WESTTOWN TOWNSHIP
PLANNING COMMISSION MEETING AGENDA
Wednesday, September 18, 2024 – 7:00 pm

Stokes Assembly Hall – Township Administration Building
1039 Wilmington Pike, West Chester, PA

For general inquiries or questions about any of the items on this agenda, please contact the Township office either by phone (610) 692-1930 or via e-mail at administration@westtown.org.

Call to Order and Pledge of Allegiance

Adoption of Agenda

Approval of Minutes

1. Planning Commission Meeting September 4, 2024

Announcements

Public Comment – Non-Agenda Items

New Business

1. **Ordinance Amendments – Digital Displays**
   Continued discussion on potential amendments to zoning regulations, Article XVIII Signs, pertaining to signs located on lots with institutional uses and general regulations on sign illumination options, including digital displays.

Old Business

1. **Land Development Application – 1502 West Chester Pike**
   The applicant, Westtown AM West TIC, LLC, has submitted a land development application for construction of a 3,294 square feet bank with drive-thru, parking, lighting, landscaping and other improvements at the Westtown Marketplace shopping center. As per Township consultants' reviews and the Planning Commission's feedback, the applicant submitted a revised traffic report, a revised site plan rendering that shows additional landscaping along the Route 3 frottage and an additional exhibit that shows the proposed improvements to the existing bus stop and corresponding switch-back sidewalk and painted connection to the shopping center. The applicant has also completed the stormwater infiltration testing and will provide a full report to the Township.

Public Comment

Reports

1. Board of Supervisors Meeting September 16, 2024 – Brian Knaub/Joe Frisco

Adjournment

Next PC Meeting:

- **October 9, 2024, 7:00 PM**

PC Representative at next Board of Supervisors Meeting:

- **Monday October 7, 2024, 7:30 PM** – Russ Hatton/Jack Embick

WESTTOWN TOWNSHIP PLANNING COMMISSION
MEETING MINUTES

Stokes Assembly Hall, 1039 Wilmington Pike
Wednesday, September 4, 2024 – 7:00 PM

Present

Commissioners Russ Hatton (RH), Tom Sennett (TS), Brian Knaub (BK), Jim Lees (JL), Joseph Frisco (JF), and Kevin Flynn (KF). Absent was Jack Embick (JE). Township Manager and Director of Planning & Zoning Mila Carter was also present.

Call to Order and Pledge of Allegiance

Mr. Hatton called the meeting to order at 7:04 PM.

Adoption of Agenda (TS/JL) 6-0

Mr. Sennett made a motion to adopt the agenda. Mr. Lees seconded. All were in favor of the motion.

Approval of Minutes

1. Mr. Sennett made a motion to adopt meeting minutes from August 7, 2024. Mr. Frisco seconded. Mr. Lees and Mr. Flynn abstained. All were in favor of the motion. (TS/JF) 4-0-2
2. Mr. Sennett made a motion to adopt meeting minutes from August 21, 2024. Mr. Lees seconded. Mr. Frisco and Mr. Flynn abstained. All were in favor of the motion. (TS/JL) 4-0-2

Announcements

None.

Public Comment – Non Agenda Items

None.

New Business

1. Ordinance Amendments – Development Near Transmission Pipelines

Mr. Hatton summarized that there are no provisions in the Township Code pertaining to setback parameters for new developments or redevelopments in proximity to existing transmission pipelines. He noted there was a sample ordinance from 2014 developed by Gaadt Perspectives, LLC for this region, and expressed his disappointment that it has taken so long for the Township to consider such provisions, noting that there have been several land developments since that time.

Mr. Sennett stated that adopting the sample ordinance that the Chester County Planning Commission endorsed would be an improvement to the Township Code. However, he suggested to have a subcommittee meet and review the draft and provide their recommendations to the Commission. Ms. Carter added that her goal is to provide the Commission with a sample ordinance and the map of existing pipelines in the Township for their initial feedback before diving into much detail. She noted that more research and work would be done on the specifics of potential provisions applicable to Westtown. Ms. Carter also pointed out that the map displays consultation zones, which are corridors of 1,000 feet on each side of the approximate pipeline centerline, which provide an insight into which areas would be impacted by the proposed ordinance.

Mr. Sennett thought that the discussion should wait until the County's draft can be reviewed in depth before making any suggestions to the Board. Mr. Flynn asked what would become of the houses that are currently located in the potential blast areas and suspected they would become legal non-conforming. Ms. Carter responded it would be dependent on the ordinance requirements for nonconforming structures and agreed that in some instances it might require an

application to the Zoning Hearing Board. Mr. Sennett pointed out that there are a number of people knowledgeable about pipelines who attended previous PC meetings, and wondered whether the Commission should consider inviting them back to participate in the discussion. Mr. Lees agreed with Mr. Sennett on inviting those who already have done a lot of research and talk to the Commission. The Commission agreed.

Old Business

1. Ordinance Amendments – Fences

Mr. Hatton explained that the Commission is looking into previously discussed ordinance amendments to Section 1505of the Township Zoning Code, Fences and Walls, such as modified height and setback requirements, additional provisions for fence foundations, fence gates, open fences, standards for garden fences, and modifications to permit submission and maintenance requirements. He referred to the draft and asked for Commission's feedback.

Mr. Knaub expressed concerned with the recommendation prohibiting a fence from going to the edge of a home owner's property, and the recommendation that fence supports be placed in concrete. He felt that it would create difficulty when replacing or fixing a fence if concrete is used. He also questioned the reasoning for the proposed one-foot setback. Ms. Carter explained that the Commission requested to look into the setback requirements that would ensure fence installation was completed properly without creating a potential public safety issue. Mr. Sennett suggested consulting with fence companies. Ms. Carter noted that she has done so, and stated that concrete footings are desirable when fence panels are made from heavy material such as metal or wood. Mr. Sennett wondered whether the Property Maintenance Code could be used to address maintenance issues. Ms. Carter stated that it would be after the fact, but the Commission wanted to consider preventative measures. Mr. Sennett requested to redraft the proposed provision requiring fence supports to be set in concrete if it is deemed necessary, and to require the property owner to be fully responsible for fence maintenance.

Mr. Sennett thought that the rest of the language was aligned with the Commission's previous recommendations. Ms. Carter asked the Commission's feedback on garden fences. She noted that their request was to include language allowing higher than currently permitted fences to protect garden areas from deer. Mr. Sennett thought it was a good idea to allow garden fences without a need for a permit. The Commission discussed the size of an average garden. Mr. Hatton proposed to do that by lot size and agreed that 60 feet is appropriate for a quarter acre lots. Ms. Carter provided that she has done a research on the garden size of American household and found that 200 square feet of garden space per person would allow for enough yield for that person year round. She acknowledged that size of the garden depends on individual family composition, household size and preference. Mr. Sennett suggested limiting the garden size a certain percentage of the lot size. The Commission agreed.

Mr. Hatton asked about the next steps. Ms. Carter explained that her next step would be to provide the amendments to the Township solicitor for review before bringing it back for discussion.

Public Comment

Bill Manning, 221 Swinburne Road raised concerns about the proposed fence ordinance amendments. He suggested that the Township remain neutral on such broad subjects like fence regulations, because of the variety of personal needs and uses. He raised concerns over several sections including B (requirement for permits of all fences exceeding 40 feet in length), D (PA One Call System notification before submitting permit application), H (proposed setback from the future right-of-way), I (proposed one foot setback from side and rear property lines), and J (concrete footings), and potential limitations on specific materials. He felt that several requirements were arbitrary. Mr. Manning strongly suggested that the primary focus should be safety and no encroachment onto someone else's property, and not what is more appropriate for the Township.

Mr. Manning also pointed out that the current fence application states that fence is required to be at least 6 inches from the property lines, but that is inconsistent with the current regulations.

Reports

1. Mr. Hatton provided the BOS report from September 3rd meeting.

Adjournment (TS/JL) 5-0

The meeting was adjourned at 8:06 PM.

Next PC Meeting:

- **September 18, 2024, 7:00 PM**

PC Representative at next Board of Supervisors Meeting:

- **Monday September 16, 2024, 7:30 PM –** Brian Knaub/Joe Frisco

Respectfully submitted,
Mila Carter
Planning Commission Secretary

§ 170-1812. Signs located on lots with institutional use.

In addition to the exempt signs described in § 170-1804, Exempt signs, the following numbers and types of signs may be erected for institutional uses, including schools, religious institutions, municipal buildings, hospitals, clubs, or permitted uses of a similar nature subject to the conditions specified here.

A. Any limited duration, temporary or portable sign as defined and regulated in § 170-1808, Regulations by sign type (limited duration, temporary and portable signs), subject to the following regulations:

   (1) One large sign with a maximum area of 24 square feet shall be permitted on a lot with a principal educational or school use at any time.

   (2) No more than four small signs with a maximum area of six square feet shall be permitted on a lot with a principal educational or school use at any time.

   (3) Small signs on a lot with a principal educational or school use shall be no closer than 50 feet to another small sign measured as a straight-line distance between the closest edges of each sign.

B. The total area of all wall, awning/canopy, freestanding, and projecting signs shall not exceed an area equal to two square feet for every one linear foot of building wall parallel to, and facing, any particular street. The sign area for each street frontage shall be computed separately, and any allowable sign area not used on one frontage may not be used on another street frontage.

C. Signs on a lot with a park or open space use in an institutional district shall comply with § 170-1810.

D. Freestanding signs on a lot with an institutional use, other than parks and open space, shall be permitted subject to the following regulations:

   (1) Number: one ground sign is permitted per street upon which the property has direct frontage.

   (2) Area: ground sign, 24 square feet except on lots with a principal educational or school use, which shall have a maximum area of 50 square feet.

   (3) Height: ground sign, six feet except for lots with a principal educational or school use, which shall have a maximum height of 15 feet.

   (4) Illumination. The following illumination types shall be permitted subject to the regulations in § 170-1805F, Sign illumination:

      (a) Internal illumination.

      (b) External illumination.

      (c) Message center sign.

      (d) Digital display on lots with a principal educational or school use.

E. Freestanding signs located on the interior of the site at least 25 feet from the nearest property boundary line are exempt from permit requirements, subject to the following:

(1) Area: Each sign shall have a maximum area of 10 square feet.

(2) Height: Each sign shall have a maximum height of six feet.

(3) Illumination. Illumination of these signs shall be prohibited.

F. Wall signs shall be permitted subject to the following regulations:

(1) Number: one sign per street frontage, up to a maximum of two signs. Where an educational use has entrances facing both a street and a parking lot, a second sign is permitted to face the parking lot.

(2) Area: The total area for all wall signs is subject to the regulations in § 170-1806A(2).

(3) Height: Signs shall have a maximum height equal to the eave line of the structure where it is placed.

(4) Illumination. The following illumination types shall be permitted subject to the regulations in § 170-1805F, Sign illumination:

(a) Internal illumination.

(b) External illumination, lit from above.

(c) Halo illumination or backlit letters.

G. Awning or canopy signs shall be permitted subject to the following regulations.

(1) Height: Signs shall have a maximum height equal to the eave line.

(2) Illumination. The following illumination types shall be permitted subject to the regulations in § 170-1805F, Sign illumination:

(a) External illumination, lit from above.

H. Projecting signs on lots with an educational use shall be permitted subject to the following regulations.

(1) Number: one sign per building entrance.

(2) Area: Each sign shall have a maximum area of 20 square feet per sign face.

(3) Height: Signs shall have a maximum height equal to the eave line.

(4) Illumination. The following illumination types shall be permitted subject to the regulations in § 170-1805F, Sign illumination:

(a) External illumination, lit from above.

§ 170-1805. General regulations.

A. Sign location.

(1) No sign shall be placed in such a position as to endanger pedestrians, bicyclists, or traffic on a street by obscuring the view or by interfering with government street signs or signals by virtue of position or color.

(2) Except for those classified as exempt under § 170-1804, no sign may be located within any public right-of-way and/or occupy a clear sight triangle of 75 feet (as measured from the center-line intersections of two streets) which shall be provided at all intersections. The minimum clear sight triangle shall be increased to 100 feet if either street is a collector street and to 150 feet if either street is an arterial highway. **[Amended 11-16-2020 by Ord. No. 2020-04]**

(3) Signs and their supporting structures shall maintain clearance and noninterference with all surface and underground utility and communications lines or equipment.

B. Sign materials and construction: Every sign shall be constructed of durable materials, using noncorrosive fastenings; shall be structurally safe and erected or installed in strict accordance with the Pennsylvania Uniform Construction Code; and shall be maintained in safe condition and good repair at all times, consistent with this section, so that all sign information is clearly legible.

C. Sign area.

(1) The "area of a sign" shall mean the area of all lettering, wording, and accompanying designs, logos, and symbols. The area of a sign shall not include any supporting framework, bracing or trim which is incidental to the display, provided that it does not contain any lettering, wording, or symbols.

(2) Where the sign consists of individual letters, designs, or symbols attached to a building, awning, wall, or window, the area shall be that of the smallest rectangle which encompasses all of the letters, designs, and symbols.

(3) Signs may be double-sided.

(a) Only one side shall be considered when determining the sign area, provided that the faces are equal in size, the interior angle formed by the faces is less than 45°, and the two faces are not more than 18 inches apart.

(b) Where the faces are not equal in size, but the interior angle formed by the faces is less than 45° and the two faces are not more than 18 inches apart, the larger sign face shall be used as the basis for calculating sign area.

(c) When the interior angle formed by the faces is greater than 45°, or the faces are greater than 18 inches apart, all sides of such sign shall be considered in calculating the sign area.

(4) Signs that consist of, or have attached to them, one or more three-dimensional or irregularly shaped objects, shall have a sign area of the sum of two adjacent vertical sign

faces of the smallest cube encompassing the sign or object.

(5) If elements of a sign are movable or flexible, such as a flag or banner, the measurement is taken when the elements are fully extended and parallel to the plane of view.

(6) The permitted maximum area for all signs is determined by the sign type and the use of the property where the sign is located.

D. Sign height.

(1) Sign height shall be measured as the distance from the highest portion of the sign to the mean finished grade of the street closest to the sign. In the case of a sign located greater than 100 feet from a public street, height shall be measured to the mean grade at the base of the sign.

(2) Clearance for freestanding and projecting signs shall be measured as the smallest vertical distance between finished grade and the lowest point of the sign, including any framework or other structural elements.

(3) The permitted maximum height for all signs is determined by the sign type and type and the use of the property where the sign is located.

E. Sign spacing: The spacing between sign structures shall be measured as a straight-line distance between the closest edges of each sign.

F. Sign illumination.

(1) Signs may be illuminated, unless otherwise specified herein, consistent with the general standards for outdoor lighting as outlined in § 170-1514 and those listed below:

(a) Light sources to illuminate signs shall neither be visible from any street right-of-way, nor cause glare which is hazardous or distracting to pedestrians, vehicle drivers, or adjacent properties.

(b) Hours of operation:

[1] Signs on nonresidential properties may be illuminated from 6:00 a.m. prevailing time until 11:00 p.m. prevailing time, or 1/2 hour past the close of business of the facility located on the same lot as the sign, whichever is later.

[2] Signs shall provide an automatic timer to comply with the intent of this subsection.

[3] The above hours of operation standards shall not apply to a use operating 24 hours a day.

(c) Brightness: Message center signs and digital displays are subject to the following brightness limits:

[1] The illumination of the sign shall be set so as not to be more than 0.3 footcandle above ambient lighting conditions, measured using a footcandle meter at 75 feet perpendicular to the sign's display.

[2] Each sign must have a light-sensing device that will automatically adjust the brightness of the display as the natural ambient light conditions change to comply with the limits set herein.

(d) Message duration: The length of time each message may be displayed on a message center sign, digital display, or tri-vision board sign shall be static and nonanimated and shall remain fixed for a minimum of 30 seconds.

(e) Message transition: The length of time when a message is transitioned on a message center sign, digital display, or tri-vision board sign shall be accomplished in one second or less with all moving parts or illumination changing simultaneously and in unison.

(f) Default design: Any message center sign, digital display, or tri-vision board shall contain a default design which shall freeze the sign message in one position if a malfunction should occur or, in the alternative, shut down.

(2) Types of illumination: Where permitted, illumination may be:

(a) External: Externally illuminated signs, where permitted, are subject to the following regulations:

[1] The source of the light must be concealed by translucent covers.

[2] External illumination shall be by a steady, stationary light source, shielded and directed solely at the sign. The light source must be static in color.

(b) Internal: Internally illuminated signs, where permitted, are subject to the following regulations:

[1] Internal illumination, including neon lighting, must be static in intensity and color.

[2] Message center signs are permitted in accordance with the regulations contained in § 170-1805F(3).

[3] Digital displays are permitted in accordance with the regulations contained in § 170-1805F(4).

(3) Message center signs are subject to the following regulations, in addition to all other illumination requirements established in this section.

(a) Sign type: Message center signs are permitted in the form of freestanding, monument, and wall signs, in accordance with the regulations established in §§ 170-1806 and 170-1807.

(b) Height: A message center sign shall have the same height limits as other permitted signs of the same type and location.

(c) Area:

[1] When used other than as a billboard, message center signs shall not exceed

50% of the sign area for any one sign, and shall not exceed more than 30% of the total area for all signs permitted on a property.

[2] When used as billboard, message center signs may be used for the full permitted sign area.

(d) Maximum number: Where permitted, one message center sign is permitted per street frontage, up to a maximum of two message center signs per property.

(e) Message display:

[1] No message center sign may contain text which flashes, pulsates, moves, or scrolls.

[2] The transition of a message center sign must take place instantly (e.g., no fade-out or fade-in).

[3] Default design: The sign shall contain a default design which shall freeze the sign message in one position if a malfunction should occur or, in the alternative, shut down.

(f) Conversion of a permitted non-message center sign to a message center sign requires the issuance of a permit pursuant to § 170-1815.

(g) The addition of any message center sign to a nonconforming sign is prohibited.

(4) Digital display signs are subject to the following regulations in addition to all other requirements established in this section.

(a) Sign type: Digital displays are permitted in the form of freestanding, monument, and wall signs, in accordance with the regulations established in §§ 170-1806 and 170-1807.

(b) Height: A digital display shall have the same height limits as for other permitted signs of the same type and location.

(c) Area:

[1] When used other than as a billboard, digital displays shall not exceed more than 30% of the total sign area permitted on the site.

[2] When used as a billboard, digital displays may be used for the full permitted sign area.

(d) Maximum number per property: Where permitted, one digital display sign is permitted per property.

(e) Message display:

[1] Any digital display containing animation, streaming video, or text or images which flash, pulsate, move, or scroll is prohibited.

[2] One message/display may be brighter than another, but each individual

message/display must be static in intensity and otherwise compliant with § 170-1805F(1)(c).

[3] The content of a digital display must transition by changing instantly, with no transition graphics (e.g., no fade-out or fade-in).

[4] Default design: The sign shall contain a default design which shall freeze the sign message in one position if a malfunction should occur or, in the alternative, shut down.

(f) Conversion of a permitted nondigital sign to a digital sign requires the issuance of a permit pursuant to § 170-1815.

(g) The addition of any digital display to a nonconforming sign is prohibited.

(5) Electrical standards.

(a) Permits for illuminated signs will not be issued without an approved electrical permit, if required. Applications for electrical permits shall be filed at the same time as the sign permit application.

(b) All work shall be completed in full compliance with the Westtown Township Electrical Code as set forth in the Pennsylvania Uniform Construction Code.

(c) The electrical supply to all exterior signs, whether to the sign itself or to lighting fixtures positioned to illuminate the sign, shall be provided by means of concealed electrical cables. Electrical supply to freestanding signs shall be provided by means of underground cables.

(d) The owner of any illuminated sign shall arrange for a certification showing compliance with the brightness standards set forth herein by an independent contractor and provide the certification documentation to the Westtown Township as a condition precedent to the issuance of a sign permit.

(6) Glare control: Glare control shall be achieved primarily through the use of such means as cutoff fixtures, shields, and baffles, and appropriate application of fixture mounting height, wattage, aiming angle, and fixture placement. Vegetation screens shall not be employed to serve as the primary means for controlling glare.

Westtown Township

Memo

To: Westtown Township Planning Commission

From: Liudmila Carter, Director of Planning & Zoning

Date: September 16, 2024

Re: Proposed ordinance amendments re: digital displays for institutional uses

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In Westtown, digital displays are only permitted for lots with commercial or industrial uses or on lots with principal educational or school use. The Township staff reviewed the information supplied by the signage industry, materials provided by the Chester County Planning Commission, and the existing regulations pertaining to ground, freestanding digital signs across local municipalities, and summarized these findings into discussion items for the Planning Commission's considerations.

Definitions

- When describing a digital display, the following terms are used, including "digital display", "changeable display sign", "electronic sign", "LED sign", "flashing and message sign", "animated sign", "digital changeable copy sign", "changing image sign" and "electronic message center". They have some similarities in their definitions and some distinct features.
- Majority of municipalities defined "billboard" as digital sign for off-premises advertising. Several regulate digital displays the same way as billboards.
- The standard definition is as follows: "*A digital display is an electronic device that presents information in a visual format using digital technology, which typically involves the use of pixels or segments to show text, images, or graphics. Digital displays are used to provide a clearer and more precise presentation of information compared to analog displays. These displays operate using electronic signals and can include technologies like LCD (liquid crystal display), LED (light-emitting diode), and OLED (organic light-emitting diode)*."
- Recommendation to evaluate and revise existing definitions for "digital sign" and "message sign" to clarify their purpose and use.

Message versus Digital Displays

Both message signs and digital displays convey information and engage viewers, but digital signs generally offer more advanced features, higher resolution, and greater versatility in the content:

- Message signs use technologies like LED or incandescent bulbs to display static or scrolling text. They often display text or symbols, but have many limitations:
    - Static text or simple graphics and may be limited in their ability to show complex or dynamic content, including videos, animations, or high-resolution images.
    - Text and images might not be as clear or detailed.
    - Lack interactive features or ability to provide real-time data updates like digital signs can.
    - Need for more frequent maintenance and higher potential for failure.
    - Limited color options to basic colors or monochrome displays.
    - Less adaptable to design changes or upgrades compared to digital signs.

- More likely to be affected by environmental conditions like weather, glare, or dust, which can impact readability.

- Digital Signs use advanced technologies like LCD, LED, or OLED screens to display dynamic content. They can produce high-resolution graphics, videos, and animations offering greater flexibility and interactivity. They can be updated remotely, display complex content, and provide real-time information. However, there are several concerns pertaining to installation of these signs in communities, such as:
    - Distraction of drivers and pedestrians, which can lead to safety concerns, as the constantly changing content may divert attention from the road or surroundings. There is no firm data to show the extent of distracted driving in relation to digital signs.
    - Aesthetic impacts on surrounding community where some residents might consider them visually unappealing or intrusive or as an obstruction of scenic views.
    - Content appropriateness, which might not be deemed suitable for all audiences and aligned with community standards.
    - Impact on property values making the area less desirable to potential buyers or renters.
    - Privacy issues in instances where there are cameras or sensors.
    - Maintenance which might become an issue due to the potential for malfunctioning screens or need for frequent repairs, which can affect the appearance and functionality.
    - Environmental impacts: Light pollution, which can affect residential comfort and sleep quality. Glare and brightness from digital signs can also be disruptive during nighttime hours. Noise pollution in cases where sound system is used.

<u>Overall Placement</u>

- Due to community concerns, many municipalities only allow digital signage as an accessory use within specified zoning districts, primarily commercial, business and/or industrial, or limit such use to properties with frontage along state roadways or major highways.
- Use of digital displays are generally prohibited in residential districts or within a certain distance from residential dwelling units (between 50 and 200 feet).
- Other considerations are the sign rotation in relevance to adjacent roadway (for example, perpendicular) and distance from another digital sign. Rotation of the sign is important to ensure the least amount of glare for the travelling public, but also to avoid potential distractions and impacts on adjacent properties. Distance between digital signs is determined based on several factors, including functional classification of roadway, traffic flow, sign purpose, sign size and content, and visual impact on the community. Recommended distance between digital signs is 1,000 to 2,000 feet for major roadways or 500 to 1,000 feet for local roads.
- Recommendation to consider limiting digital displays to properties with frontage along major roadways, limiting their placement in relation to residential properties, setting a distance requirement for similar signs and potentially requiring a visibility study (in some cases) to be provided to assess overall impacts on community.

<u>Setbacks</u>

- Few municipalities require a specific setback from right-of-ways (ROWs) and/or side property lines for sign placement, which varies from 5 to 20 feet or 1.1 times the height of the sign from the ROWs or 10 to 20 feet from the side property lines. The numbers are arbitrary; however, the recommended standard to avoid obstructing drivers' views and to avoid glare, is a distance of 15 to 30 feet from the edge of the roadway, depending on the road's functional classification, curvature and visibility.

- Recommendation to require digital signage not to encroach into easement areas, ultimate and future right-of-ways and to consider an additional setback. Section 1511 of the Zoning Ordinance reserves the following ROWs for future dedication: 120 feet for Route 202 and Route 3 and 80 feet for Routes 926 and 352.

Height

- Height limitations vary greatly across local municipalities, which is dependent on provisions within applicable zoning districts. That variation is from 3 feet to 18 feet with lower height allowance in residential areas and along local roadways and higher in commercial and industrial areas or along the frontage of major roads and highways.
- Roadway functional classification, traffic movement patterns, point of access to the property, and its use are recommended to be considered when determining limitations on height. For example, the recommended height for digital displays along major roadways is 12 feet, but for local roadways, it is less than 12 feet. If the area is accessible to pedestrians, the recommended height is no more than 6 feet.
- The speed limit on both roadways through Westtown (both are classified as arterial highways), Wilmington Pike (Route 202) and S Chester Road, is 45 mph. Typically, for such speeds, the recommended height of a digital sign is between 6 to 12 feet, and the width is recommended to be proportional to the height, maintaining a good aspect ratio.
- Recommendation to set height limitations based on digital sign placement in relation to roadway functional classification and presence of pedestrian facilities.

Sign Area

- Many municipalities regulate sign area based on its applicable zoning district, type of sign (wall, ground, temporary, identification, and etc.). Others allow such signs to be 10 to 60 square feet.
- Similar to height considerations, roadway functional classification, traffic movement patterns, point of access to the property, and its use are important when determining limitations on sign areas. The best practice is to evaluate what is the most appropriate for a specific roadway and location. For a digital sign intended to be viewed from a 45 mph roadway, an area of around 6 to 10 feet in height and 4 to 20 feet in width is most common. This size allows for clear visibility and readability without overwhelming drivers.
- Recommendation to consider revising the existing regulations to permit signage based on roadway classification, height limitations and presence of pedestrian facilities to maintain human scale.

Technical Specifications

- Message duration – dependent on functional classification of roadway, content and industry's best practices. For major roadways, recommended duration is 8 to 12 seconds, while for local roads 4 to 6 seconds seem to be a norm.
- Message transition interval – not more than 1 second, which is a typical standard utilized by majority of municipalities and best practice in the industry.
- Brightness – there are several ways to measure brightness of digital display, with a luminance meter (photometer) that quantifies light intensity in terms of nits (cd/m^2) or colorimeter that measures color and brightness and can provide data on color accuracy and luminance. A nit is a unit of luminance, which measures the amount of light emitted per unit area of a surface, and commonly used to measure the brightness of displays. Many municipalities require luminance of digital signs to be limited to 100 to 250 nits during nighttime hours, but that number varies greater for daytime hours between 5,000 and 7,000 nits. Recommended daytime brightness is between 4,000 to 7,000 nits and nighttime brightness between 300 to 1,000 nits.
- In addition to luminance requirements, several municipalities require digital signs to be compliant with footcandle provisions. A footcandle is a unit of illuminance, which measures the amount of

light falling on a surface area (lumens per square foot) with a light meter. Several municipalities set a limit not to exceed 0.2 to 0.3 footcandles within 150 to 250 feet from the surface of the sign.

- Recommendation to require reports on brightness with detailed records of measurements, including date, time, measurement points, and device settings on as needed basis to ensure that compliance is met.

Additional considerations

- Automatic shutoff in case of failure or error that would result in the sign projecting a full intensity all-white image for an extended period of time.
- Ambient light monitor, which continuously monitor and automatically adjust the brightness of the sign to appropriate levels for the existing ambient light conditions.
- Not to be used for off-premises advertising.
- Coordinate/permit message access for local, regional, state and national emergency services during emergency situations.
- Prohibit message sequencing.
- Prohibit the use of animation, sound and full-motion video.
- ADA compliant content.
- Contact information for controller/operator or main point of contact.
- Annual maintenance contract and inspection reports.
- Monitoring system to detect malfunctions.
- Permit renewal on a scheduled basis to ensure compliance and alignment with industry standards.

September, 2024

LOCAL DIGITAL DISPLAY REGULATIONS – SUMMARY[1]

Municipality	Summarized details	Digital Signs for rel. use (Y/N)	Summary (specific to ground signs)
Atglen https://atglen.org/images/pdf/zoningordmap51314.pdf	DIGITAL SIGN - An advertising sign that utilizes digital or video light emitting diodes (LEDs) or similar electric methods to create an image display area. ELECTRONIC CHANGING MESSAGE SIGN - A digital sign or portion thereof displaying frequent message changes that are rearranged electrically without physically altering the face or surface of such signs. ILLUMINATED SIGN - A sign designed to project or reflect artificial light from an internal or external source. Illumination may occur through an external source which may directly or indirectly illuminate a sign, an internal source which may provide illumination through transparent or translucent materials, or digitally through light emitting diodes (LEDs) or similar technology.	Yes	Height – 4 feet Area – 20 SF (or larger) Max number – 1 per lot (R district) or 2 (B and C) Message display – animation, sound, video, or full-motion is prohibited Content transition – no fading/dissolving/overlapping Hours of operation – 6am-11pm (unless 24hrs) Brightness - Automatic day/night dimming from 1 hr. after sunset to 1 hr. prior to sunrise Message duration – 6 seconds Message transition – 1 second Automatic shut off
Avondale https://ecode360.com/37862351	ILLUMINATED SIGNS: A sign that is lit by a source that is attached to or otherwise a part of the sign.	No	Illuminated and animated signs are prohibited.
Birmingham https://ecode360.com/9025725	BILLBOARD SIGN: A sign which directs attention to a person, business, profession, product, activity or event not conducted on the premises where the sign is located.	No	Digital displays are only permitted as billboard.

[1] Zoning regulations for all 73 municipalities in Chester County) have been reviewed for any requirements pertaining to digital display signs on lots with religious use. Due to repetitions, only municipalities with variety in requirements are included in the table.

	ILLUMINATED SIGN: A sign which has characters, letters, figures, designs or outlines illuminated by direct or indirect electric lighting or luminous tubes as part of the sign.		
Caln https://ecode360.com/9321748	ANIMATED SIGN: A sign or any device designed to attract attention by visual means through the movement or semblance of movement by mechanical, electrical or natural means. CHARITABLE or COMMUNITY SERVICE SIGN: An on-premises sign identifying the charitable or community service organization, including religious facilities, volunteer fire companies or other nonprofit organization. All such signs may include supplemental information concerning hours, events, activities or messages. ILLUMINATED SIGN: A sign designed to project or reflect artificial light from an internal or external source, which may be directly or indirectly illuminated, or through transparent or translucent material. Illuminated signs may include, billboards, freestanding signs, ground signs or signs affixed to a building or structure, as permitted under the provisions of this chapter of the Code.	No specific provisions for digital displays	Height – 18 feet Area – 60 SF Max number – 1 per street frontage Setback – 5 ft. from ROW and 20 ft. from property lines. The use of red, green or amber lights on any sign within 200 feet of a street intersection is prohibited. The use of intermittent, flashing or animated lighting within 50 feet of a street right-of-way line and 200 feet from specific residential districts is prohibited. The use of illuminated signs within specific residential districts is prohibited unless the illuminated sign is specifically related to emergency management uses, medical facilities, municipal uses, institutional uses and other similar uses.
East Bradford https://ecode360.com/27273435	DIGITAL SIGN Any sign capable of displaying words, symbols, figures or images that can be electronically or mechanically changed by remote or automatic means.	No Business signs accessory to commercial uses	Hours of operation – not past 11pm Message content – message or image (static) Message duration - no fewer than eight seconds Message transition – maximum 1 second; no blending Brightness – automatic reduction during hours of darkness not to exceed 100 nits when set to an all-white display Default design is required
East Brandywine https://ecode360.com/11883615	SIGN, CHANGEABLE DISPLAY: A sign displaying letters, numbers, and/or graphics that are designed to be readily changed electronically. A sign with changes made less frequently than once per 24 hours shall not be deemed a changeable display sign, nor shall any sign where changes to the content are effected by mechanical or manual means.	Yes, only on property fronting on Horseshoe Pike in specific	Height – 3 ft. 6 in. Max number – 1 Content transition – not scroll/flash/oscillate/blink; entire display Hours of operation – 6am to 11pm Brightness – not to exceed 0.1 footcandle measured at the boundary of any abutting property; between sunrise and

	LED specific provisions.	zoning districts	sunset, luminance shall be no greater than 5,000 nits. At all other times, luminance shall be no greater than 250 nits. Message transition – once every 5 seconds Setback – 5 ft. from ROW Ambient light monitor, which continuously monitor and automatically adjust the brightness of the sign to appropriate levels for the existing ambient light conditions is required. A nonconforming sign shall not be converted to, adapted, repurposed, or otherwise approved as a changeable display sign unless it is modified to conform to the applicable regulations
East Caln https://ecode360.com/10742706	CHANGEABLE DISPLAY SIGN Any sign capable of changes in the signage display without physical alteration of the sign, including without limitation, LED displays.	No, only for commercial uses	Height – 8 feet Area – 20 SF Setback – 10 feet from side property lines; sign height from the street line Message content – limited to text (letters and numbers) and one image Message transition – not less than 60 seconds (6am-10pm) or static (10pm – 6am) or turned off Illumination – limited to 7,000 nits between sunrise and sunset and 250 nits during nighttime hours Shall not be used for off-premises advertising Required to coordinate/permit message access for local, regional, state and national emergency services during emergency situations
East Fallowfield	ELECTRONIC SIGN: An on-site sign capable of displaying text, graphics, symbols, or images that can be electronically or mechanically changed by remote or automatic means; or with content that may be changed by electronic process through the	Yes, within MU district via special exception and with	Height – 12 feet Location – perpendicular to adjacent roadway Message transition – not more than 3 times per day Transition interval – 1 second Hours of operation – 7am to 10pm

https://ecode360.com/31345572	use of light or lights, including, but not limited to, light emitting diodes (LED), liquid crystal display and plasma image display. MESSAGE SEQUENCING: A single message or advertisement for a product, event, commodity, or service that is divided into segments and presented over two or more successive display phases of a sign, or across two or more individual signs.	frontage on state roads	Illumination – not to exceed 100 cd/m2 with a full-white board face after sunset Setbacks – 15 feet or 1.1 times the height from ROWs Shall not shine or reflect light into adjacent residences. Message sequencing is prohibited.
East Goshen https://ecode360.com/7253764	LED sign: A type of animated sign which uses light-emitting diodes, liquid crystal displays, or similar technologies to change the message of the sign. Places of worship or religious institutions permitted by conditional use in C-1 District.	Yes, but only those located in C-1 district.	Height – 5 ft. Area – 10 SF Max number – 1 per property for street frontage Message duration – static and nonanimated; min. 10 seconds; no audio Content transition - not display any message that moves, appears to move, scrolls, or changes in intensity during the fixed display period Message transition – one second or less Brightness – brightness control to reduce the intensity of the light based on outside light levels.
East Marlborough https://ecode360.com/30533657	DIGITAL DISPLAY: The portion of a sign message made up of internally illuminated components capable of changing the message periodically. Digital displays may include but are not limited to LCD, LED, or plasma displays. Places of worship are only permitted in R-1 or Institutional overlay via special exception	No In specified commercial or industrial districts	Number – 1 per street frontage Area – 50 SF Height – 20 feet Brightness – daytime at 5,000 nits and nighttime at 250 nits Sign area (total) – 30% of total sign area on site
East Whiteland https://ecode360.com/6758323	FLASHING AND MESSAGE SIGN: A sign which permits light to be turned on or off intermittently, or any illuminated sign on which such illumination is not kept stationary or constant in intensity or color at all times when such sign is in use, including an LED (light-emitting diode) or digital sign. A flashing or message sign occurs whenever such signs include lights or messages which change, flash, blink or turn on and off intermittently, with the exception of	No	Prohibited animated, flashing and message signs, and intermitted signs except for off-premises signs.

	such signs which are limited exclusively to time and temperature displays, with no other text or image. INTERMITTENT SIGN: A sign which permits light to be turned on or off intermittently more frequently than once every 12 hours or which is operated in a way whereby light is turned on or off intermittently more frequently than once every 12 hours, including any illuminated sign on which such illumination is not kept stationary or constant in intensity or color at all times when such sign is in use, including an LED or digital sign which varies in intensity or color more frequently than once every 12 hours.		
Easttown https://ecode360.com/15297460	ANIMATED SIGN: A sign with action or motion, flashing, color changes requiring electrical energy, light-emitting diodes (LED) or other light sources as part of the sign or sign face, electronic or digital sign face, electronic manufactured sources of supply, but not including static LED fuel price signs or wind-actuated elements such as flags, banners, or specialty items. PLACE OF WORSHIP: A building used for public worship by a congregation, excluding buildings used exclusively for residential, educational, burial, recreational or other uses not normally associated with worship. PBO Zoning District - Animated signs shall be permitted when authorized as a conditional use, subject to specific provisions. Places of worship are permitted by conditional use in all districts.	Not in residential districts. In business district with restrictions	Height – 8 ft. Max Area – 10 SF Number – 1 per individual lot Setback – 10 to 35 feet from property boundary with ROW or street whichever is closer to the center point of property; not less than 15 feet from any neighboring property boundary. Message duration – minimum 5 seconds Message transition – less than 1 second Brightness – controls with ability to respond to changes in the outside light levels No animated sign shall be erected within 200 feet of any other animated sign. Animated signs are prohibited within 100 feet of a traffic control device.
Elverson	Digital sign: An advertising sign that utilizes digital or video light-emitting diodes (LEDs) or similar electric methods to create an image display area.	Yes	Area - 1/3 of the size of the sign or 12 square feet, whichever is less. Duration - minimum of six seconds Transition - within one second

https://ecode360.com/34090751	Electronically changing message sign: A digital sign or portion thereof displaying frequent message changes that are rearranged electrically without physically altering the face or surface of such signs. Illuminated sign: A sign designed to project or reflect artificial light from an internal or external source. Illumination may occur through an external source which may directly or indirectly illuminate a sign; an internal source which may provide illumination through transparent or translucent materials; or digitally through light-emitting diodes (LEDs) or similar technology.		Content transition - No visual scrolling, movement, fading or dissolving is permitted and messages shall not overlap. Automatic day/night dimming to reduce the illumination intensity of the sign from one hour after sunset to one hour prior to sunrise Automatic shutoff in case of failure or error that would result in the sign projecting a full intensity all-white image for an extended period of time. The use of animation, sound and full-motion video is prohibited.
Kennett Square https://library.municode.com/pa/kennett_township/codes/code_of_ordinances?nodeId=PTIIGELE_CH240ZOAR_ARTXXISI	CHANGEABLE COPY: copy containing or displaying letters, numbers, or graphics, which is designed to be readily changed, either manually, electronically, or through mechanical means, including but not limited to illumination types such as LED, HID, LCD, fluorescent, incandescent, neon, plasma and digital.	Not in residential districts	
Malvern https://ecode360.com/31447648	DIGITAL SIGN: any pixel-based or like technology used to display and/or change the image and/or copy on a sign by electronic, digital, LED, video or similar technological means.	Yes, only in commercial districts	Display area – 8 SF Duration – 8 seconds minimum Transition – 1 second or less Ambient light monitor to adjust brightness Brightness – not to exceed 0.2 footcandles within 150 feet

Pennsbury https://ecode360.com/13084984	DIGITAL SIGN: An advertising sign that utilizes digital or video light-emitting diodes (LEDs) or similar electronic methods to create a changeable image display area. ELECTRONICALLY CHANGING MESSAGE SIGN: A freestanding or ground sign or portion thereof designed to accommodate frequent message changes composed of characters or letters that can be changed or rearranged electronically without altering the face or surface of such sign. ILLUMINATED SIGN: A sign which has characters, letters, figures, designs or outlines illuminated by direct or indirect electric lighting or luminous tubes as part of the sign.	No	Digital, electronically changing message, or flashing signs, and internal illumination of signs are prohibited.
Sadsbury https://sadsburytwp.org/wp-content/uploads/2022/09/Sadsbury-Township-Zoning-Ordinance-combined.pdf	Electronic Sign/Billboard – A sign and/or billboard capable of displaying text, graphics, symbols, or images that can be electronically or mechanically changed by remote or automatic means; or with content that may be changed by electronic process through the use of light or lights, including, but not limited to, light emitting diodes (LED), liquid crystal display and plasma image display. A Billboard is defined as a form of a Ground sign that exceeds the area and height regulations set forth elsewhere in this Part. Illuminated Sign: A sign that has characters, letters, figures, designs, or outlines illuminated by direct or indirect electric lighting or luminous tubes as part of the sign.	Yes, with restrictions and only on properties with frontage on the Route 30 Bypass. Special Exception	Sign face – 50 SF Location – min 500 feet from other such sign; 100 feet from residential unit; No fading, flashing, modulating, scrolling, moving lights, text or graphics, any fullmotion video, or any visible change during the Change Interval period. Not in location that will cause any danger to pedestrians or vehicular traffic. All light source shall be shielded and screened from adjoining residential properties.
Schuylkill https://ecode360.com/13606522	SIGN, DIGITAL: A sign that can change content of text or images which may utilize LED (light-emitting diode) technology or other technology.		

	SIGN, STATIC: A sign that is not digital and does not have changeable copy.		
Thornbury https://ecode360.com/36853174	CHANGEABLE COPY SIGN: A sign or portion thereof on which the copy or symbols change either automatically through electrical or electronic means, or manually through placement of letters or symbols on a panel mounted in or on a track system. The two types of changeable-copy signs are manual changeable copy signs and electronic changeable copy signs, which include: message center signs, digital displays, and tri-vision boards. DIGITAL DISPLAY: The portion of a sign face made up of internally illuminated components capable of changing the message periodically. Digital displays may include but are not limited to LCD, LED, or plasma displays.	Yes, only those located in commercial zoning districts, and with conditions.	
Tredyffrin https://ecode360.com/7117407	CHANGEABLE-COPY SIGN, DIGITAL: A sign on which the copy on the sign face is composed of light-emitting-diode (LED), halogen, compact fluorescent, incandescent or similar lamps or bulbs which may be changed remotely with no greater frequency than once per hour so as not to be distracting to motorists. No digital changeable-copy sign shall be permitted to project light onto a street or neighboring property. A digital changeable-copy sign shall not be considered to be an animated sign. Digital changeable-copy signs shall only be as specifically set forth in Article XXV. BILLBOARD: A freestanding outdoor sign with a sign area that is between 60 square feet and 300 square feet. Signs in C-1 and C-2 Districts: A manual changeable-copy or digital changeable-copy sign is permitted as part of or in conjunction with a freestanding sign and may be no more than 10 square feet of the total permitted sign area.	Yes, within commercial districts and with restrictions. Religious institutions permitted via conditional use (Institutional overlay)	Hours of operation – dusk to midnight Equipped with devices which automatically extinguish the lighting at 12:00 midnight. Internally illuminated and digital changeable-copy sign billboards are prohibited.

Valley https://ecode360.com/34335270	SIGN, DIGITAL: An advertising sign that utilizes digital or video light-emitting diodes (LEDs) or similar electric methods to create an image display area. SIGN, ELECTRONICALLY CHANGING MESSAGE: A digital sign or portion thereof displaying frequent message changes that are rearranged electrically without physically altering the face or surface of such sign.	Yes	Message duration - minimum of 10 seconds Message transition - within three seconds. No visual scrolling, movement, fading, or dissolving is permitted, and messages shall not overlap. Automatic day/night dimming to reduce the illumination intensity of the sign from one hour after sunset to one hour prior to sunrise. Automatic shutoff in case of failure or error that would result in the sign projecting a full-intensity all-white image for an extended period of time. The use of animation, sound, and full-motion video is prohibited.
West Brandywine https://ecode360.com/7992300	ELECTRONIC SIGN: An on-site sign capable of displaying text, graphics, symbols, or images that can be electronically or mechanically changed by remote or automatic means; or with content that may be changed by electronic process through the use of light or lights, including, but not limited to, light emitting diodes (LED), liquid crystal display and plasma image display. RELIGIOUS USE: A nonprofit use of land or a building or buildings as a place of worship, convent, monastery or similar religious institution, including rectory and parish houses for an organization organized solely or primarily as a religious institution.	Yes, only within industrial and medical services institutional districts with frontage on state roads via special exception within	Height – 12 feet Brightness – dimming capability for local ambient conditions Setbacks – 15 feet or 1.1 times of height from ROW Duration – 12 seconds Transition – 1 second maximum Hours of operation – 7am to 11pm (unless 24 hrs use) Brightness – not to exceed 100 cd/m^2 nits with exceptions Programmable controller Contact information for operator/controller
West Goshen	CHANGING IMAGE SIGN: Any sign, display, device, or portions thereof which is designed to have the capability of movement or give the semblance of movement of the whole or any part of the	Yes, except for	Duration – 6-8 hours

https://ecode360.com/10797410	sign or that displays any artificial light which is not maintained stationary or constant in intensity and color at all times when such signs are in use or, through some other automated method, results in movement, the appearance of movement or change of sign image or text. Such signs include but are not limited to electronic signs including LED, LCD, video or other automatic changeable display, rotating and revolving signs, readerboard signs, flashing signs, and wind driven signs including flags, pennants, and streamers. INSTITUTIONAL: A sign identifying a club, association, school, hospital, church, nursing home, firehouse, care facility, boarding- or rooming house, institution, cemetery or similar use. Institutional signs: two per institution.	residential districts	
West Whiteland https://ecode360.com/11704047	SIGN, BULLETIN BOARD: A permanent sign which identifies an institution or organization on the premises on which it is located and which may contain the name of the institution or organization, the names of individuals connected with it and general announcements of events or activities occurring at the institution or general messages. Such a sign may contain movable letters, words or numerals. SIGN, CHANGEABLE COPY: A sign that is designed so that the message on the sign can be easily and periodically altered. VISUAL COMMUNICATION TECHNOLOGY (VCT): Lighting elements designed and constructed for the purpose of expressing a message. VCT includes, but is not necessarily limited to, dual in-line packaged light-emitting diodes (LEDs), surface-mounted LEDs, chip-on-board LEDs, fiber optic LEDs, internally illuminated acrylic plastic (such as plexiglas or Lucite) and polycarbonate plastic (such as Lexan), intense pulsed-light technology, outdoor projection	No Prohibited in residential districts	Number – 1 per lot, per street frontage Duration – 10 seconds minimum Transition – 1 second or less, seamless, imperceptible transition from one image to the next. Message content - static images, no moving or animated words or images Illumination - automatically adjust the light to not more than 0.3 footcandle above the ambient light level as measured at a perpendicular distance of 250 feet from the surface of the sign when displaying a completely white color; technology to minimize light from the sign falling on property beyond the area of the intended audience (louvers or shades adjacent to the individual lighting elements) Data log to document the performance of the automatic dimming function.

	technology, outdoor projection video-mapping technology, holographic technology, and 3-D holographic technology.		Automatic default function that, in the event of a malfunction, will either freeze the image in one position or shut down the VCT element entirely. Public emergency announcements and applicable protocol
Willistown https://ecode360.com/11715762	ELECTRONIC SIGNS: all electronic signs [including but not limited to the lighting or illuminating of signs, or light-emitting-diode (LED) signs, high-intensity displays (HID), electronic variable-messaging signs (EVMS), changeable-display signs (CDS), digital signs, fluorescent lighting signs, or incandescent lighting signs].	Yes, in specific commercial and industrial zoning districts and not within 400 feet of a residential use. Via conditional use	Illumination - not exceed 500 initial lumens per square foot of sign face per side Hours of operation – sunrise to 11pm within 400 feet of residential use Message transition – not more than once every 20 seconds; static images only Ambient light sensors or photometric cells to automatically reduce the intensity of illumination during daytime dark periods (e.g., cloudy or rainy days) and during the dawn or twilight hours of permitted use. Automatically adjust the light emitted to not more than 0.3 footcandle above the ambient light level as measured at a perpendicular distance of 250 feet from the surface of the sign when displaying a completely white color. Automatic default function that, in the event of a malfunction, will either freeze the image in one position or shut down the image entirely. Data log to document the performance of the automatic dimming function. Public emergency announcements and applicable protocols

TRANSPORTATION IMPACT ASSESSMENT

For

Westtown AM West TIC, LLC
Proposed Chase Bank

Property Located at:

1502 West Chester Pike (SR 0003)
Parcel ID #67-2-42:4
Township of Westtown, Chester County, PA

Prepared by:

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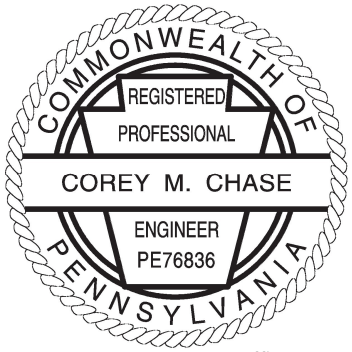

September 13, 2024

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APPENDICES

EXECUTIVE SUMMARY

Dynamic Traffic, LLC has been retained to prepare this Transportation Impact Assessment to assess the traffic impact associated with the construction of a 3,294 SF Chase Bank (The Project) on the adjacent roadway network. The study area includes the intersection of West Chester Pike (SR 0003) and the Marketplace at Westtown driveway/Wawa driveway. Based upon the detailed analyses as documented herein, the following findings are noted:

- The proposed 3,294 SF Chase Bank will generate 23 entering trips and 22 exiting trips during the weekday evening peak hour and 27 entering trips and 27 exiting trips during the Saturday peak hour that are "new" to the adjacent roadway network.

- Access to the site will continue be provided via the existing signalized driveway along West Chester Pike (SR 0003).

- With the addition of site generated traffic, the intersection of West Chester Pike (SR 0003) and the Marketplace at Westtown driveway/Wawa driveway is anticipated to operate at overall level of service "C" or better during the peak hours studied.

- As proposed, The Project's site driveway and internal circulation have been designed to provide for safe and efficient movement of automobiles and large wheel base vehicles.

- The proposed parking supply and design is sufficient to support the projected demand and exceeds the Municipal Code requirements.

INTRODUCTION

It is proposed to construct a Chase Bank within the Marketplace at Westtown Shopping Center, located on the southern side of West Chester Pike (SR 0003), just west of Chester Road (SR 0352) in Westtown Township, Chester County, Pennsylvania, see Figure 1 in Appendix B. The site is designated as Parcel Number 67-2-42:4 on the Township of Westtown Tax Maps. Specifically, the development proposal includes the construction of a 3,294 SF Chase Bank (The Project). The site is located within the C-1 – Neighborhood and Highway Commercial. Access to the site will continue be provided via the existing signalized driveway along West Chester Pike (SR 0003).

Dynamic Traffic LLC has been retained to prepare this Transportation Impact Assessment (TIA) to assess the traffic impact associated with the construction of The Project on the adjacent roadway network. This study documents the methodology, analyses, findings and conclusions of our study and includes:

- A detailed field inspection was conducted to obtain an inventory of existing roadway geometry, traffic control, and location and geometry of existing driveways and intersection.

- Existing traffic data was collected via turning movement counts (TMC) during the weekday PM and Saturday midday peak periods at the intersection of West Chester Pike (SR 0003) and Marketplace at Westtown driveway and Wawa driveway.

- Projections of traffic to be generated by the proposed development were prepared utilizing trip generation data as published by the Institute of Transportation Engineers. Site traffic was then assigned to the adjacent street system based upon the anticipated directional distribution.

- Capacity analyses were conducted for the Existing, No Build, and Build for the study intersection.

- The proposed points of ingress and egress were inspected for adequacy of geometric design, spacing and/or alignment to streets and driveways on the opposite side of the street, relationship to other driveways adjacent to the development, and conformance with accepted design standards.

- The site plan as designed was reviewed for sufficiency in accommodating large wheel base vehicles such as delivery trucks, refuse trucks, and emergency vehicles.

- The parking layout and supply was assessed based on accepted design standards and demand experienced at similar developments.

EXISTING CONDITIONS

A review of the existing roadway conditions near the proposed site was conducted to provide the basis for assessing the traffic impact of the development. This included field investigations of the surrounding roadways and intersection, collection of traffic volume data, and extensive analyses.

Existing Roadway Conditions

The following are descriptions of the roadways in the study area:

West Chester Pike (SR 0003) is an Urban Principal Arterial roadway under PennDOT jurisdiction with a general east/west orientation. In the vicinity of the site, the posted speed limit is 45 MPH and the roadway provides two travel lanes in each direction separated by a curbed median. Curb is provided along the westbound side of the roadway east of the Marketplace at Westtown driveway and both sides of the road west of the Marketplace at Westtown Driveway. Sidewalk is not provided along either side of the road. West Chester Pike (SR 0003) provides a slightly curved horizontal alignment and a relatively flat vertical alignment. The land uses along West Chester Pike (SR 0003) within the study area are primarily commercial.

Existing Bicycle and Pedestrian Facilities

Pedestrian and bicycle facilities are provided in the form of paved shoulders along West Chester Pike (SR 0003). Crosswalks, curb ramps, and pedestrian signals are provided to cross the western and southern legs of the intersection of West Chester Pike (SR 0003) and the Marketplace at Westtown driveway/Wawa driveway.

Existing Mass Transit Facilities

The Southeastern Pennsylvania Transportation Authority (SEPTA) provides bus service in the nearby area. Bus service is provided via the 104 line, which runs from West Chester University to 69th Street Transit Center in Philadelphia. The nearest bus stop is located at the intersection of West Chester Pike (SR 0003) and Marketplace at Westtown driveway/Wawa driveway.

Existing Traffic Volumes

Turning movement counts (TMC) were conducted on Thursday, September 5, 2024 from 4:00 PM to 6:00 PM and on Saturday, September 7, 2024 from 11:00 AM to 2:00 PM at the intersection of West Chester Pike (SR 0003) and the Marketplace at Westtown driveway/Wawa driveway. Figure 2, located in Appendix B, shows the existing peak hour traffic volumes at the study intersection. All TMC counts are contained in Appendix C.

Existing Capacity Analysis

The methodology utilized in the capacity analyses is described in the *Highway Capacity Manual*, published by the Transportation Research Board. In general, the term Level of Service (LOS) is used to provide a "qualitative" evaluation of capacity based upon certain "quantitative" calculations related to empirical values, such as traffic volume and intersection control.

At the signalized intersections, factors that affect the various approach capacities include width of approach, number of lanes, signal "green time", turning percentages, truck volumes, etc. However, delays cannot be related to capacity in a simple one-to-one fashion. For example, it is possible to have delays in the Level of Service "F" range without exceeding roadway capacity. Substantial delays can exist without exceeding capacity if one or more of the following conditions exist: long signal cycle lengths; a particular traffic movement experiences a long red time; or progressive movement for a particular lane group is poor. Table 1 describes the level of service ranges for signalized intersections.

Table 1
Level of Service Criteria
for Signalized Intersections

Level of Service	Average Control Delay (seconds per vehicle)
A	0.0 to 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	greater than 80.0

Analyses within the *Highway Capacity Manual* assume a random arrival for all the movements, which may not be the case if an adjacent traffic signal is present that platoons vehicles. As detailed in Exhibits 10-9 and 10-10 contained within PennDOT's *Publication 46*, the default values for Base Saturation Flow Rate, Start-Up Lost Time, and Extension of Effective Green Time for signalized intersections.

All capacity analyses were performed utilizing Synchro 12 software in accordance with Highway Capacity Manual (HCM) 6th Edition methodologies. Table 2 summarizes the existing levels of service (LOS) and delays. All capacity analysis calculation worksheets are contained in Appendix D.

Table 2
Existing Levels of Service

Intersection	Direction/ Movement		PM PSH	Sat PSH
West Chester Pike (SR 0003) & Marketplace at Westtown Driveway/Wawa Driveway	EB	L	E (69.7)	D (49.0)
		T	B (16.5)	B (14.4)
		R	B (13.1)	B (12.2)
	WB	L	E (64.1)	D (44.9)
		TR	B (13.1)	B (11.1)
	NB	L	E (58.0)	D (40.2)
		TR	D (53.9)	D (38.6)
	SB	L	E (63.4)	D (44.7)
		TR	D (48.8)	C (35.0)
	Overall		**C (24.4)**	**B (19.6)**

A (#) - Signalized Intersection Level of Service (seconds of delay per vehicle)

The following is a discussion pertaining to the existing intersection analyzed. It should be noted that the existing percentage of trucks and peak hour factors were used in the existing analysis.

West Chester Pike (SR 0003) and Marketplace at Westtown Driveway/Wawa Driveway

The Marketplace at Westtown driveway and the Wawa driveway intersect West Chester Pike (SR 0003) to form a four-leg intersection controlled by a three-phase traffic signal. The traffic signal permit and system permit plans were obtained from PennDOT which indicate that this signal operates within the West Chester Pike Signal System (I-0181). A 140-second background cycle is utilized during the weekday evening PSH and a 100-second background cycle is utilized during the Saturday midday PSH (the signal plans are included in Appendix (F).

The eastbound approach of West Chester Pike (SR 0003) provides one dedicated left turn lane, two dedicated through lanes and one dedicated right turn lane. The westbound approach provides one dedicated left turn lane, one dedicated through lane and one shared through/right turn lane. The northbound approach of the Marketplace at Westtown driveway provides one dedicated left turn lane and one shared through/right turn lane. The southbound approach of the Wawa driveway provides one dedicated left turn lane and one shared through/right turn lane.

A review of the existing analysis reveals that the intersection operates at overall levels of service "C" or better and all movements operate at levels of service "E" or better during the analyzed peak periods. See Table 2 for the individual movement levels of service and delays.

FUTURE CONDITIONS

Traffic volumes and operational analyses were developed for the 2026 No Build and Build conditions. The No Build conditions provide a baseline for assessing the impact of site development traffic on the roadway system. The process of developing the No Build and Build traffic volumes and the subsequent analyses is outlined below.

Regardless of whether the subject site is developed or not, traffic volumes on the surrounding roadways are expected to increase as a result of developments throughout the region. A growth rate for urban non-interstate roadways in Chester County within the study area was obtained from the PennDOT Growth Factors Table for August 2024 to July 2025, which indicates a growth rate of 0.44% per year.

Through consultation with the Township of Westtown staff, there are no other developments in the vicinity of the site that have been approved but not yet constructed that are identified as significant traffic generators. It was assumed that the background growth rate was adequate to account for the traffic associated with all developments not listed.

Future 2026 No Build traffic volumes were developed by applying the background growth rate of 0.44% for two (2) years to the study area roadways existing traffic volumes. Figure 3, in Appendix C, shows the 2026 No Build traffic volumes.

Traffic Generation

Trip generation projections for The Project were prepared utilizing trip generation research data as published under Land Use Code (LUC) 912 – Drive-in Bank in the Institute of Transportation Engineers' (ITE) publication, *Trip Generation, 11th Edition.* This publication sets forth trip generation rates based on empirical traffic count data conducted at numerous research sites. The trip generation calculations are included in Appendix E.

Passby Traffic

According to studies conducted by ITE, traffic associated with LUC 912 is not 100% newly generated. Rather, a portion of the traffic is diverted from the existing traffic stream on the adjacent roadway network. This is because the Chase Bank is not exclusively destination land uses, instead patrons stop on their way to/from other locations such as home or work. ITE identifies a 35% passby traffic percentage during the weekday evening PSH and a 38% passby traffic percentage during the Saturday midday PSH for LUC 912. Table 3 below details the traffic volumes associated with the subject project taking into account passby credits.

Table 3
Trip Generation Considering Passby Traffic

Trip Type		PM PSH			Sat PSH		
		In	Out	Total	In	Out	Total
3,294 SF Chase Bank	Total	35	34	69	44	43	87
	Passby	12	12	24	17	16	33
	New (Primary)	**23**	**22**	**45**	**27**	**27**	**54**

Once the magnitude of traffic to be generated by the site is known, it is necessary to assign that traffic to the adjacent street system. The distribution of new traffic to the surrounding roadways is based on the location of primary arterial roadways, major signalized intersections, and existing traffic patterns.

Located in Appendix B, Figure 4 illustrates the primary site generated trip distribution, Figure 5 illustrates the primary site generated volumes, Figure 6 illustrates the passby site generated trip distribution, Figure 7 illustrates the passby site generated volumes and Figure 8 illustrates the total site generated volumes assigned to the study area network. The site generated volumes were added to the 2026 No Build traffic volumes to generate the 2026 Build traffic volumes, which are shown in Figure 9.

Future Capacity Analysis

Operational conditions at the study intersection were analyzed under the No Build and Build conditions and are summarized in Table 4 below.

Table 4
2026 Future Levels of Service

Intersection	Direction/ Movement		PM PSH		Sat PSH	
			No Build	Build	No Build	Build
West Chester Pike (SR 0003) & Marketplace at Westtown Driveway/Wawa Driveway	EB	L	E (69.7)	E (69.7)	D (49.0)	D (49.0)
		T	B (16.7)	B (18.5)	B (14.5)	B (16.3)
		R	B (13.2)	B (14.9)	B (12.3)	B (14.2)
	WB	L	E (64.0)	E (63.4)	D (44.9)	D (44.2)
		TR	B (13.3)	B (14.1)	B (11.2)	B (12.0)
	NB	L	E (57.8)	E (58.0)	D (40.2)	D (39.7)
		TR	D (53.8)	D (54.0)	D (38.6)	D (38.3)
	SB	L	E (63.4)	E (63.4)	D (44.7)	D (44.7)
		TR	D (48.7)	D (47.3)	C (34.9)	C (33.7)
	Overall		**C (24.5)**	**C (26.0)**	**B (19.7)**	**C (21.0)**

A (#) - Signalized Intersection Level of Service (seconds of delay per vehicle)

West Chester Pike (SR 0003) & Marketplace at Westtown Driveway/Wawa Driveway

With the addition of site generated traffic, the intersection is anticipated to operate at overall No Build level of service "C" and all movements are anticipated to operate at No Build levels of service "E" or better during the studied peak hours. The increase in delay from No Build to Build scenarios across all peak hours falls within PennDOT's allowable 10 second variance. See Tables 4 for the individual movement levels of service and delays.

Queue Analysis

Queue length conditions at the study intersection were analyzed under the No Build and Build conditions. The 95th percentile queues for each study peak hour are summarized in Table 5 below.

Table 5
2026 Queue Analysis

Intersection	Direction/ Movement		Storage Length	PM PSH		Sat PSH	
				No Build	Build	No Build	Build
West Chester Pike (SR 0003) & Marketplace at Westtown Driveway/Wawa Driveway	EB	L	200’	40’	40’	28’	28’
		T	-	320’	335’	218’	230’
		R	350’	105’	125’	80’	103’
	WB	L	300’	208’	230’	148’	173’
		TR	-	335’	345’	205’	210’
	NB	L	-	208’	230’	123’	148’
		TR	-	263’	283’	193’	210’
	SB	L	-	118’	118’	63’	63’
		TR	-	143’	140’	85’	83’

West Chester Pike (SR 0003) & Marketplace at Westtown Driveway/Wawa Driveway

With the addition of site generated traffic, there is anticipated to be a maximum increase of approximately one vehicle in the 95th percentile queues for all movements at the intersection. It is not anticipated that the increase in queues will have a detrimental impact on the operation of the intersection. See Table 5 for the individual movement 95th percentile queues.

SITE PLAN

Site Access and Circulation

The site was reviewed with respect to the site access and on-site circulation design. As previously noted, access to the site will continue to be provided via the existing signalized driveway along West Chester Pike (SR 0003).

The site will be served by aisles of 26.7 feet to 28 feet wide for two-way movements and 20 feet wide for one-way movements, which allows for full site circulation for the anticipated vehicle mix on site and meets generally accepted design standards.

Parking

Westtown Township's parking schedule was obtained from the Section §170-1709.C, amended by Ordinance 2024-01, in the Westtown Township Code of Ordinances. For shopping center uses, 3.5 spaces per 1,000 square feet of gross leasable area (GLA) are required for a total of 436 parking spaces. For the Marketplace at Westtown, a total of 518 parking spaces (a reduction of 20 spaces) are proposed, which complies with the Township's Ordinance.

FINDINGS & CONCLUSIONS

Findings

Based upon the detailed analyses as documented herein, the following findings are noted:

- The proposed 3,294 SF Chase Bank will generate 23 entering trips and 22 exiting trips during the weekday evening peak hour and 27 entering trips and 27 exiting trips during the Saturday peak hour that are "new" to the adjacent roadway network.

- Access to the site will continue be provided via the existing signalized driveway along West Chester Pike (SR 0003).

- With the addition of site generated traffic, the intersection of West Chester Pike (SR 0003) and the Marketplace at Westtown driveway/Wawa driveway is anticipated to operate at overall level of service "C" or better during the peak hours studied.

- As proposed, The Project's site driveway and internal circulation have been designed to provide for safe and efficient movement of automobiles and large wheel base vehicles.

- The proposed parking supply and design is sufficient to support the projected demand and exceeds the Municipal Code requirements.

Conclusions

Based upon our Transportation Impact Assessment as detailed in the body of this report, it is the professional opinion of Dynamic Traffic LLC that the adjacent street system of the Township of Westtown and PennDOT will not experience any significant degradation in operating conditions with the construction of The Project. The site driveway is located to provide safe and efficient access to the adjacent roadway system. The site plan as proposed provides for good circulation throughout the site and provides adequate parking to accommodate The Project's needs.

Appendix A
Correspondences

ALBERT FEDERICO CONSULTING, LLC
Traffic Engineering and Mobility Solutions

133 Rutgers Avenue
Swarthmore, PA 19081

February 28, 2023

via email only
c/o Jon Altshul, Township Manager

Russell Hatton, Chair
Westtown Township Planning Commission
1039 Wilmington Pike
West Chester, PA 19382

Re: Westtown AM West TIC, LLC (Chase Bank) - Variance Traffic Review
1502 West Chester Pike (Marketplace at Westtown)
Westtown Township, Chester County

Mr. Hatton:

As requested, the following materials have been reviewed for compliance with applicable sections of the Westtown Township Code, as well as reasonable and customary standards for Traffic Engineering practice:

- Zoning Variance Plan, prepared by Dynamic Engineering, dated September 7, 2022, last revised January 18, 2023
- Parking Assessment, prepared by Dynamic Engineering, dated January 19, 2023

The applicant is proposing to develop a Drive-in Bank (3,294 sf) within the northeast portion of the Marketplace at Westtown parking field, immediately south of West Chester Pike (SR 0003). The applicant has applied to the Zoning Hearing Board for several variances, including variances for the size of parking spaces, the overall number of parking spaces and the width of drive aisles.

The following comments are offered for the Township's consideration:

1. *§170-2107A* – The submitted materials should:
    a. Clearly articulate the "unique physical circumstances or conditions" supporting the requested variances.
    b. Provide additional details on the specific locations within the property that the variances are being requested.
    c. Include documentation of existing non-conformities and previous relief granted to the subject property.
    d. Include an overall plan for the entire Shopping Center that documents the existing number of parking spaces and an illustration of the parking spaces proposed to be removed.

2. *§170-1700A(2)* – No parking facility now serving uses shall be reduced below the requirements of this chapter. The most current approved plan on file with the Township (2016 Giant expansion) added 59 parking spaces to provide 553 total spaces on-site. The requested variance would reduce the parking to 518 total spaces.
3. It is recommended that the Parking Assessment be revised to address the following:
    a. Table 1 presents the "non-December" parking rates provided by the *Institute of Transportation Engineers (ITE)*. Information supporting the use of these rates instead of the higher "December" rates should be provided.
    b. The on-site parking observations should include the periods of peak demand (between 1:00 and 2:00 PM weekdays and Saturdays) identified by the *Institute of Transportation Engineers.*
    c. The parking observations should identify the specific locations the vehicles are parked to ensure adequate spaces is available for patrons. Specifically, for the observed periods identify how many vehicles are parked in the front of the center, east of the entrance; in the front, west of the entrance; and to the rear of the in-line stores.
4. It appears that the magnitude of the variances requested from *§170-1513B* {drive aisle width} and *§170-1702A(1)* {parking space length} could be reduced by revising the design to implement one-way, counter-clockwise circulation around the bank, from the drive-thru exit past the "front door" parking. Such a change could also minimize the potential for vehicles exiting the drive-thru to make "awkward" left/U-turns to exit the center.

Please do not hesitate to contact me at 610.608.4336 or albert@federico-consulting.com should you have any questions or require additional information.

Sincerely,

Albert Federico, P.E., PTOE

ALBERT FEDERICO CONSULTING, LLC
Traffic Engineering and Mobility Solutions

133 Rutgers Avenue
Swarthmore, PA 19081

August 1, 2024

via email only
c/o Liudmila (Mila) Carter, Township Manager

John Embick, Esq., Chair
Westtown Township Planning Commission
1039 Wilmington Pike
West Chester, PA 19382

Re: Westtown AM West TIC, LLC Chase Bank - Traffic Review
1502 West Chester Pike (Marketplace at Westtown)
Westtown Township, Chester County

Mr. Embick:

As requested, the following materials have been reviewed for compliance with applicable sections of the Westtown Township Code, as well as reasonable and customary standards for Traffic Engineering practice:

- Preliminary/Final Land Development Plan, prepared by Dynamic Engineering, dated July 12, 2024
- Parking Assessment, prepared by Dynamic Engineering, dated January 19, 2023, revised March 16, 2023

The applicant is proposing to develop a Drive-in Bank (3,294 sf) within the northeast portion of the Marketplace at Westtown parking field, immediately south of West Chester Pike.

The following comments are offered for the Township's consideration:

1. *§170-1709C(1)* – The submitted Parking Assessment provides sufficient documentation that the existing Shopping Center has adequate parking to accommodate the proposed Bank use.

ack.

2. *§149-804(A)* – A traffic impact study shall be required for any subdivision or land development that is expected to generate more than 250 total average weekday trip-ends after build-out.

w/c

3. *§149-916* - Sidewalks, bike paths and other paths may be required to be installed at the discretion of the Board of Supervisors upon the recommendation of the Planning Commission. As previously discussed with the Planning Commission, consideration should be given to providing an accessible path along the Marketplace driveway to provide access to the adjacent bus stop along West Chester Pike.

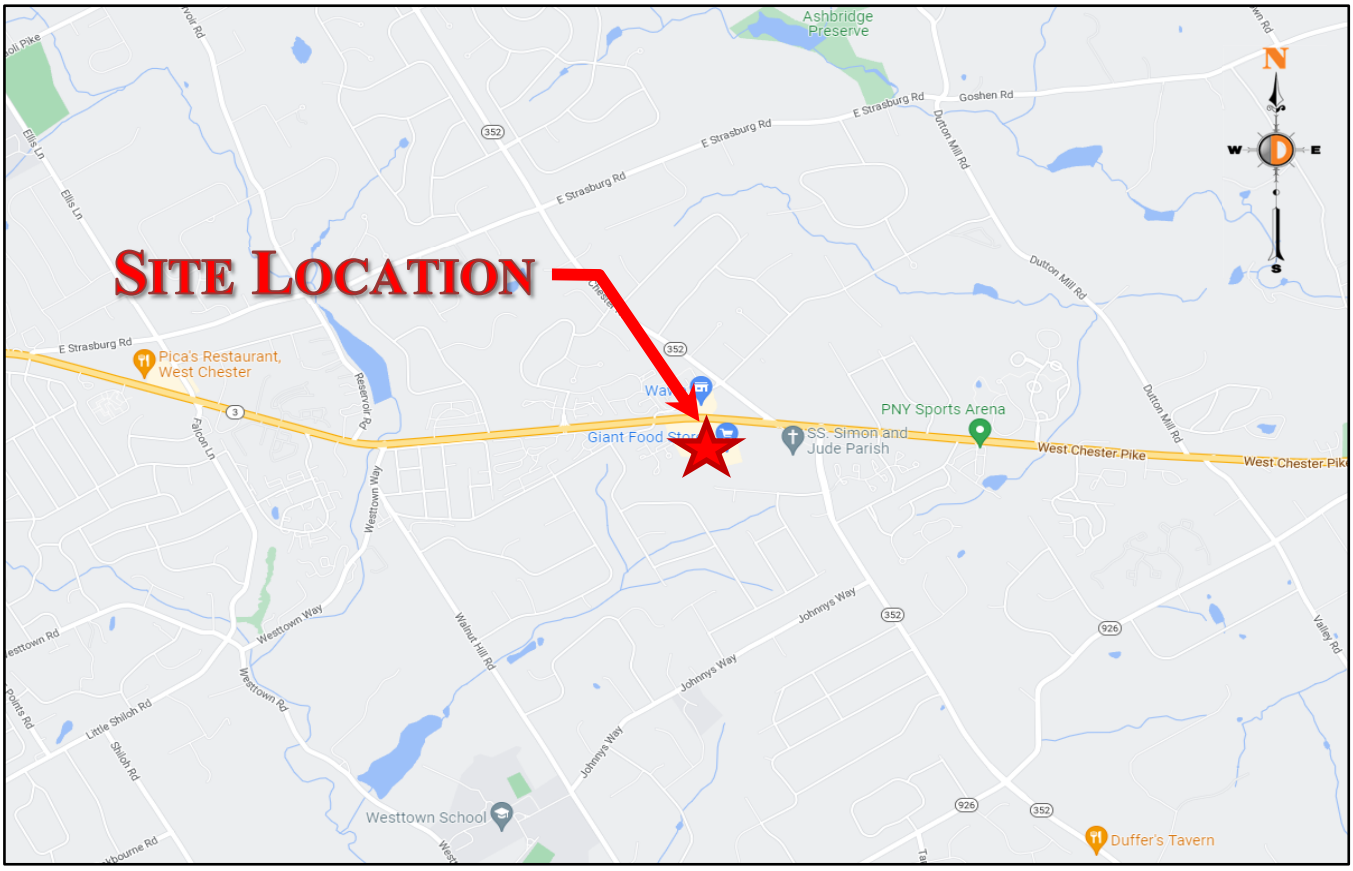
To be discussed at PC Meeting

Please do not hesitate to contact me at 610.608.4336 or albert@federico-consulting.com should you have any questions or require additional information.

Sincerely,

Albert Federico, P.E., PTOE

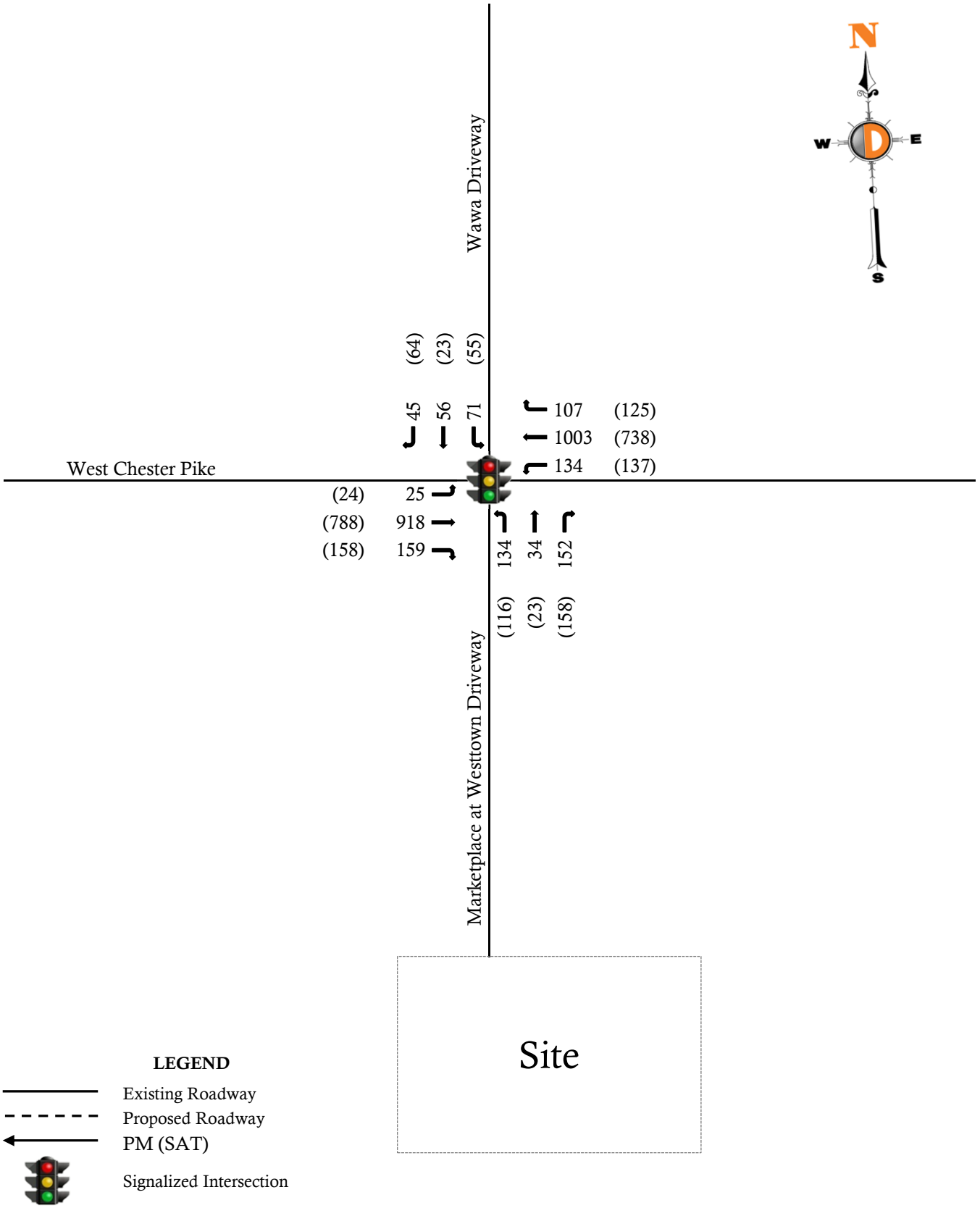
Appendix B
Traffic Volume Figures



Proposed Chase Bank
Parking Assessment
1478-99-191T

Figure 1

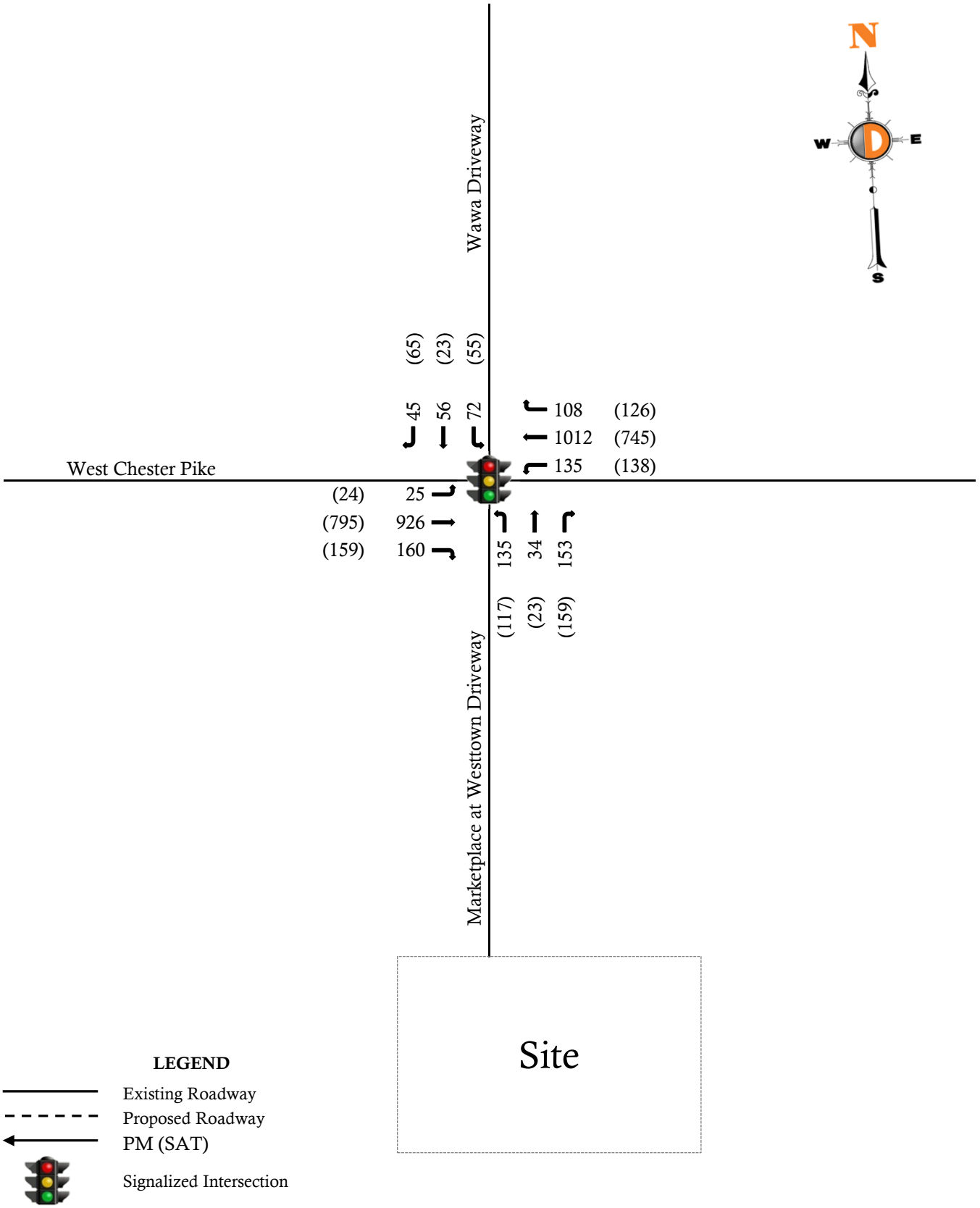
Site Location Map



Proposed Chase Bank
Transportation Impact Assessment
1478 99-191T

Figure 2

Existing Traffic Volumes



Proposed Chase Bank
Transportation Impact Assessment
1478 99-191T

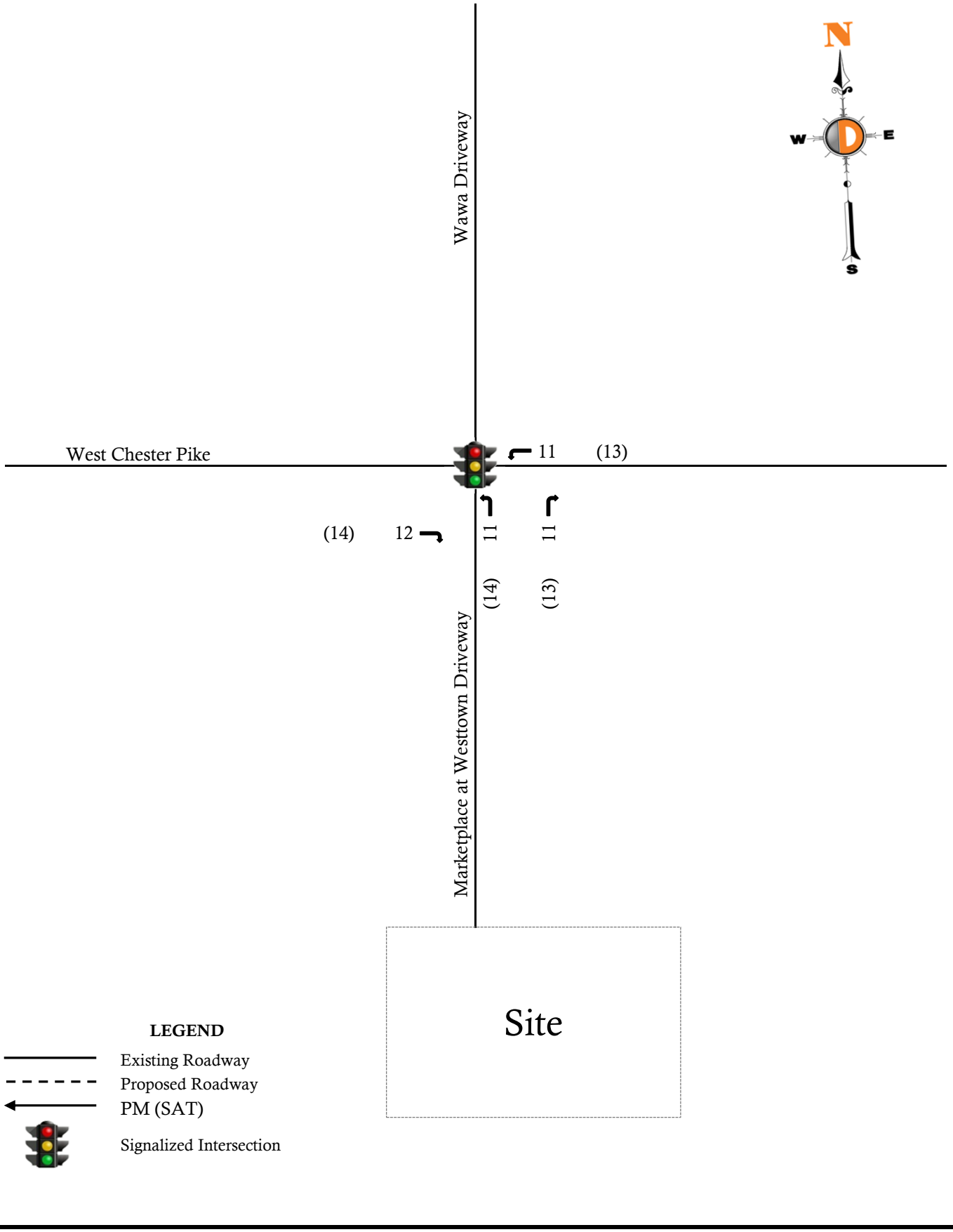
Figure 3

No Build Traffic Volumes

Proposed Chase Bank
Transportation Impact Assessment
1478 99-191T

Figure 4

Percent Distribution (Primary Trips)



Proposed Chase Bank
Transportation Impact Assessment
1478 99-191T

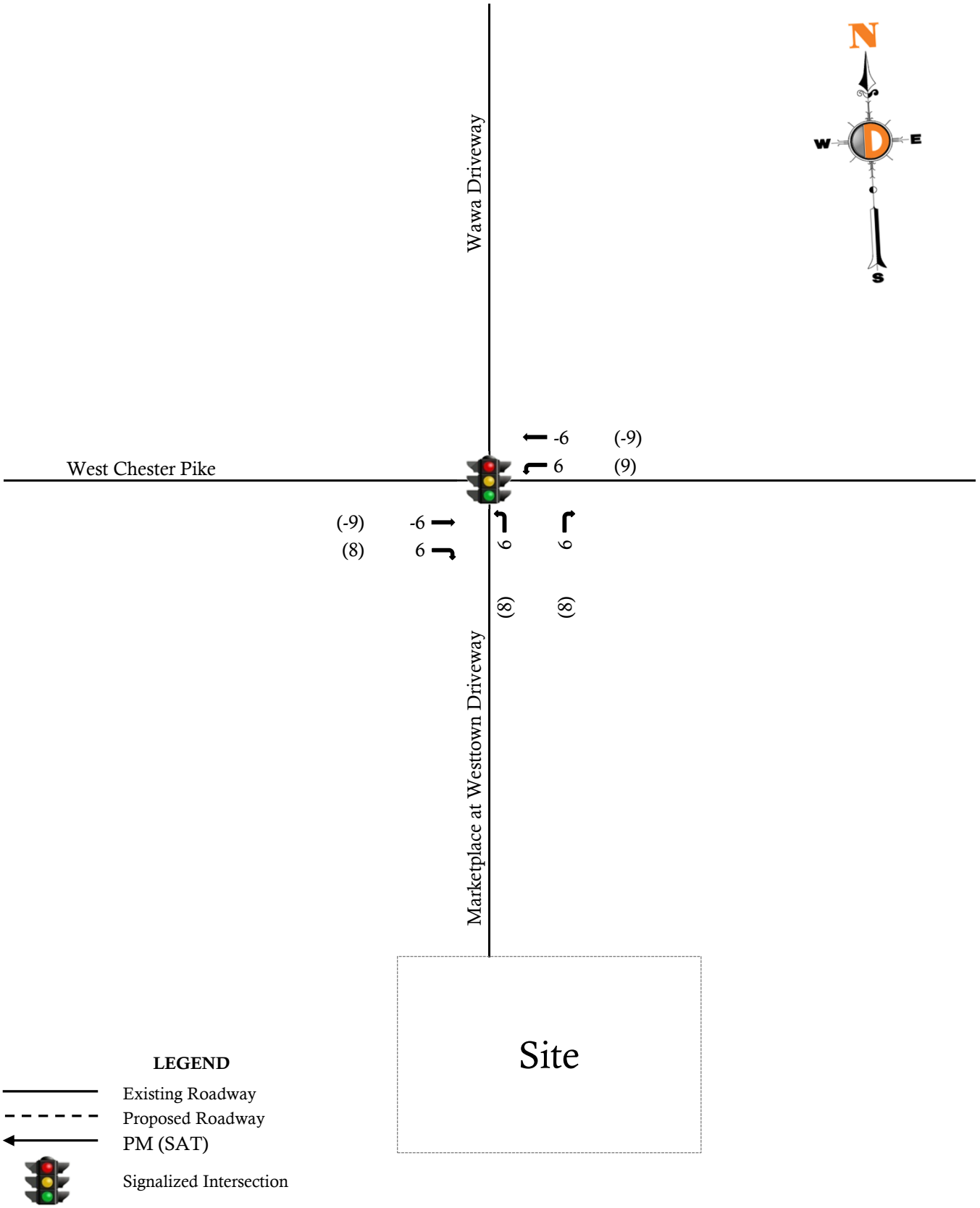
Figure 5

Primary Site Generated Trips

Proposed Chase Bank
Transportation Impact Assessment
1478 99-191T

Figure 6

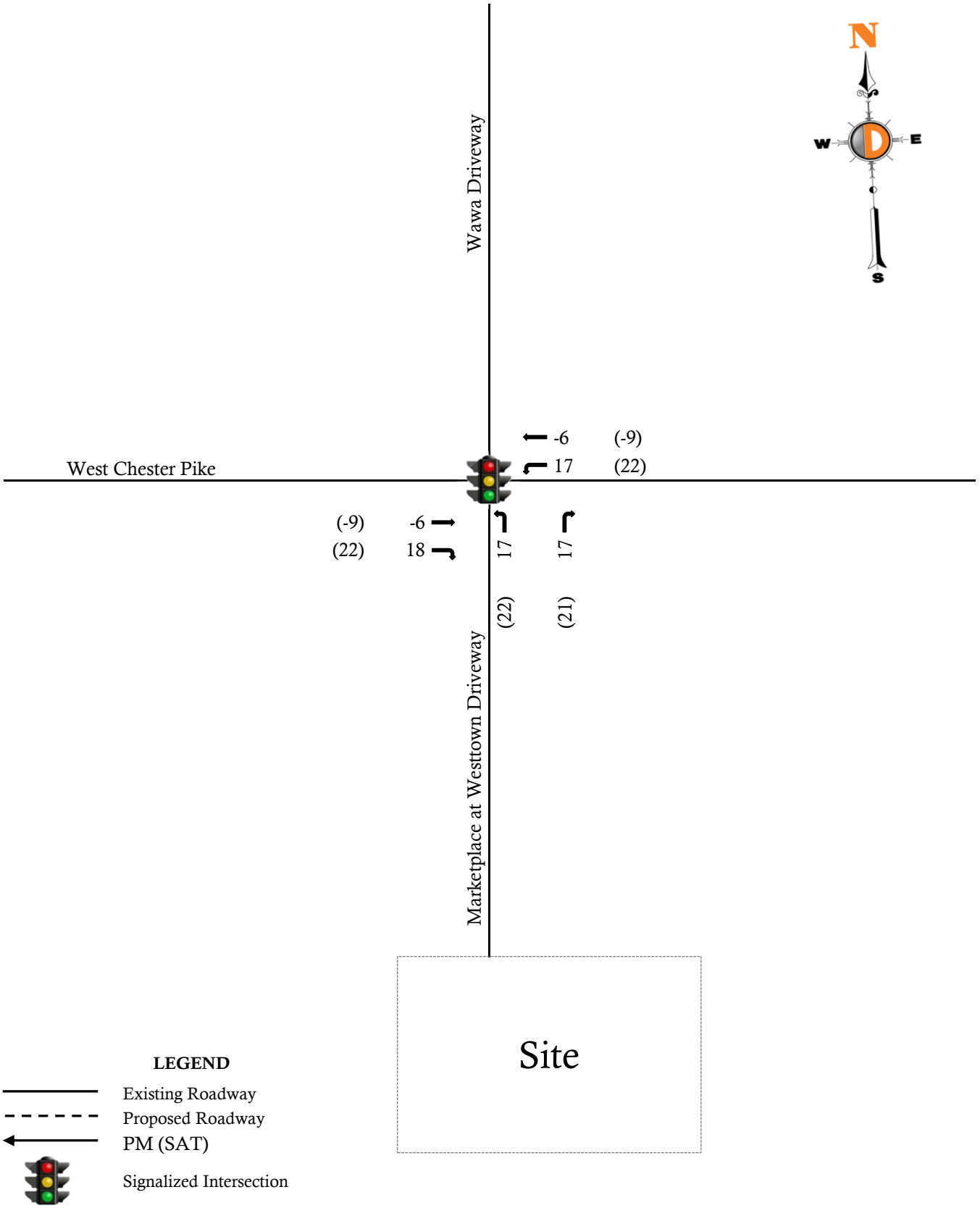
Percent Distribution (Passby Trips)



Proposed Chase Bank
Transportation Impact Assessment
1478 99-191T

Figure 7

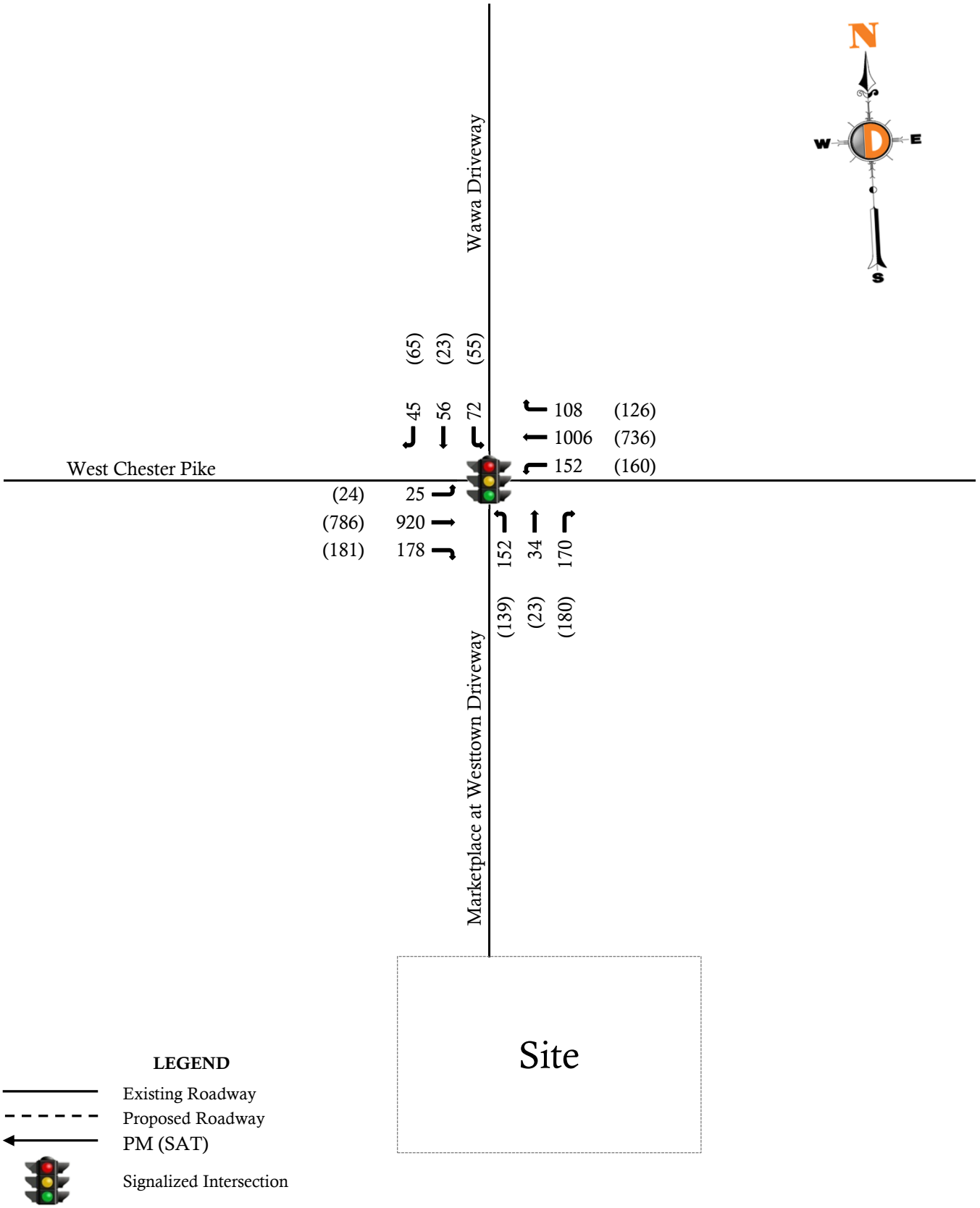
Passby Site Generated Trips



Proposed Chase Bank
Transportation Impact Assessment
1478 99-191T

Figure 8

Total Site Generated Trips



Proposed Chase Bank
Transportation Impact Assessment
1478 99-191T

Figure 9

Build Traffic Volumes

Appendix C
Traffic Counts

Imperial Traffic & Data Collection
www.imperialtdc.com
1804 Haddonfield-Berlin Road
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: Route 3 & WAWA
Municipality: West Chester, Chester County, PA
Setup: AH
Location: 39.966836, -75.526915

Count Name: 1. 1502 West Chester Pike (Route 3)/Wawa Driveways
Site Code: 1
Start Date: 09/05/2024

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Route 3 Eastbound						Route 3 Westbound						Shopping Center Northbound						Wawa Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
4:45 PM	0	7	266	38	0	311	1	37	230	23	0	291	0	26	10	30	0	66	0	21	8	7	0	36	704
5:00 PM	0	2	235	50	0	287	0	26	240	28	0	294	0	34	10	44	0	88	0	17	22	13	0	52	721
5:15 PM	0	9	238	34	0	281	0	35	247	27	0	309	0	39	6	34	0	79	0	14	8	12	0	34	703
5:30 PM	0	7	179	37	0	223	0	36	286	29	0	351	1	35	8	44	0	88	0	19	18	13	0	50	712
Total	0	25	918	159	0	1102	1	134	1003	107	0	1245	1	134	34	152	0	321	0	71	56	45	0	172	2840
Approach %	0.0	2.3	83.3	14.4	-	-	0.1	10.8	80.6	8.6	-	-	0.3	41.7	10.6	47.4	-	-	0.0	41.3	32.6	26.2	-	-	-
Total %	0.0	0.9	32.3	5.6	-	38.8	0.0	4.7	35.3	3.8	-	43.8	0.0	4.7	1.2	5.4	-	11.3	0.0	2.5	2.0	1.6	-	6.1	-
PHF	0.000	0.694	0.863	0.795	-	0.886	0.250	0.905	0.877	0.922	-	0.887	0.250	0.859	0.850	0.864	-	0.912	0.000	0.845	0.636	0.865	-	0.827	0.985
Lights	0	25	904	159	-	1088	1	134	980	105	-	1220	1	134	34	152	-	321	0	71	56	42	-	169	2798
% Lights	-	100.0	98.5	100.0	-	98.7	100.0	100.0	97.7	98.1	-	98.0	100.0	100.0	100.0	100.0	-	100.0	-	100.0	100.0	93.3	-	98.3	98.5
Mediums	0	0	9	0	-	9	0	0	20	2	-	22	0	0	0	0	-	0	0	0	0	3	-	3	34
% Mediums	-	0.0	1.0	0.0	-	0.8	0.0	0.0	2.0	1.9	-	1.8	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	6.7	-	1.7	1.2
Articulated Trucks	0	0	5	0	-	5	0	0	3	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	8
% Articulated Trucks	-	0.0	0.5	0.0	-	0.5	0.0	0.0	0.3	0.0	-	0.2	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Imperial Traffic & Data Collection
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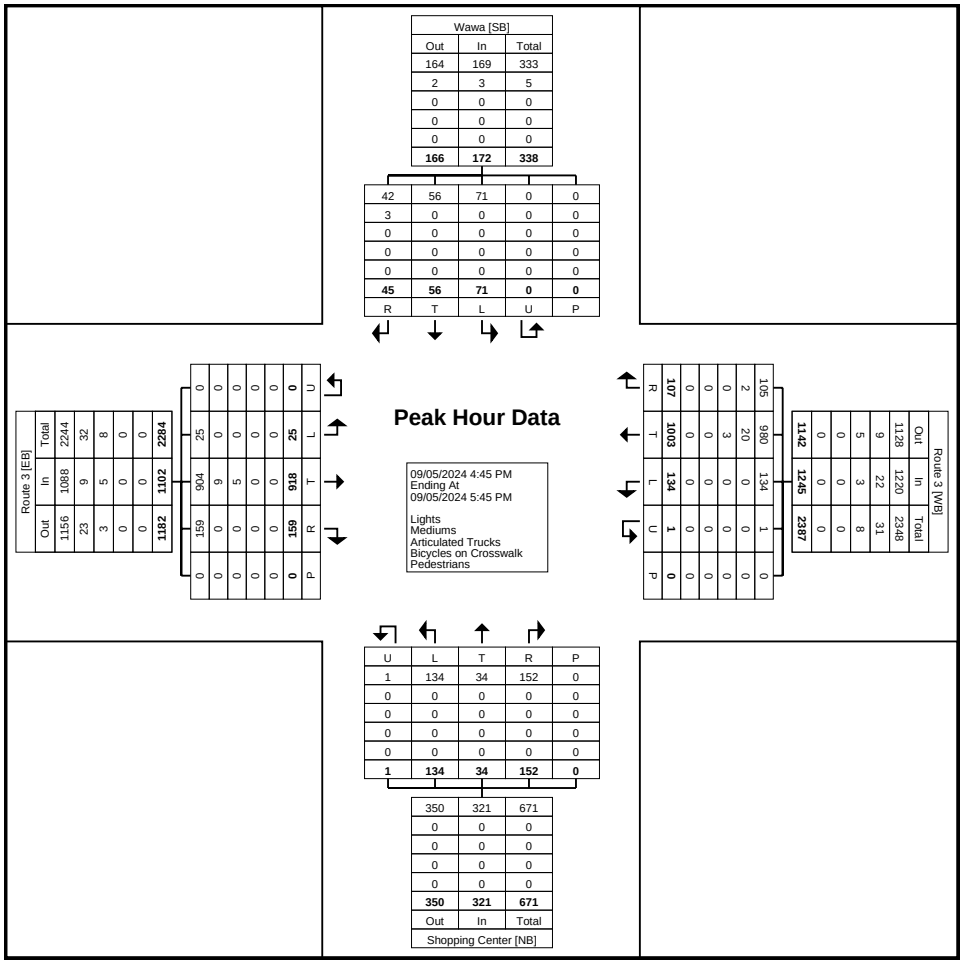

Turning Movement Peak Hour Data Plot (4:45 PM)

Imperial
TRAFFIC & DATA COLLECTION

Imperial Traffic & Data Collection
www.imperialtdc.com
1804 Haddonfield-Berlin Road
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Count Name: 1. 1502 West Chester Pike (Route 3)/Wawa Driveways
Site Code: 1
Start Date: 09/05/2024

Turning Movement Peak Hour Data (11:45 AM)

Start Time	Route 3 Eastbound						Route 3 Westbound						Shopping Center Northbound						Wawa Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
11:45 AM	1	6	212	51	0	270	0	33	166	30	0	229	0	22	2	34	0	58	0	18	8	15	0	41	598
12:00 PM	0	7	180	41	0	228	0	34	204	35	0	273	0	26	7	44	0	77	0	7	6	15	0	28	606
12:15 PM	0	5	185	33	0	223	0	33	186	35	0	254	0	34	8	48	0	90	0	13	4	24	0	41	608
12:30 PM	0	6	211	33	0	250	0	37	182	25	0	244	0	34	6	32	0	72	0	17	5	10	0	32	598
Total	1	24	788	158	0	971	0	137	738	125	0	1000	0	116	23	158	0	297	0	55	23	64	0	142	2410
Approach %	0.1	2.5	81.2	16.3	-	-	0.0	13.7	73.8	12.5	-	-	0.0	39.1	7.7	53.2	-	-	0.0	38.7	16.2	45.1	-	-	-
Total %	0.0	1.0	32.7	6.6	-	40.3	0.0	5.7	30.6	5.2	-	41.5	0.0	4.8	1.0	6.6	-	12.3	0.0	2.3	1.0	2.7	-	5.9	-
PHF	0.250	0.857	0.929	0.775	-	0.899	0.000	0.926	0.904	0.893	-	0.916	0.000	0.853	0.719	0.823	-	0.825	0.000	0.764	0.719	0.667	-	0.866	0.991
Lights	1	24	780	157	-	962	0	137	734	125	-	996	0	116	23	158	-	297	0	52	23	64	-	139	2394
% Lights	100.0	100.0	99.0	99.4	-	99.1	-	100.0	99.5	100.0	-	99.6	-	100.0	100.0	100.0	-	100.0	-	94.5	100.0	100.0	-	97.9	99.3
Mediums	0	0	7	1	-	8	0	0	3	0	-	3	0	0	0	0	-	0	0	2	0	0	-	2	13
% Mediums	0.0	0.0	0.9	0.6	-	0.8	-	0.0	0.4	0.0	-	0.3	-	0.0	0.0	0.0	-	0.0	-	3.6	0.0	0.0	-	1.4	0.5
Articulated Trucks	0	0	1	0	-	1	0	0	1	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	3
% Articulated Trucks	0.0	0.0	0.1	0.0	-	0.1	-	0.0	0.1	0.0	-	0.1	-	0.0	0.0	0.0	-	0.0	-	1.8	0.0	0.0	-	0.7	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Imperial
TRAFFIC & DATA COLLECTION

Imperial Traffic & Data Collection
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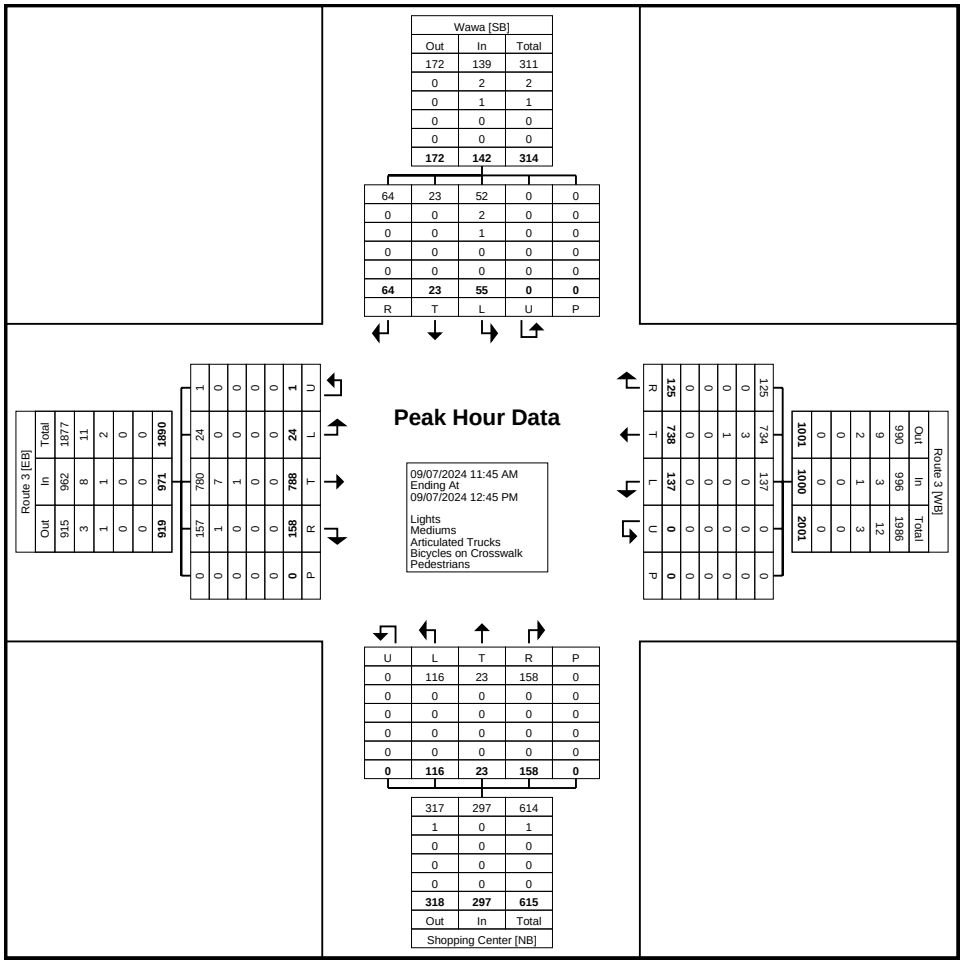
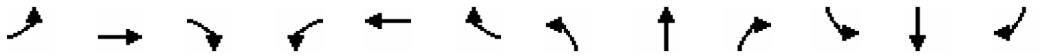
Project: Route 3 & WAWA
Municipality: West Chester, Chester County, PA
Setup: AH
Location: 39.966836, -75.526915

Count Name: 1. 1502 West Chester Pike (Route 3)/Wawa Driveways
Site Code: 1
Start Date: 09/05/2024



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

Appendix D
Capacity Analysis

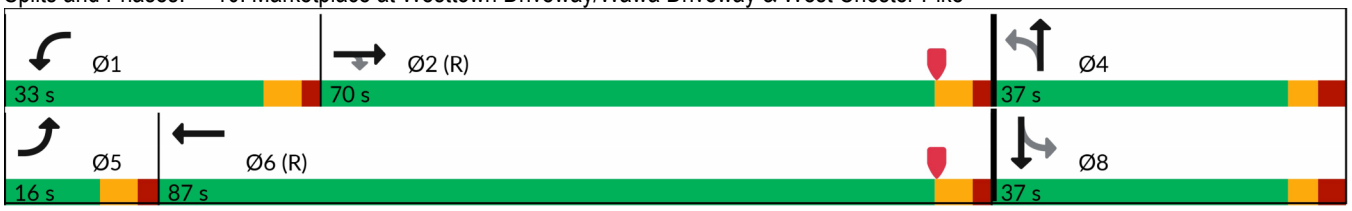


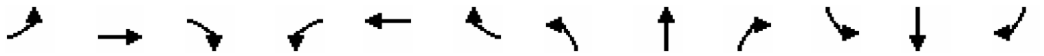
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	918	159	134	1003	107	134	34	152	71	56	45
Future Volume (vph)	25	918	159	134	1003	107	134	34	152	71	56	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	14	10	12	12	13	13	12	11	14	14
Grade (%)		1%			1%			4%			-1%	
Storage Length (ft)	200		350	300		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	100			55			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.986			0.877			0.934	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3225	1624	1588	3289	0	1732	1599	0	1661	1748	0
Flt Permitted	0.950			0.950			0.617			0.357		
Satd. Flow (perm)	1701	3225	1624	1588	3289	0	1125	1599	0	624	1748	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			161		14			151			26	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1190			1057			544			469	
Travel Time (s)		18.0			16.0			14.8			12.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	2%	0%	0%	2%	2%	0%	0%	0%	0%	0%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	927	161	135	1121	0	135	188	0	72	102	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2				4			8		
Detector Phase	5	2	2	1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	16.0	16.0	11.0	16.0		11.0	11.0		11.0	11.0	
Total Split (s)	16.0	70.0	70.0	33.0	87.0		37.0	37.0		37.0	37.0	
Total Split (%)	11.4%	50.0%	50.0%	23.6%	62.1%		26.4%	26.4%		26.4%	26.4%	
Maximum Green (s)	10.0	64.0	64.0	27.0	81.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Act Effct Green (s)	7.1	88.2	88.2	16.4	102.0		20.3	20.3		20.3	20.3	
Actuated g/C Ratio	0.05	0.63	0.63	0.12	0.73		0.15	0.15		0.15	0.15	
v/c Ratio	0.29	0.46	0.15	0.73	0.47		0.83	0.52		0.80	0.37	
Control Delay (s/veh)	72.2	16.0	2.5	80.4	10.2		93.6	17.8		108.3	41.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	72.2	16.0	2.5	80.4	10.2		93.6	17.8		108.3	41.9	
LOS	E	B	A	F	B		F	B		F	D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay (s/veh)		15.3			17.8			49.5			69.4	
Approach LOS		B			B			D			E	
Queue Length 50th (ft)	22	218	0	120	220		121	30		64	63	
Queue Length 95th (ft)	54	354	35	185	349		187	99		118	112	
Internal Link Dist (ft)		1110			977			464			389	
Turn Bay Length (ft)	200		350	300								
Base Capacity (vph)	133	2032	1082	317	2399		257	481		142	419	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.19	0.46	0.15	0.43	0.47		0.53	0.39		0.51	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 127 (91%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay (s/veh): 23.5		Intersection LOS: C	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 10: Marketplace at Westtown Driveway/Wawa Driveway & West Chester Pike

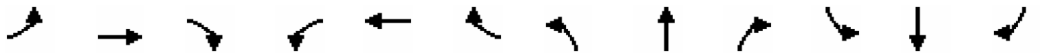




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	918	159	134	1003	107	134	34	152	71	56	45
Future Volume (veh/h)	25	918	159	134	1003	107	134	34	152	71	56	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1794	1766	1866	1794	1766	1766	1779	1779	1711	1837	1911	1807
Adj Flow Rate, veh/h	25	927	161	135	1013	108	135	34	154	72	57	45
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	2	0	0	2	2	0	0	0	0	0	7
Cap, veh/h	50	2003	944	174	2049	218	239	54	246	153	192	151
Arrive On Green	0.03	0.60	0.60	0.10	0.67	0.66	0.19	0.19	0.18	0.19	0.19	0.18
Sat Flow, veh/h	1709	3356	1582	1709	3060	326	1298	280	1270	1239	989	781
Grp Volume(v), veh/h	25	927	161	135	555	566	135	0	188	72	0	102
Grp Sat Flow(s),veh/h/ln	1709	1678	1582	1709	1678	1708	1298	0	1551	1239	0	1770
Q Serve(g_s), s	2.0	21.5	6.4	10.8	22.9	23.1	13.9	0.0	15.7	7.9	0.0	6.9
Cycle Q Clear(g_c), s	2.0	21.5	6.4	10.8	22.9	23.1	20.8	0.0	15.7	23.6	0.0	6.9
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.82	1.00		0.44
Lane Grp Cap(c), veh/h	50	2003	944	174	1123	1143	239	0	301	153	0	343
V/C Ratio(X)	0.50	0.46	0.17	0.78	0.49	0.49	0.57	0.00	0.63	0.47	0.00	0.30
Avail Cap(c_a), veh/h	134	2003	944	342	1123	1143	284	0	354	196	0	405
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.9	15.7	12.7	61.3	11.4	11.5	57.2	0.0	52.5	62.6	0.0	48.7
Incr Delay (d2), s/veh	2.8	0.8	0.4	2.8	1.6	1.5	0.8	0.0	1.3	0.8	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	12.6	4.1	8.3	12.9	13.2	8.2	0.0	10.5	4.6	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.7	16.5	13.1	64.1	13.0	13.1	58.0	0.0	53.9	63.4	0.0	48.8
LnGrp LOS	E	B	B	E	B	B	E		D	E		D
Approach Vol, veh/h		1113			1256			323			174	
Approach Delay, s/veh		17.2			18.5			55.6			54.9	
Approach LOS		B			B			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	19.3	88.6		32.2	9.1	98.7		32.2				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	27.0	64.0		31.0	10.0	81.0		31.0				
Max Q Clear Time (g_c+I1), s	13.3	24.0		23.3	4.5	25.6		26.1				
Green Ext Time (p_c), s	0.1	0.9		0.2	0.0	0.6		0.1				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			24.4									
HCM 6th LOS			C									

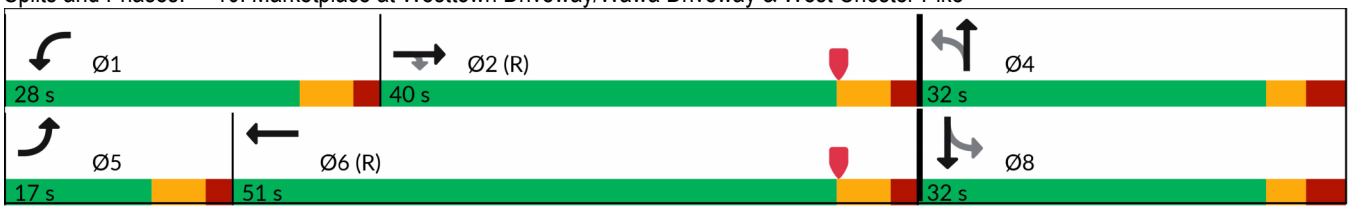


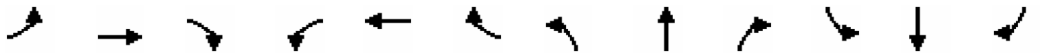
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	788	158	137	738	125	116	23	158	55	23	64
Future Volume (vph)	24	788	158	137	738	125	116	23	158	55	23	64
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	12	12	12	12	12	11	14	14
Grade (%)		1%			1%			4%			-1%	
Storage Length (ft)	200		350	300		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	100			55			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.978			0.869			0.889	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3257	1507	1701	3300	0	1676	1533	0	1582	1715	0
Flt Permitted	0.950			0.950			0.700			0.427		
Satd. Flow (perm)	1701	3257	1507	1701	3300	0	1235	1533	0	711	1715	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164		25			160			65	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1190			1057			544			469	
Travel Time (s)		18.0			16.0			14.8			12.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	0%	0%	0%	5%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	796	160	138	871	0	117	183	0	56	88	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2				4			8		
Detector Phase	5	2	2	1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	33.0	33.0	11.0	33.0		11.0	11.0		11.0	11.0	
Total Split (s)	17.0	40.0	40.0	28.0	51.0		32.0	32.0		32.0	32.0	
Total Split (%)	17.0%	40.0%	40.0%	28.0%	51.0%		32.0%	32.0%		32.0%	32.0%	
Maximum Green (s)	11.0	34.0	34.0	22.0	45.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Act Effct Green (s)	6.6	58.3	58.3	12.7	70.9		14.1	14.1		14.1	14.1	
Actuated g/C Ratio	0.07	0.58	0.58	0.13	0.71		0.14	0.14		0.14	0.14	
v/c Ratio	0.21	0.42	0.17	0.64	0.37		0.68	0.52		0.56	0.30	
Control Delay (s/veh)	48.5	14.0	2.7	54.6	7.8		58.7	13.7		59.7	16.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	48.5	14.0	2.7	54.6	7.8		58.7	13.7		59.7	16.0	
LOS	D	B	A	D	A		E	B		E	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay (s/veh)		13.0			14.2			31.2			33.0	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	15	137	0	85	75		72	13		34	13	
Queue Length 95th (ft)	40	240	33	140	207		123	70		71	53	
Internal Link Dist (ft)		1110			977			464			389	
Turn Bay Length (ft)	200		350	300								
Base Capacity (vph)	204	1897	946	391	2347		333	530		191	510	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.12	0.42	0.17	0.35	0.37		0.35	0.35		0.29	0.17	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 48 (48%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay (s/veh): 16.9		Intersection LOS: B	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 10: Marketplace at Westtown Driveway/Wawa Driveway & West Chester Pike





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	788	158	137	738	125	116	23	158	55	23	64
Future Volume (veh/h)	24	788	158	137	738	125	116	23	158	55	23	64
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1794	1780	1780	1794	1780	1794	1711	1711	1711	1766	1911	1911
Adj Flow Rate, veh/h	24	796	160	138	745	126	117	23	160	56	23	65
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	1	1	0	1	0	0	0	0	5	0	0
Cap, veh/h	59	1837	819	190	1795	303	262	36	253	169	86	244
Arrive On Green	0.03	0.54	0.54	0.11	0.62	0.60	0.20	0.20	0.18	0.20	0.20	0.18
Sat Flow, veh/h	1709	3383	1509	1709	2894	489	1264	186	1292	1197	441	1246
Grp Volume(v), veh/h	24	796	160	138	435	436	117	0	183	56	0	88
Grp Sat Flow(s),veh/h/ln	1709	1691	1509	1709	1691	1692	1264	0	1478	1197	0	1687
Q Serve(g_s), s	1.4	14.1	5.4	7.8	13.2	13.3	8.7	0.0	11.5	4.5	0.0	4.5
Cycle Q Clear(g_c), s	1.4	14.1	5.4	7.8	13.2	13.3	13.2	0.0	11.5	16.0	0.0	4.5
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.87	1.00		0.74
Lane Grp Cap(c), veh/h	59	1837	819	190	1049	1049	262	0	289	169	0	330
V/C Ratio(X)	0.41	0.43	0.20	0.73	0.41	0.42	0.45	0.00	0.63	0.33	0.00	0.27
Avail Cap(c_a), veh/h	205	1837	819	393	1049	1049	356	0	399	258	0	455
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.3	13.6	11.7	43.0	9.7	9.9	39.8	0.0	37.8	44.3	0.0	34.8
Incr Delay (d2), s/veh	1.7	0.7	0.5	2.0	1.2	1.2	0.4	0.0	0.9	0.4	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	8.6	3.2	5.9	7.9	8.0	4.9	0.0	7.7	2.5	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.0	14.4	12.2	44.9	10.9	11.1	40.2	0.0	38.6	44.7	0.0	35.0
LnGrp LOS	D	B	B	D	B	B	D		D	D		C
Approach Vol, veh/h		980			1009			300			144	
Approach Delay, s/veh		14.9			15.7			39.2			38.8	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.1	59.3		24.6	8.4	67.0		24.6				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	22.0	34.0		26.0	11.0	45.0		26.0				
Max Q Clear Time (g_c+I1), s	10.3	16.6		15.7	3.9	15.8		18.5				
Green Ext Time (p_c), s	0.1	0.7		0.2	0.0	0.4		0.1				

Intersection Summary			
HCM 6th Ctrl Delay, s/veh		19.6	
HCM 6th LOS		B	

Notes

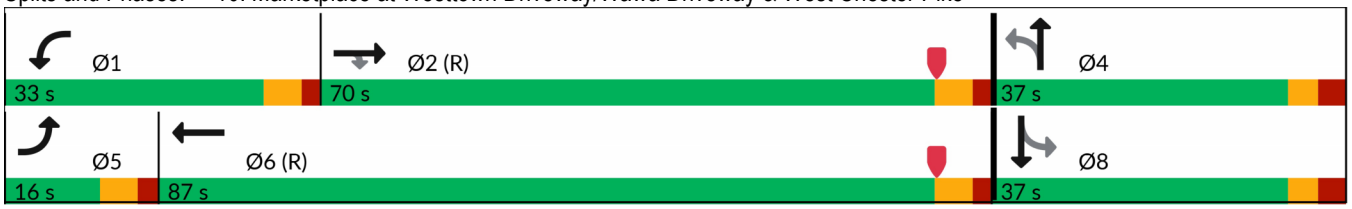
User approved pedestrian interval to be less than phase max green.

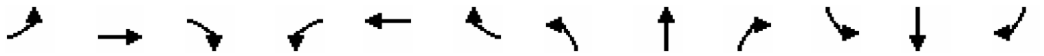
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	926	160	135	1012	108	135	34	153	72	56	45
Future Volume (vph)	25	926	160	135	1012	108	135	34	153	72	56	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	14	10	12	12	13	13	12	11	14	14
Grade (%)		1%			1%			4%			-1%	
Storage Length (ft)	200		350	300		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	100			55			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.986			0.877			0.934	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3225	1624	1588	3289	0	1732	1599	0	1661	1748	0
Flt Permitted	0.950			0.950			0.617			0.356		
Satd. Flow (perm)	1701	3225	1624	1588	3289	0	1125	1599	0	623	1748	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			162		14			152			26	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1190			1057			544			469	
Travel Time (s)		18.0			16.0			14.8			12.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	2%	0%	0%	2%	2%	0%	0%	0%	0%	0%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	935	162	136	1131	0	136	189	0	73	102	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2				4			8		
Detector Phase	5	2	2	1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	16.0	16.0	11.0	16.0		11.0	11.0		11.0	11.0	
Total Split (s)	16.0	70.0	70.0	33.0	87.0		37.0	37.0		37.0	37.0	
Total Split (%)	11.4%	50.0%	50.0%	23.6%	62.1%		26.4%	26.4%		26.4%	26.4%	
Maximum Green (s)	10.0	64.0	64.0	27.0	81.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Act Effct Green (s)	7.1	88.1	88.1	16.5	101.9		20.4	20.4		20.4	20.4	
Actuated g/C Ratio	0.05	0.63	0.63	0.12	0.73		0.15	0.15		0.15	0.15	
v/c Ratio	0.29	0.46	0.15	0.73	0.47		0.83	0.52		0.81	0.37	
Control Delay (s/veh)	72.2	16.2	2.6	80.5	10.3		93.6	17.7		109.0	41.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	72.2	16.2	2.6	80.5	10.3		93.6	17.7		109.0	41.8	
LOS	E	B	A	F	B		F	B		F	D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay (s/veh)		15.5			17.9			49.4			69.9	
Approach LOS		B			B			D			E	
Queue Length 50th (ft)	22	221	0	121	224		122	30		65	63	
Queue Length 95th (ft)	54	360	35	186	355		188	100		#120	112	
Internal Link Dist (ft)		1110			977			464			389	
Turn Bay Length (ft)	200		350	300								
Base Capacity (vph)	133	2028	1081	317	2397		257	482		142	419	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.19	0.46	0.15	0.43	0.47		0.53	0.39		0.51	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 127 (91%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay (s/veh): 23.6		Intersection LOS: C	
Intersection Capacity Utilization 70.0%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 10: Marketplace at Westtown Driveway/Wawa Driveway & West Chester Pike

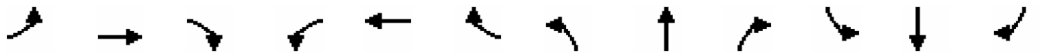




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	926	160	135	1012	108	135	34	153	72	56	45
Future Volume (veh/h)	25	926	160	135	1012	108	135	34	153	72	56	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1794	1766	1866	1794	1766	1766	1779	1779	1711	1837	1911	1807
Adj Flow Rate, veh/h	25	935	162	136	1022	109	136	34	155	73	57	45
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	2	0	0	2	2	0	0	0	0	0	7
Cap, veh/h	50	1997	941	175	2044	218	241	54	248	154	193	153
Arrive On Green	0.03	0.60	0.60	0.10	0.67	0.65	0.20	0.20	0.18	0.20	0.20	0.18
Sat Flow, veh/h	1709	3356	1582	1709	3060	326	1298	279	1271	1238	989	781
Grp Volume(v), veh/h	25	935	162	136	560	571	136	0	189	73	0	102
Grp Sat Flow(s),veh/h/ln	1709	1678	1582	1709	1678	1708	1298	0	1550	1238	0	1770
Q Serve(g_s), s	2.0	21.9	6.5	10.9	23.3	23.5	14.0	0.0	15.7	8.0	0.0	6.9
Cycle Q Clear(g_c), s	2.0	21.9	6.5	10.9	23.3	23.5	20.9	0.0	15.7	23.8	0.0	6.9
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.82	1.00		0.44
Lane Grp Cap(c), veh/h	50	1997	941	175	1121	1141	241	0	303	154	0	346
V/C Ratio(X)	0.50	0.47	0.17	0.78	0.50	0.50	0.57	0.00	0.62	0.47	0.00	0.30
Avail Cap(c_a), veh/h	134	1997	941	342	1121	1141	284	0	354	195	0	405
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.9	15.9	12.8	61.3	11.6	11.7	57.1	0.0	52.4	62.6	0.0	48.5
Incr Delay (d2), s/veh	2.8	0.8	0.4	2.8	1.6	1.6	0.8	0.0	1.4	0.8	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	12.8	4.1	8.3	13.1	13.4	8.2	0.0	10.5	4.7	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.7	16.7	13.2	64.0	13.2	13.3	57.8	0.0	53.8	63.4	0.0	48.7
LnGrp LOS	E	B	B	E	B	B	E		D	E		D
Approach Vol, veh/h		1122			1267			325			175	
Approach Delay, s/veh		17.4			18.7			55.5			54.8	
Approach LOS		B			B			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	19.4	88.3		32.3	9.1	98.5		32.3				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	27.0	64.0		31.0	10.0	81.0		31.0				
Max Q Clear Time (g_c+I1), s	13.4	24.4		23.4	4.5	26.0		26.3				
Green Ext Time (p_c), s	0.1	0.9		0.2	0.0	0.6		0.1				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			24.5									
HCM 6th LOS			C									

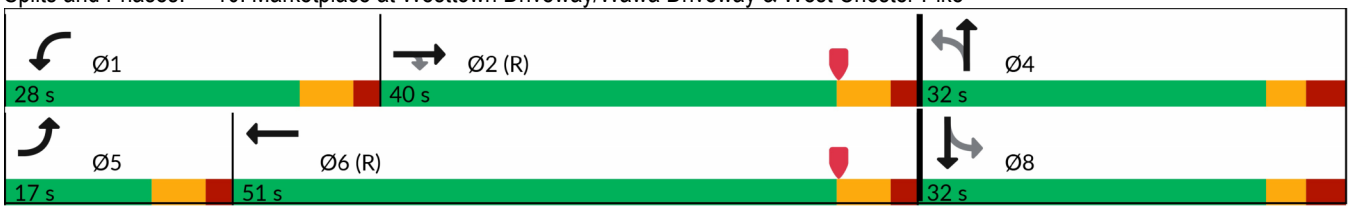


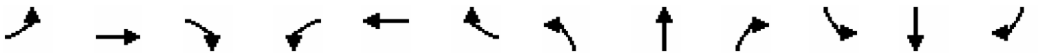
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	795	159	138	745	126	117	23	159	55	23	65
Future Volume (vph)	24	795	159	138	745	126	117	23	159	55	23	65
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	12	12	12	12	12	11	14	14
Grade (%)		1%			1%			4%			-1%	
Storage Length (ft)	200		350	300		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	100			55			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.978			0.869			0.889	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3257	1507	1701	3300	0	1676	1533	0	1582	1715	0
Flt Permitted	0.950			0.950			0.699			0.426		
Satd. Flow (perm)	1701	3257	1507	1701	3300	0	1233	1533	0	709	1715	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164		25			161			66	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1190			1057			544			469	
Travel Time (s)		18.0			16.0			14.8			12.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	0%	0%	0%	5%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	803	161	139	880	0	118	184	0	56	89	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2				4			8		
Detector Phase	5	2	2	1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	33.0	33.0	11.0	33.0		11.0	11.0		11.0	11.0	
Total Split (s)	17.0	40.0	40.0	28.0	51.0		32.0	32.0		32.0	32.0	
Total Split (%)	17.0%	40.0%	40.0%	28.0%	51.0%		32.0%	32.0%		32.0%	32.0%	
Maximum Green (s)	11.0	34.0	34.0	22.0	45.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Act Effct Green (s)	6.6	58.1	58.1	12.7	70.8		14.2	14.2		14.2	14.2	
Actuated g/C Ratio	0.07	0.58	0.58	0.13	0.71		0.14	0.14		0.14	0.14	
v/c Ratio	0.21	0.42	0.17	0.64	0.38		0.68	0.52		0.56	0.30	
Control Delay (s/veh)	48.5	14.1	2.8	54.5	7.9		58.6	13.6		59.5	15.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	48.5	14.1	2.8	54.5	7.9		58.6	13.6		59.5	15.8	
LOS	D	B	A	D	A		E	B		E	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay (s/veh)		13.1			14.2			31.2			32.7	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	15	140	0	86	76		72	13		34	13	
Queue Length 95th (ft)	40	245	33	140	211		123	70		71	53	
Internal Link Dist (ft)		1110			977			464			389	
Turn Bay Length (ft)	200		350	300								
Base Capacity (vph)	204	1892	944	391	2344		332	531		191	511	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.12	0.42	0.17	0.36	0.38		0.36	0.35		0.29	0.17	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 48 (48%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay (s/veh): 17.0		Intersection LOS: B	
Intersection Capacity Utilization 63.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 10: Marketplace at Westtown Driveway/Wawa Driveway & West Chester Pike





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	795	159	138	745	126	117	23	159	55	23	65
Future Volume (veh/h)	24	795	159	138	745	126	117	23	159	55	23	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1794	1780	1780	1794	1780	1794	1711	1711	1711	1766	1911	1911
Adj Flow Rate, veh/h	24	803	161	139	753	127	118	23	161	56	23	66
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	1	1	0	1	0	0	0	0	5	0	0
Cap, veh/h	59	1833	818	191	1794	302	262	36	254	169	85	245
Arrive On Green	0.03	0.54	0.54	0.11	0.62	0.60	0.20	0.20	0.18	0.20	0.20	0.18
Sat Flow, veh/h	1709	3383	1509	1709	2896	488	1263	185	1293	1196	436	1250
Grp Volume(v), veh/h	24	803	161	139	440	440	118	0	184	56	0	89
Grp Sat Flow(s),veh/h/ln	1709	1691	1509	1709	1691	1692	1263	0	1478	1196	0	1686
Q Serve(g_s), s	1.4	14.3	5.5	7.9	13.4	13.5	8.8	0.0	11.5	4.5	0.0	4.5
Cycle Q Clear(g_c), s	1.4	14.3	5.5	7.9	13.4	13.5	13.3	0.0	11.5	16.0	0.0	4.5
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.88	1.00		0.74
Lane Grp Cap(c), veh/h	59	1833	818	191	1048	1048	262	0	290	169	0	331
V/C Ratio(X)	0.41	0.44	0.20	0.73	0.42	0.42	0.45	0.00	0.63	0.33	0.00	0.27
Avail Cap(c_a), veh/h	205	1833	818	393	1048	1048	356	0	399	257	0	455
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.3	13.8	11.8	42.9	9.8	10.0	39.8	0.0	37.7	44.3	0.0	34.8
Incr Delay (d2), s/veh	1.7	0.8	0.5	2.0	1.2	1.2	0.4	0.0	0.9	0.4	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	8.7	3.2	5.9	8.0	8.1	5.0	0.0	7.7	2.5	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.0	14.5	12.3	44.9	11.0	11.2	40.2	0.0	38.6	44.7	0.0	34.9
LnGrp LOS	D	B	B	D	B	B	D		D	D		C
Approach Vol, veh/h		988			1019			302			145	
Approach Delay, s/veh		15.0			15.7			39.2			38.7	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.2	59.2		24.6	8.4	66.9		24.6				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	22.0	34.0		26.0	11.0	45.0		26.0				
Max Q Clear Time (g_c+I1), s	10.4	16.8		15.8	3.9	16.0		18.5				
Green Ext Time (p_c), s	0.1	0.8		0.2	0.0	0.4		0.1				

Intersection Summary			
HCM 6th Ctrl Delay, s/veh		19.7	
HCM 6th LOS		B	

Notes

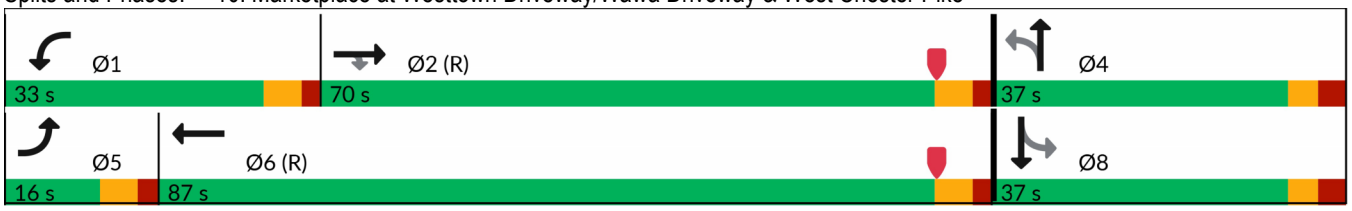
User approved pedestrian interval to be less than phase max green.

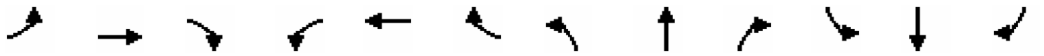
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	920	178	152	1006	108	152	34	170	72	56	45
Future Volume (vph)	25	920	178	152	1006	108	152	34	170	72	56	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	14	10	12	12	13	13	12	11	14	14
Grade (%)		1%			1%			4%			-1%	
Storage Length (ft)	200		350	300		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	100			55			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.985			0.875			0.934	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3225	1624	1588	3286	0	1732	1595	0	1661	1748	0
Flt Permitted	0.950			0.950			0.628			0.344		
Satd. Flow (perm)	1701	3225	1624	1588	3286	0	1145	1595	0	602	1748	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			180		14			169			26	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1190			1057			544			469	
Travel Time (s)		18.0			16.0			14.8			12.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	2%	0%	0%	2%	2%	0%	0%	0%	0%	0%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	929	180	154	1125	0	154	206	0	73	102	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2				4			8		
Detector Phase	5	2	2	1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	16.0	16.0	11.0	16.0		11.0	11.0		11.0	11.0	
Total Split (s)	16.0	70.0	70.0	33.0	87.0		37.0	37.0		37.0	37.0	
Total Split (%)	11.4%	50.0%	50.0%	23.6%	62.1%		26.4%	26.4%		26.4%	26.4%	
Maximum Green (s)	10.0	64.0	64.0	27.0	81.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Act Effct Green (s)	7.1	84.4	84.4	18.1	99.8		22.5	22.5		22.5	22.5	
Actuated g/C Ratio	0.05	0.60	0.60	0.13	0.71		0.16	0.16		0.16	0.16	
v/c Ratio	0.29	0.48	0.17	0.75	0.48		0.84	0.52		0.76	0.34	
Control Delay (s/veh)	72.2	18.5	2.8	80.1	11.3		90.6	15.9		97.1	39.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	72.2	18.5	2.8	80.1	11.3		90.6	15.9		97.1	39.6	
LOS	E	B	A	F	B		F	B		F	D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay (s/veh)		17.2			19.6			47.9			63.6	
Approach LOS		B			B			D			E	
Queue Length 50th (ft)	22	237	0	137	235		138	29		64	61	
Queue Length 95th (ft)	54	383	40	205	371		207	99		118	110	
Internal Link Dist (ft)		1110			977			464			389	
Turn Bay Length (ft)	200		350	300								
Base Capacity (vph)	133	1944	1050	317	2346		261	494		137	419	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.19	0.48	0.17	0.49	0.48		0.59	0.42		0.53	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 127 (91%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 24.7		Intersection LOS: C	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 10: Marketplace at Westtown Driveway/Wawa Driveway & West Chester Pike





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	920	178	152	1006	108	152	34	170	72	56	45
Future Volume (veh/h)	25	920	178	152	1006	108	152	34	170	72	56	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1794	1766	1866	1794	1766	1766	1779	1779	1711	1837	1911	1807
Adj Flow Rate, veh/h	25	929	180	154	1016	109	154	34	172	73	57	45
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	2	0	0	2	2	0	0	0	0	0	7
Cap, veh/h	50	1925	907	193	2009	215	256	53	267	153	204	161
Arrive On Green	0.03	0.57	0.57	0.11	0.66	0.64	0.21	0.21	0.19	0.21	0.21	0.19
Sat Flow, veh/h	1709	3356	1582	1709	3057	328	1298	255	1291	1219	989	781
Grp Volume(v), veh/h	25	929	180	154	557	568	154	0	206	73	0	102
Grp Sat Flow(s),veh/h/ln	1709	1678	1582	1709	1678	1707	1298	0	1547	1219	0	1770
Q Serve(g_s), s	2.0	22.9	7.7	12.3	23.9	24.0	15.9	0.0	17.2	8.2	0.0	6.8
Cycle Q Clear(g_c), s	2.0	22.9	7.7	12.3	23.9	24.0	22.7	0.0	17.2	25.3	0.0	6.8
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.83	1.00		0.44
Lane Grp Cap(c), veh/h	50	1925	907	193	1103	1122	256	0	319	153	0	365
V/C Ratio(X)	0.50	0.48	0.20	0.80	0.51	0.51	0.60	0.00	0.65	0.48	0.00	0.28
Avail Cap(c_a), veh/h	134	1925	907	342	1103	1122	285	0	354	181	0	405
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.9	17.6	14.4	60.5	12.3	12.5	56.4	0.0	51.7	62.5	0.0	47.2
Incr Delay (d2), s/veh	2.8	0.9	0.5	2.8	1.7	1.6	1.6	0.0	2.3	0.8	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	13.4	5.0	9.2	13.5	13.8	9.2	0.0	11.3	4.7	0.0	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.7	18.5	14.9	63.4	14.0	14.1	58.0	0.0	54.0	63.4	0.0	47.3
LnGrp LOS	E	B	B	E	B	B	E		D	E		D
Approach Vol, veh/h		1134			1279			360			175	
Approach Delay, s/veh		19.0			20.0			55.7			54.0	
Approach LOS		B			B			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.8	85.3		33.9	9.1	97.0		33.9				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	27.0	64.0		31.0	10.0	81.0		31.0				
Max Q Clear Time (g_c+I1), s	14.8	25.4		25.2	4.5	26.5		27.8				
Green Ext Time (p_c), s	0.1	0.9		0.2	0.0	0.6		0.0				

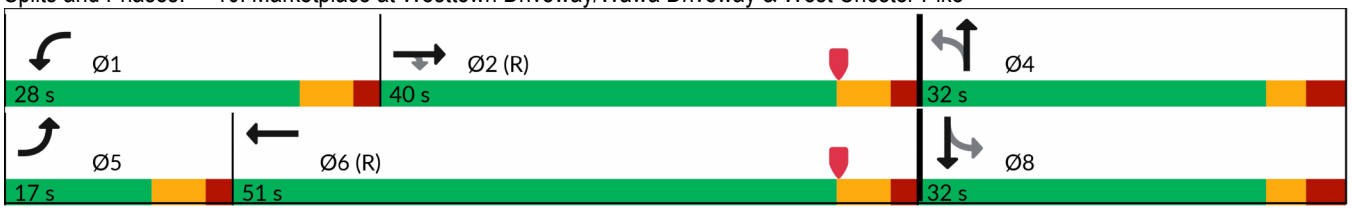
Intersection Summary			
HCM 6th Ctrl Delay, s/veh		26.0	
HCM 6th LOS		C	

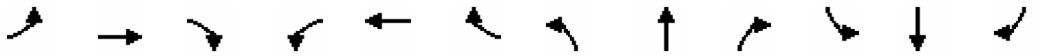
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	786	181	160	736	126	139	23	180	55	23	65
Future Volume (vph)	24	786	181	160	736	126	139	23	180	55	23	65
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	12	12	12	12	12	11	14	14
Grade (%)		1%			1%			4%			-1%	
Storage Length (ft)	200		350	300		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	100			55			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.978			0.867			0.889	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3257	1507	1701	3300	0	1676	1529	0	1582	1715	0
Flt Permitted	0.950			0.950			0.699			0.399		
Satd. Flow (perm)	1701	3257	1507	1701	3300	0	1233	1529	0	665	1715	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			183		26			182			66	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1190			1057			544			469	
Travel Time (s)		18.0			16.0			14.8			12.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	0%	0%	0%	5%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	794	183	162	870	0	140	205	0	56	89	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2				4			8		
Detector Phase	5	2	2	1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	33.0	33.0	11.0	33.0		11.0	11.0		11.0	11.0	
Total Split (s)	17.0	40.0	40.0	28.0	51.0		32.0	32.0		32.0	32.0	
Total Split (%)	17.0%	40.0%	40.0%	28.0%	51.0%		32.0%	32.0%		32.0%	32.0%	
Maximum Green (s)	11.0	34.0	34.0	22.0	45.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Act Effct Green (s)	6.6	55.0	55.0	14.1	69.1		15.9	15.9		15.9	15.9	
Actuated g/C Ratio	0.07	0.55	0.55	0.14	0.69		0.16	0.16		0.16	0.16	
v/c Ratio	0.21	0.44	0.20	0.68	0.38		0.71	0.52		0.53	0.27	
Control Delay (s/veh)	48.5	16.3	3.2	54.5	8.7		58.5	12.1		54.9	14.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	48.5	16.3	3.2	54.5	8.7		58.5	12.1		54.9	14.6	
LOS	D	B	A	D	A		E	B		D	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay (s/veh)		14.6			15.9			30.9			30.2	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	15	150	0	99	83		86	13		33	13	
Queue Length 95th (ft)	40	261	40	158	220		140	70		70	51	
Internal Link Dist (ft)		1110			977			464			389	
Turn Bay Length (ft)	200		350	300								
Base Capacity (vph)	204	1791	910	391	2287		332	545		179	511	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.12	0.44	0.20	0.41	0.38		0.42	0.38		0.31	0.17	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 48 (48%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay (s/veh): 18.3		Intersection LOS: B	
Intersection Capacity Utilization 66.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 10: Marketplace at Westtown Driveway/Wawa Driveway & West Chester Pike





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	786	181	160	736	126	139	23	180	55	23	65
Future Volume (veh/h)	24	786	181	160	736	126	139	23	180	55	23	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1794	1780	1780	1794	1780	1794	1711	1711	1711	1766	1911	1911
Adj Flow Rate, veh/h	24	794	183	162	743	127	140	23	182	56	23	66
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	1	1	0	1	0	0	0	0	5	0	0
Cap, veh/h	59	1738	775	215	1749	299	281	35	275	168	92	263
Arrive On Green	0.03	0.51	0.51	0.13	0.61	0.59	0.21	0.21	0.19	0.21	0.21	0.19
Sat Flow, veh/h	1709	3383	1509	1709	2889	494	1263	165	1310	1173	436	1250
Grp Volume(v), veh/h	24	794	183	162	435	435	140	0	205	56	0	89
Grp Sat Flow(s),veh/h/ln	1709	1691	1509	1709	1691	1692	1263	0	1475	1173	0	1686
Q Serve(g_s), s	1.4	14.9	6.7	9.2	13.7	13.8	10.4	0.0	12.9	4.6	0.0	4.5
Cycle Q Clear(g_c), s	1.4	14.9	6.7	9.2	13.7	13.8	14.9	0.0	12.9	17.5	0.0	4.5
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.89	1.00		0.74
Lane Grp Cap(c), veh/h	59	1738	775	215	1024	1024	281	0	310	168	0	354
V/C Ratio(X)	0.41	0.46	0.24	0.75	0.42	0.42	0.50	0.00	0.66	0.33	0.00	0.25
Avail Cap(c_a), veh/h	205	1738	775	393	1024	1024	357	0	398	238	0	455
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.3	15.4	13.4	42.2	10.5	10.7	39.2	0.0	37.1	44.3	0.0	33.6
Incr Delay (d2), s/veh	1.7	0.9	0.7	2.0	1.3	1.3	0.5	0.0	1.2	0.4	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	9.2	4.0	6.9	8.2	8.4	5.9	0.0	8.4	2.5	0.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.0	16.3	14.2	44.2	11.8	12.0	39.7	0.0	38.3	44.7	0.0	33.7
LnGrp LOS	D	B	B	D	B	B	D		D	D		C
Approach Vol, veh/h		1001			1032			345			145	
Approach Delay, s/veh		16.7			16.9			38.8			38.0	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.6	56.4		26.0	8.4	65.5		26.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	22.0	34.0		26.0	11.0	45.0		26.0				
Max Q Clear Time (g_c+I1), s	11.7	17.4		17.4	3.9	16.3		20.0				
Green Ext Time (p_c), s	0.1	0.8		0.2	0.0	0.4		0.1				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			21.0									
HCM 6th LOS			C									

Notes

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

Appendix E
Trip Generation Worksheets

Trip Generation Worksheet, *ITE Trip Generation 11th Edition*

DYNAMIC TRAFFIC

Land Use Code: 912 Drive-in Bank
Setting: General Urban/Suburban
Size: 3.294 KSF
Prepared By: SHC
Date: 9/10/2024
Job #: 1478 99-191T

ITE Study Information

Peak Hour	# Studies	Avg. Variable	Distribution In	Distribution Out
Weekday	19	6	50%	50%
AM Peak Street Hour	44	5	58%	42%
PM Peak Street Hour	114	4	50%	50%
AM Generator	51	5	53%	47%
PM Generator	57	5	50%	50%
Saturday	5	3	50%	50%
Saturday Generator	41	4	51%	49%
Sunday	5	3	50%	50%
Sunday Generator	5	3	0%	0%

Trip Generation using ITE Average Rates

Peak Hour	Rate Min.	Rate Avg.	Rate Max.	Rate S.D.	Trip Generation In	Trip Generation Out	Trip Generation Total	
Weekday	32.67	100.35	408.42	66.62	166	165	331	x
AM Peak Street Hour	2.12	9.95	29.47	6.00	19	14	33	x
PM Peak Street Hour	3.04	21.01	109.91	15.13	35	34	69	x
AM Generator	4.18	14.78	47.03	9.60	26	23	49	x
PM Generator	4.54	20.92	68.50	13.57	35	34	69	x
Saturday	42.46	86.48	171.78	38.92	143	142	285	x
Saturday Generator	7.18	26.35	107.00	15.32	44	43	87	x
Sunday	23.41	31.96	69.31	15.99	53	52	105	x
Sunday Generator	3.68	4.79	7.43	1.21	-	-	16	x

Trip Generation using ITE Equations

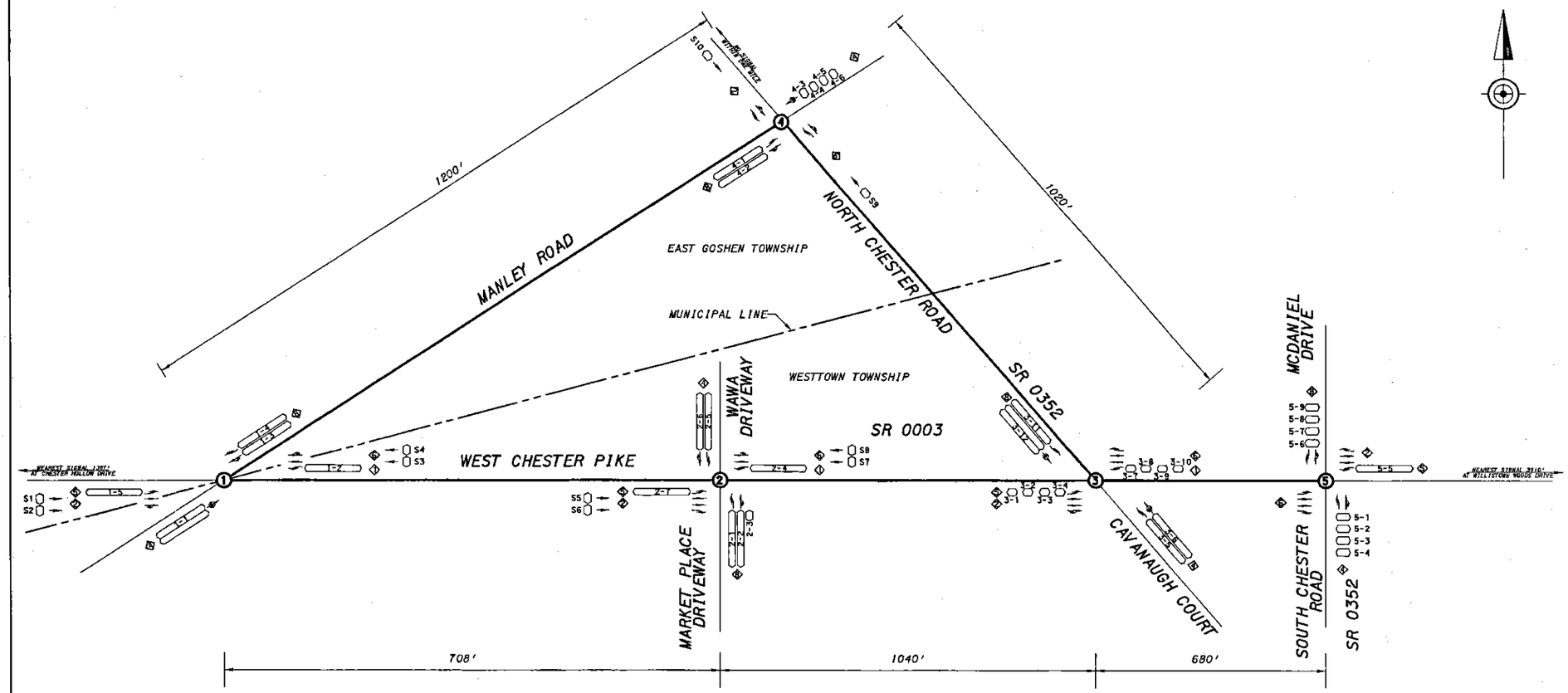
Peak Hour	Equation	R^2 value	Effective Rate	Trip Generation In	Trip Generation Out	Trip Generation Total
Weekday	*Not Given*		-	-	-	-
AM Peak Street Hour	*Not Given*		-	-	-	-
PM Peak Street Hour	*Not Given*		-	-	-	-
AM Generator	*Not Given*		-	-	-	-
PM Generator	*Not Given*		-	-	-	-
Saturday	*Not Given*		-	-	-	-
Saturday Generator	*Not Given*		-	-	-	-
Sunday	*Not Given*		-	-	-	-
Sunday Generator	*Not Given*		-	-	-	-

ITE Land Use Subcategory Description and/or DTraffic Comments:

Appendix F
Traffic Signal Permit Plans

CHESTER COUNTY - WESTTOWN TOWNSHIP

I-0181



CYCLE / SPLIT / OFFSET

	PROGRAM 1= INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
11														
10														
9														
8														
7														
6														
5	WEST CHESTER PK / SOUTH CHESTER ROAD	2806		69		38(SPLIT)	12(LEAD)	57		13(SPLIT)	120	24		
4	NORTH CHESTER RD / MANLEY RD	2393		41		19		41		19	60	0		
3	WEST CHESTER PK / NORTH CHESTER ROAD	0349	13(LEAD)	51		17(SPLIT)	13(LEAD)	51		39(SPLIT)	120	24		
2	WEST CHESTER PK / WAWA DR / MARKET PLACE DR	2067	16(LEAD)	74		30	16(LEAD)	74		30	120	30		
1	WEST CHESTER PK/MANLEY RD	2470	14(LEAD)	61		21(SPLIT)	21(LEAD)	54		24(SPLIT)	120	23		

	PROGRAM 2= INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
11														
10														
9														
8														
7														
6														
5	WEST CHESTER PK / SOUTH CHESTER ROAD	2806		87		39(SPLIT)	12(LEAD)	75		14(SPLIT)	140	47		
4	NORTH CHESTER RD / MANLEY RD	2393		49		21		49		21	70	0		
3	WEST CHESTER PK / NORTH CHESTER ROAD	0349	15(LEAD)	64		16(SPLIT)	15(LEAD)	64		45(SPLIT)	140	122		
2	WEST CHESTER PK / WAWA DR / MARKET PLACE DR	2067	33(LEAD)	70		37	16(LEAD)	67		37	140	127		
1	WEST CHESTER PK/MANLEY RD	2470	19(LEAD)	79		21(SPLIT)	17(LEAD)	81		21(SPLIT)	140	128		

	PROGRAM 3= INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
11														
10														
9														
8														
7														
6														
5	WEST CHESTER PK / SOUTH CHESTER ROAD	2806		53		33(SPLIT)	13(LEAD)	40		14(SPLIT)	100	4		
4	NORTH CHESTER RD / MANLEY RD	2393		24		26		24		26	50	0		
3	WEST CHESTER PK / NORTH CHESTER ROAD	0349	13(LEAD)	38		24(SPLIT)	13(LEAD)	38		25(SPLIT)	100	43		
2	WEST CHESTER PK / WAWA DR / MARKET PLACE DR	2067	28(LEAD)	40		32	17(LEAD)	51		32	100	48		
1	WEST CHESTER PK/MANLEY RD	2470	14(LEAD)	44		21(SPLIT)	14(LEAD)	44		21(SPLIT)	100	50		

	PROGRAM 4= INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
11														
10														
9														
8														
7														
6														
5														
4														
3														
2														
1														

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

J:\PINE\00007 (Westtown Bank\CADD\Signals\system permit.dgn 4/5/2013 11:40:00 PM astanton

Traffic Planning and Design, Inc.

SYSTEM NOTES

1. THE SIGNALS ALONG WEST CHESTER PIKE FROM MANLEY ROAD TO SOUTH CHESTER ROAD AND THE INTERSECTION OF NORTH CHESTER ROAD AND MANLEY ROAD ARE TO BE COORDINATED VIA GPS TIME CLOCKS.
2. PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
3. OFFSETS ARE REFERENCED TO THE BEGINNING OF YELLOW (PHASE 2+6).
4. SYSTEM LIMITS:
   WEST CHESTER PIKE (SR 0003) - FROM MANLEY ROAD TO SOUTH CHESTER ROAD (SR 0352).
   NORTH CHESTER ROAD (SR 0352) - FROM WEST CHESTER PIKE (SR 0003) TO MANLEY ROAD.
5. MASTER CONTROLLER
   ON STREET MASTER AT NORTH CHESTER ROAD (SR 0352) AND MANLEY ROAD.
6. PRIMARY COORDINATION: GPS TIME CLOCKS
   SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC)
7. CYCLES, SPLITS & OFFSETS ARE IN SECONDS.

WEEKLY/BACKUP PROGRAM CHART				
EVENT	DAY▲	TIME	PROGRAM*	REMARKS
1	1-7	0000	MAX 1	FREE
2	1-5	0600	1	AM PEAK
3	1-5	1000	3	MIDDAY PEAK
4	1-5	1500	2	PM PEAK
5	1-7	1900	MAX 1	FREE
6	6,7	1000	3	MIDDAY PEAK
7	6,7	1300	MAX 1	FREE

▲DAY 1 = MONDAY
* MAX / FREE WHERE NOTED IN CYCLE / SPLIT / OFFSET MATRIX.

LEGEND
- INTERSECTION ADDRESS
- SYSTEM LOOP/ IDENTIFYING NUMBER
- LOOP SENSOR / INTERSECTION X - LOOP NUMBER Y
- MICROWAVE DETECTION AREA
- PHASE NUMBER

NOT TO SCALE

GENERAL NOTES

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

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

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

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

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

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

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

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

OBTAIN POLE ATTACHMENT PERMIT FOR AERIAL FIBER OPTIC INSTALLATION.

MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.

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

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

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

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

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: CHESTER

MUNICIPALITY: WESTTOWN TOWNSHIP AND EAST GOSHEN TOWNSHIP

INTERSECTION: WEST CHESTER PIKE (SR 0003) FROM MANLEY ROAD TO SOUTH CHESTER ROAD (SR 0352) AND MANLEY ROAD AND NORTH CHESTER ROAD (SR 0352)

REVIEWED:

MUNICIPAL OFFICIAL — DATE 9-3-2013

RECOMMENDED: PAUL LUTZ 3-17-09

LOUIS R BELMONTE 3-17-09

DISTRICT TRAFFIC ENGINEER — DATE

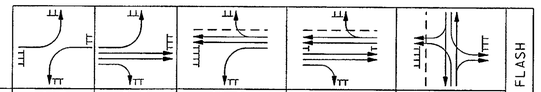
NO	REVISION	DES/ REVW	DATE	REVW	DATE	RECOM	DATE
1	ADD PHASE 5 TO INTERSECTION 5	PAI	1/31/11				
2	OPTIMIZE TIMINGS	TPD / MAP	6/6/11	LUTZ	6/7/11	LRB	6/7/11
3	REVISE TIMINGS FOR PRG 3, INT 5	TPD	11/2/11	LUTZ	11/2/11	ABP	11/2/11
4	NODE 5 PHASE 8 TIMING	JOO	7/12/12	LUTZ	7/12/12	ABP	7/25/12
5	REVISE TIMINGS FOR INT 3	TPD	10/7/13	LUTZ	10/7/13	ABP	10/10/13
6							
7							
8							

SYSTEM PERMIT # I-0181

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	CHESTER	0003	GLG	22 OF 121
	WESTTOWN TOWNSHIP			
PERMIT NO. #2067		PAGE 13 OF 112		
DATE ISSUED		DATE REVISED		

REVISION NUMBER	REVISIONS	DATE	BY

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM



PHASE	1+5			2+5			1+6				2+6				4+8				FLASH
SIGNAL INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1	G①	Y①	R①	R	R	R	G①	G①	Y①	R	R	R	R	R	R	R	R	R	OFF
2,9	R	R	R	R	R	R	G	G	Y②	R②	G	G	Y②	R②	R	R	R	R	Y
3	G①	Y②	R②	G①	Y①	R	R	R	R	R	R	R	R	R	R	R	R	R	OFF
4,10	R	R	R	G	Y	R②	R	R	R	R	G	G	Y②	R②	R	R	R	R	Y
5,6	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R	R
7,8	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R	R
12,13	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	OFF
14,15	H	H	H	H	H	H	M	FH③	H③	H③	M	FH③	H③	H③	H	H	H	H	OFF

FIXED		4	2		4	2		4	2		4	2				3	3		
MINIMUM	5			5			5			10				5					
PASSAGE	1++			1++			1++			1++				1++					
MAX 1	7			7			7			50				31					
MAX 2																			
PEDESTRIAN*							④			7	20			7	27				
MEMORY	NL			NL			NL			SVR				NL					

SYSTEM NOTE

REFER TO SYSTEM PERMIT #1-0181
ADAPTIVE OPERATION

• PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL
* UPON PEDESTRIAN ACTUATION, OTHERWISE HAND SYMBOL AT ALL TIMES

OPERATION NOTES

① R/G IF FOLLOWED BY 1+6
② R/G IF FOLLOWED BY 2+5
③ G IF FOLLOWED BY 2+6
④ TIMING WILL BE AS SHOWN IN PHASE 2+6. IT MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN PHASE 2+6
⑤ G IF FOLLOWED BY 1+6
⑥ G IF FOLLOWED BY 2+5
⑦ M IF FOLLOWED BY 2+6
⑧ M IF FOLLOWED BY 1+6

• PHASE SEQUENCE SELECTED BY TRAFFIC ADAPTIVE PROCESSOR

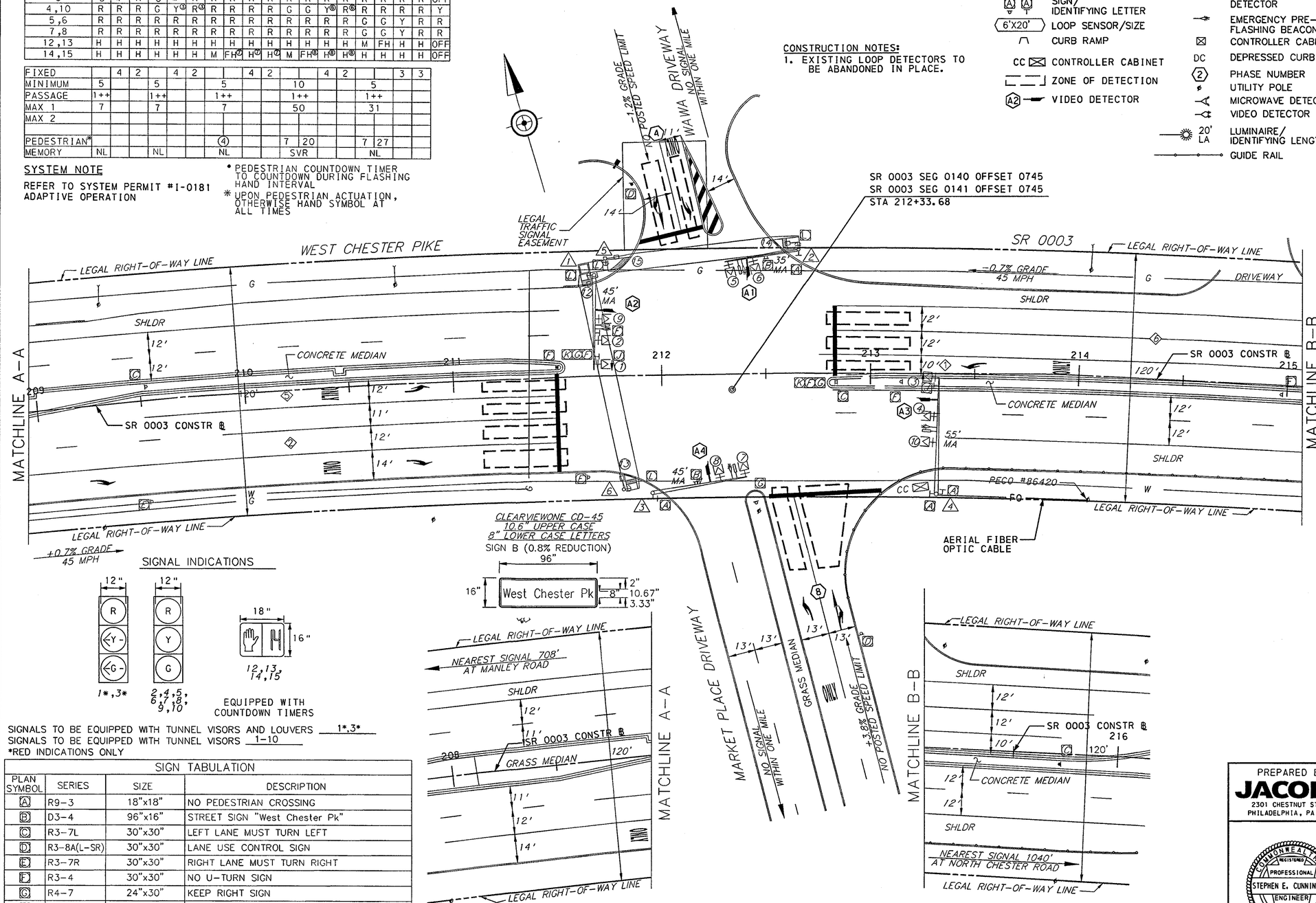
++ PHASE PASSAGE CALCULATED BY TRAFFIC ADAPTIVE PROCESSOR

LEGEND

- 25' MA — MAST ARM/ IDENTIFYING LENGTH
- ④ — SIGNAL HEAD/ IDENTIFYING NUMBER
- ④ — PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- A — PEDESTRIAN PUSHBUTTON/ SIGN WITH IDENTIFYING LETTER
- A A — SIGN/ IDENTIFYING LETTER
- 6'X20' — LOOP SENSOR/SIZE
- CURB RAMP
- CC — CONTROLLER CABINET
- ZONE OF DETECTION
- A2 — VIDEO DETECTOR
- EMERGENCY PRE-EMPTION DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- CONTROLLER CABINET
- DC — DEPRESSED CURB
- ② — PHASE NUMBER
- UTILITY POLE
- MICROWAVE DETECTOR
- VIDEO DETECTOR
- 20' LA — LUMINAIRE/ IDENTIFYING LENGTH
- GUIDE RAIL

CONSTRUCTION NOTES:

1. EXISTING LOOP DETECTORS TO BE ABANDONED IN PLACE.



SIGNAL INDICATIONS

SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS AND LOUVERS 1*,3*
SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS 1-10
*RED INDICATIONS ONLY

SIGN TABULATION

PLAN SYMBOL	SERIES	SIZE	DESCRIPTION
A	R9-3	18"x18"	NO PEDESTRIAN CROSSING
B	D3-4	96"x16"	STREET SIGN "West Chester Pk"
C	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
D	R3-8A(L-SR)	30"x30"	LANE USE CONTROL SIGN
E	R3-7R	30"x30"	RIGHT LANE MUST TURN RIGHT
F	R3-4	30"x30"	NO U-TURN SIGN
G	R4-7	24"x30"	KEEP RIGHT SIGN
J	R10-10L	30"x36"	LEFT TURN SIGNAL
K	OM1-3	18"x18"	OBJECT MARKER
L	R10-3E	9" x 15"	EDUCATIONAL PUSH BUTTON SIGN ←OR→

CONSTRUCTION NOTES

DO NOT MODIFY INSTALLATION WITHOUT PRIOR WRITTEN APPROVAL.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ARE PART OF THE PERMIT. INSTALL AND MAINTAIN IN ACCORDANCE WITH PUBLICATION 212.

POST MOUNTED SIGNALS: INSTALL WITH A MINIMUM SIGNAL HEAD CLEARANCE OF 2 FEET BEHIND FACE OF CURB OR EDGE OF SHOULDER; AND 8 FEET ABOVE SIDEWALK OR PAVEMENT GRADE.

OVERHEAD SIGNALS: INSTALL WITH A MINIMUM SIGNAL HEAD CLEARANCE OF 2 FEET BEHIND FACE OF CURB OR EDGE OF SHOULDER. PROVIDE A MINIMUM SIGNAL HEAD CLEARANCE OF 16 FEET ABOVE ROADWAY; RIGIDLY MOUNT, TOP AND BOTTOM; AND EQUIP WITH BACKPLATES. PROVIDE A MINIMUM HORIZONTAL DISTANCE OF 8 FEET BETWEEN SIGNALS AS MEASURED AT RIGHT ANGLES TO THE APPROACH.

DETERMINE WITH A PENNDOT REPRESENTATIVE, THE EXACT LOCATION OF DETECTORS PRIOR TO INSTALLATION.

CONSULT WITH LOCAL OFFICIALS AND UTILITIES TO RESOLVE CONFLICTS PRIOR TO CONSTRUCTION.

COMPLY WITH PROVISIONS OF ACT 181, FOR PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED MARCH 29, 2007.

ALL DESIGNERS AND CONTRACTORS UTILIZING THIS PLAN AND THE INFORMATION CONTAINED THEREON ARE CAUTIONED TO COMPLY WITH THE REQUIREMENTS OF PENNSYLVANIA ACT 181, ENTITLED "UNDERGROUND UTILITY LINE PROTECTION LAW", (AMENDS PENNSYLVANIA ACT 187). ANY INFORMATION APPEARING ON THESE DRAWINGS AS TO THE UNDERGROUND LINES OF A USER, SUCH AS A PUBLIC UTILITY, HAS BEEN INCORPORATED HEREON PURSUANT TO SAID PENNSYLVANIA ACT 181. THIS INFORMATION HAS BEEN PROVIDED BY THE RESPECTIVE USERS IN RESPONSE TO THE PA ONE CALL SYSTEM REFERENCE SERIAL #20163550718 ISSUED ON 12/20/2016.

JACOBS ENGINEERING GROUP, INC. HAS NOT MADE AN INDEPENDENT DETERMINATION WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION AND SPECIFICALLY DISCLAIMS ANY WARRANTY OR REPRESENTATION AS TO THE ACCURACY OF SUCH INFORMATION. ALL LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY AND MUST BE VERIFIED PRIOR TO CONSTRUCTION.

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

CALL BEFORE YOU DIG !

PENNSYLVANIA LAW REQUIRES
3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE
AND 10 WORKING DAYS IN DESIGN STAGE
BEFORE YOU DIG CALL
THE PA ONE CALL SYSTEM TELEPHONE NUMBER.

1-800-242-1776

SYSTEM PERMIT # I-0181

COUNTY: CHESTER
MUNICIPALITY: WESTTOWN TOWNSHIP
INTERSECTION: WEST CHESTER PIKE (SR 0003) & MARKET PLACE DRIVEWAY / WAWA DRIVEWAY

PREPARED BY:
JACOBS
2301 CHESTNUT STREET
PHILADELPHIA, PA 19103

REVIEWED:
MUNICIPAL OFFICIAL — DATE 8/10/17

RECOMMENDED:
DISTRICT TRAFFIC ENGINEER — DATE 11/22/17

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — STEPHEN E. CUNNINGHAM — ENGINEER — PE061714

0 25 50 FEET

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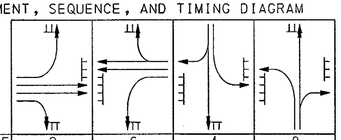
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	CHESTER	0003	GLG	23 OF 121
WESTTOWN TOWNSHIP				
PERMIT NO. *2067		PAGE 14 OF 112		
DATE ISSUED		DATE REVISED		

REVISION NUMBER	REVISIONS	DATE	BY

EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM



PHASE	2			6			4			8		
INTERVAL / SIGNALS	19	20	21	22	23	24	25	26	27	28	29	30
1	R	R	R	~~G~~	~~Y~~	R	R	R	R	R	R	R
2,9	R	R	R	G	Y	R ◎	R	R	R	R	R	R
3	~~G~~	~~Y~~	R	R	R	R	R	R	R	R	R	R
4,10	G	Y	R ◎	R	R	R	R	R	R	R	R	R
5,6	R	R	R	R	R	R	R	R	R	G	Y	R
7,8	R	R	R	R	R	R	G	Y	R	R	R	R
12,13	H	H	H	H	H	H	H	H	H	H	H	H
14,15	H	H	H	H	H	H	H	H	H	H	H	H
FIXED	▲	4	2	▲	4	2	▲	3	3	▲	3	3

▲ FOR DURATION OF PRE-EMPTION

NOTE:
IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

◎ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION.

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND APPROACH OF THE MARKET PLACE DRIVEWAY, THE SOUTHBOUND APPROACH OF THE WAWA DRIVEWAY AND THE EASTBOUND AND WESTBOUND APPROACHES OF WEST CHESTER PIKE (SR 0003) WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW. ONLY THOSE PHASES NOT POSING A YELLOW TRAP CONDITION MAY REMAIN GREEN (2+5, 1+6, 2, OR 6) WHEN GOVERNED BY APPROACHING EMERGENCY VEHICLE.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION PHASE 2, 4, 6, OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 11 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.
- LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.

MISCELLANEOUS			
ITEM NO.	QUANTITY	UNIT	DESCRIPTION
0956-0011	1	EACH	DETECTOR CARD RACK ASSEMBLY
9000-0005	1	EACH	MANAGED NETWORK SWITCH
9000-0006	1	EACH	FIBER OPTIC TERMINATION PANEL (FTP)
9000-0008	1	EACH	TRAFFIC ADAPTIVE SYSTEM, 4 APPROACHES
9000-0010	1	EACH	INSTALLATION OF TRAFFIC ADAPTIVE SYSTEM, 4 APPROACHES
9000-0012	1	EACH	FIBER OPTIC CABLE SPLICE ENCLOSURE

CONSTRUCTION NOTES:

1. PROVIDE MAINTENANCE AND PROTECTION OF TRAFFIC.
2. INSTALL TRAFFIC ADAPTIVE HARDWARE AND ETHERNET SWITCH IN EXISTING CABINET. FIELD LOCATE CABINET WITH A PENNDOT AND MUNICIPAL REPRESENTATIVE. CABINET SHALL MEET OR EXCEED APPLICABLE PENNDOT SPECIFICATIONS FOR TRAFFIC SIGNAL CONTROLLER ASSEMBLIES, AND INCLUDE VENTILATION, FILTRATION, AND LIGHTING.
3. INSTALL TRAFFIC ADAPTIVE VIDEO CAMERAS. CAMERA LOCATIONS ARE PRELIMINARY, AND SUBJECT TO CHANGE UPON INITIAL SET-UP. CAMERA LOCATIONS TO BE SPOTTED WITH A MANUFACTURER REPRESENTATIVE, PENNDOT, AND A MUNICIPAL REPRESENTATIVE. ALL EXISTING DETECTION SYSTEMS TO REMAIN IN OPERATION UNTIL SUCH TIME AS THE TRAFFIC ADAPTIVE SYSTEM IS READY FOR ACTIVATION. MINIMIZE SIGNAL OPERATIONS WITHOUT DETECTION.
4. INSTALL TRAFFIC ADAPTIVE VIDEO CAMERA CABLE(S) IN EXISTING CONDUIT, UNLESS OTHERWISE DIRECTED BY PENNDOT OR MUNICIPAL REPRESENTATIVE.
5. INSTALL NEW DETECTOR CARD RACK ASSEMBLY IN EXISTING CONTROLLER CABINET FOR VIDEO INPUT.
6. INSTALL FIBER OPTIC CABLE AERIALLY FROM UTILITY POLE, AS SHOWN ON PLAN. REFER TO INTERCONNECT PLAN FOR CABLE ROUTING BETWEEN INTERSECTIONS.
7. INSTALL FIBER OPTIC MODEM, PATCH PANEL AND SPLICE ENCLOSURE.

SYSTEM PERMIT # I-0181

PREPARED BY:
JACOBS
2301 CHESTNUT STREET
PHILADELPHIA, PA 19103

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
STEPHEN E. CUNNINGHAM
PE061714

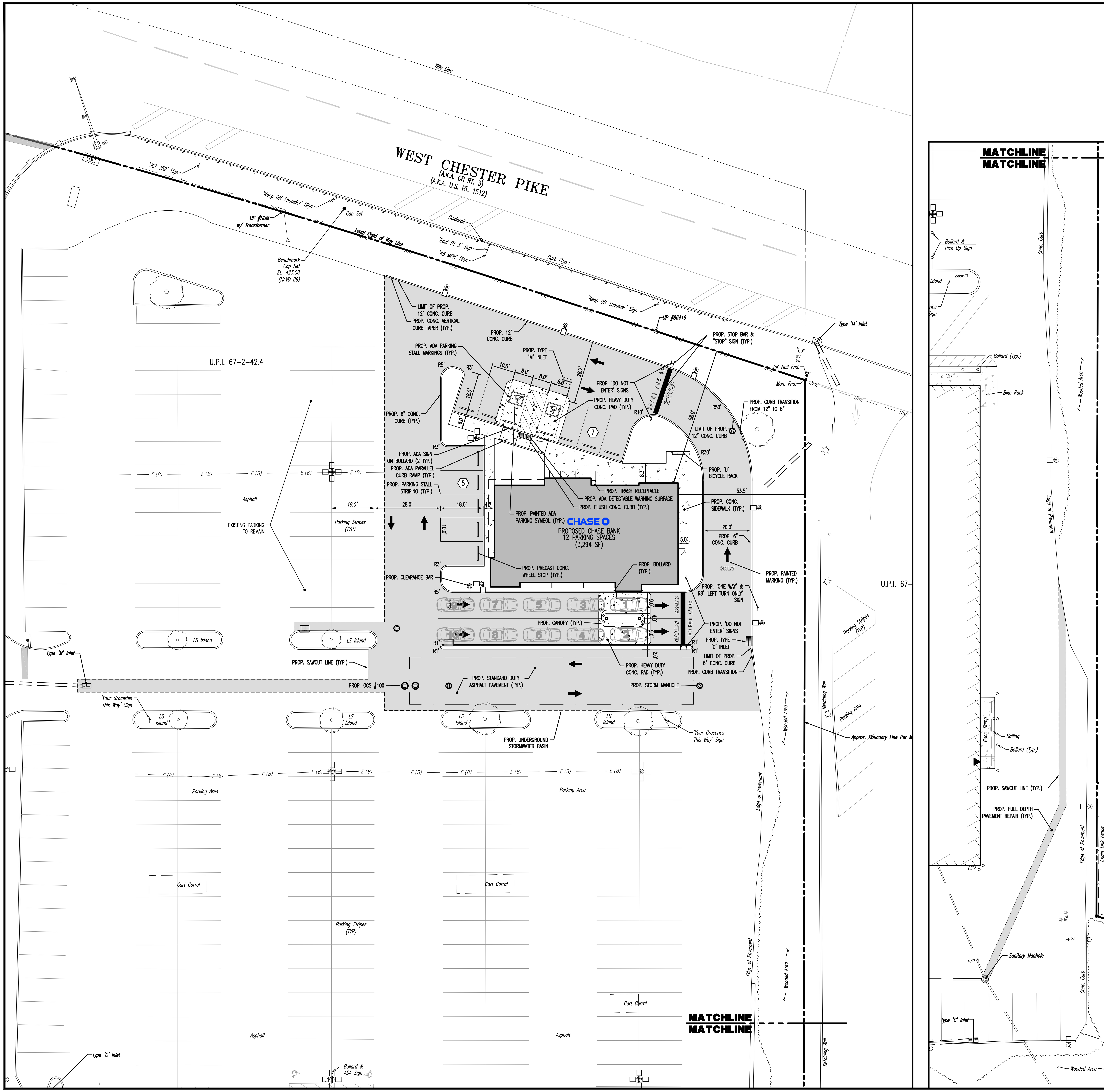
COUNTY: CHESTER
MUNICIPALITY: WESTTOWN TOWNSHIP
INTERSECTION: WEST CHESTER PIKE (SR 0003) &
MARKET PLACE DRIVEWAY / WAWA DRIVEWAY

REVIEWED: Robert P. Bregar 10/10/17
MUNICIPAL OFFICIAL DATE

RECOMMENDED: Scott Yeager 11/27/17
DISTRICT TRAFFIC ENGINEER 11/22/17 DATE

0 25 50 FEET

Appendix G
Site Plans



GENERAL NOTES

1. THIS PLAN HAS BEEN PREPARED BASED ON REFERENCES INCLUDING:

   PARTIAL TOPOGRAPHIC SURVEY
   DYNAMIC SURVEY, LLC
   826 NEWTOWN YARDLEY ROAD; SUITE 201
   NEWTOWN, PENNSYLVANIA 18940
   DATED: 1/10/23
   LAST REVISED: 5/10/24
   FILE #: 1478-99-191S

   ALTA/NSPS LAND TITLE SURVEY
   AMERICAN SURVEYING & MAPPING INC.
   3191 MAGUIRE BOULEVARD, SUITE 200
   ORLANDO, FLORIDA 32803
   DATED: 4/21/2021
   LAST REVISED: 5/14/2021

2. OWNER/APPLICANT: WESTTOWN AM WEST TIC LLC
   120 N. POINTE BOULEVARD, SUITE 301
   LANCASTER, PA 17601

3. PARCEL DATA: UPI: 67-2-42.4
   1502 WEST CHESTER PIKE (PA STATE HIGHWAY ROUTE 3)
   TOWNSHIP OF WESTTOWN
   CHESTER COUNTY, PENNSYLVANIA

4. ZONE: C-1 (NEIGHBORHOOD AND HIGHWAY COMMERCIAL)

5. EXISTING USE: RETAIL SERVICES **(PERMITTED USE)** (§170-1101)
   BARBER SHOP **(PERMITTED USE)** (§170-1101)
   BANK **(PERMITTED USE)** (§170-1101)
   RESTAURANT **(PERMITTED USE)** (§170-1101)

6. PROPOSED USE: BANK **(PERMITTED USE)** (§170-1101)

7. SCHEDULE OF ZONING REQUIREMENTS (§170-1102)

ZONE REQUIREMENT	C-1 DISTRICT	EXISTING	PROPOSED
MINIMUM LOT AREA	2 AC	18.45 AC	18.45 AC
MINIMUM LOT WIDTH	300 FT **[1]**	±1,009.66 FT	±1,009.66 FT
MINIMUM FRONT YARD SETBACK	50 FT **[2]**	±12 FT **(E)**	36 FT **(E)**
MINIMUM REAR YARD SETBACK	50 FT	161.5 FT	161.5 FT
MINIMUM SIDE YARD SETBACK	50 FT **[3]**	49.5 FT **(E)**	49.5 FT **(E)**
MAXIMUM BUILDING HEIGHT	38 FT	34 FT	34 FT
MAXIMUM BUILDING HEIGHT (STORIES)	3	1	1
MAXIMUM BUILDING COVERAGE	25%	15%	15%
MAXIMUM IMPERVIOUS COVERAGE	65%	62%	+/- 62.1% (486,409 SF)
MAXIMUM FLOOR AREA RATIO (FAR)	0.40	0.15	0.15

N/S: NO STANDARD   N/A: NOT APPLICABLE   (E): EXISTING NON-CONFORMANCE   (V): VARIANCE

NOTES:

[1] MINIMUM LOT WIDTH: 300 FEET AT BUILDING SETBACK LINE; IN ADDITION, 300 FEET AT FUTURE RIGHT-OF-WAY LINE OF ROUTES 202, 926, 3 AND 352. (§170-1102.B)

[2] MINIMUM FRONT YARD SETBACK: 50 FEET FOR ANY BUILDING OR PARKING AREA. (§170-1102.F)

[3] MINIMUM SIDE YARDS: FIFTEEN (15) FEET MINIMUM FOR EACH, EXCEPT FIFTY (50) FEET FROM THE FUTURE RIGHT-OF-WAY LINE OF ROUTE 202 OR ROUTE 3 AND THIRTY (30) FEET FROM THE FUTURE RIGHT-OF-WAY LINE OF ROUTE 926 OR ROUTE 352. (§170-1102.G(1))

[4] ANY ACCESSORY USE OR STRUCTURE SHALL BE LOCATED IN COMPLIANCE WITH FRONT, SIDE AND REAR YARD REQUIREMENTS OF THIS DISTRICT. (§170-1102.J) **(COMPLIES)**

[5] NO USE SHALL BE CONDUCTED IN THE REQUIRED FRONT, SIDE, AND REAR YARDS. (§170-1104.A)

PAVEMENT LEGEND

- PROPOSED STANDARD DUTY ASPHALT PAVEMENT
- PROPOSED STANDARD DUTY CONCRETE PAVEMENT
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT

SEE SHEET 3 OF 21 FOR SITE PLAN NOTES

GRAPHIC SCALE
-20 0 10 20 40 80
(IN FEET)
1 INCH = 20 FT.

REV. | DATE | COMMENTS | BY

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION

DRAWN BY: ARK | DESIGNED BY: MS | CHECKED BY: MS | CHECKED BY: -

PROJECT: **WESTTOWN AM WEST TIC LLC**
CHASE *PROPOSED CHASE BANK*
PARCEL NO. 67-2-42:4
1502 PENNSYLVANIA STATE HIGHWAY ROUTE 3 (WEST CHESTER PIKE)
TOWNSHIP OF WESTTOWN
CHESTER COUNTY, PENNSYLVANIA

DYNAMIC ENGINEERING
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ANNAPOLIS, MARYLAND • T: 410.567.5000
www.dynamicec.com

...TIN A. GEONNOTTI
... ENGINEER
PE... No. 080629

MATTHE... ...RO
PROFESSIONAL ENGI...
NEW JERSEY LICENSE No. 529...

DRAFT

TITLE: **SITE PLAN**

SCALE: (H) 1"=20' (V)
DATE: 07/12/2024
PROJECT No: 1478-99-191
SHEET No: 6 OF 21
Rev. #: 0

Plotted: 07/12/24 – 1:56 PM, By: rkazimir
File: \\decpc.local\decfolders\Data\DECPC PROJECTS\1478 Paramount Realty\99-191 West Chester PA\Dwg\4 Land Dev Plans\0147899191SS0.dwg, ---> 06 SITE PLAN