'	410'/648'	425'/685'	453'/743'
	WB T/R	400'/400'	535'/815'	553'/868'	590'/945'
	NB L	220'/220'	48'/95'	48'/98'	48'/98'
	NB T/R	500'/500'	485'/500'	493'/510'	503'/548'
	SB L	320'/320'	380'/298'	393'/298''	398'/315'
	SB T/R	650 <sup>+</sup> /650 <sup>+</sup>	303'/533'	305'/538'	330'/550'
Stump Road & Jughandle	EB L/R	150'/150'	0'/13'	0'/13'	13'/25'
	NB L	650'/75'	0'/0'	0'/0'	3'/5'
Jughandle & Private Driveway	EB T	350'/350'	0'/6'	0'/6'	11'/15'
	NB L/R	675'/675'	0'/1'	0'/1'	1'/3'

Note: The queue lengths represent the 95<sup>th</sup>% queue length.

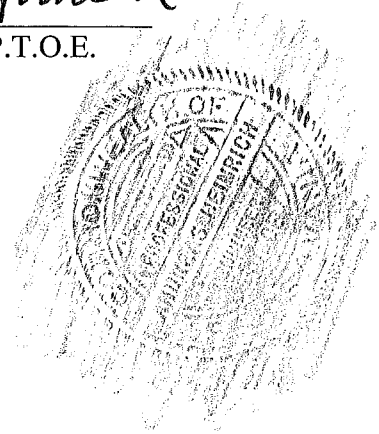
**Conclusions**

The foregoing Traffic Impact Assessment for the proposed development of a 237-unit apartment building in the northwest quadrant of the intersection of Bethlehem Pike (PA Route 309) and Stump Road in Montgomery Township, Montgomery County, Pennsylvania, demonstrates that safe and efficient access will be provided to the proposed new development.



Andreas Heinrich, P.E., P.T.O.E.  
Principal

AH:rh



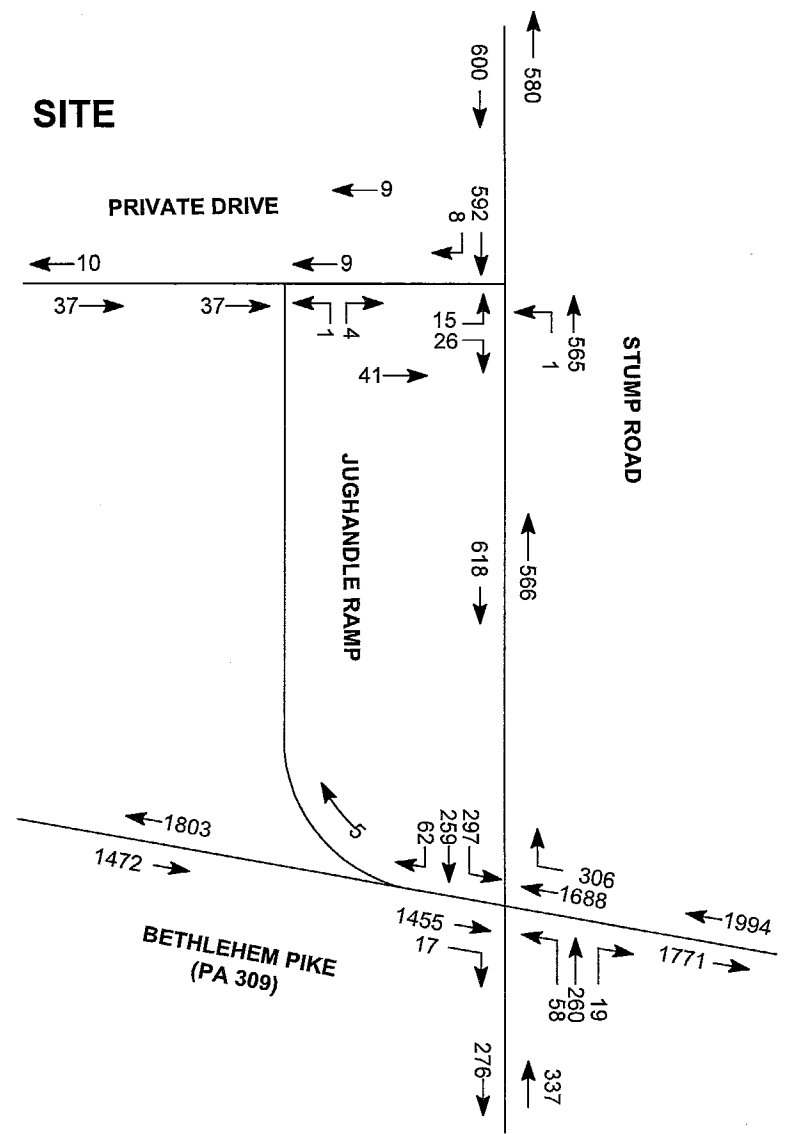
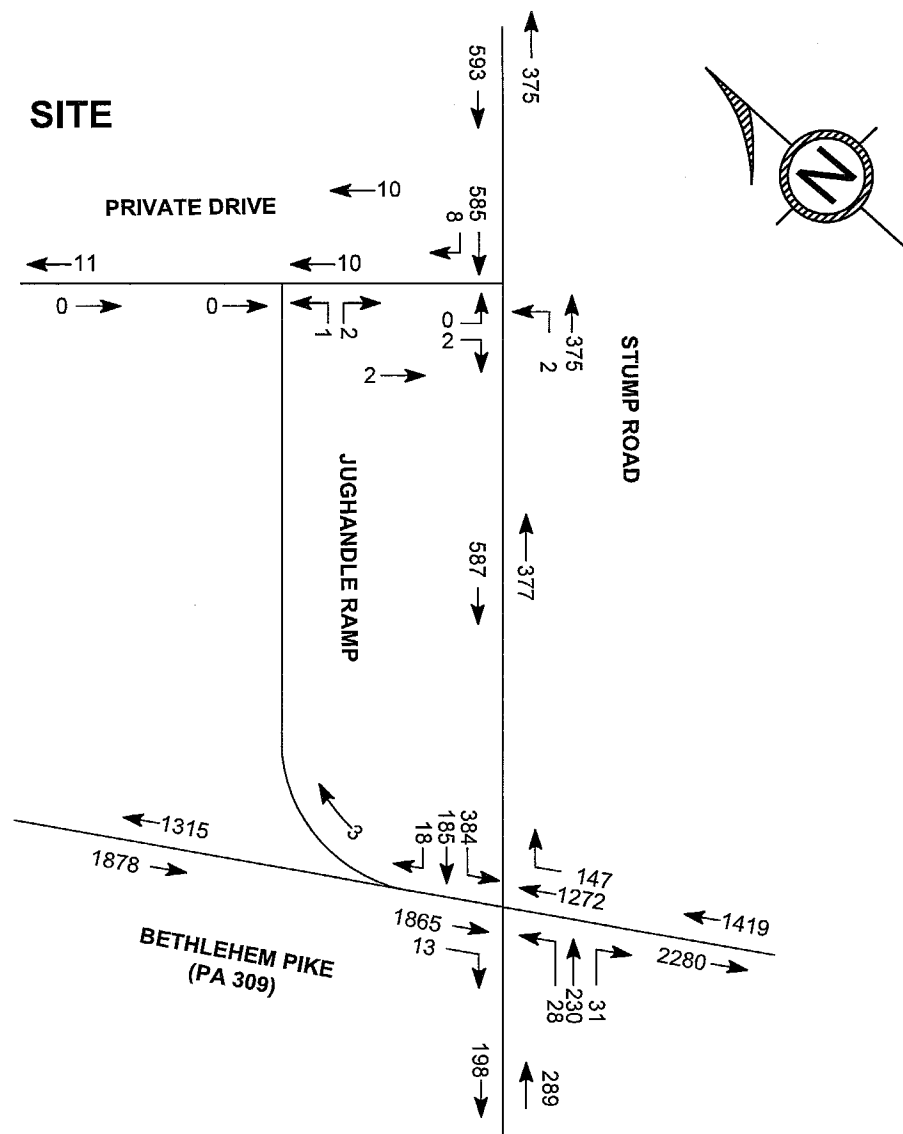


FIGURE 1  
EXISTING (2020) PEAK HOUR TRAFFIC

**WESTRUM APARTMENTS  
MONTGOMERY TOWNSHIP, PA**



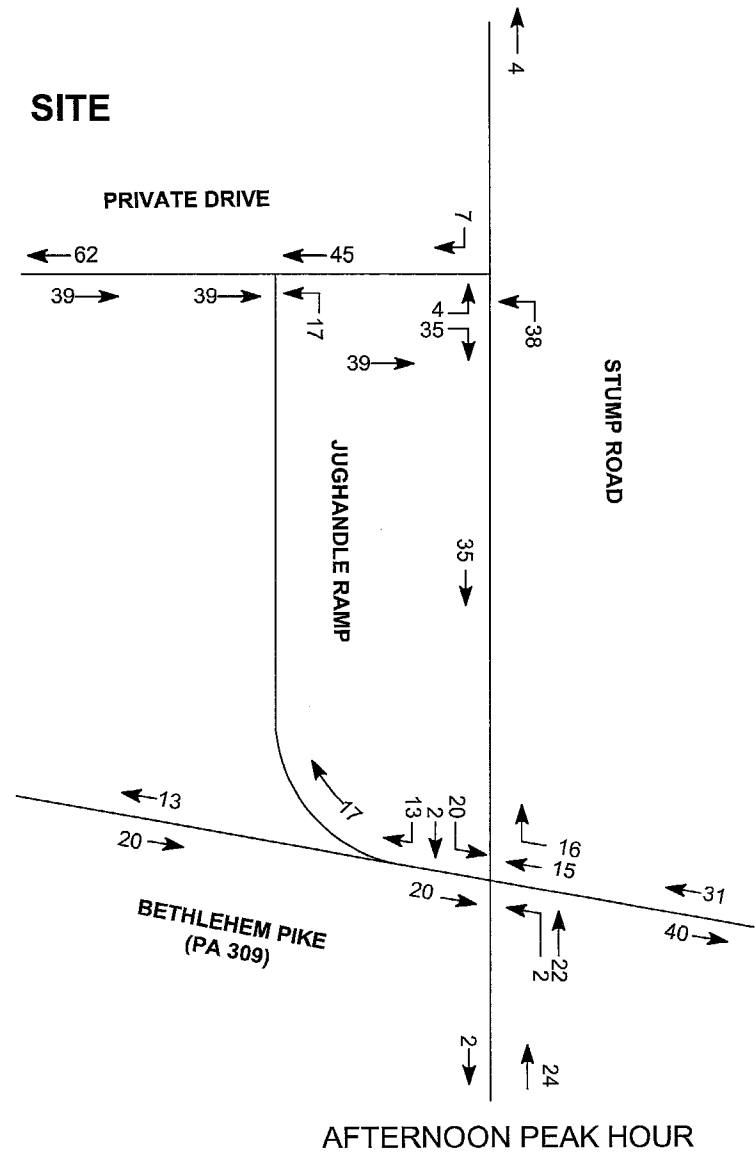
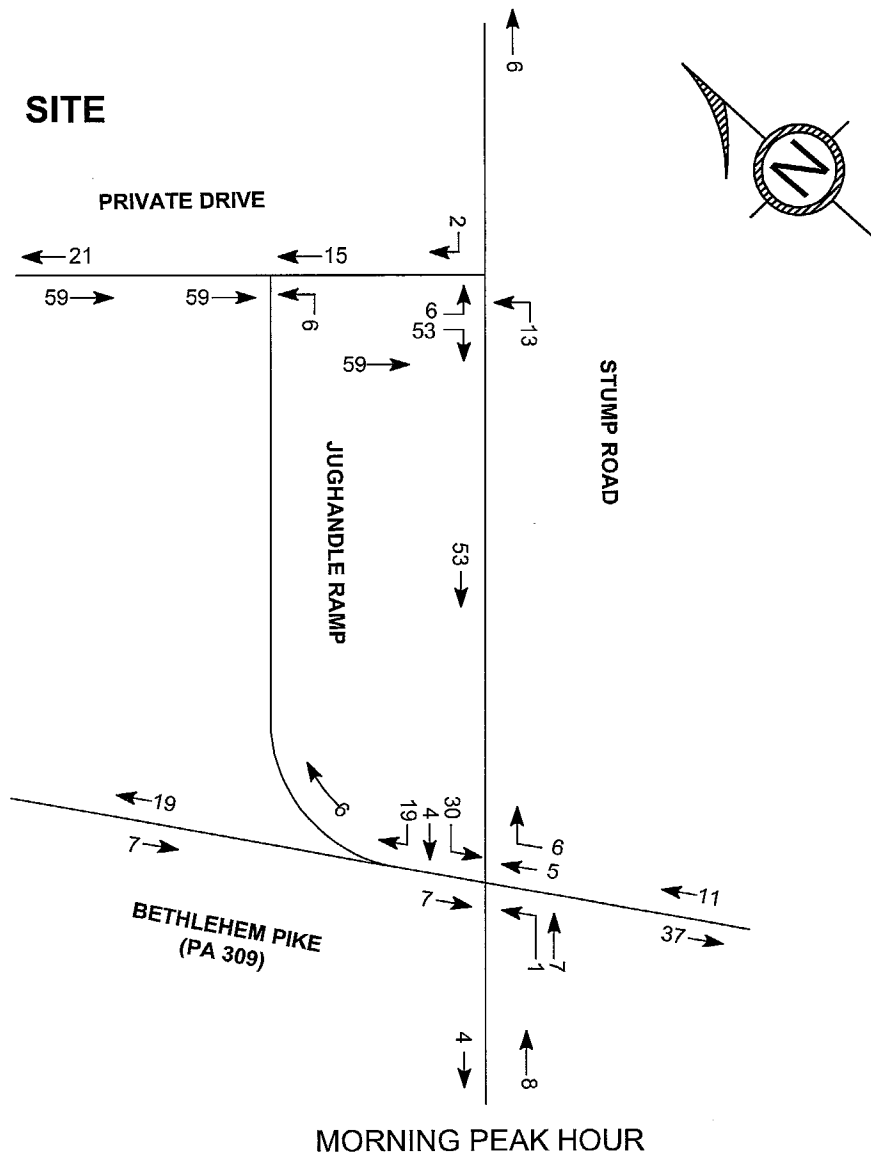


FIGURE 2  
DEVELOPMENT GENERATED TRAFFIC

**WESTRUM APARTMENTS  
MONTGOMERY TOWNSHIP, PA**



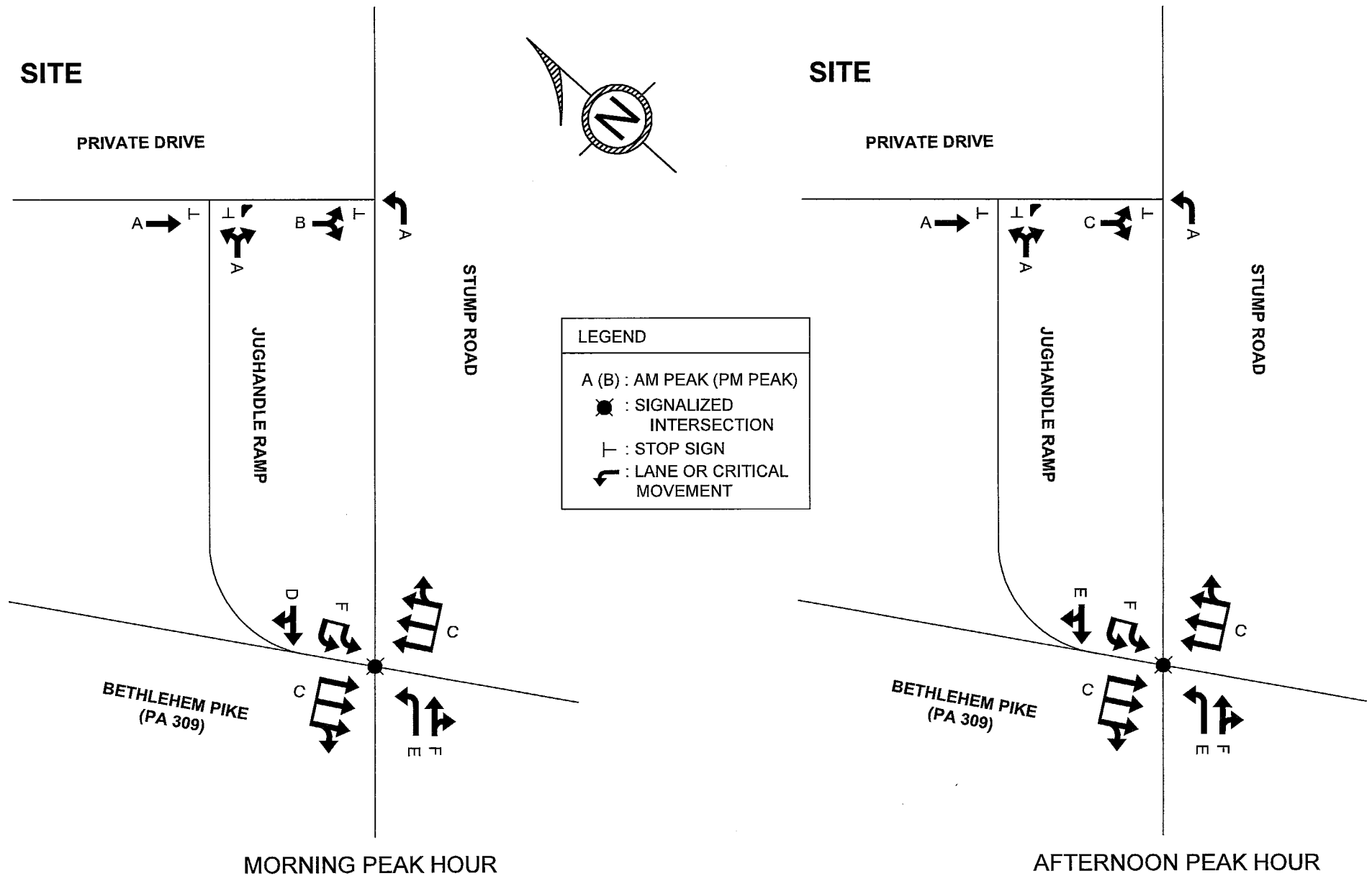
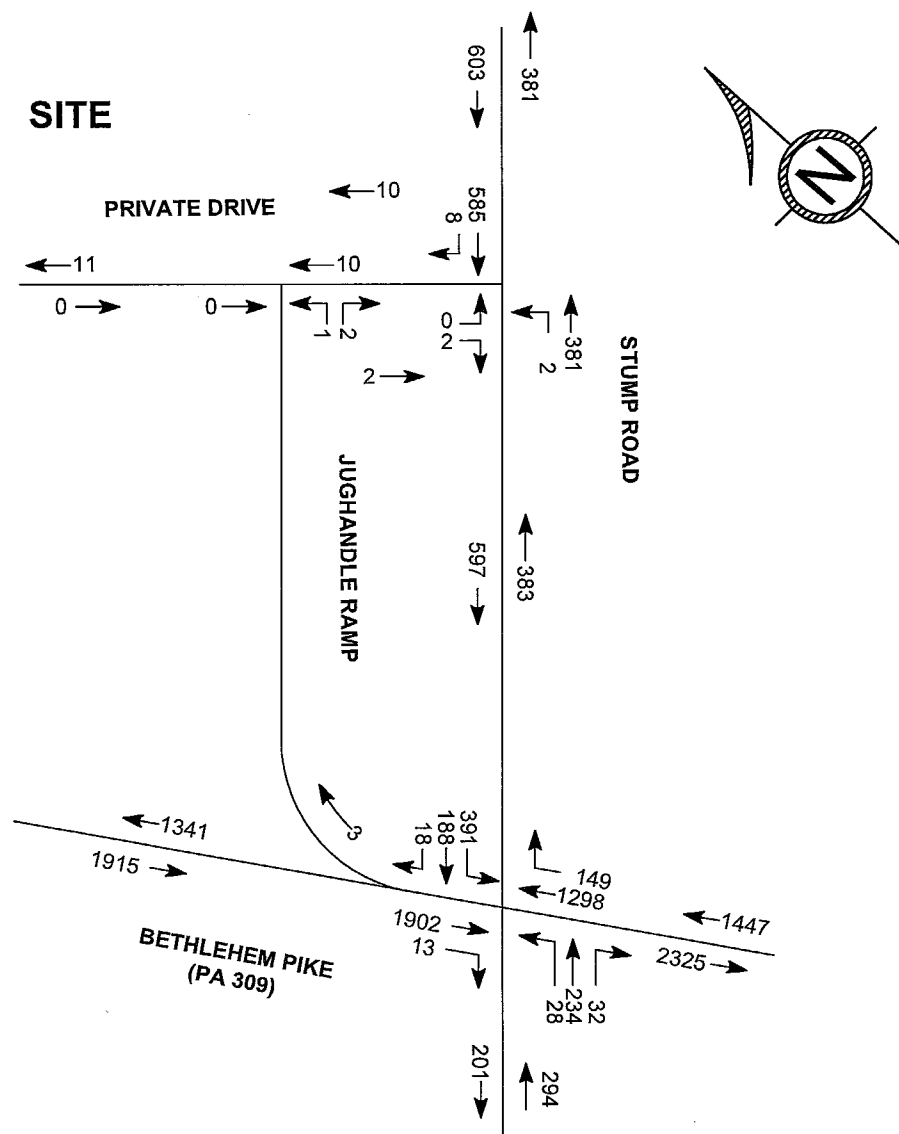


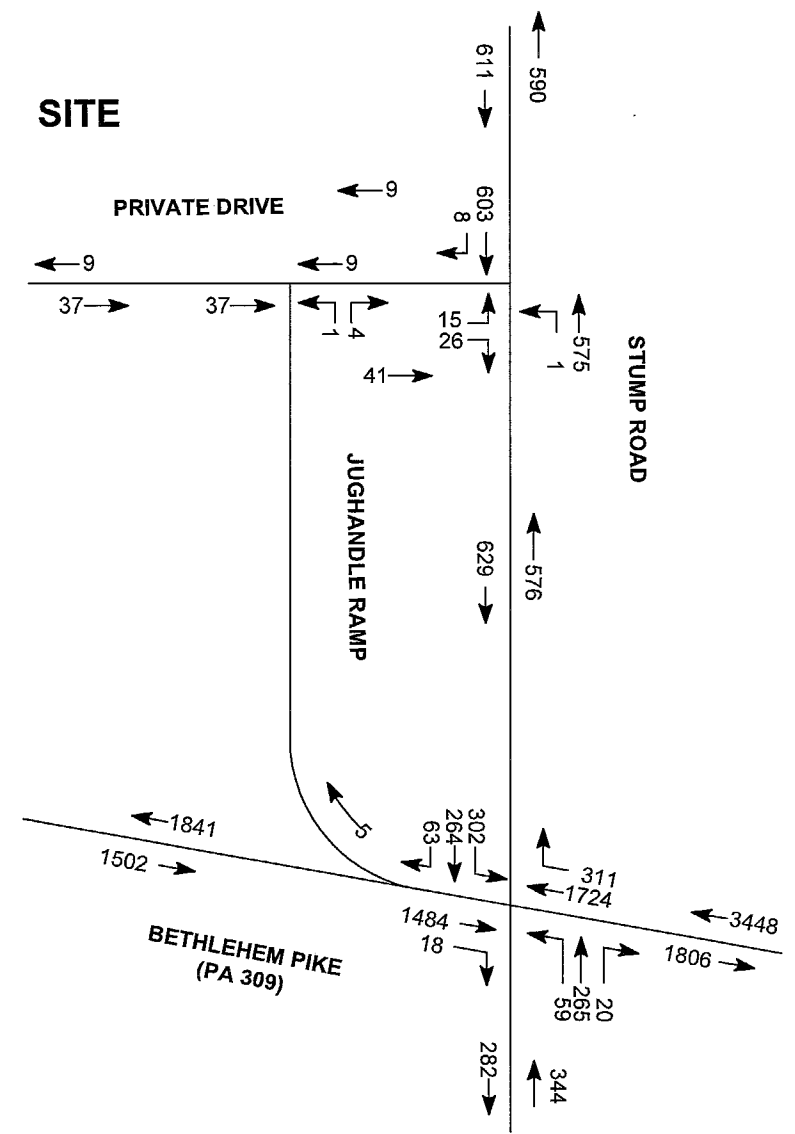
FIGURE 3  
EXISTING (2020) PEAK HOUR LEVELS OF SERVICE

**WESTRUM APARTMENTS  
MONTGOMERY TOWNSHIP, PA**





MORNING PEAK HOUR



AFTERNOON PEAK HOUR

FIGURE 4  
FUTURE (2023) PEAK HOUR TRAFFIC  
WITHOUT DEVELOPMENT  
**WESTRUM APARTMENTS**  
**MONTGOMERY TOWNSHIP, PA**

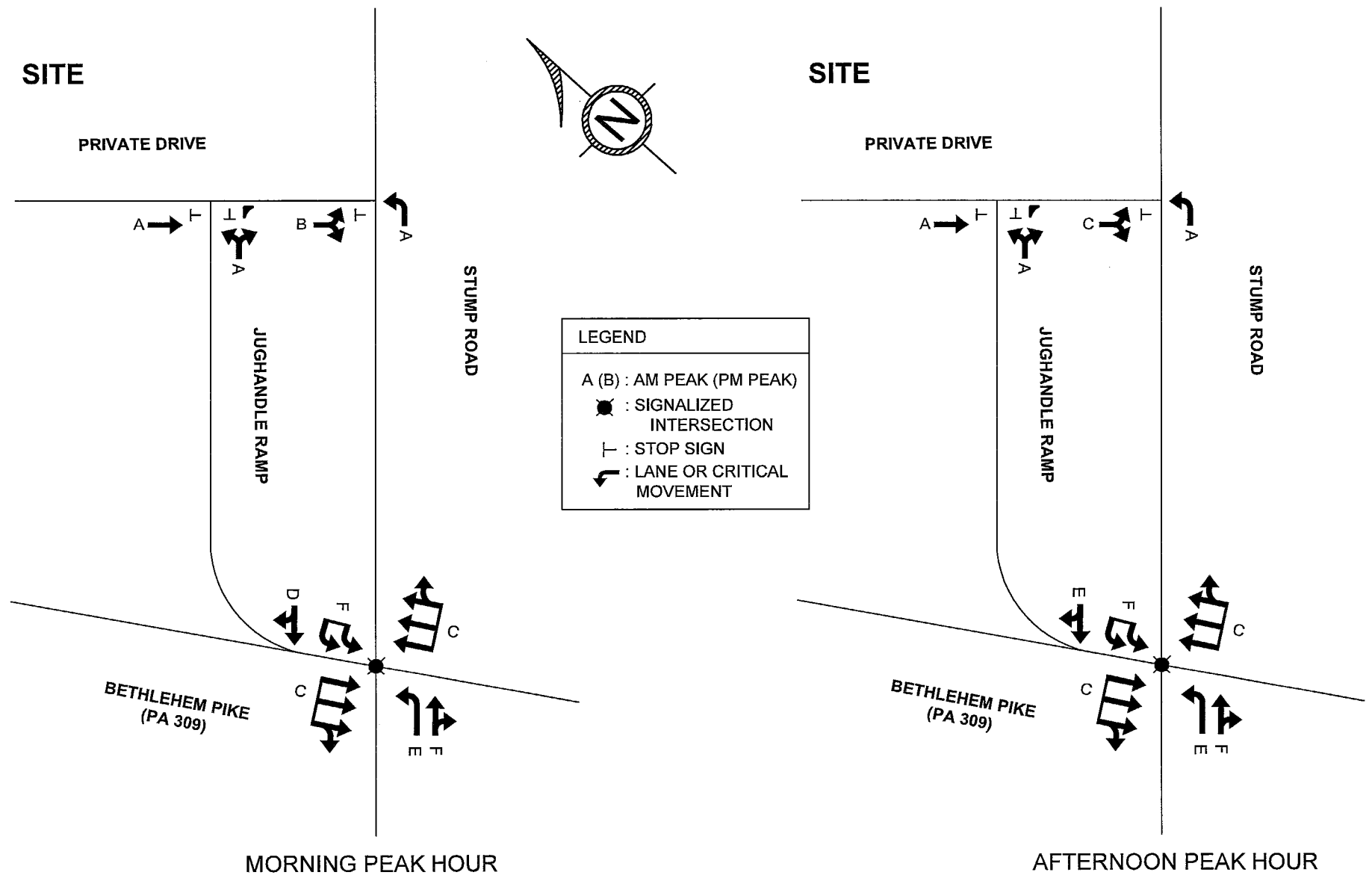


FIGURE 5  
 FUTURE (2023) PEAK HOUR LEVELS OF SERVICE  
 WITHOUT DEVELOPMENT  
**WESTRUM APARTMENTS**  
**MONTGOMERY TOWNSHIP, PA**

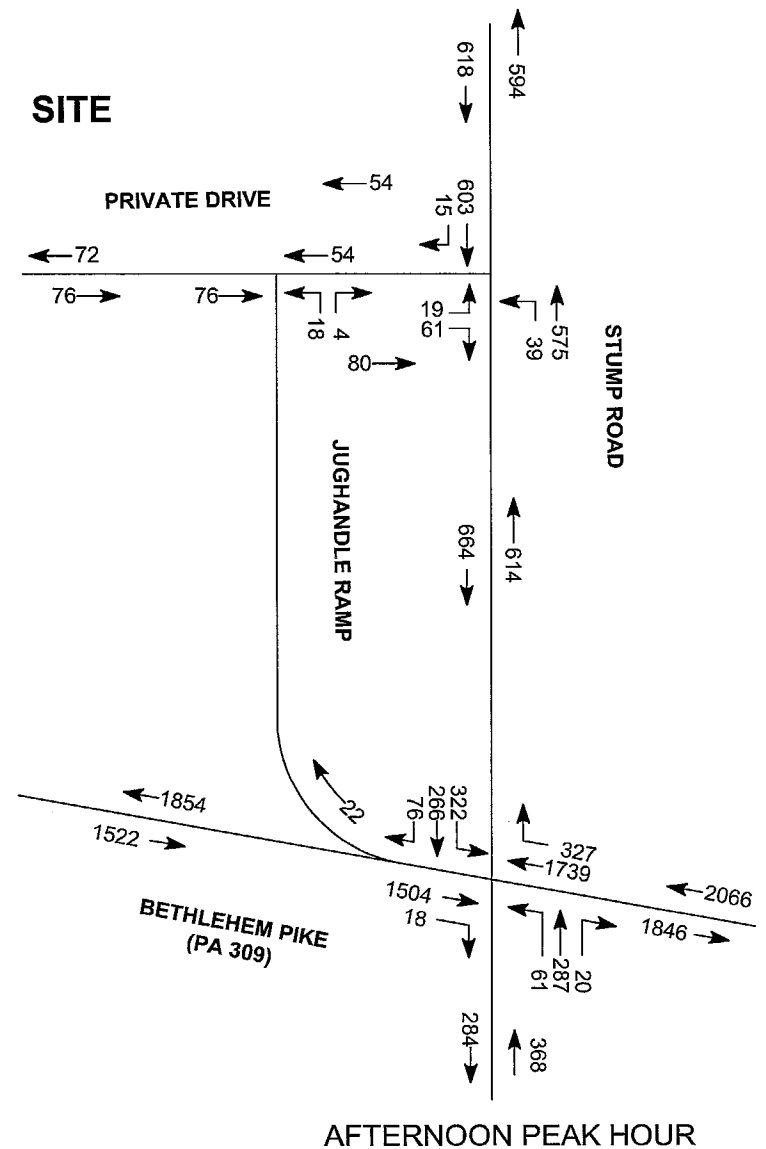
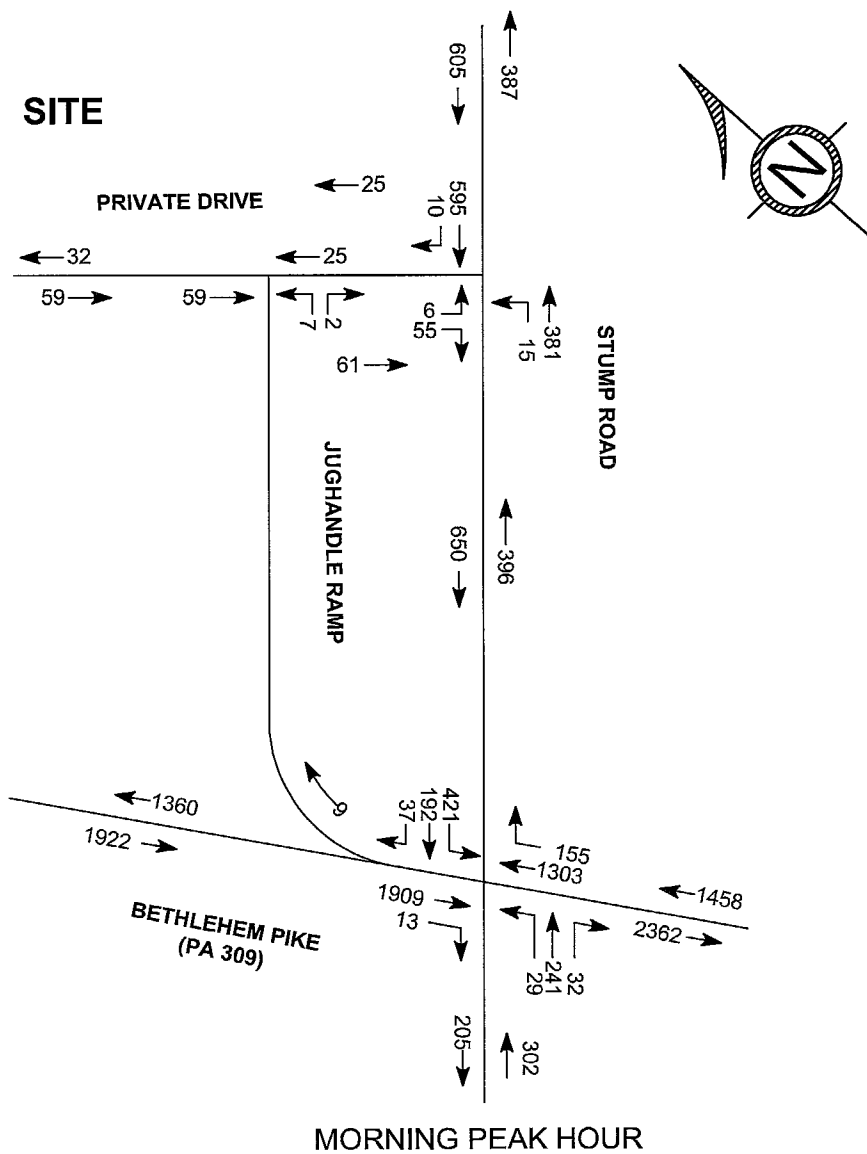


FIGURE 6  
FUTURE (2023) PEAK HOUR TRAFFIC  
AFTER DEVELOPMENT  
**WESTRUM APARTMENTS**  
**MONTGOMERY TOWNSHIP, PA**





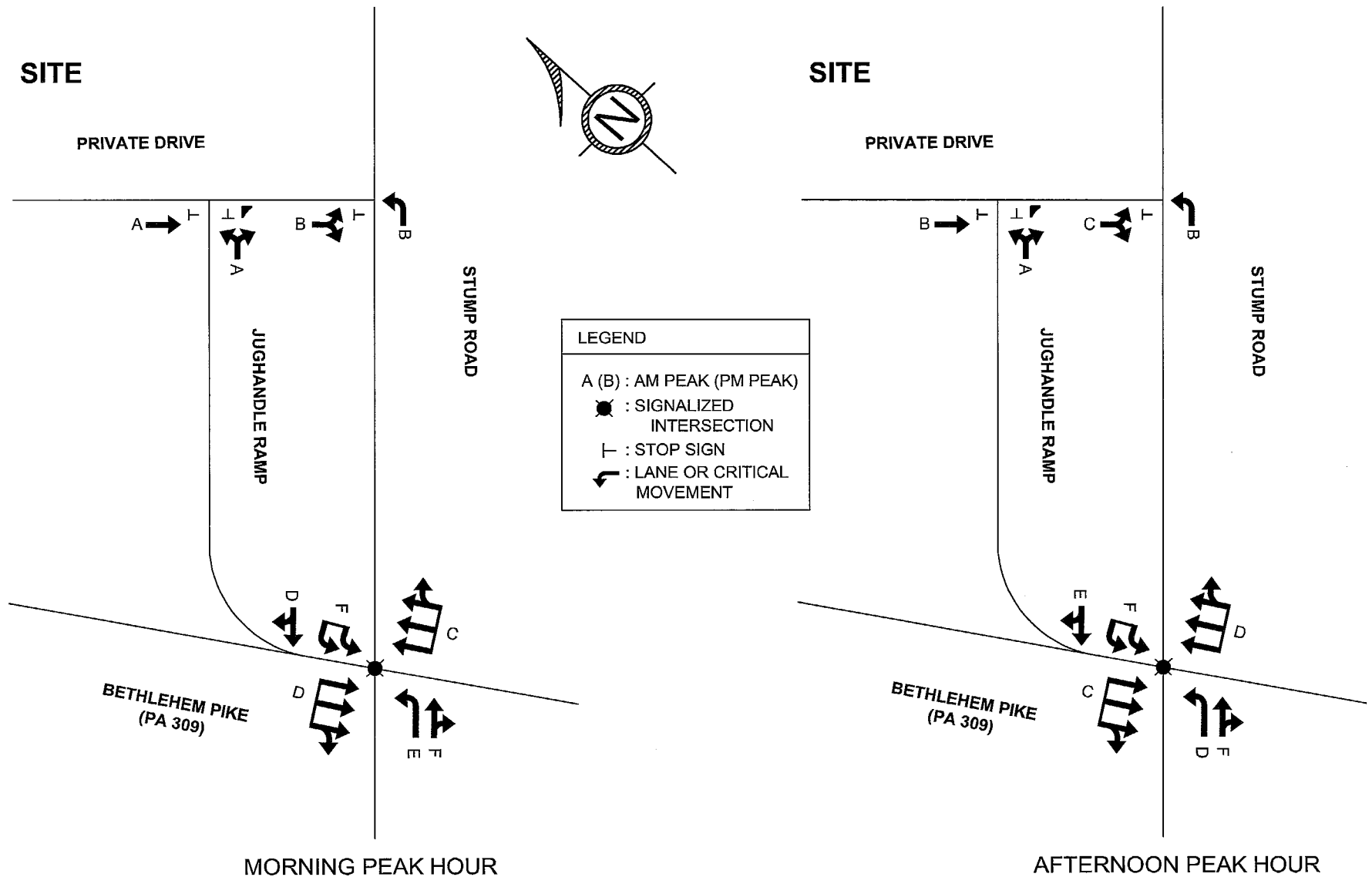
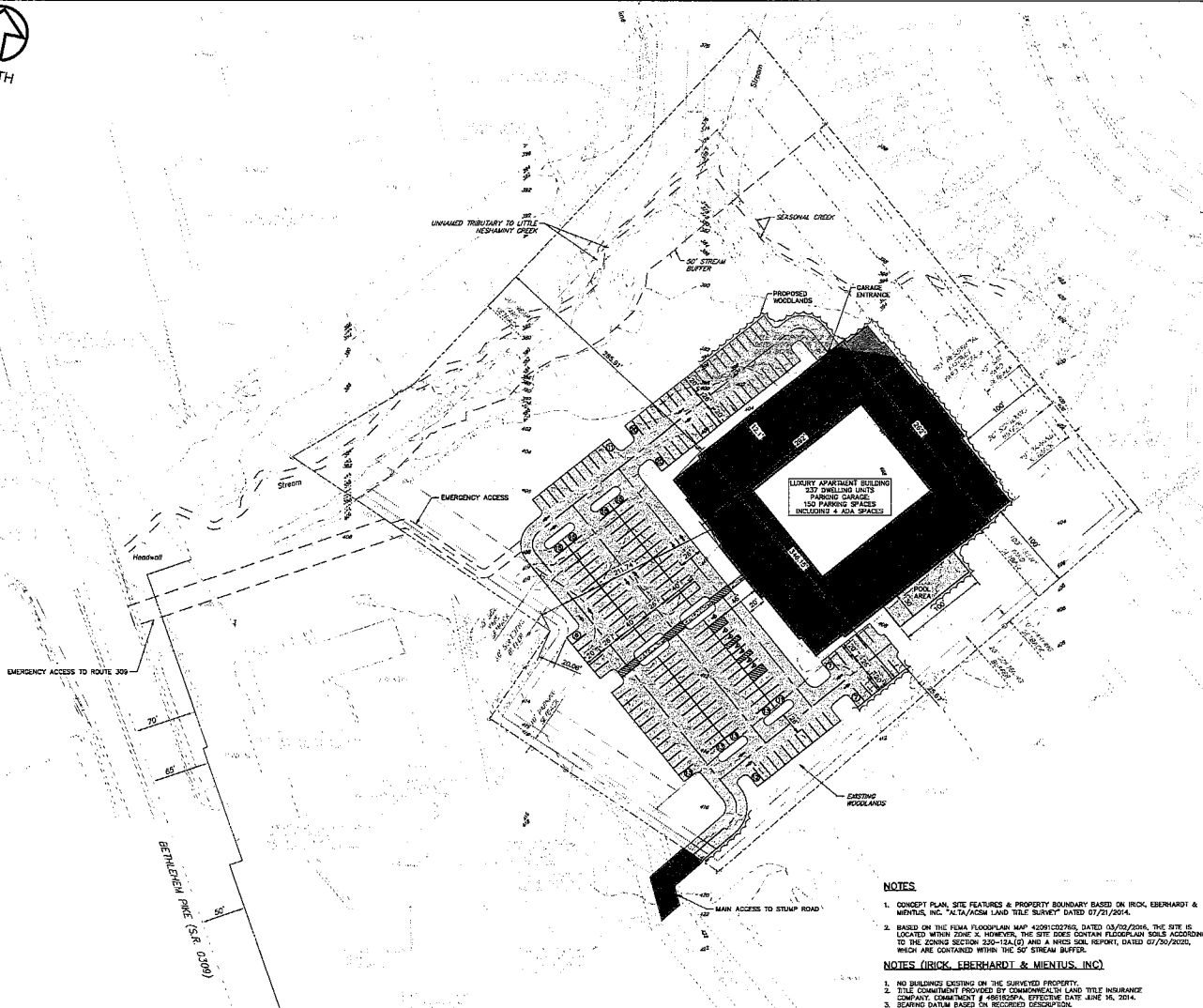


FIGURE 7  
FUTURE (2023) PEAK HOUR LEVELS OF SERVICE  
AFTER DEVELOPMENT

**WESTRUM APARTMENTS**  
**MONTGOMERY TOWNSHIP, PA**





#### NOTES

- CONCEPT PLAN, SITE FEATURES & PROPERTY BOUNDARY BASED ON IRICK, EBERHARDT & MIENTUS, INC. "ALTA/ACSM LAND TITLE SURVEY" DATED 07/31/2014.
- BASED ON THE FEMA FLOODPLAIN MAP 42081C027602, DATED 03/20/2004, THE SITE IS LOCATED WITHIN ZONE X. HOWEVER, THE SITE DOES CONTAIN FLOODPLAIN ISLES ACCORDING TO THE ZONING SECTION 230-124(G) AND A NILES SOIL REPORT, DATED 07/20/2020, WHICH ARE CONTAINED WITHIN THE 50' STREAM BUFFER.

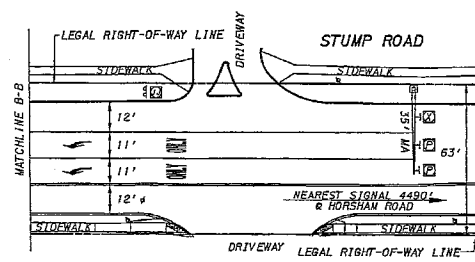
#### NOTES (IRICK, EBERHARDT & MIENTUS, INC.)

- NO BUILDINGS EXISTING ON THE SURVEYED PROPERTY.
- TITLE COMMITMENT PROVIDED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY, COMMITMENT # 48185280A, EFFECTIVE DATE JUNE 14, 2014.
- AS SURVEYED DESCRIPTION WAS PREPARED DUE TO MISS CLOSURE AND THE MISSING COURSE AND DISTANCE WITHIN THE RECORDED DEED.
- THERE IS NO OBSERVED EVIDENCE OF CONSTRUCTION WITHIN THE PA DOT REQUIRED RIGHT-OF-WAY FOR LIMITED ACCESS AS SHOWN IN PLAN BOOK H-51 PAGE 3602.
- DISTANCES IN PARENTHESIS ( ) ARE PER RECORDED DEED.
- STREAM AND BUILDING LOCATIONS TAKEN FROM AERIAL MAPPING.

#### PLANS OF REFERENCE (IRICK, EBERHARDT & MIENTUS, INC.)

- PLAN OF SURVEY PREPARED FOR MONTGOMERY COUNTY, INC. BY IRICK, EBERHARDT & MIENTUS, INC., DATED 10/20/1987, LAST REVISED 6/1/2001.
- SITE PLAN PREPARED FOR CMC INVESTMENT GROUP, PREPARED BY IRICK, EBERHARDT & MIENTUS, INC., DATED 4/18/1998, LAST REVISED 2/27/1997.
- PLAN OF SUBDIVISION PREPARED FOR GENERAL HANCOCK PARTNERSHIP BY SCHLOESSER & CLAUER CONSULTING ENGINEERS, INC. DATED 10/1/1997, LAST REVISED 11/1/1998, RECORDED IN PLAN BOOK A-48 PAGE 100.
- PLAN OF SUBDIVISION OF THE ORCHARD-PHASE IV PREPARED FOR A. HANSON BUILDING, INC. BY HERBERT H. MENTUS, INC. DATED 4/26/1987, RECORDED IN PLAN BOOK A-48 PAGE 100.
- PA DOT PLANS TITLED DISTRICT C-6, MONTGOMERY COUNTY, ROUTES 6202, 0202 SECTIONS 172-173 & PLAN BOOK A-48 PAGE 100.
- 700 R/W SHEETS 48, 50, 128, 130, 136, 137 OF 150, RECORDED IN HIGHWAY PLAN BOOK H-51, SHEETS 363, 365, 367, 369, 371, 373, 375, 377, 379, 381, 383, 385, 387, 389, 391, 393, 395, 397, 399, 401, 403, 405, 407, 409, 411, 413, 415, 417, 419, 421, 423, 425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 445, 447, 449, 451, 453, 455, 457, 459, 461, 463, 465, 467, 469, 471, 473, 475, 477, 479, 481, 483, 485, 487, 489, 491, 493, 495, 497, 499, 501, 503, 505, 507, 509, 511, 513, 515, 517, 519, 521, 523, 525, 527, 529, 531, 533, 535, 537, 539, 541, 543, 545, 547, 549, 551, 553, 555, 557, 559, 561, 563, 565, 567, 569, 571, 573, 575, 577, 579, 581, 583, 585, 587, 589, 591, 593, 595, 597, 599, 601, 603, 605, 607, 609, 611, 613, 615, 617, 619, 621, 623, 625, 627, 629, 631, 633, 635, 637, 639, 641, 643, 645, 647, 649, 651, 653, 655, 657, 659, 661, 663, 665, 667, 669, 671, 673, 675, 677, 679, 681, 683, 685, 687, 689, 691, 693, 695, 697, 699, 701, 703, 705, 707, 709, 711, 713, 715, 717, 719, 721, 723, 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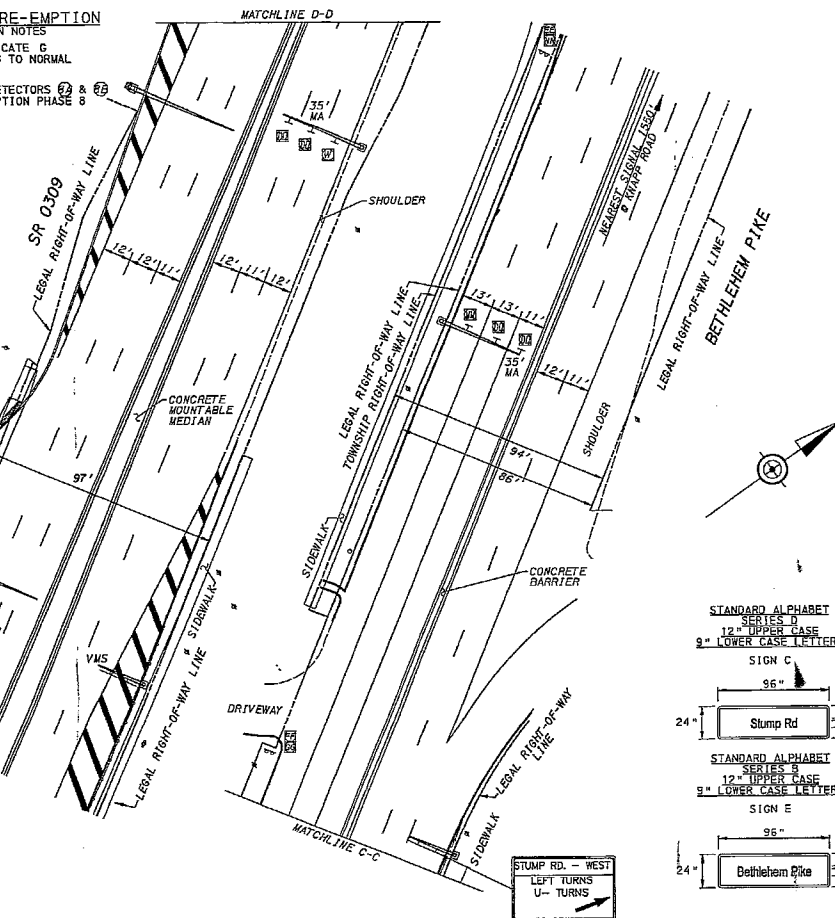
EMERGENCY PRE-EMPTION

OPERATION NOTES

- Ⓒ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION
- Ⓓ PRE-EMPTION DETECTORS ② & ③ TO CALL PREEMPTION PHASE 8

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHSOUND AND SOUTHSOUND APPROACHES OF BETHLEHEM PIKE (S.R. 0309) AND THE EASTBOUND AND WESTBOUND APPROACHES OF STUMP ROAD WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
  - PRE-EMPTION DETECTOR BA & BB TO CALL PRE-EMPTION PHASE 8 AT THIS INTERSECTION. PRE-EMPTION PHASE 6 AT THE INTERSECTION OF STUMP ROAD & WITCHWOOD DRIVE USING PEER TO PEER CONTROLLER COMMUNICATION VIA FIBER OPTIC CABLE CONNECTION BETWEEN INTERSECTIONS. THE USE OF EXTENSIONS AND DELAYS TO BE FIELD ADJUSTED TO ACHIEVE OPTIMAL OPERATION.
  - THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS IMMEDIATELY. THE GREEN INTERVAL FOR THE PRE-EMPTED PHASE SHALL FOLLOW. ONLY THOSE PHASES NOT POSING A YELLOW TRAP CONDITION MAY REMAIN GREEN (2, 6, 3+8, 4+7 OR 8) WHEN GOVERNED BY APPROACHING EMERGENCY VEHICLE.
  - THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
  - IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PED "WALK" (MAIN) INTERVAL SHALL TERMINATE IMMEDIATELY AND THE "CLEAR" (FLASHING) AND CLASING AND AND COUNTDOWN TIMER INTERVAL SHALL TIME OUT, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PREEMPTION.
  - IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING, ALL SIGNALS SHALL REMAIN FLASHING.
  - IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
  - UPON COMPLETION OF PRE-EMPTION PHASE 2, 4, 6, OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 1 SHALL FOLLOW.
  - IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVED" OPERATION.
  - LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.
- 



NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS  
PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE  
OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING  
ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED  
AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO  
INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING  
UNLESS THE PERMITEE COMPLIES WITH THE PROVISIONS OF THE  
LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO  
UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY  
CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS  
OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED  
OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH  
TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

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SYSTEM PERMIT # I-0011

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION  
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY

MUNICIPALITY: MONTGOMERY TOWNSHIP

INTERSECTION: BETHLEHEM PIKE (S.R. 0309) &

STUMP ROAD (T-375)

REVIEWED:

DATE 10/1/18  
MUNICIPAL OFFICIAL DATE

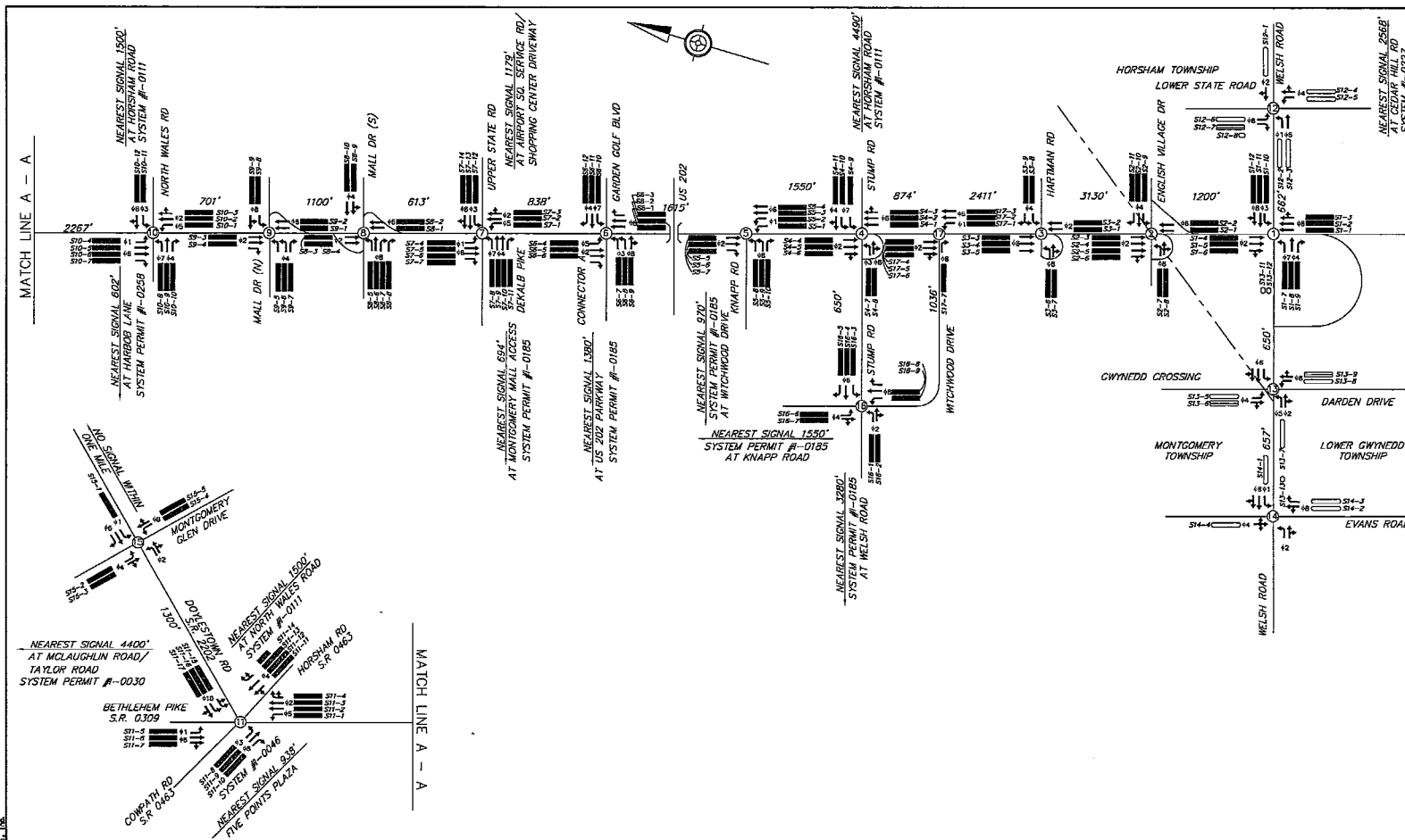
RECOMMENDED:

EA 6-13-96

DOUGLAS W. MAY 6-13-96

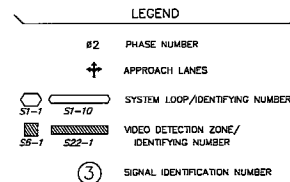
DISTRICT TRAFFIC ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

NO	REVISION	DES/REV	DATE	REVW	DATE	RECOM	DN
1	3.0.0 GENERATION & TIMING	MBR	4/14/98	MLK	4/14/98	DWN	4/14/98
2	ADDED N.T.G.R. SIGNS	BBN	4/23/98	MLK	4/23/98	DWN	5/4/98
3	ADDED EMERGENCY	PAT	8/10/04	MLK	5/2/04	LNB	5/4/04
4	REMOVED SIGN "P"	PAT	10/3/07	ASP	10/17/07	LNB	10/17/07
5	SA 0202-TTT AS-BUILT	PAT	4/10/13	DLA	9/22/14	ASP	5/4/14
6	SA 0202-TTT AS-BUILT	EPL	3/5/15	DLA	5/21/15	ASP	6/4/15
7	SA 0202-TTT AS-BUILT	TPD	06/28/18	DLA	10/4/18	DLA	10/4/18
8							



# CLOSED LOOP SYSTEM NOTES

- PROGRAMS TO BE SELECTED BY CENTRAL SYSTEM (TIME OF DAY), TRAFFIC ADAPTIVE SYSTEM, OR T.B.C. BACKUP.
- OFFSETS FOR NON-ADAPTIVE INTERSECTIONS AND TBC BACKUP REFERENCED TO THE BEGINNING OF MAIN STREET AMBER (PHASE 2+6).
- SYSTEM:
  - BETHLEHEM PIKE (S.R.0309): 12 INTERSECTIONS
  - WELSH ROAD (S.R.0063): 3 INTERSECTIONS
  - STUMP ROAD: 1 INTERSECTION
  - DOYLESTOWN ROAD (S.R. 2202): 1 INTERSECTION
- SYSTEM LIMITS:
  - SYSTEM 1: BETHLEHEM PIKE (S.R.0309) AND WELSH ROAD (S.R.0063) TO BETHLEHEM PIKE (S.R.0309) AND KNAPP ROAD, ALSO EVANS ROAD AND WELSH PIKE ROAD TO LOWER STATE AND WELSH ROAD.
  - SYSTEM 2: BETHLEHEM PIKE (S.R.0309) AND CONNECTOR A (S.R. 8019) TO BETHLEHEM PIKE (S.R.0309) AND HORSHAM ROAD (S.R.0463) AND DOYLESTOWN ROAD.
  - THE INTERSECTION OF DOYLESTOWN ROAD (SR 2202) AND MONTGOMERY GLEN DRIVE TO OPERATE AS A STAND ALONE INTERSECTION.
- COMMUNICATIONS PROVIDED TO PENNDOT. THE SYSTEM WILL OPERATE FROM A CENTRAL SERVER LOCATED IN PENNDOT DISTRICT 6-0 HEADQUARTERS. SYSTEM TO UTILIZE CENTRACS SYSTEM SOFTWARE.
- PRIMARY COORDINATION: CLOSED LOOP SYSTEM/HARD-WIRE COMMUNICATION CABLE (FIBER OPTIC)
- SECONDARY COORDINATION: TIME BASED COORDINATION (DEFAULT TO BACKUP T.B.C. PROGRAM CHART)
- TRAFFIC ADAPTIVE SYSTEM IS DESIGNED FOR THE INSYNC SYSTEM SOFTWARE
- TRAFFIC ADAPTIVE SYSTEM TO UTILIZE RYTHM ENGINEERING TRAVIS/INSYNC VIDEO DETECTION/TRAFFIC ADAPTIVE SIGNAL CONTROL SYSTEM AT DESIGNATED INTERSECTIONS.
- ALL EXCLUSIVE RIGHT TURN LANES TO HAVE 10-SEC DETECTION DELAY IN INSYNC PROCESSOR.



## GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

REFER TO TRAFFIC SIGNAL PERMIT DRAWING FOR INDIVIDUAL INTERSECTION OPERATION, GEOMETRY, PHASING AND CRITICAL TIMES.

FOR CONSTRUCTION AND INSPECTION THE SYSTEM PERMIT SHOULD ALWAYS BE ACCOMPANIED WITH TRAFFIC SIGNAL PERMIT DRAWING.

TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL, MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE DIAL UP LEVEL.

GATHER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PENNDOT DISTRICT 6-0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.

ASSIGN LOOP DETECTORS AND PROGRAM THE CONTROLLERS TO GATHER TRAFFIC VOLUMES IN 15 MINUTE INTERVAL, WHERE APPLICABLE.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

OBTAIN POLE ATTACHMENT PERMIT FOR AERIAL FIBER OPTIC INSTALLATION.

MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 121 (2000), PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES.

WHEN LIQUID FILLED MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION  
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY  
MUNICIPALITY: MONTGOMERY/HORSHAM/L GWYNEDD TOWNSHIPS  
INTERSECTION: BETHLEHEM PIKE (S.R. 0309)  
CORRIDOR: \_\_\_\_\_

REVIEWED:  
\_\_\_\_\_  
DATE: 10/1/18

RECOMMENDED:  
\_\_\_\_\_  
DATE: 2/2/06

\_\_\_\_\_  
DATE: 2/2/06

NO.	REVISION	DATE	BY	DATE	BY	DATE
1	REVISE TRAVIS	1/25/05	TPD	ASP	1/25/05	ASP
2	REVISE TRAVIS	1/25/05	TPD	ASP	1/25/05	ASP
3	REVISE TRAVIS	1/25/05	TPD	ASP	1/25/05	ASP
4	REVISE TRAVIS	1/25/05	TPD	ASP	1/25/05	ASP
5	REVISE TRAVIS	1/25/05	TPD	ASP	1/25/05	ASP
6	REVISE TRAVIS	1/25/05	TPD	ASP	1/25/05	ASP
7	REVISE TRAVIS	1/25/05	TPD	ASP	1/25/05	ASP
8	REVISE TRAVIS	1/25/05	TPD	ASP	1/25/05	ASP

SYSTEM PERMIT # 1-0011 SHEET 1 OF 3

# WEEKLY TIMING PROGRAMS (ADAPTIVE ▲)

CONFIGURATION:AM		TUNNEL PHASE DURATION (SEC)		PERIOD	GLOBAL OFFSET (AT FACILITATOR (SEC))		LOCAL OFFSET (SEC)		TRAVEL TIME TO NEXT INTERSECTION (SEC)
INTERSECTIONS		FILE #	NB OR EB SB OR WB		NB OR EB SB OR WB		NB OR EB SB OR WB		
1	BETHLEHEM PIKE (SR 309) & WELSH ROAD	0210	44 = 55 42 = 80	170	44=NBSB 1684=NBSB 60	16 = 0 92 = -60	92 = 17 42 = N/A		
2	BETHLEHEM PIKE (SR 309) & ENGLISH VILLAGE	2704	44 = 50 42 = 55	170	44=NBSB 30 42=NBSB 60	16 = 0 92 = -10	92 = 15 42 = 17		
3	BETHLEHEM PIKE (SR 309) & HARTMAN ROAD	1618	44 = 100 44 = 70	170	44=NBSB 1684=NBSB 60	12 = 15 94 = -27	92 = 34 44 = 45		
4	BETHLEHEM PIKE (SR 309) & STUMP ROAD	0429	44 = 55 42 = 70	170	44=NBSB 1684=NBSB 60	16 = 0 92 = -57	94 = 22 42 = 13		
5	BETHLEHEM PIKE (SR 309) & KNAPP ROAD	3004	42 = 60 44 = 100	170	44=NBSB 1684=NBSB 60	92 = 0 94 = -24	92 = 23 42 = 24		
6	BETHLEHEM PIKE (SR 309) & GARDEN GOLF BLVD	3367	44 = 50 44 = 65	170	44=NBSB 1684=NBSB 60	92 = 15 94 = -43	92 = 13 42 = 13		
7	BETHLEHEM PIKE (SR 309) & DEKALB PIKE/UPPER STATE RD	1056	44 = 60 44 = 65	170	44=NBSB 1684=NBSB 60	92 = -3 94 = -51	92 = 8 44 = 13		
8	BETHLEHEM PIKE (SR 309) & MALL DRIVE SOUTH	1984	44 = 70 42 = 58	170	44=NBSB 1684=NBSB 60	16 = -8 92 = -43	94 = 18 42 = 8		
9	BETHLEHEM PIKE (SR 309) & MALL DRIVE NORTH	1983	42 = 52 44 = 60	170	44=NBSB 1684=NBSB 60	92 = 15 94 = -43	92 = 13 42 = 13		
10	BETHLEHEM PIKE (SR 309) & NORTH WALES ROAD	1594	42 = 45 44 = 55	170	44=NBSB 1684=NBSB 60	92 = 77 94 = -40	92 = 58 44 = 13		
11	BETHLEHEM PIKE (SR 309) & HORSHAM ROAD/DEKALB PIKE	0197	42 = 45 44 = 50	170	44=NBSB 1684=NBSB 60	92 = 75 94 = -40	92 = 61 44 = 58		
12									
13									
14									
15									
16	STUMP ROAD & WITCHWOOD DRIVE	3944	42 = N/A 44 = N/A	80	44=NBSB 1684=NBSB 60	42 = N/A 94 = N/A	42 = N/A 44 = N/A		
17	BETHLEHEM PIKE (SR 309) & WITCHWOOD DRIVE	3943	44 = 47 42 = 77	170	44=NBSB 1684=NBSB 60	16 = 0 92 = -60	92 = 62 13 42 = 34		
CONFIGURATION:MIDDAY		TUNNEL PHASE DURATION (SEC)		PERIOD	GLOBAL OFFSET (AT FACILITATOR (SEC))		LOCAL OFFSET (SEC)		TRAVEL TIME TO NEXT INTERSECTION (SEC)
INTERSECTIONS		FILE #	NB OR EB SB OR WB		NB OR EB SB OR WB		NB OR EB SB OR WB		
1	BETHLEHEM PIKE (SR 309) & WELSH ROAD	0210	44 = 40 42 = 55	150	44=NBSB 30 42=NBSB 20	16 = 5 92 = -16	94 = 17 42 = N/A		
2	BETHLEHEM PIKE (SR 309) & ENGLISH VILLAGE	2704	44 = 50 42 = 55	150	44=NBSB 30 42=NBSB 20	16 = 0 92 = -10	94 = 45 42 = 17		
3	BETHLEHEM PIKE (SR 309) & HARTMAN ROAD	1618	44 = 55 44 = 45	150	44=NBSB 1684=NBSB 60	92 = 0 94 = -15	92 = 34 44 = 45		
4	BETHLEHEM PIKE (SR 309) & STUMP ROAD	0429	44 = 50 44 = 45	150	44=NBSB 30 42=NBSB 20	16 = 0 92 = -10	94 = 22 42 = 13		
5	BETHLEHEM PIKE (SR 309) & KNAPP ROAD	3004	44 = 68 44 = 45	150	44=NBSB 30 42=NBSB 20	92 = 0 94 = -5	92 = 34 44 = 22		
6	BETHLEHEM PIKE (SR 309) & GARDEN GOLF BLVD	3367	44 = 40 42 = 45	150	44=NBSB 30 42=NBSB 20	16 = 0 92 = -5	94 = 13 42 = 24		
7	BETHLEHEM PIKE (SR 309) & DEKALB PIKE/UPPER STATE RD	1056	44 = 40 44 = 45	150	44=NBSB 30 42=NBSB 20	16 = 0 92 = -10	94 = 22 42 = 13		
8	BETHLEHEM PIKE (SR 309) & MALL DRIVE SOUTH	1984	44 = 55 92 = 40	150	44=NBSB 30 42=NBSB 20	94 = -15 92 = 0	94 = 18 42 = 8		
9	BETHLEHEM PIKE (SR 309) & MALL DRIVE NORTH	1983	42 = 56 44 = 40	150	44=NBSB 30 42=NBSB 20	92 = 35 94 = 0	92 = 13 44 = 18		
10	BETHLEHEM PIKE (SR 309) & NORTH WALES ROAD	1594	42 = 40 44 = 40	150	44=NBSB 30 42=NBSB 20	92 = 35 94 = 0	92 = 38 44 = 13		
11	BETHLEHEM PIKE (SR 309) & HORSHAM ROAD/DEKALB PIKE	0197	42 = 40 44 = 40	150	44=NBSB 30 42=NBSB 20	92 = 20 94 = 10	92 = 61 44 = 38		
12									
13									
14									
15									
16	STUMP ROAD & WITCHWOOD DRIVE	3944	42 = N/A 44 = N/A	120	44=NBSB 30 42=NBSB 20	16 = N/A 94 = N/A	92 = N/A 44 = N/A		
17	BETHLEHEM PIKE (SR 309) & WITCHWOOD DRIVE	3943	44 = 50 42 = 65	150	44=NBSB 30 42=NBSB 20	16 = -5 92 = -8	94 = 13 42 = 34		
CONFIGURATION:PM		TUNNEL PHASE DURATION (SEC)		PERIOD	GLOBAL OFFSET (AT FACILITATOR (SEC))		LOCAL OFFSET (SEC)		TRAVEL TIME TO NEXT INTERSECTION (SEC)
INTERSECTIONS		FILE #	NB OR EB SB OR WB		NB OR EB SB OR WB		NB OR EB SB OR WB		
1	BETHLEHEM PIKE (SR 309) & WELSH ROAD	0210	44 = 55 42 = 70	170	44=NBSB 0 42=NBSB 48	16 = 0 92 = 35	94 = 17 42 = N/A		
2	BETHLEHEM PIKE (SR 309) & ENGLISH VILLAGE	2704	44 = 60 42 = 70	170	44=NBSB 0 42=NBSB 48	16 = 0 92 = 10	94 = 45 42 = 17		
3	BETHLEHEM PIKE (SR 309) & HARTMAN ROAD	1618	44 = 60 42 = 70	170	44=NBSB 0 42=NBSB 48	16 = -10 94 = -30	94 = 45 42 = 17		
4	BETHLEHEM PIKE (SR 309) & STUMP ROAD	0429	44 = 55 42 = 55	170	44=NBSB 0 42=NBSB 48	16 = -10 92 = 110	94 = 22 42 = 13		
5	BETHLEHEM PIKE (SR 309) & KNAPP ROAD	3004	42 = 72 44 = 51	170	44=NBSB 0 42=NBSB 48	12 = -10 94 = 110	92 = 23 44 = 22		
6	BETHLEHEM PIKE (SR 309) & GARDEN GOLF BLVD	3367	44 = 60 42 = 55	170	44=NBSB 0 42=NBSB 48	12 = -10 94 = 110	92 = 23 44 = 22		
7	BETHLEHEM PIKE (SR 309) & DEKALB PIKE/UPPER STATE RD	1056	44 = 60 44 = 55	170	44=NBSB 0 42=NBSB 48	12 = -12 94 = -114	92 = 6 44 = 13		
8	BETHLEHEM PIKE (SR 309) & MALL DRIVE SOUTH	1984	44 = 72 42 = 55	170	44=NBSB 0 42=NBSB 48	16 = -17 92 = 40	94 = 18 42 = 8		
9	BETHLEHEM PIKE (SR 309) & MALL DRIVE NORTH	1983	42 = 70 44 = 55	170	44=NBSB 0 42=NBSB 48	92 = 20 94 = 40	92 = 13 44 = 18		
10	BETHLEHEM PIKE (SR 309) & NORTH WALES ROAD	1594	42 = 74 44 = 55	170	44=NBSB 0 42=NBSB 48	92 = 40 94 = 38	92 = 13 44 = 18		
11	BETHLEHEM PIKE (SR 309) & HORSHAM ROAD/DEKALB PIKE	0197	42 = 56 44 = 50	170	44=NBSB 0 42=NBSB 48	92 = 25 94 = 60	92 = 61 44 = 38		
12									
13									
14									
15									
16	STUMP ROAD & WITCHWOOD DRIVE	3944	42 = N/A 42 = N/A	120	44=NBSB 0 42=NBSB 48	42 = N/A 94 = N/A	42 = N/A 42 = N/A		
17	BETHLEHEM PIKE (SR 309) & WITCHWOOD DRIVE	3943	44 = 70 92 = 70	170	44=NBSB 0 42=NBSB 48	94 = -12 92 = -135	94 = 13 42 = 34		

## NOTES:

- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
- REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2 AND CLEARANCE AND PED TIMES.
- GLOBAL OFFSET (AT FACILITATOR): VALUE IN SECONDS THAT OFFSETS A TUNNEL GLOBALLY AT THE FACILITATOR INTERSECTION AS ENTERED IN INTRAFFIC
- LOCAL OFFSET: TUNNEL OFFSET AT INTERSECTION AS ENTERED IN INTRAFFIC
- TRAVEL TIME TO NEXT INTERSECTION: VALUE FOR TRAVEL TIME OF THE CHOSEN TUNNEL TO THE CORRESPONDING TUNNEL AT THE NEXT INTERSECTION AS ENTERED IN INSYNC MAP VIEW

▲ TIMING SELECTED BY TRAFFIC ADAPTIVE PROCESSOR

## GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

REFER TO TRAFFIC SIGNAL PERMIT DRAWING FOR INDIVIDUAL INTERSECTION OPERATION, GEOMETRY, PHASING AND CRITICAL TIMES.

FOR CONSTRUCTION AND INSPECTION THE SYSTEM PERMIT SHOULD ALWAYS BE ACCOMPANIED WITH TRAFFIC SIGNAL PERMIT DRAWING.

TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL, MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE DIAL UP LEVEL.

GATHER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PENNDOT DISTRICT 6-0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.

ASSIGN LOOP DETECTORS AND PROGRAM THE CONTROLLERS TO GATHER TRAFFIC VOLUMES IN 15 MINUTE INTERVAL, WHERE APPLICABLE.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

OBTAIN POLE ATTACHMENT PERMIT FOR AERIAL FIBER OPTIC INSTALLATION.

MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLETES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 121 (2006), PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8000 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION  
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY

MUNICIPALITY: MONTGOMERY/HORSHAM/L GWYNEDD TOWNS

INTERSECTION: BETHLEHEM PIKE (SR. 0309)

CORRIDOR

REVIEWED:

LAWRENCE J. GREGAN 10/1/18  
MUNICIPAL OFFICIAL DATE

RECOMMENDED: KEVIN CONAHAN 2/2/06  
LOUIS R. BELMONTE 2/2/06  
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DATE	DATE	DATE	DATE
1	REVISION	DATE	DATE	DATE	DATE
2	REVISION	DATE	DATE	DATE	DATE
3	REVISION	DATE	DATE	DATE	DATE
4	REVISION	DATE	DATE	DATE	DATE
5	REVISION	DATE	DATE	DATE	DATE
6	REVISION	DATE	DATE	DATE	DATE
7	REVISION	DATE	DATE	DATE	DATE
8	REVISION	DATE	DATE	DATE	DATE

SYSTEM PERMIT # 1-0011

SHEET 2 OF 3

Notes:

- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
- REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2 AND CLEARANCE AND PED TIMES.

++ REFER TO SIGNAL PERMIT PLAN FOR MAX 1 AND MAX 2 OPERATION TIMES.

▲ BACKUP COORDINATION. ACTUAL COORDINATION TIMINGS TO BE SELECTED BY TRAFFIC ADAPTIVE SYSTEM.

SYSTEM PERMIT # I-0011	SHEET 3 OF 3
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Montgomeryville, PA  
Rt 309/Stump Rd  
Tuesday, May 24, 2016  
Location: 40.2251072786708, -  
75.2339512109757

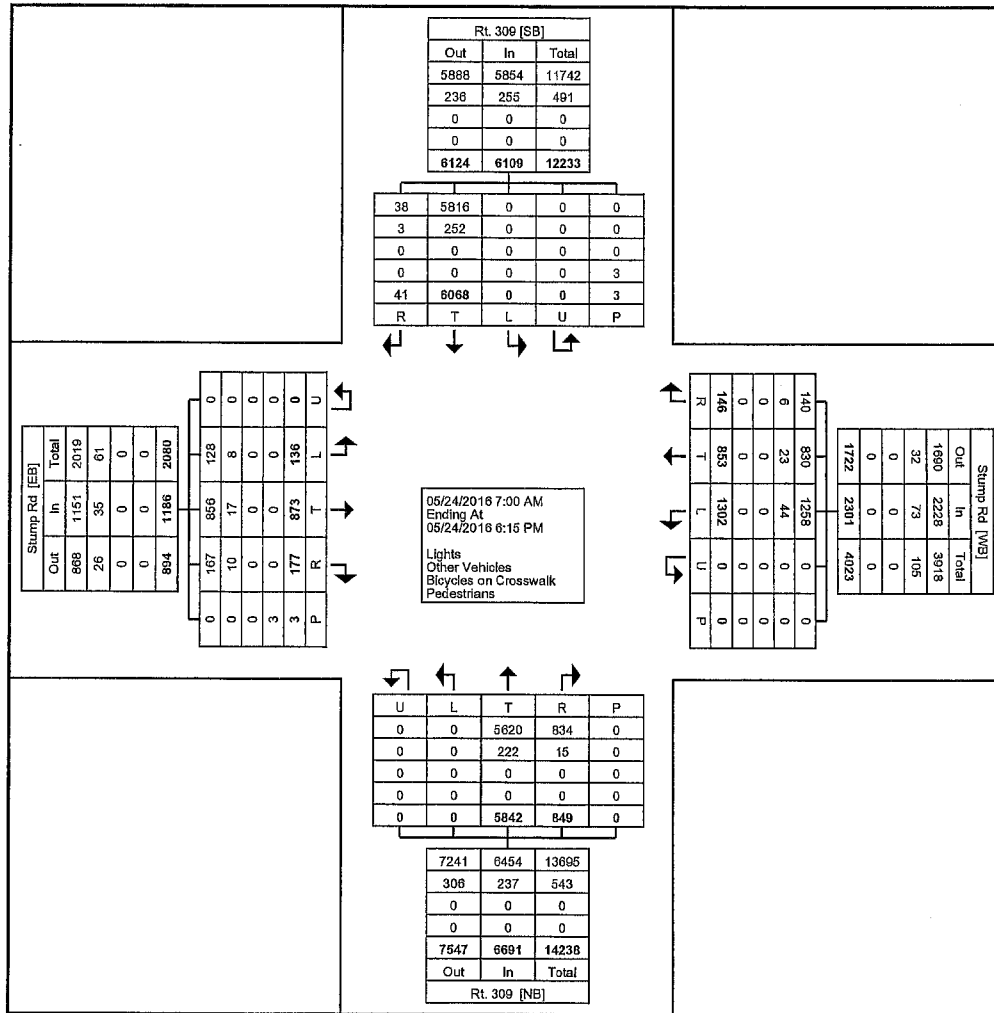
Coatesville, Pennsylvania, United States 19320  
610-466-1469  
Serving Transportation Professionals Since 1995

Count Name: Rt. 309/Stump Rd  
Tues  
Site Code:  
Start Date: 05/24/2016  
Page No: 1

### Turning Movement Data

Start Time	Rt. 309 Southbound							Stump Rd Westbound							Rt. 309 Northbound							Stump Rd Eastbound							Int. Total
	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	1	0	454	0	0	0	455	3	0	38	123	0	0	164	13	12	240	0	0	0	265	5	1	40	5	0	0	51	935
7:15 AM	0	0	443	0	0	0	443	3	0	49	115	0	0	167	16	14	249	0	0	0	279	12	0	40	6	0	0	58	947
7:30 AM	0	0	477	0	0	1	477	5	0	51	85	0	0	141	21	9	324	0	0	0	354	14	1	52	6	0	0	73	1045
7:45 AM	1	2	486	0	0	1	469	3	0	34	99	0	0	136	29	13	317	0	0	0	359	20	1	56	4	0	1	81	1045
Hourly Total	2	2	1840	0	0	2	1844	14	0	172	422	0	0	608	79	48	1130	0	0	0	1257	51	3	188	21	0	1	263	3972
8:00 AM	0	1	488	0	0	0	489	4	0	45	87	0	0	136	26	12	298	0	0	0	336	12	1	50	5	0	1	68	1029
8:15 AM	1	0	397	0	0	0	398	5	0	41	86	0	0	132	23	9	354	0	0	0	386	10	0	56	4	0	0	70	986
8:30 AM	3	0	370	0	0	0	373	4	0	53	101	0	0	158	31	5	294	0	0	0	330	12	0	61	4	0	0	77	938
8:45 AM	0	1	349	0	0	1	350	5	0	38	86	0	0	129	31	12	282	0	0	0	325	4	0	48	9	0	0	61	865
Hourly Total	4	2	1604	0	0	1	1610	18	0	177	360	0	0	555	111	38	1228	0	0	0	1377	38	1	215	22	0	1	276	3818
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	5	0	311	0	0	0	316	17	0	58	80	0	0	155	41	15	478	0	0	0	534	9	1	50	22	0	1	82	1087
4:15 PM	3	0	320	0	0	0	323	13	0	65	54	0	0	132	51	18	410	0	0	0	479	9	1	65	10	0	0	85	1019
4:30 PM	8	0	294	0	0	0	302	16	1	87	69	0	0	173	59	14	397	0	0	0	470	14	0	60	9	0	0	83	1028
4:45 PM	2	0	366	0	0	0	368	14	1	35	53	0	0	103	63	21	479	0	0	0	563	8	1	58	10	0	0	77	1111
Hourly Total	18	0	1291	0	0	0	1309	60	2	245	256	0	0	563	214	68	1764	0	0	0	2046	40	3	233	51	0	1	327	4245
5:00 PM	3	0	363	0	0	0	366	20	0	78	87	0	0	185	47	13	436	0	0	0	496	12	0	56	12	0	0	80	1127
5:15 PM	5	0	344	0	0	0	349	10	1	70	76	0	0	157	58	16	427	0	0	0	501	6	1	66	10	0	0	83	1090
5:30 PM	1	1	350	0	0	0	352	14	0	61	60	0	0	135	51	27	457	0	0	0	535	9	0	50	10	0	0	69	1091
5:45 PM	2	1	275	0	0	0	278	7	0	50	41	0	0	98	67	12	399	0	0	0	478	13	0	65	10	0	0	88	942
Hourly Total	11	2	1332	0	0	0	1345	51	1	259	264	0	0	575	223	68	1719	0	0	0	2010	40	1	237	42	0	0	320	4250
6:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2
Grand Total	35	6	6068	0	0	3	6109	143	3	853	1302	0	0	2301	627	222	5842	0	0	0	6691	169	8	873	136	0	3	1186	16267
Approach %	0.6	0.1	99.3	0.0	0.0	-	-	6.2	0.1	37.1	56.6	0.0	-	-	9.4	3.3	87.3	0.0	0.0	-	-	14.2	0.7	73.6	11.5	0.0	-	-	-
Total %	0.2	0.0	37.3	0.0	0.0	-	37.5	0.9	0.0	5.2	8.0	0.0	-	14.1	3.8	1.4	35.9	0.0	0.0	-	41.1	1.0	0.0	5.4	0.8	0.0	-	7.3	-
Lights	32	6	5816	0	0	-	5854	137	3	830	1258	0	-	2228	615	219	5620	0	0	-	6454	159	8	856	128	0	-	1151	15967
% Lights	91.4	100.0	95.8	-	-	-	95.8	95.8	100.0	97.3	96.6	-	-	96.8	98.1	98.6	96.2	-	-	-	96.5	94.1	100.0	98.1	94.1	-	-	97.0	96.3
Other Vehicles	3	0	252	0	0	-	255	6	0	23	44	0	-	73	12	3	222	0	0	-	237	10	0	17	8	0	-	35	600
% Other Vehicles	8.6	0.0	4.2	-	-	-	4.2	4.2	0.0	2.7	3.4	-	-	3.2	1.9	1.4	3.8	-	-	-	3.5	5.9	0.0	1.9	5.9	-	-	3.0	3.7
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-
Pedestrians	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	3	-	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-





Turning Movement Data Plot

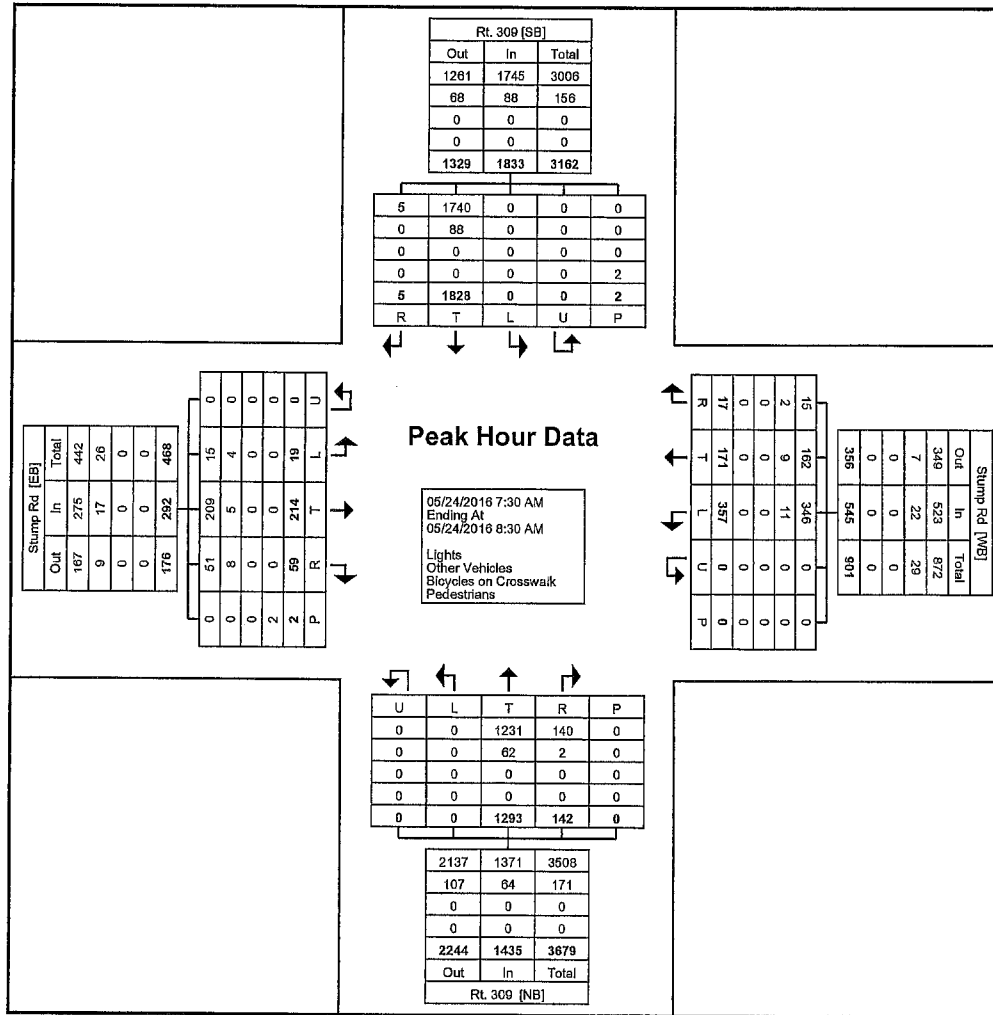
Montgomeryville, PA  
Rt 309/Stump Rd  
Tuesday, May 24, 2016  
Location: 40.2251072786708, -  
75.2339512109757

Coatesville, Pennsylvania, United States 19320  
610-466-1469  
Serving Transportation Professionals Since 1995

Count Name: Rt. 309/Stump Rd  
Tues  
Site Code:  
Start Date: 05/24/2016  
Page No: 3

### Turning Movement Peak Hour Data (7:30 AM)

Start Time	Rt. 309 Southbound							Stump Rd Westbound							Rt. 309 Northbound							Stump Rd Eastbound							Int. Total
	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	
7:30 AM	0	0	477	0	0	1	477	5	0	51	85	0	0	141	21	9	324	0	0	0	354	14	1	52	6	0	0	73	1046
7:45 AM	1	2	466	0	0	1	469	3	0	34	99	0	0	136	29	13	317	0	0	0	359	20	1	56	4	0	1	81	1045
8:00 AM	0	1	488	0	0	0	489	4	0	45	87	0	0	136	26	12	298	0	0	0	336	12	1	50	5	0	1	68	1029
8:15 AM	1	0	397	0	0	0	398	5	0	41	86	0	0	132	23	9	354	0	0	0	386	10	0	56	4	0	0	70	986
Total	2	3	1828	0	0	2	1833	17	0	171	357	0	0	545	99	43	1293	0	0	0	1435	56	3	214	19	0	2	292	4105
Approach %	0.1	0.2	99.7	0.0	0.0	-	-	3.1	0.0	31.4	65.5	0.0	-	-	6.9	3.0	90.1	0.0	0.0	-	-	19.2	1.0	73.3	6.5	0.0	-	-	-
Total %	0.0	0.1	44.5	0.0	0.0	-	44.7	0.4	0.0	4.2	8.7	0.0	-	13.3	2.4	1.0	31.5	0.0	0.0	-	35.0	1.4	0.1	5.2	0.5	0.0	-	7.1	-
PHF	0.50	0.375	0.936	0.000	0.000	-	0.937	0.850	0.000	0.838	0.902	0.000	-	0.986	0.853	0.827	0.913	0.000	0.000	-	0.929	0.700	0.750	0.955	0.792	0.000	-	0.901	0.982
Lights	2	3	1740	0	0	-	1745	15	0	162	346	0	-	523	97	43	1231	0	0	-	1371	48	3	209	15	0	-	275	3914
% Lights	100.0	100.0	95.2	-	-	-	95.2	88.2	-	94.7	98.9	-	-	96.0	98.0	100.0	95.2	-	-	-	95.5	85.7	100.0	97.7	78.9	-	-	94.2	95.3
Other Vehicles	0	0	88	0	0	-	88	2	0	9	11	0	-	22	2	0	62	0	0	-	64	8	0	5	4	0	-	17	191
% Other Vehicles	0.0	0.0	4.8	-	-	-	4.8	11.8	-	5.3	3.1	-	-	4.0	2.0	0.0	4.8	-	-	-	4.5	14.3	0.0	2.3	21.1	-	-	5.8	4.7
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (7:30 AM)



Coatesville, Pennsylvania, United States 19320  
610-466-1469  
Serving Transportation Professionals Since 1995

Count Name: Rt. 309/Stump Rd  
Tues  
Site Code:  
Start Date: 05/24/2016  
Page No: 5

[illegible]

Coatesville, Pennsylvania, United States 19320  
610-466-1469  
Serving Transportation Professionals Since 1995

Count Name: Rt. 309/Stump Rd  
Tues  
Site Code:  
Start Date: 05/24/2016  
Page No: 6



AM: Drizzle Tues 10/13/20

Montgomery Twp, PA

Stump Road & NE Jughaulle Ramp

↑ 1    ↘ 2    ↙ 3    ↓ 4    TOT    ↘ 5    ↙ 6    ↘ 7    ↙ 8    TOT    TOTAL

700-715					0					0	0
715-730	1				1			1		1	2
730-745	1		1		2		1	1		2	4
745-800		1			1			1		1	2
800-815			1		2	1			1	2	4
815-830			1		2	1			1	2	4
830-845			1		3	1				3	6
845-900		1	1		6	1		1		5	11
800-900	0	1	2	10	13	8	0	2	2	12	25

PM: Overcast

400-415	1111		11	11	8		1	111	11	8	16
415-430	111		T	11	8	1	111	11	T	8	16
430-445	111	1	11	111	11	11	111	111	1	11	22
445-500	111	11	1		8		111	111		8	16
500-515	111	111	1	111	18	11	111	111	111	18	36
515-530	111	1		111	9	111	111	111		9	18
530-545	111	111	1	1	15	11	111	111	111	14	28
545-600	111	1		11	9	1	11	111	1	9	18
500-600	37	1	4	9	51	8	15	26	1	50	101

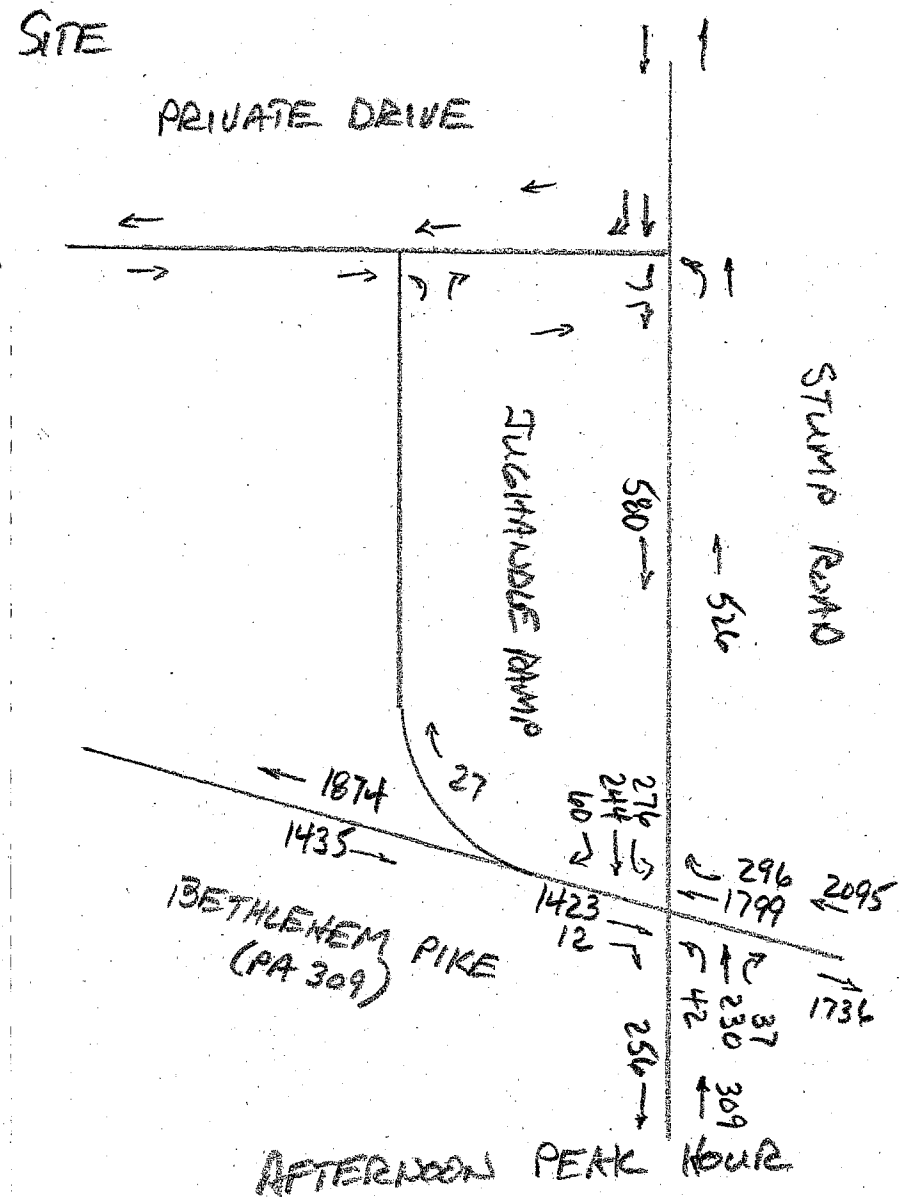
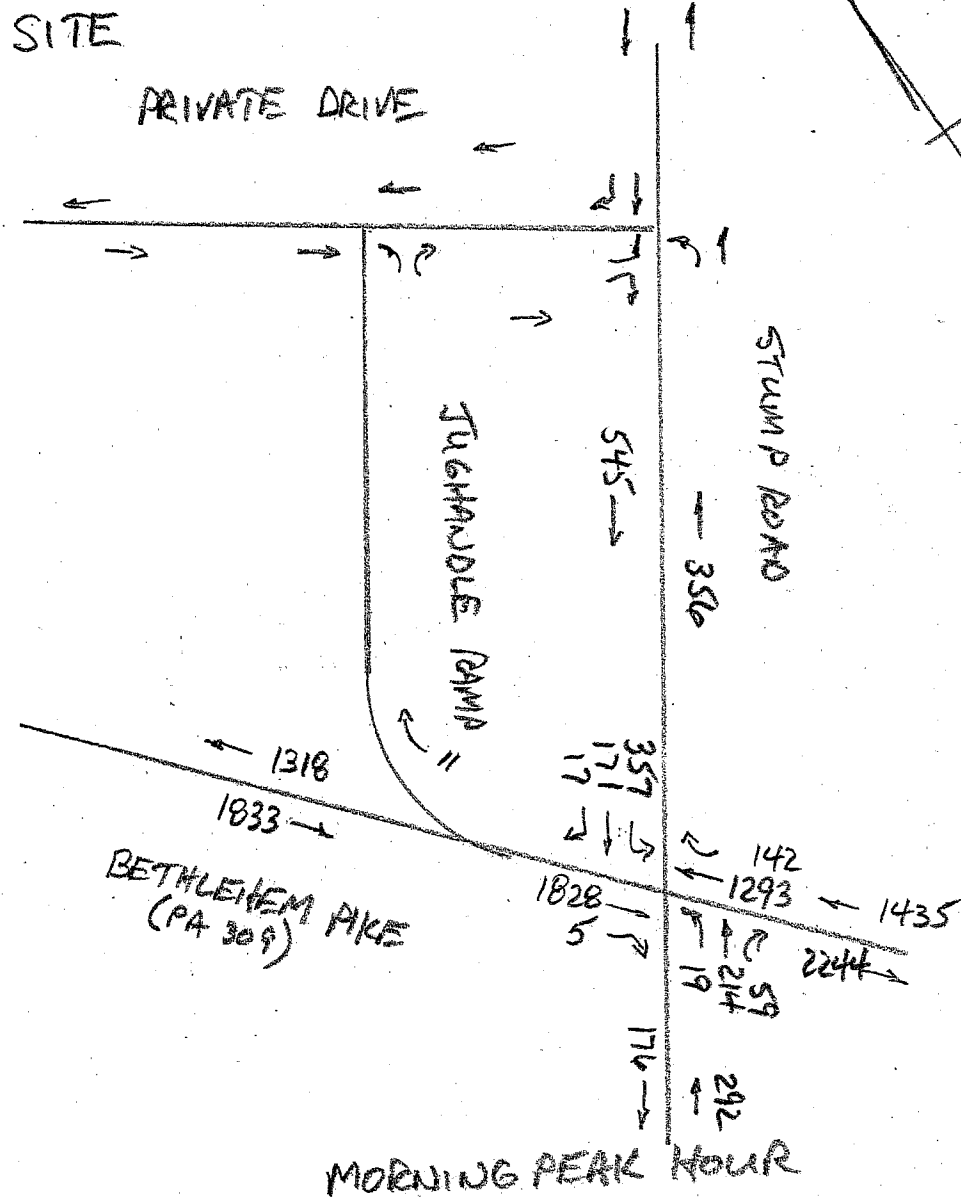
Stump

57 58 67

4 ↓

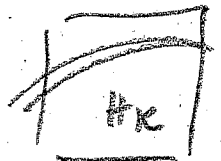
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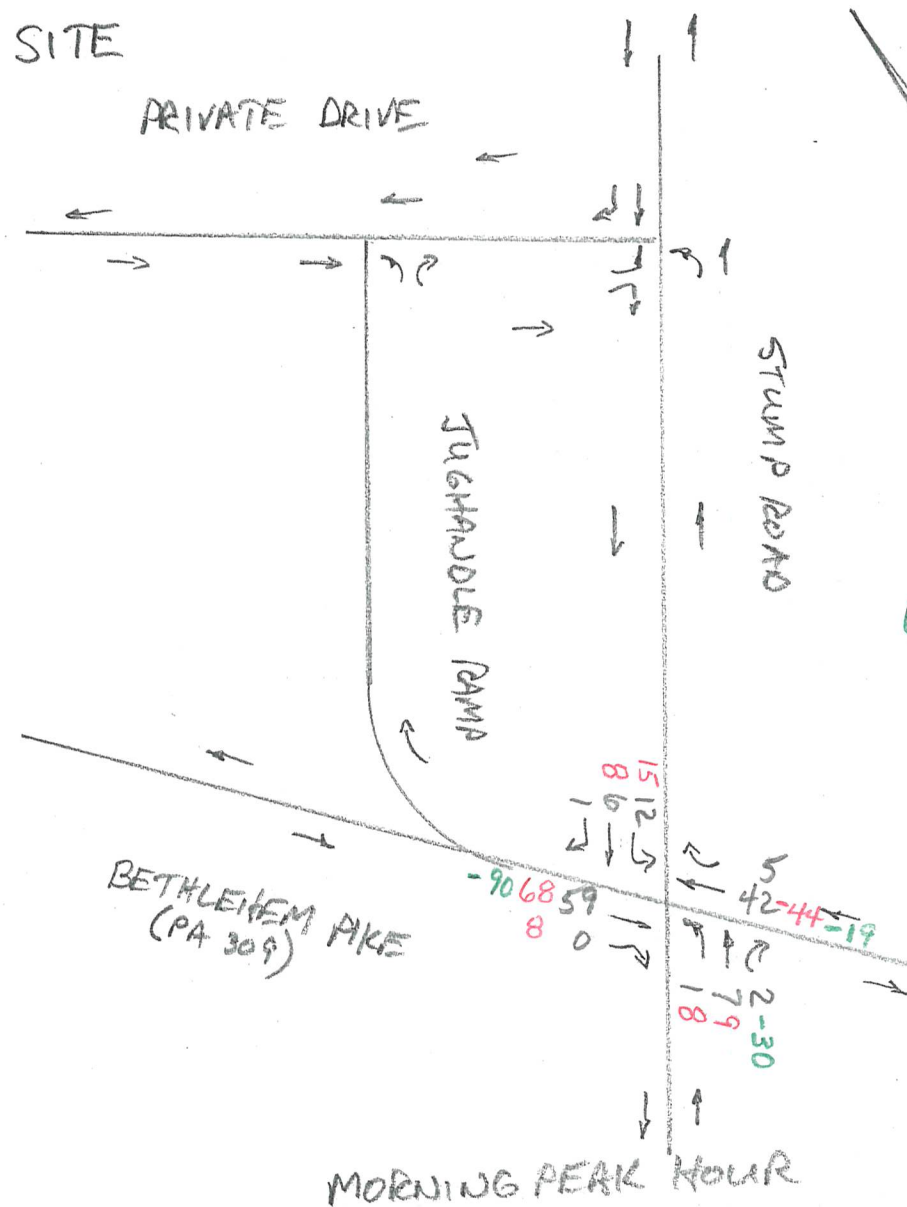
Jughaulle



EXISTING (2016) PEAK HOUR TRAFFIC

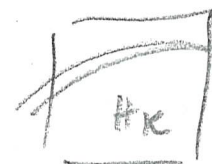
MONTGOMERY TOWNSHIP, PA





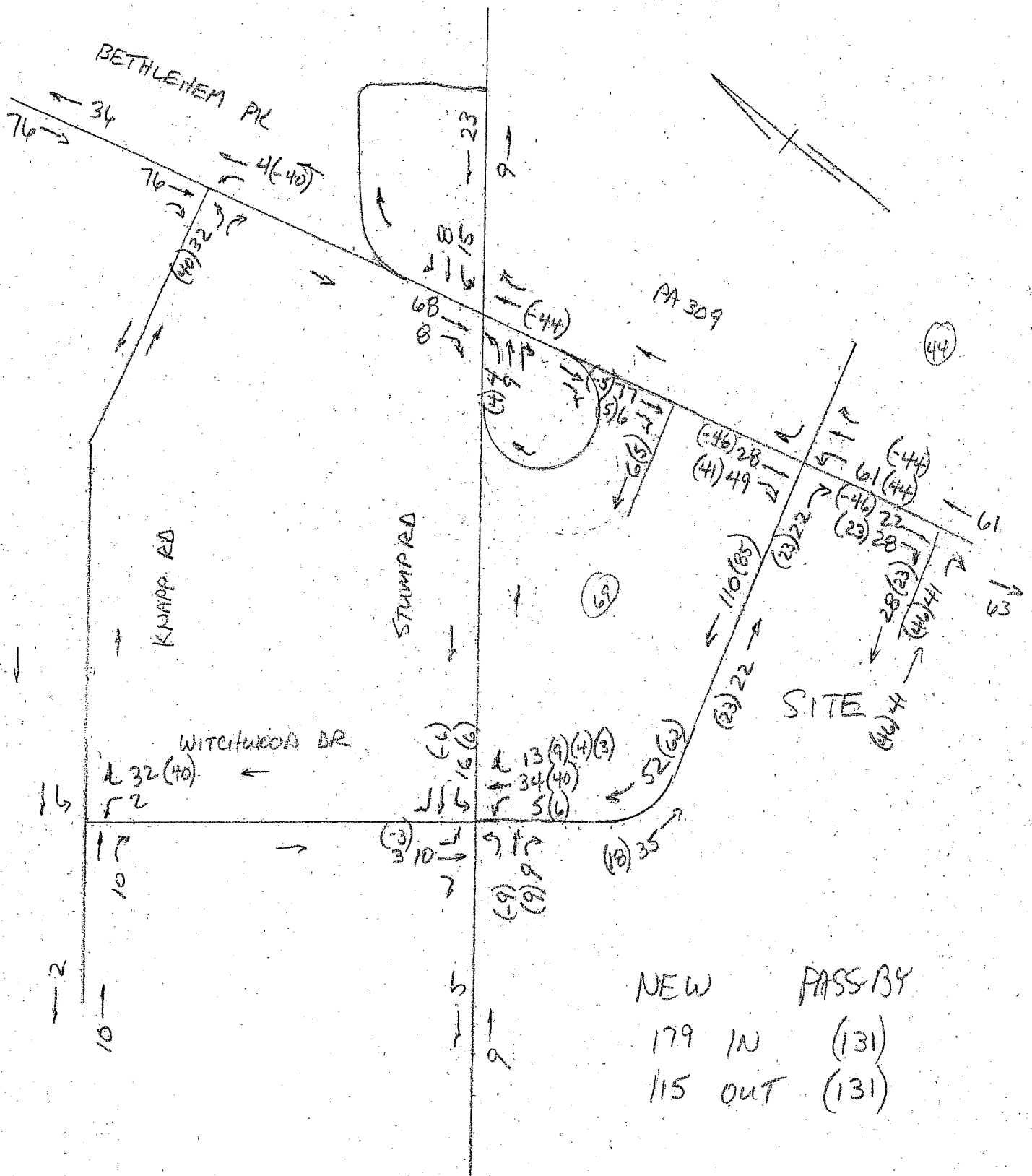
EXISTING (2020) PEAK HOUR TRAFFIC

MONTGOMERY TOWNSHIP, AA



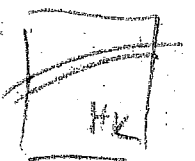
44



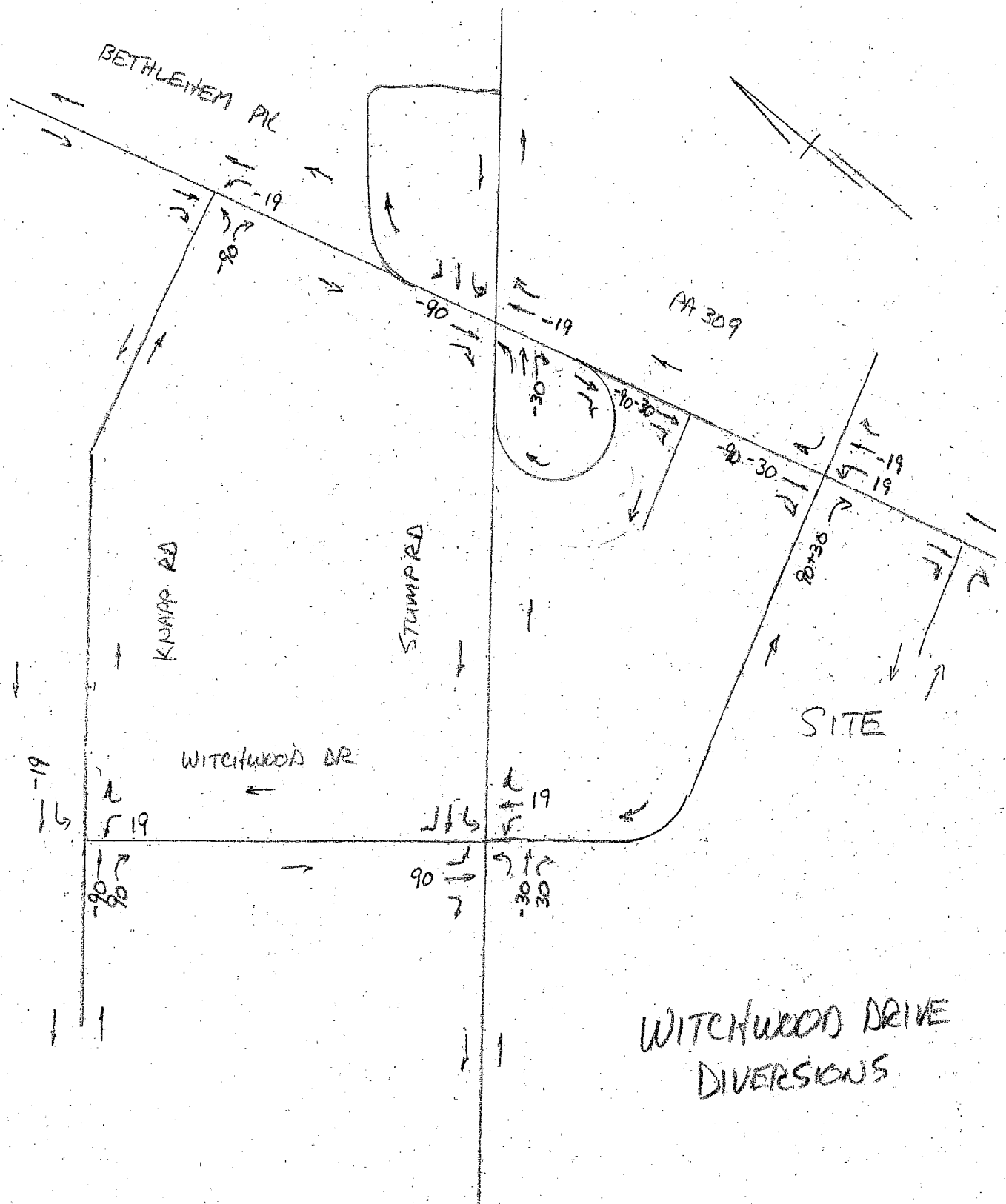


PM PEAK

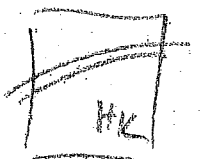
TERRA VISTA, LLC COMMERCIAL DEVELOPMENT  
MONTGOMERY TOWNSHIP, PA

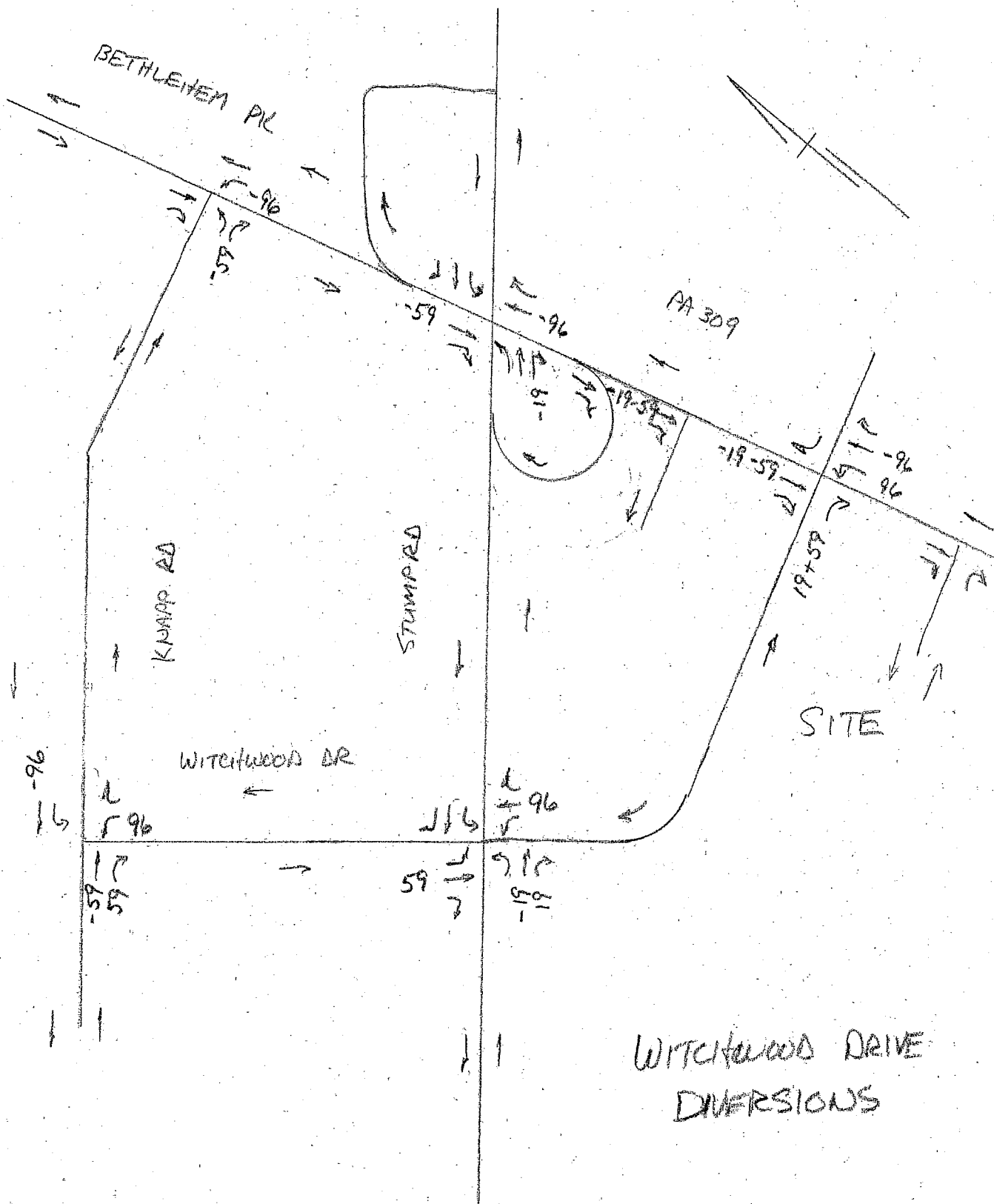






TERRA VISTA, LLC COMMERCIAL DEVELOPMENT  
MONTGOMERY TOWNSHIP, PA





PM PEAK

TERRA VISTA, LLC COMMERCIAL DEVELOPMENT  
MONTGOMERY TOWNSHIP, PA



# LANE UTILIZATION FACTORS

AM

SB 309

① STUMP

$$1878 \left\{ \begin{array}{l} \rightarrow 1711 \times 1.525 = 898.275 \\ \rightarrow \\ \rightarrow 167 \end{array} \right. \quad \frac{1878}{(898.275)3} = 0.697$$

NB 309

① STUMP

$$1419 \left\{ \begin{array}{l} \rightarrow 1272 \times 1.525 = 667.8 \\ \rightarrow \\ \rightarrow 150 \end{array} \right. \quad \frac{1419}{(667.8)3} = 0.708$$

PM

SB 309

① STUMP

$$1472 \left\{ \begin{array}{l} \rightarrow 1310 \times 1.525 = 687.75 \\ \rightarrow \\ \rightarrow 162 \end{array} \right. \quad \frac{1472}{(687.75)3} = 0.713$$













NB 309

① STUMP

$$1994 \left\{ \begin{array}{l} \rightarrow 1683 \times 1.525 = 883.575 \\ \rightarrow \\ \rightarrow 311 \end{array} \right. \quad \frac{1994}{(883.575)3} = 0.752$$


# HCM 6th Signalized Intersection Summary 3: Stump Road & Bethlehem Pike

10/21/2020

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑			↑↑↑		↰	↱		↰↱	↱		
Traffic Volume (veh/h)	0	1865	13	0	1272	147	28	230	31	384	185	18	
Future Volume (veh/h)	0	1865	13	0	1272	147	28	230	31	384	185	18	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach		No			No			No			No		
Adj Sat Flow, veh/h/ln	0	1724	1794	0	1724	1780	1650	1921	1750	1618	1590	1492	
Adj Flow Rate, veh/h	0	1903	13	0	1298	150	29	235	32	392	189	18	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Percent Heavy Veh, %	0	5	0	0	5	1	21	2	14	3	5	12	
Cap, veh/h	0	2416	16	0	2161	250	260	262	36	422	388	37	
Arrive On Green	0.00	0.59	0.59	0.00	0.59	0.59	0.03	0.16	0.16	0.14	0.27	0.27	
Sat Flow, veh/h	0	4622	28	0	4172	424	1572	1655	225	2990	1430	136	
Grp Volume(v), veh/h	0	1119	797	0	865	583	29	0	267	392	0	207	
Grp Sat Flow(s), veh/h/ln	0	1207	1719	0	1224	1648	1572	0	1880	1495	0	1566	
Q Serve(g_s), s	0.0	60.4	60.5	0.0	38.3	38.3	2.6	0.0	23.7	22.0	0.0	18.9	
Cycle Q Clear(g_c), s	0.0	60.4	60.5	0.0	38.3	38.3	2.6	0.0	23.7	22.0	0.0	18.9	
Prop In Lane	0.00		0.02	0.00		0.26	1.00		0.12	1.00		0.09	
Lane Grp Cap(c), veh/h	0	1420	1012	0	1441	970	260	0	298	422	0	425	
V/C Ratio(X)	0.00	0.79	0.79	0.00	0.60	0.60	0.11	0.00	0.90	0.93	0.00	0.49	
Avail Cap(c_a), veh/h	0	1420	1012	0	1441	970	290	0	332	422	0	425	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	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	1.00	1.00	0.00	1.00	1.00	0.00	1.00	
Uniform Delay (d), s/veh	0.0	26.8	26.8	0.0	22.3	22.3	57.3	0.0	70.1	72.2	0.0	52.0	
Incr Delay (d2), s/veh	0.0	4.5	6.2	0.0	1.9	2.8	0.2	0.0	23.8	26.8	0.0	0.9	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/ln	0.0	24.3	33.6	0.0	16.4	21.4	1.9	0.0	19.4	15.2	0.0	12.1	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	0.0	31.3	33.0	0.0	24.1	25.0	57.4	0.0	94.0	99.0	0.0	52.8	
LnGrp LOS	A	C	C	A	C	C	E	A	F	F	A	D	
Approach Vol, veh/h	1916				1448				296				599
Approach Delay, s/veh	32.0				24.5				90.4				83.0
Approach LOS	C				C				F				F
Timer - Assigned Phs	2		3	4		6		7	8				
Phs Duration (G+Y+Rc), s	107.0		10.8	52.2		107.0		30.0	33.0				
Change Period (Y+Rc), s	8.0		7.0	7.0		8.0		7.0	7.0				
Max Green Setting (Gmax), s	96.0		7.0	45.0		96.0		23.0	29.0				
Max Q Clear Time (g_c+I1), s	62.9		5.1	20.9		40.8		24.5	25.7				
Green Ext Time (p_c), s	22.9		0.0	0.6		20.3		0.0	0.3				
Intersection Summary													
HCM 6th Ctrl Delay	40.7												
HCM 6th LOS	D												
Notes													
User approved pedestrian interval to be less than phase max green.													

Lanes, Volumes, Timings  
3: Stump Road & Bethlehem Pike


10/21/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑↑			↑	↑		↑↑	↑	
Traffic Volume (vph)	0	1865	13	0	1272	147	28	230	31	384	185	18
Future Volume (vph)	0	1865	13	0	1272	147	28	230	31	384	185	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	12	12	11	12	12
Grade (%)		1%			1%			-4%			5%	
Storage Length (ft)	0		400	0		400	220		0	320		0
Storage Lanes	0		0	0		1	1		0	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	*0.70	0.91	1.00	*0.71	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.984			0.982			0.987	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	3580	0	0	3589	0	1393	1743	0	3036	1640	0
Flt Permitted							0.628			0.950		
Satd. Flow (perm)	0	3580	0	0	3589	0	921	1743	0	3036	1640	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)		1			14							
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		275			1000			1000			770	
Travel Time (s)		4.2			15.2			19.5			15.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	0%	0%	5%	1%	21%	2%	14%	3%	5%	12%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	1903	13	0	1298	150	29	235	32	392	189	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1916	0	0	1448	0	29	267	0	392	207	0
Turn Type		NA			NA		pm+pt	NA		Prot	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases							8					
Detector Phase		2			6		3	8		7	4	
Switch Phase												
Minimum Initial (s)		15.0			15.0		5.0	5.0		5.0	5.0	
Minimum Split (s)		23.0			23.0		12.0	12.0		12.0	12.0	
Total Split (s)		104.0			104.0		14.0	36.0		30.0	52.0	
Total Split (%)		61.2%			61.2%		8.2%	21.2%		17.6%	30.6%	
Maximum Green (s)		96.0			96.0		7.0	29.0		23.0	45.0	
Yellow Time (s)		5.0			5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		7.0			7.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)		5.0			5.0		3.0	3.0		3.0	3.0	

# Lanes, Volumes, Timings

## 3: Stump Road & Bethlehem Pike

10/21/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)		2.7			2.7		3.0	3.0		3.0	3.0	
Time Before Reduce (s)		35.0			35.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)		15.0			15.0		0.0	0.0		0.0	0.0	
Recall Mode		C-Max			Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		98.2			98.2		36.6	28.9		23.9	47.7	
Actuated g/C Ratio		0.58			0.58		0.22	0.17		0.14	0.28	
v/c Ratio		0.93			0.70		0.13	0.90		0.92	0.45	
Control Delay		41.8			27.6		39.5	100.6		99.0	54.8	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		41.8			27.6		39.5	100.6		99.0	54.8	
LOS		D			C		D	F		F	D	
Approach Delay		41.8			27.6			94.6			83.7	
Approach LOS		D			C			F			F	
Queue Length 50th (ft)		912			524		21	293		225	194	
Queue Length 95th (ft)		1028			598		48	#457		#325	282	
Internal Link Dist (ft)		195			920			920			690	
Turn Bay Length (ft)							220			320		
Base Capacity (vph)		2068			2078		222	307		428	459	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.93			0.70		0.13	0.87		0.92	0.45	

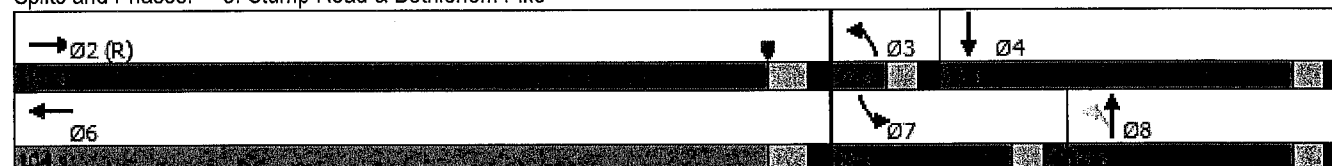
### Intersection Summary

Area Type: Other  
 Cycle Length: 170  
 Actuated Cycle Length: 170  
 Offset: 20 (12%), Referenced to phase 2:EBT, Start of Yellow  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.93  
 Intersection Signal Delay: 46.5  
 Intersection Capacity Utilization 80.5%  
 Analysis Period (min) 15  
 \* User Entered Value  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Intersection LOS: D

ICU Level of Service D

Splits and Phases: 3: Stump Road & Bethlehem Pike

















# HCM 6th Signalized Intersection Summary

## 3: Stump Road & Bethlehem Pike


10/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑↑			↰	↱		↰↱	↱	
Traffic Volume (veh/h)	0	1455	17	0	1688	306	58	260	19	297	259	62
Future Volume (veh/h)	0	1455	17	0	1688	306	58	260	19	297	259	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	0	1752	1794	0	1766	1766	1921	1921	1949	1618	1646	1646
Adj Flow Rate, veh/h	0	1485	17	0	1722	312	59	265	19	303	264	63
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	3	0	0	2	2	2	2	0	3	1	1
Cap, veh/h	0	2525	29	0	2198	395	177	296	21	352	309	74
Arrive On Green	0.00	0.60	0.60	0.00	0.60	0.60	0.04	0.17	0.17	0.12	0.24	0.24
Sat Flow, veh/h	0	4692	48	0	4084	655	1829	1771	127	2990	1285	307
Grp Volume(v), veh/h	0	883	619	0	1249	785	59	0	284	303	0	327
Grp Sat Flow(s),veh/h/ln	0	1244	1744	0	1325	1648	1829	0	1898	1495	0	1591
Q Serve(g_s), s	0.0	37.1	37.1	0.0	60.1	61.3	4.5	0.0	24.9	16.9	0.0	33.4
Cycle Q Clear(g_c), s	0.0	37.1	37.1	0.0	60.1	61.3	4.5	0.0	24.9	16.9	0.0	33.4
Prop In Lane	0.00		0.03	0.00		0.40	1.00		0.07	1.00		0.19
Lane Grp Cap(c), veh/h	0	1502	1052	0	1599	995	177	0	317	352	0	383
V/C Ratio(X)	0.00	0.59	0.59	0.00	0.78	0.79	0.33	0.00	0.90	0.86	0.00	0.85
Avail Cap(c_a), veh/h	0	1502	1052	0	1599	995	182	0	380	352	0	431
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	20.7	20.7	0.0	25.3	25.5	55.9	0.0	69.3	73.6	0.0	61.7
Incr Delay (d2), s/veh	0.0	1.7	2.4	0.0	3.9	6.4	1.1	0.0	20.5	19.1	0.0	14.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	16.1	21.7	0.0	25.9	32.6	3.8	0.0	20.0	11.9	0.0	21.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	22.4	23.1	0.0	29.1	31.9	57.0	0.0	89.8	92.7	0.0	75.9
LnGrp LOS	A	C	C	A	C	C	E	A	F	F	A	E
Approach Vol, veh/h	1502			2034			343			630		
Approach Delay, s/veh	22.7			30.2			84.2			84.0		
Approach LOS	C			C			F			F		
Timer - Assigned Phs	2		3	4		6		7		8		
Phs Duration (G+Y+Rc), s	109.6		13.5	46.9		109.6		26.0		34.4		
Change Period (Y+Rc), s	8.0		7.0	7.0		8.0		7.0		7.0		
Max Green Setting (Gmax), s	96.0		7.0	45.0		96.0		19.0		33.0		
Max Q Clear Time (g_c+I1), s	39.6		7.0	35.4		63.3		19.4		26.9		
Green Ext Time (p_c), s	21.4		0.0	0.8		24.3		0.0		0.5		
Intersection Summary												
HCM 6th Ctrl Delay	39.3											
HCM 6th LOS	D											

# Lanes, Volumes, Timings

## 3: Stump Road & Bethlehem Pike

10/21/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑↑			↑	↑		↑↑	↑	
Traffic Volume (vph)	0	1455	17	0	1688	306	58	260	19	297	259	62
Future Volume (vph)	0	1455	17	0	1688	306	58	260	19	297	259	62
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	12	12	11	12	12
Grade (%)		1%			1%			-4%			5%	
Storage Length (ft)	0		400	0		400	220		0	320		0
Storage Lanes	0		0	0		1	1		0	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	*0.71	0.91	1.00	*0.75	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.977			0.990			0.971	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	3698	0	0	3860	0	1653	1784	0	3036	1687	0
Flt Permitted							0.415			0.950		
Satd. Flow (perm)	0	3698	0	0	3860	0	722	1784	0	3036	1687	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)		1			26							
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		275			1000			1000			770	
Travel Time (s)		4.2			15.2			19.5			15.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	0%	0%	2%	2%	2%	2%	0%	3%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	1485	17	0	1722	312	59	265	19	303	264	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1502	0	0	2034	0	59	284	0	303	327	0
Turn Type		NA			NA		pm+pt	NA		Prot	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases							8					
Detector Phase		2			6		3	8		7	4	
Switch Phase												
Minimum Initial (s)		15.0			15.0		5.0	5.0		5.0	5.0	
Minimum Split (s)		23.0			23.0		12.0	12.0		12.0	12.0	
Total Split (s)		104.0			104.0		14.0	40.0		26.0	52.0	
Total Split (%)		61.2%			61.2%		8.2%	23.5%		15.3%	30.6%	
Maximum Green (s)		96.0			96.0		7.0	33.0		19.0	45.0	
Yellow Time (s)		5.0			5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		7.0			7.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)		5.0			5.0		3.0	3.0		3.0	3.0	

# Lanes, Volumes, Timings

## 3: Stump Road & Bethlehem Pike

10/21/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)		2.7			2.7		3.0	3.0		3.0	3.0	
Time Before Reduce (s)		35.0			35.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)		15.0			15.0		0.0	0.0		0.0	0.0	
Recall Mode		C-Max			Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		100.1			100.1		39.1	31.2		19.6	45.7	
Actuated g/C Ratio		0.59			0.59		0.23	0.18		0.12	0.27	
v/c Ratio		0.69			0.89		0.28	0.87		0.86	0.72	
Control Delay		26.8			36.5		42.5	92.3		96.9	66.9	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		26.8			36.5		42.5	92.3		96.9	66.9	
LOS		C			D		D	F		F	E	
Approach Delay		26.8			36.5			83.7			81.4	
Approach LOS		C			D			F			F	
Queue Length 50th (ft)		549			873		44	306		173	333	
Queue Length 95th (ft)		627			978		81	#444		#253	455	
Internal Link Dist (ft)		195			920			920			690	
Turn Bay Length (ft)							220			320		
Base Capacity (vph)		2178			2284		210	356		357	461	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.69			0.89		0.28	0.80		0.85	0.71	

### Intersection Summary

Area Type: Other

Cycle Length: 170

Actuated Cycle Length: 170

Offset: 22 (13%), Referenced to phase 2:EBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 43.1

Intersection LOS: D

Intersection Capacity Utilization 82.1%

ICU Level of Service E

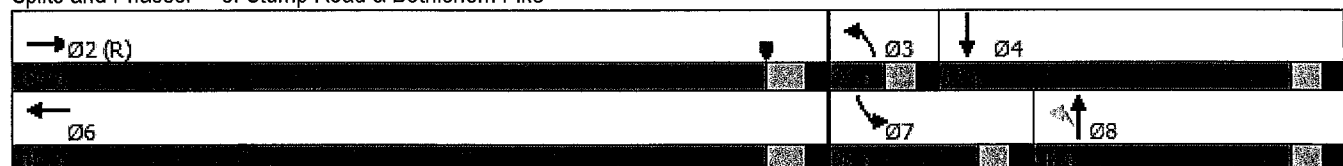
Analysis Period (min) 15

\* User Entered Value

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Stump Road & Bethlehem Pike



HCM 6th TWSC  
6: Stump Road & Jughandle

10/21/2020

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			4	1	
Traffic Vol, veh/h	0	2	2	375	585	8
Future Vol, veh/h	0	2	2	375	585	8
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, %	1	-	-	-3	3	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	2	4	0
Mvmt Flow	0	2	2	383	597	8

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	988	601	605	0	-	0
Stage 1	601	-	-	-	-	-
Stage 2	387	-	-	-	-	-
Critical Hdwy	7.2	6.2	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	244	528	742	-	-	-
Stage 1	599	-	-	-	-	-
Stage 2	769	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	243	528	742	-	-	-
Mov Cap-2 Maneuver	243	-	-	-	-	-
Stage 1	597	-	-	-	-	-
Stage 2	769	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBT	SBT	SBR
Capacity (veh/h)	742	-	528	-	-	-
HCM Lane V/C Ratio	0.003	-	0.004	-	-	-
HCM Control Delay (s)	9.9	0	11.8	-	-	-
HCM Lane LOS	A	A	B	-	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-	-

HCM 6th TWSC  
6: Stump Road & Jughandle

10/21/2020

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	YY			↑↑	↑↑	
Traffic Vol, veh/h	15	26	1	565	592	8
Future Vol, veh/h	15	26	1	565	592	8
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, %	1	-	-	-3	3	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	15	27	1	577	604	8

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1187	608	612	0	-	0
Stage 1	608	-	-	-	-	-
Stage 2	579	-	-	-	-	-
Critical Hdwy	7.2	6.2	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	176	524	737	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	615	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	176	524	737	-	-	-
Mov Cap-2 Maneuver	176	-	-	-	-	-
Stage 1	593	-	-	-	-	-
Stage 2	615	-	-	-	-	-










Approach	EB	NB	SB
HCM Control Delay, s	18.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBT	SBT	SBR
Capacity (veh/h)	737	-	304	-	-	-
HCM Lane V/C Ratio	0.001	-	0.138	-	-	-
HCM Control Delay (s)	9.9	0	18.7	-	-	-
HCM Lane LOS	A	A	C	-	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-	-

# HCM Unsignalized Intersection Capacity Analysis

## 9: Jughandle & Driveway










10/21/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	10	1	2	0	0
Future Volume (Veh/h)	0	10	1	2	0	0
Sign Control	Free		Stop			Stop
Grade	-1%		-3%			1%
Peak Hour Factor	0.54	0.54	0.54	0.54	0.54	0.54
Hourly flow rate (vph)	0	19	2	4	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		19	0	1	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		19	0	1	0
tC, single (s)	4.1		*7.2	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		*3.0	*3.1	3.5	4.0
p0 queue free %	100		100	100	100	100
cM capacity (veh/h)	1636		1164	1161	1022	900
Direction	Lane #	WB1	NB1	SB1		
Volume Total		19	6	0		
Volume Left		0	0	0		
Volume Right		19	4	0		
cSH		1700	1162	1700		
Volume to Capacity		0.01	0.01	0.00		
Queue Length 95th (ft)		0	0	0		
Control Delay (s)		0.0	8.1	0.0		
Lane LOS			A	A		
Approach Delay (s)		0.0	8.1	0.0		
Approach LOS			A	A		
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			
* User Entered Value						

# HCM Unsignalized Intersection Capacity Analysis

## 9: Jughandle & Driveway

10/21/2020


						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	9	1	4	37	0
Future Volume (Veh/h)	0	9	1	4	37	0
Sign Control	Free		Stop			Stop
Grade	-1%		-3%			1%
Peak Hour Factor	0.54	0.54	0.54	0.54	0.54	0.54
Hourly flow rate (vph)	0	17	2	7	69	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		17	0	1	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		17	0	1	0
tC, single (s)	4.1		*7.2	6.2	*6.5	6.5
tC, 2 stage (s)						
tF (s)	2.2		*3.0	*3.1	*4.0	4.0
p0 queue free %	100		100	99	92	100
cM capacity (veh/h)	1636		1168	1161	892	900
Direction-Lane #	WB1	NB1	SB1			
Volume Total	17	9	69			
Volume Left	0	0	69			
Volume Right	17	7	0			
cSH	1700	1163	892			
Volume to Capacity	0.01	0.01	0.08			
Queue Length 95th (ft)	0	1	6			
Control Delay (s)	0.0	8.1	9.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	8.1	9.4			
Approach LOS		A	A			
Intersection Summary						
Average Delay		7.6				
Intersection Capacity Utilization		13.3%	ICU Level of Service	A		
Analysis Period (min)		15				

\* User Entered Value

# HCM 6th Signalized Intersection Summary

## 3: Stump Road & Bethlehem Pike

10/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑↑			↖	↑		↗	↖	↗
Traffic Volume (veh/h)	0	1902	13	0	1298	149	28	234	32	391	188	18
Future Volume (veh/h)	0	1902	13	0	1298	149	28	234	32	391	188	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	0	1724	1794	0	1724	1780	1650	1921	1750	1618	1590	1492
Adj Flow Rate, veh/h	0	1941	13	0	1324	152	29	239	33	399	192	18
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	5	0	0	5	1	21	2	14	3	5	12
Cap, veh/h	0	2406	16	0	2153	247	263	266	37	422	392	37
Arrive On Green	0.00	0.59	0.59	0.00	0.59	0.59	0.03	0.16	0.16	0.14	0.27	0.27
Sat Flow, veh/h	0	4623	27	0	4175	422	1572	1652	228	2990	1432	134
Grp Volume(v), veh/h	0	1141	813	0	882	594	29	0	272	399	0	210
Grp Sat Flow(s), veh/h/ln	0	1207	1719	0	1224	1648	1572	0	1880	1495	0	1566
Q Serve(g_s), s	0.0	63.1	63.1	0.0	39.6	39.6	2.6	0.0	24.1	22.5	0.0	19.1
Cycle Q Clear(g_c), s	0.0	63.1	63.1	0.0	39.6	39.6	2.6	0.0	24.1	22.5	0.0	19.1
Prop In Lane	0.00		0.02	0.00		0.26	1.00		0.12	1.00		0.09
Lane Grp Cap(c), veh/h	0	1414	1007	0	1435	966	263	0	303	422	0	429
V/C Ratio(X)	0.00	0.81	0.81	0.00	0.61	0.61	0.11	0.00	0.90	0.95	0.00	0.49
Avail Cap(c_a), veh/h	0	1414	1007	0	1435	966	292	0	332	422	0	429
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	27.6	27.6	0.0	22.8	22.8	56.9	0.0	69.9	72.3	0.0	51.7
Incr Delay (d2), s/veh	0.0	5.0	6.9	0.0	2.0	2.9	0.2	0.0	24.5	30.2	0.0	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	0.0	25.3	35.1	0.0	17.0	22.1	1.9	0.0	19.7	15.7	0.0	12.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	32.7	34.6	0.0	24.8	25.7	57.1	0.0	94.5	102.6	0.0	52.6
LnGrp LOS	A	C	C	A	C	C	E	A	F	F	A	D
Approach Vol, veh/h		1954			1476			301			609	
Approach Delay, s/veh		33.5			25.1			90.9			85.3	
Approach LOS		C			C			F			F	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		106.6	10.8	52.6		106.6	30.0	33.4				
Change Period (Y+Rc), s		8.0	7.0	7.0		8.0	7.0	7.0				
Max Green Setting (Gmax), s		96.0	7.0	45.0		96.0	23.0	29.0				
Max Q Clear Time (g_c+I1), s		65.6	5.1	21.1		42.1	25.0	26.1				
Green Ext Time (p_c), s		22.0	0.0	0.7		20.8	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			41.9									
HCM 6th LOS			D									













### Notes

User approved pedestrian interval to be less than phase max green.



Lanes, Volumes, Timings  
3: Stump Road & Bethlehem Pike

10/21/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑↑			↰	↱		↰↱	↱	
Traffic Volume (vph)	0	1902	13	0	1298	149	28	234	32	391	188	18
Future Volume (vph)	0	1902	13	0	1298	149	28	234	32	391	188	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	12	12	11	12	12
Grade (%)		1%			1%			-4%			5%	
Storage Length (ft)	0		400	0		400	220		0	320		0
Storage Lanes	0		0	0		1	1		0	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	*0.70	0.91	1.00	*0.71	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.985			0.982			0.987	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	3580	0	0	3593	0	1393	1743	0	3036	1640	0
Flt Permitted							0.626			0.950		
Satd. Flow (perm)	0	3580	0	0	3593	0	918	1743	0	3036	1640	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)		1			14							
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		275			1000			1000			770	
Travel Time (s)		4.2			15.2			19.5			15.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	0%	0%	5%	1%	21%	2%	14%	3%	5%	12%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	1941	13	0	1324	152	29	239	33	399	192	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1954	0	0	1476	0	29	272	0	399	210	0
Turn Type		NA			NA		pm+pt	NA		Prot	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases							8					
Detector Phase		2			6		3	8		7	4	
Switch Phase												
Minimum Initial (s)		15.0			15.0		5.0	5.0		5.0	5.0	
Minimum Split (s)		23.0			23.0		12.0	12.0		12.0	12.0	
Total Split (s)		104.0			104.0		14.0	36.0		30.0	52.0	
Total Split (%)		61.2%			61.2%		8.2%	21.2%		17.6%	30.6%	
Maximum Green (s)		96.0			96.0		7.0	29.0		23.0	45.0	
Yellow Time (s)		5.0			5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		7.0			7.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)		5.0			5.0		3.0	3.0		3.0	3.0	

# Lanes, Volumes, Timings

## 3: Stump Road & Bethlehem Pike

10/21/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)		2.7			2.7		3.0	3.0		3.0	3.0	
Time Before Reduce (s)		35.0			35.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)		15.0			15.0		0.0	0.0		0.0	0.0	
Recall Mode		C-Max			Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		97.9			97.9		36.7	29.1		24.0	48.0	
Actuated g/C Ratio		0.58			0.58		0.22	0.17		0.14	0.28	
v/c Ratio		0.95			0.71		0.13	0.91		0.93	0.45	
Control Delay		44.8			28.2		39.5	102.3		100.6	54.8	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		44.8			28.2		39.5	102.3		100.6	54.8	
LOS		D			C		D	F		F	D	
Approach Delay		44.8			28.2			96.3			84.8	
Approach LOS		D			C			F			F	
Queue Length 50th (ft)		953			542		21	300		230	197	
Queue Length 95th (ft)		#1097			617		48	#469		#333	286	
Internal Link Dist (ft)		195			920			920			690	
Turn Bay Length (ft)							220			320		
Base Capacity (vph)		2062			2075		222	307		428	462	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.95			0.71		0.13	0.89		0.93	0.45	

### Intersection Summary

Area Type: Other

Cycle Length: 170

Actuated Cycle Length: 170

Offset: 20 (12%), Referenced to phase 2:EBT, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 48.3

Intersection Capacity Utilization 81.8%

Analysis Period (min) 15

\* User Entered Value

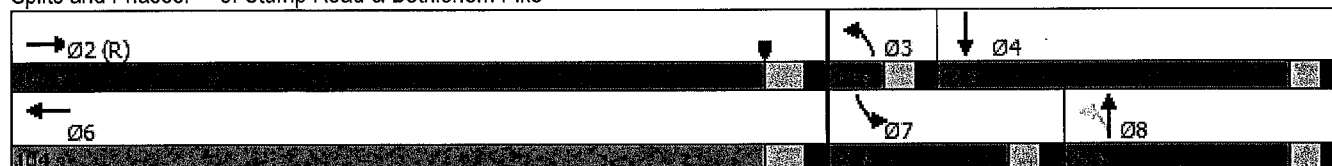
# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Intersection LOS: D

ICU Level of Service D.













Splits and Phases: 3: Stump Road & Bethlehem Pike



# HCM 6th Signalized Intersection Summary


## 3: Stump Road & Bethlehem Pike

10/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↰	↱		↰↰	↱	
Traffic Volume (veh/h)	0	1484	18	0	1724	311	59	265	20	302	264	63
Future Volume (veh/h)	0	1484	18	0	1724	311	59	265	20	302	264	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1752	1794	0	1766	1766	1921	1921	1949	1618	1646	1646
Adj Flow Rate, veh/h	0	1514	18	0	1759	317	60	270	20	308	269	64
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	3	0	0	2	2	2	2	0	3	1	1
Cap, veh/h	0	2494	30	0	2175	389	182	301	22	364	318	76
Arrive On Green	0.00	0.60	0.60	0.00	0.60	0.60	0.04	0.17	0.17	0.12	0.25	0.25
Sat Flow, veh/h	0	4690	50	0	4089	652	1829	1766	131	2990	1286	306
Grp Volume(v), veh/h	0	901	631	0	1274	802	60	0	290	308	0	333
Grp Sat Flow(s),veh/h/ln	0	1244	1743	0	1325	1649	1829	0	1897	1495	0	1591
Q Serve(g_s), s	0.0	38.9	38.9	0.0	63.5	65.0	4.5	0.0	25.5	17.1	0.0	33.9
Cycle Q Clear(g_c), s	0.0	38.9	38.9	0.0	63.5	65.0	4.5	0.0	25.5	17.1	0.0	33.9
Prop In Lane	0.00		0.03	0.00		0.40	1.00		0.07	1.00		0.19
Lane Grp Cap(c), veh/h	0	1484	1040	0	1580	983	182	0	323	364	0	393
V/C Ratio(X)	0.00	0.61	0.61	0.00	0.81	0.82	0.33	0.00	0.90	0.85	0.00	0.85
Avail Cap(c_a), veh/h	0	1484	1040	0	1580	983	186	0	379	369	0	440
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	21.7	21.7	0.0	26.7	27.0	55.4	0.0	69.1	73.1	0.0	60.9
Incr Delay (d2), s/veh	0.0	1.9	2.6	0.0	4.5	7.4	1.0	0.0	21.2	16.3	0.0	13.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	16.9	22.7	0.0	27.4	34.7	3.9	0.0	20.4	11.9	0.0	21.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	23.6	24.3	0.0	31.2	34.4	56.5	0.0	90.3	89.4	0.0	74.1
LnGrp LOS	A	C	C	A	C	C	E	A	F	F	A	E
Approach Vol, veh/h	1532			2076			350			641		
Approach Delay, s/veh	23.9			32.4			84.5			81.4		
Approach LOS	C			C			F			F		
Timer - Assigned Phs	2		3	4		6		7		8		
Phs Duration (G+Y+Rc), s	108.4		13.6	48.0		108.4		26.7		34.9		
Change Period (Y+Rc), s	8.0		7.0	7.0		8.0		7.0		7.0		
Max Green Setting (Gmax), s	95.0		7.0	46.0		95.0		20.0		33.0		
Max Q Clear Time (g_c+I1), s	41.4		7.0	35.9		67.0		19.6		27.5		
Green Ext Time (p_c), s	21.7		0.0	0.8		21.9		0.0		0.5		
Intersection Summary												
HCM 6th Ctrl Delay	40.4											
HCM 6th LOS	D											

Lanes, Volumes, Timings  
3: Stump Road & Bethlehem Pike

10/21/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑↑			↑	↑		↑↑	↑	
Traffic Volume (vph)	0	1484	18	0	1724	311	59	265	20	302	264	63
Future Volume (vph)	0	1484	18	0	1724	311	59	265	20	302	264	63
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	12	12	11	12	12
Grade (%)		1%			1%			-4%			5%	
Storage Length (ft)	0		400	0		400	220		0	320		0
Storage Lanes	0		0	0		1	1		0	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	*0.71	0.91	1.00	*0.75	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.977			0.990			0.971	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	3698	0	0	3860	0	1653	1784	0	3036	1687	0
Flt Permitted							0.421			0.950		
Satd. Flow (perm)	0	3698	0	0	3860	0	733	1784	0	3036	1687	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)		1			25							
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		275			1000			1000			770	
Travel Time (s)		4.2			15.2			19.5			15.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	0%	0%	2%	2%	2%	2%	0%	3%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	1514	18	0	1759	317	60	270	20	308	269	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1532	0	0	2076	0	60	290	0	308	333	0
Turn Type		NA			NA		pm+pt	NA		Prot	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases							8					
Detector Phase		2			6		3	8		7	4	
Switch Phase												
Minimum Initial (s)		15.0			15.0		5.0	5.0		5.0	5.0	
Minimum Split (s)		23.0			23.0		12.0	12.0		12.0	12.0	
Total Split (s)		103.0			103.0		14.0	40.0		27.0	53.0	
Total Split (%)		60.6%			60.6%		8.2%	23.5%		15.9%	31.2%	
Maximum Green (s)		95.0			95.0		7.0	33.0		20.0	46.0	
Yellow Time (s)		5.0			5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		7.0			7.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)		5.0			5.0		3.0	3.0		3.0	3.0	

# Lanes, Volumes, Timings

## 3: Stump Road & Bethlehem Pike

10/21/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)		2.7			2.7		3.0	3.0		3.0	3.0	
Time Before Reduce (s)		35.0			35.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)		15.0			15.0		0.0	0.0		0.0	0.0	
Recall Mode		C-Max			Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		99.0			99.0		39.5	31.6		20.4	46.8	
Actuated g/C Ratio		0.58			0.58		0.23	0.19		0.12	0.28	
v/c Ratio		0.71			0.92		0.28	0.88		0.84	0.72	
Control Delay		28.2			39.9		41.8	93.0		93.5	65.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		28.2			39.9		41.8	93.0		93.5	65.7	
LOS		C			D		D	F		F	E	
Approach Delay		28.2			39.9			84.2			79.0	
Approach LOS		C			D			F			E	
Queue Length 50th (ft)		579			930		45	313		175	337	
Queue Length 95th (ft)		656			1037		82	#458		#248	460	
Internal Link Dist (ft)		195			920			920			690	
Turn Bay Length (ft)							220			320		
Base Capacity (vph)		2153			2257		214	356		375	471	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.71			0.92		0.28	0.81		0.82	0.71	

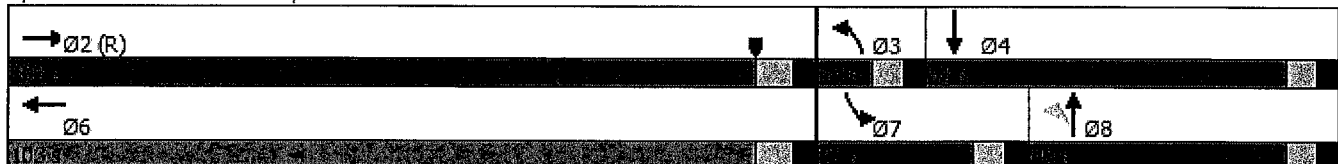
### Intersection Summary

Area Type: Other  
Cycle Length: 170  
Actuated Cycle Length: 170  
Offset: 22 (13%), Referenced to phase 2:EBT, Start of Yellow  
Natural Cycle: 90  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.92  
Intersection Signal Delay: 44.8  
Intersection Capacity Utilization 83.4%  
Analysis Period (min) 15  
\* User Entered Value  
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Intersection LOS: D

ICU Level of Service E

Splits and Phases: 3: Stump Road & Bethlehem Pike



HCM 6th TWSC  
6: Stump Road & Jughandle

10/21/2020

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	YY			↑↑	↑↑	
Traffic Vol, veh/h	0	2	2	381	595	8
Future Vol, veh/h	0	2	2	381	595	8
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, %	1	-	-	-3	3	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	2	4	0
Mvmt Flow	0	2	2	389	607	8

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1004	611	615	0	-	0
Stage 1	611	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Critical Hdwy	7.2	6.2	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	238	521	736	-	-	-
Stage 1	592	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	237	521	736	-	-	-
Mov Cap-2 Maneuver	237	-	-	-	-	-
Stage 1	590	-	-	-	-	-
Stage 2	764	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBL1	SBT	SBR
Capacity (veh/h)	736	-	521	-	-
HCM Lane V/C Ratio	0.003	-	0.004	-	-
HCM Control Delay (s)	9.9	0	11.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC  
6: Stump Road & Jughandle

10/21/2020

Intersection

Int Delay, s/veh 0.6

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	15	26	1	575	603	8
Future Vol, veh/h	15	26	1	575	603	8
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, %	1	-	-	-3	3	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	15	27	1	587	615	8

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	1208	619	623	0	-	0
Stage 1	619	-	-	-	-	-
Stage 2	589	-	-	-	-	-
Critical Hdwy	7.2	6.2	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	170	516	731	-	-	-
Stage 1	586	-	-	-	-	-
Stage 2	607	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	170	516	731	-	-	-
Mov Cap-2 Maneuver	170	-	-	-	-	-
Stage 1	585	-	-	-	-	-
Stage 2	607	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	19.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt NBL NBT EBL EBT SBT SBR

Capacity (veh/h)	731	-	296	-	-	-
HCM Lane V/C Ratio	0.001	-	0.141	-	-	-
HCM Control Delay (s)	9.9	0	19.2	-	-	-
HCM Lane LOS	A	A	C	-	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-	-

# HCM Unsignalized Intersection Capacity Analysis

## 9: Jughandle & Driveway

10/21/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↖		↗	
Traffic Volume (veh/h)	0	10	1	2	0	0
Future Volume (Veh/h)	0	10	1	2	0	0
Sign Control	Free		Stop			Stop
Grade	-1%		-3%			1%
Peak Hour Factor	0.54	0.54	0.54	0.54	0.54	0.54
Hourly flow rate (vph)	0	19	2	4	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		19	0	1	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		19	0	1	0
tC, single (s)	4.1		*7.2	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		*3.0	*3.1	3.5	4.0
p0 queue free %	100		100	100	100	100
cM capacity (veh/h)	1636		1164	1161	1022	900

Direction Lane #	WB 1	NB 1	SB 1
Volume Total	19	6	0
Volume Left	0	0	0
Volume Right	19	4	0
cSH	1700	1162	1700
Volume to Capacity	0.01	0.01	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	8.1	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	8.1	0.0
Approach LOS		A	A

Intersection Summary			
Average Delay		1.9	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	

\* User Entered Value



# HCM Unsignalized Intersection Capacity Analysis

## 9: Jughandle & Driveway

10/21/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↖		↖	
Traffic Volume (veh/h)	0	9	1	4	37	0
Future Volume (Veh/h)	0	9	1	4	37	0
Sign Control	Free		Stop			Stop
Grade	-1%		-3%			1%
Peak Hour Factor	0.54	0.54	0.54	0.54	0.54	0.54
Hourly flow rate (vph)	0	17	2	7	69	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		17	0	1	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		17	0	1	0
tC, single (s)	4.1		*7.2	6.2	*6.5	6.5
tC, 2 stage (s)						
tF (s)	2.2		*3.0	*3.1	*4.0	4.0
p0 queue free %	100		100	99	92	100
cM capacity (veh/h)	1636		1168	1161	892	900

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	17	9	69
Volume Left	0	0	69
Volume Right	17	7	0
cSH	1700	1163	892
Volume to Capacity	0.01	0.01	0.08
Queue Length 95th (ft)	0	1	6
Control Delay (s)	0.0	8.1	9.4
Lane LOS		A	A
Approach Delay (s)	0.0	8.1	9.4
Approach LOS		A	A













Intersection Summary			
Average Delay		7.6	
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

\* User Entered Value

# HCM 6th Signalized Intersection Summary

## 3: Stump Road & Bethlehem Pike

12/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↑	↑		↑↑	↑	
Traffic Volume (veh/h)	0	1909	13	0	1303	155	29	241	32	421	192	37
Future Volume (veh/h)	0	1909	13	0	1303	155	29	241	32	421	192	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1724	1794	0	1724	1780	1650	1921	1750	1618	1590	1492
Adj Flow Rate, veh/h	0	1948	13	0	1330	158	30	246	33	430	196	38
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	5	0	0	5	1	21	2	14	3	5	12
Cap, veh/h	0	2318	15	0	2066	245	264	273	37	475	382	74
Arrive On Green	0.00	0.56	0.56	0.00	0.56	0.56	0.03	0.16	0.16	0.16	0.29	0.29
Sat Flow, veh/h	0	4623	27	0	4160	435	1572	1658	222	2990	1294	251
Grp Volume(v), veh/h	0	1145	816	0	890	598	30	0	279	430	0	234
Grp Sat Flow(s),veh/h/ln	0	1207	1719	0	1224	1646	1572	0	1881	1495	0	1545
Q Serve(g_s), s	0.0	66.8	66.9	0.0	42.3	42.3	2.7	0.0	24.7	24.0	0.0	21.4
Cycle Q Clear(g_c), s	0.0	66.8	66.9	0.0	42.3	42.3	2.7	0.0	24.7	24.0	0.0	21.4
Prop In Lane	0.00		0.02	0.00		0.26	1.00		0.12	1.00		0.16
Lane Grp Cap(c), veh/h	0	1363	971	0	1382	929	264	0	310	475	0	455
V/C Ratio(X)	0.00	0.84	0.84	0.00	0.64	0.64	0.11	0.00	0.90	0.91	0.00	0.51
Avail Cap(c_a), veh/h	0	1363	971	0	1382	929	292	0	343	475	0	455
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	30.7	30.7	0.0	25.3	25.3	56.3	0.0	69.6	70.2	0.0	49.8
Incr Delay (d2), s/veh	0.0	6.4	8.7	0.0	2.3	3.4	0.2	0.0	24.1	20.8	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	27.0	37.5	0.0	18.1	23.6	1.9	0.0	20.1	15.9	0.0	13.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	37.1	39.4	0.0	27.6	28.8	56.5	0.0	93.7	91.0	0.0	50.8
LnGrp LOS	A	D	D	A	C	C	E	A	F	F	A	D
Approach Vol, veh/h		1961			1488			309			664	
Approach Delay, s/veh		38.0			28.1			90.1			76.8	
Approach LOS		D			C			F			E	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	103.0	10.9	56.1	103.0	33.0	34.0
Change Period (Y+Rc), s	8.0	7.0	7.0	8.0	7.0	7.0
Max Green Setting (Gmax), s	92.0	7.0	49.0	92.0	26.0	30.0
Max Q Clear Time (g_c+I1), s	69.3	5.2	23.4	44.8	26.5	26.7
Green Ext Time (p_c), s	17.6	0.0	0.8	20.1	0.0	0.3













Intersection Summary		
HCM 6th Ctrl Delay	44.1	
HCM 6th LOS	D	

### Notes

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings  
3: Stump Road & Bethlehem Pike

12/21/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↵	↑		↵↵	↑	
Traffic Volume (vph)	0	1909	13	0	1303	155	29	241	32	421	192	37
Future Volume (vph)	0	1909	13	0	1303	155	29	241	32	421	192	37
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	12	12	11	12	12
Grade (%)		1%			1%			-4%			5%	
Storage Length (ft)	0		400	0		400	220		0	320		0
Storage Lanes	0		0	0		1	1		0	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	*0.70	0.91	1.00	*0.71	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.984			0.982			0.976	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	3580	0	0	3590	0	1393	1743	0	3036	1614	0
Flt Permitted							0.613			0.950		
Satd. Flow (perm)	0	3580	0	0	3590	0	899	1743	0	3036	1614	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)		1			14							
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		275			1000			1000			770	
Travel Time (s)		4.2			15.2			19.5			15.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	0%	0%	5%	1%	21%	2%	14%	3%	5%	12%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	1948	13	0	1330	158	30	246	33	430	196	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1961	0	0	1488	0	30	279	0	430	234	0
Turn Type		NA			NA		pm+pt	NA		Prot	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases							8					
Detector Phase		2			6		3	8		7	4	
Switch Phase												
Minimum Initial (s)		15.0			15.0		5.0	5.0		5.0	5.0	
Minimum Split (s)		23.0			23.0		12.0	12.0		12.0	12.0	
Total Split (s)		100.0			100.0		14.0	37.0		33.0	56.0	
Total Split (%)		58.8%			58.8%		8.2%	21.8%		19.4%	32.9%	
Maximum Green (s)		92.0			92.0		7.0	30.0		26.0	49.0	
Yellow Time (s)		5.0			5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		7.0			7.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)		5.0			5.0		3.0	3.0		3.0	3.0	

# Lanes, Volumes, Timings

## 3: Stump Road & Bethlehem Pike

12/21/2020

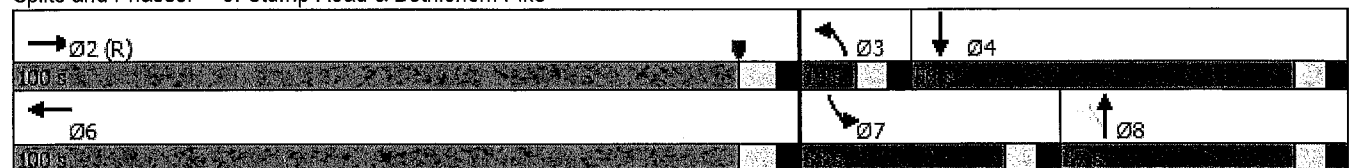
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)		2.7			2.7		3.0	3.0		3.0	3.0	
Time Before Reduce (s)		35.0			35.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)		15.0			15.0		0.0	0.0		0.0	0.0	
Recall Mode		C-Max			Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		94.5			94.5		37.6	30.0		26.5	51.3	
Actuated g/C Ratio		0.56			0.56		0.22	0.18		0.16	0.30	
v/c Ratio		0.99			0.74		0.14	0.91		0.91	0.48	
Control Delay		53.9			31.5		37.4	100.8		93.7	52.9	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		53.9			31.5		37.4	100.8		93.7	52.9	
LOS		D			C		D	F		F	D	
Approach Delay		53.9			31.5			94.6			79.3	
Approach LOS		D			C			F			E	
Queue Length 50th (ft)		~1020			582		21	307		245	217	
Queue Length 95th (ft)		#1194			663		47	#475		#341	310	
Internal Link Dist (ft)		195			920			920			690	
Turn Bay Length (ft)							220			320		
Base Capacity (vph)		1990			2002		223	317		482	487	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.99			0.74		0.13	0.88		0.89	0.48	

### Intersection Summary

Area Type: Other  
 Cycle Length: 170  
 Actuated Cycle Length: 170  
 Offset: 20 (12%), Referenced to phase 2:EBT, Start of Yellow  
 Natural Cycle: 120  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.99  
 Intersection Signal Delay: 53.0  
 Intersection Capacity Utilization 83.2%  
 Analysis Period (min) 15  
 \* User Entered Value  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Intersection LOS: D  
 ICU Level of Service E













### Splits and Phases: 3: Stump Road & Bethlehem Pike



# HCM 6th Signalized Intersection Summary

## 3: Stump Road & Bethlehem Pike

12/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↑	↑		↑↑	↑	
Traffic Volume (veh/h)	0	1504	18	0	1739	327	61	287	20	322	266	76
Future Volume (veh/h)	0	1504	18	0	1739	327	61	287	20	322	266	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1752	1794	0	1766	1766	1921	1921	1949	1618	1646	1646
Adj Flow Rate, veh/h	0	1535	18	0	1774	334	62	293	20	329	271	78
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	3	0	0	2	2	2	2	0	3	1	1
Cap, veh/h	0	2417	28	0	2092	390	192	323	22	384	326	94
Arrive On Green	0.00	0.58	0.58	0.00	0.58	0.58	0.05	0.18	0.18	0.13	0.26	0.26
Sat Flow, veh/h	0	4691	49	0	4061	675	1829	1777	121	2990	1229	354
Grp Volume(v), veh/h	0	913	640	0	1294	814	62	0	313	329	0	349
Grp Sat Flow(s),veh/h/ln	0	1244	1743	0	1325	1645	1829	0	1899	1495	0	1583
Q Serve(g_s), s	0.0	41.6	41.6	0.0	68.5	70.3	4.6	0.0	27.5	18.3	0.0	35.4
Cycle Q Clear(g_c), s	0.0	41.6	41.6	0.0	68.5	70.3	4.6	0.0	27.5	18.3	0.0	35.4
Prop In Lane	0.00		0.03	0.00		0.41	1.00		0.06	1.00		0.22
Lane Grp Cap(c), veh/h	0	1438	1008	0	1531	951	192	0	345	384	0	419
V/C Ratio(X)	0.00	0.64	0.64	0.00	0.84	0.86	0.32	0.00	0.91	0.86	0.00	0.83
Avail Cap(c_a), veh/h	0	1438	1008	0	1531	951	195	0	391	387	0	456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	23.9	23.9	0.0	29.6	30.0	53.9	0.0	68.1	72.5	0.0	58.9
Incr Delay (d2), s/veh	0.0	2.1	3.1	0.0	5.9	9.8	1.0	0.0	22.6	16.9	0.0	11.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	18.0	24.2	0.0	29.7	37.8	3.9	0.0	21.9	12.6	0.0	22.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	26.1	27.0	0.0	35.5	39.8	54.8	0.0	90.8	89.5	0.0	70.6
LnGrp LOS	A	C	C	A	D	D	D	A	F	F	A	E
Approach Vol, veh/h		1553			2108			375			678	
Approach Delay, s/veh		26.4			37.2			84.8			79.8	
Approach LOS		C			D			F			E	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	105.2	13.7	51.0	105.2	27.8	36.9
Change Period (Y+Rc), s	8.0	7.0	7.0	8.0	7.0	7.0
Max Green Setting (Gmax), s	93.0	7.0	48.0	93.0	21.0	34.0
Max Q Clear Time (g_c+l1), s	44.1	7.1	37.4	72.3	20.8	29.5
Green Ext Time (p_c), s	21.5	0.0	0.9	17.2	0.0	0.5


Intersection Summary		
HCM 6th Ctrl Delay	43.5	
HCM 6th LOS	D	

### Notes

User approved pedestrian interval to be less than phase max green.


Lanes, Volumes, Timings  
3: Stump Road & Bethlehem Pike

12/21/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↖	↗		↖↗	↖	
Traffic Volume (vph)	0	1504	18	0	1739	327	61	287	20	322	266	76
Future Volume (vph)	0	1504	18	0	1739	327	61	287	20	322	266	76
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	12	12	11	12	12
Grade (%)		1%			1%			-4%			5%	
Storage Length (ft)	0		400	0		400	220		0	320		0
Storage Lanes	0		0	0		1	1		0	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	*0.71	0.91	1.00	*0.75	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.976			0.990			0.966	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	3698	0	0	3856	0	1653	1784	0	3036	1679	0
Flt Permitted							0.384			0.950		
Satd. Flow (perm)	0	3698	0	0	3856	0	668	1784	0	3036	1679	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)		1			26							
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		275			1000			1000			770	
Travel Time (s)		4.2			15.2			19.5			15.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	0%	0%	2%	2%	2%	2%	0%	3%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	1535	18	0	1774	334	62	293	20	329	271	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1553	0	0	2108	0	62	313	0	329	349	0
Turn Type		NA			NA		pm+pt	NA		Prot	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases							8					
Detector Phase		2			6		3	8		7	4	
Switch Phase												
Minimum Initial (s)		15.0			15.0		5.0	5.0		5.0	5.0	
Minimum Split (s)		23.0			23.0		12.0	12.0		12.0	12.0	
Total Split (s)		101.0			101.0		14.0	41.0		28.0	55.0	
Total Split (%)		59.4%			59.4%		8.2%	24.1%		16.5%	32.4%	
Maximum Green (s)		93.0			93.0		7.0	34.0		21.0	48.0	
Yellow Time (s)		5.0			5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		7.0			7.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)		5.0			5.0		3.0	3.0		3.0	3.0	

Lanes, Volumes, Timings  
3: Stump Road & Bethlehem Pike

12/21/2020

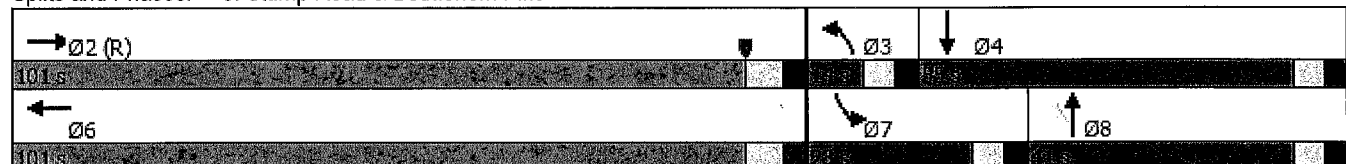
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)		2.7			2.7		3.0	3.0		3.0	3.0	
Time Before Reduce (s)		35.0			35.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)		15.0			15.0		0.0	0.0		0.0	0.0	
Recall Mode		C-Max			Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		96.5			96.5		41.0	33.1		21.5	46.6	
Actuated g/C Ratio		0.57			0.57		0.24	0.19		0.13	0.27	
v/c Ratio		0.74			0.96		0.30	0.90		0.86	0.76	
Control Delay		30.6			46.4		40.9	95.2		93.9	67.8	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		30.6			46.4		40.9	95.2		93.9	67.8	
LOS		C			D		D	F		F	E	
Approach Delay		30.6			46.4			86.2			80.5	
Approach LOS		C			D			F			F	
Queue Length 50th (ft)		610			991		45	340		187	352	
Queue Length 95th (ft)		691			#1161		83	#504		#264	478	
Internal Link Dist (ft)		195			920			920			690	
Turn Bay Length (ft)							220			320		
Base Capacity (vph)		2098			2198		207	367		392	483	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.74			0.96		0.30	0.85		0.84	0.72	

Intersection Summary

Area Type: Other  
 Cycle Length: 170  
 Actuated Cycle Length: 170  
 Offset: 22 (13%), Referenced to phase 2:EBT, Start of Yellow  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 49.3  
 Intersection Capacity Utilization 85.9%  
 Analysis Period (min) 15  
 \* User Entered Value  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Intersection LOS: D  
 ICU Level of Service E

Splits and Phases: 3: Stump Road & Bethlehem Pike



HCM 6th TWSC  
6: Stump Road & Jughandle

12/21/2020

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Traffic Vol, veh/h	6	55	15	381	595	10
Future Vol, veh/h	6	55	15	381	595	10
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	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-3	3	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	2	4	0
Mvmt Flow	6	56	15	389	607	10

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1031	612	617	0	-	0
Stage 1	612	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Critical Hdwy	7.2	6.2	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	227	521	735	-	-	-
Stage 1	591	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	222	521	735	-	-	-
Mov Cap-2 Maneuver	222	-	-	-	-	-
Stage 1	579	-	-	-	-	-
Stage 2	741	-	-	-	-	-





Approach	EB	NB	SB
HCM Control Delay, s	14	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	735	-	460	-	-
HCM Lane V/C Ratio	0.021	-	0.135	-	-
HCM Control Delay (s)	10	-	14	-	-
HCM Lane LOS	B	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-



Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	61	39	575	603	15
Future Vol, veh/h	19	61	39	575	603	15
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	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-3	3	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	19	62	40	587	615	15

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1290	623	630	0	-	0
Stage 1	623	-	-	-	-	-
Stage 2	667	-	-	-	-	-
Critical Hdwy	7.2	6.2	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	148	513	727	-	-	-
Stage 1	584	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	140	513	727	-	-	-
Mov Cap-2 Maneuver	140	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	554	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.4	0.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	727	-	314	-	-
HCM Lane V/C Ratio	0.055	-	0.26	-	-
HCM Control Delay (s)	10.2	-	20.4	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1	-	-

# HCM Unsignalized Intersection Capacity Analysis

## 9: Jughandle & Driveway

12/21/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↖		↘	
Traffic Volume (veh/h)	0	25	7	2	59	0
Future Volume (Veh/h)	0	25	7	2	59	0
Sign Control	Free		Stop			Stop
Grade	-1%		-3%			1%
Peak Hour Factor	0.54	0.54	0.54	0.54	0.54	0.54
Hourly flow rate (vph)	0	46	13	4	109	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		46	0	6	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		46	0	6	0
tC, single (s)	4.1		*7.2	6.2	*6.5	6.5
tC, 2 stage (s)						
tF (s)	2.2		*3.0	*3.1	*4.0	4.0
p0 queue free %	100		99	100	88	100
cM capacity (veh/h)	1636		1116	1161	882	900

Direction Lane #	WB 1	NB 1	SB 1
Volume Total	46	17	109
Volume Left	0	0	109
Volume Right	46	4	0
cSH	1700	1126	882
Volume to Capacity	0.03	0.02	0.12
Queue Length 95th (ft)	0	1	11
Control Delay (s)	0.0	8.2	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	8.2	9.7
Approach LOS		A	A

Intersection Summary			
Average Delay		6.9	
Intersection Capacity Utilization		13.5%	ICU Level of Service
Analysis Period (min)		15	A

\* User Entered Value

# HCM Unsignalized Intersection Capacity Analysis

## 9: Jughandle & Driveway

12/21/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↖		↖	
Traffic Volume (veh/h)	0	54	18	4	76	0
Future Volume (Veh/h)	0	54	18	4	76	0
Sign Control	Free		Stop			Stop
Grade	-1%		-3%			1%
Peak Hour Factor	0.54	0.54	0.54	0.54	0.54	0.54
Hourly flow rate (vph)	0	100	33	7	141	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		100	0	16	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		100	0	16	0
tC, single (s)	4.1		*7.2	6.2	*6.5	6.5
tC, 2 stage (s)						
tF (s)	2.2		*3.0	*3.1	*4.0	4.0
p0 queue free %	100		97	99	84	100
cM capacity (veh/h)	1636		1024	1161	855	900

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	100	40	141
Volume Left	0	0	141
Volume Right	100	7	0
cSH	1700	1046	855
Volume to Capacity	0.06	0.04	0.16
Queue Length 95th (ft)	0	3	15
Control Delay (s)	0.0	8.6	10.0
Lane LOS		A	B
Approach Delay (s)	0.0	8.6	10.0
Approach LOS		A	B

Intersection Summary			
Average Delay		6.3	
Intersection Capacity Utilization		14.4%	ICU Level of Service A
Analysis Period (min)		15	

\* User Entered Value

# Turn Lane Warrant and Length Analysis Workbook

## STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Montgomery Township  
County: Montgomery County  
PennDOT Engineering District: 6

Analysis Date: 12/21/2020  
Conducted By: AUH  
Checked By: AUH  
Agency/Company Name: H&K

Intersection & Approach Description: Stump Road & Private Driveway/Jughandle

Analysis Period: 2023 Build  
Design Hour: AM Peak Hour  
Intersection Control: Unsignalized  
Posted Speed Limit (MPH): 35  
Type of Terrain: Level

Number of Approach Lanes: 1  
Undivided or Divided Highway: Undivided

Type of Analysis: Left Turn Lane  
Left or Right-Turn Lane Analysis?: Left Turn Lane

## VOLUME CALCULATIONS

### Left Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	15	0.0%
	Through	-	381	2.0%
	Right	No	0	0.0%
Opposing	Left	No	0	0.0%
	Through	-	595	4.0%
	Right	Yes	10	0.0%

Advancing Volume: 400  
Opposing Volume: 617  
Left Turn Volume: 15

% Left Turns in Advancing Volume: 3.75%

### Right Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%
	Through	-	595	4.0%
	Right	-	10	0.0%

Advancing Volume: N/A  
Right Turn Volume: N/A

## TURN LANE WARRANT FINDINGS

### Left Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 1  
Warrant Met?: No

### Right Turn Lane Warrant Findings

Applicable Warrant Figure: N/A  
Warrant Met?: N/A

## TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized  
Design Hour Volume of Turning Lane: 15  
Cycles Per Hour (Assumed): 60  
Cycles Per Hour (If Known): 40

Average # of Vehicles/Cycle: 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

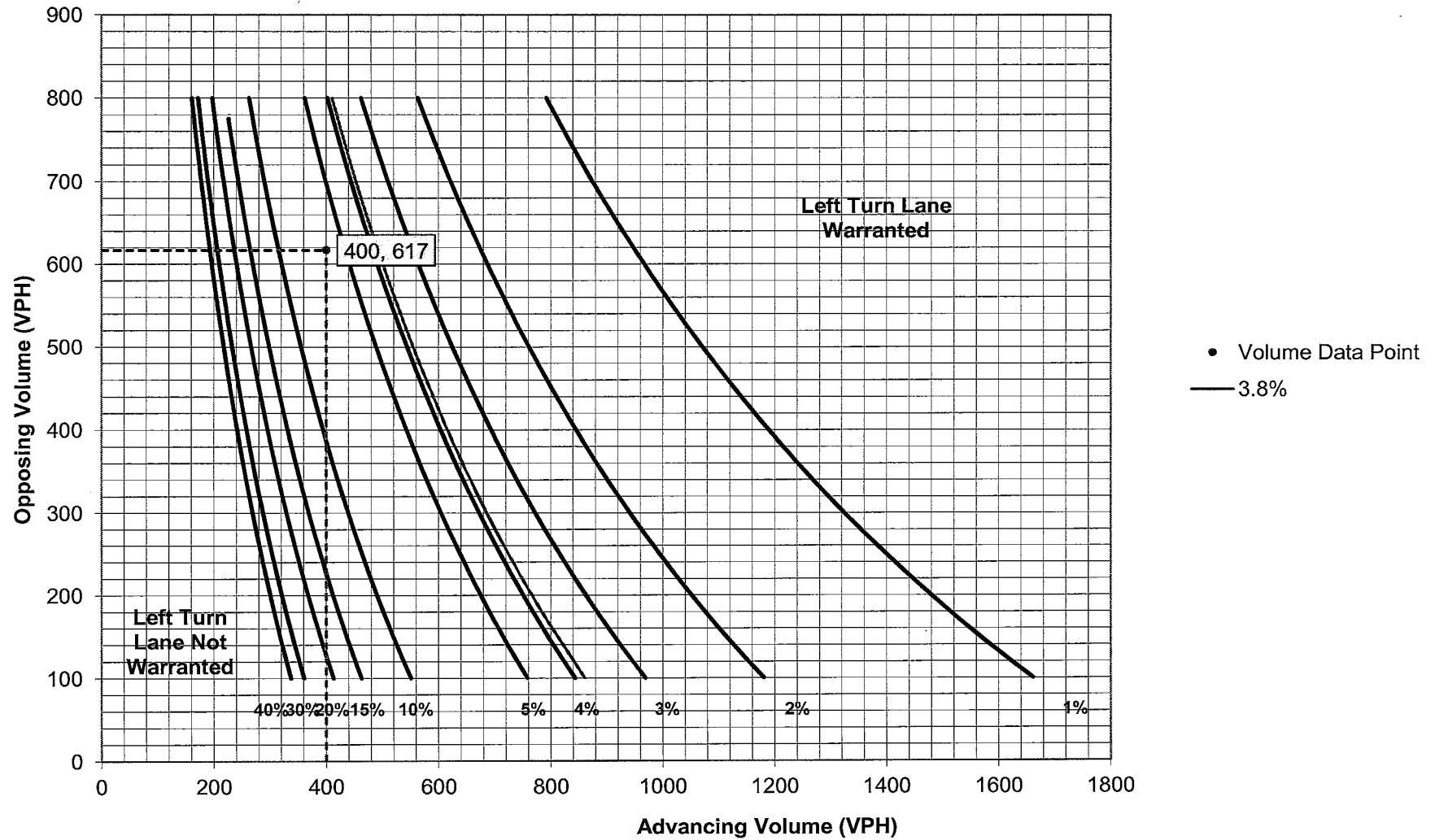
Left Turn Lane Storage Length, Condition A: N/A Feet  
Condition B: N/A Feet  
Condition C: N/A Feet  
Required Left Turn Lane Storage Length: N/A Feet

Additional Findings: 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:	Montgomery Township	Analysis Date:	12/21/2020
County:	Montgomery County	Conducted By:	AUH
PennDOT Engineering District:	6	Checked By:	AUH
		Agency/Company Name:	H&K
Intersection & Approach Description: Stump Road & Private Driveway/Jughandle			
Analysis Period:	2023 Build	Number of Approach Lanes:	1
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35	Type of Analysis	
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?: Right Turn Lane	

## **VOLUME CALCULATIONS**

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	15	0.0%	N/A
	Through	-	381	2.0%	N/A
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	595	4.0%	N/A
	Right	Yes	10	0.0%	N/A
Advancing Volume: N/A					
Opposing Volume: N/A					
Left Turn Volume: N/A					
% Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	595	4.0%	607
	Right	-	10	0.0%	10
Advancing Volume: 617					
Right Turn Volume: 10					

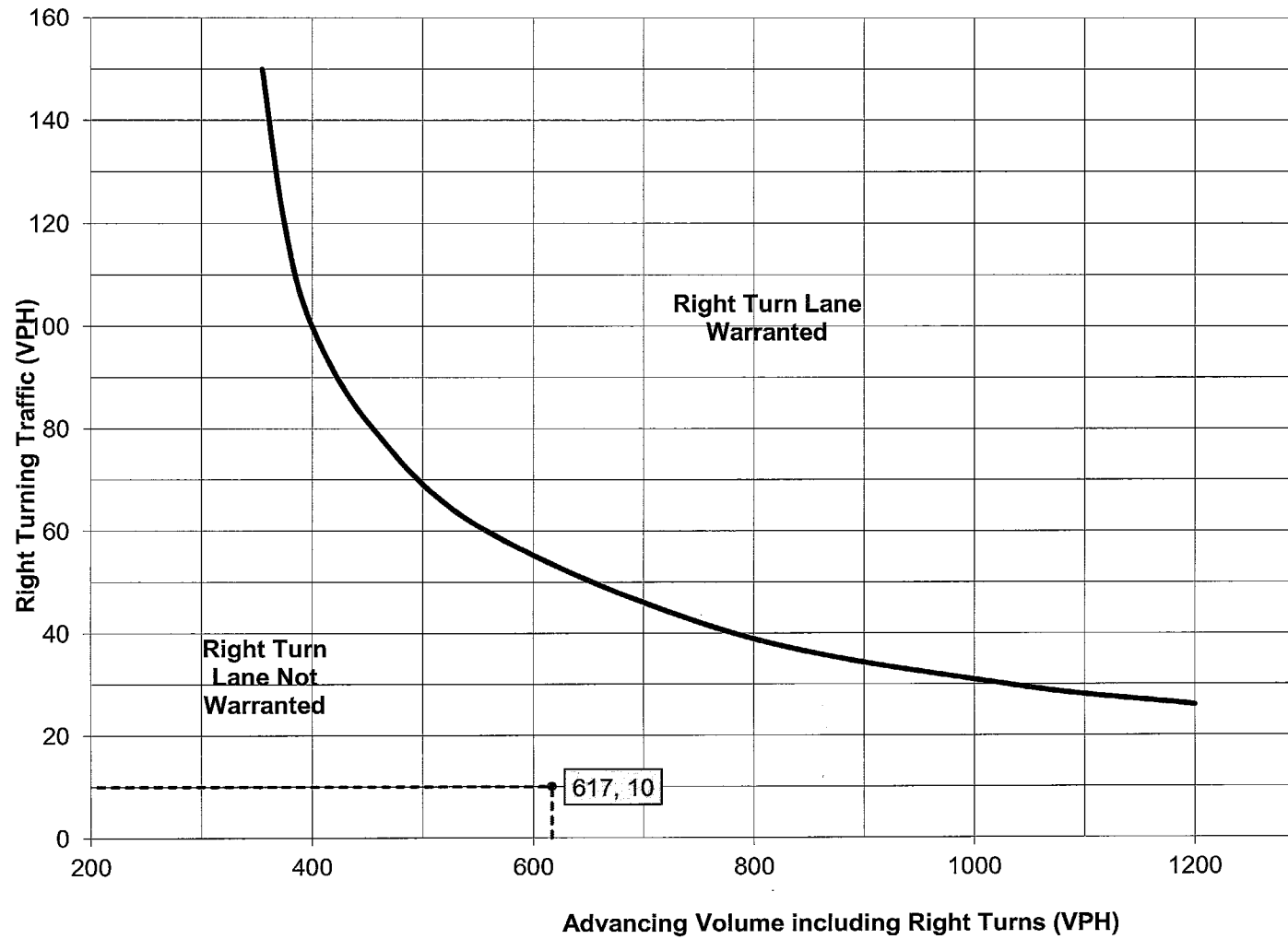
## **TURN LANE WARRANT FINDINGS**

Left Turn Lane Warrant Findings		Right Turn Lane Warrant Findings	
Applicable Warrant Figure:	N/A	Applicable Warrant Figure:	Figure 9
Warrant Met?:	N/A	Warrant Met?:	No

## **TURN LANE LENGTH CALCULATIONS**

Intersection Control:	Unsignalized					
Design Hour Volume of Turning Lane:	10					
Cycles Per Hour (Assumed):	60					
Cycles Per Hour (If Known):	40					
Average # of Vehicles/Cycle:		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:						N/A Feet
Condition B:						N/A Feet
Condition C:						N/A Feet
Required Right Turn Lane Storage Length:						N/A Feet
Additional Findings:						N/A
Additional Comments / Justifications:						

**Figure 9. Warrant for right turn lanes on two-lane roadways  
(40 mph or lower speeds, unsignalized and signalized intersections)**



• Volume Data Point

# Turn Lane Warrant and Length Analysis Workbook

## STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Montgomery Township	Analysis Date:	12/21/2020
County:	Montgomery County	Conducted By:	AUH
PennDOT Engineering District:	6	Checked By:	AUH
		Agency/Company Name:	H&K
Intersection & Approach Description: Stump Road & Private Driveway/Jughandle			
Analysis Period:	2023 Build	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35	Type of Analysis	
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?: Left Turn Lane	

## VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	39	0.0%	39
	Through	-	575	1.0%	578
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	603	2.0%	610
	Right	Yes	15	0.0%	15

Advancing Volume: 617  
Opposing Volume: 625  
Left Turn Volume: 39

% Left Turns in Advancing Volume: 6.32%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	603	2.0%	N/A
	Right	-	15	0.0%	N/A

Advancing Volume: N/A  
Right Turn Volume: N/A

## TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <b>Figure 1</b>	Applicable Warrant Figure: <b>N/A</b>
Warrant Met?: <b>Yes</b>	Warrant Met?: <b>N/A</b>

## TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	39
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	40
Average # of Vehicles/Cycle: 1.0	

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

Left Turn Lane Storage Length, Condition A: **75** Feet  
Condition B: **N/A** Feet  
Condition C: **N/A** Feet  
Required Left Turn Lane Storage Length: **75** Feet

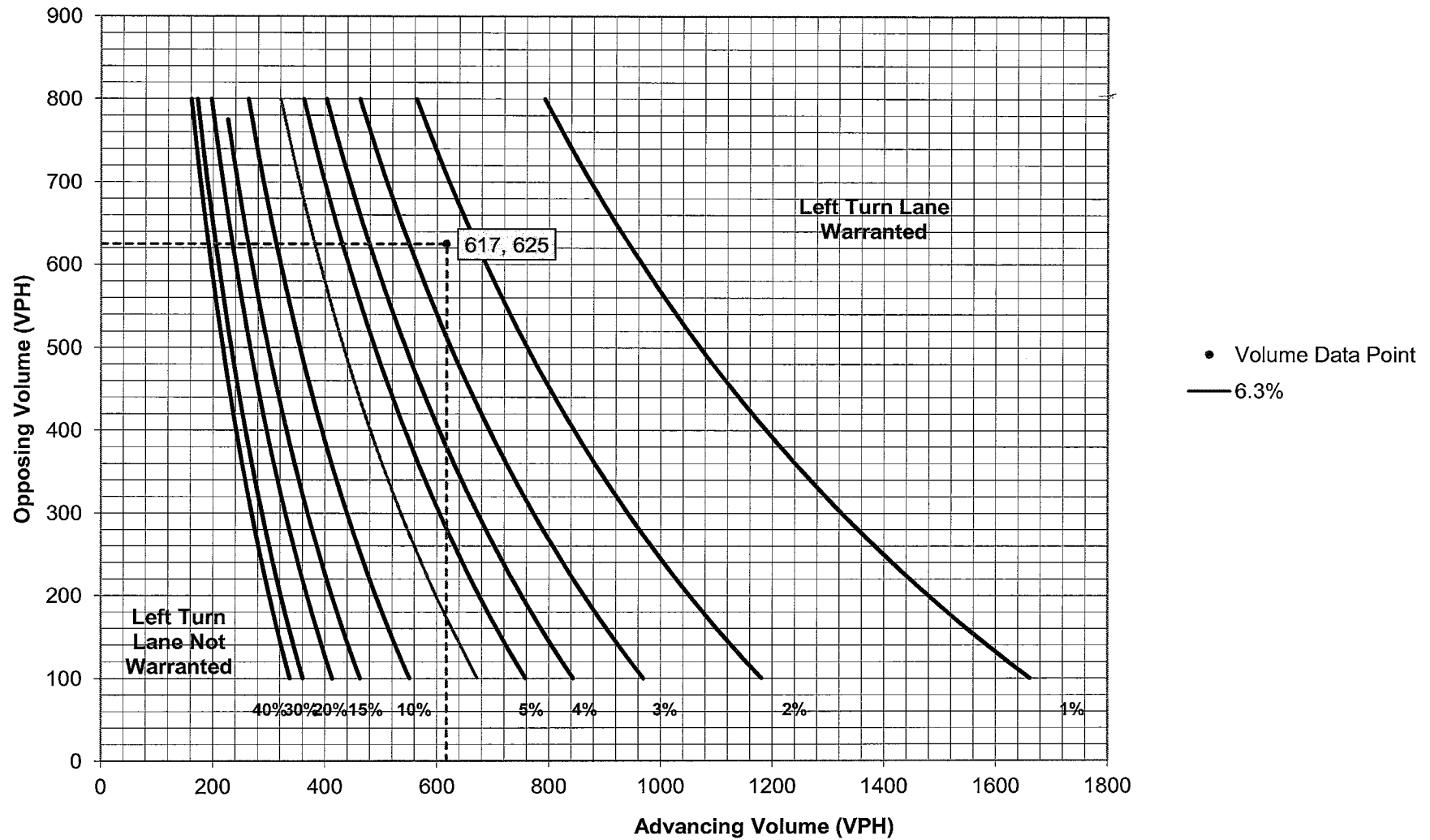
Additional Findings: **N/A**

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: <span style="border: 1px solid black; padding: 2px;">Montgomery Township</span> County: <span style="border: 1px solid black; padding: 2px;">Montgomery County</span> PennDOT Engineering District: <span style="border: 1px solid black; padding: 2px;">6</span>	Analysis Date: <span style="border: 1px solid black; padding: 2px;">12/21/2020</span> Conducted By: <span style="border: 1px solid black; padding: 2px;">AUH</span> Checked By: <span style="border: 1px solid black; padding: 2px;">AUH</span> Agency/Company Name: <span style="border: 1px solid black; padding: 2px;">H&amp;K</span>
Intersection & Approach Description: <span style="border: 1px solid black; padding: 2px;">Stump Road &amp; Private Driveway/Jughandle</span>	
Analysis Period: <span style="border: 1px solid black; padding: 2px;">2023 Build</span> Design Hour: <span style="border: 1px solid black; padding: 2px;">PM Peak Hour</span> Intersection Control: <span style="border: 1px solid black; padding: 2px;">Unsignalized</span> Posted Speed Limit (MPH): <span style="border: 1px solid black; padding: 2px;">35</span> Type of Terrain: <span style="border: 1px solid black; padding: 2px;">Level</span>	Number of Approach Lanes: <span style="border: 1px solid black; padding: 2px;">1</span> Undivided or Divided Highway: <span style="border: 1px solid black; padding: 2px;">Undivided</span> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;"> Type of Analysis  Right Turn Lane </div>

## VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	39	0.0%	N/A
	Through	-	575	1.0%	N/A
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	603	2.0%	N/A
	Right	Yes	15	0.0%	N/A

Advancing Volume: N/A  
Opposing Volume: N/A  
Left Turn Volume: N/A  
  
% Left Turns in Advancing Volume: N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	603	2.0%	610
	Right	-	15	0.0%	15

Advancing Volume: 625  
Right Turn Volume: 15

## TURN LANE WARRANT FINDINGS

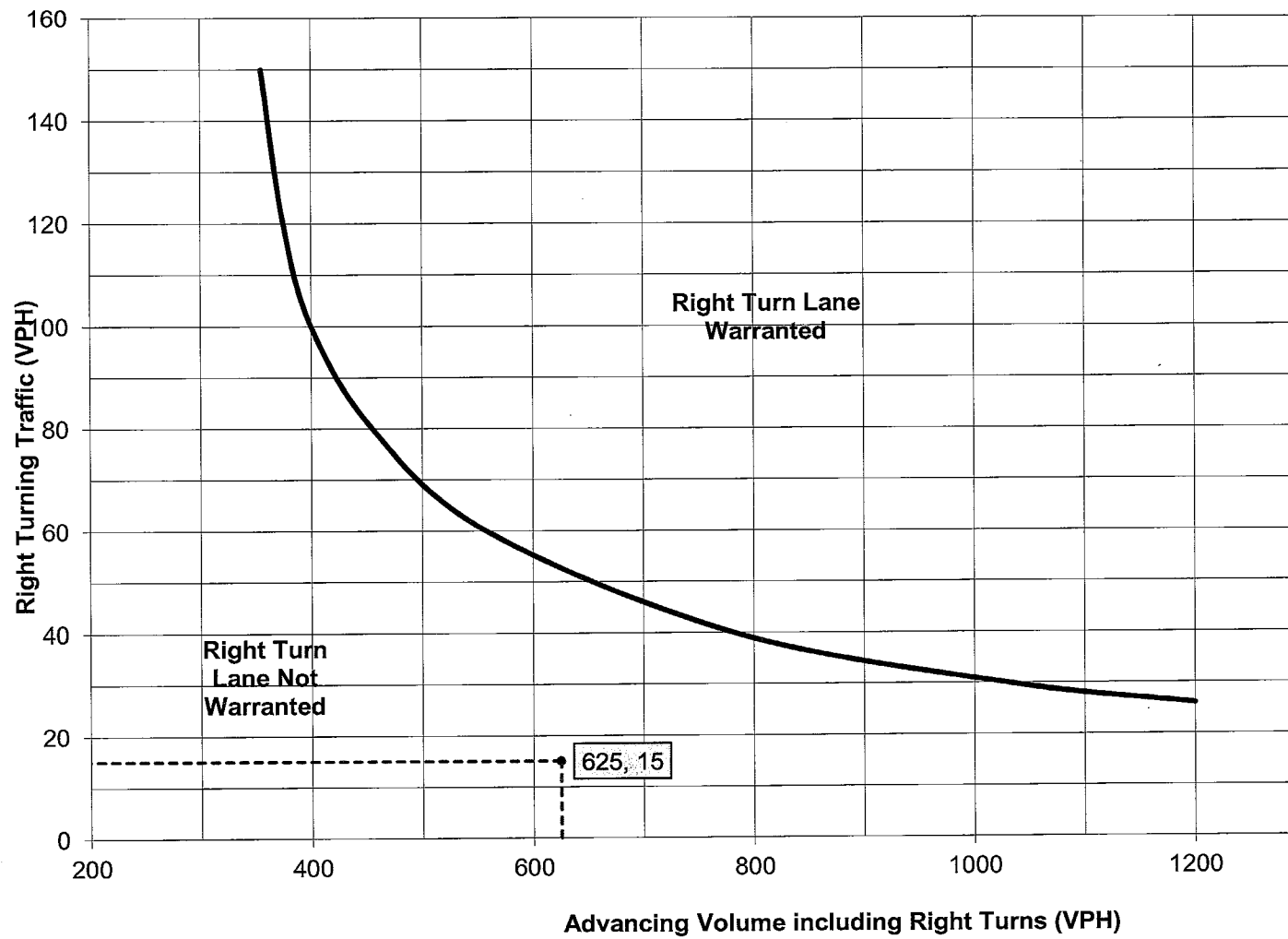
Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <span style="border: 1px solid black; padding: 2px; font-weight: bold;">N/A</span>  Warrant Met?: <span style="border: 1px solid black; padding: 2px; font-weight: bold;">N/A</span>	Applicable Warrant Figure: <span style="border: 1px solid black; padding: 2px; font-weight: bold;">Figure 9</span>  Warrant Met?: <span style="border: 1px solid black; padding: 2px; font-weight: bold;">No</span>

## TURN LANE LENGTH CALCULATIONS

Intersection Control: <span style="border: 1px solid black; padding: 2px;">Unsignalized</span> Design Hour Volume of Turning Lane: <span style="border: 1px solid black; padding: 2px;">15</span> Cycles Per Hour (Assumed): <span style="border: 1px solid black; padding: 2px;">60</span> Cycles Per Hour (If Known): <span style="border: 1px solid black; padding: 2px;">40</span>	Average # of Vehicles/Cycle: <span style="border: 1px solid black; padding: 2px;">N/A</span>																																							
<b>PennDOT Publication 46, Exhibit 11-6</b>																																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="4" style="width: 20%;">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </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: <span style="border: 1px solid black; padding: 2px; font-weight: bold;">N/A</span> Feet Condition B: <span style="border: 1px solid black; padding: 2px; font-weight: bold;">N/A</span> Feet Condition C: <span style="border: 1px solid black; padding: 2px; font-weight: bold;">N/A</span> Feet Required Right Turn Lane Storage Length: <span style="border: 1px solid black; padding: 2px; font-weight: bold;">N/A</span> Feet																																								
Additional Findings: <span style="border: 1px solid black; padding: 2px;">N/A</span>																																								

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways  
(40 mph or lower speeds, unsignalized and signalized intersections)**



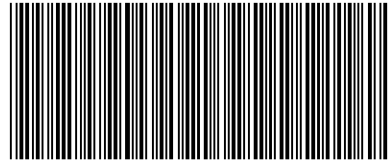
• Volume Data Point



RECORDER OF DEEDS  
MONTGOMERY COUNTY  
*Nancy J. Becker*

One Montgomery Plaza  
Swede and Airy Streets ~ Suite 303  
P.O. Box 311 ~ Norristown, PA 19404  
Office: (610) 278-3289 ~ Fax: (610) 278-3869

DEED BK 5762 PG 02158 to 02163  
INSTRUMENT # : 2010026098  
RECORDED DATE: 04/01/2010 11:15:48 AM

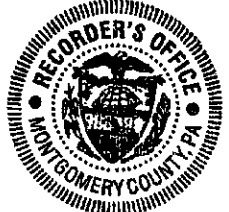



1315125-0009K

MONTGOMERY COUNTY ROD

OFFICIAL RECORDING COVER PAGE

Page 1 of 6

<b>Document Type:</b> Deed <b>Document Date:</b> 09/15/2009 <b>Reference Info:</b>	<b>Transaction #:</b> 1217886 - 1 Doc(s) <b>Document Page Count:</b> 5 <b>Operator Id:</b> sford
<b>RETURN TO: (Mail)</b> NEIL HOPKINS 374 MAPLE AVE DOYLESTOWN, PA 18901	<b>SUBMITTED BY:</b> NEIL HOPKINS 374 MAPLE AVE DOYLESTOWN, PA 18901
<b>* PROPERTY DATA:</b> Parcel ID #: 46-00-00124-00-1 Address: BETHLEHEM PIKE  Municipality: PA Montgomery Township (100%) School District: North Penn	
<b>* ASSOCIATED DOCUMENT(S):</b>	
<b>CONSIDERATION/SECURED AMT:</b> \$1.00  <b>FEES / TAXES:</b> Recording Fee:Deed \$65.00 Additional Pages Fee \$2.00 Affordable Housing Pages \$2.00 <b>Total:</b> \$69.00	DEED BK 5762 PG 02158 to 02163 Recorded Date: 04/01/2010 11:15:48 AM  I hereby CERTIFY that this document is recorded in the Recorder of Deeds Office in Montgomery County, Pennsylvania.    Nancy J. Becker Recorder of Deeds

**PLEASE DO NOT DETACH**

THIS PAGE IS NOW PART OF THIS LEGAL DOCUMENT

NOTE: If document data differs from cover sheet, document data always supersedes.  
\*COVER PAGE DOES NOT INCLUDE ALL DATA, PLEASE SEE INDEX AND DOCUMENT FOR ANY ADDITIONAL INFORMATION.



RECORDER OF DEEDS  
MONTGOMERY COUNTY

2010 APR -1 AM 11:10

MONTGOMERY COUNTY COMMISSIONERS REGISTRY  
46-00-00124-00-1 MONTGOMERY  
BETHLEHEM PIKE  
HOPKINS NEIL C  
B 013 U 017 L 2309 DATE: 04/01/2010\$10.00  
JG

**Prepared by:** GREGORY KESSELL  
15 JOHN DYER WAY  
DOYLESTOWN, PA

**Return to:** NEIL HOPKINS  
374 MAPLE AVE  
DOYLESTOWN, PA 18901

5/3

**Parcel #** 46-00-00124-00-1

---



**SPECIAL WARRANTY DEED**

**THIS DEED** is made the 15<sup>th</sup> day of September, in the year Two Thousand nine (2009) between **NEIL HOPKINS**, an individual residing at 374 Maple Avenue, Doylestown, Bucks County, Pennsylvania, 18901 ("Grantor"),

**AND**

**NEIL C. HOPKINS**, an adult individual, of 374 Maple Ave., Doylestown, Bucks County, Pennsylvania 18901, and **GREGORY KESSELL**, an individual residing at 15 John Dyer Way, Doylestown, Bucks County, Pennsylvania, 18902 ("Grantee"),

**WITNESSETH**, that in consideration of One (\$1.00) Dollar, in hand truly paid by Grantee at or before the sealing and delivery of these presents, the receipt whereof is hereby acknowledged, the Grantor does hereby grant and convey to the Grantee, their heirs and assigns,

**ALL THAT CERTAIN** tract, piece or parcel of land situate, lying and being in the Township of Montgomery, County of Montgomery and Commonwealth of Pennsylvania, and known as Parcel Number 46-00-00124-00-1 and being the premises that Montgomery Court, Inc, a corporation, by Special Warranty Deed dated June 23, 2001, recorded in the Office of the Recorder of Deeds of Montgomery County, Pennsylvania in Deed Book 5364 Page 2194, granted and conveyed unto Neil Hopkins in fee and bounded and described as follows, to wit:

**BEGINNING** at a point, a corner on the line of land now or late of Lewis J. and Florence Strong, said point of beginning being North 37 degrees, ten minutes, thirty seconds East, six hundred twenty feet from a point on the middle line of Bethlehem Pike (sixty feet wide), said point being a corner between land now or late of Mary L. Post and land now or late of Frank Crisci; thence along lot No. 4-B the three following courses and distances to wit: (1) North sixty seven degrees, thirty minutes West, three hundred ten feet to a point, a corner; (2) North twenty two degrees, thirty minutes East, one hundred twenty feet to a point, a corner; (3) North sixty seven degrees, thirty minutes West, three hundred forty eight and ninety two one hundredths feet crossing a small creek to a point, a corner in the middle line of a strip reserved for change of creek channel, said last mentioned being on line of lot no. 3: thence along the same and along said strip reserved for change of creek channel the following courses and distances, to wit: (1) North forty seven degrees, eight minutes East, one hundred fifty six and forty five one hundreths feet to a point, a corner in the line of land now or late of William Weidner, thence along the same, South fifty degrees, thirty six minutes East, six hundred ninety six and sixty one hundreths feet to a point, a corner; thence along land now or late of Lewis J. and Florence Strong, South thirty seven degrees, ten

*THIS TRANSACTION IS TAX EXEMPT. DEED GOING FROM FATHER-IN-LAW TO FATHER-IN-LAW & SON-IN-LAW.*



minutes thirty seconds West, six hundred twenty five and fifty eight one hundredths feet to the point and place of beginning.

**TOGETHER WITH** all and singular the buildings, improvements, ways, waters, water courses, rights, liberties, privileges, hereditaments and appurtenances whatsoever thereunto belonging, or in anywise appertaining, and the reversions and remainders, rents, issues and profits thereof; and all the estate, right, title, interest, property, claim and demand whatsoever of the Grantor, its successors and assigns, in law, equity or otherwise, of, in and to the same, and every part thereof.

**TO HAVE AND TO HOLD** the lot or piece of ground above described, with the improvements thereon erected, hereditaments and premises hereby granted or mentioned, and intended so to be, with the appurtenances, unto the Grantee, his heirs and assigns to and for the only proper use and behoof of the Grantee, his heirs and assigns, forever.

TOGETHER, with the free and common use, right, liberty and privilege and right of ingress and egress over parcel 46-00-00118-0007 as set forth in a certain Declaration of Easement dated June 4, 2001 and recorded in the Recorder of Deeds Office for the County of Montgomery in Deed Book 5362 Page 1148.

TOGETHER ALSO, with the free and common use, right, liberty and privilege and right of ingress and egress as set forth in a certain deed of Right of Way dated January 28, 1992 and recorded in the Recorder of Deeds Office for the County of Montgomery in Deed Book 5001 Page 1216.

**UNDER AND SUBJECT** to all matters of record affecting title to said premises, including without limitation, all

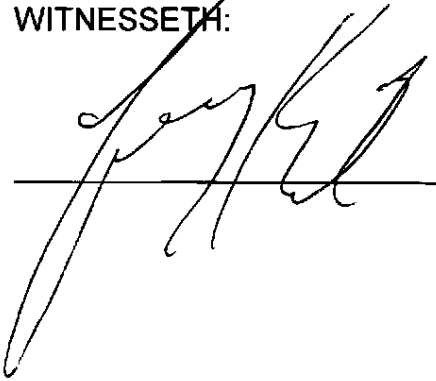
**THE GRANTOR**, for itself, its successors and assigns, does by these presents covenant, grant and agree to and with the Grantee, his heirs and assigns, that it, the Grantor, and its successors and assigns, all and singular the hereditaments and premises hereinabove described and granted, or mentioned, and intended so to be, with the appurtenances, unto the Grantee, his heirs and assigns, against it, the Grantor and its successors and assigns, and against all and every other person or persons whomsoever, lawfully claiming or to claim the same, or any part thereof, by, from or under Grantor,

**SHALL AND WILL SPECIALLY WARRANT AND FOREVER DEFEND.**



**IN WITNESS WHEREOF**, the Grantor has caused this Deed to be executed by its Executive Vice President and attested by its Assistant Secretary, on the day and year first above written.

WITNESSETH:

A large, stylized handwritten signature in black ink, written over a horizontal line.

By:   
NEIL HOPKINS





COMMONWEALTH OF PENNSYLVANIA

:

: ss:

COUNTY OF BUCKS

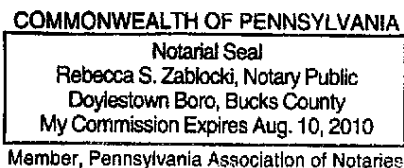
:

On this the 15<sup>th</sup> day of September<sup>2009</sup> before me, the subscriber, a duly authorized Notary Public, personally appeared NEIL HOPKINS, an individual known to me (or satisfactorily proven) to be the person who signed his name to the within instrument, being authorized to do so, for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Rebecca S. Zablocki  
Notary Public

My Commission Expires:



I hereby certify that the correct address  
of the Grantee herein is:

Neil Hopkins: 374 Maple Ave.  
Doylestown, PA 18901

Gregory Kessell: 15 John Dyer Way  
Doylestown, PA 18902



## **AGREEMENT OF SALE**

THIS AGREEMENT is made this 7<sup>th</sup> day of July, 2020, by and between Neil C. Hopkins and Gregory Kessel (collectively, "Seller") and COMMERCE PURSUIT CAPITAL, L.P., acting on behalf of a nominee, a yet-to-be formed single purpose entity to be formed prior to Closing ("Buyer"). For purposes of this Agreement, the term "Effective Date" shall mean the date on which Buyer receives from Seller a fully executed copy of this Agreement provided such date is a Business Day, and if such date is not a Business Day, then the Effective Date shall be the first Business Day immediately following such date.

In consideration of the mutual covenants and agreements contained herein, and intending to be legally bound hereby, the parties hereto agree as follows:

1. **Agreement to Sell and Purchase.** Seller agrees to sell to Buyer, and Buyer agrees to purchase from Seller, subject to the terms and conditions of this Agreement, that certain tract or parcel of land consisting of approximately 9.43 acres and known as tax parcel number 46-00-00124-00-1 (the "Overall Parcel"), located in Montgomery Township, Montgomery County, Pennsylvania, having a street address of 13-17 Bethlehem Pike, being more particularly depicted on Exhibit "A", including any buildings and other improvements located thereon (the "Improvements"), together with (a) any land lying in the bed of any street, road or alley, open or proposed, in front, abutting or adjoining the subject property, (b) any easement, privilege, license or right-of-way inuring to the benefit of the subject property, and (c) the appurtenances and hereditament belonging or otherwise pertaining to the subject property (collectively, the "Property").

2. **Purchase Price.**

3. **Closing.** Closing (the "Closing") hereunder shall occur on a date not later than sixty (60) days after the earlier to occur of (a) the Development Approval Deadline Date (hereinafter defined), or (b) receipt of the

IN WITNESS WHEREOF, intending to be legally bound hereby, the parties hereto have executed this Agreement as of the date first above written.

Witness:

Witness:

SELLER:

Neil C. Hopkins

Gregory Kessel

BUYER:

COMMERCE PURSUIT CAPITAL, L.P.

By: Commerce Operating GP, LLC

By:

Name: John A. Westman  
Title: Managing member

Attest:

Name: Jesse Kovach

MONTGOMERY TOWNSHIP BOARD OF SUPERVISORS  
**BOARD ACTION SUMMARY**

Item # *7a.*

---

SUBJECT: Consider Construction Escrow Release 10 / Start of 18-month  
Maintenance Period – Maple Dr/Crystal Road – Firefox Phase 3 -  
LDS 639  
MEETING DATE: February 8, 2021  
BOARD LIAISON: Tanya C. Bamford, Chair  
INITIATED BY: Bruce Shoupe, Director of Planning and Zoning

---

**BACKGROUND:**

Attached is a construction escrow release requested by Crystal Road Enterprise, LLC for Firefox Phase 3 as recommended by the Township Engineer.

The original amount of the escrow for Phase 3 was \$876,309.28, held as Letter of Credit with the Township. This release for is in the amount of \$119,948.41. The new balance would be \$0.00,

**ALTERNATIVES/OPTIONS:** Approve or not approve the construction escrow release.

**RECOMMENDATION:** That this construction escrow be released.

**MOTION/RESOLUTION:**

MOTION to authorize a construction escrow release for the Crystal Road Enterprise, LLC, contingent upon the developer satisfying all outstanding Township invoices related to this project, and receipt of an approved maintenance security by the Township Solicitor in the amount of \$119,948.41.

MOTION \_\_\_\_\_ SECOND \_\_\_\_\_



**GILMORE & ASSOCIATES, INC.**  
ENGINEERING & CONSULTING SERVICES

**VIA EMAIL**

February 3, 2021

File No. 2012-10074

Ms. Carolyn McCreary, Township Manager  
Montgomery Township  
1001 Stump Road  
Montgomeryville, PA 18936

Reference: Maple Dr / Crystal Rd Townhouse Project – LD/S #639  
Financial Security Release 10

Dear Carolyn:

We have received and reviewed the Request for Escrow Release for the above-referenced project. This letter is to certify that the improvements attached to this letter in the amount of \$119,948.41 have been completed. Please find enclosed a copy of our escrow calculations and the application for release of funds for your use. We recommend that this release be contingent upon the developer satisfying all outstanding Township invoices related to this project and Township receipt of maintenance security in the amount of \$119,496.72.

Please be advised that these improvements will be subject to a final inspection at the end of the maintenance period. Any deficiencies will be required to be corrected by the developer.

Should you have any further questions or require any additional information, please do not hesitate to contact our office.

Sincerely,

James P. Dougherty, P.E.  
Senior Project Manager  
Gilmore & Associates, Inc.

JPD/si

Enclosures: Release of Escrow Form, Escrow Status Report, (2/3/21)

cc: Bruce S. Shoupe, Director of Planning and Zoning  
Brian C. Grant - Select Properties  
Stephen Mansfield, Mansfield Development LLC  
Valerie Liggett, R.L.A., Senior Landscape Architect – Gilmore & Associates, Inc.  
Damon A. Drummond, P.E., PTOE, Senior Transportation Engineer – Gilmore & Associates, Inc.

---

65 East Butler Avenue | Suite 100 | New Britain, PA 18901 | Phone: 215-345-4330 | Fax: 215-345-8606

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Gilmore & Associates, Inc.  
Building on a Foundation of Excellence  
[www.gilmore-assoc.com](http://www.gilmore-assoc.com)

**RELEASE OF ESCROW FORM**

James P. Dougherty, P.E.  
Senior Project Manager  
Gilmore & Associates, Inc.  
65 East Butler Avenue, Suite 100  
New Britain, PA 18901  
215-345-4330

Date: 01/22/2021

Development: Maple Dr / Crystal Rd Townhouse Project - LD/S #639  
Release #: 10

G&A Project #: 2012-10074

Dear Mr. Dougherty:

This is an escrow release request in the amount of \$119,948.41. Enclosed is a copy of our escrow spreadsheet with the quantities noted.

**ESCROW RELEASE REQUESTS ARE LIMITED TO ONE PER MONTH.**

Ms. Carolyn McCreary  
Township Manager  
Montgomery Township  
1001 Stump Road  
Montgomeryville, PA 18936

Date: 02/03/2021

Dear Ms. McCreary:

We have reviewed the developer's request for an escrow release. We therefore, recommend that \$119,948.41 be released. These improvements will be subject to a final observation prior to dedication and again at the end of the maintenance period. Any deficiencies will be required to be corrected by the developer.

James P. Dougherty 2/3/2021  
James P. Dougherty, P.E., Senior Project Manager, Gilmore & Associates, Inc.

Resolution # \_\_\_\_\_

WHEREAS, a request for release of escrow was received from Crystal Road Enterprises, LLC for Maple Dr / Crystal Rd Townhouse Project - LD/S #639, in the amount of \$119,948.41, on the representation that work set forth in the Land Development Agreement to the extent has been completed and; WHEREAS, said request has been reviewed by the Township Engineer who recommends release of \$119,948.41; NOW, THEREFORE, BE IT RESOLVED by the Board of Supervisors of Montgomery Township that we do hereby authorize release of \$119,948.41; in accordance with the developer's request, and the officers of the Township are authorized to take the necessary action to obtain release of said sum.  
BE IT FURTHER RESOLVED that Township records indicate that escrow has been deposited via Letter of Credit with Montgomery Township in total sum of \$876,309.28 pursuant to a signed Land Development Agreement and that \$756,360.87 has previously been released from escrow. Therefore, the action of the Board releasing said sum leaves a new balance of \$0.00 in escrow.

MOTION BY: \_\_\_\_\_

VOTE: \_\_\_\_\_

SECOND BY: \_\_\_\_\_

DATED: \_\_\_\_\_

RELEASED BY: \_\_\_\_\_

Department Director



Gilmore & Associates, Inc.  
Engineering and Consulting Services

## ESCROW STATUS REPORT

### SUMMARY OF ESCROW ACCOUNT

RELEASE NO.: 10  
RELEASE DATE: 3-Feb-2021

PROJECT NAME: Maple Dr / Crystal Rd Townhouse Project  
PROJECT NO.: 2012-10074  
TOWNSHIP NO.: LD/S #639  
PROJECT OWNER: Crystal Road Enterprises, LLC

TOTAL CONSTRUCTION: \$ 796,644.80  
TOTAL CONSTRUCTION CONTINGENCY (10%): \$ 79,664.48  
TOTAL CONSTRUCTION ESCROW POSTED: \$ 876,309.28

ORIGINAL CONSTRUCTION AMOUNT: \$ 876,309.28

AMOUNT OF THIS RELEASE: \$ 119,948.41

MUNICIPALITY: Montgomery Township  
ESCROW AGENT: Uninvest National Bank  
TYPE OF SECURITY: Letter of Credit  
AGREEMENT DATE: 10-Oct-2014

TOTAL ENG/INSP/LEGAL (CASH ACCOUNT): \$ 39,900.00  
TOTAL ADMINISTRATION (CASH ACCOUNT): \$ 5,000.00

PRIOR CONSTRUCTION RELEASED: \$ 756,360.87  
TOTAL CONSTRUCTION RELEASED TO DATE: \$ 876,309.28

BALANCE AFTER CURRENT RELEASE: \$ -

ESCROW TABULATION					CURRENT RELEASE	RELEASED TO DATE	AVAILABLE FOR RELEASE	RELEASE REQ # 11
					QUANTITY	TOTAL AMOUNT	QUANTITY	TOTAL AMOUNT
CONSTRUCTION ITEMS	UNITS	QUANTITY	UNIT PRICE	TOTAL AMOUNT	QUANTITY	TOTAL AMOUNT	QUANTITY	TOTAL AMOUNT
<b>I. EARTHWORK</b>								
1. Clearing & Grubbing	LS	1	\$ 40,331.00	\$ 40,331.00	\$ -	1.00 \$ 40,331.00	\$ -	
2. Strip Topsoil	CY	5,163	\$ 2.93	\$ 15,127.59	\$ -	5,163.00 \$ 15,127.59	\$ -	
3. Cut Fill & Compact	CY	7,954	\$ 3.22	\$ 25,611.88	\$ -	7,954.00 \$ 25,611.88	\$ -	
4. Grade	SY	6,150	\$ 0.23	\$ 1,414.50	\$ -	6,150.00 \$ 1,414.50	\$ -	
<b>II. EROSION CONTROL</b>								
<i>Erosion &amp; Sediment Controls</i>								
1. Construction Entrance	EA	1	\$ 3,392.00	\$ 3,392.00	\$ -	1.00 \$ 3,392.00	\$ -	
2. 18" Silt Fence	LF	620	\$ 1.56	\$ 967.20	\$ -	620.00 \$ 967.20	\$ -	
3. Super Silt Fence	LF	798	\$ 6.45	\$ 5,147.10	\$ -	798.00 \$ 5,147.10	\$ -	
4. Tree Protection Fence	LF	1,420	\$ 1.54	\$ 2,186.80	\$ -	1,420.00 \$ 2,186.80	\$ -	
5. Temporary Vegetation - Excess Fill Piles	SY	4,850	\$ 0.29	\$ 1,406.50	\$ -	4,850.00 \$ 1,406.50	\$ -	
6. Grade Swales #A,B,C,D,E,F	SY	1,230	\$ 0.55	\$ 676.50	\$ -	1,230.00 \$ 676.50	\$ -	
7. Swale Matting #A,B,C,D,E,F (North American Green S-150br)	SY	1,230	\$ 1.65	\$ 2,029.50	\$ -	1,230.00 \$ 2,029.50	\$ -	
8. Rock Filters	EA	2	\$ 132.00	\$ 264.00	\$ -	2.00 \$ 264.00	\$ -	
9. Permanent Rake & Vegetation (Lawn Area)	LS	1	\$ 4,000.00	\$ 4,000.00	\$ -	1.00 \$ 4,000.00	\$ -	
<i>Sediment Trap C</i>								
1. Strip Topsoil	CY	240	\$ 3.32	\$ 796.80	\$ -	240.00 \$ 796.80	\$ -	
2. Cut Fill & Compact	CY	771	\$ 3.68	\$ 2,837.28	\$ -	771.00 \$ 2,837.28	\$ -	
3. Grade	SY	1,072	\$ 0.28	\$ 300.16	\$ -	1,072.00 \$ 300.16	\$ -	
4. Core Cut & Fill Keyway	LF	250	\$ 10.08	\$ 2,520.00	\$ -	250.00 \$ 2,520.00	\$ -	
5. Respread Topsoil	CY	240	\$ 4.24	\$ 1,017.60	\$ -	240.00 \$ 1,017.60	\$ -	
6. Grade Spillway	SY	202	\$ 0.48	\$ 96.96	\$ -	202.00 \$ 96.96	\$ -	
7. Spillway Matting (North American Green C-125)	SY	202	\$ 6.00	\$ 1,212.00	\$ -	202.00 \$ 1,212.00	\$ -	
8. Permanent Rake & Vegetation (Meadow Mix)	SF	9,800	\$ 0.15	\$ 1,470.00	9,800.00 \$ 1,470.00	9,800.00 \$ 1,470.00	\$ -	
9. 15" CMP Temporary Riser	EA	1	\$ 1,554.00	\$ 1,554.00	\$ -	1.00 \$ 1,554.00	\$ -	
10. 18" RCP	LF	30	\$ 39.23	\$ 1,176.90	\$ -	30.00 \$ 1,176.90	\$ -	
11. Outlet Structure w/Wier Wall and Precast Footer with Trash Rack, #23	EA	1	\$ 3,081.00	\$ 3,081.00	\$ -	1.00 \$ 3,081.00	\$ -	





Gilmore & Associates, Inc.  
Engineering and Consulting Services

## ESCROW STATUS REPORT

### SUMMARY OF ESCROW ACCOUNT

RELEASE NO.: 10  
RELEASE DATE: 3-Feb-2021

PROJECT NAME: Maple Dr / Crystal Rd Townhouse Project  
PROJECT NO.: 2012-10074  
TOWNSHIP NO.: LDIS #639  
PROJECT OWNER: Crystal Road Enterprises, LLC

TOTAL CONSTRUCTION: \$ 796,644.80  
TOTAL CONSTRUCTION CONTINGENCY (10%): \$ 79,664.48  
TOTAL CONSTRUCTION ESCROW POSTED: \$ 876,309.28

ORIGINAL CONSTRUCTION AMOUNT: \$ 876,309.28

AMOUNT OF THIS RELEASE: \$ 119,948.41

MUNICIPALITY: Montgomery Township  
ESCROW AGENT: Univest National Bank  
TYPE OF SECURITY: Letter of Credit  
AGREEMENT DATE: 10-Oct-2014

TOTAL ENG/INSP/LEGAL (CASH ACCOUNT): \$ 39,900.00  
TOTAL ADMINISTRATION (CASH ACCOUNT): \$ 5,000.00

PRIOR CONSTRUCTION RELEASED: \$ 756,360.87  
TOTAL CONSTRUCTION RELEASED TO DATE: \$ 876,309.28

BALANCE AFTER CURRENT RELEASE: \$ -

MAINTENANCE BOND AMOUNT (15%): \$ 119,498.72

ESCROW TABULATION					CURRENT RELEASE	RELEASED TO DATE	AVAILABLE FOR RELEASE	RELEASE REQ # 11					
CONSTRUCTION ITEMS					UNITS	QUANTITY	UNIT PRICE	TOTAL AMOUNT	QUANTITY	TOTAL AMOUNT	QUANTITY	TOTAL AMOUNT	QUANTITY
12.	Antiseep Collars	EA	2	\$	1,306.00	\$	2,612.00		\$	2.00	\$	2,612.00	
13.	18" DW Endwalls, #24	EA	1	\$	1,500.00	\$	1,500.00		\$	1.00	\$	1,500.00	
14.	R-4 Rip Rap Dissipator	TON	8	\$	77.20	\$	617.60		\$	8.00	\$	617.60	
15.	Sediment Trap As-Built Plan	LS	1	\$	500.00	\$	500.00		\$	1.00	\$	500.00	
Rain Gardens #1,2,B1,C1													
1.	Strip Topsoil - Rain Garden #1,2,B1,C1	CY	450	\$	3.32	\$	1,494.00		\$	450.00	\$	1,494.00	
2.	Cut Fill & Compact - Rain Garden #1,2,B1,C1	CY	4,976	\$	3.68	\$	18,311.68		\$	4,976.00	\$	18,311.68	
3.	Grade - Rain Garden #1,2,B1,C1	SY	1,825	\$	0.26	\$	511.00		\$	1,825.00	\$	511.00	
4.	Respread Topsoil - Rain Garden #1,2,B1,C1	CY	450	\$	4.24	\$	1,908.00		\$	450.00	\$	1,908.00	
5.	Permanent Rake & Vegetation (Meadow Mix) - RG #1,2,B1,C1	SF	1,800	\$	0.15	\$	270.00	1,800.00	\$	1,800.00	\$	270.00	
6.	Rain Gardens # 1, 2, B1, B2 As-Built Plans	EA	4	\$	250.00	\$	1,000.00	4.00	\$	1,000.00	\$	1,000.00	
III. STORM SEWER													
1.	15" RCP	LF	76	\$	30.89	\$	2,347.64		\$	76.00	\$	2,347.64	
2.	18" RCP	LF	751	\$	30.13	\$	22,627.63		\$	751.00	\$	22,627.63	
3.	36" HDPE (Dual Runs) w/2a Mod 6" Under Pipe to 12" Over	LF	224	\$	110.00	\$	24,640.00		\$	224.00	\$	24,640.00	
4.	48" HDPE Pipe w/2a Mod 6" Under Pipe to 12" Over	LF	80	\$	88.91	\$	7,112.80		\$	80.00	\$	7,112.80	
5.	Type C Inlet (Average Depth 3.84') #5,8,9,11,16	EA	4	\$	1,705.00	\$	6,820.00		\$	4.00	\$	6,820.00	
6.	Type C Inlet Mod (Average Depth 4.13') 42"x48" #15	EA	1	\$	1,820.00	\$	1,820.00		\$	1.00	\$	1,820.00	
7.	Type M Inlet Mod w/Weir Wall (Average Depth 4.48') 42"x48" #12	EA	1	\$	2,075.00	\$	2,075.00		\$	1.00	\$	2,075.00	
8.	Type M Inlet (Average Depth 4.23') #1,2,3,4,6,14,17-17-2,17a,21	EA	11	\$	1,683.00	\$	18,513.00		\$	11.00	\$	18,513.00	
9.	Type M Inlet (Average Depth 4.33') #7,10	EA	2	\$	1,616.00	\$	3,236.00		\$	2.00	\$	3,236.00	
10.	Type C Inlet Mod 24"x72" (Average Depth 7.18') #18-1,18-2	EA	2	\$	3,029.00	\$	6,058.00		\$	2.00	\$	6,058.00	
11.	Type C Inlet Mod (Average Depth 7.38') 24"x12" #19	EA	1	\$	3,571.00	\$	3,571.00		\$	1.00	\$	3,571.00	
12.	18" DW Endwalls #13,22	EA	2	\$	1,500.00	\$	3,000.00		\$	2.00	\$	3,000.00	
13.	48" DW Endwalls #20	EA	1	\$	4,000.00	\$	4,000.00		\$	1.00	\$	4,000.00	
14.	R-4 Rip Rap Dissipator	TON	51	\$	55.43	\$	2,826.93		\$	51.00	\$	2,826.93	



Gilmore & Associates, Inc.  
Engineering and Consulting Services

## ESCROW STATUS REPORT

### SUMMARY OF ESCROW ACCOUNT

RELEASE NO.: 10  
RELEASE DATE: 3-Feb-2021

PROJECT NAME: Maple Dr / Crystal Rd Townhouse Project  
PROJECT NO.: 2012-10074  
TOWNSHIP NO.: LD/S #639  
PROJECT OWNER: Crystal Road Enterprises, LLC

TOTAL CONSTRUCTION: \$ 796,644.80  
TOTAL CONSTRUCTION CONTINGENCY (10%): \$ 79,664.48  
TOTAL CONSTRUCTION ESCROW POSTED: \$ 876,309.28

ORIGINAL CONSTRUCTION AMOUNT: \$ 876,309.28

AMOUNT OF THIS RELEASE: \$ 119,948.41

MUNICIPALITY: Montgomery Township  
ESCROW AGENT: Univest National Bank  
TYPE OF SECURITY: Letter of Credit  
AGREEMENT DATE: 10-Oct-2014

TOTAL ENG/INSP/LEGAL (CASH ACCOUNT): \$ 39,900.00  
TOTAL ADMINISTRATION (CASH ACCOUNT): \$ 5,000.00

PRIOR CONSTRUCTION RELEASED: \$ 756,360.87  
TOTAL CONSTRUCTION RELEASED TO DATE: \$ 876,309.28

BALANCE AFTER CURRENT RELEASE: \$

MAINTENANCE BOND AMOUNT (15%): \$ 119,496.72

ESCROW TABULATION					CURRENT RELEASE	RELEASED TO DATE	AVAILABLE FOR RELEASE	RELEASE REQ # 11
CONSTRUCTION ITEMS	UNITS	QUANTITY	UNIT PRICE	TOTAL AMOUNT	QUANTITY	TOTAL AMOUNT	QUANTITY	TOTAL AMOUNT
<b>IV. DETENTION FACILITY #B2</b>								
1. Infiltration Bed #B2 w/36" Storm Tank	LS	1	\$ 90,000.00	\$ 90,000.00		\$ -	1.00	\$ 90,000.00
2. As-Built Plan	EA	1	\$ 500.00	\$ 500.00	1.00	\$ 500.00	1.00	\$ 500.00
<b>V. ROADWAY SITE</b>								
1. Excavate & Backfill, Curb - Roadway Site	LF	1,721	\$ 3.19	\$ 5,489.99		\$ -	1,721.00	\$ 5,489.99
2. 18" Belgian Block Curb - Roadway Site	LF	1,721	\$ 14.00	\$ 24,094.00		\$ -	1,721.00	\$ 24,094.00
3. Fine Grade Paving - Roadway Site	SY	3,790	\$ 1.12	\$ 4,244.80		\$ -	3,790.00	\$ 4,244.80
4. 3" 2a Modified - Roadway Site	SY	3,790	\$ 3.01	\$ 11,407.90		\$ -	3,790.00	\$ 11,407.90
5. 5" BCBC Paving - Roadway Site	SY	3,790	\$ 19.00	\$ 72,010.00		\$ -	3,790.00	\$ 72,010.00
6. 1.5" Wearing Paving	SY	3,790	\$ 7.12	\$ 26,984.80	3,790.00	\$ 26,984.80	3,790.00	\$ 26,984.80
7. Street Sweeping	SY	3,790	\$ 0.12	\$ 454.80	3,790.00	\$ 454.80	3,790.00	\$ 454.80
8. Tack Coat	SY	3,790	\$ 0.19	\$ 720.10	3,790.00	\$ 720.10	3,790.00	\$ 720.10
9. Curb & Joint Seal	LF	1,721	\$ 0.63	\$ 1,084.23	1,721.00	\$ 1,084.23	1,721.00	\$ 1,084.23
10. Striping	LS	1	\$ 500.00	\$ 500.00	1.00	\$ 500.00	1.00	\$ 500.00
<b>Roadway - Emergency Access</b>								
11. Excavate for Widening	SY	93	\$ 8.34	\$ 775.62		\$ -	93.00	\$ 775.62
12. Permanent Paving Repairs (5" BCBC, 1.5" Wearing)	SY	93	\$ 99.00	\$ 9,207.00		\$ -	93.00	\$ 9,207.00
<b>Emergency Access</b>								
13. Fine Grade & Compact	SY	983	\$ 1.31	\$ 1,287.73		\$ -	983.00	\$ 1,287.73
14. Pave (8" 3A Modified Stone, 5" BCBC Asphalt Paving)	SF	8,838	\$ 2.76	\$ 24,392.88		\$ -	8,838.00	\$ 24,392.88
15. Posts (2), Chain (1), Knox Box (1), Pad Lock (1)	EA	2	\$ 550.00	\$ 1,100.00		\$ -	2.00	\$ 1,100.00
<b>VI. ONSITE SIDEWALKS</b>								
1. Excavate and Place 4" 2a Modified for Sidewalks and Driveway Aprons	SF	8,610	\$ 1.56	\$ 13,431.60		\$ -	8,610.00	\$ 13,431.60
2. Sidewalks (4")	SF	2,690	\$ 5.72	\$ 15,386.80		\$ -	2,690.00	\$ 15,386.80
3. Driveway Aprons (6" and wire)	SF	5,920	\$ 10.00	\$ 59,200.00		\$ -	5,920.00	\$ 59,200.00
4. Handicap Ramps (incl. DWS)	EA	8	\$ 500.00	\$ 4,000.00		\$ -	8.00	\$ 4,000.00



Gilmore & Associates, Inc.  
Engineering and Consulting Services

## ESCROW STATUS REPORT

### SUMMARY OF ESCROW ACCOUNT

RELEASE NO.: 10  
RELEASE DATE: 3-Feb-2021

PROJECT NAME: Maple Dr / Crystal Rd Townhouse Project  
PROJECT NO.: 2012-10074  
TOWNSHIP NO.: LD/S #639  
PROJECT OWNER: Crystal Road Enterprises, LLC

TOTAL CONSTRUCTION: \$ 798,644.80  
TOTAL CONSTRUCTION CONTINGENCY (10%): \$ 79,864.48  
TOTAL CONSTRUCTION ESCROW POSTED: \$ 878,509.28

ORIGINAL CONSTRUCTION AMOUNT: \$ 878,309.28

AMOUNT OF THIS RELEASE: \$ 119,948.41

MUNICIPALITY: Montgomery Township  
ESCROW AGENT: Univest National Bank  
TYPE OF SECURITY: Letter of Credit  
AGREEMENT DATE: 10-Oct-2014

TOTAL ENG/INSP/LEGAL (CASH ACCOUNT): \$ 39,900.00  
TOTAL ADMINISTRATION (CASH ACCOUNT): \$ 5,000.00

PRIOR CONSTRUCTION RELEASED: \$ 756,360.87  
TOTAL CONSTRUCTION RELEASED TO DATE: \$ 876,309.28

BALANCE AFTER CURRENT RELEASE: \$

MAINTENANCE BOND AMOUNT (15%): \$ 119,496.72

ESCROW TABULATION					CURRENT RELEASE		RELEASED TO DATE		AVAILABLE FOR RELEASE		RELEASE REQ # 11		
CONSTRUCTION ITEMS					UNITS	QUANTITY	UNIT PRICE	TOTAL AMOUNT	QUANTITY	TOTAL AMOUNT	QUANTITY	TOTAL AMOUNT	QUANTITY
VII. <u>RAIN GARDEN CONVERSION</u>													
1.	Excavate Rain Garden Areas for Compost and Underdrain #1,2,B1,C1	EA	4	\$ 13,357.00	\$ 53,428.00		\$ -	4.00	\$ 53,428.00	\$ -			
2.	As-Built Plan	EA	4	\$ 250.00	\$ 1,000.00	4.00	\$ 1,000.00	4.00	\$ 1,000.00	\$ -			
VIII. <u>STREET LIGHTS</u>													
1.	Street Lights	EA	4	\$ 3,000.00	\$ 12,000.00		\$ -	4.00	\$ 12,000.00	\$ -			
IX. <u>LANDSCAPING</u>													
<u>Shade Trees</u>													
1.	Acer rubrum - Red Maple (3" Cal.)	EA	27	\$ 350.00	\$ 9,450.00		\$ -	27.00	\$ 9,450.00	\$ -			
2.	Acer saccharum - Sugar Maple (3" Cal.)	EA	16	\$ 350.00	\$ 5,600.00		\$ -	16.00	\$ 5,600.00	\$ -			
3.	Gleditsia triacanthos var. inermis - Thornless Honeylocust (3" Cal.)	EA	16	\$ 350.00	\$ 5,600.00		\$ -	16.00	\$ 5,600.00	\$ -			
4.	Liquidambar styraciflua - Sweetgum (3" Cal.)	EA	21	\$ 350.00	\$ 7,350.00		\$ -	21.00	\$ 7,350.00	\$ -			
5.	Liriodendron tulipifera - Tulip Poplar (3" Cal.)	EA	15	\$ 350.00	\$ 5,250.00		\$ -	15.00	\$ 5,250.00	\$ -			
6.	Platanus x acerifolia - London Plain Tree (3" Cal.)	EA	21	\$ 350.00	\$ 7,350.00		\$ -	21.00	\$ 7,350.00	\$ -			
7.	Quercus palustris - Pin Oak (3" Cal.)	EA	24	\$ 350.00	\$ 8,400.00		\$ -	24.00	\$ 8,400.00	\$ -			
<u>Evergreen Trees</u>													
8.	Pinus strobus - Eastern White Pine (8' Ht.)	EA	11	\$ 250.00	\$ 2,750.00		\$ -	11.00	\$ 2,750.00	\$ -			
9.	Pseudotsuga menziesii - Douglas Fir (8' Ht.)	EA	14	\$ 250.00	\$ 3,500.00		\$ -	14.00	\$ 3,500.00	\$ -			
10.	Picea abies - Norway Spruce (8' Ht.)	EA	14	\$ 250.00	\$ 3,500.00		\$ -	14.00	\$ 3,500.00	\$ -			
<u>Ornamental/ Flowering Trees</u>													
11.	Amelanchier canadensis - Shadblow (8' Ht.)	EA	17	\$ 325.00	\$ 5,525.00		\$ -	17.00	\$ 5,525.00	\$ -			
12.	Magnolia virginiana - Sweetbay Magnolia (8' Ht.)	EA	15	\$ 325.00	\$ 4,875.00		\$ -	15.00	\$ 4,875.00	\$ -			
<u>Deciduous Shrubs</u>													
13.	Aronia arbutifolia - Red Chokeberry (30" Ht.)	EA	19	\$ 65.00	\$ 1,235.00		\$ -	19.00	\$ 1,235.00	\$ -			
14.	Clethra alnifolia - Summersweet (30" Ht.)	EA	19	\$ 65.00	\$ 1,235.00		\$ -	19.00	\$ 1,235.00	\$ -			
15.	Cornus stolonifera - Red Twig Dogwood (30" Ht.)	EA	23	\$ 65.00	\$ 1,495.00		\$ -	23.00	\$ 1,495.00	\$ -			
16.	Forsythia x intermedia - Forsythia (30" Ht.)	EA	15	\$ 65.00	\$ 975.00		\$ -	15.00	\$ 975.00	\$ -			
17.	Ilex verticillata - Winterberry Holly (30" Ht.)	EA	9	\$ 65.00	\$ 585.00		\$ -	9.00	\$ 585.00	\$ -			
18.	Itea virginia 'Henry's Garnet' - Itea (30" Ht.)	EA	19	\$ 65.00	\$ 1,235.00		\$ -	19.00	\$ 1,235.00	\$ -			
19.	Viburnum dentatum - Arrowwood Viburnum (30" Ht.)	EA	8	\$ 65.00	\$ 520.00		\$ -	8.00	\$ 520.00	\$ -			



Gilmore & Associates, Inc.  
Engineering and Consulting Services

## ESCROW STATUS REPORT

### SUMMARY OF ESCROW ACCOUNT

RELEASE NO.: 10  
RELEASE DATE: 3-Feb-2021

PROJECT NAME: Maple Dr / Crystal Rd Townhouse Project  
PROJECT NO.: 2012-10074  
TOWNSHIP NO.: LD/S #639  
PROJECT OWNER: Crystal Road Enterprises, LLC  
MUNICIPALITY: Montgomery Township  
ESCROW AGENT: Univest National Bank  
TYPE OF SECURITY: Letter of Credit  
AGREEMENT DATE: 10-Oct-2014

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BALANCE AFTER CURRENT RELEASE: \$ -

ESCROW TABULATION					CURRENT RELEASE		RELEASED TO DATE		AVAILABLE FOR RELEASE		RELEASE REQ # 11
CONSTRUCTION ITEMS		UNITS	QUANTITY	UNIT PRICE	TOTAL AMOUNT	QUANTITY	TOTAL AMOUNT	QUANTITY	AMOUNT	TOTAL AMOUNT	QUANTITY
X.	OTHER										
1.	Construction Stakeout	LS	1	\$ 25,225.00	\$ 25,225.00		\$ -	1.00	\$ 25,225.00	\$ -	
2.	Pins and Monuments	EA	1	\$ 1,800.00	\$ 1,800.00	1.00	\$ 1,800.00	1.00	\$ 1,800.00	\$ -	
3.	As-Built (Final Site)	EA	1	\$ 4,500.00	\$ 4,500.00	1.00	\$ 4,500.00	1.00	\$ 4,500.00	\$ -	
XI.	CONTINGENCY										
1.	10% Contingency	LS	1	\$ 79,664.48	\$ 79,664.48	1.00	\$ 79,664.48	1.00	\$ 79,664.48	\$ -	
(Released upon certification of completion and receipt of Maintenance Bond)											

MONTGOMERY TOWNSHIP BOARD OF SUPERVISORS

BOARD ACTION SUMMARY

Item # 7b.

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SUBJECT: Consider Construction Escrow Release 13 – Firefox Phase 1 -  
LDS 630  
MEETING DATE: February 8, 2021  
BOARD LIAISON: Tanya C. Bamford, Chair  
INITIATED BY: Bruce Shoupe, Director of Planning and Zoning

---

BACKGROUND:

Attached is a construction escrow release requested by Crystal Road Enterprise, LLC for Firefox Phase 1 as recommended by the Township Engineer.

The original amount of the escrow for Phase 1 was \$2,627,817.72, held by Univest Bank. This release for is in the amount of \$69,944.31. The new balance would be \$358,344.84.

ALTERNATIVES/OPTIONS: Approve or not approve the construction escrow release.

RECOMMENDATION: That this construction escrow be released.

MOTION/RESOLUTION:

MOTION to authorize a construction escrow release in the amount of \$69,944.31 as recommended by the Township Engineer for the Crystal Road Enterprise, LLC.

MOTION \_\_\_\_\_ SECOND \_\_\_\_\_



**GILMORE & ASSOCIATES, INC.**  
ENGINEERING & CONSULTING SERVICES

**VIA EMAIL**

February 2, 2021

File No. 2012-09009

Ms. Carolyn McCreary, Township Manager  
Montgomery Township  
1001 Stump Road  
Montgomeryville, PA 18936

Reference: Firefox Phase 1 (Southern Village) – LD/S #630  
Financial Security Release 13

Dear Carolyn:

We have received and reviewed the Request for Escrow Release for the above-referenced project. This letter is to certify that the improvements attached to this letter in the amount of \$69,944.31 have been completed. Please find enclosed a copy of our escrow calculations and the application for release of funds for your use.

Note the remainder of the requested amount was withheld due to incomplete punch list items and until the maintenance security is provided to the Township.

Please be advised that these improvements will be subject to a final inspection prior to dedication and again at the end of the maintenance period. Any deficiencies will be required to be corrected by the developer.

Should you have any further questions or require any additional information, please do not hesitate to contact our office.

Sincerely,

James P. Dougherty, P.E.  
Senior Project Manager  
Gilmore & Associates, Inc.

JPD/sl

Enclosures: Release of Escrow Form (2/2/21), Escrow Status Report (2/2/21), Developer's Request (1/22/21)

cc: Bruce S. Shoupe, Director of Planning and Zoning  
Brian C. Grant - Select Properties  
Valerie Liggett, R.L.A., Senior Landscape Architect – Gilmore & Associates, Inc.  
Damon A. Drummond, P.E., PTOE, Senior Transportation Engineer – Gilmore & Associates, Inc.

65 East Butler Avenue | Suite 100 | New Britain, PA 18901 | Phone: 215-345-4330 | Fax: 215-345-8606

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Gilmore & Associates, Inc.  
Building on a Foundation of Excellence  
[www.gilmore-assoc.com](http://www.gilmore-assoc.com)

**RELEASE OF ESCROW FORM**

James P. Dougherty, P.E.  
Senior Project Manager  
Gilmore & Associates, Inc.  
65 East Butler Avenue, Suite 100  
New Britain, PA 18901  
215-345-4330

Date: 01/22/2021

Development: Firefox - Ph. 1 (Southern) - LDS-630

G&A Project #: 2012-09009

Release #: 13

Dear Mr. Dougherty:

This is an escrow release request in the amount of \$189,396.64. Enclosed is a copy of our escrow spreadsheet with the quantities noted.

**ESCROW RELEASE REQUESTS ARE LIMITED TO ONE PER MONTH.**

Ms. Carolyn McCreary  
Township Manager  
Montgomery Township  
1001 Stump Road  
Montgomeryville, PA 18936

Date: 02/02/2021

Dear Ms. McCreary:

We have reviewed the developer's request for an escrow release. We therefore, recommend that \$69,944.31 be released. These improvements will be subject to a final observation prior to dedication and again at the end of the maintenance period. Any deficiencies will be required to be corrected by the developer.

James P. Dougherty 2/2/2021  
James P. Dougherty, P.E., Senior Project Manager, Gilmore & Associates, Inc.

Resolution # \_\_\_\_\_

WHEREAS, a request for release of escrow was received from Crystal Road Enterprises, LLC for Firefox - Ph. 1 (Southern) - LDS-630, in the amount of \$189,396.64, on the representation that work set forth in the Land Development Agreement to the extent has been completed and; WHEREAS, said request has been reviewed by the Township Engineer who recommends release of \$69,944.31; NOW, THEREFORE, BE IT RESOLVED by the Board of Supervisors of Montgomery Township that we do hereby authorize release of \$69,944.31; in accordance with the developer's request, and the officers of the Township are authorized to take the necessary action to obtain release of said sum.  
BE IT FURTHER RESOLVED that Township records indicate that escrow has been deposited via Loan with Montgomery Township in total sum of \$2,627,817.72 pursuant to a signed Land Development Agreement and that \$2,199,528.57 has previously been released from escrow. Therefore, the action of the Board releasing said sum leaves a new balance of \$358,344.84 in escrow.

MOTION BY: \_\_\_\_\_

VOTE: \_\_\_\_\_

SECOND BY: \_\_\_\_\_

DATED: \_\_\_\_\_

RELEASED BY: \_\_\_\_\_

Department Director





# ESCROW RELEASE NO. 13

DATE PREPARED: 2-Feb-2021

PROJECT NAME:	Firefox - Ph. 1 (Southern)	TOTAL ENGINEERING/LEGAL (CASH ESCROW):	\$ 45,000.00	MONTGOMERY TOWNSHIP
DEVELOPER:	Crystal Road Enterprises, LLC	TOTAL ADMINISTRATION (CASH ESCROW):	\$ 5,000.00	TOWNSHIP NO. LDS-630
ESCROW AGENT:	Univest			G&A PROJECT NO.: 2012-09009
TYPE OF SECURITY:	Loan	MAINTENANCE BOND AMOUNT (15%):	\$ 358,338.78	AGREEMENT DATE: 10-Oct-2014

SUMMARY OF IMPROVEMENT ESCROW ACCOUNT	TOTAL COST	RELEASE REQUESTS		TOTAL	BALANCE
		CURRENT	PRIOR		
CONSTRUCTION	\$ 2,354,842.45	\$ 63,585.74	\$ 2,182,387.19	\$ 2,245,972.93	\$ 108,869.52
ANNUAL 10% CONSTRUCTION COST INCREASE (Balance as of 3/31/19 - \$342,827.51)	\$ 34,282.75	\$ 6,358.57	\$ 17,141.38	\$ 23,499.95	\$ 10,782.80
CONTINGENCY (10%)	\$ 238,892.52	\$ -	\$ -	\$ -	\$ 238,892.52
<b>TOTAL</b>	<b>\$2,627,817.72</b>	<b>\$ 69,944.31</b>	<b>\$ 2,199,528.57</b>	<b>\$ 2,269,472.88</b>	<b>\$ 358,344.84</b>

CONSTRUCTION ITEMS	UNIT	QUANTITY	UNIT COST	TOTAL COST	CURRENT REQUEST		PRIOR REQUESTS		TOTAL REQUESTS (Incl. current release)		AVAILABLE FOR RELEASE (Incl. current release)	
					QTY	COST	QTY	COST	QTY	COST	QTY	COST
<b>PHASE I (SOUTHERN VILLAGE)</b>												
<b>1.A. MOBILIZATION</b>	LS	1	\$ 73,227.00	\$ 73,227.00			1.00	73,227.00	1.00	73,227.00		
<b>1.B. EARTHWORK</b>												
1. Clearing & Grubbing	LS	1	\$ 52,482.00	\$ 52,482.00			1.00	52,482.00	1.00	52,482.00		
2. Strip Topsoil	CY	11,338	\$ 2.47	\$ 28,004.86			11,338.00	\$ 28,004.86	11,338.00	\$ 28,004.86		
3. Cut Fill & Compact	CY	16,335	\$ 2.50	\$ 40,837.50			16,335.00	\$ 40,837.50	16,335.00	\$ 40,837.50		
4. Grade	SY	35,597	\$ 0.28	\$ 9,967.16			35,597.00	\$ 9,967.16	35,597.00	\$ 9,967.16		
<b>1.C. RETAINING WALL</b>												
1. Excavate Retaining Wall	LF	321	\$ 6.40	\$ 2,054.40			321.00	\$ 2,054.40	321.00	\$ 2,054.40		
2. Retaining Wall	SF	1,250	\$ 40.00	\$ 50,000.00			1,250.00	\$ 50,000.00	1,250.00	\$ 50,000.00		
3. Sleeves for Guide Rail behind Wall #1	LS	1	\$ 1,785.00	\$ 1,785.00			1.00	\$ 1,785.00	1.00	\$ 1,785.00		
<b>1.D. EROSION CONTROL</b>												
<b>Erosion &amp; Sediment Controls</b>												
1. Construction Entrance	EA	1	\$ 3,392.00	\$ 3,392.00			1.00	\$ 3,392.00	1.00	\$ 3,392.00		
2. 12" Weighted Sediment Tube	LF	31	\$ 10.35	\$ 320.85			31.00	\$ 320.85	31.00	\$ 320.85		
3. 12" Filter Sock	LF	138	\$ 3.81	\$ 525.78			138.00	\$ 525.78	138.00	\$ 525.78		
4. 18" Silt Fence - Stockpiles	LF	350	\$ 1.56	\$ 546.00			350.00	\$ 546.00	350.00	\$ 546.00		
5. 30" Silt Fence	LF	646	\$ 1.91	\$ 1,233.86			646.00	\$ 1,233.86	646.00	\$ 1,233.86		
6. Super Silt Fence	LF	687	\$ 6.45	\$ 4,431.15			687.00	\$ 4,431.15	687.00	\$ 4,431.15		
7. Super Silt Fence w/ Tree Protection Fence	LF	3,000	\$ 6.45	\$ 19,350.00			3,000.00	\$ 19,350.00	3,000.00	\$ 19,350.00		
8. Orange Construction Fence	LF	1,520	\$ 1.54	\$ 2,340.80			1,520.00	\$ 2,340.80	1,520.00	\$ 2,340.80		
9. Tree Protection Fence	LF	3,753	\$ 1.54	\$ 5,779.62			3,753.00	\$ 5,779.62	3,753.00	\$ 5,779.62		
10. Temporary Vegetation - Excess Fill Piles	SY	19,360	\$ 0.29	\$ 5,614.40			19,360.00	\$ 5,614.40	19,360.00	\$ 5,614.40		
11. Slope Matting (North American Green S-75)	SY	3,059	\$ 1.50	\$ 4,588.50			3,059.00	\$ 4,588.50	3,059.00	\$ 4,588.50		
12. Grade Swales #A,A1 5,B12 2,B6,B13	SY	2,471	\$ 0.55	\$ 1,359.05			2,471.00	\$ 1,359.05	2,471.00	\$ 1,359.05		
13. Swale Matting (North American Green S-75)	SY	2,471	\$ 1.50	\$ 3,706.50			2,471.00	\$ 3,706.50	2,471.00	\$ 3,706.50		
14. Rock Filters	EA	6	\$ 132.00	\$ 792.00			6.00	\$ 792.00	6.00	\$ 792.00		
15. Inlet Protection Silt Sack	EA	29	\$ 134.00	\$ 3,886.00			29.00	\$ 3,886.00	29.00	\$ 3,886.00		
16. Pumped Water Filter Bag, Pump, Clean Water Pump Bypass, Sandbag Cofferdam	LS	1	\$ 12,000.00	\$ 12,000.00			1.00	\$ 12,000.00	1.00	\$ 12,000.00		
<b>Sediment Basin B</b>												
20. Strip Topsoil	CY	1,058	\$ 2.47	\$ 2,613.26			1,058.00	\$ 2,613.26	1,058.00	\$ 2,613.26		
21. Cut Fill & Compact	CY	3,683	\$ 2.50	\$ 9,207.50			3,683.00	\$ 9,207.50	3,683.00	\$ 9,207.50		
22. Grade	CY	4,737	\$ 0.28	\$ 1,326.36			4,737.00	\$ 1,326.36	4,737.00	\$ 1,326.36		
23. Core Cut & Fill Keyway	LF	275	\$ 10.08	\$ 2,772.00			275.00	\$ 2,772.00	275.00	\$ 2,772.00		
24. Respread Topsoil	CY	1,058	\$ 2.97	\$ 3,142.26			1,058.00	\$ 3,142.26	1,058.00	\$ 3,142.26		
25. Grade Spillway	SY	132	\$ 0.48	\$ 63.36			132.00	\$ 63.36	132.00	\$ 63.36		
26. Spillway Matting (North American Green P-300)	SY	132	\$ 5.66	\$ 747.12			132.00	\$ 747.12	132.00	\$ 747.12		
27. Permanent Rake & Vegetation	SF	42,675	\$ 0.29	\$ 12,375.75			42,675.00	\$ 12,375.75	42,675.00	\$ 12,375.75		
28. Super Silt Fence Baffle Wall, 3.05' hgt.	LF	255	\$ 6.45	\$ 1,644.75			255.00	\$ 1,644.75	255.00	\$ 1,644.75		



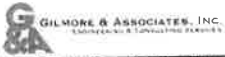
**ESCROW RELEASE NO. 13**  
DATE PREPARED: 2-Feb-2021

PROJECT NAME: Firefox - Ph. 1 (Southern)	TOTAL ENGINEERING (CASH ESCROW) \$ 45,000.00	MONTGOMERY TOWNSHIP
DEVELOPER: Crystal Road Enterprises, LLC	TOTAL ADMINISTRATION (CASH ESCROW) \$ 5,000.00	TOWNSHIP NO.: LD9-630
ESCROW AGENT: Unvest		G&A PROJECT NO.: 2012-09009
TYPE OF SECURITY: Loan	MAINTENANCE BOND AMOUNT (15%): \$ 358,338.78	AGREEMENT DATE: 10-Oct-2014

SUMMARY OF IMPROVEMENT ESCROW ACCOUNT	TOTAL COST	RELEASE REQUESTS			BALANCE
		CURRENT	PRIOR	TOTAL	
CONSTRUCTION	\$ 2,354,642.45	\$ 63,585.74	\$ 2,182,387.19	\$ 2,245,972.93	\$ 108,669.52
ANNUAL 10% CONSTRUCTION COST INCREASE (Balance as of 3/31/19 - \$342,827.51)	\$ 34,282.75	\$ 6,358.57	\$ 17,141.38	\$ 23,499.95	\$ 10,782.80
CONTINGENCY (10%)	\$ 238,892.52	\$ -	\$ -	\$ -	\$ 238,892.52
<b>TOTAL</b>	<b>\$2,627,817.72</b>	<b>\$ 69,944.31</b>	<b>\$ 2,199,528.57</b>	<b>\$ 2,269,472.88</b>	<b>\$ 358,344.84</b>

CONSTRUCTION ITEMS	UNIT	QUANTITY	UNIT COST	TOTAL COST	CURRENT REQUEST		PRIOR REQUESTS		TOTAL REQUESTS (incl. current release)		AVAILABLE FOR RELEASE (incl. current release)	
					QTY	COST	QTY	COST	QTY	COST	QTY	COST
29. 24" x 38" Elliptical RCP (Dual Runs)	LF	88	\$ 143.00	\$ 12,584.00		\$ -	88.00	\$ 12,584.00	88.00	\$ 12,584.00	\$ -	\$ -
30. Outlet Structure (#B3.3) w/Wingwalls and Trash Rack	EA	1	\$ 10,505.00	\$ 10,505.00		\$ -	1.00	\$ 10,505.00	1.00	\$ 10,505.00	\$ -	\$ -
31. 30" x 120" Modified Type C Inlets (#B02, B03)	EA	2	\$ 5,087.00	\$ 10,174.00		\$ -	2.00	\$ 10,174.00	2.00	\$ 10,174.00	\$ -	\$ -
32. Antiseep Collars	EA	2	\$ 1,809.00	\$ 3,618.00		\$ -	2.00	\$ 3,618.00	2.00	\$ 3,618.00	\$ -	\$ -
33. 24" x 38" Elliptical Endwall (#B1) w/Concrete Apron	EA	1	\$ 11,715.00	\$ 11,715.00		\$ -	1.00	\$ 11,715.00	1.00	\$ 11,715.00	\$ -	\$ -
34. 36" CMP Temporary Riser	EA	1	\$ 1,900.00	\$ 1,900.00		\$ -	1.00	\$ 1,900.00	1.00	\$ 1,900.00	\$ -	\$ -
35. R-5 Rip Rap Dissipator	TON	80	\$ 54.00	\$ 4,320.00		\$ -	80.00	\$ 4,320.00	80.00	\$ 4,320.00	\$ -	\$ -
<b>1.E. STORM SEWER</b>												
1. 18" RCP	LF	762	\$ 35.00	\$ 26,670.00		\$ -	762.00	\$ 26,670.00	762.00	\$ 26,670.00	\$ -	\$ -
2. 24" RCP	LF	410	\$ 45.00	\$ 18,450.00		\$ -	410.00	\$ 18,450.00	410.00	\$ 18,450.00	\$ -	\$ -
3. 36" RCP	LF	112	\$ 80.00	\$ 8,960.00		\$ -	112.00	\$ 8,960.00	112.00	\$ 8,960.00	\$ -	\$ -
4. 34" x 53" Elliptical RCP	LF	73	\$ 162.00	\$ 11,826.00		\$ -	73.00	\$ 11,826.00	73.00	\$ 11,826.00	\$ -	\$ -
5. Type C Inlet (#A01.3, A01.4, A03, A04, A05, A06, B02.1, B03.1)	EA	26	\$ 2,700.00	\$ 70,200.00		\$ -	26.00	\$ 70,200.00	26.00	\$ 70,200.00	\$ -	\$ -
6. Type C Inlet Mod. 42"x48", (#B03.4, B04)	EA	2	\$ 3,400.00	\$ 6,800.00		\$ -	2.00	\$ 6,800.00	2.00	\$ 6,800.00	\$ -	\$ -
7. Type C Inlet Mod 8' x 8' (Outlet Structure #A02)	EA	1	\$ 12,608.00	\$ 12,608.00		\$ -	1.00	\$ 12,608.00	1.00	\$ 12,608.00	\$ -	\$ -
8. 18" DW Endwalls (#A01.2, A01.5)	EA	2	\$ 1,200.00	\$ 2,400.00		\$ -	2.00	\$ 2,400.00	2.00	\$ 2,400.00	\$ -	\$ -
9. 36" DW Endwalls (#B10)	EA	1	\$ 1,850.00	\$ 1,850.00		\$ -	1.00	\$ 1,850.00	1.00	\$ 1,850.00	\$ -	\$ -
10. R-5 Rip Rap Dissipator	TON	191	\$ 54.00	\$ 10,314.00		\$ -	191.00	\$ 10,314.00	191.00	\$ 10,314.00	\$ -	\$ -
<b>1.F. DETENTION FACILITIES #A, B1, B2</b>												
1. Facility A, Systems #1 and 2, w/ Structure #A7, w/ #57 Stone to Springline of Pipe and On-site Backfill (No Fabric)	LS	1	\$ 48,161.00	\$ 48,161.00		\$ -	1.00	\$ 48,161.00	1.00	\$ 48,161.00	\$ -	\$ -
2. Facility B1, Systems #1,2 and 3, w/ Structures #B5, B6, and B7, w/ #57 Stone to Springline of Pipe and On-Site Backfill (No Fabric)	LS	1	\$ 117,195.00	\$ 117,195.00		\$ -	1.00	\$ 117,195.00	1.00	\$ 117,195.00	\$ -	\$ -
3. Facility B2, Systems #1 through 8, w/ Structures #B10.1, B11, B12, B12.1, B12.2, B14, B15, and B16, w/ #57 Stone to Springline of Pipe and On-Site Backfill (No Fabric)	LS	1	\$ 313,500.00	\$ 313,500.00		\$ -	1.00	\$ 313,500.00	1.00	\$ 313,500.00	\$ -	\$ -
<b>1.G. ROADWAY (interior)</b>												
1. Excavate & Backfill Curb	LF	6,117	\$ 3.19	\$ 19,513.23		\$ -	6,117.00	\$ 19,513.23	6,117.00	\$ 19,513.23	\$ -	\$ -
2. Belgian Block Curb	LF	6,117	\$ 14.00	\$ 85,638.00		\$ -	6,117.00	\$ 85,638.00	6,117.00	\$ 85,638.00	\$ -	\$ -
3. Fine Grade and Compact Subgrade	SY	9,489	\$ 1.12	\$ 10,627.68		\$ -	9,489.00	\$ 10,627.68	9,489.00	\$ 10,627.68	\$ -	\$ -
4. 3" 2a Modified	SY	9,489	\$ 3.01	\$ 28,561.89		\$ -	9,489.00	\$ 28,561.89	9,489.00	\$ 28,561.89	\$ -	\$ -
5. 5" (25MM) Base Course	SY	9,489	\$ 19.00	\$ 180,291.00		\$ -	9,489.00	\$ 180,291.00	9,489.00	\$ 180,291.00	\$ -	\$ -
6. 1.5" (9.5MM) Wearing Paving (Note 5)	SY	6,204	\$ 7.12	\$ 44,172.48		\$ -		\$ -		\$ -	6,204.00	\$ 44,172.48
7. Speed Bump	LS	1	\$ 1,200.00	\$ 1,200.00	1.00	\$ 1,200.00		\$ -	1.00	\$ 1,200.00	\$ -	\$ -
8. Street Sweeping (Note 5)	SY	6,204	\$ 0.12	\$ 744.48	6,204.00	\$ 744.48		\$ -	6,204.00	\$ 744.48	\$ -	\$ -
9. Tack Coat (Note 5)	SY	6,204	\$ 0.19	\$ 1,178.76	6,204.00	\$ 1,178.76		\$ -	6,204.00	\$ 1,178.76	\$ -	\$ -
10. Curb & Joint Seal (Note 5)	LF	3,883	\$ 0.63	\$ 2,446.29	1,650.00	\$ 1,039.50		\$ -	1,650.00	\$ 1,039.50	2,233.00	\$ 1,406.79
11. Line Painting	LS	1	\$ 1,750.00	\$ 1,750.00		\$ -		\$ -		\$ -	1.00	\$ 1,750.00
12. Site Signage	LS	1	\$ 2,307.00	\$ 2,307.00		\$ -	0.50	\$ 1,153.50	0.50	\$ 1,153.50	0.50	\$ 1,153.50



# ESCROW RELEASE NO. 13

DATE PREPARED: 2-Feb-2021

PROJECT NAME: Firefox - Ph. 1 (Southern)		TOTAL ENGINEERING/LEGAL (CASH ESCROW) \$	45,000.00	MONTGOMERY TOWNSHIP	
DEVELOPER: Crystal Road Enterprises, LLC		TOTAL ADMINISTRATION (CASH ESCROW) \$	5,000.00	TOWNSHIP NO.: LDS-630	
ESCROW AGENT: Univest				G&A PROJECT NO.: 2012-09009	
TYPE OF SECURITY: Loan		MAINTENANCE BOND AMOUNT (15%) \$		358,338.78	
AGREEMENT DATE:				10-Oct-2014	
SUMMARY OF IMPROVEMENT ESCROW ACCOUNT					
		TOTAL COST	RELEASE REQUESTS		
			CURRENT	PRIOR	TOTAL
					BALANCE
CONSTRUCTION		\$ 2,354,642.45	\$ 63,565.74	\$ 2,182,387.19	\$ 2,245,972.93
ANNUAL 10% CONSTRUCTION COST INCREASE (Balance as of 3/31/19 - \$342,827.51)		\$ 34,282.75	\$ 6,356.57	\$ 17,141.38	\$ 23,499.95
CONTINGENCY (10%)		\$ 238,892.52	\$ -	\$ -	\$ -
TOTAL		\$2,627,817.72	\$ 69,944.31	\$ 2,199,528.57	\$ 2,269,472.88
					\$ 358,344.84

CONSTRUCTION ITEMS	UNIT	QUANTITY	UNIT COST	TOTAL COST	CURRENT REQUEST		PRIOR REQUESTS		TOTAL REQUESTS (Incl. current release)		AVAILABLE FOR RELEASE (Incl. current release)	
					QTY	COST	QTY	COST	QTY	COST	QTY	COST
13. Type 2S Guide Rail (Includes 3 Terminal Sections)	LF	760	\$ 20.71	\$ 15,739.60		\$ -	760.00	\$ 15,739.60	760.00	\$ 15,739.60		\$ -
<b>1.H. ROADWAY (Bethlehem Pike)</b>												
1. Excavate & Backfill, Concrete Curb	LF	360	\$ 5.29	\$ 1,904.40		\$ -	360.00	\$ 1,904.40	360.00	\$ 1,904.40		\$ -
2. 18" Concrete Curb	LF	360	\$ 13.35	\$ 4,806.00		\$ -	360.00	\$ 4,806.00	360.00	\$ 4,806.00		\$ -
3. Saw Cut	LF	450	\$ 3.17	\$ 1,426.50		\$ -	450.00	\$ 1,426.50	450.00	\$ 1,426.50		\$ -
4. Excavate for Widening	SY	500	\$ 8.44	\$ 4,220.00		\$ -	500.00	\$ 4,220.00	500.00	\$ 4,220.00		\$ -
5. 6" Pavement Base Drain	LF	261	\$ 18.93	\$ 4,940.73		\$ -	261.00	\$ 4,940.73	261.00	\$ 4,940.73		\$ -
6. 18" RCP	LF	65	\$ 55.38	\$ 3,599.70		\$ -	65.00	\$ 3,599.70	65.00	\$ 3,599.70		\$ -
7. Tie-In to Existing Inlets	EA	2	\$ 1,725.00	\$ 3,450.00		\$ -	2.00	\$ 3,450.00	2.00	\$ 3,450.00		\$ -
8. Type C Inlets (#B1, B2)	EA	2	\$ 3,187.00	\$ 6,374.00		\$ -	2.00	\$ 6,374.00	2.00	\$ 6,374.00		\$ -
9. Fine Grade and Compact Subgrade	SY	520	\$ 1.12	\$ 582.40		\$ -	520.00	\$ 582.40	520.00	\$ 582.40		\$ -
10. 8" 2a Modified	SY	500	\$ 11.93	\$ 5,965.00		\$ -	500.00	\$ 5,965.00	500.00	\$ 5,965.00		\$ -
11. 8" (25MM) Base Course	SY	500	\$ 35.38	\$ 17,690.00		\$ -	500.00	\$ 17,690.00	500.00	\$ 17,690.00		\$ -
12. 2.5" (19MM) Base Course	SY	500	\$ 14.58	\$ 7,290.00		\$ -	500.00	\$ 7,290.00	500.00	\$ 7,290.00		\$ -
13. 1.5" (12MM) Wearing Paving	SY	1,133	\$ 9.59	\$ 10,865.47		\$ -	1,133.00	\$ 10,865.47	1,133.00	\$ 10,865.47		\$ -
14. Street Sweeping	SY	1,133	\$ 0.16	\$ 181.28		\$ -	1,133.00	\$ 181.28	1,133.00	\$ 181.28		\$ -
15. Curb & Joint Seal	LF	1,200	\$ 0.63	\$ 756.00		\$ -	1,200.00	\$ 756.00	1,200.00	\$ 756.00		\$ -
16. Tack Coat	SY	1,133	\$ 0.19	\$ 215.27		\$ -	1,133.00	\$ 215.27	1,133.00	\$ 215.27		\$ -
17. Milling for Overlay	LS	1	\$ 7,645.00	\$ 7,645.00		\$ -	1.00	\$ 7,645.00	1.00	\$ 7,645.00		\$ -
18. Line Painting	LS	1	\$ 6,540.00	\$ 6,540.00		\$ -	1.00	\$ 6,540.00	1.00	\$ 6,540.00		\$ -
19. Signalization	LS	1	\$ 215,889.00	\$ 215,889.00		\$ -	1.00	\$ 215,889.00	1.00	\$ 215,889.00		\$ -
20. Type 2S Guide Rail, Remove & Replace	LS	1	\$ 8,350.00	\$ 8,350.00		\$ -	1.00	\$ 8,350.00	1.00	\$ 8,350.00		\$ -
21. Figure 24 Signage	LS	1	\$ 2,725.00	\$ 2,725.00		\$ -	1.00	\$ 2,725.00	1.00	\$ 2,725.00		\$ -
22. Traffic Control	DY	8	\$ 900.00	\$ 7,200.00		\$ -	8.00	\$ 7,200.00	8.00	\$ 7,200.00		\$ -
23. Excavate & Backfill, Place 4" 2A Mod. Stone for Sidewalk	SF	1,400	\$ 1.56	\$ 2,184.00		\$ -	1,400.00	\$ 2,184.00	1,400.00	\$ 2,184.00		\$ -
24. Sidewalk (4")	SF	1,400	\$ 8.00	\$ 11,200.00		\$ -	1,400.00	\$ 11,200.00	1,400.00	\$ 11,200.00		\$ -
25. Handicap Ramps (incl. DWS)	EA	4	\$ 500.00	\$ 2,000.00		\$ -	4.00	\$ 2,000.00	4.00	\$ 2,000.00		\$ -
<b>1.I. ONSITE SIDEWALKS</b>												
1. Sidewalk (4")	SF	8,700	\$ 8.00	\$ 69,600.00		\$ -	8,700.00	\$ 69,600.00	8,700.00	\$ 69,600.00		\$ -
2. Driveway Apron (6" w/ wire mesh)	EA	57	\$ 1,100.00	\$ 62,700.00		\$ -	57.00	\$ 62,700.00	57.00	\$ 62,700.00		\$ -
3. Handicap Ramps (incl. DWS)	EA	12	\$ 500.00	\$ 6,000.00		\$ -	10.00	\$ 5,000.00	10.00	\$ 5,000.00	2.00	\$ 1,000.00
<b>1.J. BIOSWALE CONVERSION</b>												
1. Convert bioswales A1.5 and B12.2 to permanent infiltration	LS	1	\$ 23,202.00	\$ 23,202.00		\$ -	1.00	\$ 23,202.00	1.00	\$ 23,202.00		\$ -
<b>1.K. SEDIMENT BASIN B CONVERSION</b>												
1. Earthwork	LS	1	\$ 43,918.00	\$ 43,918.00		\$ -		\$ -		\$ -	1.00	\$ 43,918.00
2. Post and rail fencing	LF	462	\$ 15.00	\$ 6,930.00	462.00	\$ 6,930.00		\$ -	462.00	\$ 6,930.00		\$ -
<b>1.L. STREET LIGHTS</b>												
1. Street Lights	EA	16	\$ 2,700.00	\$ 43,200.00		\$ -	16.00	\$ 43,200.00	16.00	\$ 43,200.00		\$ -



**ESCROW RELEASE NO. 13**  
DATE PREPARED: 2-Feb-2021

PROJECT NAME: Firefox - Ph 1 (Southern)	TOTAL ENGINEERING/LEGAL (CASH ESCROW) \$ 45,000.00	MONTGOMERY TOWNSHIP
DEVELOPER: Crystal Road Enterprises, LLC	TOTAL ADMINISTRATION (CASH ESCROW) \$ 5,000.00	TOWNSHIP NO.: LDC-630
ESCROW AGENT: Univest		G&A PROJECT NO.: 2012-09009
TYPE OF SECURITY: Loan	MAINTENANCE BOND AMOUNT (15%) \$ 358,338.78	AGREEMENT DATE: 10-Oct-2014
<b>SUMMARY OF IMPROVEMENT ESCROW ACCOUNT</b>		
	<b>TOTAL COST</b>	<b>RELEASE REQUESTS</b>
		<b>CURRENT PRIOR TOTAL</b>
CONSTRUCTION	\$ 2,354,642.45	\$ 63,585.74 \$ 2,182,387.18 \$ 2,245,972.93
ANNUAL 10% CONSTRUCTION COST INCREASE (Balance as of 3/31/19 - \$342,827.51)	\$ 34,282.75	\$ 6,358.57 \$ 17,141.38 \$ 23,499.95
CONTINGENCY (10%)	\$ 238,892.52	\$ - \$ - \$ -
<b>TOTAL</b>	<b>\$2,627,817.72</b>	<b>\$ 69,944.31 \$ 2,199,528.57 \$ 2,269,472.88</b>
		<b>BALANCE</b>
		\$ 108,688.52
		\$ 10,782.80
		\$ 238,892.52
		<b>\$ 358,344.84</b>

CONSTRUCTION ITEMS					UNIT	QUANTITY	UNIT COST	TOTAL COST	CURRENT REQUEST		PRIOR REQUESTS		TOTAL REQUESTS (Incl. current release)		AVAILABLE FOR RELEASE (Incl. current release)							
									QTY	COST	QTY	COST	QTY	COST	QTY	COST						
1.M. <u>LANDSCAPING</u>																						
<u>Shade Trees</u>																						
	EA	31	\$	350.00	\$	10,850.00		3.00	\$	1,050.00		28.00	\$	9,800.00		\$	-					
1.	Acer rubrum	EA	19	\$	350.00	\$	6,650.00		5.00	\$	1,750.00		14.00	\$	4,900.00		\$	-				
2.	Acer saccharum	EA	16	\$	380.00	\$	6,080.00		10.00	\$	3,800.00		6.00	\$	2,280.00		\$	-				
3.	Cercidiphyllum Japonica	EA	27	\$	350.00	\$	9,450.00		14.00	\$	4,900.00		12.00	\$	4,200.00	1.00	\$	350.00				
4.	Gleditsia T. Shademaster	EA	23	\$	350.00	\$	8,050.00		9.00	\$	3,150.00		14.00	\$	4,900.00		\$	-				
5.	Liquidambar styraciflua	EA	21	\$	350.00	\$	7,350.00		10.00	\$	3,500.00		11.00	\$	3,850.00		\$	-				
6.	Liriodendron tulipifera	EA	13	\$	360.00	\$	4,650.00		9.00	\$	3,150.00		4.00	\$	1,400.00		\$	-				
7.	Platanus x acerifolia	EA	16	\$	350.00	\$	5,600.00		7.00	\$	2,450.00		9.00	\$	3,150.00		\$	-				
8.	Pyrus C. Chanticleer	EA	13	\$	360.00	\$	4,680.00			\$	-		13.00	\$	4,680.00		\$	-				
9.	Quercus borealis	EA	9	\$	350.00	\$	3,150.00		9.00	\$	3,150.00			\$	-		\$	-				
10.	Quercus palustris	EA	9	\$	360.00	\$	7,920.00		4.00	\$	1,440.00		18.00	\$	6,480.00		\$	-				
11.	Quercus phellos	EA	22	\$	360.00	\$	7,920.00			\$	-			\$	-		\$	-				
12.	Tilia cordata	EA	18	\$	350.00	\$	6,300.00		11.00	\$	3,850.00		7.00	\$	2,450.00		\$	-				
13.	Zelkova serrata	EA	28	\$	350.00	\$	9,100.00		13.00	\$	4,550.00		13.00	\$	4,550.00		\$	-				
<u>Evergreen Trees</u>																						
17.	Juniperus virginiana	EA	26	\$	250.00	\$	6,500.00		15.00	\$	3,750.00			\$	-	15.00	\$	3,750.00				
18.	Picea abies	EA	34	\$	250.00	\$	8,500.00		2.00	\$	500.00		21.00	\$	5,250.00		11.00	\$	2,750.00			
14.	Pinus strobus	EA	43	\$	250.00	\$	10,750.00		1.00	\$	250.00		31.00	\$	7,750.00		11.00	\$	2,750.00			
15.	Pseudotsuga menziesii	EA	29	\$	250.00	\$	7,250.00		18.00	\$	4,500.00			\$	-	18.00	\$	4,500.00				
<u>Shrubs</u>																						
18.	Euonymous A. Compacta	EA	10	\$	65.00	\$	650.00			\$	-		10.00	\$	650.00			\$	-			
19.	Forsythia Lynwood Gold	EA	10	\$	65.00	\$	650.00		10.00	\$	650.00			\$	-			\$	-			
20.	Ilex verticillata	EA	17	\$	65.00	\$	1,105.00		17.00	\$	1,105.00			\$	-			\$	-			
22.	Taxus densiformis	EA	11	\$	65.00	\$	715.00			\$	-		11.00	\$	715.00			\$	-			
21.	Viburnum plicatum	EA	9	\$	65.00	\$	585.00		9.00	\$	585.00			\$	-			\$	-			
<u>Miscellaneous</u>																						
23.	Seed Mix "A" for Basin (ERNMX 126)	SF	14,190		\$	0.12	\$	1,702.80	14,190.00	\$	1,702.80			\$	-	14,190.00	\$	1,702.80		\$	-	
24.	Seed Mix "B" for Basin (ERNMX 127)	SF	12,960		\$	0.12	\$	1,555.20	12,960.00	\$	1,555.20			\$	-	12,960.00	\$	1,555.20		\$	-	
1.N. <u>BITUMINOUS PATHWAYS</u>																						
	SY	1,645	\$	35.00	\$	57,575.00		33.00	\$	1,155.00		1,612.00	\$	56,420.00		1,645.00	\$	57,575.00		\$	-	
1.O. <u>6-FT-HIGH OPAQUE (BUFFER) FENCING</u>																						
	LS	1	\$	10,000.00	\$	10,000.00			\$	-		1.00	\$	10,000.00		1.00	\$	10,000.00		\$	-	
1.P. <u>RESPREAD TOPSOIL (8")</u>																						
	LS	1	\$	30,000.00	\$	30,000.00			\$	-		1.00	\$	30,000.00		1.00	\$	30,000.00		\$	-	
1.Q. <u>MONOSLAB PAVERS (access to sanitary easement)</u>																						
	SF	1,310	\$	8.65	\$	11,331.50			\$	-		1,310.00	\$	11,331.50		1,310.00	\$	11,331.50		\$	-	
1.R. <u>OTHER</u>																						
1.	Construction Stakeout	LS	1	\$	46,781.00	\$	46,781.00			\$	-		1.00	\$	46,781.00		1.00	\$	46,781.00		\$	-
2.	Pins and Monuments and As-Builts	LS	1	\$	15,675.00	\$	15,675.00			\$	-		0.75	\$	11,756.25		0.75	\$	11,756.25	0.25	\$	3,918.75



# ESCROW RELEASE NO. 13

DATE PREPARED: 2-Feb-2021

PROJECT NAME: Firefox - Ph. 1 (Southern)	TOTAL ENGINEERING/LEGAL (CASH ESCROW): \$ 45,000.00	MONTGOMERY TOWNSHIP
DEVELOPER: Crystal Road Enterprises, LLC	TOTAL ADMINISTRATION (CASH ESCROW): \$ 5,000.00	TOWNSHIP NO: LGS-630
ESCROW AGENT: Unvest		G&A PROJECT NO: 2012-09009
TYPE OF SECURITY: Loan	MAINTENANCE BOND AMOUNT (15%): \$ 358,338.78	AGREEMENT DATE: 10-Oct-2014
SUMMARY OF IMPROVEMENT ESCROW ACCOUNT		
	TOTAL COST	BALANCE
CONSTRUCTION	\$ 2,354,642.45	\$ 108,669.52
ANNUAL 10% CONSTRUCTION COST INCREASE (Balance as of 3/31/19 - \$342,827.51)	\$ 34,282.75	\$ 10,782.80
CONTINGENCY (10%)	\$ 238,892.52	\$ 238,892.52
<b>TOTAL</b>	<b>\$2,627,817.72</b>	<b>\$ 358,344.84</b>

CONSTRUCTION ITEMS	UNIT	QUANTITY	UNIT COST	TOTAL COST	CURRENT REQUEST		PRIOR REQUESTS		TOTAL REQUESTS (Incl. current release)		AVAILABLE FOR RELEASE (Incl. current release)		
					QTY	COST	QTY	COST	QTY	COST	QTY	COST	
1.S. <u>ANNUAL CONSTRUCTION COST INCREASE PER PA MPC §509(h)</u>													
Construction Cost Subtotal													
Released as of December 2017 (Release #11)													
Balance as of December 2017 (Release #11)													
1. 10% Annual Construction Cost Increase (Balance as of 3/31/19 - \$342,827.51)	LS	1	\$ 34,282.75	\$ 34,282.75	0.19	\$ 6,358.57	0.50	\$ 17,141.38	0.69	\$ 23,499.95	0.31	\$ 10,782.80	
1.T. <u>CONTINGENCY</u>													
1. 10% Contingency (Released upon certification of completion and receipt of Maintenance Bond)	LS	1	\$ 238,892.52	\$ 238,892.52		\$ -		\$ -		\$ -	1.00	\$ 238,892.52	

## NOTES:

- 2014-09-24: Initial construction cost issued for Phase I Land Development Agreement
- 2016-08-04: Phase II costs updated prior to recording of Phase II Land Development Agreement. Net change to construction cost = \$0.00.
- 2018-04-04: Phase I and Phase II spreadsheets separated for release purposes
- 2018-04-04: Engineering/Legal & Administration cash escrow amounts based upon Phases I and II
- 2018-05-13: Moved Fox Meadow wearing course from Phase 1 to Phase 2 (line items 1 G, 6, 8, 9 (3,286 SY), & 10 (2,234 LF))
- 2019-05-13: Added 10% annual increase per PA MPC §509(h) (line item 1.S.1)

## **MANSFIELD DEVELOPMENT LLC**

PO Box 8896  
Hamilton, NJ 08650  
609-638-2907  
[stephenamansfield@gmail.com](mailto:stephenamansfield@gmail.com)

**January 22, 2021**

**James P. Dougherty, P.E.  
Gilmore & Associates  
65 East Butler Ave.  
Suite 100  
New Britain, PA 18901**

**Re: Walnut Creek Phase 1 (a.k.a. Firefox) – Montgomery Township  
Escrow Reduction Request #13**

**Dear Mr. Dougherty:**

On behalf of Crystal Road Enterprises, LLC (a.k.a. Select Properties), enclosed for review and approval is Escrow Reduction Request #13 dated January 22, 2021, in the amount of \$189,396.64 for work completed at the Walnut Creek Phase 1 community as outlined in the attached detailed reduction request.

If you require any additional information, please feel free to contact me at either 609-638-2907 or [stephenamansfield@gmail.com](mailto:stephenamansfield@gmail.com). Thank you again for all your assistance.

Sincerely,



Stephen Mansfield

Cc: Brian Desault, Gilmore & Associates (via US Mail and email with attachment)  
Brian Grant, Select Properties (via email with attachment)



**ESCROW RELEASE NO. 13**  
DATE PREPARED: 22-Jan-2021

PROJECT NAME: Firefox - Ph. 1 (Southern)	TOTAL ENG/INSP/LEGAL (CASH ESCROW): \$ 45,000.00	MONTGOMERY TOWNSHIP
DEVELOPER: Crystal Road Enterprises, LLC	TOTAL ADMINISTRATION (CASH ESCROW): \$ 5,000.00	TOWNSHIP NO.: LDS-630
ESCROW AGENT: Univest		G&A PROJECT NO.: 2012-09009
TYPE OF SECURITY: Loan	MAINTENANCE BOND AMOUNT (15%): \$ 358,338.78	AGREEMENT DATE: 10-Oct-2014

SUMMARY OF IMPROVEMENT ESCROW ACCOUNT	TOTAL COST	RELEASE REQUESTS			BALANCE
		CURRENT	PRIOR	TOTAL	
CONSTRUCTION	\$2,354,542.45	\$ 172,255.26	\$ 2,182,387.19	\$ 2,354,642.45	\$ -
ANNUAL 10% CONSTRUCTION COST INCREASE (Balance as of 3/31/19 - \$342,827.51)	\$ 34,282.75	\$ 17,141.38	\$ 17,141.38	\$ 34,282.75	\$ -
CONTINGENCY (10%)	\$ 238,892.52	\$ -	\$ -	\$ -	\$ 238,892.52
TOTAL	\$ 2,627,817.72	\$ 189,396.64	\$ 2,199,528.57	\$ 2,388,925.20	\$ 238,892.52

CONSTRUCTION ITEMS	UNIT	QUANTITY	UNIT COST	TOTAL COST	CURRENT REQUEST		PRIOR REQUESTS		TOTAL REQUESTS (Incl. current release)		AVAILABLE FOR RELEASE (Incl. current release)	
					QTY	COST	QTY	COST	QTY	COST	QTY	COST
PHASE I (SOUTHERN VILLAGE)				\$0.00					0.00		0.00	\$0.00
1.A. MOBILIZATION	LS	1	\$ 73,227.00	\$ 73,227.00	0.00	\$ -	1.00	\$ 73,227.00	1.00	\$ 73,227.00	0.00	\$ -
1.B. EARTHWORK												
1. Clearing & Grubbing	LS	1	\$ 52,482.00	\$ 52,482.00	0.00	\$ -	1.00	\$ 52,482.00	1.00	\$ 52,482.00	0.00	\$ -
2. Strip Topsoil	CY	11,338	\$ 2.47	\$ 28,004.86	0.00	\$ -	11,338	\$ 28,004.86	11,338	\$ 28,004.86	0.00	\$ -
3. Cut Fill & Compact	CY	16,335	\$ 2.50	\$ 40,837.50	0.00	\$ -	16,335	\$ 40,837.50	16,335	\$ 40,837.50	0.00	\$ -
4. Grade	SY	35,597	\$ 0.28	\$ 9,967.16	0.00	\$ -	35,597	\$ 9,967.16	35,597	\$ 9,967.16	0.00	\$ -
1.C. RETAINING WALL												
1. Excavate Retaining Wall	LF	321	\$ 6.40	\$ 2,054.40	0.00	\$ -	321	\$ 2,054.40	321	\$ 2,054.40	0.00	\$ -
2. Retaining Wall	SF	1,250	\$ 40.00	\$ 50,000.00	0.00	\$ -	1,250	\$ 50,000.00	1,250	\$ 50,000.00	0.00	\$ -
3. Sleeves for Guide Rail behind Wall #1	LS	1	\$ 1,785.00	\$ 1,785.00	0.00	\$ -	1.00	\$ 1,785.00	1.00	\$ 1,785.00	0.00	\$ -
1.D. EROSION CONTROL												
Erosion & Sediment Controls												
1. Construction Entrance	EA	1	\$ 3,392.00	\$ 3,392.00	0.00	\$ -	1.00	\$ 3,392.00	1.00	\$ 3,392.00	0.00	\$ -
2. 12" Weighted Sediment Tube	LF	31	\$ 10.35	\$ 320.85	0.00	\$ -	31	\$ 320.85	31	\$ 320.85	0.00	\$ -
3. 12" Filtrix Sock	LF	138	\$ 3.81	\$ 525.78	0.00	\$ -	138	\$ 525.78	138	\$ 525.78	0.00	\$ -
4. 18" Silt Fence - Stockpiles	LF	350	\$ 1.58	\$ 546.00	0.00	\$ -	350	\$ 546.00	350	\$ 546.00	0.00	\$ -
5. 30" Silt Fence	LF	646	\$ 1.81	\$ 1,233.86	0.00	\$ -	646	\$ 1,233.86	646	\$ 1,233.86	0.00	\$ -
6. Super Silt Fence	LF	687	\$ 6.45	\$ 4,431.15	0.00	\$ -	687	\$ 4,431.15	687	\$ 4,431.15	0.00	\$ -
7. Super Silt Fence w/ Tree Protection Fence	LF	3,000	\$ 6.45	\$ 19,350.00	0.00	\$ -	3,000	\$ 19,350.00	3,000	\$ 19,350.00	0.00	\$ -
8. Orange Construction Fence	LF	1,520	\$ 1.54	\$ 2,340.80	0.00	\$ -	1,520	\$ 2,340.80	1,520	\$ 2,340.80	0.00	\$ -
9. Tree Protection Fence	LF	3,753	\$ 1.54	\$ 5,779.62	0.00	\$ -	3,753	\$ 5,779.62	3,753	\$ 5,779.62	0.00	\$ -
10. Temporary Vegetation - Excess Fill Piles	SY	19,360	\$ 0.28	\$ 5,614.40	0.00	\$ -	19,360	\$ 5,614.40	19,360	\$ 5,614.40	0.00	\$ -
11. Slope Matting (North American Green S-75)	SY	3,059	\$ 1.50	\$ 4,588.50	0.00	\$ -	3,059	\$ 4,588.50	3,059	\$ 4,588.50	0.00	\$ -
12. Grade Swales #A,A1.5,B12.2,B6,B13	SY	2,471	\$ 0.55	\$ 1,359.05	0.00	\$ -	2,471	\$ 1,359.05	2,471	\$ 1,359.05	0.00	\$ -
13. Swale Matting (North American Green S-75)	SY	2,471	\$ 1.50	\$ 3,706.50	0.00	\$ -	2,471	\$ 3,706.50	2,471	\$ 3,706.50	0.00	\$ -
14. Rock Filters	EA	6	\$ 132.00	\$ 792.00	0.00	\$ -	6	\$ 792.00	6	\$ 792.00	0.00	\$ -
15. Inlet Protection Silt Sack	EA	29	\$ 134.00	\$ 3,886.00	0.00	\$ -	29	\$ 3,886.00	29	\$ 3,886.00	0.00	\$ -
16. Pumped Water Filter Bag, Pump, Clean Water Pump Bypass, Sandbag Cofferdam	LS	1	\$ 12,000.00	\$ 12,000.00	0.00	\$ -	1.00	\$ 12,000.00	1.00	\$ 12,000.00	0.00	\$ -
Sediment Basin B												
20. Strip Topsoil	CY	1,058	\$ 2.47	\$ 2,613.26	0.00	\$ -	1,058	\$ 2,613.26	1,058	\$ 2,613.26	0.00	\$ -
21. Cut Fill & Compact	CY	3,683	\$ 2.50	\$ 9,207.50	0.00	\$ -	3,683	\$ 9,207.50	3,683	\$ 9,207.50	0.00	\$ -
22. Grade	CY	4,737	\$ 0.28	\$ 1,326.36	0.00	\$ -	4,737	\$ 1,326.36	4,737	\$ 1,326.36	0.00	\$ -
23. Core Cut & Fill Keyway	LF	275	\$ 10.08	\$ 2,772.00	0.00	\$ -	275	\$ 2,772.00	275	\$ 2,772.00	0.00	\$ -
24. Respread Topsoil	CY	1,058	\$ 2.97	\$ 3,142.26	0.00	\$ -	1,058	\$ 3,142.26	1,058	\$ 3,142.26	0.00	\$ -
25. Grade Spillway	SY	132	\$ 0.48	\$ 63.36	0.00	\$ -	132	\$ 63.36	132	\$ 63.36	0.00	\$ -
26. Spillway Matting (North American Green P-300)	SY	132	\$ 5.65	\$ 747.12	0.00	\$ -	132	\$ 747.12	132	\$ 747.12	0.00	\$ -
27. Permanent Rake & Vegetation	SF	42,675	\$ 0.28	\$ 12,375.75	0.00	\$ -	42,675	\$ 12,375.75	42,675	\$ 12,375.75	0.00	\$ -
28. Super Silt Fence Baffle Wall, 3.05' hgt.	LF	255	\$ 6.45	\$ 1,644.75	0.00	\$ -	255	\$ 1,644.75	255	\$ 1,644.75	0.00	\$ -
29. 24" x 38" Elliptical RCP (Duel Runs)	LF	88	\$ 143.00	\$ 12,584.00	0.00	\$ -	88	\$ 12,584.00	88	\$ 12,584.00	0.00	\$ -
30. Outlet Structure (#B3.3) w/Wingwalls and Trash Rack	EA	1	\$ 10,505.00	\$ 10,505.00	0.00	\$ -	1.00	\$ 10,505.00	1.00	\$ 10,505.00	0.00	\$ -
31. 30" x 120" Modified Type C Inlets (#B02, B03)	EA	2	\$ 5,087.00	\$ 10,174.00	0.00	\$ -	2.00	\$ 10,174.00	2.00	\$ 10,174.00	0.00	\$ -
32. Antiseep Collars	EA	2	\$ 1,618.00	\$ 3,618.00	0.00	\$ -	2.00	\$ 3,618.00	2.00	\$ 3,618.00	0.00	\$ -
33. 24" x 38" Elliptical Endwall (#B1) w/Concrete Apron	EA	1	\$ 11,715.00	\$ 11,715.00	0.00	\$ -	1.00	\$ 11,715.00	1.00	\$ 11,715.00	0.00	\$ -
34. 36" CMP Temporary Riser	EA	1	\$ 1,900.00	\$ 1,900.00	0.00	\$ -	1.00	\$ 1,900.00	1.00	\$ 1,900.00	0.00	\$ -



35. R-5 Rip Rap Dissipator	TON	80	\$	54.00	\$	4,320.00	0.00	\$	80.00	\$	4,320.00	80.00	\$	4,320.00	0.00	\$
															#VALUE!	
															#VALUE!	
<b>1.E. STORM SEWER</b>																
1. 18" RCP	LF	762	\$	35.00	\$	26,670.00	0.00	\$	762.00	\$	26,670.00	762.00	\$	26,670.00	0.00	\$
2. 24" RCP	LF	410	\$	45.00	\$	18,450.00	0.00	\$	410.00	\$	18,450.00	410.00	\$	18,450.00	0.00	\$
3. 36" RCP	LF	112	\$	80.00	\$	8,960.00	0.00	\$	112.00	\$	8,960.00	112.00	\$	8,960.00	0.00	\$
4. 34" x 53" Elliptical RCP	LF	73	\$	162.00	\$	11,826.00	0.00	\$	73.00	\$	11,826.00	73.00	\$	11,826.00	0.00	\$
5. Type C Inlet (#A01.3, A01.4, A03, A04, A05, A06, B02.1, B03.1, Type C Inlet Mod 42"x48", (#B03.4, B04)	EA	26	\$	2,700.00	\$	70,200.00	0.00	\$	26.00	\$	70,200.00	26.00	\$	70,200.00	0.00	\$
6. Type C Inlet Mod 8' x 8' (Outlet Structure #A02)	EA	2	\$	3,400.00	\$	6,800.00	0.00	\$	2.00	\$	6,800.00	2.00	\$	6,800.00	0.00	\$
7. 18" DW Endwalls (#A01.2, A01.5)	EA	1	\$	12,608.00	\$	12,608.00	0.00	\$	1.00	\$	12,608.00	1.00	\$	12,608.00	0.00	\$
8. 36" DW Endwalls (#B10)	EA	2	\$	1,200.00	\$	2,400.00	0.00	\$	2.00	\$	2,400.00	2.00	\$	2,400.00	0.00	\$
9. R-5 Rip Rap Dissipator	EA	1	\$	1,850.00	\$	1,850.00	0.00	\$	1.00	\$	1,850.00	1.00	\$	1,850.00	0.00	\$
10. R-5 Rip Rap Dissipator	TON	191	\$	54.00	\$	10,314.00	0.00	\$	191.00	\$	10,314.00	191.00	\$	10,314.00	0.00	\$
															#VALUE!	
<b>1.F. DETENTION FACILITIES #A, B1, B2</b>																
1. Facility A, Systems #1 and 2, w/ Structure #A7, w/ #57 Stone to Springline of Pipe and On-site Backfill (No Fabric)	LS	1	\$	48,161.00	\$	48,161.00	0.00	\$	1.00	\$	48,161.00	1.00	\$	48,161.00	0.00	\$
2. Facility B1, Systems #1,2 and 3, w/ Structures #B5, B6, and B7, w/ #57 Stone to Springline of Pipe and On-Site Backfill (No Fabric)	LS	1	\$	117,195.00	\$	117,195.00	0.00	\$	1.00	\$	117,195.00	1.00	\$	117,195.00	0.00	\$
3. Facility B2, Systems #1 through 8, w/ Structures #B10.1, B11, B12, B12.1, B12.2, B14, B15, and B16, w/ #57 Stone to Springline of Pipe and On-Site Backfill (No Fabric)	LS	1	\$	313,500.00	\$	313,500.00	0.00	\$	1.00	\$	313,500.00	1.00	\$	313,500.00	0.00	\$
															#VALUE!	
<b>1.G. ROADWAY (Interior)</b>																
1. Excavate & Backfill Curb	LF	6,117	\$	3.19	\$	19,513.23	0.00	\$	6,117.00	\$	19,513.23	6,117.00	\$	19,513.23	0.00	\$
2. Belgian Block Curb	LF	6,117	\$	14.00	\$	85,638.00	0.00	\$	6,117.00	\$	85,638.00	6,117.00	\$	85,638.00	0.00	\$
3. Fine Grade and Compact Subgrade	SY	9,489	\$	1.12	\$	10,627.68	0.00	\$	9,489.00	\$	10,627.68	9,489.00	\$	10,627.68	0.00	\$
4. 3" 2a Modified	SY	9,489	\$	3.01	\$	28,561.89	0.00	\$	9,489.00	\$	28,561.89	9,489.00	\$	28,561.89	0.00	\$
5. 5" (25MM) Base Course	SY	9,489	\$	18.00	\$	180,291.00	0.00	\$	9,489.00	\$	180,291.00	9,489.00	\$	180,291.00	0.00	\$
6. 1.5" (9.5MM) Wearing Paving (Note 5)	SY	6,204	\$	7.12	\$	44,172.48	6,204.00	\$	44,172.48	0.00	\$	6,204.00	\$	44,172.48	0.00	\$
7. Speed Bump	LS	1	\$	1,200.00	\$	1,200.00	1.00	\$	1,200.00	0.00	\$	1.00	\$	1,200.00	0.00	\$
8. Street Sweeping (Note 5)	SY	6,204	\$	0.12	\$	744.48	6,204.00	\$	744.48	0.00	\$	6,204.00	\$	744.48	0.00	\$
9. Tack Coat (Note 5)	SY	6,204	\$	0.19	\$	1,178.76	6,204.00	\$	1,178.76	0.00	\$	6,204.00	\$	1,178.76	0.00	\$
10. Curb & Joint Seal (Note 5)	LF	3,883	\$	0.63	\$	2,446.29	3,883.00	\$	2,446.29	0.00	\$	3,883.00	\$	2,446.29	0.00	\$
11. Line Painting	LS	1	\$	1,750.00	\$	1,750.00	1.00	\$	1,750.00	0.00	\$	1.00	\$	1,750.00	0.00	\$
12. Site Signage	LS	1	\$	2,307.00	\$	2,307.00	0.50	\$	1,153.50	0.00	\$	1.00	\$	2,307.00	0.00	\$
13. Type 2S Guide Rail (Includes 3 Terminal Sections)	LF	760	\$	20.71	\$	15,739.60	0.00	\$	760.00	\$	15,739.60	760.00	\$	15,739.60	0.00	\$
															#VALUE!	
<b>1.H. ROADWAY (Bethlehem Pike)</b>																
1. Excavate & Backfill, Concrete Curb	LF	360	\$	5.29	\$	1,904.40	0.00	\$	360.00	\$	1,904.40	360.00	\$	1,904.40	0.00	\$
2. 18" Concrete Curb	LF	360	\$	13.35	\$	4,806.00	0.00	\$	360.00	\$	4,806.00	360.00	\$	4,806.00	0.00	\$
3. Saw Cut	LF	450	\$	3.17	\$	1,426.50	0.00	\$	450.00	\$	1,426.50	450.00	\$	1,426.50	0.00	\$
4. Excavate for Widening	SY	500	\$	8.44	\$	4,220.00	0.00	\$	500.00	\$	4,220.00	500.00	\$	4,220.00	0.00	\$
5. 6" Pavement Base Drain	LF	261	\$	18.93	\$	4,940.73	0.00	\$	261.00	\$	4,940.73	261.00	\$	4,940.73	0.00	\$
6. 18" RCP	LF	65	\$	55.38	\$	3,599.70	0.00	\$	65.00	\$	3,599.70	65.00	\$	3,599.70	0.00	\$
7. Tie-In to Existing Inlets	EA	2	\$	1,725.00	\$	3,450.00	0.00	\$	2.00	\$	3,450.00	2.00	\$	3,450.00	0.00	\$
8. Type C Inlets (#B1, B2)	EA	2	\$	3,187.00	\$	6,374.00	0.00	\$	2.00	\$	6,374.00	2.00	\$	6,374.00	0.00	\$
9. Fine Grade and Compact Subgrade	SY	520	\$	1.12	\$	582.40	0.00	\$	520.00	\$	582.40	520.00	\$	582.40	0.00	\$
10. 8" 2a Modified	SY	500	\$	11.93	\$	5,965.00	0.00	\$	500.00	\$	5,965.00	500.00	\$	5,965.00	0.00	\$
11. 8" (25MM) Base Course	SY	500	\$	35.38	\$	17,690.00	0.00	\$	500.00	\$	17,690.00	500.00	\$	17,690.00	0.00	\$
12. 2.5" (19MM) Base Course	SY	500	\$	14.58	\$	7,290.00	0.00	\$	500.00	\$	7,290.00	500.00	\$	7,290.00	0.00	\$
13. 1.5" (12MM) Wearing Paving	SY	1,133	\$	9.59	\$	10,865.47	0.00	\$	1,133.00	\$	10,865.47	1,133.00	\$	10,865.47	0.00	\$
14. Street Sweeping	SY	1,133	\$	0.16	\$	181.28	0.00	\$	1,133.00	\$	181.28	1,133.00	\$	181.28	0.00	\$
15. Curb & Joint Seal	LF	1,200	\$	0.63	\$	756.00	0.00	\$	1,200.00	\$	756.00	1,200.00	\$	756.00	0.00	\$
16. Tack Coat	SY	1,133	\$	0.19	\$	215.27	0.00	\$	1,133.00	\$	215.27	1,133.00	\$	215.27	0.00	\$
17. Milling for Overlay	LS	1	\$	7,645.00	\$	7,645.00	0.00	\$	1.00	\$	7,645.00	1.00	\$	7,645.00	0.00	\$
18. Line Painting	LS	1	\$	6,540.00	\$	6,540.00	0.00	\$	1.00	\$	6,540.00	1.00	\$	6,540.00	0.00	\$
19. Signalization	LS	1	\$	215,889.00	\$	215,889.00	0.00	\$	1.00	\$	215,889.00	1.00	\$	215,889.00	0.00	\$
20. Type 2S Guide Rail, Remove & Replace	LS	1	\$	8,350.00	\$	8,350.00	0.00	\$	1.00	\$	8,350.00	1.00	\$	8,350.00	0.00	\$
21. Figure 24 Signage	LS	1	\$	2,725.00	\$	2,725.00	0.00	\$	1.00	\$	2,725.00	1.00	\$	2,725.00	0.00	\$
22. Traffic Control	DY	8	\$	900.00	\$	7,200.00	0.00	\$	8.00	\$	7,200.00	8.00	\$	7,200.00	0.00	\$
23. Excavate & Backfill, Place 4" 2A Mod. Stone for Sidewalk	SF	1,400	\$	1.56	\$	2,184.00	0.00	\$	1,400.00	\$	2,184.00	1,400.00	\$	2,184.00	0.00	\$
24. Sidewalk (4")	SF	1,400	\$	8.00	\$	11,200.00	0.00	\$	1,400.00	\$	11,200.00	1,400.00	\$	11,200.00	0.00	\$
25. Handicap Ramps (incl. DWS)	EA	4	\$	500.00	\$	2,000.00	0.00	\$	4.00	\$	2,000.00	4.00	\$	2,000.00	0.00	\$
															#VALUE!	
<b>1.I. ONSITE SIDEWALKS</b>																
1. Sidewalk (4")	SF	8,700	\$	8.00	\$	69,600.00	0.00	\$	8,700.00	\$	69,600.00	8,700.00	\$	69,600.00	0.00	\$

2.	Driveway Apron (8" w/ wire mesh)	EA	57	\$	1,100.00	\$	62,700.00	0.00	\$	-	57.00	\$	62,700.00	57.00	\$	62,700.00	0.00	\$	-
3.	Handicap Ramps (Incl. DWS)	EA	12	\$	500.00	\$	6,000.00	2.00	\$	1,000.00	10.00	\$	5,000.00	12.00	\$	6,000.00	0.00	\$	-
1.J.	<b>BIOSWALE CONVERSION</b>																#VALUE!		
1.	Convert bioswales A1.5 and B12.2 to permanent infiltration swales	LS	1	\$	23,202.00	\$	23,202.00	0.00	\$	-	1.00	\$	23,202.00	1.00	\$	23,202.00	0.00	\$	-
1.K.	<b>SEDIMENT BASIN B CONVERSION</b>																#VALUE!		
1.	Earthwork	LS	1	\$	43,918.00	\$	43,918.00	1.00	\$	43,918.00	0.00	\$	-	1.00	\$	43,918.00	0.00	\$	-
2.	Post and rail fencing	LF	462	\$	15.00	\$	6,930.00	462.00	\$	6,930.00	0.00	\$	-	462.00	\$	6,930.00	0.00	\$	-
1.L.	<b>STREET LIGHTS</b>																#VALUE!		
1.	Street Lights	EA	16	\$	2,700.00	\$	43,200.00	0.00	\$	-	16.00	\$	43,200.00	16.00	\$	43,200.00	0.00	\$	-
1.M.	<b>LANDSCAPING</b>																#VALUE!		
	<b>Shade Trees</b>																#VALUE!		
1.	Acer rubrum	EA	31	\$	350.00	\$	10,850.00	3.00	\$	1,050.00	26.00	\$	9,800.00	31.00	\$	10,850.00	0.00	\$	-
2.	Acer saccharum	EA	19	\$	350.00	\$	6,650.00	5.00	\$	1,750.00	14.00	\$	4,900.00	19.00	\$	6,650.00	0.00	\$	-
3.	Cercidiphyllum Japonica	EA	16	\$	380.00	\$	6,080.00	10.00	\$	3,800.00	8.00	\$	2,280.00	16.00	\$	6,080.00	0.00	\$	-
4.	Gleditsia T. Shademaster	EA	27	\$	350.00	\$	9,450.00	15.00	\$	5,250.00	12.00	\$	4,200.00	27.00	\$	9,450.00	0.00	\$	-
5.	Liquidambar styraciflua	EA	23	\$	350.00	\$	8,050.00	9.00	\$	3,150.00	14.00	\$	4,900.00	23.00	\$	8,050.00	0.00	\$	-
6.	Liriodendron tulipifera	EA	21	\$	350.00	\$	7,350.00	10.00	\$	3,500.00	11.00	\$	3,850.00	21.00	\$	7,350.00	0.00	\$	-
7.	Platanus x acenifolia	EA	13	\$	350.00	\$	4,550.00	9.00	\$	3,150.00	4.00	\$	1,400.00	13.00	\$	4,550.00	0.00	\$	-
8.	Pyrus C. Chanticleer	EA	16	\$	350.00	\$	5,600.00	7.00	\$	2,450.00	9.00	\$	3,150.00	16.00	\$	5,600.00	0.00	\$	-
9.	Quercus borealis	EA	13	\$	380.00	\$	4,680.00	0.00	\$	-	13.00	\$	4,680.00	13.00	\$	4,680.00	0.00	\$	-
10.	Quercus palustris	EA	8	\$	350.00	\$	3,150.00	9.00	\$	3,150.00	0.00	\$	-	9.00	\$	3,150.00	0.00	\$	-
11.	Quercus phellos	EA	22	\$	380.00	\$	7,920.00	4.00	\$	1,440.00	18.00	\$	6,480.00	22.00	\$	7,920.00	0.00	\$	-
12.	Tilia cordata	EA	18	\$	350.00	\$	6,300.00	11.00	\$	3,850.00	7.00	\$	2,450.00	18.00	\$	6,300.00	0.00	\$	-
13.	Zelkova serrata	EA	26	\$	350.00	\$	9,100.00	13.00	\$	4,550.00	13.00	\$	4,550.00	26.00	\$	9,100.00	0.00	\$	-
	<b>Evergreen Trees</b>																#VALUE!		
17.	Juniperus virginiana	EA	26	\$	250.00	\$	6,500.00	26.00	\$	6,500.00	0.00	\$	-	26.00	\$	6,500.00	0.00	\$	-
16.	Picea abies	EA	34	\$	250.00	\$	8,500.00	13.00	\$	3,250.00	21.00	\$	5,250.00	34.00	\$	8,500.00	0.00	\$	-
14.	Pinus strobus	EA	43	\$	250.00	\$	10,750.00	12.00	\$	3,000.00	31.00	\$	7,750.00	43.00	\$	10,750.00	0.00	\$	-
15.	Pseudotsuga menziesii	EA	29	\$	250.00	\$	7,250.00	29.00	\$	7,250.00	0.00	\$	-	29.00	\$	7,250.00	0.00	\$	-
	<b>Shrubs</b>																#VALUE!		
16.	Euroymous A. Compacta	EA	10	\$	65.00	\$	650.00	0.00	\$	-	10.00	\$	650.00	10.00	\$	650.00	0.00	\$	-
19.	Forsythia Lynwood Gold	EA	10	\$	65.00	\$	650.00	10.00	\$	650.00	0.00	\$	-	10.00	\$	650.00	0.00	\$	-
20.	Ilex verticillata	EA	17	\$	65.00	\$	1,105.00	17.00	\$	1,105.00	0.00	\$	-	17.00	\$	1,105.00	0.00	\$	-
22.	Taxus densiformis	EA	11	\$	65.00	\$	715.00	0.00	\$	-	11.00	\$	715.00	11.00	\$	715.00	0.00	\$	-
21.	Viburnum Plicatum	EA	9	\$	65.00	\$	585.00	9.00	\$	585.00	0.00	\$	-	9.00	\$	585.00	0.00	\$	-
	<b>Miscellaneous</b>																#VALUE!		
23.	Seed Mix "A" for Basin (ERNMX 126)	SF	14,190	\$	0.12	\$	1,702.80	14,190.00	\$	1,702.80	0.00	\$	-	14,190.00	\$	1,702.80	0.00	\$	-
24.	Seed Mix "B" for Basin (ERNMX 127)	SF	12,960	\$	0.12	\$	1,555.20	12,960.00	\$	1,555.20	0.00	\$	-	12,960.00	\$	1,555.20	0.00	\$	-
1.N.	<b>BITUMINOUS PATHWAYS</b>	SY	1,645	\$	35.00	\$	57,575.00	33.00	\$	1,155.00	1,612.00	\$	56,420.00	1,645.00	\$	57,575.00	0.00	\$	-
1.O.	<b>8-FT-HIGH OPAQUE (BUFFER) FENCING</b>	LS	1	\$	10,000.00	\$	10,000.00	0.00	\$	-	1.00	\$	10,000.00	1.00	\$	10,000.00	0.00	\$	-
1.P.	<b>RESPIREAD TOPSOIL (8")</b>	LS	1	\$	30,000.00	\$	30,000.00	0.00	\$	-	1.00	\$	30,000.00	1.00	\$	30,000.00	0.00	\$	-
1.Q.	<b>MONOSLAB PAVERS (access to sanitary easement)</b>	SF	1,310	\$	8.65	\$	11,331.50	0.00	\$	-	1,310.00	\$	11,331.50	1,310.00	\$	11,331.50	0.00	\$	-
1.R.	<b>OTHER</b>																#VALUE!		
1.	Construction Stakeout	LS	1	\$	46,781.00	\$	46,781.00	0.00	\$	-	1.00	\$	46,781.00	1.00	\$	46,781.00	0.00	\$	-
2.	Pins and Monuments and As-Built	LS	1	\$	15,675.00	\$	15,675.00	0.25	\$	3,918.75	0.75	\$	11,756.25	1.00	\$	15,675.00	0.00	\$	-
1.S.	<b>ANNUAL CONSTRUCTION COST INCREASE PER PA MPC 6509(h)</b>																#VALUE!		
	Construction Cost Subtotal			\$	2,354,642.45														
	Released as of December 2017 (Release #11)			\$	2,011,814.94														
	Balance as of December 2017 (Release #11)			\$	342,827.51														
1.	10% Annual Construction Cost Increase (Balance as of 3/31/19 - \$342,827.51)	LS	1	\$	34,282.75	\$	34,282.75	0.50	\$	17,141.38	0.50	\$	17,141.38	1.00	\$	34,282.75	0.00	\$	-
1.T.	<b>CONTINGENCY</b>																#VALUE!		
1.	10% Contingency (Released upon certification of completion and receipt of Maintenance Bond)	LS	1	\$	238,892.52	\$	238,892.52	0.00	\$	-	0.00	\$	-	0.00	\$	-	1.00	\$	238,892.52

\$0.00  
\$0.00  
\$0.00

**NOTES:**

- 2014-09-24. Initial construction cost issued for Phase I Land Development Agreement.

MONTGOMERY TOWNSHIP BOARD OF SUPERVISORS

BOARD ACTION SUMMARY

Item # 7c.

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SUBJECT: Consider Construction Escrow Release 2 – 1274 Welsh Road–  
PEMV Partners, LP - LDS 699  
MEETING DATE: February 8, 2021  
BOARD LIAISON: Tanya C. Bamford, Chair  
INITIATED BY: Bruce Shoupe, Director of Planning and Zoning

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BACKGROUND:

Attached is a construction escrow release requested by PEMV Partners, LP for 1274 Welsh Road as recommended by the Township Engineer.

The original amount of the escrow was \$810,086.09, held as Tri-Party Set Aside Agreement with Bryn Mawr Trust. This is the second release for this project and is in the amount of \$160,334.83. The new balance would be \$549,377.47.

ALTERNATIVES/OPTIONS: Approve or not approve the construction escrow release.

RECOMMENDATION: That this construction escrow be released.

MOTION/RESOLUTION:

MOTION to authorize a construction escrow release in the amount of \$160,334.83 as recommended by the Township Engineer for PEMV Partners, LP.

MOTION \_\_\_\_\_ SECOND \_\_\_\_\_



**GILMORE & ASSOCIATES, INC.**  
ENGINEERING & CONSULTING SERVICES

January 29, 2021

File No. 2018-01153-01

Carolyn McCreary, Manager  
Montgomery Township  
1001 Stump Road  
Montgomeryville, PA 18936-9605

Reference: PEMV Partners, LP - LD/S#699  
Escrow Release 2

Dear Carolyn:

We have received and reviewed the Request for Escrow Release for the above-referenced project. This letter is to certify that the improvements noted on the enclosed escrow summary in the amount of **\$160,334.83** have been completed. Please find enclosed a copy of our escrow calculations and the application for release of funds for your use.

Note the requested sidewalk and curb ramps were not included in this release. The sidewalk and ramps that have been installed to date are within the PennDOT ROW and have been escrowed with PennDOT and were not included in the escrow held by the Township.

Please be advised that these improvements will be subject to a final inspection prior to dedication and again at the end of the maintenance period. Any deficiencies will be required to be corrected by the developer.

Should you have any further questions or require any additional information, please do not hesitate to contact our office.

Sincerely,

James P. Dougherty, P.E.  
Senior Project Manager  
Gilmore & Associates, Inc.

JPD/si

Enclosure: Release of Escrow Form & Summary of Improvement Escrow Account (January 29, 2021), Applicant's Request (January 27, 2021)

cc: Bruce S. Shoupe, Director of Planning and Zoning  
Marianne McConnell, Deputy Zoning Officer - Montgomery Township  
Mary Gambino, Project Coordinator - Montgomery Township  
Sean Kilkenny, Esq., Solicitor - Kilkenny Law  
Drew Altringer - Pete's Express Carwash  
Jeff Altringer - Pete's Express Carwash  
Paul F. Boettinger, P.E., - T&M Associates  
John Detweiler - RAM Construction  
Damon Drummon, PE, PTOE - Gilmore & Associates, Inc.  
Judith Stern Goldstein, ASLA, R.L.A. - Gilmore & Associates, Inc.  
Brian Dusault, Construction Services Manager - Gilmore & Associates, Inc.

65 East Butler Avenue | Suite 100 | New Britain, PA 18901 | Phone: 215-345-4330 | Fax: 215-345-8606

**RELEASE OF ESCROW FORM**

James P. Dougherty, P.E.  
Senior Project Manager  
Gilmore & Associates, Inc.  
65 East Butler Avenue, Suite 100  
New Britain, PA 18901  
215-345-4330

Date: 01/27/2021

Development: Pete's Express Car Wash (1274 Welsh Rd) - LDS-699

G&A Project #: 2018-01153-01

Release #: 2

Dear Mr. Dougherty:

This is an escrow release request in the amount of \$164,834.83. Enclosed is a copy of our escrow spreadsheet with the quantities noted.

**ESCROW RELEASE REQUESTS ARE LIMITED TO ONE PER MONTH.**

Ms. Carolyn McCreary  
Township Manager  
Montgomery Township  
1001 Stump Road  
Montgomeryville, PA 18936

Date: 01/29/2021

Dear Ms. McCreary:

We have reviewed the developer's request for an escrow release. We therefore, recommend that \$160,334.83 be released. These improvements will be subject to a final observation prior to dedication and again at the end of the maintenance period. Any deficiencies will be required to be corrected by the developer.

1/29/2021

James P. Dougherty, P.E., Senior Project Manager, Gilmore & Associates, Inc.

Resolution # \_\_\_\_\_

WHEREAS, a request for release of escrow was received from PEMV Partners, LP for Pete's Express Car Wash (1274 Welsh Rd) - LDS-699, in the amount of \$164,834.83, on the representation that work set forth in the Land Development Agreement to the extent has been completed and; WHEREAS, said request has been reviewed by the Township Engineer who recommends release of \$160,334.83; NOW, THEREFORE, BE IT RESOLVED by the Board of Supervisors of Montgomery Township that we do hereby authorize release of \$160,334.83; in accordance with the developer's request, and the officers of the Township are authorized to take the necessary action to obtain release of said sum.

BE IT FURTHER RESOLVED that Township records indicate that escrow has been deposited via Tri-Party Set Aside Agreement with Montgomery Township in total sum of \$810,086.09 pursuant to a signed Land Development Agreement and that \$100,373.79 has previously been released from escrow. Therefore, the action of the Board releasing said sum leaves a new balance of \$549,377.47 in escrow.

MOTION BY: \_\_\_\_\_

VOTE: \_\_\_\_\_

SECOND BY: \_\_\_\_\_

DATED: \_\_\_\_\_

RELEASED BY: \_\_\_\_\_

Department Director

**ESCROW RELEASE NO.: 2**

DATE PREPARED: 29-Jan-2021

PROJECT NAME: <b>Pete's Express Car Wash (1274 Welsh Rd)</b>		TOTAL ENGINEERING/LEGAL (CASH ESCROW): \$ 45,000.00		MONTGOMERY TOWNSHIP		
DEVELOPER: PEMV Partners, LP		TOTAL ADMINISTRATION (CASH ESCROW): \$ 5,000.00		TOWNSHIP NO.: LDS-699		
ESCROW AGENT: Bryn Mawr Trust Company				G&A PROJECT NO.: 2018-01153-01		
TYPE OF SECURITY: Tri-Party Set Aside Agreement		MAINTENANCE BOND AMOUNT (15%): \$ 110,466.29		AGREEMENT DATE: 16-Dec-2019		
SUMMARY OF IMPROVEMENT ESCROW ACCOUNT		TOTAL COST	RELEASE REQUESTS		BALANCE	
			CURRENT	PRIOR		
CONSTRUCTION		\$ 736,441.90	\$ 160,334.83	\$ 100,373.79	\$ 260,708.62	\$ 475,733.28
ANNUAL 10% CONSTRUCTION COST INCREASE (Balance as of mm/dd/yy = \$0.00)		\$ -	\$ -	\$ -	\$ -	\$ -
CONTINGENCY (10%)		\$ 73,644.19	\$ -	\$ -	\$ -	\$ 73,644.19
TOTAL		\$ 810,086.09	\$ 160,334.83	\$ 100,373.79	\$ 260,708.62	\$ 549,377.47

CONSTRUCTION ITEMS				CURRENT REQUEST		PRIOR REQUESTS		TOTAL REQUESTS (incl. current release)		AVAILABLE FOR RELEASE (incl. current release)	
	UNIT	QUANTITY	UNIT COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST
<b>A. SOIL EROSION AND SEDIMENT CONTROL</b>											
1 Construction Entrance	EA	1	\$ 3,500.00		\$ -	1.00	\$ 3,500.00	1.00	\$ 3,500.00		\$ -
2 12 inch Filter Sock	LF	921	\$ 8.50		\$ -	921.00	\$ 7,828.50	921.00	\$ 7,828.50		\$ -
3 24 inch Filter Sock	LF	604	\$ 10.50		\$ -	604.00	\$ 6,342.00	604.00	\$ 6,342.00		\$ -
4 Filter Bag Inlet Protection	EA	13	\$ 150.00		\$ -		\$ -	13.00	\$ 1,950.00		\$ -
5 Temporary Seed Stockpile	SF	1,130	\$ 0.15		\$ -		\$ -		\$ -	1,130.00	\$ 169.50
6 NAG S75 Erosion Control Matting	SF	5,480	\$ 0.25		\$ -		\$ -		\$ -	5,480.00	\$ 1,370.00
7 Remove E&S Measures	LS	1	\$ 2,150.00		\$ -		\$ -		\$ -	1.00	\$ 2,150.00
<b>B. EARTHWORK</b>											
1 Site Excavation & Grading	LS	1	\$ 87,387.90	0.20	\$ 17,477.58	0.10	\$ 8,738.79	0.30	\$ 26,216.37	0.70	\$ 61,171.53
<b>C. STORMWATER</b>											
1 4 in. HDPE	LF	25	\$ 30.75	25.00	\$ 768.75		\$ -	25.00	\$ 768.75		\$ -
2 15 in. HDPE	LF	510	\$ 38.00	196.00	\$ 7,448.00	314.00	\$ 11,932.00	510.00	\$ 19,380.00		\$ -
3 18 in. HDPE	LF	132	\$ 44.00	132.00	\$ 5,808.00		\$ -	132.00	\$ 5,808.00		\$ -
4 Outlet Structure	EA	1	\$ 4,000.00	1.00	\$ 4,000.00		\$ -	1.00	\$ 4,000.00		\$ -
5 Type C Inlet	EA	12	\$ 2,425.00	3.00	\$ 7,275.00	9.00	\$ 21,825.00	12.00	\$ 29,100.00		\$ -
6 Storm Manhole	EA	1	\$ 2,520.00	1.00	\$ 2,520.00		\$ -	1.00	\$ 2,520.00		\$ -
7 Underground Detention Basin	LS	1	\$ 110,000.00	1.00	\$ 110,000.00		\$ -	1.00	\$ 110,000.00		\$ -
8 Flared End Section	EA	1	\$ 1,500.00		\$ -		\$ -		\$ -	1.00	\$ 1,500.00
9 Level Spreader	EA	1	\$ 11,875.00		\$ -		\$ -		\$ -	1.00	\$ 11,875.00
<b>D. SITE IMPROVEMENTS</b>											
1 Concrete Curb, inc. curb line sealing	LF	3,475	\$ 17.00		\$ -	960.00	\$ 16,320.00	960.00	\$ 16,320.00	2,515.00	\$ 42,755.00
2 1.5 in 9.5mm Wearing Course	SY	4,631	\$ 9.00		\$ -		\$ -		\$ -	4,631.00	\$ 41,679.00
3 3 in. 25mm Binder Course	SY	4,631	\$ 17.00		\$ -	780.00	\$ 13,260.00	780.00	\$ 13,260.00	3,851.00	\$ 65,467.00
4 6 in. 2A Stone	SY	4,631	\$ 11.25		\$ -	780.00	\$ 8,775.00	780.00	\$ 8,775.00	3,851.00	\$ 43,323.75
5 Concrete Pad (4,000 psi w/ fiber), inc. 6 inch 2A	SY	103	\$ 100.00		\$ -		\$ -		\$ -	103.00	\$ 10,300.00
6 Concrete Sidewalk (4,000 psi w/ fiber), inc. 4 inch 2A	SF	3,747	\$ 7.50		\$ -		\$ -		\$ -	3,747.00	\$ 28,102.50
7 ADA/PennDOT Compliant Ramp, inc. DWS	EA	7	\$ 1,500.00		\$ -		\$ -		\$ -	7.00	\$ 10,500.00
<b>E. LIGHTING</b>											
1 Pole Mounted Light w/ Shield & Foundation	EA	8	\$ 3,500.00		\$ -		\$ -		\$ -	8.00	\$ 28,000.00
2 Double Pole Mounted Light w/ Shield & Foundation	EA	6	\$ 5,000.00		\$ -		\$ -		\$ -	6.00	\$ 30,000.00
3 S4H Fixture (DeKalb Pike Egress)	EA	1	\$ 2,000.00		\$ -		\$ -		\$ -	1.00	\$ 2,000.00
<b>F. LANDSCAPING</b>											
<b>Deciduous Trees</b>											
1 Acer rubrum 'Bowhall' (3" cal. min.)	EA	8	\$ 650.00		\$ -		\$ -		\$ -	8.00	\$ 5,200.00
2 Ginkgo biloba 'Princeton Sentry' (3" cal. min.)	EA	13	\$ 650.00		\$ -		\$ -		\$ -	13.00	\$ 8,450.00
3 Gleditsia triacanthos 'Skyline' (3" cal. min.)	EA	6	\$ 650.00		\$ -		\$ -		\$ -	6.00	\$ 3,900.00
4 Liquidambar styraciflua 'Retundiloba' TM (3" cal. min.)	EA	9	\$ 650.00		\$ -		\$ -		\$ -	9.00	\$ 5,850.00
5 Quercus palustris (3" cal. min.)	EA	7	\$ 650.00		\$ -		\$ -		\$ -	7.00	\$ 4,550.00
6 Zelkova serrata 'Green Vase' (3" cal. min.)	EA	12	\$ 650.00		\$ -		\$ -		\$ -	12.00	\$ 7,800.00



**ESCROW RELEASE NO.: 2**  
DATE PREPARED: 29-Jan-2021

PROJECT NAME: <b>Pete's Express Car Wash (1274 Welsh Rd)</b>	TOTAL ENGINEERING/LEGAL (CASH ESCROW): \$ 45,000.00	MONTGOMERY TOWNSHIP
DEVELOPER: PEMV Partners, LP	TOTAL ADMINISTRATION (CASH ESCROW): \$ 5,000.00	TOWNSHIP NO.: LDS-699
ESCROW AGENT: Bryn Mawr Trust Company		G&A PROJECT NO.: 2018-01153-01
TYPE OF SECURITY: Tri-Party Set Aside Agreement	MAINTENANCE BOND AMOUNT (15%): \$ 110,468.29	AGREEMENT DATE: 16-Dec-2019

SUMMARY OF IMPROVEMENT ESCROW ACCOUNT	TOTAL COST	RELEASE REQUESTS			BALANCE
		CURRENT	PRIOR	TOTAL	
CONSTRUCTION	\$ 736,441.90	\$ 160,334.83	\$ 100,373.79	\$ 260,708.62	\$ 475,733.28
ANNUAL 10% CONSTRUCTION COST INCREASE (Balance as of mm/dd/yyyy = \$0.00)	\$ -	\$ -	\$ -	\$ -	\$ -
CONTINGENCY (10%)	\$ 73,644.19	\$ -	\$ -	\$ -	\$ 73,644.19
<b>TOTAL</b>	<b>\$ 810,086.09</b>	<b>\$ 160,334.83</b>	<b>\$ 100,373.79</b>	<b>\$ 260,708.62</b>	<b>\$ 549,377.47</b>

CONSTRUCTION ITEMS				UNIT	QUANTITY	UNIT COST	TOTAL COST	CURRENT REQUEST		PRIOR REQUESTS		TOTAL REQUESTS (Incl. current release)		AVAILABLE FOR RELEASE (Incl. current release)	
								QTY	COST	QTY	COST	QTY	COST	QTY	COST
Shrubs															
7.	Cornus Sericea 'Bailey' (30 - 36 in. ht.)	EA	9	\$	95.00	\$	855.00		\$ -		\$ -		\$ -	9.00	\$ 855.00
8.	Fothergilla Gardenii 'Mt. Airy' (30 - 36 in. ht.)	EA	7	\$	95.00	\$	665.00		\$ -		\$ -		\$ -	7.00	\$ 665.00
9.	Ilex Glabra 'Shamrock' (24 - 30 in. ht.)	EA	97	\$	95.00	\$	9,215.00		\$ -		\$ -		\$ -	97.00	\$ 9,215.00
10.	Ilex Verticillata 'Sparkleberry' (30 - 36 in. ht.)	EA	35	\$	95.00	\$	3,325.00		\$ -		\$ -		\$ -	35.00	\$ 3,325.00
11.	Ilex Virginica 'Henry's Garnet' (30 - 36 in. ht.)	EA	30	\$	95.00	\$	2,850.00		\$ -		\$ -		\$ -	30.00	\$ 2,850.00
12.	Taxus Canadensis (24 - 30 in. ht.)	EA	29	\$	95.00	\$	2,755.00		\$ -		\$ -		\$ -	29.00	\$ 2,755.00
13.	Viburnum Dentatum 'Chicago Lustre' (30 - 36 in. ht.)	EA	5	\$	95.00	\$	475.00		\$ -		\$ -		\$ -	5.00	\$ 475.00
Ornamental Grasses & Ground Cover															
14.	Calamagrostis X Acutiflora 'Karl Forester' (2 gal.)	EA	6	\$	15.00	\$	90.00		\$ -		\$ -		\$ -	6.00	\$ 90.00
15.	Hemerocallis X 'Stella De Oro' (1 gal.)	EA	40	\$	15.00	\$	600.00		\$ -		\$ -		\$ -	40.00	\$ 600.00
16.	Juniperus Confolta 'Emerald Sea' (15 - 18 in. ht.)	EA	45	\$	15.00	\$	675.00		\$ -		\$ -		\$ -	45.00	\$ 675.00
17.	Liriodendron Muscari 'Big Blue' (1 gal.)	EA	97	\$	15.00	\$	1,455.00		\$ -		\$ -		\$ -	97.00	\$ 1,455.00
G. MISCELLANEOUS															
1.	Trash Enclosure	EA	1	\$	6,500.00	\$	6,500.00		\$ -		\$ -		\$ -	1.00	\$ 6,500.00
2.	Regulatory/Warning Signs	EA	41	\$	250.00	\$	10,250.00		\$ -		\$ -		\$ -	41.00	\$ 10,250.00
3.	Striping	LS	1	\$	5,000.00	\$	5,000.00		\$ -		\$ -		\$ -	1.00	\$ 5,000.00
4.	Construction Stakeout	LS	1	\$	12,350.00	\$	12,350.00	0.25	\$ 3,087.50	0.15	\$ 1,852.50	0.40	\$ 4,940.00	0.60	\$ 7,410.00
5.	As-Built Plans	LS	1	\$	7,500.00	\$	7,500.00		\$ -		\$ -		\$ -	1.00	\$ 7,500.00
H. ANNUAL CONSTRUCTION COST INCREASE PER PA.MPC (\$509/yr)															
1.	10% Annual Construction Cost Increase (Balance as of mm/dd/yyyy = \$0.00)	LS	1	\$	-	\$	-		\$ -		\$ -		\$ -	1.00	\$ -
I. CONTINGENCY															
1.	10% Contingency (Released upon certification of completion and receipt of Maintenance Bond)	LS	1	\$	73,644.19	\$	73,644.19		\$ -		\$ -		\$ -	1.00	\$ 73,644.19

# APPLICANT REQUEST 1/27/2021 SUMMARY OF IMPROVEMENT ESCROW ACCOUNT

DATE PREPARED: 6-May-2020

GILMORE & ASSOCIATES, INC.  
CONSULTING & CONSTRUCTION SERVICES

PROJECT NAME: Sparkies Xpress Car Wash  
DEVELOPER: Pro Real Ventures, LLC  
ESCROW AGENT:  
TYPE OF SECURITY:

TOTAL ENGINEERING/LEGAL (CASH ESCROW) \$ 45,000.00  
TOTAL ADMINISTRATION (CASH ESCROW) \$ 5,000.00  
MAINTENANCE BOND AMOUNT (15%): \$ 110,466.28

MONTGOMERY TOWNSHIP  
TOWNSHIP NO. LDE-499  
G&A PROJECT NO. 2018-01153-01  
AGREEMENT DATE:

SUMMARY OF IMPROVEMENT ESCROW ACCOUNT		TOTAL COST	CURRENT	PRIOR	TOTAL	BALANCE
CONSTRUCTION		\$ 726,441.90	\$ -	\$ -	\$ -	\$ 726,441.90
ANNUAL 10% CONSTRUCTION COST INCREASE (Balance as of run/d/yyyy = \$0.00)		\$ -	\$ -	\$ -	\$ -	\$ -
CONTINGENCY (10%)		\$ 73,644.19	\$ -	\$ -	\$ -	\$ 73,644.19
TOTAL		\$ 800,086.09	\$ -	\$ -	\$ -	\$ 800,086.09

CONSTRUCTION ITEMS				UNIT	QUANTITY	UNIT COST	TOTAL COST	CURRENT REQUEST		PRIOR REQUESTS		TOTAL REQUESTS (incl. current release)		AVAILABLE FOR RELEASE (incl. current release)	
								QTY	COST	QTY	COST	QTY	COST	QTY	COST
<b>A. SOIL EROSION AND SEDIMENT CONTROL</b>															
1. Construction Entrance	EA	1	\$	3,500.00	\$	3,500.00		\$	-	\$	-	\$	-	1.00	\$ 3,500.00
2. 12 inch Filler Sock	LF	921	\$	8.50	\$	7,828.50		\$	-	\$	-	\$	-	921.00	\$ 7,828.50
3. 24 inch Filler Sock	LF	604	\$	10.50	\$	6,342.00		\$	-	\$	-	\$	-	604.00	\$ 6,342.00
4. Filter Bag Inlet Protection	EA	13	\$	150.00	\$	1,950.00		\$	-	\$	-	\$	-	13.00	\$ 1,950.00
5. Temporary Seed Stockpile	SF	1,130	\$	0.15	\$	169.50		\$	-	\$	-	\$	-	1,130.00	\$ 169.50
6. NAG S75 Erosion Control Matting	SF	5,480	\$	0.25	\$	1,370.00		\$	-	\$	-	\$	-	5,480.00	\$ 1,370.00
7. Remove E&S Measures	LS	1	\$	2,150.00	\$	2,150.00		\$	-	\$	-	\$	-	1.00	\$ 2,150.00
<b>B. EARTHWORK</b>															
1. Site Excavation & Grading	LS	1	\$	87,387.90	\$	87,387.90		\$	-	\$	-	\$	-	1.00	\$ 87,387.90
<b>C. STORMWATER</b>															
1. 4 in. HDPE	LF	28	\$	30.75	\$	768.75		\$	-	\$	-	\$	-	28.00	\$ 768.75
2. 15 in. HDPE	LF	510	\$	38.00	\$	19,380.00		\$	-	\$	-	\$	-	510.00	\$ 19,380.00
3. 18 in. HDPE	LF	132	\$	44.00	\$	5,808.00		\$	-	\$	-	\$	-	132.00	\$ 5,808.00
4. Outlet Structure	EA	1	\$	4,000.00	\$	4,000.00		\$	-	\$	-	\$	-	1.00	\$ 4,000.00
5. Type C Inlet	EA	12	\$	2,425.00	\$	29,100.00		\$	-	\$	-	\$	-	12.00	\$ 29,100.00
6. Storm Manhole	EA	1	\$	2,520.00	\$	2,520.00		\$	-	\$	-	\$	-	1.00	\$ 2,520.00
7. Underground Detention Basin	LS	1	\$	110,000.00	\$	110,000.00		\$	-	\$	-	\$	-	1.00	\$ 110,000.00
8. Flared End Section	EA	1	\$	1,500.00	\$	1,500.00		\$	-	\$	-	\$	-	1.00	\$ 1,500.00
9. Level Spreader	EA	1	\$	11,875.00	\$	11,875.00		\$	-	\$	-	\$	-	1.00	\$ 11,875.00
<b>D. SITE IMPROVEMENTS</b>															
1. Concrete Curb, Inc. curb line sealing	LF	3,475	\$	17.00	\$	59,075.00		\$	-	\$	-	\$	-	3,475.00	\$ 59,075.00
2. 1.5 in. 9.5mm Wearing Course	SY	4,631	\$	9.00	\$	41,679.00		\$	-	\$	-	\$	-	4,631.00	\$ 41,679.00
3. 3 in. 25mm Blinder Course	SY	4,631	\$	17.00	\$	78,727.00		\$	-	\$	-	\$	-	4,631.00	\$ 78,727.00
4. 6 in. 2A Stone	SY	4,631	\$	11.25	\$	52,098.75		\$	-	\$	-	\$	-	4,631.00	\$ 52,098.75
5. Concrete Pad (4,000 psi w/ fiber), Inc. 6 inch 2A	SY	103	\$	100.00	\$	10,300.00		\$	-	\$	-	\$	-	103.00	\$ 10,300.00
6. Concrete Sidewalk (4,000 psi w/ fiber), Inc. 4 Inch 2A	SF	3,747	\$	7.50	\$	28,102.50		\$	-	\$	-	\$	-	3,747.00	\$ 28,102.50
7. ADA/PennDOT Compliant Ramp, Inc. DWS	EA	7	\$	1,500.00	\$	10,500.00		\$	-	\$	-	\$	-	7.00	\$ 10,500.00
<b>E. LIGHTING</b>															
1. Pole Mounted Light w/ Shield & Foundation	EA	8	\$	3,500.00	\$	28,000.00		\$	-	\$	-	\$	-	8.00	\$ 28,000.00
2. Double Pole Mounted Light w/ Shield & Foundation	EA	6	\$	5,000.00	\$	30,000.00		\$	-	\$	-	\$	-	6.00	\$ 30,000.00
3. SAH Fixture (DeKalb Pike Egress)	EA	1	\$	2,000.00	\$	2,000.00		\$	-	\$	-	\$	-	1.00	\$ 2,000.00
<b>F. LANDSCAPING</b>															
<b>Deciduous Trees</b>															
1. Acer rubrum 'Bowhall' (3" cal. min.)	EA	8	\$	650.00	\$	5,200.00		\$	-	\$	-	\$	-	8.00	\$ 5,200.00
2. Ginkgo Biloba 'Princeton Sentry' (3" cal. min.)	EA	13	\$	650.00	\$	8,450.00		\$	-	\$	-	\$	-	13.00	\$ 8,450.00
3. Gladiolus Triacanthus 'Skyline' (3" cal. min.)	EA	6	\$	650.00	\$	3,900.00		\$	-	\$	-	\$	-	6.00	\$ 3,900.00
4. Liquidambar styraciflua 'Rotundifolia' TM (3" cal. min.)	EA	9	\$	650.00	\$	5,850.00		\$	-	\$	-	\$	-	9.00	\$ 5,850.00
5. Quercus palustris (3" cal. min.)	EA	7	\$	650.00	\$	4,550.00		\$	-	\$	-	\$	-	7.00	\$ 4,550.00
6. Zelkova serrata 'Green Vase' (3" cal. min.)	EA	12	\$	650.00	\$	7,800.00		\$	-	\$	-	\$	-	12.00	\$ 7,800.00

APPLICANT REQUEST 1/27/2021





PROJECT NAME: Sparkies Express Car Wash  
 DEVELOPER: Pro Real Ventures, LLC  
 ESCROW AGENT:  
 TYPE OF SECURITY:

TOTAL ENGINE/LEGAL (CASH ESCROW): \$ 45,000.00  
 TOTAL ADMINISTRATION (CASH ESCROW): \$ 5,000.00  
 MAINTENANCE BOND AMOUNT (15%): \$ 110,466.29

# APPLICANT REQUEST 1/27/2021 SUMMARY OF IMPROVEMENT ESCROW ACCOUNT

DATE PREPARED: 6-May-2020

MONTGOMERY TOWNSHIP  
 TOWNSHIP NO.: LDS-699  
 G&A PROJECT NO.: 2018-01153-01  
 AGREEMENT DATE:

SUMMARY OF IMPROVEMENT ESCROW ACCOUNT	TOTAL COST	RELEASE REQUESTS			BALANCE
		CURRENT	PRIOR	TOTAL	
CONSTRUCTION	\$ 238,441.90	\$ -	\$ -	\$ -	\$ 736,441.90
ANNUAL 10% CONSTRUCTION COST INCREASE (Balance as of mm/dd/yyyy + \$0.00)	\$ -	\$ -	\$ -	\$ -	\$ -
CONTINGENCY (10%)	\$ 73,644.19	\$ -	\$ -	\$ -	\$ 73,644.19
<b>TOTAL</b>	<b>\$ 312,086.09</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 810,086.09</b>

CONSTRUCTION ITEMS		UNIT	QUANTITY	UNIT COST	TOTAL COST	CURRENT REQUEST		PRIOR REQUESTS		TOTAL REQUESTS (incl. current release)		AVAILABLE FOR RELEASE (incl. current release)	
						QTY	COST	QTY	COST	QTY	COST	QTY	COST
<b>Shrubs</b>													
7	Cornus Sericea 'Bailey' (20 - 36 in. ht.)	EA	9	\$ 95.00	\$ 855.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	9.00	\$ 855.00
8	Fothergilla Gardenii 'Mt. Airy' (30 - 36 in. ht.)	EA	7	\$ 95.00	\$ 665.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	7.00	\$ 665.00
9	Ilex Glabra 'Shamrock' (24 - 30 in. ht.)	EA	97	\$ 95.00	\$ 9,215.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	97.00	\$ 9,215.00
10	Ilex Verticillata 'Sparkleberry' (30 - 36 in. ht.)	EA	35	\$ 95.00	\$ 3,325.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	35.00	\$ 3,325.00
11	Ilex Virginia 'Henry's Gamet' (30 - 36 in. ht.)	EA	30	\$ 95.00	\$ 2,850.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	30.00	\$ 2,850.00
12	Taxus Canadensis (24 - 30 in. ht.)	EA	29	\$ 65.00	\$ 1,885.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	29.00	\$ 1,885.00
13	Viburnum Dentatum 'Chicago Lustre' (30 - 36 in. ht.)	EA	6	\$ 95.00	\$ 570.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	6.00	\$ 570.00
<b>Ornamental Grasses &amp; Ground Cover</b>													
14	Calamagrostis X Acutiflora 'Karl Forester' (2 gal.)	EA	6	\$ 15.00	\$ 90.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	6.00	\$ 90.00
15	Hemerocallis X 'Stella De Oro' (1 gal.)	EA	40	\$ 15.00	\$ 600.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	40.00	\$ 600.00
16	Juniperus Conifera 'Emerald Sae' (15 - 18 in. ht.)	EA	45	\$ 15.00	\$ 675.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	45.00	\$ 675.00
17	Liriodendron 'Big Blue' (1 gal.)	EA	97	\$ 15.00	\$ 1,455.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	97.00	\$ 1,455.00
<b>G. MISCELLANEOUS</b>													
1	Trash Enclosure	EA	1	\$ 6,500.00	\$ 6,500.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	1.00	\$ 6,500.00
2	Regulatory/Warning Signs	EA	41	\$ 250.00	\$ 10,250.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	41.00	\$ 10,250.00
3	Striping	LS	1	\$ 5,000.00	\$ 5,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	1.00	\$ 5,000.00
4	Construction Stakeout	LS	1	\$ 12,350.00	\$ 12,350.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	1.00	\$ 12,350.00
5	As-Built Plans	LS	1	\$ 7,500.00	\$ 7,500.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	1.00	\$ 7,500.00
<b>H. ANNUAL CONSTRUCTION COST INCREASE PER PA MPC \$606.00</b>													
1	10% Annual Construction Cost Increase (Balance as of mm/dd/yyyy - \$0.00)	LS	1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	1.00	\$ -
<b>I. CONTINGENCY</b>													
1	10% Contingency (Released upon certification of completion and receipt of Maintenance Bond)	LS	1	\$ 73,644.19	\$ 73,644.19	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	1.00	\$ 73,644.19

APPLICANT REQUEST 1/27/2021

MONTGOMERY TOWNSHIP BOARD OF SUPERVISORS

BOARD ACTION SUMMARY

Item # 8

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SUBJECT:	Consider Resolution Setting Volunteer Firefighter Stipend for 2020
MEETING DATE:	February 8, 2021
BOARD LIAISON:	Tanya C. Bamford, Chair
INITIATED BY:	Carolyn McCreary, Township Manager

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BACKGROUND:

The Township approved a First Responder Recruitment and Retention Stipend program in 2018. The annual stipend program is incorporated in the 2021 budget. In order to proceed with payment to the volunteers, the Board of Supervisors would need to approve the attached resolution.

At the January 25<sup>th</sup> meeting of the Board of Supervisors the board acknowledge the written criteria for determining Qualified Active Member status, which was a prerequisite of the resolution.

The FDMT submitted the qualified active members for 2020, which is 30 volunteers.

PREVIOUS BOARD ACTION:

None.

BUDGET IMPACT:

The annual stipend has been incorporated in the 2021 budget. With 30 qualified members and a \$500.00 stipend, the payment to the FDMT would be \$15,000.00

RECOMMENDATION:

To approve the 2020 First Responder Recruitment and Retention Stipend.

MOTION/RESOLUTION:

See attached.

MOTION BY: \_\_\_\_\_ SECOND BY: \_\_\_\_\_

## **RESOLUTION #2021-**

**WHEREAS**, The Montgomery Township Board of Supervisors created a First Responder Recruitment and Retention Stipend to incentivize volunteer first responders who are Township Residents; and

**WHEREAS**, Township staff has created and developed an incentive program that allows for a lump sum distribution per "Qualified Active Member" in a local fire company or EMS squad; and

**WHEREAS**, a Qualified Active Member is a candidate that must be a resident of Montgomery Township during the qualifying eligibility period of January 1<sup>st</sup> through December 31<sup>st</sup> ("Eligibility Year") and who has met criteria established by his/her fire company/EMS squad for meeting "Active Member" status during the Eligibility Year; and

**WHEREAS**, each fire company or EMS squad must provide to the Township by January 31<sup>st</sup> of each year a certified, notarized list of Qualified Active Members; and

**WHEREAS**, each fire company or EMS squad must establish written qualifying criteria for achieving Active Member status and submit it to the Township by December 31<sup>st</sup> of each year and each fire company or EMS squad must determine the Qualified Active Member status of all its members which will then be certified and notarized by January 31<sup>st</sup> of each year; and

**WHEREAS**, the Township must vote to approve each fire company's or EMS squad's written criteria for determining Qualified Active Member status by December 31<sup>st</sup> of each year, and must vote to accept the certified and notarized list of Qualified Active Members by January 31<sup>st</sup> of each year; and

**WHEREAS**, the Township shall issue one lump-sum check to each fire company or EMS squad representing the First Responder Recruitment/Retention Stipend calculated in the amount of \$500.00 per Qualified Active Member in place by the fire company or EMS squad on the list accepted by the Township, and shall issue First Responder Recruitment/Retention Stipend within the first quarter of the year following the Qualifying Year; and

**WHEREAS**, the Township shall annually pass a resolution before the end of the year, setting the terms and conditions for the First Responder Recruitment and Retention Program, as well as setting the monetary amount per Qualified Active Member;

**NOW THEREFORE BE IT RESOLVED** that the Montgomery Township Board of Supervisors approves, by adoption of this resolution, responder recruitment and retention stipend for volunteer first responders.

MOTION BY:

SECOND BY:

VOTE:

DATE:

CC: B. Shapiro, W. Wiegman, VMSC, Resolution File

MONTGOMERY TOWNSHIP BOARD OF SUPERVISORS  
**BOARD ACTION SUMMARY**  
Item # **9**

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SUBJECT: Consider Authorization to Accept Quote for Engineering Services – Traffic Signal  
MEETING DATE: January 25, 2021  
BOARD LIAISON:  
INITIATED BY: Carolyn McCreary, Township Manager

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**BACKGROUND:**

Included in the Capital Investment Plan (CIP) is the anticipated work on the traffic signals at the intersections of the Montgomery Mall with Route 309. The Township was awarded a Green Light Go grant, which will be used to offset the cost to make these necessary improvements. Additionally, the Township has received notification from PennDOT of the need to inspect all traffic signal poles. This evaluation will be utilized to prioritize signal upgrades in the CIP.

**PREVIOUS BOARD ACTION:** None

**BUDGET IMPACT:**

The 2021 adopted budget includes funds specifically designated for this project.

**RECOMMENDATION:**

Authorize acceptance of the quote for services.

**MOTION/RESOLUTION:**

**Motion** to accept the proposal from Gilmore & Associates dated 01/27/21 in the amount of \$75,000 for traffic engineering services related to the modernization of the Route 309 & Montgomery Mall traffic signals.

Motion by: \_\_\_\_\_

Seconded by: \_\_\_\_\_



**GILMORE & ASSOCIATES, INC.**  
ENGINEERING & CONSULTING SERVICES

January 27, 2021

File No. 2020-12014

Carolyn McCreary, Township Manager  
Montgomery Township  
1001 Stump Road  
Montgomeryville, PA 18936-9605

Reference: Proposal for Professional Services for  
Modernization of Route 309/Montgomery Mall Traffic Signals

Dear Ms. McCreary:

Pursuant to your request, Gilmore & Associates, Inc. is providing a scope of work and fee proposal to prepare construction plans and documents for the modernization of the two signalized intersections of Bethlehem Pike (SR 0309) & Montgomery Mall South Access Drive and Bethlehem Pike (SR 0309) & Montgomery Mall North Access Drive. Improvements will include installing new mast arms, traffic signal heads, video detection, emergency pre-emption, and battery back-up.

The scope of work to prepare construction plans and documents for this project includes the following:

- Task 1 - Existing Conditions Survey
- Task 2 - Design and Permitting
- Task 3 - Construction Documents and Specifications
- Task 4 - Public Bid Support & Review
- Task 5 - Construction, Observation, Signal Inspection and As-Built Plans

**SCOPE OF WORK AND FEE PROPOSAL**

**TASK 1 – Existing Conditions Survey**

This task includes limited topographic survey at the two intersections to verify existing conditions of the project area and to locate utilities in order to minimize potential conflicts during construction. This information will be used to prepare a base plan for the construction plans.

**TASK 2 – Design and Permitting**

This task includes the following:

- a. Obtain Traffic Counts at the intersections of Bethlehem Pike (SR 0309) & Montgomery Mall North Access Drive and Bethlehem Pike (SR 0309) & Montgomery Mall South Access Drive. It is assumed a vehicular count will be conducted from 7:00AM to 7:00PM on a typical weekday and 11:00AM to 3:00PM on a Saturday at the intersections.
- b. Attend one meeting with PennDOT and the Township to discuss the proposed improvements.
- c. Prepare Traffic Signal plans, PennDOT Permitting and supporting documentation.
- d. Prepare plans for Highway Occupancy Permit (HOP) at the intersection of Bethlehem Pike (SR 0309) and Montgomery Mall Northern Access Drive/ Airport Square North Jug-handle.

**TASK 3 – Construction Documents and Specifications**

Task 3 includes preparation of the bid documents, which will consist of the contract documents (e.g. Bid Form, Agreement, General Conditions, Supplementary Conditions, Prevailing Wage Rates, etc.) and the technical specifications. These documents will be specific to this project.

65 East Butler Avenue | Suite 100 | New Britain, PA 18901 | Phone: 215-345-4330 | Fax: 215-345-8606

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Gilmore & Associates, Inc.  
Building on a Foundation of Excellence  
www.gilmore-assoc.com

**TASK 4 – Public Bid Support & Review**

Task 4 includes responding to bidder questions during the public notice period, attending a pre-bid meeting if determined to be needed, attending the bid opening, review and tabulation of the bids, and providing a recommendation with respect to potential award of a contract.

**TASK 5 – Construction Administration, Observation, Signal Inspection and As-Built Plans**

These tasks include oversight management of the work. The effort involved with construction observation is dependent upon the duration of the work and the level of oversight required by the Township. For the purposes of this proposal, we have assumed the duration of the work will be approximately 40 hours. Construction administration includes project management, coordination between the Township and contractor, and review and recommendations regarding payment requests. Also included are the pole spot inspection and two signal inspection meetings. An as-built signal plan will also be submitted to PennDOT, if needed.

Our proposed fee for these services outline above is not to exceed:

Task 1 - Existing Conditions Survey	\$10,000
Task 2 - Design and Permitting	\$45,000
Task 3 - Construction Documents and Specifications	\$8,000
Task 4 - Public Bid Support & Review	\$4,000
Task 5 - Construction, Observation, Signal Inspection and As-Built Plans	\$8,000

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<b>TOTAL – Not to Exceed</b>	<b>\$75,000</b>
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Should you find this scope of work and fee proposal acceptable, please let us know and we will commence work shortly thereafter. If you have any questions regarding the above, please contact this office.

Sincerely,



Damon Drummond, P.E., PTOE  
Senior Transportation Engineer  
Gilmore & Associates, Inc.

DAD/las

Enclosure:

cc: Greg Reiff, Director of Public Works  
Jim Dougherty, P.E.  
Leslie Salsbury, P.E.