

David J. Falcone Phone: (610) 251-5752 Fax: (610) 722-3270 David.Falcone@saul.com www.saul.com

August 14, 2023

VIA HAND DELIVERY

Board of Commissioners Radnor Township 301 Iven Avenue Wayne, PA 19087

Re: APPLICATION FOR CONDITIONAL USE APPROVAL OF A MIXED USE DEVELOPMENT FOR THE PROPERTY LOCATED AT 60 WEST AVENUE, WAYNE, PA ("PROPERTY") IN THE SPECIAL USE AREA IDENTIFIED BY SECTION 280-53.17 OF THE RADNOR TOWNSHIP ZONING CODE

Dear Commissioners:

60 West GP ("Applicant"), equitable owner of the above-referenced Property located at 60 West Avenue in Wayne, in conjunction with the owner of the Property, AT&T CORP. ("ATT"), hereby applies for conditional use approval of a mixed use building within the Township's Wayne Business Overlay District (Special Use Area) pursuant to Section 280-53.17 of the Radnor Township Code. The required conditional use application fee of \$1,500.00 will be delivered under separate cover.

Enclosed herewith and forming a part of this Conditional Use Application are the following plans and studies (the "Plans and Studies"):

1. Eighteen (18) full sized copies of the conditional use plan set entitled "60 West Avenue Conditional Use Plan" prepared by Site Engineering Concepts, LLC each consisting of eight (8) sheets.

2. Eighteen (18) copies of the Renderings for the Conditional Use Application prepared by Varenhorst dated July 27, 2023 consisting of four (4) sheets.

1200 Liberty Ridge Drive, Suite 200 • Wayne, PA 19087-5569 • Phone: (610) 251-5050 • Fax: (610) 651-5930

CALIFORNIA DELAWARE FLORIDA ILLINOIS MARYLAND MASSACHUSETTS MINNESOTA NEW JERSEY NEW YORK PENNSYLVANIA WASHINGTON, DC A delaware limited liability partnership 3. Eighteen (18) copies of the Planting Plan "Parcel B" and the Site Plan "Parcel B" each prepared by Jonathan Alderson Landscape and Architects dated July 21, 2023 and each consisting of one (1) sheet.

4. Eighteen (18) copies of the Fiscal Impact Analysis prepared by Erik W. Hetzel dated July 31, 2023 consisting of six (6) pages.

5. Eighteen (18) copies of the Parking Exhibit prepared by Site Engineering Concepts consisting of one (1) sheet.

As noted in the initial paragraph above, the subject Property (the AT&T Parking Lot) is identified as a "Special Use Area" by Section 280-53.17 of the Township's Zoning Code. As such, the Township has identified the Property as an area that is "close to public transit, dining and retail opportunities." Further, the Township has specifically identified the Special Use Areas as "offering the potential for unique urban residential and nonresidential projects to meet the growing and future demand for different uses within the WBOD."

Consistent with Section 280-53.17 of the Township Zoning Code, Applicant intends to purchase the Property and to develop the same as a mixed use development consisting of 52 residential condominium units, ground floor retail/commercial space, and 126 parking spaces, 109 of which will be located in a partially below grade parking structure (the "Project").

The residential units will include a wide variety of units (15 one-Bedroom Units, 17 two-Bedroom Units and 20 three-Bedroom Units) with sizes ranging from 1,100 square feet to 3,100 square feet. Other features proposed for the Project include several landscaped courtyards, significant stormwater management and maintenance of the existing street trees fronting Lancaster Avenue.

The approximate location of the proposed building and related parking is shown on the Plans. The proposed building will comply with the height, setback, coverage and parking regulations established by Section 280-53.17(D) of the Township Code.

It should be noted that the tract and the immediate area is currently served by public utilities and the proposed density is permitted under Article XIX of the Zoning Ordinance, therefore these impacts are already considered under the Zoning Ordinance. No adverse impacts on public utilities are anticipated. The nature of the stormwater management proposals for the Project are shown on the Plans. Traffic impact analysis is being performed and will be submitted to the Township upon completion. 60 West GP Conditional Use Application August 14, 2023 Page 3

Applicant hereby requests that this application be forwarded to the Planning Commission for review and comment and that a hearing for the consideration of this application be set by the Board.

Please contact the undersigned with any questions or comments and direct any notices or correspondence there as well. We look forward to working with the Township on this project.

Very thily yours, David J. Falcone

Enclosures

cc: Mr. William Collins Mr. Ken Kearns Mr. Devin Tuohey Robert Lambert, P.E.

Recached

CONTRACT OF SALE

Between

AT&T CORP.

And

WEST AVENUE GP, LLC

Portion of 60 West Avenue, Radnor Township, Delaware County, PA

CORP/1015953.1 US.336008676.11 The mailing, delivery or negotiation of this Contract by Seller or Purchaser or their respective agent or attorney shall not be deemed an offer by Seller or Purchaser to enter into this Contract or to enter into any other relationship with the other, whether on the terms contained herein or on any other terms. This Contract shall not be binding upon Seller or Purchaser, and neither Seller nor Purchaser shall have any obligations or liabilities or any rights with respect thereto, or with respect to the Property, unless and until Purchaser and Seller have executed and delivered this Contract. Until such execution and delivery of this Contract, Seller or Purchaser may terminate all negotiation and discussion of the subject matter hereof, without cause and for any reason, without recourse or liability.

* * *

CORP/1015953.1 US.336008676.11

CONTRACT OF SALE

THIS CONTRACT OF SALE ("Contract"), effective as of the 27 th day of January, 2023 ("Contract Date"), by and between AT&T Corp., a New York corporation, successor by merger to AT&T Communications of Pennsylvania, LLC, in turn successor by merger to AT&T Communications of Pennsylvania, Inc., having a mailing address for the purposes hereof at c/o AT&T Services, Inc., One AT&T Way, Bedminster, NJ 07921, Attention: Ms. Whitney Meyer ("Seller") and West Avenue GP, LLC, a Pennsylvania limited liability company, having a mailing address for the purposes hereof at 20 Louella Court, Suite 200, Wayne, Pennsylvania 19087, Attention: Devin Tuohey ("Purchaser").

WITNESSETH:

WHEREAS, Seller owns certain real property having a street address at 60 West Avenuc, Radnor Township, Delaware Country, Pennsylvania consisting of approximately 5.29 acres, and being Delaware County Tax Parcel No. 360100677801 ("Seller's Existing Property"); and

WHEREAS, Seller's Existing Property lends itself to being subdivided into three (3) separate lots consisting of (i) a northern lot consisting of approximately 1.05 acres and commonly known as the "West Parcel", (ii) a middle lot consisting of approximately 2.6 acres upon which is located an existing building and other improvements used by Seller and commonly known as the "Building Parcel", and (iii) a southern lot consisting of approximately 1.64 acres fronting on Lancaster Avenue and commonly known as the "Bellevue Parcel"; and

WHEREAS, Seller desires to sell and Purchaser desires to purchase the Bellevue Parcel, as said lot is more particularly depicted on **Exhibit A** attached hereto and made a part hereof; and

WHEREAS, the West Parcel and the Building Parcel are sometimes referred to collectively as "Seller's Retained Property"; and

WHEREAS, Purchaser is willing to purchase and Seller is willing to sell the Bellevue Parcel on the terms and conditions set forth below.

NOW, THEREFORE, for and in consideration of the covenants contained herein and other good and valuable considerations, the receipt and sufficiency whereof are hereby acknowledged by each of the parties hereto, it is hereby agreed that, upon all the terms and conditions hereinafter set forth, Seller shall sell and Purchaser shall purchase the Bellevue Parcel.

1. <u>PURCHASE PRICE</u>. The purchase price to be paid by Purchaser to Seller for the Bellevue Parcel is agreed to be

Price"). Said Purchase Price, as adjusted by the credits and prorations described herein, shall be paid by Purchaser to Seller at Closing (as hereinafter defined in paragraph 6) at the election of

CORP/1015953.1 US,336008676.11 Purchaser in certified funds or by wire transfer pursuant to wire transfer instructions provided by Seller.

3. INSPECTION AND SUBDIVISION.

Commencing on the Contract Date, subject to the rights of Radnor Township under (a) its lease dated December 13, 1999, with Seller and AT&T Communications of Pennsylvania, Inc., as landlord (the "Radnor Township Lease"), the Purchaser and its employees and agents shall have the right to enter upon the Bellevue Parcel upon at least twenty-four (24) hours' prior notice to Seller for the purpose of investigating the physical condition of the Bellevue Parcel. Purchaser shall and does hereby indemnify and hold harmless Seller from and against any claim, loss, damage, or obligation arising out of or incurred in connection with the exercise of the rights of Purchaser under this paragraph 3(a) (and said indemnity obligation shall survive the Closing or earlier termination of this Contract). For avoidance of doubt, the foregoing indemnity obligations shall not extend to, and Seller hereby releases Purchaser from liability for, any claims, damages or other liability resulting from or related to any existing environmental contamination with respect to the Bellevue Parcel, or other environmental deficiencies in the Bellevue Parcel or Seller's Retained Parcel, that may be discovered by Purchaser as a result of its investigations, unless Purchaser exacerbates an existing environmental contamination, in which case Purchaser shall be liable to the extent the environmental condition is exacerbated. Additionally, prior to entry upon the Bellevue Parcel, Purchaser shall present Seller with a certificate in form and content reasonably satisfactory to Seller, evidencing a commercial general liability insurance policy covering Purchaser's performance of its rights under this paragraph, which policy shall remain in effect during the term of this Contract, the limits of which shall not be less than \$5,000,000 per occurrence and which shall include a contractual liability endorsement covering Purchaser's indemnity obligation under this paragraph. Seller shall be listed on such policy as an additional insured. Further, Purchaser shall diligently and in good faith investigate and pursue the satisfaction of Purchaser's development criteria relating to the Bellevue Parcel (which criteria include, without limitation, matters relating to soil conditions, environmental hazards, utilities, zoning, demographics, and governmental permits). Purchaser shall use commercially reasonable efforts to conduct such right of entry with a minimum of interference of Radnor Township's use of the Bellevue Parcel and if Purchaser or any of its employees or agents cause any damage to the

CORP/1015953.1 US.336008676.11 Bellevue Parcel, Purchaser shall promptly restore the Bellevue Parcel to the same condition as existed prior to any such entry.

(b) Purchaser shall in good faith and using commercially reasonable efforts, seek final, unappealed and unappealable approval from Radnor Township and Delaware County, to subdivide Seller's Existing Property into three separate tax parcels constituting the Bellevue Parcel, the Building Parcel and the West Parcel (the "Subdivision"), in accordance with all applicable laws, statutes and ordinances and any rules and regulations enacted thereunder (collectively, "Legal Requirements"), subject to (i) such terms and conditions as are acceptable to Purchaser, in its sole and absolute discretion; and (ii) that each of the Bellevue Parcel, the Building Parcel and the West Parcel individually, on a stand-alone basis, complies "as-of-right" with all Legal Requirements including any Legal Requirements of the Township of Radnor, without any variances.

Seller shall cooperate with Purchaser in its efforts to obtain the Subdivision. including, without limitation, Seller's signing a subdivision plan and an application for the Subdivision as the record owner; the execution of all documents, petitions and other instruments that may from time to time be required and joining Purchaser as a petitioner or co-applicant; provided however, that (i) before making any submissions to governmental agencies having jurisdiction over the Subdivision, including, but not limited to submissions to applicable agencies of the Township of Radnor, Purchaser shall first provide Seller with an opportunity to reasonably approve any submission (which approval shall not be unreasonably withheld, conditioned or delayed) and it shall be reasonable for Seller to object to any submission if it involves any variance or other condition unacceptable to Seller in its sole discretion with respect to the Seller Retained Property; provided that if Seller shall fail to affirmatively approve any such submission or fail to issue written notice of any rejection within seven (7) business days of receipt by Seller of such submission for review, Seller shall be deemed to have approved the submission; (ii) Purchaser shall reimburse Seller for any reasonable third party expense incurred by Seller in connection with such cooperation, including, without limitation, reasonable legal fees, within thirty (30) days after Seller's delivery to Purchaser of third party invoices, and (iii) no documents or plans effectuating the Subdivision shall be recorded prior to the completion of Closing.

If Purchaser does not obtain the final and unappealable Subdivision (with no appeal therefrom having been taken) (the "Subdivision Approval"), on or before the one hundred eightieth (180th) day after the Contract Date (the "Subdivision Approval Period") or if Purchaser's application for the Subdivision is denied on or before the end of the Subdivision Approval Period, this Contract shall automatically terminate and upon any such termination Purchaser shall be entitled to a return of the Earnest Money and except as may otherwise be expressly provided for herein nether party shall have any further rights or obligations under this Contract.

Notwithstanding the foregoing, if Purchaser has not received the Subdivision Approval by the end of the Subdivision Approval Period, Purchaser shall have the right to extend the Subdivision Approval Period for two additional periods of ninety (90) days each, by giving

CORP/1015953 1 US.336008676.11 IN WITNESS WHEREOF, Seller and Purchaser have executed this Contract to be effective as of the Contract Date.

SELLER:

AT&T CORP

By: C.K./Lal Name:

Title:

PURCHASER:

WEST AVENUE GP, LLC

By: _____ Name: Title:

JOINDER:

Crescent Abstract LLC, being the Escrow Agent and agent for Fidelity National Title Insurance Company, relating to the foregoing Contract of Sale, hereby joins the Contract of Sale for the sole purpose of acknowledging and agreeing that the Seller Corporate Lien Indemnity as defined in Section 5(a) of the Contract for Sale is sufficient for Escrow Agent and Fidelity National Title Company to omit the Seller Corporate Lien from Purchaser's and its mortgagee's title insurance policies for the Bellevue Parcel.

IN WITNESS WHEREOF, Escrow Agent, intending to be legally bound hereby, has caused this document to be duly executed this _____ day of _____, 2023.

CRESCENT ABSTRACT LLC

By:	
Nan	ne:
Titl	e:

CORP/1015953.1 US.336008676.11 IN WITNESS WHEREOF, Seller and Purchaser have executed this Contract to be effective as of the Contract Date.

SELLER:

AT&T CORP

By: ____ Name: Title:

PURCHASER:

WEST AVENUE OP, By: Name: William J. Collins

Title: Manager

JOINDER:

Crescent Abstract LLC, being the Escrow Agent and agent for Fidelity National Title Insurance Company, relating to the foregoing Contract of Sale, hereby joins the Contract of Sale for the sole purpose of acknowledging and agreeing that the Seller Corporate Lien Indemnity as defined in Section 5(a) of the Contract for Sale is sufficient for Escrow Agent and Fidelity National Title Company to omit the Seller Corporate Lien from Purchaser's and its mortgagee's title insurance policies for the Bellevue Parcel.

IN WITNESS WHEREOF, Escrow Agent, intending to be legally bound hereby, has caused this document to be duly executed this _____ day of _____, 2023.

CRESCENT ABSTRACT LLC

By: _____ Name: Title:

CORP/1015953.1 US.336008676.11 IN WITNESS WHEREOF, Seller and Purchaser have executed this Contract to be effective as of the Contract Date.

SELLER:

AT&T CORP

By: _____ Name: Title:

PURCHASER:

WEST AVENUE GP, LLC

By: _____ Name: Title:

JOINDER:

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IN WITNESS WHEREOF, Escrow Agent, intending to be legally bound hereby, has caused this document to be duly executed this 27° day of 18000, 2023.

CRESCENT ABSTRACT/LLC By: E W. CRZRICKI Name: Title:

CORP/1015953.1 US.336008676.11 17

EXHIBIT "A"

SUBDIVISION SKETCH



CORP/1015953.1

60 WEST AVENUE CONDITIONAL USE PLAN





CIVIL ENGINEER:

SITE ENGINEERING CONCEPTS, LLC ATTN: MICHAEL T. ROKOSNY, P.E. P.O. BOX 1992 SOUTHEASTERN, PA 19399

P: 610-523-9002

E: MROKOSNY@SITE-ENGINEERS.COM

ADJOINING PROPERTIES (LANDS N/F)

3. EADEH FAMILY LIMITED PARTNERSHIP 34 WEST AVENUE

1. RADNOR SCHOOL DISTRICT 103 LOUELLA AVENUE

2. EASTERN CONTROLS LLC 57 WEST AVENUE

4. LESLIE W. EADEH 163 W. LANCASTER AVENUE

5. GEORGE & JACKIE GLADSTONE 128 W. LANCASTER AVENUE

6. LUMBERMENS MERCHANDISING CORP 130 W. LANCASTER AVENUE

7. WAYNE TOWN CENTER LP 132 136 W. LANCASTER AVENUE

 WAYNE TOWN CENTER LP 132 136 W. LANCASTER AVENUE
 201 WEST GP LLC 201 W. LANCASTER AVENUE
 CAESAR L. & DEBRAH MAZARSKI 114 BELLEVUE AVENUE
 JOHN G. AIKEN 116 BELLEVUE AVENUE
 MELANIE GULMOUR 118 BELLEVUE AVENUE

13. ANGUS R. MACGILLIVRAY 120 BELLEVUE AVENUE

 DANIEL L. PRIMA & SANDRA BAUER 112 S. BELLEVUE AVENUE
 DANIEL L. PRIMA & SANDRA BAUER 122 S. BELLEVUE AVENUE
 THOMAS J. LIEB 124 S. BELLEVUE AVENUE
 TAVID W. MORRIS 126 BELLEVUE AVENUE
 SETH A. DAKES 201 WEST AVENUE
 SETH A. BAKES 201 WEST AVENUE
 MICHARL R. MCFEE 205 WEST AVENUE
 MICHARL A. THOFOLD 1 MARLYN CIRCLE
 BRIAN J. SACKSTEDER 2 MARYLN CIRCLE

ARCHITECT:

VARENHORST ATTN: STEPHEN VARENHORST 230 N 21ST ST. PHILADELPHIA, PA 19103 P: 215-940-1128 E: STEPHEN@VARENHORST.COM

LANDSCAPE ARCHITECT:

JONATHAN ALDERSON LANDSCAPE ARCHITECTS, INC. ATTN: JONATHAN ALDERSON P.O. BOX 661 WAYNE, PA 19087 P: 610-341-9925 E: JONATHAN@JONATHANALDERSON.COM



OWNER / APPLICANT:

WEST AVENUE GP ATTN: DEVIN TUOHEY 20 LOUELLA COURT, SUITE 200 WAYNE, PA 19087 P: 347-330-0048 E: DTUOHEY@CONCORDIAGROUP.BIZ

	RADNOR TOWNSHIP delaware co. pennsylvani
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ATTEST:	SEC

DRAWING SCHEDULE

- 1. COVER SHEET
- 2. EXISTING CONDITIONS
- 3. SUBDIVISION PLAN
- 4. SITE PLAN

- 5. RECORD PLAN
- 6. POST CONSTRUCTION STORMWATER
- 7. EROSION AND SEDIMENTATION CONTROL PLAN
- 8. EROSION AND SEDIMENTATION CONTROL DETAILS

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	110.00	DATE	PLAN PREPARED BY			
	SI	TE EN	GINEERING CONC	EPTS, LLC		
			P.O. BOX 1992			
	SOUTHEASTERN, PA 19399					
	P: 610-240-0450 F: 610-240-0451 E:INFO@SITE-ENGINEERS.COM					
			PLAN FREPARED FOR			
			- WEST AVENUE G	P		
ATTACKS.			60 WEST AVE			
ACCESSION AND			WAYNE, PA 19087			
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GENERAL NOTES

- PARCEL INFORMATION: FOLIO NUMBER: 36-010-0078-01 Block 36-12 Unit 113 DEED BOOK 6574 PAGE 0184
- 2. GROSS LOT AREA: 291,448 5q. Ft.
- OUTLINE DESCRIPTION AND LOCATIONS SHOWN IN ACCORDANCE WITH AN ACTUAL FIELD INSTRUMENT SUMPLY CONDUCTED BY THIS OFFICE. SUMPLY PREPARED FORM RECEARD SUMPLICE OF LOCKY AND WOOLS DEEDS AND FLANS OF RECORD. THIS SUMPLY WAS PERIODUCED WITHOUT THE DEVENT OF A CUMPLY TILL REPORT, WHICH WOULD DECLOSE. ANY REATS, RESEARCH ST, ECC. OF RECEMP.
- CONTOURS PLOTED FROM FELD RUN SURVEY, APPROXIMATE ELEVATION DENCHMARK BASED ON WOS84
- THIS SURVEY IS NOT TO BE USED FOR TREE REMOVAL ALONG PROPERTY LINES. THEE LOCATIONS ARE APPROXIMATE PROPERTY LINES MUST BE FIELD MARKED WITH STAKES SET TO ESTABLISH EACH THEE OWNERSHIP.
- THERE IS NO TRENT MER FEAR FLOOD HAN ARKS WITH THE PROJECT STE AS ILLUSTRATED ON COMMUNIT PARE, NUMBER 42028-0017-FO THE FLOOD INSURANC RATE MAP AS PREPARED BY THE FEDERAL EXEMPLICITY MANAGUENT AGENCY FOR THE TOWNSHIP OF FADOLOGY, PENNSYLVANA.

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IMPERVIOUS COVER/	GE SUMM	ARY	
GROSS LOT AREA	291,448	Sq. FL	
BUILDING (INC. OVERHANGS > 2)	49,684	Sq. FL	-
ASPHALT	128,167	Sq. Fl.	
CONCRETE & WALKS	10,510	Sq. Fl.	
CURBS (INC. PARKING BLOCKS/CAR STOPS)	1,362	Sq. Fl.	
WALLS, TIES, WINDOW WELLS	1,650	Sq. Fl.	
INACCESSIBLE AREAS - IMPERVICUS	9,240	Sq. Fl.	
TOTAL BUILDING COVERAGE	49,684	Sq. FL	17.05%
TOTAL SITE IMPERVIOUS COVERAGE	200,613	Sq. FL	68.83%



	NUM.	DATE	REVISION	
	SI.	TE EN	GINEERING CONCEJ P.O. BOX 1992 SOUTHEASTERN, PA 19399 F. 610-240-0451 EINFO@S	PTS, LLC
	BADAN	YR TOMAICIAR	WEST AVENUE GP 60 WEST AVE WAYNE, PA 19087	DENNEVI VAIIA
HAEL T. ROKOSNY, P.E. PE093468	E	XISTI	SHEET 2 of 8 scale 1"+40	



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PARCEL INFORMATION: FOLIO NUMBER: 36-010-0678-01 Brock 36-12 Unit 115 DEED BOOK 6574 PAGE 0184

2. GROSS LOT ANEA: 291,448 Sq. Ft.

- 3. OUTLINE DESCRIPTION AND LICATIONS SHOWN IN ACCORDANCE WITH AN ACTUAL FIELD INSTRUMENT SUPPORT CONDUCTIO BY THIS GFFCC. SUPPORT PREPARED FROM REED AS SUPPORT BY CLONENT AND VIRUOUS DEDIS AND PANGE OF RECORD. THIS SUPPORT WAS REPORTED BY THE REPORT OF A CURRENT THE REPORT, WHICH WOULD SECURE AND REFERS, RESERVANCES, ESSENTIAL, ELL, OF RECORD SECURE AND REFERS, RESERVANCES, ESSENTIAL, ELL, OF RECORD.
- 4. CONTOURS PLOTTED TROM FIELD RUN SURVEY, APPROXIMATE ELEVATION BENCHWARK IS BASED ON WESSA 5. THIS SURVEY IS NOT TO BE USED FOR TREE REMOVAL ALONG PROPERTY LINES. TREE LOCATIONS ARE APPROXIMATE, PROPERTY LINES MUST BE FIELD MARKED with STARES SET TO ESTABLISH LOCAT TREE OWNERSHIP.
- HERE IS NO IDENTIFIABLE FEMA FLOOD PLAIN ANGAS WITHIN THE PROJECT ST ILLUSTRATED ON COMMUNITY PANEL NUMBER 420478-0017-F OF THE FLOOD RATE MAY AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY F TOWNSHIP OF RADURD, PENNENTMANA.
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PROPERTY OWNER COMMONWEALTH OF PENNSYLVANI

COUNTY OF DELAWARE

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NOTARY

RADNOR TOWNSHIP:

ΤΗς ΤΟ ΤΟ CERTIFY ΤΗ ΕΧΑΝΟ ΟΓ ΞΔΟΟΒΟΟΧΑ ΝΑ ΑΡΥΡΟΥΤΟ ΤΗ 5 ΔΙΙΟΝΥΞΟΝ ΠΑΙ ΤΟ ΟΙ ΝΗΤΑ ΑΝΟΤ, ΟΙ Η ΤΕ ΓΓΟΟ ΟΙ ΝΗΤΑ ΑΝΟΤ, ΟΙ Η ΤΕ ΠΟΓΟΙ ΟΙ ΝΗΤΑ ΑΝΟΤ, ΟΙ Η ΤΕ ΠΟΓΟΙ ΟΙ ΝΗΤΑ ΑΝΟΤΟ ΑΝΟΤΑΙ ΤΟ ΑΝΟΤΑ ΠΑΙΟ ΟΙ ΤΟ ΑΝΟΤΟ ΑΠΤΕΙ ΟΙ ΟΙ ΠΟΣΟΙΟΝΙ ΗΜΑΙ ΕΙΣΟΑ ΑΟ ΕΧΟΠΙΙΑΛΙΑΙ ΕΙ ΠΟΙΟΙΤΑ ΤΗΝΟ ΟΙ ΒΕΓΟΛΙΠΟΙ ΑΠΤΕΙ ΟΙ ΠΟΣΟΙΟΝΙ ΗΜΑΙ ΕΙΣΟΑ ΑΟ ΕΧΟΠΙΙΑΛΙΑΙ ΤΑ ΟΙ ΑΝΟΤΑ ΑΝΟΤΑΙ ΤΑ ΤΗΝΑΤΑΙ ΤΗ ΕΙΣΟΝΤΟΙ ΑΝΟΤΑΙ ΤΑ ΟΙ ΑΝΟΤΑ ΑΝΟΤΑΙ ΤΑ ΤΗΝΑΤΑΙ ΤΑ ΤΗΝΑΤΑΙ ΑΝΟ ΠΟΙΟΙΤΑΙ ΤΗ ΟΙ ΑΝΟΤΑΙΟΝΑΙ ΑΝΟ ΑΝΟΤΑΙ ΤΑ ΤΗΝΑΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟ ΠΟΙΟΙΤΑ ΤΗ ΣΙΙΟΝΥΙΟΝΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΟΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΤΑ ΟΙ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΝΟΤΑΙ ΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΝΟΤΑΝΟ ΑΝΟΤΑΙ ΑΝΟΤΑΙ ΑΝΟΤΑΝΟΤΑΝΟΤΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟΤΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟΤΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟ ΑΝΟ ΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟ ΑΝΟ ΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟΤΑΝΟ ΑΝΟ ΑΝΟ ΑΝΟΤΑΝ APPROVED THE __ DAY OF . 20____

BOARD OF SUPERVISORS SKINED THIS ____ DAY OF ____

DHARMAN

NEWBER TOWNSHIP INCIDER

ATTEST MANAGER

DELAWARE COUNTY PLANNING COMMISSION: REVIEWED BY THE DELAWARE COUNTY PLANNING COMMISSION THIS ____ DAY OF

SECRETARY

RECORDER OF DEEDS

RECORDED IN THE OFFICE OF THE RECORDER OF DEEDS OF DELA CHESTER, PENNSYLVANA IN THE NARE COUNTY AT MEDIA ON THE ____ DAY OF

RECORDER OF DEEDS

	NUM.	DATE	REVISION		
			PLAN PREPARED BY		
	ST	re en	GINEERING CONCE P.O. BOX 1992 SOUTHEASTERN, PA 19399	PTS, LLC	
	P: 810-240-0450 F: 510-240-0451 EINFO@SITE-ENGINEERS.C				
	0.000.000		PLAN PREPARED FOR		
			WEST AVENUE GP		
A REAL PROPERTY AND			60 WEST AVE WAYNE, PA 19087		
All and and WE	RADNO	R TOWNSHIP	P DELAWARE COUNTY	PENNSYLVANIA	
	7	SUB	DIVISION PLAN	SHEET 3 of 8	
ICHAEL T, ROKOSNY, P.E. PE093468				SCALE 1" #40"	



GENERAL NOTES

- PARCEL INFORMATION: FOLIO NUMBER: 36-010-0678-01 Block 36-12 Unit 113 DEED BOOK 6574 PAGE 0184
- 2. CROSS LOT AREA: 291,448 Sq. Ft.
- OUTLINE DESCRIPTION AND LOCATIONS SHOWN IN ACCORDANCE WITH AN ACTUAL FELD INSTITUATION SUMPLY CONDUCTED BY THIS OFFICE, SUMPLY PREPARED FROM DEED AS SUPPLED BY CUENT AND VARIOUS BEEDS AND FLANS OF RECORD. THIS SUMPLY WAS PERFORMED WITHOUT HE BENEFIT OF A CURRENT TILL REPORT, WHICH WOULD DISCLUSE ANY PROVING RESEARCHING, EACOMENTS, ETC. OF RECORD.
- CONTOURS PLOTTED FROM FIELD RUN SURVEY, APPROXIMATE ELEVATION BENCHMARK I BASED ON WCS84
- 1. THIS SURVEY IS NOT TO BE USED FOR TREE REMOVAL ALONG PROPERTY LINES. THEI LOCATIONS ARE APPROXIMATE PROPERTY LINES MUST BE FIELD MARKED WITH STAKES SET TO ESTABLISH EXACT TREE OWNERSHIP.
- THERE IS NO DENTRUBLE FEMA FLOOD PLAN AREAS WITHIN THE PROJECT STE AS LUSISTRATED ON COMMUNITY PARE, HUMBER 420428-0017-6 THE FLOOD INSURANCE RATE MAP AS PREPARED BY THE FLOERAL DURGENCY MANAGEMENT AGENCY FOR THE TOWNSHIP OF RADNER, PENNSYLVANA.

TREE LEGEND

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THIS SURVEY IS NOT	TO BE USED FOR
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TREE LOCATIONS ARE	APPROXIMATE, FOR
TREE REMOVAL PURE	OSES, PROPERTY LIN
MUST BE FELD MARE	KED WITH STAKES SE
TO ESTABLISH EXACT	TITLE OWNERSHIP.

PLAN LEGEND

	SUPPLEMENTAL CONTOUR (1" INTERVAL)
	INDEX CONTOUR (5' INTERVAL)
	EXISTING STORM SEWER PIPING
	EXISTING SANITARY SEWER PIPING
	EXISTING GAS MAIN
	EXISTING WATER MAN / SERVICE
	EXISTING UNDERGROUND TELEPHONE
mmm	EXISTING EDGE OF WOODS
	EXISTING EDGE OF PAVENENT
X	EXISTING FENCE LINE
	PROPERTY LINE
	BUILDING SETBACK LINE
	EXISTING EAVES
CONC.	CONCRETE
Dre	UTILITY POLE
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1.P	LIGHT POLE
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1.000	ALL'S ALL ALL

IMPERVIOUS	COVERAGE	SUMMAR	۲Y	
GROSS LOT AREA	76,834	Sq. Fl.		
	EXISTING	REMOVE	ADD	PROPOSED
BUILDING (INC. OVERHANGS > 2' AND GARAGE)	a	0	46,525	46,525
ASPHALT	44,858	-38,784	4,970	11,044
CONCRETE & WALKS	3.076	-3.076	4,930	4,930
CURBS (INC. PARKING BLOCKS/CAR STOPS)	567	-567	0	0
WALLS, TIES, WINDOW WELLS	456	-465	556	547
TOTAL BUILDING COVERAGE	0			46,525
TOTAL SITE IMPERVIOUS COVERAGE	48,957	-42,892	56,961	63,048



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	2	GENERAL NOT	ES	
		PARCEL INFORMATION		
		FOLIO NUMBER: 36- DEED BOOK 6574 F	010-0678-01 Block 3E-12 Unit 113 WGE 0184	
		 CROSS LOF AREA 2 OUTLINE DESCRIPTION INSTRUMENT SURVEY SURVEY ENDER BY CUENCING 	S1.448 Sq. FL N AND LOCATIONS SHOWN IN ACCORDANCE WITH CONDUCTED BY THIS OFFICE. SURVEY PREPAR AND INARIAN DESCRIPTION AND BY AUGUST OF DESCRIPTION	H AN ACTUAL FIELD ED FROM DEED AS
		PERFORMED WITHOUT DISCLOSE ANY RIGHT	THE RENEFIT OF A CURRENT TITLE REPORT, Y S, RESERVATIONS, EASEMENTS, ETC. OF RECOR	RHICH WOULD D.
	5	BASED ON WOS84	TO BE USED FOR THEE REMOVAL MONG PRO	PERTY LINES TROP
		LOCATIONS ARE APPI SET TO ESTABLISH E	ROXMATE, PROPERTY LINES MUST BE FIELD MA XACT TREE DWNERSHIP.	RED WITH STAKES
E	8	8 THERE IS NO IDENTI ILLUSTRATED ON COM RATE MAP AS PREPA	FIABLE FEMA FLOOD PLAIN AREAS WITHIN THE I IMUNITY PANEL NUMBER 420428-0017-F OF RED BY THE FEDERAL EMERGENCY MANAGEMEN	PROJECT SITE AS THE FLOOD INSURANCE IT AGENCY FOR THE
		TOWNSHIP OF RADIO 7. EXISTING SUBSURFAC	OR, PENNSYLVANIA. IE UTILIFY INFORMATION INDICATED IS BASED UP	'ON VISUAL FIELD
		INSPECTION BY JEFF LOCATION, BEPTIN, O AND HAS BEEN OUT PROVIDED IS REPRES DEPTINS WHERE SUO IMPLED ARREMENT ENDSTS BEIWEEN EX SHOULD NOT BE REP THE CONTRACTOR TO UTILITIES SHALL BE CONTRACTORS PROM UNDERGROUND UTILIT	CHY P. NUMER, PLS. BLOCH MORPHATCH, COM NUMER, PLS. BLOCH MORPHATCH, CHINARD AND AND AND AND AND AND AND AND AND AN	CERNING THE SIZE, FROMING THE NATURE THE UNTORNATION THE UNTORNATION ENTRESSED OF CHTCLAS SHOWN IS INCLUMENT UPON IS INCLUMENT UPON IS INCLUMENT ALL VERTICAL INFORMATION F ALL SUBSURFACE VERTICAL
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?5"W		CONNONWEALTH OF P	ENNSYLVANA	
		COUNTY OF DELAWARE		
		ON THE ME, THE UNDERSIGNED OFFICER	DAY OF DINDTARY PUBLIC OF THE COMMONWEALTH OF R PERSONALLY APPEARED,	20 BEFORE PENNSYLVANA, THE
		WHO ACKNOWLEDGED OF BE DEVELOPED IN THI	HM/HERSELF TO BE THE OWNER OF THE PROLE E SUBJECT PLAN, BEING AUTHORIZED TO DO SE	PERTIES PROPOSED TO D. ACKNOWLEDGED THIS
		PLAN TO BE THE OFF TOWNSHIP OF RADNOP IS MADE WITH THE OF	ICIAL PLAN OF THE PROPERTIES SHOWN THERED R, DELAWARE COUNTY, PENNSYLVANIA, AND DESI (NER'S FREE CONSENT AND INTENDED TO BE R	ON, SITUATED IN THE CRIBED THAT THIS PLAN RECORDED ACCORDING TO
		LAW. WITNESS MY HAND AN	D NOTARIAL SEAL THE DAY AND YEAR ATORESA	vD.
		N/UMP-		
		KOTANY		
		OWNER		
=		RADNOR TO	WNSHIP:	
	ē.	THIS IS TO CERTIFY T	HE BOARD OF SUPERVISORS HAS APPROVED TH	IS LAND DEVELOPMENT
E	54	FOR RECORDING AT TH OFFERS OF DEDICATION ESCROW HAVE BEEN F	HE RECORDER OF DEEDS OF ODJAWARE COUNTIN N HAVE BEEN ACCEPTED/REJECTED, BONDS, FU ILED WITH THE TOWNSHIP AND ACCEPTED TO C	r, NEDIA, PENNSYLVANIA, INDS OR SECURITIES IN OVER ALL
mm		IMPROVEMENTS SHOWN DEVELOPMENT AGREEM	ON THE PLAN AND REQUIRED UNDER THE SU	BOWSION/LAND
		APPROVED THE DI BOARD OF SUPERVISION	NY OF 20	20
1		CHARMAN		
		MEMBER		
1		TOWNSHIP ENGINEER		
		ATTEST:	NAGER	
1		DELAWARE C	OUNTY PLANNING COMMIS	SION:
		REVIEWED BY THE DED.	30	DAT OF
		SECRETARY	••••••••••••••••••••••••••••••••••••••	
1		RECORDER	DF DEEDS	
1		RECORDED IN THE OFF	ICE OF THE RECORDER OF DEEDS OF DELAWAR	RE COUNTY AT MEDIA
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		NUM. DATE	REVISION PLAN PREPARED BY	
		SITE EN	GINEERING CONCE	PTS, LLC
			P.O. BOX 1992	
		P: 610-240-0450	F. 610-240-0451 EINFORM	ITE-ENGINEERS.COM
			PLAN PREPARED FOR	a second second second
	atter		WEST AVENUE GP	
	NUMBER OF		60 WEST AVE WAYNE, PA 19087	
	A manager	RADNOR TOWNSHIP	DELAWARE COUNTY	PENNSYLVANIA
7	Hall Desem / //			AUDURT 1, 1003
		RE	CORD PLAN	SHEET
	MICHAEL T. ROKOSNY, P.P.	1.584		5 of 8
	PE093468			SCALE 1" >20'



GENERAL NOTES

- L FARCEL INFORMATION: FOUO NUMBER: 36-010-0678-01 Block 36-12 Unit 113 DEED BOOK 6574 PAGE 0184
- 2. GROSS LOT AREA: 291,448 Sq. FI.
- OUTLINE DESCRIPTION AND LOCATIONS SHOWN IN ACCORDANCE WITH AN ACTUAL THED INSTRUMENT SUMMEY CONDUCTED BY THIS OFFICE. SUMMY PREPARED IFROM DEED AS SUMPLIED BY CURIT AND VARIES DEEDS AND UNLAS OF FECODE. THIS SUMMY WAS PERFORMED WITHOUT THE BERKETT OF A CLIENTIAT THE REPORT, WICH WOULD DISCLOSE ANY REGHTS, RESEMUNDING, EASSMUTHTS, ELE OF RECORD.
- . CONTOURS PLOTTED FROM FIELD RUM SURVEY, APPROXIMATE ELEVATION BENCHMARK BASED ON WOSS4
- THIS SURVEY IS NOT TO BE USED FOR TREE REMOVAL ALONG PROPERTY LINES. TREE LOCATIONS ARE APPROXIMATE. PROPERTY LINES MUST BE FIELD MARKED WITH STAKES SET TO ESTABLISH EMACT TREE OWNERSHIP.
- THERE IS NO DENTIFICATE FEMA FLOOD PLAN AREAS WITHIN THE PROJECT SITE AS ILLUSTRATED ON COMMITY PANLE MUMBER 420428-0017-6 (F) THE FLOOD INSURAN RATE MAP AS PREPARED BY THE FLOORAL EMERGENCY MANAGEMENT AGENCY FOR THE TOWNSHIP OF MADAGE PENNSYLVANIA.
- CERTING SUBJECTIVE TO LITUTE INFORMATION INDUKTIO IS SAFED UPON VISUAL FIELD INSECTION IN TURTER P. TUNKER, FLS. SICH INSTANLEN CONCERNING IN FSZT. LINE INSECTION IN TURKER INSECTION INTERIOR INTERIOR INTERIOR IN LINE INSECTION IN TURKER INSECTION INTERIOR INTERIOR INTERIO DEPINS INTERIE SICH INFORMATION INSECTION INTERIOR IN AL DEPINS INTERIES SICH INFORMATION INSECTION INTERIOR IN AL DEPINS INTERIES SICH INFORMATION INSECTION INSECTION IN DEPINS INTERIES SICH INFORMATION INSECTION INSECTION INSECTION EXIST ERTERIES FUNCTION INSECTION INSECTION INSECTION INSECTION INFORMATION INSECTION INSECTIONI INSE

TREE LEGEND

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PLAN LEGEND

SUPPLEMENTAL CONTOUR (1" INTERVAL)
EXISTING STORM SEWER PIPING
EXISTING SANITARY SEWER PUPING
EXISTING GAS MAIN
EXISTING WATER MAIN / SERVICE
EXISTING UNDERGROUND TELEPHONE
EXISTING EDGE OF WOODS
EXISTING EDGE OF PAVEMENT
EXISTING FENCE LINE
PROPERTY LINE
BUILDING SETBACK LINE
EXISTING EAVES
CONCRETE
UTILITY POLE
SION
LIGHT POLE
WATER VALVE WATER WETER CLEAN OUT SANITARY VENT SANITARY CLEAN OUT GAS WETER GAS VALVE

IMPERVIOUS COVERAGE SUMMARY							
GROSS LOT AREA	76,834	Sq. PL					
	EXISTING	REMOVE	ADD	PROPOSED			
BUILDING (INC. OVERHANGS > 2' AND GARAGE)	0	٥	46,966	45,966			
ASPHALT	44,858	-38,784	1,360	7,434			
CONCRETE & WALKS	3,076	-3,076	4,930	4,930			
CURBS (INC, PARKING BLOCKS/CAR STOPS)	667	-567	0	0			
WALLS, TIES, MINDOW WELLS	456	-465	556	547			
TOTAL BUILDING COVERAGE	0			45,966			
TOTAL SITE IMPERVIOUS COVERAGE	48,957	-42.892	53,812	59.877			





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HA HARCH A PINE
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HK HICKORY, WA WALNUT
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MA MAPLE
KO- KOUSA DOGWOOD
THE SUBJECT IS NOT TO BE USED FOR
THEE BEMOVAL ALONG PROPERTY LINES
THEE LOCATIONS ARE APPROXIMATE FOR
TREE REMOVAL PURPOSES, PROPERTY LIN
MUST BE FIELD MARKED WITH STAKES SE
TO ESTABLISH EXACT THEE CHNERSHIP.

	SUPPLEMENTAL CONTOUR (1' INTERNAL)
	INDEX CONTOUR (5' INTERVAC)
	EXISTING STORM SEWER PIPING
	EXISTING SANITARY SEWER PIPING
	EXISTING GAS MAIN
	EXISTING WATER WAN / SERVICE
	EXISTING UNDERGROUND TELEPHONE
mannan.	EXISTING EDGE OF WOODS
	EXISTING EDGE OF PAVEMENT
X	EXISTING FENCE LINE
	PROPERTY LINE
	BUILDING SETBACH LINE
	EXISTING EAVES
CONC	CONCRETE
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Oww	WATER METER
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OSAN VENT	SANITARY VENT
OSAN CO.	SANITARY CLEAN OUT
OcM	CAS METER
Cherry	and a second of the second s



REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE, EXTEND ROCK OVER FULL WIDTH OF ENTRANCE. RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL DAP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.

14503501

NOUNTABLE BERN SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PRPE IS USED AND PROPER PRPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROADED. PRE SHALL BE SZED APPROPRIATELY FOR SZEC OF BIOTO BENG GROSSED.

AVAL DE SACUE APPROPRIATELY FOR SEL OF DICH BENG CROSSED. DIMETRINGE: CONC CONSTRUCTIVE INTRACES TIME DE CONSTRUCTIVE TO THE SPECIFIC DIMETRISME STY ADDRE POSC, IL STOCKTE STALL DE LANTANED ON STE TO THE SPECIFIC DIMETRISME STY ADDRE POSC, IL STOCKTE STALL DE LANTANED ON STE DE THES INFORMES. ALL SEGURITY, LISTER LIGHT OF ROMOKAYS STALL DE REDOCTO DA RELIENDE TO THE CONSTRUCTIVE STE INFORMATION OF ROMOKAYS STALL DE REDOCTO DA RELIENDE TO THE CONSTRUCTIVE STE INFORMATION OF ROMOKAYS STE AND/ONES OF SEGMENT AND THE CONSTRUCTIVE STE INFORMATION OF ROMOKAY DISCHES, SEMERE, CULLERIS, GE DOTARY DE SEETING THE OPPOSITE MIN ROMOKAY DISCHES, SEMERE, CULLERIS, GE DOTARY DE SEETING THE OPPOSITE MIN ROMOKAY DISCHES, SEMERE, CULLERIS, GE DIERE REAMARE CONSEST IS NOT ADDRESS.

STANDARD CONSTRUCTION DETAIL #3-1 ROCK CONSTRUCTION ENTRANC

NOT TO SCALE



MAXIMUM DRAINACE AREA = 1/2 ACRE.

NOTES

INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDMENT BASIN OR TRAP. BERLIS SHALL BE REQUIRED FOR ALL INSTALLATIONS.

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DO NOT USE ON MAKER PARED ROADWAYS WHERE PORDING WAY CAUSE TRAFFIC HAZARDS STANDARD CONSTRUCTION DETAIL #4-15 FILTER BAG INLET PROTECTION - TYPE C INLET



LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTLE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STICHED "J" TYPE SEAMS, THY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAM ISO MEGNS, HIGH VOLUME FALLER BAGS SHALL BE MADE FROW WOVEN GOTEXTLES THAT SHALL BET. THE

PROPERTY	TEST METHOD	MINIMUM STANDARD	
AVG. WIDE WOTH STRENGTH	ASTM D-4884	60 LB/N	
GRAD TENSILE	ASTN D-4632	205 LB	
PUNCTURE	ASTAL D4833	110 LB	
MULLEN BURST	ASTM D~3786	350 PSI	
UV RESISTANCE	ASTM D-4355	70 x	
AOS X RETAINED	ASTM D-4751	80 SIEVE	
A SUITABLE MEANS OF ACCESS!	NG THE BAG WITH MACI	HINERY REQUIRED FOR D	SPOSAL PURPOSES SHALL BE
PROVIDED. FILTER BAGS SHALL B	BE REFLACED WHEN THE	EY BECOME 1/2 FULL OF	SEDIMENT, SPARE BAGS SHALL
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ON STRAFS TO FACILITATE REMO	WAL UNLESS BAGS CON	RE WITH LIFTING STRAPS	ALREADY ATTACHED.
BAGS SHALL BE LOCATED IN WE	LL-VEGETATED (CRASS)	AREA, AND DISCHARG	E ONTO STABLE, EROSION

BASS SHALL BE LOCATED IN WELL-VECTATED (GRASSY) AREA, AND DISDURGE (ONTO STABLE, EROSCON RESSTANT AREAS, WHER THIS IS NOT POSSBEE, A COTEXTIEL UNDERLANDRY) AND FLOW PAIL SHALL READED BASS WHE PLACED OF LEVER STAND. DO RECREAD RESOLVARE CANACTY BASS SHALL NOT BE PLACED ON SCOTES DELATER HAN SET OR SCOTES DUCETIONS SET, CLEAN 40CX AN OHER NEW-FRICOBLE AND NON-FRUITING MATERIAL AND THE PLACED DATE THE DATE OF DO TO THE NEW-FRICOBLE AND NON-FRUITING MATERIAL AND THE PLACED DATE THE DATE OF DOT DATE. NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR WOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BASS LOCATED IN ING OR EV WATERSHEDS, WITHIN SO FEET OF ANY RECEIVING SURFACE WATER OR WHERE GARSY AREA IS NOT AVALABLE. THE PURP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE. THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS, PUMP INTAKES SHALL BE FLOATING AND SCREENED. FILTER BAGS SHALL BE INSPECTED DAILY, IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED. STANDARD CONSTRUCTION DETAIL #3-16

PUMPED WATER FILTER BAG



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CONCRETE WASHOUT DETAIL (USING COMPOST SOCK)

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EROSION AND SEDIMENTATION CONTROL NOTES APPENDIX C - STANDARD EAS PLAN NOTES

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A horizon horizon	RADNOR TO	WNSHIP	DELAWAR	E COUNTY	PENNSYLVANIA
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Drivelik West Avenue GP PROJECT NUMBER 101221 60 WEST AVE

RENDERINGS

841/2

ISSUED DATE







31' - 0"

10' - 0''

11' - 0'

WEST ELEVATION ALONG BELLEVUE AVE.

45' - 0"

50' - 0" ARCHITECTURAL WIDTH OFFSETS 10' - 0"

30' - 0"

Level 3 GRADE HIGH GRADE LIGH GRADE LIGH MEAN GRADE MEAN GRAD

Overen West Avenue GP

COSSULTANTS

PROJECT NUMBER 101921 60 WEST AVE

> RORTH GOWESTAVE. WATHER A 19387 WATHER A 19387

> > A06



Radnor Township Tree Removal and Replacement Requirement						7/11/2023
Tree Removed Sizes	Requirement Replacement	Quantity Removed (Hazard, Dead or Dying)	Quantity Removed	Other Trees Required (Medium to Small)	Large Canopy Trees Required*	Total Quantity Required
< 6" DBH	0	0	з	0	0	0
6" - 18" DBH	1	7	10	10	0	10
19" - 29" DBH	3 (2 being large canopy trees)	1	1	1	2	3
> 30" DBH	6 (4 being large canopy trees)	1		0	0	0
			·		Total Required Replacements	13
					Total Removed	23

Notes:

• *Dead and hazardous, invasive species (i.e. Norway Maples), and declining Ash trees do not count toward the replacement tree quantity. See Arborist's Report for more information.

 All replacement trees shall have a minimum 2 to 2 ½" DBH.
 Protective tree preservation fence must be installed and maintained until the work is complete and not removed until directed by the Township. See Engineer's Tree Protection Detail on Sheet 2.

 All trees to be removed with in the area of disturbance must be clearly marked at the base of each tree with visible, permanent forestry type paint in the color of pink indicating the status of each tree. All trees to remain with in the area of disturbance must be clearly marked at the base of each tree with Forestry Grade flagging tape in green color.

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	ALDER	Post Office E (61 e-mail
Legend Image: State of the second state o		60 WEST AVE WAYNE, PA 19087
 (Based on Arborist's Notes or Under Requirement)		
• Existing Trees to Remain		
Tree Protection Fencing (See Detail X/LXXX)	DATE	2022-07-21
Existing Vegetation	CHECKED: DRAWN BY: PROJECT #:	IA GR 00769
RARE INFORMATION TAKEN FROM CONDITIONAL THE PLANERY SITE DEMONSTRATES ALCONSTRUCTION FOR INFORMATION DATE: 0756/2937 CALL BEFORE YOU DIG! PA ONE-CALL 1.800.242.1776 WWW.paonecall.org NOT FOR CONSTRUCTION	SHEET: 1 LO Exis Cond 'Pare scale:	00 00 ting itions cel B' 1"=20'



Radnor Township Tree Replacement Plant Schedule 7/21/2023 ID # BOTANICAL NAME AM 3 Amelanchier spp. COMMON NAME SIZE COND. REMARKS Serviceberry 8'-10' 8&8 Multistem, Small to Medium Tree 6 Betula populifolia BP Gray Birch 2-1/2" cal. Small to Medium Tree 88.8 2 Cladrastis kentukea 2-1/2" cal. Large Canopy Tree CK American Yellowwood 8&B 3 Liquidambar styraciflua 'Slender Silhouette' Sweetgum 2-1/2" cal. Fastigate, Small to Medium Tree LS 8&8 5 Liriodendron tulipifero 'Arnold' Fastigate, Small to Medium Tree LT. Tulip Poplar 2-1/2" cal. 8&8 Magnolia virginiana MV 7 Sweetbay Magnolia 8'-10' B&B Multistem, Small to Medium Tree 2 Taxodium ascendens 'Morris' Debonair* Pond Cypress Large Canopy Tree TD 2-1/2° cal. 888 Total 28

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	JONATHANILANDSCAPE	Post Office Box 651 Wayne, Pennsylvania 19087-0661 (610) 341-9925 Fax (610) 341-9926 e-mail Information@jonathanalderson.com
Image: Description of the second s	WEST AVENUE GP	60 WEST AVE WAYNE, PA 19087
Proposed Shrubs Perennial Bed Hardscape	ISSUED:	
River Cobble Sidewalk Extensive Green Roof	DATE: CHECKED: DRAWN BY: PROJECT #: SHEET: 2 (2023-07-21 JA GR, LH 00769 DF 02
CONDITIONAL DIRE LAN BY SITE ENDIBURING CONFIRENCE PULION 1992, DIVITINGATERINE PLATERINE TOL. #102.0400 PLANERVIRON DATE 0796/2013 D. 10' 20' 40' 60' CALL BEFORE YOU DIGI PA ONE-CALL 1.800.242.1776 www.poonecall.org NOT FOR CONSTRUCTION	L4 Plan Pla 'Parc	00 ting an el B' 1" = 20'



ERIK W. HETZEL, AICP/PP, LEED AP 16 MANOR ROAD PAOLI, PA 19301 610.322.7154 erik@erikhetzel.com

Memorandum

To: William J. Collins, The Concordia Group

From: Erik Hetzel, AICP/PP, LEED AP

Date: July 31, 2023

Re: Fiscal Impact Analysis – Mixed Use Residential/Retail Development, Radnor Township

The Concordia Group is proposing a mixed use building on the site of the property located at 60 West Avenue in Radnor Township, Delaware County. Fifty-two (52) single-family attached condominium units and 1,302 square feet of first floor retail space are planned. This memorandum describes the anticipated future annual fiscal impacts related to the proposed development. A concise summary of fiscal impacts is presented in a table on the last page of this memorandum.

Fiscal impacts presented in this analysis were estimated using a methodology developed by the Rutgers University Center for Urban Policy Research, as originally described in <u>The New Practitioner's Guild to Fiscal Analysis¹</u> and further developed in a later publication by the same authors entitled <u>Development Impact Assessment Handbook²</u>. It is projected that, in total, the proposed development will result in beneficial, net-positive annual fiscal impacts to both Radnor Township and the Radnor Township School District.

Revenue Impacts

Real Estate Property Tax - At full build-out under the proposed concept, the development will have a total market value of approximately \$78.39 million, which translates to an assessed value of approximately \$51.57 million. This assessment calculation is based on the current (2022-2023) Delaware County common-level ratio of

¹ Burchell, Robert W., David Listokin, et al. *The New Practitioner's Guide to Fiscal Impact Analysis*, New Brunswick, NJ: Rutgers, The State University of New Jersey, 1985.

² Burchell, Robert W., David Listokin, et al. *Development Impact Assessment Handbook.* Washington, D.C.: ULI-the Urban Land Institute, 1994.

1.52, which estimates assessed value at approximately 65.78% of market value. The proposed development will generate ongoing real estate tax revenue to the local taxing authorities, with an estimated \$123,078 going to the Township and \$754,659 going to the School District annually.

Real Estate Transfer Tax – The Township levies the Real Estate Transfer Tax at the rate of 1.0% of sale price, and the School District levies the Real Estate Transfer Tax at 0.5%. This analysis anticipates that an average of approximately 5% of the residential units in the proposed development will transfer ownership (be sold) in any given year, which equates to annual Transfer Tax Revenues from the residential portion of the building totaling \$39,000 to the Township and \$19,500 to the School District. In addition to the annual Transfer Tax revenues estimated here, it is also important to note that the Township and School District will also receive significant Transfer Tax revenues from the initial sales of every residential unit from the builder to the first homeowners. With a total market value of \$78 million in 2023, this equates to an estimated \$780,000 in initial-sales transfer taxes to the Township (\$78 million market value x 1.0% transfer tax rate = \$780,000). For the School District, initial home sales would generate transfer taxes totaling \$390,000 (\$78 million market value x 0.5% transfer tax rate = \$390,000).

In calculating transfer tax revenues from the non-residential portion of the development, it is assumed that ownership would transfer less frequently than the residential units, approximately once every ten years. Viewed as an annualized figure, this results in transfer tax revenues to the Township totaling \$391 and \$195 to the School District each year.

Other Revenues - In addition to the aforementioned tax revenues, the proposed development is expected to generate approximately \$56,800 in Township revenues from other sources, as reported in the <u>Radnor Township 2023 General Fund Budget</u>. These sources include licenses & permits, fines & costs, and departmental earnings. Similarly, the School District will realize additional revenues totaling approximately \$33,415 in revenues from non-tax sources (LEA activities and rentals) and intergovernmental sources (State and Federal funding) as identified in the <u>Radnor</u> Township School District 2023-2024 Final General Fund Budget.

Population Impacts

An estimated 90 residents will be living in the proposed development, including 6 school-aged children. These population estimates are based on demographic

multipliers published by the Rutgers University Center for Urban Policy Research (2006)³. This source uses information from the U.S. Census to derive population multipliers specific to the Commonwealth of Pennsylvania, categorized by household structure type (i.e., single-family detached, single-family attached, apartments, etc.), and by the number of bedrooms per household. The single-family attached residential bedroom mix considered in this analysis includes 15 1-bedroom units, 17 2-bedroom units, and 30 3-bedroom units.

Economic Impacts

The proposed development will have a beneficial economic "ripple effect" in the local economy, as the new residents and employees use goods and services in and around Radnor Township. In addition, the development phase of the project will provide construction jobs and result in construction-related consumption expenditures in the local and regional economies. These impacts are not reflected in the summary table included in this memorandum but will provide economic benefits over and above the annual revenues described therein.

Cost Analysis

Annual Township and School District expenditures attributable to the proposed development were projected using the Per Capita Multiplier Method described in the <u>Development Impact Assessment Handbook</u>. In calculating the per capita expenditure value for the Township, the methodology uses information from the current (2023) Township budget and accounts for the fact that costs are divided differently among serving both residential and non-residential portions of the Township, based on the actual mix of land uses provided by the County Board of Assessment. Overall, it is estimated that the proposed development will result in Township costs totaling approximately \$84,990 annually, which is more than offset by revenues totaling \$219,269 annually from the tax and non-tax sources described previously.

A similar per capita cost calculation is used for the Radnor Township School District. Based on current (2023) enrollment and budget information published by the School District, the estimated annual total cost-per-student in the Radnor Township School District used in this analysis is approximately \$32,179. With 6 school-aged

³ Burchell, Robert W., David Listokin, et al. *Residential Demographic Multipliers (Pennsylvania)*. New Brunswick, New Jersey: Center for Urban Policy Research, Edward J. Bloustein School of Planning and Public Policy - Rutgers, the State University of New Jersey (2006).

children projected to reside in the proposed development, this results in projected annual costs of \$193,076 to the School District, which is more than offset by revenues from taxes and other sources totaling \$807,769. This estimate assumes that all 6 school-aged children will be attending public schools; however, it is likely that some will attend private schools, which would result in lower costs to the Radnor Township School District than estimated here, and a higher net-positive fiscal impact.

Impacts to Public Safety Services and Facilities

Overall, impacts on public safety services and facilities from the proposed development are expected to be minimal and can be offset by the projected net positive fiscal impact. Demands for Police, Fire, and Emergency Management Services (EMS) personnel, vehicles, and facilities are presented in the following table, using planning standards published in the Development Impact Assessment Handbook. Personnel, vehicles, and facilities for Police and Fire are based on the noted planning standards per 1,000 population. EMS standards for personnel and vehicles are per 30,000 population, and EMS calls are per 1,000 population per year.

	Residential Planning Standard	Non- Residential Planning Standard	Projected Demand
Police			
Personnel	1.50	0.50	0.14
Vehicles	0.45	0.15	0.04
Facilities (square feet)	150	50	13.65
<u>Fire</u>			
Personnel	1.24	0.41	0.11
Vehicles	0.15	0.05	0.01
Facilities (square feet)	187.5	62.5	17.06
<u>EMS</u>			
Personnel	3.08	1.03	0.01
Vehicles	0.75	0.25	0.0023
Calls per year per 1,000 population	27.4	9.1	2.49

Public Safety Demand Factors and Projected Demand from Proposed Development

Conclusions and Summary

In conclusion, the net positive fiscal impact in terms of projected revenues over costs for Radnor Township is expected to be over \$134,000 annually at project completion. The projected net positive fiscal impact to the Radnor Township School District is projected to be over \$600,000 per year. The combined net positive fiscal impact for both taxing authorities is estimated at nearly \$750,000 annually. Not included in these annual estimates are significant real estate transfer fees that will be paid on the initial sales of every unit from the builder to the first homeowners. The table on the next page summarizes the fiscal impacts to the Township and School District.

Fiscal Impact Summary

	Co	ndominium Units	Retail		TOTAL
Residential Units		52	0		52
Non-Residential Square Feet		0	1,302		1,302
Value per Unit	¢	\$1,500,000	 \$300	ç	51,500,300
Market Value of Proposed Development	\$	78,000,000	 \$390,600	\$	78,390,600
Assessed Value (approx. 65.78% of market value)	\$	51,315,789	 \$256,974	\$	51,572,763
New Employee Population		0	3		3
New Residential Population		90	0		90
New School-Aged Children		6	 0		6
Radnor Township					
Real Estate Tax Revenue (2.3865 mills)	\$	122,465	\$ 613	\$	123,078
Non-Property Tax Revenue	\$	56,560	\$ 241	\$	56,800
Real Estate Transfer Tax (1.0%)	\$	39,000	\$ 391	\$	39,391
Total Township Revenues	\$	218,025	\$ 1,244	\$	219,269
Total Township Expenditures	\$	(84,123)	\$ (867)	\$	(84,990)
Net Township Fiscal Impact	\$	133,902	\$ 378	\$	134,280
Radnor Township School District			 		
Real Estate Tax Revenue (14.6329 mills)	\$	750,899	\$ 3,760	\$	754,659
Non-Property Tax Revenue	\$	1,837	\$ -	\$	1,837
Intergovernmental Revenue	\$	31,578	\$ -	\$	31,578
Real Estate Transfer Tax (0.5%)	\$	19,500	\$ 195	\$	19,695
Total School District Revenues	\$	803,814	\$ 3,956	\$	807,769
Total School District Expenditures	\$	(193,076)	\$ -	\$	(193,076)
Net School District Fiscal Impact	\$	610,738	\$ 3,956	\$	614,693
Total Development-Generated Revenues (Township + School District)	\$	1,021,839	\$ 5,200	\$	1,027,039
Total Development-Generated Expenditures (Township + School District)	\$	(277,199)	\$ (867)	\$	(278,065)
Total Net Annual Fiscal Impact	\$	744,640	\$ 4,333	\$	748,973



GEN	VERAL	NOT	ES

- PARCEL INFORMATION: FOLIO NUMBER: 36-010-0678-01 Block 36-13 Unit 113 DEED BOOK 6574 PACE 0184
- 2. GROSS LOT AREA: 291,448 Sq. Ft.
- OUTURE DESCRIPTION AND LOCATIONS SHOWN IN ACCORDANCE WITH AN ACTUAL FIELD MOTIVATION SUMPLY COMPLICITO IN THIS OFFICE. SUMPLY PREMATED FROM UPED AS SUMPULD BY CUTMIN AND VARIOUS SEEDS AND PLANS OF RECORD. THIS SUMPLY WAS PERFORMED WITHOUT THE UNLYIT OF A CUMPLY THE REPORT, WHICH WOULD DISCLOSE ANY RESCH, RESPONDED, CASEDWATEL, LFC OF RECORD.
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- THERE IS NO IDENTIFIABLE FEMA FLOOD PLAN AREAS WITHIN THE PROJECT SITE AS ILLUSTRATED ON COMMUNITY PANEL MANDER 420428-0017-F OF THE FLOOD INSURANC RATE MAP AS INFERPARED BY THE FEDERAL EVERGENCY MANAGEMENT AGENCY FOR THE TOWNSHIP OF RADAVR, PENNSYLVANIA.

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> AT&T PARKING AREA TO BE DEDICATED TO RADNOR TOWNSHIP

	NUM.	DATE	REVISION		
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Wayne C.O./Radnor Twp., Delaware Co. Loc. Nos. 21470 & 21910

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DEED

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THIS INDENTURE, made the 15th day of December, 1983, between THE BELL TELEPHONE COMPANY OF PENNSYLVANIA, a corporation created and existing under the laws of the Commonwealth of Pennsylvania, having its principal office at One Parkway, Philadelphia, Pennsylvania, party of the first part, and AT&T COMMUNICATIONS OF PENNSYLVANIA, INC., a corporation created and existing under the laws of the Commonwealth of Pennsylvania, having its principal office at 295 North Maple Avenue, Basking Ridge, New Jersey 07920, party of the second part.

WITNESSETH

IN CONSIDERATION OF One Dollar (\$1.00) and other good " and valuable consideration, receipt of which is hereby acknowledged, and pursuant to the Modification of Final Judgment entered by the United States District Court for the District of Columbia in United States v. Western Electric Co. et al, Civil Action No. 82-0192, and the Plan of Reorganization approved by the District Court on August 5, 1983, the party of the first part does hereby remise, release and quit claim unto the party of the second part, its successors and assigns forever, all of the party of the first part's undivided 41/100 fractional interest as tenant in common in the following described parcel of real estate:

ALL THAT CERTAIN lot or piece of ground, with the buildings and improvements erected thereon, situate in the Township of Radnor, County of Delaware, Commonwealth of Pennsylvania, as shown on plan of property for American Telephone & Telegraph Company, prepared by Howard W. Doran, Registered Land Surveyor, Newtown Square, Pennsylvania, dated September 26, 1978, being bounded and described as follows:

BEGINNING at a point marking the intersection of the centerline of Bellevue Avenue (50 feet wide) with the centerline of West Avenue (50 feet wide); THENCE FROM SAID POINT OF BEGINNING along the centerline of Bellevue Avenue extended North 0 degrees 01 minutes 25 seconds East 145.75 feet to a point; THENCE leaving said centerline of Bellevue Avenue extended, North 89 degrees 58 minutes 35 seconds West 74.00 feet to a point; THENCE North 0 degrees 01 minutes 25 seconds East 136.62 feet to a point on the southerly right-of-way line now or late of the Pennsylvania Railroad Company; THENCE along said

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right-of-way the following four courses and distances: South 66 degrees 49 minutes East 17.96 feet to a point; (2) THENCE South 64 degrees 53 minutes 50 seconds East 351.03 feet to a point; (3) THENCE North 58 degrees 51 minutes 10 seconds East 12.40 feet to a point; (4) THENCE on the arc of a circle curving to the left having a radius of 4362 feet an arc distance of 140.38 feet to a point; THENCE, leaving said right-of-way line, South 2 degrees 13 minutes 25 seconds West 212.59 feet to a point in the said centerline of West Avenue; THENCE by same, on the arc of a circle curving to the right having a radius of 450 feet an arc distance of 54.37 feet to a point; THENCE leaving said centerline, South 2 degrees 13 minutes 25 seconds West 529.58 feet to a point on the Northerly side of Lancaster Avenue and THENCE, extending along same, the following courses and distances: (1) North 87 degrees 49 minutes 35 seconds West 273.95 feet to a point, an angle, and (2) North 89 degrees 58 minutes 35 seconds West 51.05 feet to a point in the said centerline of Bellevue Avenue; THENCE by same, North 0 degrees 01 minute 25 seconds East 624.25 feet to the point and place of beginning.

CONTAINING an area of 6.6772 Acres more or less.

BEING the same premises which American Telephone and Telegraph Company, a New York corporation, by deed dated August 16, 1979 and recorded on October 1, 1979 in the Office of the Recorder of Deeds in and for Delaware County, Pennsylvania in Deed Book 2712, page 1043, conveyed unto The Bell Telephone Company of Pennsylvania.

UNDER AND SUBJECT, without limitation, to PART B of a certain Agreement of February 1, 1979, as amonded February 2, 1979, between the parties hereto, said Part B being entitled "OWNERSHIP APPORTIONMENT OF LAND AND BUILDINGS OWNED AND USED AS TENANTS IN COMMON", and to the payment and performance of the covenants and obligations contained therein.

<u>ALSO UNDER AND SUBJECT</u>, without limitation, to rights of the public and others entitled thereto in and to those portions of the property lying within the bounds of Bellevue, West and Lancaster Avenues, and the aforesaid railroad right-of-way.

ALSO UNDER AND SUBJECT, without limitation, to all other easements, restrictions, covenants, agreements and conditions of record, and to the payment and performance thereof.

YOF 130 ME2194
* * * * *

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TOGETHER with the appurtenances and with all improvements thereon and fixtures attached thereto, and all the estate and rights of the party of the first part in and to said premises.

AND the party of the first part does covenant with the party of the second part that it will, upon the reasonable request of the party of the second part, its successors and assigns, execute, acknowledge, and deliver such further instruments as may reasonably be required to make effective and confirm this conveyance and to aid and assist the party of the second part, its successors and assigns, in obtaining possession of the premises and in establishing the right, title and interest to the premises herein conveyed.

IN WITNESS WHEREOF, the party of the first part has caused this instrument to be executed by its duly authorized officers as of the date first set forth above.

Ale Elen THE BELL TELEPHONE COMPANY OF PENNSYLVANIA EI forma By: Vice President Assistant (Corporate Seal) ere Attest: Assistant Secretary I hereby certify that the address of the within named grantee is 295 North Maple Avenue, Basking Ridge, New Jersey 07920 toung the graftee On behalf VOI 130 PME2195

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COMMONWEALTH OF PENNSYLVANIA : : 55 COUNTY OF PHILADELPHIA :

ON THIS, the 15th day of December , 1983, before me, a Notary Public in and for the said Commonwealth and County, the undersigned officer, personally appeared <u>R. E. Young</u> who acknowledged himself (NYXXXXXXX) to be the <u>Asst. Vice President</u> of THE BELL TELEPHONE COMPANY OF PENNSYLVANIA, a corporation, and that he as such <u>Assistant</u> <u>Vice President</u>, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself (NXXXXXXXX) as <u>Asst. Vice President</u>.

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

(Official Seal)

21

Jan M. Ander Notary Public

My Commission Expires:

JANE M. FOWLER Notory Public, Philadelphia, Philadelphia Co. My Commission Expires February 36, 1984

VOI 130 PAGE2197



Traffic Impact Assessment for the Proposed Mixed-Use Development – Lancaster Avenue Radnor Township, Delaware County, PA





Prepared by **McMahon, a Bowman Company** 1515 Market Street, Suite 1360 Philadelphia, PA 19102 215.433.1660



Mark A. Roth, P.E. PA License Number PE052382E

Prepared for The Concordia Group

August 2023 McMahon Project 310903-01-001

mcmahonassociates.com

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Executive Summary

The Concordia Group proposes to develop the mixed-use development to be located on the north side of Lancaster Avenue (S.R. 0030), between Bellevue Avenue and Wayne Avenue in Radnor Township, Delaware County, Pennsylvania (**Figure 1**). The proposed mixed-use development consists of 52 multifamily apartment units (midrise) and 1,302 s.f. of commercial retail space (**Figure 2**). The project also proposes to provide 119 parking spaces for the residential portion and 9 parking spaces for the retail portion on site. Access to the site is proposed to be provided via one (1) full-movement driveway along Bellevue Avenue. The property to be redeveloped by the proposed mixed-use development is currently occupied by a municipal parking lot. The existing municipal parking lot will be relocated along West Avenue adjacent to the train tracks.

The scope of this Traffic Impact Assessment is based on PennDOT's guidelines, per the Department's *Publication 282*, Appendix A *Policies and Procedures for Transportation Impact Studies Related to Highway Occupancy Permits*, dated September 2022, and the requirements of the Township Ordinance.

The purpose of this traffic impact assessment is to evaluate the traffic impacts of the proposed development. The scope of this study includes an evaluation of the existing weekday morning and weekday afternoon peak hours, as well as the future 2025 build-out year, both without and with the development at the following study intersections:

- Lancaster Avenue (S.R. 0030) and Bellevue Avenue
- Bellevue Avenue and Proposed Driveway

Based on trip generation data compiled for Multifamily Housing (Mid-Rise) (ITE Land Use Code 221) and Strip Retail Plaza (<40k) (ITE Land Use Code 822) contained in the Institute of Transportation Engineers (ITE) publication entitled, *Trip Generation Manual, 11th Edition,* and assumed mass transit and pedestrian reductions, the proposed development will generate a total of approximately 15 "new" trips during the weekday morning peak hour and 26 "new" trips during the weekday afternoon peak hour. Due to the location of the development in Wayne within close proximity to a SEPTA Regional Rail Line, there will be less dependency on vehicles. A large portion of trips will be supplemented by transit (SEPTA) and pedestrians.

For residential modal reductions, McMahon referenced data from the United States Census Bureau titled "Commuting Characteristics by Sex, 2017-2021 American Community Survey 5-Year Estimates" (**Appendix L**). Based on this data, the Wayne area of Radnor Township (19087 Zip Code) has a mode of transport to work breakdown of 69% car, 7% transit, 4% walk, 0% bike, 19% home, and 1% other. For the residential uses, McMahon assumed approximately 69% car, 7% transit, and 24% pedestrians/other.

Additionally, trip reduction for internalization was applied and calculated based on PennDOT approved methodology (**Appendix K**). These deductions take into account trips by residents to the retail space within the site, whereby residents do not need to leave the overall site and create a typical vehicular trip. As a conservative approach, pass-by traffic percentages for the retail use were not applied to the trip generation.



Per the traffic evaluation, the following on-site and off-site traffic improvements are recommended to mitigate the proposed development impacts:

Site Access

Bellevue Avenue and Proposed Driveway

- Classified as a low volume driveway based on the anticipated daily traffic volumes.
- Provide one ingress lane and one egress lane for the access.
- Provide appropriate corner radius length, which will be verified based on the largest vehicle anticipated to utilize the driveway.
- Provide stop-control on the egress approach.
- Based on warrants, turn lanes are not warranted or recommended.

Off-Site Traffic Improvements

Lancaster Avenue (S.R. 0030) and Bellevue Avenue

• No improvements are required or recommended.

The traffic analyses contained herein reveal that efficient access to and from the proposed development can be provided, and furthermore, site-generated traffic can be accommodated at the study area intersections. Detailed results of the level-of-service and queuing analysis are contained in the matrices provided in **Tables 1 and 2**.

Table 1 - Level of Service Matrices

1. Lancaster Avenue (S.R. 0030) and Bellevue Avenue

Tir	ne Per	iod	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour			Hour
	Year		2023	B	2025 Build-Out Year			2025 2023 Build-Out Year		ar	
Dev Co	velopm onditic	ent on	Existing	w/o Dev	w/Dev Base	w/Dev Imps		Existing	w/o Dev W/Dev w/Dev Base Imps		w/Dev Imps
S.R.		Left	А	А	А			А	A	А	
venue (30)	EB	Thru	0.8	0.8	0.8			0.9	0.9	1.1	
Lancaster A 00:	WB	Thru Right	(1)	(1)	(1)			(1)	(1)	(1)	
evue nue	67	D 's La	В	В	В			В	В	В	
Belle Avei	Aver Belle Belle	B Right	11.0	11.0	11.1			11.2	11.2	11.3	
0		А	A	А			А	A	А		
	Overall		0.6	0.6	0.6			0.7	0.7	0.9	

(1) Movement operates at free-flow conditions.

Table 1 - Level of Service Matrices

2. Bellevue Avenue and Proposed Driveway

Time Period		Weekday Morr	ning Peak Hour		Weekday After	noon Peak Hour	
Year		20 Build-C	25 Jut Year		2025 Build-Out Year		
Development Condition		w/Dev Base	w/Dev Imps		w/Dev Base	w/Dev Imps	
osed way	Left WB Right		А			A	
Prop(Drive			8.5			8.7	
Avenue	NB	Thru Right	(1)			(1)	
ellevue		Left	А			А	
Be	≝ SB	Thru	0.0			0.0	
Orangili		A			A		
	Overall		0.9			0.6	

(1) Movement operates at free-flow conditions.

Table 2 - 95th Percentile Queue Matrices

1. Lancaster Avenue (S.R. 0030) and Bellevue Avenue

Time Period Weekday Morning Peak Ho		lour	Weekday Afternoon Peak Hour										
Year			Current Storage ⁽¹⁾	Current Future 2023 2025 Storage ⁽¹⁾ Storage ⁽²⁾ Build-Out Year					2023 2025 Build-Out Year			ar	
Dev C	velopment ondition	oment			Existing	w/o Dev	w/Dev Base	w/Dev Imps		Existing	w/o Dev	w/Dev Base	w/Dev Imps
venue (S.R. 30)	EB T	Left Thru	465		25	25	25			25	25	25	
Lancaster A 00:	T WB R	Γhru Right	(3)		(3)	(3)	(3)			(3)	(3)	(3)	
Bellevue Avenue	SB R	Right	580		25	25	25			25	25	25	

(1) Distance to adjacent intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

(3) Movement operates at free-flow conditions.

Table 2 - 95th Percentile Queue Matrices

2. Bellevue Avenue and Proposed Driveway

Time Period Year Development Condition				Weekday Morr	ning Peak Hour		Weekday Aftern	ernoon Peak Hour	
		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	2025 Build-Out Year			2025 Build-Out Year		
				w/Dev Base	w/Dev Imps		w/Dev Base	w/Dev Imps	
posed ⁄eway	Left WB		100	25			25		
Pro Driv	Right								
Avenue	Thru NB Right		(3)	(3)			(3)		
Bellevue	Left SB Thru		360	0			0		

(1) Distance to adjacent intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

(3) Movement operates at free-flow conditions.

Existing Transportation Settings and Conditions

The proposed development will be located on the north side of Lancaster Avenue (S.R. 0030), between Bellevue Avenue and Wayne Avenue in Radnor Township, Delaware County, Pennsylvania (**Figure 1**). The existing roadways and intersections in the vicinity of the site, which comprise the study area roadway network, are described in this section.

Roadway Characteristics

The study area roadway network and characteristics are summarized below in **Table 3**.

Deedwey Neme	Average Daily	Roadway Cl	assification	Travellance	Posted Speed Limit (mph)	
(Jurisdiction)	Traffic Volumes (vehicles per day)	PennDOT Roadway Typologies ⁽¹⁾	PennDOT/ Township ⁽²⁾	(per direction)		
Lancaster Avenue (S.R. 0030)	18,915 ⁽³⁾	Regional Arterial	Urban – Principal Arterial	2	25	
Bellevue Avenue	n/a	Local	Local	1	25	

Table 3. Existing Roadway Characteristics

(1) Based on Table 1.2 – Roadway Typologies in the PennDOT Publication 13M, Design Manual Part 2.

(2) Based on the roadway classifications provided on PennDOT's Traffic Information Repository (TIRe) website.

(3) Based on traffic data from PennDOT's Traffic Information Repository (TIRe) website.

The following key intersections in the vicinity of the site comprise the study area:

- Lancaster Avenue (S.R. 0030) and Bellevue Avenue
- Bellevue Avenue and Proposed Driveway

The existing characteristics of the study intersections, including field sketches and photographs are provided in **Appendix A**.

Land Use Context

The proposed development is located in Radnor Township, within WBOD (Wayne Business Overlay District) as seen in the Radnor Township Zoning Map below.



Source: Radnor Township Zoning Map

Area Transit Services

Transit services are currently provided by bus and train services within the vicinity of the proposed site. SEPTA Train Line – Paoli/Thorndale Line is located at Wayne Station which is approximately 0.2 miles from the proposed site. SEPTA Bus Route 106 is located at the intersection of Lancaster Avenue (S.R. 0030) and Banbury Way/Bloomingdale Avenue.

Pedestrian-Bicycle Facilities

Currently, there are sidewalks located along the study intersections. There are no bicycle lanes located along the study intersections.

Traffic Count Data

Daily traffic counts were obtained from PennDOT's Traffic Information Repository (TIRe) website.

Turning movement traffic counts were conducted in April 2022 during the weekday morning (7:00 AM – 9:00 AM) and weekday afternoon (4:00 PM – 6:00 PM) peak periods. The results of these traffic counts are tabulated by 15-minute intervals in **Appendix B**. The four highest consecutive 15-minute peak intervals during these traffic count periods constitute the peak hours that are the basis of this traffic analysis.

Existing Traffic Volumes

The 2022 traffic volumes were projected to the existing year of 2023. McMahon utilized the following methodology in order to project the 2023 existing base volumes utilized in the study. The growth rate in Delaware County is 0.00%, so there were no adjustments to the 2022 traffic volumes due to regional traffic growth. Traffic volume figures depicting the 2023 Existing Volume Development are provided in **Appendix C**.

- 1. **Figure C1** depicts the 2022 traffic volumes without adjustments.
- 2. Figure C2 depicts the balancing adjustments between the intersections.
- 3. **Figure C3** depicts the trip assignment for the retail store located at 201 W Lancaster Avenue which exists in 2023 and will be included in the 2023 traffic volumes.
- 4. Figure C4 depicts the 2023 existing peak hour traffic volumes with adjustments that are utilized in the TIA.

The resultant peak hour traffic volumes are depicted in **Figure 3A** for the weekday morning (7:00 AM – 9:00 AM) and weekday afternoon (4:00 PM – 6:00 PM) peak periods. The traffic volumes in Figure 3A were then analyzed to determine the existing operating conditions, and the results of this analysis are shown in **Figure 3B**. Specific details regarding the analysis results and traffic operations are provided later in this report.

Site Characteristics

This section presents the details regarding the proposed site, including the incremental increase in traffic volumes generated by the development during the peak hours and the distribution of site traffic to the study area roadways, as well as the proposed site access configuration, traffic control, and sight distance requirements.

Existing Site Trips Relocated

Due to the development of the site, existing trips associated with the existing municipal parking lot located along Bellevue Avenue were removed from the site, and then redistributed throughout the study area. The existing municipal parking lot trips were relocated to West Avenue. An assignment figure depicting the redistribution of existing site trips is provided in **Appendix D**.

Trip Generation

Traffic volumes generated by the proposed development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation*, *11th Edition*, and assumed mass transit and pedestrian reductions. Due to the location of the development in Wayne within close proximity to a SEPTA Regional Rail Line, there will be less dependency on vehicles. A large portion of trips will be supplemented by transit (SEPTA) and pedestrians. There are multiple SEPTA services located within the vicinity of the site. These SEPTA services include a bus route and a train line.

For residential modal reductions, McMahon referenced data from the United States Census Bureau titled "Commuting Characteristics by Sex, 2017-2021 American Community Survey 5-Year Estimates" (**Appendix L**). Based on this data, the Wayne area of Radnor Township (19087 Zip Code) has a mode of transport to work breakdown of 69% car, 7% transit, 4% walk, 0% bike, 19% home, and 1% other. For the residential uses, McMahon assumed approximately 69% car, 7% transit, and 24% pedestrians/other.

Additionally, trip reduction for internalization was applied and calculated based on PennDOT approved methodology (**Appendix K**). These deductions take into account trips by residents to the retail space within the site, whereby residents do not need to leave the overall site and create a typical vehicular trip. As a conservative approach, pass-by traffic percentages for the retail use were not applied to the trip generation.

Table 4 presents the anticipated vehicular trip generation for the proposed development.

			Weekday Morning Peak Hour			Week	xday Afte Peak Hoเ	rnoon Ir
Land Use	Size	Daily	In	Out	Total	In	Out	Total
Proposed Residential ⁽¹⁾	52 Units	202	3	8	11	13	8	21
Transit/Pedestrian Reductions ⁽³⁾		-63	-1	-2	-3	-4	-3	-7
Internalization ⁽⁴⁾			-0	-0	-0	-2	-1	-3
"New" Residential Trips		139	2	6	8	7	4	11
Proposed Retail ⁽²⁾	1,302 s.f.	285	4	3	7	9	9	18
Internalization ⁽⁴⁾			-0	-0	-0	-1	-2	-3
"New" Retail Trips		285	4	3	7	8	7	15
Total "New" Trips		424	6	9	15	15	11	26

Table 4. Vehicular Trip Generation

(1) ITE Land Use Code 221 for Multifamily Housing (Mid-Rise).

(2) ITE Land Use Code 822 for Strip Retail Plaza (<40k).

(3) Assumed to be 69% car and 31% transit/pedestrians.

(4) Based on NCHRP 684 Internal Trip Capture Estimation for the proposed residential and proposed retail.

Trip Distribution and Assignment

Site-generated traffic will approach and depart the site via different routes depending on factors such as the existing traffic patterns, location of major roadways, and the location of the development's site access. The distribution percentages for the anticipated directions of approach and departure and traffic assignment percentages are illustrated in **Figure 4A**. Application of the percentages illustrated in Figure 4A to the new peak hour trips contained in Table 4, provides an estimate of site traffic to be added to the study area. The site-generated traffic is also shown in **Figure 4B** for the weekday morning and weekday afternoon peak hours.

Site Access Configuration and Traffic Control

Access to the site is proposed to be provided via one (1) full-movement driveway along Bellevue Avenue. The recommendations for the proposed access designs, including auxiliary turn lanes, traffic control, and geometric design, were based on industry accepted criteria and guidelines. Specifically, the need for left- and right-turn deceleration lanes was based on the current PennDOT guidelines in accordance with *Publication 46, Chapter 11 – Traffic Studies*. The turn lane warrant/guideline analysis worksheets are contained in **Appendix J**.

Table 5 summarizes the results of the auxiliary turn lane warrants for the site access intersection along Bellevue Avenue.

Intersection	Auxiliary Lane Warrant	Warrant Satisfied? ⁽¹⁾	Required Lane Length ⁽¹⁾	Proposed Lane Length
Bellevue Avenue and	Northbound Right	NO	Not Required	-
Proposed Driveway	Southbound Left	NO	Not Required	-

Table 5. Turn Lane Warrant Summary

(1) Based on PennDOT Publication 46, *Traffic Engineering Manual*, Chapter 11.16

Additionally, the geometric design of the proposed site access was preliminarily evaluated based on guidelines contained in the *Pennsylvania Code*, *Chapter 441*, *Access to and Occupancy of Highways by Driveways and Local Roads*, as well as local PennDOT District policies.

Based on the results of this evaluation, the following access configurations and traffic controls are recommended, subject to the detailed engineering of the site access:

Site Access

Bellevue Avenue and Proposed Driveway

- Classified as a low volume driveway based on the anticipated daily traffic volumes.
- Provide one ingress lane and one egress lane for the access.
- Provide appropriate corner radius length, which will be verified based on the largest vehicle anticipated to utilize the driveway.
- Provide stop-control on the egress approach.
- Based on warrants, turn lanes are not warranted or recommended.

Sight Distance

Sight distance field measurements and an evaluation were performed at the proposed access intersection along Bellevue Avenue. Generally, the prevailing (85th percentile) travel speed, roadway grades and profiles, and the number of travel lanes play a role in determining if safe sight distances are available for egress and ingress at the proposed access. The existing sight distances at the proposed access intersection were measured and compared to PennDOT's sight distance requirements. These sight distance requirements are contained in *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads.*

Table 6 summarizes the available sight distance measurements, as well as PennDOT's sight distance requirements at the proposed access location.

		Posted Speed	Approximate	PennDOT Requirements (feet)		Available Sight Distance
Movement	Direction	(mph)	Grade	Desirable ⁽¹⁾	Minimum ⁽²⁾	(feet)
Exiting	Looking Left	25	+2%	250	144	250+
	Looking Right	25	-1%	195	148	250+
Left turn	Looking Ahead	25	+2%	190	144	250+
Entering	From the Rear	25	-1%	N/A	148	250+

Table 6. Sight Distance EvaluationBellevue Avenue and Proposed Driveway

(1) Based on the desirable sight distance requirements contained in the *Pennsylvania Code*, *Chapter 441*, *Access to and Occupancy of Highways by Driveways and Local Roads* and the posted speed limit, unless otherwise noted.

(2) Based on the safe stopping sight distance requirements contained in the *Pennsylvania Code, Chapter 441, Access* to and Occupancy of Highways by Driveways and Local Roads and the posted speed limit, unless otherwise noted.

As shown in Table 6, all of the existing available sight distances at the site access intersection meet PennDOT's desirable sight distance criteria. The actual available sight distances should be verified during detailed engineering of the site access. The PennDOT M-950S form is completed and provided in **Appendix E** for the site access intersection.

Future Traffic Conditions

This section presents the future build-out year (2025) traffic conditions, both without and with the proposed development, which is anticipated to be completed and occupied by 2025. The future 2025 build-out year without-development traffic volumes were estimated by increasing the existing 2023 traffic volumes to account for regional growth, as described below. The incremental increase due to the anticipated trip generation for the site was then added, resulting in the future 2025 build-out year with-development traffic volumes.

Regional Traffic Growth

To account for regional traffic growth, the existing traffic volumes were increased by an annual traffic growth rate of 0.00 percent per year compounded for two years to 2025. This growth rate is consistent with the traffic growth rate recommended by the PennDOT Bureau of Planning and Research *Growth Factors for August 2022 to July 2023* for similar, Urban Non-Interstate roadways in Delaware County.

Local Traffic Growth

It is our understanding that there are no nearby planned developments that would affect the intersections within the study area.

Planned Roadway Improvements

It is our understanding that there are no roadway projects planned by the Radnor Township, PennDOT, or other area development projects that would have an impact on any of the study intersections.

Future Traffic Conditions

The total background growth was then added to the existing 2023 traffic volumes, resulting in the future 2025 without-development traffic volumes. Next, the site generated traffic volumes, as shown in Figure 4B, were added to the future 2025 without-development traffic volumes, resulting in the future 2025 with-development traffic volumes.

The resultant future 2025 peak hour traffic volumes without development are illustrated in **Figure 5A**, and the future 2025 with-development peak hour traffic volumes are illustrated in **Figure 5B** for the weekday morning and weekday afternoon peak hours. These traffic volumes were then analyzed to determine the future 2025 without and with development traffic operating conditions, and the results of this analysis are shown in **Figures 5C and 5D**.

Capacity/Level-of-Service Results

The peak hour traffic volumes were analyzed to determine the existing and future traffic operating conditions, both without and with the proposed development, in accordance with the standard techniques contained in the current *Highway Capacity Manual (6th Edition)* for both signalized and unsignalized intersections. The HCM 6th Edition Methodology within Synchro 11.1 (build 2, rev. 9) traffic analysis software was utilized in the traffic analyses.

These standard capacity/level-of-service analysis techniques, which calculate total control delay, are described in **Appendix F** for both signalized and unsignalized intersections, as well as the correlation between average total control delay and the respective level-of-service (LOS) criteria for each intersection type.

According to PennDOT's Policies and Procedures for Transportation Impact Studies Related to Highway Occupancy Permit Plans, the following procedures and assumptions were utilized:

- For unsignalized intersections, the base critical headways at TWSC intersections (Exhibit 10-11) and base follow-up headways at TWSC intersections (Exhibit 10-12) outlined in PennDOT's Publication 46, Traffic Engineering Manual, were used.
- If the evaluation of without-development to with-development conditions indicates that the overall intersection level-of-service has dropped, mitigation will be required if the increase in delay is greater than 10 seconds. If the overall intersection delay increase is less than or equal to 10 seconds, mitigation of the intersection will not be required.

The existing, future build-out year (2025) traffic conditions, both without and with the proposed development, are summarized in **Figures 3B, 5C, and 5D**, respectively while the detailed capacity/level-of-service analysis worksheets are provided in **Appendices G, H, and I**. As stated in the executive summary, the level-of-service and queue matrices are provided in **Tables 1 and 2**.

As illustrated in **Figures 3B**, **5C**, **and 5D**, with the proposed site and with the site related improvement recommendations, all study intersections will satisfy PennDOT's level-of-service criteria. **Table 7** below summarizes the overall levels of service for the study, and the detailed results of the level-of-service analysis are contained in the matrices provided in **Table 1**.

Table 7. Overall Intersection Levels-of-ServiceWeekday Morning Peak Hour

	Overall Lev (Delay in	el-of-Service Seconds)	Delay	Requires	
Intersection	Without With		Increase	Mitigation ⁽²⁾	
	Development	Development ⁽¹⁾			
Lancaster Ave &	А	А	100	NO	
Bellevue Ave	(0.6)	(0.6)	+0.0	NO	
Bellevue Ave &	NI / A	А	NI / A	N/A	
Proposed Dwy	IN/A	(0.9)	IN/A		

Weekday Afternoon Peak Hour

Intersection	Overall Level-of-Service (Delay in Seconds)		Delay	Requires
	Without	With	Increase	Mitigation ⁽²⁾
	Development	Development ⁽¹⁾		
Lancaster Ave &	А	А	10.2	NO
Bellevue Ave	(0.7)	(0.9)	+0.2	NO
Bellevue Ave &	N/A	А	N/A	N/A
Proposed Dwy		(0.6)		

(1) With-development base conditions without improvements.

(2) Based on the difference in delay from without-development to with-development conditions, in accordance with PennDOT's level of service requirements.

Queuing Analysis

A queuing analysis was completed at the study intersections based on the HCM 6th Edition methodology. The queue lengths will not extend into adjacent intersections at any of the study intersections.

Matrices summarizing the results of the queuing analysis are provided in Table 2.

Conclusions and Recommendations

The following improvements are proposed in conjunction with the proposed development:

Site Access

Bellevue Avenue and Proposed Driveway

- Classified as a low volume driveway based on the anticipated daily traffic volumes.
- Provide one ingress lane and one egress lane for the access.
- Provide appropriate corner radius length, which will be verified based on the largest vehicle anticipated to utilize the driveway.
- Provide stop-control on the egress approach.
- Based on warrants, turn lanes are not warranted or recommended.

Off-Site Traffic Improvements

Lancaster Avenue (S.R. 0030) and Bellevue Avenue

• No improvements are required or recommended.

The traffic analyses contained herein reveal that efficient access to and from the proposed development can be provided, and furthermore, site-generated traffic can be accommodated at the study area intersections.



FIGURE 1 Site Location **PROPOSED MIXED-USE DEVELOPMENT -**LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA

MCMAHON a **Bowman** company

AREAL - 08/10/2023 - I:\eng\CONCOGR1\822366.12 - AT&T Site - Traffic and Parking\Traffic\Graphics\Figure 1.dwg

Scale



FIGURE 2

Site Plan PROPOSED MIXED-USE DEVELOPMENT -LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA

a Bowman company



FIGURE 3A 2023 Existing Peak Hour Traffic Volumes PROPOSED MIXED-USE DEVELOPMENT -LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA



AREAL - 08/11/2023 - I:\eng\CONCOGR1\822366.12 - AT&T Site - Traffic and Parking\Traffic\Graphics\Figure 3A.dwg



FIGURE 3B 2023 Existing Levels of Service PROPOSED MIXED-USE DEVELOPMENT -LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA





FIGURE 4A New Trip Distribution PROPOSED MIXED-USE DEVELOPMENT -LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA



AREAL - 08/11/2023 - I:\eng\CONCOGR1\822366.12 - AT&T Site - Traffic and Parking\Traffic\Graphics\Figure 4A.dwg

PROPOSED MIXED-USE DEVELOPMENT -LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA

FIGURE 4B

New Trip Assignment





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Ν

Not To

Scale



FIGURE 5A 2025 Future without Development Peak Hour Traffic Volumes PROPOSED MIXED-USE DEVELOPMENT -LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA



FIGURE 5B 2025 Future with Development Peak Hour Traffic Volumes PROPOSED MIXED-USE DEVELOPMENT -LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA



Ν







FIGURE 5C 2025 Future without Development Levels of Service PROPOSED MIXED-USE DEVELOPMENT -LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA





FIGURE SD 2025 Future with Development Levels of Service PROPOSED MIXED-USE DEVELOPMENT -LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA





Appendix A

Intersection Sketches and Photographs

Transportation Solutions Building Better Communities

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Lancaster Avenue (S.R. 0030) and Bellevue Avenue – SB

Lancaster Avenue (S.R. 0030) and Bellevue Avenue – WB

Radnor Township, Delaware County, Pennsylvania


Study Area: Radnor Township, Delaware County, Pennsylvania



Lancaster Avenue (S.R. 0030) and Bellevue Avenue – EB

Radnor Township, Delaware County, Pennsylvania



Appendix B

Turning Movement Traffic Counts

Transportation Solutions Building Better Communities

mcmahonassociates.com



Count Name: 1. Lancaster Avenue and Bellevue Avenue Site Code: 1 Start Date: 04/21/2022 Page No: 1

Turning Movement Data

		I	Lancaster Avenue	е				Lancaster Avenu	e				Bellevue Avenue	e		
Start Time			Eastbound					Westbound					Southbound			
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
7:00 AM	0	2	95	0	97	0	120	2	0	122	0	0	2	3	2	221
7:15 AM	0	4	131	0	135	0	133	1	0	134	0	0	0	1	0	269
7:30 AM	0	5	178	0	183	0	159	0	0	159	0	0	2	0	2	344
7:45 AM	0	6	176	1	182	0	186	2	0	188	0	0	0	3	0	370
Hourly Total	0	17	580	1	597	0	598	5	0	603	0	0	4	7	4	1204
8:00 AM	0	8	224	0	232	0	170	2	0	172	0	0	2	1	2	406
8:15 AM	0	5	167	0	172	0	179	5	0	184	0	0	4	1	4	360
8:30 AM	0	4	126	0	130	0	174	3	0	177	0	0	5	6	5	312
8:45 AM	0	5	140	0	145	0	173	3	0	176	0	0	4	0	4	325
Hourly Total	0	22	657	0	679	0	696	13	0	709	0	0	15	8	15	1403
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	3	164	0	167	0	174	4	0	178	0	1	2	1	3	348
4:15 PM	0	4	192	0	196	0	175	7	0	182	0	0	6	7	6	384
4:30 PM	0	1	186	0	187	0	194	4	0	198	0	0	7	0	7	392
4:45 PM	0	5	156	0	161	0	167	3	0	170	0	0	3	4	3	334
Hourly Total	0	13	698	0	711	0	710	18	0	728	0	1	18	12	19	1458
5:00 PM	0	5	161	0	166	0	156	2	0	158	0	0	6	4	6	330
5:15 PM	0	4	196	0	200	0	142	11	0	153	0	0	2	5	2	355
5:30 PM	0	4	152	0	156	0	185	7	1	192	0	1	8	0	9	357
5:45 PM	0	2	164	0	166	0	171	6	0	177	0	0	3	3	3	346
Hourly Total	0	15	673	0	688	0	654	26	1	680	0	1	19	12	20	1388
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	_	-	-	-
11:00 AM	0	8	190	0	198	0	169	2	0	171	0	0	4	1	4	373
11:15 AM	0	4	164	0	168	0	165	3	0	168	0	0	6	1	6	342
11:30 AM	0	9	180	1	189	0	155	4	0	159	0	0	9	5	9	357
11:45 AM	0	4	182	0	186	0	190	2	1	192	0	1	5	3	6	384
Hourly Total	0	25	716	1	741	0	679	11	1	690	0	1	24	10	25	1456
12:00 PM	0	7	183	0	190	0	165	9	1	174	0	0	6	1	6	370
12:15 PM	0	2	168	0	170	0	174	7	0	181	0	1	4	3	5	356
12:30 PM	0	6	170	0	176	0	158	5	0	163	0	0	1	1	1	340
12:45 PM	0	8	169	0	177	0	197	7	0	204	0	0	3	3	3	384
Hourly Total	0	23	690	0	713	0	694	28	1	722	0	1	14	8	15	1450
1:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	115	4015	2	4130	0	4031	101	3	4132	0	4	94	57	98	8360
Approach %	0.0	2.8	97.2	-	-	0.0	97.6	2.4	-	-	0.0	4.1	95.9	-	-	-
Total %	0.0	1.4	48.0	-	49.4	0.0	48.2	1.2	-	49.4	0.0	0.0	1.1	-	1.2	-

Lights	0	114	3934	-	4048	0	3938	101	-	4039	0	4	92	-	96	8183
% Lights	-	99.1	98.0	-	98.0	-	97.7	100.0	-	97.7	-	100.0	97.9	-	98.0	97.9
Buses	0	0	17	-	17	0	18	0	-	18	0	0	0	-	0	35
% Buses	-	0.0	0.4	-	0.4	-	0.4	0.0	-	0.4	-	0.0	0.0	-	0.0	0.4
Trucks	0	1	64	-	65	0	75	0	-	75	0	0	2	-	2	142
% Trucks	-	0.9	1.6	-	1.6	-	1.9	0.0	-	1.8	-	0.0	2.1	-	2.0	1.7
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	1.8	-	-
Pedestrians	-	-	-	2	-	-	-	_	3	-	-	-	-	56	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	98.2	-	-



Count Name: 1. Lancaster Avenue and Bellevue Avenue Site Code: 1 Start Date: 04/21/2022 Page No: 3

Bellevue Avenue [SB] Out In Total 215 96 311 0 0 0 3 0 0 0 216 98 314 0 0 0 0 2 0 0 0 0 0 1 0 0 0 0 56 94 4 0 57 R R Р U 1 04/21/2022 7:00 AM Ending At 04/23/2022 1:15 PM Lights Buses Trucks Bicycles on Crosswalk Pedestrians

Turning Movement Data Plot



Count Name: 1. Lancaster Avenue and Bellevue Avenue Site Code: 1 Start Date: 04/21/2022 Page No: 4

Turning Movement Peak Hour Data (7:30 AM)

		L	ancaster Avenu	e				Lancaster Avenu	e				Bellevue Avenue			
Otant Time			Eastbound					Westbound					Southbound			
Start Time	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
7:30 AM	0	5	178	0	183	0	159	0	0	159	0	0	2	0	2	344
7:45 AM	0	6	176	1	182	0	186	2	0	188	0	0	0	3	0	370
8:00 AM	0	8	224	0	232	0	170	2	0	172	0	0	2	1	2	406
8:15 AM	0	5	167	0	172	0	179	5	0	184	0	0	4	1	4	360
Total	0	24	745	1	769	0	694	9	0	703	0	0	8	5	8	1480
Approach %	0.0	3.1	96.9	-	-	0.0	98.7	1.3	-	-	0.0	0.0	100.0	-	-	-
Total %	0.0	1.6	50.3	-	52.0	0.0	46.9	0.6	-	47.5	0.0	0.0	0.5	-	0.5	-
PHF	0.000	0.750	0.831	-	0.829	0.000	0.933	0.450	-	0.935	0.000	0.000	0.500	-	0.500	0.911
Lights	0	24	712	-	736	0	658	9	-	667	0	0	7	-	7	1410
% Lights	-	100.0	95.6	-	95.7	-	94.8	100.0	-	94.9	-	-	87.5	-	87.5	95.3
Buses	0	0	5	-	5	0	7	0	-	7	0	0	0	-	0	12
% Buses	-	0.0	0.7	-	0.7	-	1.0	0.0	-	1.0	-	-	0.0	-	0.0	0.8
Trucks	0	0	28	-	28	0	29	0	-	29	0	0	1	-	1	58
% Trucks	-	0.0	3.8	-	3.6	-	4.2	0.0	-	4.1	-	-	12.5	-	12.5	3.9
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	_	0	-	_	-	-	5	-	_
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-



Count Name: 1. Lancaster Avenue and Bellevue Avenue Site Code: 1 Start Date: 04/21/2022 Page No: 5

Bellevue Avenue [SB] Out In Total 33 7 40 0 0 0 33 41 8 0 0 0 0 0 0 0 0 5 8 0 0 5 R R Р U **4 1** Peak Hour Data 04/21/2022 7:30 AM Ending At 04/21/2022 8:30 AM Lights Buses Trucks Bicycles on Crosswalk Pedestrians

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



Count Name: 1. Lancaster Avenue and Bellevue Avenue Site Code: 1 Start Date: 04/21/2022 Page No: 6

Turning Movement Peak Hour Data (4:00 PM)

		L	ancaster Avenu	e				Lancaster Avenu	Э	-			Bellevue Avenue	•		
Otant Time			Eastbound					Westbound					Southbound			
Start Time	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
4:00 PM	0	3	164	0	167	0	174	4	0	178	0	1	2	1	3	348
4:15 PM	0	4	192	0	196	0	175	7	0	182	0	0	6	7	6	384
4:30 PM	0	1	186	0	187	0	194	4	0	198	0	0	7	0	7	392
4:45 PM	0	5	156	0	161	0	167	3	0	170	0	0	3	4	3	334
Total	0	13	698	0	711	0	710	18	0	728	0	1	18	12	19	1458
Approach %	0.0	1.8	98.2	-	-	0.0	97.5	2.5	-	-	0.0	5.3	94.7	-	-	-
Total %	0.0	0.9	47.9	-	48.8	0.0	48.7	1.2	-	49.9	0.0	0.1	1.2	-	1.3	-
PHF	0.000	0.650	0.909	-	0.907	0.000	0.915	0.643	-	0.919	0.000	0.250	0.643	-	0.679	0.930
Lights	0	13	691	-	704	0	702	18	-	720	0	1	17	-	18	1442
% Lights	-	100.0	99.0	-	99.0	-	98.9	100.0	-	98.9	-	100.0	94.4	-	94.7	98.9
Buses	0	0	1	-	1	0	3	0	-	3	0	0	0	-	0	4
% Buses	-	0.0	0.1	-	0.1	-	0.4	0.0	-	0.4	-	0.0	0.0	-	0.0	0.3
Trucks	0	0	6	-	6	0	5	0	-	5	0	0	1	-	1	12
% Trucks	-	0.0	0.9	-	0.8	-	0.7	0.0	-	0.7	-	0.0	5.6	-	5.3	0.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	_	-	-	0	-	-	-	-	12	-	_
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Count Name: 1. Lancaster Avenue and Bellevue Avenue Site Code: 1 Start Date: 04/21/2022 Page No: 7

Bellevue Avenue [SB] Out In Total 31 18 49 0 0 0 31 19 50 0 1 0 0 0 0 0 0 0 0 0 12 18 0 12 1 R R Р U 1 **4 1** t Peak Hour Data 04/21/2022 4:00 PM Ending At 04/21/2022 5:00 PM Lights Buses Trucks Bicycles on Crosswalk Pedestrians

Turning Movement Peak Hour Data Plot (4:00 PM)



Count Name: 1. Lancaster Avenue and Bellevue Avenue Site Code: 1 Start Date: 04/21/2022 Page No: 8

Turning Movement Peak Hour Data (11:30 AM)

		I	ancaster Avenu Eastbound	e			I	Lancaster Avenue Westbound	e				Bellevue Avenue Southbound	9		
Start Time	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
11:30 AM	0	9	180	1	189	0	155	4	0	159	0	0	9	5	9	357
11:45 AM	0	4	182	0	186	0	190	2	1	192	0	1	5	3	6	384
12:00 PM	0	7	183	0	190	0	165	9	1	174	0	0	6	1	6	370
12:15 PM	0	2	168	0	170	0	174	7	0	181	0	1	4	3	5	356
Total	0	22	713	1	735	0	684	22	2	706	0	2	24	12	26	1467
Approach %	0.0	3.0	97.0	-	-	0.0	96.9	3.1	-	-	0.0	7.7	92.3	-	-	-
Total %	0.0	1.5	48.6	-	50.1	0.0	46.6	1.5	-	48.1	0.0	0.1	1.6	-	1.8	-
PHF	0.000	0.611	0.974	-	0.967	0.000	0.900	0.611	-	0.919	0.000	0.500	0.667	-	0.722	0.955
Lights	0	21	704	-	725	0	680	22	-	702	0	2	24	-	26	1453
% Lights	-	95.5	98.7	-	98.6	-	99.4	100.0	-	99.4	-	100.0	100.0	-	100.0	99.0
Buses	0	0	1	-	1	0	1	0	-	1	0	0	0	-	0	2
% Buses	-	0.0	0.1	-	0.1	-	0.1	0.0	-	0.1	-	0.0	0.0	-	0.0	0.1
Trucks	0	1	8	-	9	0	3	0	-	3	0	0	0	-	0	12
% Trucks	-	4.5	1.1	-	1.2	-	0.4	0.0	-	0.4	-	0.0	0.0	-	0.0	0.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	8.3	-	-
Pedestrians	-	-	-	1	-	-	-	-	2	-	-	-	-	11	-	_
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	91.7	-	-



Count Name: 1. Lancaster Avenue and Bellevue Avenue Site Code: 1 Start Date: 04/21/2022 Page No: 9

Bellevue Avenue [SB] Out In Total 43 26 69 0 0 0 0 44 26 70 0 0 0 0 0 0 0 1 0 0 0 0 11 24 2 0 12 R R Р U 1 **4 1** t Peak Hour Data 04/23/2022 11:30 AM Ending At 04/23/2022 12:30 PM Lights Buses Trucks Bicycles on Crosswalk Pedestrians

Turning Movement Peak Hour Data Plot (11:30 AM)



Count Name: 2. Bellevue Avenue and Existing Parking Lot Driveway Site Code: 2 Start Date: 04/21/2022 Page No: 1

Project: Lancaster & Bellevue Municipality: Wayne, Delaware County, PA Setup: DR Location: 40.044664, -75.391265

Turning Movement Data

	I		Parking Access			i un	ing wo			I			Rellevue Avenue	2		
			Westbound					Northbound					Southbound	,		
Start Time	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
7:00 AM	0	0	0	3	0	0	4	0	0	4	0	0	2	0	2	6
7:15 AM	0	0	0	1	0	0	4	1	0	5	0	0	0	0	0	5
7:30 AM	0	0	0	0	0	0	4	1	0	5	0	0	2	0	2	7
7:45 AM	0	0	0	1	0	0	7	1	0	8	0	1	0	0	1	9
Hourly Total	0	0	0	5	0	0	19	3	0	22	0	1	4	0	5	27
8:00 AM	0	0	0	0	0	0	9	1	0	10	0	1	2	0	3	13
8:15 AM	0	0	0	0	0	0	8	2	1	10	0	0	4	1	4	14
8:30 AM	0	0	0	0	0	0	4	3	5	7	0	0	5	0	5	12
8:45 AM	0	0	1	2	1	0	7	1	0	8	0	1	4	0	5	14
Hourly Total	0	0	1	2	1	0	28	7	6	35	0	2	15	1	17	53
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	1	2	0	3	0	6	1	1	7	0	0	2	0	2	12
4:15 PM	0	0	1	1	1	0	11	0	5	11	0	0	8	0	8	20
4:30 PM	0	0	1	1	1	0	5	0	1	5	0	0	5	0	5	11
4:45 PM	0	0	0	1	0	0	7	0	3	7	0	0	3	2	3	10
Hourly Total	0	1	4	3	5	0	29	1	10	30	0	0	18	2	18	53
5:00 PM	0	0	4	0	4	0	7	0	0	7	0	0	6	0	6	17
5:15 PM	0	1	3	0	4	0	11	4	0	15	0	1	1	0	2	21
5:30 PM	0	1	0	1	1	1	10	0	0	11	0	0	6	0	6	18
5:45 PM	0	0	1	0	1	0	7	1	0	8	1	0	3	0	4	13
Hourly Total	0	2	8	1	10	1	35	5	0	41	1	1	16	0	18	69
*** BREAK ***	-	-		-	-	-	-	-	-	-		-	-	-	-	-
11:00 AM	0	0	1	4	1	1	9	0	0	10	1	1	4	0	6	17
11:15 AM	0	0	0	2	0	0	6	1	0	7	0	0	5	0	5	12
11:30 AM	0	0	1	1	1	0	12	1	0	13	0	1	9	1	10	24
11:45 AM	0	0	0	1	0	0	6	0	0	6	0	0	6	0	6	12
Hourly Total	0	0	2	8	2	1	33	2	0	36	1	2	24	1	27	65
12:00 PM	0	0	0	0	0	0	13	3	0	16	0	0	6	0	6	22
12:15 PM	0	1	0	1	1	0	9	0	1	9	0	1	4	0	5	15
12:30 PM	0	0	0	1	0	0	11	0	1	11	0	0	3	2	3	14
12:45 PM	0	1	1	0	2	0	14	1	1	15	0	0	3	0	3	20
Hourly Total	0	2	1	2	3	0	47	4	3	51	0	1	16	2	17	71
Grand Total	0	5	16	21	21	2	191	22	19	215	2	7	93	6	102	338
Approach %	0.0	23.8	76.2	-	-	0.9	88.8	10.2	-	-	2.0	6.9	91.2	-	-	-
Total %	0.0	1.5	4.7	-	6.2	0.6	56.5	6.5	-	63.6	0.6	2.1	27.5	-	30.2	-
Lights	0	5	16	-	21	2	190	22	-	214	2	7	91	-	100	335

% Lights	-	100.0	100.0	-	100.0	100.0	99.5	100.0	-	99.5	100.0	100.0	97.8	-	98.0	99.1
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Trucks	0	0	0	-	0	0	1	0	-	1	0	0	2	-	2	3
% Trucks	-	0.0	0.0	-	0.0	0.0	0.5	0.0	-	0.5	0.0	0.0	2.2	-	2.0	0.9
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	21	-	-	-	-	19	-	-	-	-	6	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Count Name: 2. Bellevue Avenue and Existing Parking Lot Driveway Site Code: 2 Start Date: 04/21/2022 Page No: 3

Bellevue Avenue [SB] Out In Total 208 100 308 209 102 311 93 7 ⊤ Р L U 04/21/2022 7:00 AM Ending At 04/23/2022 1:00 PM Б Lights Buses Trucks Bicycles on Crosswalk Pedestrians Ł ↑ + υ т R Ρ 191 22 0 0 0 100 215 315 Out In Total Bellevue Avenue [NB]

Turning Movement Data Plot



Count Name: 2. Bellevue Avenue and Existing Parking Lot Driveway Site Code: 2 Start Date: 04/21/2022 Page No: 4

Turning Movement Peak Hour Data (8:00 AM)

			Parking Access			[Bellevue Avenue)				Bellevue Avenue)		
Chart Time			Westbound					Northbound					Southbound			
Start Time	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
8:00 AM	0	0	0	0	0	0	9	1	0	10	0	1	2	0	3	13
8:15 AM	0	0	0	0	0	0	8	2	1	10	0	0	4	1	4	14
8:30 AM	0	0	0	0	0	0	4	3	5	7	0	0	5	0	5	12
8:45 AM	0	0	1	2	1	0	7	1	0	8	0	1	4	0	5	14
Total	0	0	1	2	1	0	28	7	6	35	0	2	15	1	17	53
Approach %	0.0	0.0	100.0	-	-	0.0	80.0	20.0	-	-	0.0	11.8	88.2	-	-	-
Total %	0.0	0.0	1.9	-	1.9	0.0	52.8	13.2	-	66.0	0.0	3.8	28.3	-	32.1	-
PHF	0.000	0.000	0.250	-	0.250	0.000	0.778	0.583	-	0.875	0.000	0.500	0.750	-	0.850	0.946
Lights	0	0	1	-	1	0	28	7	-	35	0	2	15	-	17	53
% Lights	-	-	100.0	-	100.0	-	100.0	100.0	-	100.0	-	100.0	100.0	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	-	-	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Trucks	-	-	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	2	-	-	-	-	6	-	-	-	-	1	-	_
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Count Name: 2. Bellevue Avenue and Existing Parking Lot Driveway Site Code: 2 Start Date: 04/21/2022 Page No: 5

Bellevue Avenue [SB] Out In Total 17 46 29 17 15 2 0 ⊤ Р L U £ Peak Hour Data 04/21/2022 8:00 AM Ending At 04/21/2022 9:00 AM Lights Buses Trucks Bicycles on Crosswalk Pedestrians Ł т R Р 15 35 50 Out In Total Bellevue Avenue [NB]

Turning Movement Peak Hour Data Plot (8:00 AM)



Count Name: 2. Bellevue Avenue and Existing Parking Lot Driveway Site Code: 2 Start Date: 04/21/2022 Page No: 6

Turning Movement Peak Hour Data (5:00 PM)

			Parking Access					Bellevue Avenue					Bellevue Avenue	•		
Start Time			Westbound					Northbound					Southbound			
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
5:00 PM	0	0	4	0	4	0	7	0	0	7	0	0	6	0	6	17
5:15 PM	0	1	3	0	4	0	11	4	0	15	0	1	1	0	2	21
5:30 PM	0	1	0	1	1	1	10	0	0	11	0	0	6	0	6	18
5:45 PM	0	0	1	0	1	0	7	1	0	8	1	0	3	0	4	13
Total	0	2	8	1	10	1	35	5	0	41	1	1	16	0	18	69
Approach %	0.0	20.0	80.0	-	-	2.4	85.4	12.2	-	-	5.6	5.6	88.9	-	-	-
Total %	0.0	2.9	11.6	-	14.5	1.4	50.7	7.2	-	59.4	1.4	1.4	23.2	-	26.1	-
PHF	0.000	0.500	0.500	-	0.625	0.250	0.795	0.313	-	0.683	0.250	0.250	0.667	-	0.750	0.821
Lights	0	2	8	-	10	1	35	5	-	41	1	1	16	-	18	69
% Lights	-	100.0	100.0	-	100.0	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Trucks	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-



Count Name: 2. Bellevue Avenue and Existing Parking Lot Driveway Site Code: 2 Start Date: 04/21/2022 Page No: 7

Bellevue Avenue [SB] Out In Total 18 62 16 1 ↓ Р L U **1** £ Peak Hour Data 04/21/2022 5:00 PM Ending At 04/21/2022 6:00 PM Lights Buses Trucks Bicycles on Crosswalk Pedestrians Ł ш R Р 19 41 60 Out In Total Bellevue Avenue [NB]

Turning Movement Peak Hour Data Plot (5:00 PM)



Count Name: 2. Bellevue Avenue and Existing Parking Lot Driveway Site Code: 2 Start Date: 04/21/2022 Page No: 8

Turning Movement Peak Hour Data (11:30 AM)

			Parking Access		-			Bellevue Avenue					Bellevue Avenue	•		
Start Time	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
11:30 AM	0	0	1	1	1	0	12	1	0	13	0	1	9	1	10	24
11:45 AM	0	0	0	1	0	0	6	0	0	6	0	0	6	0	6	12
12:00 PM	0	0	0	0	0	0	13	3	0	16	0	0	6	0	6	22
12:15 PM	0	1	0	1	1	0	9	0	1	9	0	1	4	0	5	15
Total	0	1	1	3	2	0	40	4	1	44	0	2	25	1	27	73
Approach %	0.0	50.0	50.0	-	-	0.0	90.9	9.1	-	-	0.0	7.4	92.6	-	-	-
Total %	0.0	1.4	1.4	-	2.7	0.0	54.8	5.5	-	60.3	0.0	2.7	34.2	-	37.0	-
PHF	0.000	0.250	0.250	-	0.500	0.000	0.769	0.333	-	0.688	0.000	0.500	0.694	-	0.675	0.760
Lights	0	1	1	-	2	0	39	4	-	43	0	2	25	-	27	72
% Lights	-	100.0	100.0	-	100.0	-	97.5	100.0	-	97.7	-	100.0	100.0	-	100.0	98.6
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Trucks	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Trucks	-	0.0	0.0	-	0.0	-	2.5	0.0	-	2.3	-	0.0	0.0	-	0.0	1.4
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	3	-	-	-	-	1	-	-	-	-	1	-	_
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Count Name: 2. Bellevue Avenue and Existing Parking Lot Driveway Site Code: 2 Start Date: 04/21/2022 Page No: 9

Bellevue Avenue [SB] Out In Total 27 67 41 27 25 2 0 ⊤ Р L U £ Peak Hour Data 04/23/2022 11:30 AM Ending At 04/23/2022 12:30 PM Lights Buses Trucks Bicycles on Crosswalk Pedestrians Ł т R Р 26 44 70 Out In Total Bellevue Avenue [NB]

Turning Movement Peak Hour Data Plot (11:30 AM)



Appendix C

2023 Existing Volume Development

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2022 Peak Hour Traffic Volumes **PROPOSED MIXED-USE DEVELOPMENT - LANCASTER AVENUE** RADNOR TOWNSHIP, DELAWARE COUNTY, PA

FIGURE C1



Ν

 $W \rightarrow E$

Schematic-Not To

Scale





BELLEVUE

LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA









FIGURE C3 201 W Lancaster Avenue Trip Assignment PROPOSED MIXED-USE DEVELOPMENT -LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA







FIGURE C4 2023 Existing Peak Hour Traffic Volumes with Adjustments PROPOSED MIXED-USE DEVELOPMENT -LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA





Appendix D

Existing Site Trips Relocated

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FIGURE D1 2025 Future with Development - Existing Site Trips Relocated PROPOSED MIXED-USE DEVELOPMENT -LANCASTER AVENUE RADNOR TOWNSHIP, DELAWARE COUNTY, PA



Ν







Appendix E

PennDOT M-950S Form

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M-950S (3-04)	Bellevne Avenue d	+ Proposal Driveway
PENNDOT	DRIVEWAY SIGHT DIS (FOR LOCAL ROAD	STANCE MEASUREMENTS s, use penndot pub 70)
APPLICANT	·	APPLICATION NO
S.R	SEGOFFSET	LEGAL SPEED LIMIT_ <u>25mp4</u> DATE_ <u>4</u> /11/22
FOR DEPAR	RTMENT USE ONLY: Safe-Running Speed	d 85th Percentile Speed
Α		
	≪••••	← 250+ GRADE%, 7 (3.50)
100	[3.50'] = 250t GRADE + 2	%
DISTA FSD=_	NCE REQUIRED Required - 1441 Degized - 1441 THE MAXIMUM LENGTH OF ROADWAY AI CAN CONTINUOUSLY SEE ANOTHER	DRIVER'S EYE 10' EDGE OF TRAVEL LANE DISTANCE REQUIRED Required 148 FSD= LONG WHICH A DRIVER AT A DRIVEWAY LOCATION R VEHICLE APPROACHING ON THE ROADWAY.
		GRADE% Sight Line3.50 ⁺
с С	THE MAXIMUM LENGTH OF ROADWAY A CONTINUOUSLY SEE THE REAR OF A VEHICL AND WHICH IS POSITIONED TO	DISTANCE REQUIRED Required - 148' FSD= Required - 148' ALONG WHICH A DRIVER ON THE ROADWAY CAN LE WHICH IS LOCATED IN THE DRIVER'S TRAVEL LANE O MAKE A LEFT TURN INTO A DRIVEWAY.
======= [3.5]	GRADE +2_%	DISTANCE REQUIRED Required - 144 FSD=
INTO	A DRIVEWAY CAN CONTINUOUSLY SEE A V	EHICLE APPROACHING FROM THE OPPOSITE DIRECTION.


Appendix F

Capacity/Level-of-Service Methodology

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CAPACITY/LEVEL-OF-SERVICE ANALYSIS METHODOLOGY

The detailed capacity/level-of-service analysis contained in this transportation impact study was performed in accordance with the standard techniques contained in the *Highway Capacity Manual 6th Edition*. By definition, capacity represents "the maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions." The level at which an intersection or a uniform section of a lane or roadway during of a level of service. Level of service (LOS) is defined as "a quantitative stratification of a performance measure or measures that represent quality of service, measured on an A-F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F the worst."

Stop-Controlled Intersections

At unsignalized stop-controlled intersections, such as two-way stop-controlled (TWSC) or all-way stop-controlled (AWSC), a methodology for evaluating the relative functioning of these intersections is based upon the control delay. For these types of unsignalized intersections, the analysis of the control delay is based upon the following data:

- Number and configuration of lanes on each approach;
- Percentage of heavy vehicles on each approach;
- Demand flow rate for each entering vehicular movement and pedestrian crossing movement;
- Unique geometric factors such as, channelization aspects; two-way left-turn lanes, raised or striped median storage; approach grades, flared approaches on the minor street; and upstream signals within 0.25 miles.

At TWSC intersections, only drivers on the minor street approaches are required to stop before proceeding into the intersection and left-turning drivers from the major street may have to yield to on-coming major street through or right-turning traffic, but are not required to stop in the absence of on-coming traffic. The capacity at stop-controlled legs is based primarily on three factors: the distribution of gaps in the major stream, driver judgment in selecting the gaps, and the follow-up headways required by each driver in a queue.

At AWSC intersections, every vehicle is required to stop at the intersection before proceeding, and as a result, the decision to proceed is a function of the traffic conditions on the other approaches. Each driver proceeds only after determining that no vehicles are currently in the intersection and that it is the driver's turn to proceed. Capacity at an AWSC intersection is described by the saturation headway or time between departures of successive vehicles on a given approach for a particular case assuming a continuous queue; departure headway or the average time between departures of successive vehicles on a given approach accounting for the probability of each possible case; and service time or the average time sent by a vehicle in first position waiting to depart.

At both TWSC and AWSC intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. For TWSC intersections, the level of service is not calculated for major-street approaches or for the intersection as a whole; however, the intersection-wide level of service is calculated for AWSC intersections. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for TWSC and AWSC intersections.

Control Delay	LOS by Volume-	to-Capacity Ratio
(Sec/Veh)	$v/c \le 1.0$	v/c > 1.0
≤10	А	F
> 10 - 15	В	F
> 15 – 25	С	F
> 25 - 35	D	F
> 35 - 50	Е	F
> 50	F	F

Signalized Intersections

At three or four-legged signalized intersections, a methodology for evaluating the capacity and quality of service provided to road users traveling through the signalized intersection. For signalized intersections, the level of service can be characterized for the entire intersection, each approach, and each lane group. The level of service is based upon the control delay and volume-to-capacity ratio. The delay quantifies the increase in travel time due to the traffic signal control and is a surrogate measure of driver discomfort and fuel consumption, while the volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group. Input data in determining the delay and volume-to-capacity ratio include:

- Demand flow rate for each entering vehicular movement and pedestrian crossing movement, including right-turn on red volumes and percent of heavy vehicles;
- Initial queue for each lane group;
- Number and configuration of lanes on each approach;
- Type of signal control and phase sequence;
- Allocation of minimum/maximum green times and clearance intervals (Yellow plus All Red phases); and
- Phase recall.

At signalized intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for signalized intersections.

Control Delay	LOS by Volume-	to-Capacity Ratio
(Sec/Veh)	$v/c \le 1.0$	v/c > 1.0
<u>≤</u> 10	А	F
> 10 - 20	В	F
> 20 - 35	С	F
> 35 – 55	D	F
> 55 - 80	Е	F
> 80	F	F



Appendix G

Existing Capacity/Level-of-Service Analysis Worksheets

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	٨	-+	+-	×	1	4
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		41	↑ Ъ			1
Traffic Volume (vph)	35	745	694	19	0	21
Future Volume (vph)	35	745	694	19	0	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	12	12
Grade (%)		-1%	2%		-1%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	1
Taper Length (ft)	25				25	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected		0.998				
Satd. Flow (prot)	0	3084	3001	0	0	1385
Flt Permitted		0.998				
Satd. Flow (perm)	0	3084	3001	0	0	1385
Link Speed (mph)		25	25		25	
Link Distance (ft)		930	942		649	
Travel Time (s)		25.4	25.7		17.7	
Confl. Peds. (#/hr)	5			5		1
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	5%	0%	0%	13%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	38	819	763	21	0	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	857	784	0	0	23
Sign Control		Free	Free		Stop	
Intersection Summary						
	Other					
Alea Type.	Ullei					

Int Delay, s/veh	0.6						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		41	†]-			1	
Traffic Vol, veh/h	35	745	694	19	0	21	
Future Vol, veh/h	35	745	694	19	0	21	
Conflicting Peds, #/hr	5	0	0	5	0	1	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	-	0	
Veh in Median Storage,	# -	0	0	-	0	-	
Grade, %	-	-1	2	-	-1	-	
Peak Hour Factor	91	91	91	91	91	91	
Heavy Vehicles, %	0	4	5	0	0	13	
Mvmt Flow	38	819	763	21	0	23	

Major/Minor	Major1	Ν	/lajor2		Minor2	
Conflicting Flow All	789	0	-	0	-	398
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	3.9	-	-	-	-	7.4
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.4	-	-	-	-	3
Pot Cap-1 Maneuver	821	-	-	-	0	622
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	817	-	-	-	-	619
Mov Cap-2 Maneuver	· -	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		SB	
HCM Control Delay, s	6.0		0		11	
HCM LOS					В	
Minor Lane/Major Mvr	mt	EBL	EBT	WBT	WBR S	SBLn1
Capacity (veh/h)		817	-	-	-	619
HCM Lane V/C Ratio		0.047	-	-	-	0.037
HCM Control Delay (s	;)	9.6	0.4	-	-	11
HCM Lane LOS	/	А	А	-	-	В
HCM 95th %tile Q(veh	n)	0.1	-	-	-	0.1

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	٨			*	1	~
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		41	↑ Ъ			1
Traffic Volume (vph)	38	698	710	45	0	40
Future Volume (vph)	38	698	710	45	0	40
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	12	12
Grade (%)		-1%	2%		-1%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	1
Taper Length (ft)	25				25	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.991			0.865
Flt Protected		0.997				
Satd. Flow (prot)	0	3168	3102	0	0	1490
Flt Permitted		0.997				
Satd. Flow (perm)	0	3168	3102	0	0	1490
Link Speed (mph)		25	25		25	
Link Distance (ft)		930	942		649	
Travel Time (s)		25.4	25.7		17.7	
Confl. Peds. (#/hr)	12			12		
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	1%	0%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adi, Flow (vph)	41	751	763	48	0	43
Shared Lane Traffic (%)					-	
Lane Group Flow (vph)	0	792	811	0	0	43
Sign Control		Free	Free		Stop	
Intersection Summary						
	Other					

Int Delay, s/veh	0.7						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		41	1			1	
Traffic Vol, veh/h	38	698	710	45	0	40	
Future Vol, veh/h	38	698	710	45	0	40	
Conflicting Peds, #/hr	12	0	0	12	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	-	0	
Veh in Median Storage	, # -	0	0	-	0	-	
Grade, %	-	-1	2	-	-1	-	
Peak Hour Factor	93	93	93	93	93	93	
Heavy Vehicles, %	0	1	1	0	0	5	
Mvmt Flow	41	751	763	48	0	43	

Major/Minor	Major1	Ν	/lajor2	ľ	Minor2		
Conflicting Flow All	823	0	-	0	-	418	
Stage 1	-	-	-	-	-	-	
Stage 2	-	-	-	-	-	-	
Critical Hdwy	3.9	-	-	-	-	7.2	
Critical Hdwy Stg 1	-	-	-	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	
Follow-up Hdwy	2.4	-	-	-	-	2.9	
Pot Cap-1 Maneuver	799	-	-	-	0	634	
Stage 1	-	-	-	-	0	-	
Stage 2	-	-	-	-	0	-	
Platoon blocked, %		-	-	-			
Mov Cap-1 Maneuver	790	-	-	-	-	627	
Mov Cap-2 Maneuver	-	-	-	-	-	-	
Stage 1	-	-	-	-	-	-	
Stage 2	-	-	-	-	-	-	
Approach	EB		WB		SB		
HCM Control Delay, s	0.9		0		11.2		
HCM LOS					В		
Minor Lane/Major Mun	nt	ERI	ERT			BIn1	
	ш		EDI	VDI	VDR	607	
Capacity (ven/n)		790	-	-	-	021	
HCIVI Lane V/C Ratio	۱	0.052	-	-	-	11.0	
HCM Long LOS)	9.8	0.4	-	-	II.Z	
HOM OF the 9/ tile Of the		A	A	-	-	B	
HOW 95th %the Q(ven	1)	0.2	-	-	-	0.2	



Appendix H

2025 Future without Development Capacity/Level-of-Service Analysis Worksheets

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McMahon, a Bowman Company 1: Lancaster Avenue & Bellevue Avenue

	٨		+	*	1	~
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		41	↑ Ъ			1
Traffic Volume (vph)	35	745	694	19	0	21
Future Volume (vph)	35	745	694	19	0	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	12	12
Grade (%)		-1%	2%		-1%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	1
Taper Length (ft)	25				25	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.996			0.865
Flt Protected		0.998				
Satd. Flow (prot)	0	3084	3001	0	0	1385
Flt Permitted		0.998				
Satd. Flow (perm)	0	3084	3001	0	0	1385
Link Speed (mph)		25	25		25	
Link Distance (ft)		930	942		649	
Travel Time (s)		25.4	25.7		17.7	
Confl. Peds. (#/hr)	5			5		1
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	5%	0%	0%	13%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)			•	•		
Mid-Block Traffic (%)		0%	0%		0%	
Adi, Flow (vph)	38	819	763	21	0	23
Shared Lane Traffic (%)		0.0			Ū	
Lane Group Flow (vph)	0	857	784	0	0	23
Sign Control	Ū	Free	Free		Stop	0
Intersection Summary						
Area Type:	Other					

Int Delay, s/veh	0.6							
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		41	14			1		
Traffic Vol, veh/h	35	745	694	19	0	21		
Future Vol, veh/h	35	745	694	19	0	21		
Conflicting Peds, #/hr	5	0	0	5	0	1		
Sign Control	Free	Free	Free	Free	Stop	Stop		
RT Channelized	-	None	-	None	-	None		
Storage Length	-	-	-	-	-	0		
Veh in Median Storage	e, # -	0	0	-	0	-		
Grade, %	-	-1	2	-	-1	-		
Peak Hour Factor	91	91	91	91	91	91		
Heavy Vehicles, %	0	4	5	0	0	13		
Mvmt Flow	38	819	763	21	0	23		

Major/Minor	Major1	Ν	/lajor2		Minor2	
Conflicting Flow All	789	0	-	0	-	398
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	3.9	-	-	-	-	7.4
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.4	-	-	-	-	3
Pot Cap-1 Maneuver	821	-	-	-	0	622
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	817	-	-	-	-	619
Mov Cap-2 Maneuver	· -	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.8		0		11	
HCM LOS					В	
Minor Lane/Major Mvi	mt	EBL	EBT	WBT	WBR S	BLn1
Capacity (veh/h)		817	-	-	-	619
HCM Lane V/C Ratio		0.047	-	-	-	0.037
HCM Control Delay (s	3)	9.6	0.4	-	-	11
HCM Lane LOS		А	А	-	-	В
HCM 95th %tile Q(vel	า)	0.1	-	-	-	0.1

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Lane Group EBL EBT WBT WBR SBL SBR Lane Configurations Image: Configuratio
Lane Configurations Image: Configurations <
Traffic Volume (vph) 38 698 710 45 0 40 Future Volume (vph) 38 698 710 45 0 40 Ideal Flow (vphpl) 1800 1800 1800 1800 1800 1800 1800 Lane Width (ft) 10 10 10 10 12 12 Grade (%) -1% 2% -1% 2% -1% Storage Length (ft) 0 0 0 0 0 Storage Lanes 0 0 0 1 1 Taper Length (ft) 25 25 25 25 Lane Util. Factor 0.95 0.95 0.95 1.00 1.00 Ped Bike Factor
Future Volume (vph) 38 698 710 45 0 40 Ideal Flow (vphpl) 1800 12 12 Grade (%) -1% -1% 12 12 12 12 12 12 12 12 12 12 12 12 12 12 100 <td< td=""></td<>
Ideal Flow (vphpl) 1800 12 12 12 Grade (%) 0 10 10 10 12 12 12 12 12 12 100
Lane Width (ft) 10 10 10 10 10 12 12 Grade (%) -1% 2% -1% 2% -1% 2% 10 10 10 12 12 12 12 Grade (%) -1% 2% -1% 2% 5 10 10 10 10 10 10 10 10 10 12 12 12 Grade (%) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 10 10 10 10 10 10 10 10 10 10 12 12 12 10 100
Grade (%) -1% 2% -1% Storage Length (ft) 0 0 0 0 0 Storage Lanes 0 0 0 1 1 Taper Length (ft) 25 25 25 Lane Util. Factor 0.95 0.95 0.95 1.00 1.00 Ped Bike Factor 7 0.991 0.865 0 1490 Frt 0.997 0 3168 3102 0 0 1490 Fit Protected 0.997 0 3168 3102 0 0 1490 Fit Permitted 0.997 0 3168 3102 0 0 1490 Link Speed (mph) 25 25 25 25 17.7 1490 Link Distance (ft) 930 942 649 17.7 12 12 12 12 12 12 12 12 13 100 100% 100% 100% 100% 100%
Storage Length (ft) 0 0 0 0 0 0 1 Taper Length (ft) 25 25 25 25 25 25 25 26 27 25 <td< td=""></td<>
Storage Lanes 0 0 0 1 Taper Length (ft) 25 25 25 Lane Util. Factor 0.95 0.95 0.95 1.00 1.00 Ped Bike Factor 7 0.991 0.865 0.97 0.991 0.865 Fit Protected 0.997 0 3168 3102 0 0 1490 Fit Permitted 0.997 0 3168 3102 0 0 1490 Satd. Flow (port) 0 3168 3102 0 0 1490 Link Speed (mph) 25 25 25 25 110 1100 Link Distance (ft) 930 942 649 117.7 117.7 117.7 117.7 112 12 12 12 12 12 12 12 12 12 12 13 130 10.93 10.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93
Taper Length (ft) 25 25 Lane Util. Factor 0.95 0.95 0.95 1.00 1.00 Ped Bike Factor 0.991 0.865 Frt 0.997 0 3168 3102 0 0 1490 Flt Protected 0.997 3168 3102 0 0 1490 Flt Permitted 0.997 25 25 25 1490
Lane Util. Factor 0.95 0.95 0.95 0.95 1.00 1.00 Ped Bike Factor 0.991 0.865 0.991 0.865 Frt 0.997 0 3168 3102 0 0 1490 Satd. Flow (prot) 0 3168 3102 0 0 1490 Flt Permitted 0.997 0 3168 3102 0 0 1490 Satd. Flow (perm) 0 3168 3102 0 0 1490 Link Speed (mph) 25 25 25 25 17 17.7 Confl. Peds. (#/hr) 12 12 12 12 12 12 12 12 12 100%
Ped Bike Factor 0.991 0.865 Frt 0.997 0 3168 3102 0 0 1490 Satd. Flow (prot) 0 3168 3102 0 0 1490 Flt Permitted 0.997 0 3168 3102 0 0 1490 Satd. Flow (perm) 0 3168 3102 0 0 1490 Link Speed (mph) 25 25 25 25 1490 1490 Link Distance (ft) 930 942 649 9 17avel Time (s) 25.4 25.7 17.7 Confl. Peds. (#/hr) 12 12 12 12 12 12 12 12 12 13 100%
Frt 0.991 0.865 Fit Protected 0.997 0 3168 3102 0 0 1490 Satd. Flow (prot) 0 3168 3102 0 0 1490 Fit Permitted 0.997 0 3168 3102 0 0 1490 Satd. Flow (perm) 0 3168 3102 0 0 1490 Link Speed (mph) 25 25 25 25 1490 1490 Link Distance (ft) 930 942 649 1777 17.7 17.7 17.7 12 12 12 12 12 12 12 12 12 13 100 100%
Fit Protected 0.997 Satd. Flow (prot) 0 3168 3102 0 0 1490 Fit Permitted 0.997 0 3168 3102 0 0 1490 Satd. Flow (perm) 0 3168 3102 0 0 1490 Link Speed (mph) 25 25 25 25 1490 Link Distance (ft) 930 942 649 649 Travel Time (s) 25.4 25.7 17.7 Confl. Peds. (#/hr) 12 12 12 Confl. Bikes (#/hr) 930 0.93 0.93 0.93 0.93 Peak Hour Factor 0.93 0.93 0.93 0.93 0.93 0.93 Growth Factor 100% 100% 100% 100% 100% 100%
Satd. Flow (prot) 0 3168 3102 0 0 1490 Flt Permitted 0.997 0 3168 3102 0 0 1490 Satd. Flow (perm) 0 3168 3102 0 0 1490 Link Speed (mph) 25 25 25 25 1490 Link Distance (ft) 930 942 649 177 17.7 17.7 17.7 12 12 12 12 12 12 12 12 13 100% </td
Fit Permitted 0.997 Satd. Flow (perm) 0 3168 3102 0 0 1490 Link Speed (mph) 25 25 25 25 25 25 25 25 25 25 25 25 26 25 26 26 <td< td=""></td<>
Satd. Flow (perm) 0 3168 3102 0 0 1490 Link Speed (mph) 25 25 25 25 25 25 25 25 25 25 25 25 26 26 27
Link Speed (mph) 25 25 25 Link Distance (ft) 930 942 649 Travel Time (s) 25.4 25.7 17.7 Confl. Peds. (#/hr) 12 12 12 Confl. Bikes (#/hr) 930 0.93 0.93 0.93 0.93 Peak Hour Factor 0.93 0.93 0.93 0.93 0.93 0.93 Growth Factor 100% 100% 100% 100% 100% 100%
Link Distance (ft) 930 942 649 Travel Time (s) 25.4 25.7 17.7 Confl. Peds. (#/hr) 12 12 12 Confl. Bikes (#/hr) 930 0.93 0.93 0.93 0.93 Peak Hour Factor 0.93 0.93 0.93 0.93 0.93 0.93 Growth Factor 100% 100% 100% 100% 100% 100%
Travel Time (s) 25.4 25.7 17.7 Confl. Peds. (#/hr) 12 12 12 Confl. Bikes (#/hr) 9 0.93 0.93 0.93 0.93 Peak Hour Factor 0.93 0.93 0.93 0.93 0.93 0.93 Growth Factor 100% 100% 100% 100% 100% 100%
Confl. Peds. (#/hr) 12 12 Confl. Bikes (#/hr) 12 12 Peak Hour Factor 0.93 0.93 0.93 0.93 0.93 Growth Factor 100% 100% 100% 100% 100% 100%
Confl. Bikes (#/hr) Peak Hour Factor 0.93 0.93 0.93 0.93 0.93 Growth Factor 100% 100% 100% 100% 100%
Peak Hour Factor 0.93
Growth Factor 100% 100% 100% 100% 100%
Heavy Vehicles (%) 0% 1% 1% 0% 0% 5%
Bus Blockages (#/hr) 0 0 0 0 0 0
Parking (#/hr)
Mid-Block Traffic (%) 0% 0% 0%
Adj. Flow (vph) 41 751 763 48 0 43
Shared Lane Traffic (%)
Lane Group Flow (vph) 0 792 811 0 0 43
Sign Control Free Free Stop
Intersection Summary
Area Type: Other

Int Delay, s/veh	0.7							
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		41	1			1		
Traffic Vol, veh/h	38	698	710	45	0	40		
Future Vol, veh/h	38	698	710	45	0	40		
Conflicting Peds, #/hr	12	0	0	12	0	0		
Sign Control	Free	Free	Free	Free	Stop	Stop		
RT Channelized	-	None	-	None	-	None		
Storage Length	-	-	-	-	-	0		
Veh in Median Storage	, # -	0	0	-	0	-		
Grade, %	-	-1	2	-	-1	-		
Peak Hour Factor	93	93	93	93	93	93		
Heavy Vehicles, %	0	1	1	0	0	5		
Mvmt Flow	41	751	763	48	0	43		

Major/Minor	Major1	Ν	/lajor2	1	Minor2	
Conflicting Flow All	823	0	-	0	-	418
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	3.9	-	-	-	-	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.4	-	-	-	-	2.9
Pot Cap-1 Maneuver	799	-	-	-	0	634
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	790	-	-	-	-	627
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.9		0		11.2	
HCM LOS					В	
Minor Lane/Maior Myr	nt	FBI	FBT	WBT	WBR S	SBI n1
Canacity (veh/h)		790		-	-	627
HCM Lane V/C Ratio		0.052	_	_	_	0 069
HCM Control Delay (s)	9.8	04	_	_	11.2
HCM Lane LOS)	0.0 A	A	-	-	B
HCM 95th %tile Q(veh	ו)	0.2	-	-	-	0.2



Appendix I

2025 Future with Development Capacity/Level-of-Service Analysis Worksheets

Transportation Solutions Building Better Communities

mcmahonassociates.com

McMahon, a Bowman Company 1: Lancaster Avenue & Bellevue Avenue

Lane GroupEBLEBLEBTWBTWBRSBLSBRLane ConfigurationsImage: Configuration stateImage: Configuration stateImage: Configuration stateImage: Configuration stateTraffic Volume (vph)3874569422026Entry Volume (vph)3874569422026
Lane Configurations Image: Algorithm of the second se
Traffic Volume (vph) 38 745 694 22 0 26 Future Volume (vph) 38 745 694 22 0 26
Euture Volume (vob) 38 745 694 22 0 26
Ideal Flow (vphpl) 1800 1800 1800 1800 1800 1800
Lane Width (ft) 10 10 10 12 12
Grade (%) -1% 2% -1%
Storage Length (ft) 0 0 0
Storage Lanes 0 0 1
Taper Length (ft) 25 25
Lane Util. Factor 0.95 0.95 0.95 0.95 1.00 1.00
Ped Bike Factor
Frt 0.995 0.865
Flt Protected 0.998
Satd. Flow (prot) 0 3084 2999 0 0 1385
Flt Permitted 0.998
Satd. Flow (perm) 0 3084 2999 0 0 1385
Link Speed (mph) 25 25 25
Link Distance (ft) 930 942 248
Travel Time (s) 25.4 25.7 6.8
Confl. Peds. (#/hr) 5 5 1
Confl. Bikes (#/hr)
Peak Hour Factor 0.91 0.91 0.91 0.91 0.91 0.91
Growth Factor 100% 100% 100% 100% 100% 100%
Heavy Vehicles (%) 0% 4% 5% 0% 0% 13%
Bus Blockages (#/hr) 0 0 0 0 0 0
Parking (#/hr)
Mid-Block Traffic (%) 0% 0% 0%
Adj. Flow (vph) 42 819 763 24 0 29
Shared Lane Traffic (%)
Lane Group Flow (vph) 0 861 787 0 0 29
Sign Control Free Free Stop
Intersection Summary
Area Type: Other

Int Delay, s/veh	0.6						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		41	1			1	
Traffic Vol, veh/h	38	745	694	22	0	26	
Future Vol, veh/h	38	745	694	22	0	26	
Conflicting Peds, #/hr	5	0	0	5	0	1	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	-	0	
Veh in Median Storage	, # -	0	0	-	0	-	
Grade, %	-	-1	2	-	-1	-	
Peak Hour Factor	91	91	91	91	91	91	
Heavy Vehicles, %	0	4	5	0	0	13	
Mvmt Flow	42	819	763	24	0	29	

Major/Minor	Major1	Ν	/lajor2	l	Minor2	
Conflicting Flow All	792	0	-	0	-	400
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	3.9	-	-	-	-	7.4
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.4	-	-	-	-	3
Pot Cap-1 Maneuver	819	-	-	-	0	620
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	815	-	-	-	-	617
Mov Cap-2 Maneuver	· -	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		SB	
HCM Control Delay, s	6.0		0		11.1	
HCM LOS					В	
Minor Lane/Major Mvr	mt	EBL	EBT	WBT	WBR S	BLn1
Capacity (veh/h)		815	-	-	-	617
HCM Lane V/C Ratio		0.051	-	-	-	0.046
HCM Control Delay (s	5)	9.7	0.4	-	-	11.1
HCM Lane LOS	,	А	А	-	-	В
HCM 95th %tile Q(veh	ר)	0.2	-	-	-	0.1

McMahon, a Bowman Company 2: Bellevue Avenue & Proposed Driveway

	1	*	Ť	1	1	ŧ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		Þ			4
Traffic Volume (vph)	5	4	54	6	0	21
Future Volume (vph)	5	4	54	6	0	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		2%			-1%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.946		0.986			
Flt Protected	0.971					
Satd. Flow (prot)	1621	0	1753	0	0	1601
Flt Permitted	0.971					
Satd. Flow (perm)	1621	0	1753	0	0	1601
Link Speed (mph)	25		25			25
Link Distance (ft)	251		248			401
Travel Time (s)	6.8		6.8			10.9
Confl. Peds. (#/hr)	6	1		2	2	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	0%	2%	0%	13%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	6	4	60	7	0	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	67	0	0	23
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					

Int Delay, s/veh	0.9						
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	Y		t,			ŧ	
Traffic Vol, veh/h	5	4	54	6	0	21	
Future Vol, veh/h	5	4	54	6	0	21	
Conflicting Peds, #/hr	6	1	0	2	2	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-	-	-	-	-	
Veh in Median Storage	, # 0	-	0	-	-	0	
Grade, %	0	-	2	-	-	-1	
Peak Hour Factor	90	90	90	90	90	90	
Heavy Vehicles, %	2	2	0	2	0	13	
Mvmt Flow	6	4	60	7	0	23	

Major/Minor	Minor1	Ν	lajor1	Ν	1ajor2		
Conflicting Flow All	95	67	0	0	69	0	
Stage 1	66	-	-	-	-	-	
Stage 2	29	-	-	-	-	-	
Critical Hdwy	6.42	6.22	-	-	4.3	-	
Critical Hdwy Stg 1	5.42	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	-	
Follow-up Hdwy	3	3.1	-	-	3	-	
Pot Cap-1 Maneuver	1054	1064	-	-	1137	-	
Stage 1	1117	-	-	-	-	-	
Stage 2	1163	-	-	-	-	-	
Platoon blocked, %			-	-		-	
Mov Cap-1 Maneuver	1046	1061	-	-	1135	-	
Mov Cap-2 Maneuver	1046	-	-	-	-	-	
Stage 1	1115	-	-	-	-	-	
Stage 2	1156	-	-	-	-	-	
Annroach	WB		NB		SB		
HCM Control Dolay	8.5		0		0		
LCM LOS	0.5		U		0		
	A						

Minor Lane/Major Mvmt	NBT	NBRWI	BLn1	SBL	SBT	
Capacity (veh/h)	-	-	1053	1135	-	
HCM Lane V/C Ratio	-	- 0	0.009	-	-	
HCM Control Delay (s)	-	-	8.5	0	-	
HCM Lane LOS	-	-	Α	А	-	
HCM 95th %tile Q(veh)	-	-	0	0	-	

McMahon, a Bowman Company 1: Lancaster Avenue & Bellevue Avenue

	٨		-	*	1	~
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		đ†	↑ Ъ			1
Traffic Volume (vph)	46	698	710	52	0	46
Future Volume (vph)	46	698	710	52	0	46
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	12	12
Grade (%)		-1%	2%		-1%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	1
Taper Length (ft)	25				25	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.990			0.865
Flt Protected		0.997				
Satd. Flow (prot)	0	3169	3100	0	0	1490
Flt Permitted		0.997				
Satd. Flow (perm)	0	3169	3100	0	0	1490
Link Speed (mph)		25	25		25	
Link Distance (ft)		930	942		248	
Travel Time (s)		25.4	25.7		6.8	
Confl. Peds. (#/hr)	12			12		
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	1%	0%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adi, Flow (vph)	49	751	763	56	0	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	800	819	0	0	49
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					

Int Delay, s/veh	0.9								
Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations		41	14			1			
Traffic Vol, veh/h	46	698	710	52	0	46			
Future Vol, veh/h	46	698	710	52	0	46			
Conflicting Peds, #/hr	12	0	0	12	0	0			
Sign Control	Free	Free	Free	Free	Stop	Stop			
RT Channelized	-	None	-	None	-	None			
Storage Length	-	-	-	-	-	0			
Veh in Median Storage	e, # -	0	0	-	0	-			
Grade, %	-	-1	2	-	-1	-			
Peak Hour Factor	93	93	93	93	93	93			
Heavy Vehicles, %	0	1	1	0	0	5			
Mvmt Flow	49	751	763	56	0	49			

Major1	Ν	/lajor2	<u> </u>	Minor2	
831	0	-	0	-	422
-	-	-	-	-	-
-	-	-	-	-	-
3.9	-	-	-	-	7.2
-	-	-	-	-	-
-	-	-	-	-	-
2.4	-	-	-	-	2.9
794	-	-	-	0	630
-	-	-	-	0	-
-	-	-	-	0	-
	-	-	-		
785	-	-	-	-	623
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
EB		WB		SB	
1.1		0		11.3	
				В	
nt	FRI	FRT	W/RT		RI n1
<u> </u>	785			VDICC	623
	0.063	-	-	-	023
.)	0.003	0.5	-	-	11 2
)	9.9 A	0.5	-	-	II.J R
n)	0.2	-	_	_	0.3
	Major1 831 - - 3.9 - 2.4 794 - 785 - 785 - 1.1 mt	Major1 N 831 0 - - 3.9 - - - 3.9 - - - 2.4 - 794 - - - 785 - -	Major1 Major2 831 0 - - - - 3.9 - - - - - 3.9 - - 2.4 - - 794 - - 795 - - 785 - - - - - 1.1 0 - mt EBL EBT 785 - - - - - 9.9 0.5 - A A -	Major1 Major2 I 831 0 - 0 - - - - 3.9 - - - - - - - 3.9 - - - - - - - 2.4 - - - 794 - - - 794 - - - 785 - - - 785 - - - - - - - - 785 - - - - - - - - - - - - - - - - - 1.1 0 - - - - - - - - - - - - - - - - -	Major1 Major2 Minor2 831 0 - 0 - - - - - - - - - - - 3.9 - - - - - - - - - - - - - - 2.4 - - - - 794 - - 0 - - - - 0 - 785 - - - - - - - - - - - - - - - - - 785 - - - - - - - EB WB SB - - - - - 0.063 - - - - - - -

McMahon, a Bowman Company 2: Bellevue Avenue & Proposed Driveway

	-	*	Ť	1	1	ŧ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		ţ,			्स
Traffic Volume (vph)	6	5	83	15	0	40
Future Volume (vph)	6	5	83	15	0	40
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		2%			-1%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.938		0.979			
Flt Protected	0.974					
Satd. Flow (prot)	1612	0	1739	0	0	1723
Flt Permitted	0.974					
Satd. Flow (perm)	1612	0	1739	0	0	1723
Link Speed (mph)	25		25			25
Link Distance (ft)	251		248			401
Travel Time (s)	6.8		6.8			10.9
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	0%	2%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	7	6	92	17	0	44
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	109	0	0	44
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					

Int Delay, s/veh	0.6						
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	Y		t,			ŧ	
Traffic Vol, veh/h	6	5	83	15	0	40	
Future Vol, veh/h	6	5	83	15	0	40	
Conflicting Peds, #/hr	0	0	0	1	1	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-	-	-	-	-	
Veh in Median Storage,	# 0	-	0	-	-	0	
Grade, %	0	-	2	-	-	-1	
Peak Hour Factor	90	90	90	90	90	90	
Heavy Vehicles, %	2	2	0	2	0	5	
Mvmt Flow	7	6	92	17	0	44	

Major/Minor	Minor1	Μ	ajor1	Ν	lajor2		
Conflicting Flow All	146	102	0	0	110	0	
Stage 1	102	-	-	-	-	-	
Stage 2	44	-	-	-	-	-	
Critical Hdwy	6.42	6.22	-	-	4.3	-	
Critical Hdwy Stg 1	5.42	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	-	
Follow-up Hdwy	3	3.1	-	-	3	-	
Pot Cap-1 Maneuver	982	1017	-	-	1101	-	
Stage 1	1074	-	-	-	-	-	
Stage 2	1144	-	-	-	-	-	
Platoon blocked, %			-	-		-	
Mov Cap-1 Maneuver	981	1016	-	-	1100	-	
Mov Cap-2 Maneuver	981	-	-	-	-	-	
Stage 1	1073	-	-	-	-	-	
Stage 2	1144	-	-	-	-	-	
Approach	WB		NB		SB		
HCM Control Delay, s	8.7		0		0		
HCM LOS	А						

Minor Lane/Major Mvmt	NBT	NBRW	BLn1	SBL	SBT	
Capacity (veh/h)	-	-	997	1100	-	
HCM Lane V/C Ratio	-	- (0.012	-	-	
HCM Control Delay (s)	-	-	8.7	0	-	
HCM Lane LOS	-	-	А	А	-	
HCM 95th %tile Q(veh)	-	-	0	0	-	



Appendix J

Turn Lane Warrants

Transportation Solutions Building Better Communities

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Turn Lane Warrant and Length Analysis Workbook

		S	TUDY LOC			SIS INFORM	IATION				
DemoDOT	Mu	nicipality: County:	Radnor T Delawar	Fownship e County		Analysis Date: 8/15/2023 Conducted By:			2023		
PennDOT	Engineerin	g District:		D	A	cneck ency/Company	ed By: Name: Mc	Mahon, a Bov	wman Company		
Intersection & Approach Description: Bellevue Avenue & Proposed Driveway - NBR											
	Analys	sis Period:	2025	Build		Number	of Approach	Lanes:	1		
	De	sign Hour:	AM Pe	ak Hour		Undivided o	or Divided Hi	ghway:	Undivided		
Posted	l Speed Lin	nit (MPH):	Unsigi 2	13112ed				Ту	/pe of Analysis	٦	
	Туре с	of Terrain:	Le	vel		Left or Right-1	urn Lane An	alysis?: R	ight Turn Lane		
				VOLUME	CALCULA	TIONS					
			L	eft Turn Lan	e Volume C	alculations					
Movemer	nt	Include?	Volume	% Trucks	PCEV						
Advancing	Left Through	No	0	0.0%	N/A N/A		Ad	Ivancing Volu	ime: N//	۹ ۹	
	Right	No	0	0.0%	N/A		L	eft Turn Volu	ime: N//	4	
	Left	No	0	0.0%	N/A						
Opposing	Through Bight	- No	0	0.0%	N/A	% Lof	t Turns in Ad	wancing Volu	Ime: N//	۵	
	Nght	NU	Ri	oht Turn I ar	ne Volume (alculations				_	
				g							
Movemer	nt Left	Include?	Volume	% Trucks	PCEV						
Advancing	Through	-	54	0.0%	54		Ad	lvancing Volu	ime: 61	•	
	Right	-	6	2.0%	7		Rig	ght Turn Volu	ime: 7		
			TUF	RN LANE V	VARRAN	FINDINGS					
Le	ft Turn La	ane Warran	t Findings			Rig	ht Turn Lan	e Warrant F	Findings		
Applicable	Warrant F	igure:	N/A]		Applicable \	Narrant Figu	ure: Fig	ure 9		
	Warrant	Met?:	N/A]			Warrant Mo	et?: f	No		
			TURN	I LANE LE	NGTH CA		S				
I	Intersectio	n Control:	Unsignalize	d							
Design Hour Volu	ime of Turi	ning Lane:	7								
Cycles I Cycles I	Per Hour (<i>F</i> Per Hour (I	f Known):	60		Average	# of Vehicles/Cy	:le:	N/A	7		
				PennDOT Pub	lication 46. E	khibit 11-6					
					Sp	eed (MPH)					
	Туре	of Traffic Con	trol	25-35	Turn De	40-45 mand Volume	50	0-60	-		
			High	Low	High	Low	High	Low			
		Signalized Unsignalized	A	A	B or C	B or C B	B or C B or C	B or C B	-		
				Right Turn I	Lane Storage	Length. Condit	ion A:	N/A	Feet		
						Condit	ion B:	N/A	Feet		
						Condit	ion C:	N/A	Feet		
				Require	d Right Turn	Lane Storage L	ength:	N/A	Feet		
				dan C		Storuge L					
							Additio	nal Findings N/A	4		
Additional Comment	ts / Justifica	tions:									



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



Advancing Volume including Right Turns (VPH)

Turn Lane Warrant and Length Analysis Workbook

		S.			ID ANALY	SIS INFORM	IATION				
	Mu	nicipality:	Radnor 1	ownship		Analysis	Date:	8/15/	2023		
		County:	Delawar	e County		Conducted By:					
PennDOT	Engineerin	g District:		6		Checked By:					
Agency/Company Name: McMahon, a Bowman Company											
Intersection & Approach Description: Bellevue Avenue & Proposed Driveway - NBR											
	Analys	is Period:	2025	Build		Number	of Approach	Lanes:	1		
	Des	sign Hour:	PM Pea	ak Hour		Undivided o	or Divided Hi	ghway:	Undivided		
I	ntersectio	n Control:	Unsigr	nalized						_	
Posted	Speed Lin	nit (MPH):	2	.5				Ту	pe of Analysis		
	Туре с	of Terrain:	Le	vel		Left or Right-1	urn Lane An	alysis?: R	ight Turn Lane		
				VOLUME	CALCULA	TIONS					
			Le	eft Turn Lan	e Volume C	alculations					
Movemer	nt	Include?	Volume	% Trucks	PCEV						
	Left	No	0	0.0%	N/A		Ad	vancing Volu	me: N/A		
Advancing	Through	-	0	0.0%	N/A		0	pposing Volu	me: N/A		
	Right	No	0	0.0%	N/A		L	eft Turn Volu	me: N/A		
	Left	No	0	0.0%	N/A						
Opposing	Through	-	0	0.0%	N/A						
	Right	No	0	0.0%	N/A	% Lef	t Turns in Ad	vancing Volu	me: N/A		
			Ri	ght Turn Lar	ne Volume C	alculations					
Movemer	nt	Include?	Volume	% Trucks	PCEV						
	Left	No	0	0.0%	N/A						
Advancing	Through	-	83	0.0%	83		Ad	vancing Volu	me: 99		
	Right	-	15	2.078	10		Kiş		me: 10		
			TUF	RN LANE V	VARRAN	FINDINGS					
Le	ft Turn La	ane Warran	t Findings			Rig	ht Turn Lan	e Warrant F	indings		
Applicable	Warrant F	igure:	N/A			Applicable \	Narrant Figu	ure: Fig	ure 9		
	Warrant	Met?:	N/A				Warrant Me	et?: 🏾 🖍	No		
			TURN	I LANE LE	NGTH CA		S				
		. Combrall	Unsignaliza				-				
Design Hour Volu	me of Turr	ning Lane	16	u							
Cycles I	Per Hour (A	ssumed):	60								
Cycles	Per Hour (I	f Known):	60		Average	# of Vehicles/Cy	:le:	N/A			
				PennDOT Pub	lication 46, E	khibit 11-6					
					Sp	eed (MPH)					
	Туре	of Traffic Con	trol	25-35		40-45	50	0-60	4		
			High	low	Turn Do High	I ow	High	Low	-		
		Signalized	A	A	B or C	B or C	B or C	B or C	1		
	l	Jnsignalized	A	A	С	В	B or C	В]		
				Right Turn I	Lane Storage	Length, Condit	ion A:	N/A	Feet		
					2	Condit	ion B:	N/A	Feet		
									Faat		
						Condit	ion C:	N/A	reet		
				Require	d Right Turn	Lane Storage Lo	ength:	N/A	Feet		
							Additio	nal Findings	:		
a datate and the second		•						N/A	A Contraction of the second seco		
Additional Comment	s / Justificat	tions:									



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



Advancing Volume including Right Turns (VPH)

Turn Lane Warrant and Length Analysis Workbook

		S		ATION AN		SIS INFORM	IATION						
Municipality: County: PennDOT Engineering District:			Radnor 1 Delawar	Fownship e County 6		Analysis Conduct Check	Date: ed By: ed By:	8/15/2023					
	0			-	Ag	ency/Company I	Name: McMaho	n, a Bowman Company					
Intersection & Approach Description: Bellevue Avenue & Proposed Driveway - SBL													
	Analys Des	is Period:	2025 AM Pea	Build ak Hour		Number Undivided o	of Approach Lanes or Divided Highway	:: 1 /: Undivided					
lı Posted	ntersection Speed Lim	n Control:	Unsigr 2	nalized				Type of Analysis					
- Osteu	Туре с	of Terrain:	Le	vel		Left or Right-T	urn Lane Analysis	2: Left Turn Lane					
VOLUME CALCULATIONS													
			Le	eft Turn Lan	e Volume Ca	lculations							
Movemen	t	Include?	Volume	% Trucks	PCEV								
Advancing	Left Through	Yes -	0	0.0%	0		Advanci	ng Volume: 23					
, availants	Right	No	0	0.0%	N/A		Left Tu	rn Volume: 0					
Orneris	Left	No	0	0.0%	N/A								
Opposing	Right	- Yes	6	2.0%	54 7	% Lef	t Turns in Advanci	ng Volume: 0.00%					
		-	Rig	ght Turn Lar	ne Volume C	alculations							
Movemen	t	Include?	Volume	% Trucks	PCEV								
	Left	No	0	0.0%	N/A								
Advancing	Through Right	-	0	0.0%	N/A N/A	Advancing Volume: N/A							
			TUC				0 • •						
						FINDINGS							
Lef	t Turn La	ine Warran	t Findings	1		Rigl	nt Turn Lane Wa	rrant Findings					
Applicable \	Varrant F	igure: F	igure 1]		Applicable V	Varrant Figure:	N/A					
	Warrant	Met?: #	DIV/0!	J			Warrant Met?:	N/A					
			TURN	I LANE LE	NGTH CAI	CULATIONS	5						
lı Design Hour Voluı	ntersection me of Turr	n Control:	Unsignalize 0	d									
Cycles P Cycles P	er Hour (A er Hour (I	ssumed): f Known):	60 60		Average #	of Vehicles/Cyc	le: #DIV/0	l .					
-				PennDOT Pub	lication 46, Ex	hibit 11-6							
	_			25-35	Spe	ed (MPH) 40-45	50-60						
	туре	or traffic con	Liab	Low	Turn De	mand Volume	High						
		Signalized	A	A	B or C	B or C	B or C B	or C					
		Jnsignalized	A	A	С	В	B or C	В					
				Left Turn I	Lane Storage	Length, Condit	ion A: #DIV	0! Feet					
						Condit	ion B: #DIV	/U! Feet					
						Condit	ion C: #DIV	/0! Feet					
				Requir	ed Left Turn	Lane Storage Le		reet					
Additional Findings:													
Additional Comments	/ Justificat	ions:						#010/0:					
Additional Comments	/ Justificat	ions:						*510701					





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

		S	TUDY LOC			SIS INFORM	ATION					
	Mu	nicipality	Radnor	Township		Analysis	Date: 8/15/2	2023				
County:				re County		Conducte	d By:	.025				
PennDOT	Engineerin	g District:		6		Checke	d By:					
	0	0		-	Ag	ency/Company N	ame: McMahon, a Bow	vman Company				
Intersection & Approach Description: Bellevue Avenue & Proposed Driveway - SBL												
	Analys	sis Period:	2025	Build		Number o	f Approach Lanes:	1				
	Des	sign Hour:	PM Pe	ak Hour		Undivided or	Divided Highway:	Undivided				
Poste	d Sneed Lin	nit (MPH)	Ulisig	25			Tvr	ne of Analysis				
	Туре с	of Terrain:	Le	evel		Left or Right-Tu	rn Lane Analysis?:	eft Turn Lane				
			L	oft Turn I an	e Volume C	alculations						
		1										
Moveme	nt Loft	Include?	Volume	% Trucks	PCEV		Advancing Vol-	me: 11				
Advancing	Through	-	40	5.0%	41		Opposing Volue	me: 99				
. la carionig	Right	No	0	0.0%	N/A		Left Turn Volu	me: 0				
	Left	No	0	0.0%	N/A							
Opposing	Through	-	83	0.0%	83							
	Right	Yes	15	2.0%	16	% Left	Turns in Advancing Volur	me: 0.00%				
			Ri	ght Turn Lai	ne Volume C	alculations						
Moveme	nt	Include?	Volume	% Trucks	PCEV							
	Left	No	0	0.0%	N/A							
Advancing	Through	-	0	0.0%	N/A		Advancing Volur	me: N/A				
	Right	-	U	0.0%	N/A		Right Turn Volur	me: N/A				
			TUF	RN LANE V	NARRANT	FINDINGS						
Le	eft Turn La	ane Warran	nt Findings			Righ	Turn Lane Warrant F	indings				
Applicable	Warrant F	igure:	Figure 1	1		Applicable W	arrant Figure: N	/A				
	Warrant	Met?: #	#DIV/0!	1		١	/arrant Met?: N	/A				
			TUR									
Design Hour Volu	Intersectio	n Control:	Unsignalize	ed								
Cvcles	Per Hour (A	Assumed):	60									
Cycles	Per Hour (I	f Known):	60		Average	t of Vehicles/Cycl	#DIV/0!					
				PennDOT Pub	lication 46. F	hibit 11-6						
					Spe	ed (MPH)]				
	Туре	of Traffic Con	trol	25-35		40-45	50-60	4				
			High	Low	Turn De High	Low	High Low					
		Signalized	A	A	B or C	B or C	B or C B or C					
		Unsignalized	A	A	C	В	B or C B					
				Left Turn	Lane Storage	Length, Condition	on A: #DIV/0!	Feet				
						Conditi	on B: #DIV/0!	Feet				
						Conditi	on C: #DIV/0!	Feet				
				Requir	ed Left Turn	Lane Storage Le	gth: #DIV/0!	Feet				
				·		0	Additional Findings	_				
							#DIV/0!					
Additional Commen	ts / Justifica	tions:						-				





Figure 1. Warrant for left turn lanes on two-lane roadways (speeds to 35 mph, unsignalized and signalized intersections) (L = % Left Turns in Advancing Volume)


Appendix K

NCHRP 684 Internal Trip Capture

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NCHRP 684 Internal Trip Capture Estimation Tool										
Project Name:	Proposed Mixed-Use Development		Organization:							
Project Location:	Radnor Township		Performed By:							
Scenario Description:			Date:							
Analysis Year:			Checked By:							
Analysis Period:	AM Street Peak Hour		Date:							

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)								
L an d L la a	Developm	ent Data (<i>For In</i>	formation Only)			Estimated Vehicle-Trips ³		
Land Ose	ITE LUCs ¹	Quantity	Units		Total	Entering	Exiting	
Office					0			
Retail					7	4	3	
Restaurant					0			
Cinema/Entertainment					0			
Residential					8	2	6	
Hotel					0			
All Other Land Uses ²					0			
					15	6	9	

				_					
Table 2-A: Mode Split and Vehicle Occupancy Estimates									
Land Lies		Entering Trip	ps		Exiting Trips				
Land Ose	Veh. Occ.4	% Transit	% Non-Motorized	Ī	Veh. Occ. ⁴	% Transit	% Non-Motorized		
Office									
Retail									
Restaurant									
Cinema/Entertainment									
Residential									
Hotel									
All Other Land Uses ²									

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)									
				Destination (To)					
Origin (From)	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel			
Office									
Retail									
Restaurant									
Cinema/Entertainment									
Residential									
Hotel									

Table 4-A: Internal Person-Trip Origin-Destination Matrix*											
	Destination (To)										
Oligin (Floin)	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel					
Office		0	0	0	0	0					
Retail	0		0	0	0	0					
Restaurant	0	0		0	0	0					
Cinema/Entertainment	0	0	0		0	0					
Residential	0	0	0	0		0					
Hotel	0	0	0	0	0						

Table 5-A: Computations Summary				Table 6-A: Internal Trip Capture Percentages by Land Use			
	Total	Entering	Exiting	Land Use	Entering Trips	Exiting Trips	
All Person-Trips	15	6	9	Office	N/A	N/A	
Internal Capture Percentage	0%	0%	0%	Retail	0%	0%	
				Restaurant	N/A	N/A	
External Vehicle-Trips ⁵	15	6	9	Cinema/Entertainment	N/A	N/A	
External Transit-Trips ⁶	0	0	0	Residential	0%	0%	
External Non-Motorized Trips ⁶	0	0	0	Hotel	N/A	N/A	

¹ Land Use Codes (LUCs) from <i>Trip Generation Manual</i> , published by the Institute of Transportation Engineers.
² Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.
³ Enter trips assuming no transit or non-motorized trips (as assumed in ITE <i>Trip Generation Manual</i>).
⁴ Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.
⁵ Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.
⁶ Person-Trips
*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Proposed Mixed-Use Development
Analysis Period:	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends										
	Table 7-A (D): Entering Trips				Table 7-A (O): Exiting Trips					
Land Use	Veh. Occ.	Vehicle-Trips	Person-Trips*		Veh. Occ.	Vehicle-Trips	Person-Trips*			
Office	1.00	0	0		1.00	0	0			
Retail	1.00	4	4		1.00	3	3			
Restaurant	1.00	0	0		1.00	0	0			
Cinema/Entertainment	1.00	0	0		1.00	0	0			
Residential	1.00	2	2		1.00	6	6			
Hotel	1.00	0	0		1.00	0	0			

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)											
	Destination (To)										
Origin (From)	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel					
Office		0	0	0	0	0					
Retail	1		0	0	0	0					
Restaurant	0	0		0	0	0					
Cinema/Entertainment	0	0	0		0	0					
Residential	0	0	1	0		0					
Hotel	0	0	0	0	0						

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)											
Origin (From)	Destination (To)										
Ongin (From)	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel					
Office		1	0	0	0	0					
Retail	0		0	0	0	0					
Restaurant	0	0		0	0	0					
Cinema/Entertainment	0	0	0		0	0					
Residential	0	1	0	0		0					
Hotel	0	0	0	0	0						

Table 9-A (D): Internal and External Trips Summary (Entering Trips)									
	Person-Trip Estimates				External Trips by Mode*				
Destination Land Use	Internal	External	Total		Vehicles ¹	Transit ²	Non-Motorized ²		
Office	0	0	0		0	0	0		
Retail	0	4	4		4	0	0		
Restaurant	0	0	0		0	0	0		
Cinema/Entertainment	0	0	0		0	0	0		
Residential	0	2	2		2	0	0		
Hotel	0	0	0		0	0	0		
All Other Land Uses ³	0	0	0		0	0	0		

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)										
Origin Land Llag		Person-Trip Esti	mates			External Trips by Mode*				
Origin Land Ose	Internal	External	Total		Vehicles ¹	Transit ²	Non-Motorized ²			
Office	0	0	0		0	0	0			
Retail	0	3	3		3	0	0			
Restaurant	0	0	0		0	0	0			
Cinema/Entertainment	0	0	0		0	0	0			
Residential	0	6	6		6	0	0			
Hotel	0	0	0		0	0	0			
All Other Land Uses ³	0	0	0		0	0	0			

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

²Person-Trips

³Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool								
Project Name:	Proposed Mixed-Use Development		Organization:					
Project Location:	Radnor Township		Performed By:					
Scenario Description:			Date:					
Analysis Year:			Checked By:					
Analysis Period:	PM Street Peak Hour		Date:					

	Table 1	I-P: Base Vehicle	e-Trip Generatior	n Esti	mates (Single-Use S	ite Estimate)			
Land Lise	Developm	ent Data (<i>For Info</i>	ormation Only)			Estimated Vehicle-Trips ³	imated Vehicle-Trips ³		
Land Use	ITE LUCs ¹	Quantity	Units	1	Total	Entering	Exiting		
Office				1 [0				
Retail				1 [18	9	9		
Restaurant				1 [0				
Cinema/Entertainment				1 [0				
Residential				1 [14	9	5		
Hotel				1 [0				
All Other Land Uses ²					0				
					32	18	14		

Table 2-P: Mode Split and Vehicle Occupancy Estimates									
		Entering Tri	ps			Exiting Trips			
Land Use	Veh. Occ.4	% Transit	% Non-Motorized	Γ	Veh. Occ.4	% Transit	% Non-Motorized		
Office									
Retail									
Restaurant									
Cinema/Entertainment									
Residential									
Hotel									
All Other Land Uses ²									

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)										
Origin (From)			Destination (To)							
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel				
Office										
Retail										
Restaurant		/								
Cinema/Entertainment										
Residential										
Hotel		/								

Table 4-P: Internal Person-Trip Origin-Destination Matrix*										
Origin (From)	Destination (To)									
Oligin (Floin)	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel				
Office		0	0	0	0	0				
Retail	0		0	0	2	0				
Restaurant	0	0		0	0	0				
Cinema/Entertainment	0	0	0		0	0				
Residential	0	1	0	0		0				
Hotel	0	0	0	0	0					

Table 5-P	: Computatio	ons Summary		Table 6-P: Internal Trip Capture Percentages by Land Use			
	Total	Entering	Exiting	Land Use	Entering Trips	Exiting Trips	
All Person-Trips	32	18	14	Office	N/A	N/A	
Internal Capture Percentage	19%	17%	21%	Retail	11%	22%	
				Restaurant	N/A	N/A	
External Vehicle-Trips ⁵	26	15	11	Cinema/Entertainment	N/A	N/A	
External Transit-Trips ⁶	0	0	0	Residential	22%	20%	
External Non-Motorized Trips ⁶	0	0	0	Hotel	N/A	N/A	

¹Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

³Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

⁴Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be ⁵Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

⁶Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Proposed Mixed-Use Development
Analysis Period:	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends									
L and Lie a	Table	7-P (D): Entering	g Trips		Table 7-P (O): Exiting Trips				
Land Use	Veh. Occ.	Vehicle-Trips	Person-Trips*		Veh. Occ.	Vehicle-Trips	Person-Trips*		
Office	1.00	0	0		1.00	0	0		
Retail	1.00	9	9		1.00	9	9		
Restaurant	1.00	0	0		1.00	0	0		
Cinema/Entertainment	1.00	0	0		1.00	0	0		
Residential	1.00	9	9		1.00	5	5		
Hotel	1.00	0	0		1.00	0	0		

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)										
Origin (From)	Destination (To)									
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel				
Office		0	0	0	0	0				
Retail	0		3	0	2	0				
Restaurant	0	0		0	0	0				
Cinema/Entertainment	0	0	0		0	0				
Residential	0	2	1	0		0				
Hotel	0	0	0	0	0					

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)										
Origin (From)	Destination (To)									
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel				
Office		1	0	0	0	0				
Retail	0		0	0	4	0				
Restaurant	0	5		0	1	0				
Cinema/Entertainment	0	0	0		0	0				
Residential	0	1	0	0		0				
Hotel	0	0	0	0	0					

Table 9-P (D): Internal and External Trips Summary (Entering Trips)									
Destination Land Use	P	erson-Trip Estima	ates		External Trips by Mode*				
	Internal	External	Total		Vehicles ¹	Transit ²	Non-Motorized ²		
Office	0	0	0		0	0	0		
Retail	1	8	9		8	0	0		
Restaurant	0	0	0		0	0	0		
Cinema/Entertainment	0	0	0		0	0	0		
Residential	2	7	9		7	0	0		
Hotel	0	0	0		0	0	0		
All Other Land Uses ³	0	0	0		0	0	0		

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)								
	Person-Trip Estimates				External Trips by Mode*			
Origin Land Use	Internal	External	Total		Vehicles ¹	Transit ²	Non-Motorized ²	
Office	0	0	0		0	0	0	
Retail	2	7	9		7	0	0	
Restaurant	0	0	0		0	0	0	
Cinema/Entertainment	0	0	0		0	0	0	
Residential	1	4	5		4	0	0	
Hotel	0	0	0		0	0	0	
All Other Land Uses ³	0	0	0		0	0	0	

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

²Person-Trips

³Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator *Indicates computation that has been rounded to the nearest whole number.



Appendix L

US Census Data

Transportation Solutions Building Better Communities

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American Community Survey 2021: ACS 5-Year Estimates Subject Tables

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Label	ZCTA5 19087								
	Total		Male		Female				
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error			
✓ Workers 16 years and over	17,305	±1,092	9,513	±653	7,792	±683			
✓ MEANS OF TRANSPORTATION TO WORK									
> Car, truck, or van	69.1%	±3.1	66.3%	±4.3	72.6%	=3.0			
Public transportation (excluding taxicab)	7.2%	±1.6	8.3%	±2.5	5.8%	±1.6			
Walked	4.2%	±1,1	3.4%	±1,1	5.3%	±1.7			
Bicycle	0.3%	±0.4	0.5%	±0.8	0.0%	±0.4			
Taxicab, motorcycle, or other means	0.8%	±0.4	1.2%	±0.7	0.4%	±0.4			
Worked from home	18.4%	±2.5	20.4%	±3.7	15.9%	±2.4			
> PLACE OF WORK									
> Workers 16 years and over who did not work from home	14,126	±933	7,573	±585	6,553	±606			
VEHICLES AVAILABLE									
> PERCENT ALLOCATED									