DelDOT
Delaware Department of Transportation

US 13 PEDESTRIAN SAFETY STUDY

SR 273 TO MARKET STREET/WALNUT STREET SPLIT

AUGUST 2015

WRA
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1915 100 YEARS 2015

EXECUTIVE SUMMARY

During 2012, an unusually high number of fatal and incapacitating pedestrian crashes occurred in the State of Delaware. In 2012, 30 pedestrian fatalities were reported compared to a previous 5-year average (2007 to 2011) of 19 pedestrian fatalities per year. Additionally, 25 and 27 pedestrian fatalities were reported on Delaware roadways in 2013 and 2014, respectively. In response to this increase in serious pedestrian crashes, the Delaware Department of Transportation (DelDOT) formed the Pedestrian/Bicycle Safety Working Group comprised of various highway safety stakeholders with the goal of identifying, evaluating, and implementing pedestrian/bicycle related safety improvements throughout the state and along several corridors exhibiting higher than average pedestrian crash rates. Additionally, the goal of *Delaware's 2010 Strategic Highway Safety Plan* and the Pedestrian/Bicycle Safety Working Group for the emphasis area focused on pedestrian safety is to reduce the number of fatal crashes involving pedestrians by five percent every three years.

One of the corridors identified as exhibiting a higher than average pedestrian crash rate is US 13 (Dupont Highway) from SR 273 to the Market Street/Walnut Street split in New Castle County (see **Figure 1**). The purpose of this study is to conduct a pedestrian safety audit along this corridor. This report provides a description of historical crash trends, existing physical conditions, pedestrian activity, vehicular traffic trends, and traffic control devices. It assesses the need and impacts associated with pedestrian safety improvements within the study corridor.

Pedestrian and bicycle crashes that occurred within the study limits during an 8-year study period from 2005 to 2012 were reviewed. A total of 34 pedestrian crashes and 6 bicycle crashes were reported during the study period, including 14 fatal pedestrian crashes, 16 injury pedestrian crashes, and 3 injury bicycle crashes (no fatal bicycle crashes were reported). Additionally, one and three fatal pedestrian crashes occurred along the study corridor in 2013 and 2014, respectively, following the study period. Pedestrian and bicycle crash trends are summarized in the report.

Pedestrian observations and counts were performed in April 2014. Following the pedestrian counts, members of Delaware's Pedestrian/Bicycle Safety Working Group participated in a bus/walking tour of the study corridor to discuss key areas in need of improvements and/or further study. The bus/walking tour discussions focused on further evaluation and assessment of pedestrian and bicycle accommodations throughout the study corridor that are summarized in the report.

Recommendations are presented as short-term, mid-term, and long-term improvements and are prioritized based on pedestrian crash history, pedestrian frequency, transit ridership, and ease of implementation. Recommendations include installing additional signalized crosswalks, installing pedestrian warning signs, performing public outreach, installing sidewalk, replacing pushbutton signs, revising pedestrian signal timings, and installing lighting. In addition, consolidating access points along the corridor and installing ADA-compliant curb ramps should be considered as part of future projects.

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INTRODUCTION

During 2012, an unusually high number of fatal and incapacitating injury pedestrian crashes occurred in the State of Delaware. In 2012, 30 pedestrian fatalities were reported compared to a previous 5-year average (2007 to 2011) of 19 pedestrian fatalities per year. Additionally, 25 and 27 pedestrian fatalities were reported on Delaware roadways in 2013 and 2014, respectively. In response to this increase in serious pedestrian crashes, the Delaware Department of Transportation (DelDOT) formed the Pedestrian/Bicycle Safety Working Group comprised of various highway safety stakeholders (i.e., DelDOT, WILMAPCO, Delaware Office of Highway Safety, Dover/Kent MPO, Delaware State Police (DSP), University of Delaware, City of Wilmington, Bike Delaware, FHWA, City of Newark, Division of Alcohol and Tobacco Enforcement, Beebee Medical Center, and DART/DTC) with the goal of identifying, evaluating, and implementing pedestrian/bicycle related safety improvements throughout the state and along several corridors exhibiting higher than average pedestrian crash rates. Additionally, the goal of *Delaware's 2010 Strategic Highway Safety Plan* and the Pedestrian/Bicycle Safety Working Group for the emphasis area focused on pedestrian safety is to reduce the number of fatal crashes involving pedestrians by five percent every three years.

One of the corridors identified as exhibiting a higher than average pedestrian crash rate is US 13 (Dupont Highway) from SR 273 to the Market Street/Walnut Street split in New Castle County (see **Figure 1**). The purpose of this study is to conduct a pedestrian safety audit along this corridor. The US 13 corridor serves as a major north/south route extending the full length of the state of Delaware. In addition to serving a high volume of vehicular traffic, numerous pedestrian generators, including commercial and residential properties, are located along the corridor. This report provides a description of historical crash trends, existing physical conditions, pedestrian activity, vehicular traffic trends, and traffic control devices. It assesses the need and impacts associated with pedestrian safety improvements within the study corridor.

Relevant Projects

As part of DelDOT's Hazard Elimination Program (HEP), several intersections within the study area have been identified and studied, including US 13 from US 40 to Rogers Road (2003 Site B), US 13 at Memorial Drive (2003 Site K), US 13 at SR 273 (2004 Site U), and US 13 from SR 141 to I-295 (2010 Site M). As part of the US 13, Bacon Avenue/Boulden Boulevard to McMullen Avenue project recommended as part of the 2003 HEP Site B, the northbound US 13 left-turn median openings at McMullen Avenue and Parkway Plaza were closed in 2011/2012. The project included removing the left-turn lanes serving the two median openings and extending the northbound US 13 left-turn lane at Bacon Avenue/Boulden Boulevard to accommodate diverted traffic.

A pedestrian safety study was completed in April 2009 along US 13 from Saienni Boulevard to SR 273 and along US 40 from Buckley Boulevard to US 13. The study recommended several pedestrian improvements including installing roadway lighting, sidewalk, additional signalized crosswalks, and median barrier/fence along US 13 (pending further investigation/crash trends). As a result of the study, signalized crosswalks were installed on the east, west, and south legs of the US 13 at SR 273 intersection in July 2009 and corridor lighting was installed along US 13 south of SR 273 in 2010/2011.

In November 2011, DelDOT conducted an ADA inventory and assessment of pedestrian accommodations along US 13 from SR 273 to the Market Street/Walnut Street split.

Signal timing improvements, including adjustments to cycle lengths, splits, and offsets, were implemented in August/September 2014 along US 13 within the study corridor to reduce congestion and delays.

As part of an expansion of commercial carrier services, New Castle County Airport is expanding its parking facilities. A Traffic Operations Analysis report prepared in February 2014 identified proposed improvements at the US 13 at School Lane intersection including widening the eastbound approach to install an additional eastbound left-turn lane and installing a channelizing island for southbound US 13 right turns at School Lane.

The New Castle Town Center, a Super Wal-Mart anchored commercial center located on the northwest quadrant of US 13 and SR 273, is currently proposed. Access to the center would be along southbound US 13 at Old Churchmans Road and along SR 273 and Churchmans Road (west of US 13).

A Wawa gas station and convenience store is proposed along southbound US 13 just south of Quigley Boulevard (south of the study area). Access to the Wawa would be provided along southbound US 13 and along eastbound SR 273 west of US 13.

The East Coast Greenway, an urban trail system extending between Calais, Maine and Key West, Florida, crosses US 13 at SR 273.

The New Castle Industrial Track Trail, a bicycle and pedestrian trail from the City of New Castle to the Wilmington Riverfront, crosses below US 13 along the Baylor Boulevard alignment which is located approximately 600 feet south of I-295. A direct connection between US 13 and the New Castle Industrial Track Trial is not currently planned. The US 13 bridges over Baylor Boulevard were replaced in fall 2014 as part of Contract No. T201107401.01-North I.

Delaware Transit Corporation (DTC) installed ADA improvements at the bus stop and shelter located on the southeast corner of the US 13 at Bacon Avenue/Boulden Boulevard intersection in August/September 2014. Improvements included widening the sidewalk in front of the bus shelter and installing a ramp on the southeast corner of the intersection.

As part of the Statewide Divided Highway Safety Study, signing and pavement marking improvements were identified along US 13 within the study limits.

The BR 1-680 on SR 141 over US 13 bridge replacement project (Contract No. T201407105), currently in the conceptual stage, includes replacing the concrete deck and steel girders, repairing the substructure, reconstructing the approach roadways, and installing guardrail.

US 13 from US 40 to Wilmington was identified in 2014 as a Congestion Management System (CMS) corridor by *WILMAPCO*. Constructing an additional lane in each direction of US 13 throughout the study corridor is listed on the "Aspirations List" in the WILMPACO Regional Transportation Plan (RTP).

The Churchmans Road Trail Study (October 2013), in support of The First State Trail and Pathway Initiative, proposes the construction of a shared-use path/trail to run along the northern side of Churchmans Road and the northern side of SR 273 to provide a connection for pedestrians and bicyclists along existing trail alignments throughout New Castle County, including the New Castle Industrial Track Trail. As part of the project, installation of a crosswalk across the north leg of the US 13 at SR 273 intersection is proposed.

Delaware Office of Highway Safety is assembling a pedestrian focus group to understand pedestrian needs and issues throughout Delaware.

In early 2015, *WILMAPCO* recommended to DelDOT to pursue a project to install sidewalks along US 13 between US 40 and Memorial Drive. The US 13, US 40 to Memorial Drive Pedestrian Improvement project is included in the proposed FY17 to FY22 Capital Improvement Program (CTP).

Figure 1 – Study Location Map

EXISTING CONDITIONS

Site Description

US 13 is classified as an urban principal arterial, serving as a major north/south route extending the full length of Delaware from the Maryland State Line in Delmar to the Pennsylvania State Line north of Claymont and is included in the National Highway System. Within the study limits, US 13 is generally an eight-lane, divided roadway with variable shoulder widths from SR 273 to Lincoln Avenue; a six-lane, divided roadway with variable shoulder widths from Lincoln Avenue to I-495; and a four-lane roadway from I-495 to the Market Street/Walnut Street split. Within the study limits, the posted speed limit is 50 miles per hour south of Heald Street, 45 miles per hour from Heald Street to 1,400 feet south of the Wilmington city limits, and 40 miles per hour from 1,400 feet south of the Wilmington city limits to the Wilmington city limit (see Vehicular Travel Speeds section). According to *DelDOT's 2013 Traffic Summary*, the ADT along US 13 within the study area is approximately 75,300 south of SR 141, approximately 55,300 from SR 141 to I-295, approximately 38,700 from I-295 to I-495, and approximately 23,600 north of I-495. The corridor is approximately 5.1 miles long and includes 3 interchanges (SR 141, I-495, and I-295), 12 signalized intersections (in addition to the fire signal at US 13 at Hazeldell Avenue), and numerous unsignalized intersections/business driveways within the study limits. Median openings are provided at all signalized intersections and median openings are provided approximately 1,100 feet north of SR 273, approximately 625 feet north of School Lane (southbound access only), approximately 1,350 feet north of School Lane (northbound access only), Franklin Avenue, approximately 700 feet north of McMullen Avenue (southbound access only), Lovelace Avenue (southbound access only), Gracelawn Cemetery, and approximately 650 feet south of Marsh Lane/Wildel Avenue (northbound access only). Adjacent land uses along the corridor are predominately commercial; however, many residential properties are located within walking distance along the side street approaches to US 13 (and behind commercial properties). Wilmington Manor Elementary School is located along Roosevelt Avenue approximately 1,000 feet east of US 13 and Wilmington University is located on the southeast quadrant of the US 13 at Lincoln Avenue intersection.

Existing condition figures for the US 13 corridor from SR 273 to the Market Street/Walnut Street split are shown in **Figures 2-1 to 2-22.** The following information is included in the existing condition figures.

- Existing signalized intersections
- Existing bus stops and shelter locations with available ridership information from DTC
- Existing luminaire locations
- Existing sidewalk and locations lacking a curb ramp
- Pedestrian and bicycle crash locations and characteristics (January 2005 through December 2012)
- April 2014 pedestrian count data
- Adjacent land uses

In addition, further discussion of existing conditions is provided below. It is important to note that the lighting locations shown in the figures include only roadway lighting provided along US 13 (i.e., ambient lighting due to adjacent properties is not shown).

Signalized Intersections

The twelve signalized intersections along US 13 within the study corridor operate as part of two coordinated signal systems along US 13 (the signals north and south of I-295 operate on separate systems). During both the AM and PM peak hours, the signal system south of I-295 operates with a 180-second cycle length. The signal system north of I-295 operates with a 120-second cycle length during the AM and PM peak hours. At least one push-button activated pedestrian crossing (two-stage crossings are typical) is provided across US 13 at SR 273, School Lane, Roosevelt Avenue, Bacon Avenue/Boulden Boulevard, Marsh Lane/Wildel Avenue, and Memorial Drive. Pedestrian crossings across US 13 are not provided at US 13 at State Hospital, Hessler Boulevard, I-495 Ramps, and Heald Street. Additionally, elevated pedestrian bridges are provided across US 13 at Lincoln Avenue and Harrison Avenue/Stahl Avenue. Countdown pedestrian signals are provided at all intersections where pedestrian signals are provided except for US 13 at Marsh Lane/Wildel Avenue.

US 13 at SR 273: US 13 at SR 273 operates with protected-only left-turn phasing on all four approaches to the intersection. The northbound and southbound US 13 approaches include two channelized left-turn lanes, four through lanes, and a right-turn lane (a channelizing island is provided for southbound right turns). The eastbound and westbound SR 273 approaches include two left-turn lanes, two through lanes, and a channelized right-turn lane. YIELD (R1-2) signs are provided for the eastbound, westbound, and southbound right-turning movements. An auxiliary acceleration/deceleration lane is provided along northbound US 13 between SR 273 and the commercial driveway located approximately 900 feet north of SR 273 (the acceleration lane length meets AASHTO criteria for acceleration lane lengths). A short auxiliary acceleration/deceleration lane is provided along westbound SR 273 from US 13 to the commercial driveway located approximately 175 feet west of US 13 (AASHTO acceleration lane length criteria is not met). Pedestrian signals and crosswalks are provided across the east, west, and south legs of the intersection.

US 13 at School Lane: US 13 at School Lane operates with protected-only left-turn phasing on the northbound and southbound US 13 approaches and split phasing on the eastbound and westbound School Lane approaches. The northbound US 13 approach includes a left-turn lane, four through lanes, and a right-turn lane (a painted channelizing island is provided) and the southbound US 13 approach includes two left-turn lanes, four through lanes, and a right-turn lane. The eastbound School Lane approach includes a shared left-turn/through lane and a right-turn lane. The westbound School Lane approach includes a left-turn lane, shared left-turn/through lane, and a right-turn lane. Pedestrian signals and crosswalks are provided across the west and north legs of the intersection.

US 13 at Lincoln Avenue: US 13 at Lincoln Avenue operates with protected-only left-turn phasing on the northbound and southbound US 13 approaches and with split phasing on the eastbound and westbound Lincoln Avenue approaches. The northbound US 13 approach includes a left-turn lane, three through lanes, and a shared through/right-turn lane (the fourth through lane is reduced downstream of the intersection). The southbound US 13 approach includes a left-turn lane, three through lanes, and a shared through/right-turn lane (the rightmost through lane is delineated downstream as an auxiliary acceleration/deceleration lane for movements to/from the SR 141 ramps). The eastbound Lincoln Avenue approach includes a shared left-turn/through/right-turn lane. The westbound Lincoln Avenue approach includes shared left-turn/through lane and a right-turn lane. Pedestrian signals and crosswalk are provided across the east leg of the intersection and a pedestrian bridge is provided across the south leg of the intersection.

US 13 at Harrison Avenue/Stahl Avenue: US 13 at Harrison Avenue/Stahl Avenue operates with protected-only left-turn phasing on the northbound and southbound US 13 approaches to the intersection. Harrison Avenue is a one-way westbound street away from the intersection and Stahl Avenue is a two-way residential street with right-turns only permitted onto northbound US 13. The northbound and southbound

US 13 approaches include a left-turn lane, two through lanes, and a shared through/right-turn lane. A concrete median island separates concurrent northbound and southbound US 13 left turns. Pedestrian signals and crosswalk are provided across the east leg of the intersection and a pedestrian bridge is provided across the north leg of the intersection.

US 13 at Roosevelt Avenue: US 13 at Roosevelt Avenue operates with concurrent phasing on the eastbound and westbound Roosevelt Avenue approaches with the through movements prohibited. The eastbound and westbound Roosevelt Avenue approaches are one-way streets with traffic movements toward US 13; therefore, no turning movements from US 13 are permitted. The northbound and southbound US 13 approaches include three through lanes. The eastbound and westbound Roosevelt Avenue approaches include a left-turn lane and a right-turn lane. A concrete median island separates concurrent eastbound and westbound left turns and provides a pedestrian refuge area for pedestrians crossing US 13. Red light enforcement cameras monitor the northbound US 13 through movement. Pedestrian signals and crosswalk are provided across the east and north legs of the intersection.

US 13 at Bacon Avenue/Boulden Boulevard: US 13 at Bacon Avenue/Boulden Boulevard operates with protected-only left-turn phasing on the northbound and southbound US 13 approaches and split phasing on the eastbound Bacon Avenue and westbound Boulden Boulevard approaches. The northbound US 13 approach includes a left-turn lane, three through lanes, and a right-turn lane. The southbound US 13 approach includes two left-turn lanes, three through lanes, and a right-turn lane. The eastbound Bacon Avenue and westbound Boulden Boulevard approaches include a left-turn lane, shared left-turn/through lane, and a right-turn lane. Concrete channelizing islands are provided for northbound and southbound left turns and for eastbound, westbound, and southbound right turns. YIELD (R1-2) signs are posted for the eastbound, westbound, and southbound right-turning movements. The northbound right-turning movement is controlled by a NO TURN ON RED (ARROW) (R10-11-DE) sign. Pedestrian signals and crosswalk are provided across the west and south legs of the intersection.

Southbound US 13 at State Hospital: Southbound US 13 at State Hospital operates with concurrent phasing on the eastbound State Hospital and northbound US 13 U-turn approaches. Northbound US 13 through traffic is not controlled by the traffic signal. A solid red right-turn arrow is displayed for eastbound right turns onto southbound US 13 when the northbound U-turn phase operates. The southbound US 13 approach includes a U-turn lane, three through lanes, and a right-turn lane. The eastbound State Hospital approach includes a through lane (vehicles subsequently merge onto northbound US 13) and a channelized right-turn lane. The northbound approach includes a U-turn lane (controlled by the signal) and three northbound through lanes (not controlled by the signal).

US 13 at Marsh Lane/Wildel Avenue: US 13 at Marsh Lane/Wildel Avenue operates with protected-only left-turn phasing on the northbound and southbound US 13 approaches and concurrent left-turn phasing on the eastbound Marsh Lane and westbound Wildel Avenue approaches. Additionally, the eastbound New Castle County Public Safety driveway located approximately 125 feet north of the intersection operates as part of the signal. Vehicles from the New Castle County Public Safety driveway complete a right turn to access southbound US 13 and a subsequent southbound U-turn to access northbound US 13. The northbound and southbound US 13 approaches include a left-turn lane, three through lanes, and a right-turn lane. The eastbound Marsh Lane and westbound Wildel Avenue approaches include a left-turn lane and a right-turn lane. The eastbound New Castle County Public Safety driveway includes a single lane. Within the US 13 median, channelizing islands are provided to separate northbound and southbound left turns and to separate eastbound and westbound left turns. Pedestrian signals and crosswalks are provided across the west leg of the intersection and diagonally across US 13 from the southwest to northeast corner of the intersection.

US 13 at Memorial Drive: US 13 at Memorial Drive operates with protected/permissive left-turn phasing with flashing red arrow indications on the northbound US 13 approach, protected-only left-turn phasing on the southbound US 13 approach, and split phasing on the eastbound and westbound Memorial Drive approaches. The northbound and southbound US 13 approaches include a channelized left-turn lane, three through lanes, and a channelized right-turn lane. The eastbound Memorial Drive approach includes a left-turn lane and shared left-turn/through lane. Eastbound Memorial Drive right turns onto southbound US 13 are served by a spur road located approximately 150 feet south of the intersection. The westbound Memorial Drive approach includes a left-turn lane, shared left-turn/through lane, and a channelized right-turn lane. YIELD (R1-2) signs are posted for the northbound, southbound, and westbound right-turning movements. An acceleration/deceleration auxiliary lane is provided along northbound US 13 between Memorial Drive and the Wawa driveway located approximately 300 feet north of Memorial Drive (the acceleration lane length does not meet AASHTO criteria for acceleration lane lengths). Pedestrian signals and crosswalks are provided across the east, west, and south legs of the intersection.

US 13 at Hessler Boulevard: US 13 at Hessler Boulevard operates with protected-only left-turn phasing on the northbound and southbound US 13 approaches and split phasing on the eastbound Hessler Boulevard and westbound Comcast driveway approaches. The northbound US 13 approach includes two left-turn lanes, three through lanes, and a right-turn lane. The southbound US 13 approach includes a channelized left-turn lane, three through lanes, and a channelized right-turn lane. The eastbound Hessler Boulevard approach includes a left-turn lane, a shared left-turn/through lane, and a channelized right-turn lane. No pavement markings are provided on the east leg of the intersection; however, the approach generally operates as a shared left-turn/through lane and a right-turn lane. YIELD (R1-2) signs are posted for the southbound and eastbound right-turning movements. An auxiliary acceleration/deceleration lane is provided along southbound US 13 from Hessler Boulevard to Memorial Drive (the acceleration lane length does not meet AASHTO criteria for acceleration lane lengths). No pedestrian accommodations are provided at the intersection.

US 13 at I-495 Ramps: US 13 at the I-495 Ramps intersection operates with protected-only left-turn phasing on the southbound US 13 approach. The west leg of the intersection is one-way eastbound and serves southbound I-495 to northbound US 13 movements. The east leg of the intersection is one-way eastbound (i.e., away from the intersection) and serves southbound US 13 to northbound I-495 movements. The northbound US 13 approach includes two through lanes. The southbound US 13 approach includes a left-turn lane and two through lanes. The eastbound approach includes a left-turn lane and a shared left-turn/through lane. No pedestrian accommodations are provided at the intersection.

US 13 at Heald Street (US 13A): US 13 at Heald Street operates with protected phasing for westbound Heald Street left turns. A four second trailing overlap is provided for the westbound Heald Street phase to reduce the probability of vehicles being trapped within the wide US 13 median. The northbound and southbound US 13 approaches include two through lanes. The westbound Heald Street approach includes two left-turn lanes. No pedestrian accommodations are provided at the intersection.

January 2015

Existing Conditions
US 13

SR 273
to
Market St/Walnut St

- Traffic Signal
- Existing Bus Stop
- Daily Bus Board/Alight
- Existing Luminaire
- Existing Sidewalk
- Pedestrian Bridge
- No Ramp
- Pedestrian Non-Injury Crash
- Bicycle Non-Injury Crash
- Pedestrian Injury Crash
- Bicycle Injury Crash
- Pedestrian Fatal Crash
- Bicycle Fatal Crash
- Dark — Nighttime Crash
- Hourly Ped Volume (highest recorded hour of 3 peaks)

Crash study period - January 2005 through December 2012

Feet
0 50 100 150 200

STUDY LIMIT

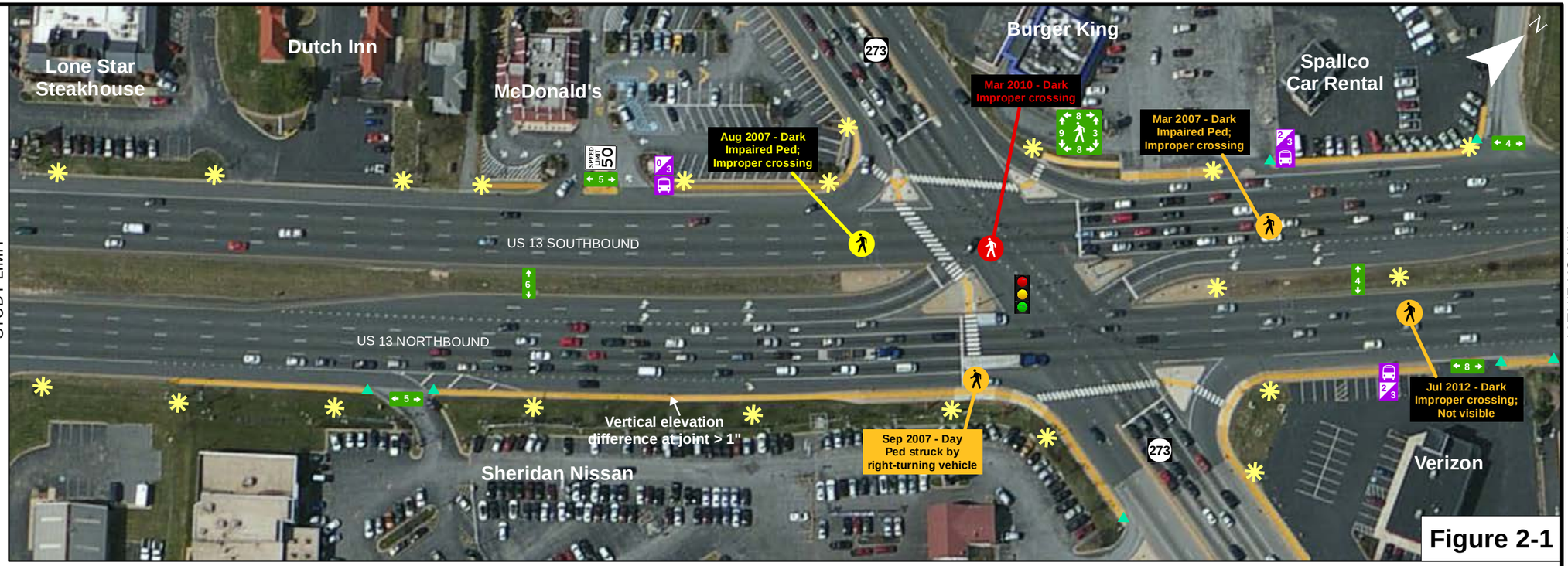


Figure 2-1

MATCH LINE A

Figure 2-2

MATCH LINE B

January 2015

Existing Conditions
US 13

SR 273
to
Market St/Walnut St

- Traffic Signal
- Existing Bus Stop
- Daily Bus Board/Alight
- Existing Luminaire
- Existing Sidewalk
- Pedestrian Bridge
- No Ramp
- Pedestrian Non-Injury Crash
- Bicycle Non-Injury Crash
- Pedestrian Injury Crash
- Bicycle Injury Crash
- Pedestrian Fatal Crash
- Bicycle Fatal Crash
- Dark — Nighttime Crash
- Hourly Ped Volume (highest recorded hour of 3 peaks)

Crash study period - January 2005 through December 2012

Feet
0 50 100 150 200

Figure 2-3

Figure 2-4

January 2015

Existing Conditions

US 13

SR 273
to
Market St/Walnut St

- Traffic Signal
- Existing Bus Stop
- Daily Bus Board/Alight
- Existing Luminaire
- Existing Sidewalk
- Pedestrian Bridge
- No Ramp
- Pedestrian Non-Injury Crash
- Bicycle Non-Injury Crash
- Pedestrian Injury Crash
- Bicycle Injury Crash
- Pedestrian Fatal Crash
- Bicycle Fatal Crash
- Dark — Nighttime Crash
- Hourly Ped Volume (highest recorded hour of 3 peaks)

Crash study period - January 2005 through December 2012

Feet
0 50 100 150 200

MATCHLINE D

MATCH LINE E

Figure 2-5

MATCH LINE E

MATCH LINE F

Figure 2-6

January 2015

Existing Conditions
US 13

SR 273
to
Market St/Walnut St

- Traffic Signal
- Existing Bus Stop
- Daily Bus Board/Alight
- Existing Luminaire
- Existing Sidewalk
- Pedestrian Bridge
- No Ramp
- Pedestrian Non-Injury Crash
- Bicycle Non-Injury Crash
- Pedestrian Injury Crash
- Bicycle Injury Crash
- Pedestrian Fatal Crash
- Bicycle Fatal Crash
- Dark — Nighttime Crash
- Hourly Ped Volume (highest recorded hour of 3 peaks)

Crash study period - January 2005 through December 2012

0 50 100 150 200 Feet

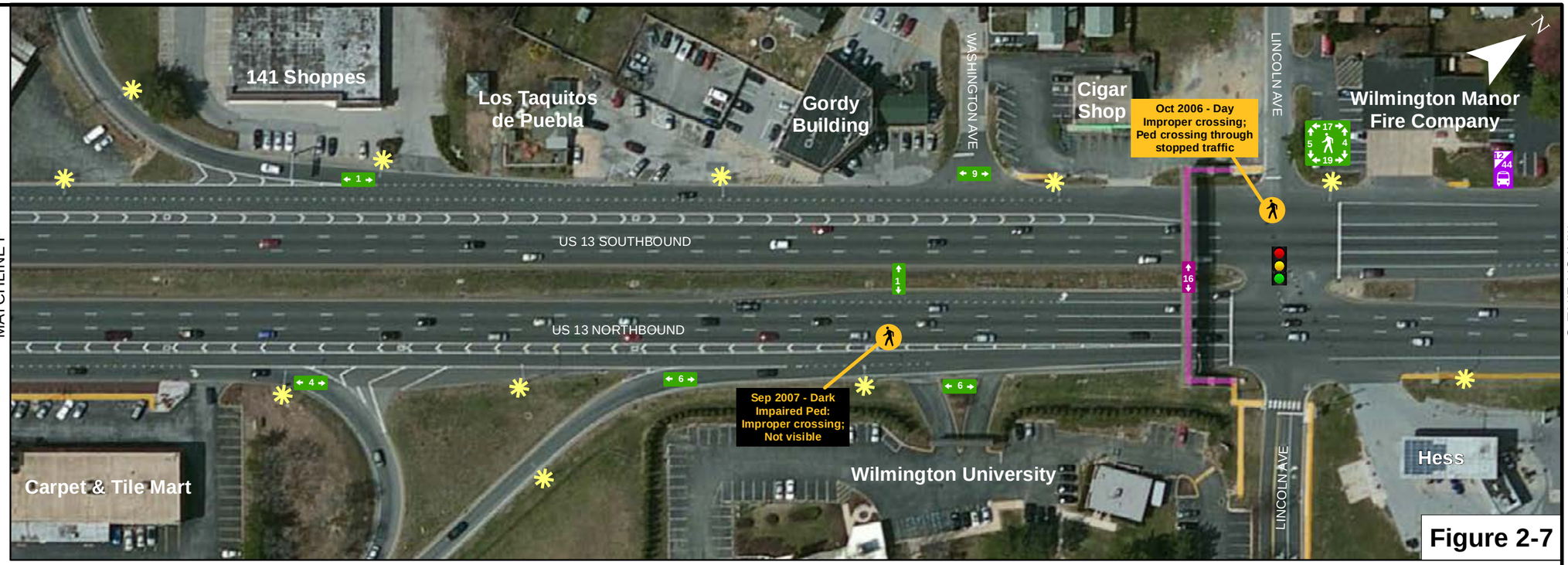


Figure 2-7

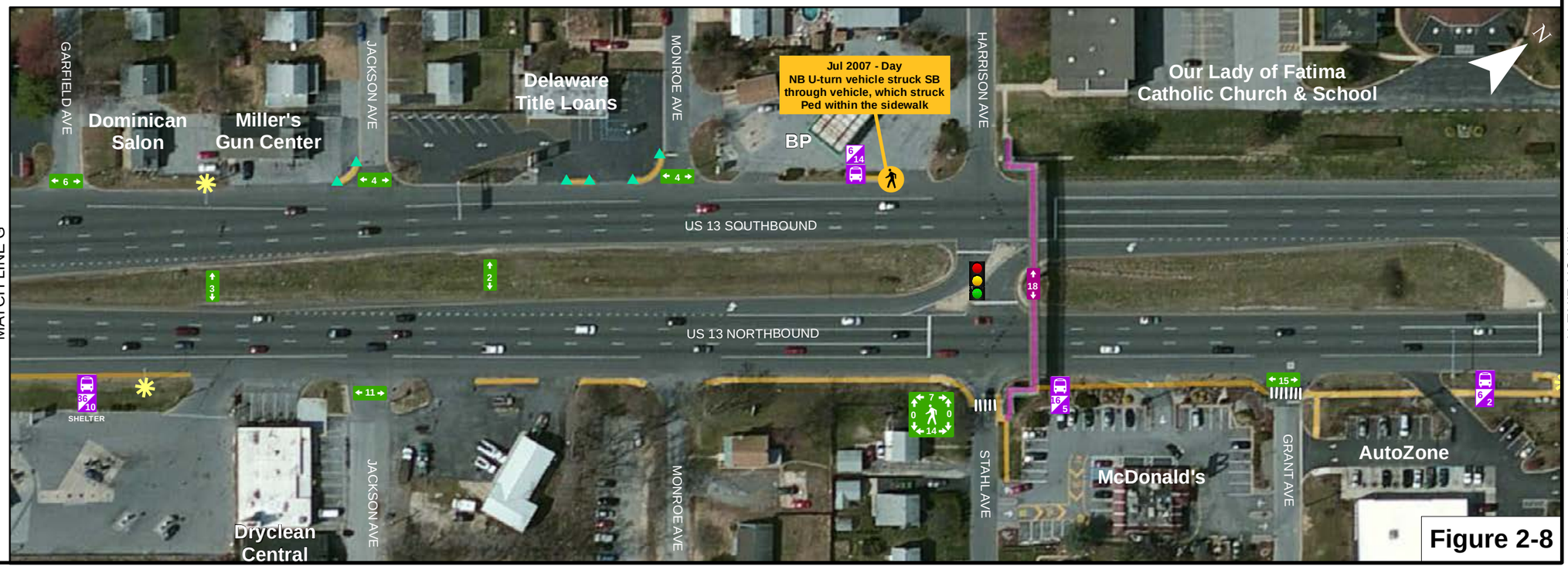


Figure 2-8

January 2015

Existing Conditions
US 13

SR 273
to
Market St/Walnut St

- Traffic Signal
- Existing Bus Stop
- Daily Bus Board/Alight
- Existing Luminaire
- Existing Sidewalk
- Pedestrian Bridge
- No Ramp
- Pedestrian Non-Injury Crash
- Bicycle Non-Injury Crash
- Pedestrian Injury Crash
- Bicycle Injury Crash
- Pedestrian Fatal Crash
- Bicycle Fatal Crash
- Dark — Nighttime Crash
- Hourly Ped Volume (highest recorded hour of 3 peaks)

Crash study period - January 2005 through December 2012

Feet
0 50 100 150 200

January 2015

Existing Conditions
US 13

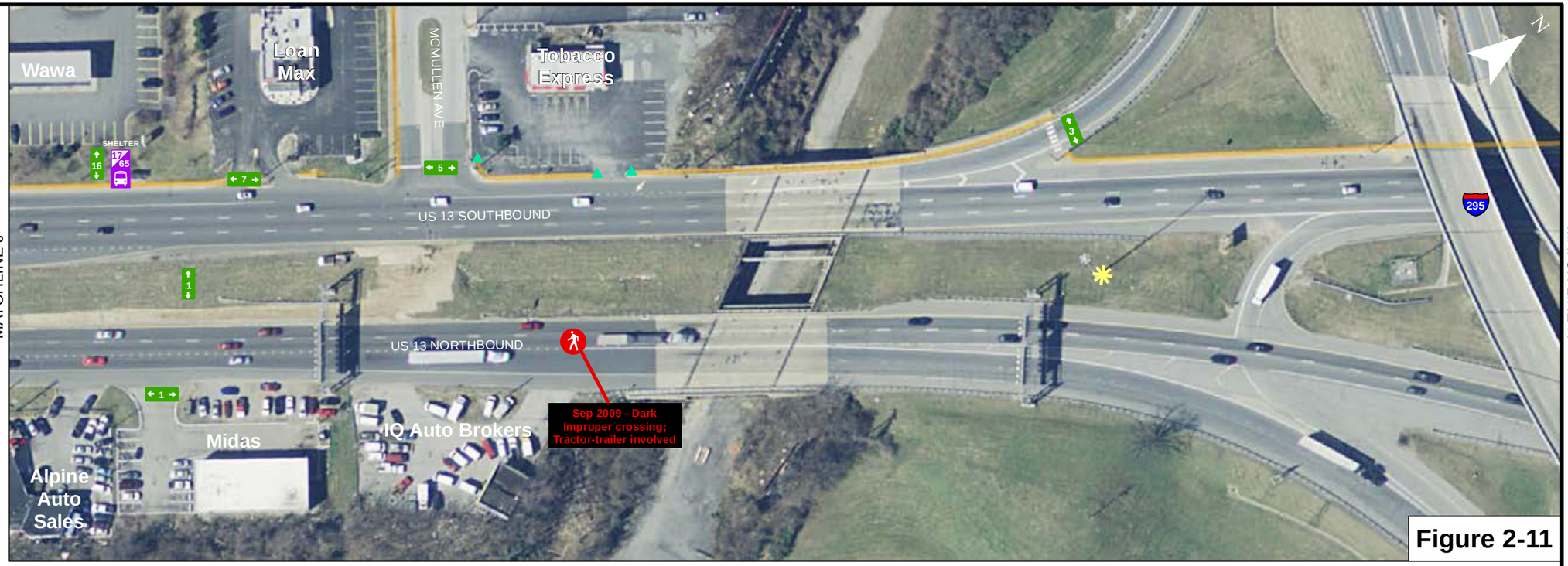
SR 273
to
Market St/Walnut St

- Traffic Signal
- Existing Bus Stop
- Daily Bus Board/Alight
- Existing Luminaire
- Existing Sidewalk
- Pedestrian Bridge
- No Ramp
- Pedestrian Non-Injury Crash
- Bicycle Non-Injury Crash
- Pedestrian Injury Crash
- Bicycle Injury Crash
- Pedestrian Fatal Crash
- Bicycle Fatal Crash
- Dark — Nighttime Crash
- Hourly Ped Volume (highest recorded hour of 3 peaks)

Crash study period - January 2005 through December 2012

Feet
0 50 100 150 200

MATCHLINE J



MATCH LINE K

Figure 2-11

MATCH LINE K

MATCH LINE L

Figure 2-12

January 2015

Existing Conditions
US 13

SR 273
to
Market St/Walnut St

- Traffic Signal
- Existing Bus Stop
- Daily Bus Board/Alight
- Existing Luminaire
- Existing Sidewalk
- Pedestrian Bridge
- No Ramp
- Pedestrian Non-Injury Crash
- Bicycle Non-Injury Crash
- Pedestrian Injury Crash
- Bicycle Injury Crash
- Pedestrian Fatal Crash
- Bicycle Fatal Crash
- Dark — Nighttime Crash
- Hourly Ped Volume (highest recorded hour of 3 peaks)

Crash study period - January 2005 through December 2012

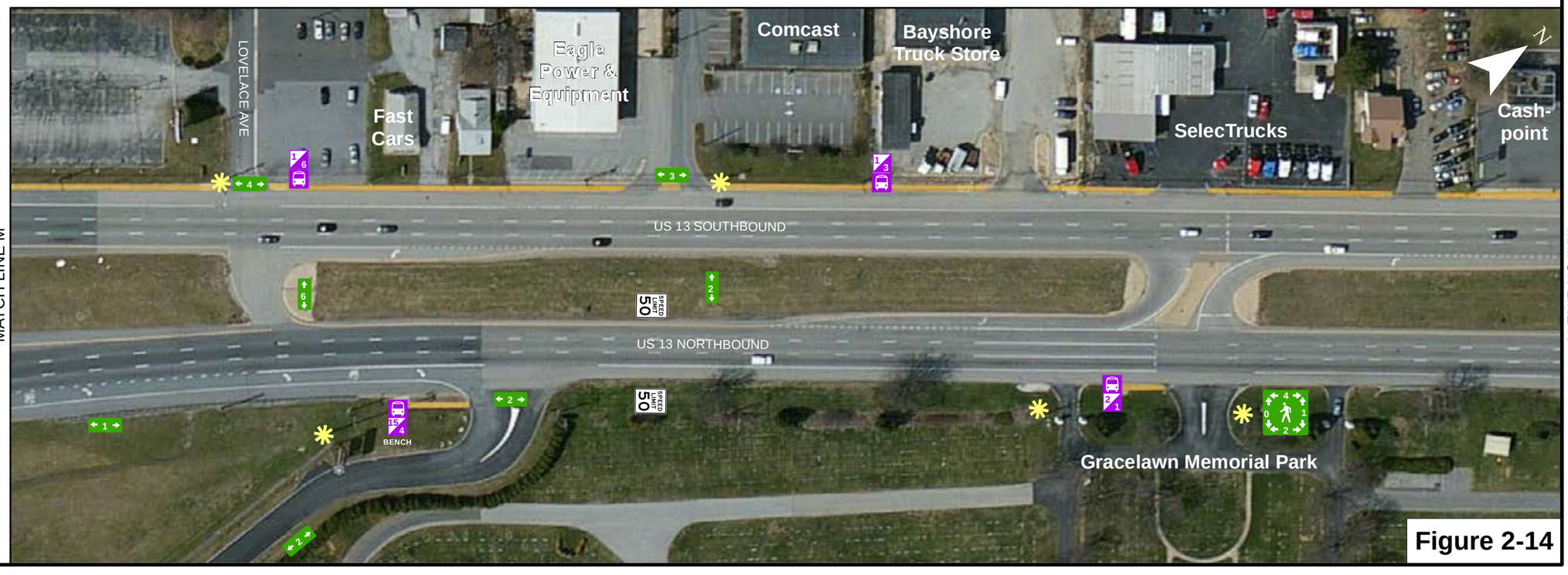
0 50 100 150 200 Feet

MATCHLINE L

MATCH LINE M

Figure 2-13

MATCH LINE M



MATCH LINE N

Figure 2-14

January 2015

Existing Conditions
US 13

SR 273
to
Market St/Walnut St

- Traffic Signal
- Existing Bus Stop
- Daily Bus Board/Alight
- Existing Luminaire
- Existing Sidewalk
- Pedestrian Bridge
- Pedestrian Non-Injury Crash
- Bicycle Non-Injury Crash
- Pedestrian Injury Crash
- Bicycle Injury Crash
- Pedestrian Fatal Crash
- Bicycle Fatal Crash
- No Ramp
- Dark — Nighttime Crash
- Hourly Ped Volume (highest recorded hour of 3 peaks)

Crash study period - January 2005 through December 2012

Feet
0 50 100 150 200

MATCHLINE N

Delaware Plumbing Supply
Alderman Auto & Marine
Auto Auction
Tools & More
MARSH LN
US 13 SOUTHBOUND
US 13 NORTHBOUND
Sep 2009 - Dark Improper crossing
Dec 2007 - Dark Not visible; Ped walking in right-turn lane/shoulder
Mar 2008 - Dark Improper crossing
WILDELAVE
Collins Business Systems

MATCH LINE O

Figure 2-15

MATCH LINE O

Public Safety Building
Public Storage
HAZELDELL AVE
MEMORIAL DR
SHELTER
Oct 2005 - Dark Improper crossing
SPEED LIMIT 50
US 13 SOUTHBOUND
FIRE SIGNAL
Dec 2008 - Dark Improper crossing
US 13 NORTHBOUND
Sep 2011 - Day Improper crossing; Not visible
City Auto Sale
MINQUADALE BLVD
DOVER ST
Giovanni's Place II
Sharp Shooters
New York Fried Chicken

MATCH LINE P

Figure 2-16

January 2015

Existing Conditions
US 13

SR 273
to
Market St/Walnut St

- Traffic Signal
- Existing Bus Stop
- Daily Bus Board/Alight
- Existing Luminaire
- Existing Sidewalk
- Pedestrian Bridge
- No Ramp
- Pedestrian Non-Injury Crash
- Bicycle Non-Injury Crash
- Pedestrian Injury Crash
- Bicycle Injury Crash
- Pedestrian Fatal Crash
- Bicycle Fatal Crash
- Dark — Nighttime Crash
- Hourly Ped Volume (highest recorded hour of 3 peaks)

Crash study period - January 2005 through December 2012

Feet
0 50 100 150 200

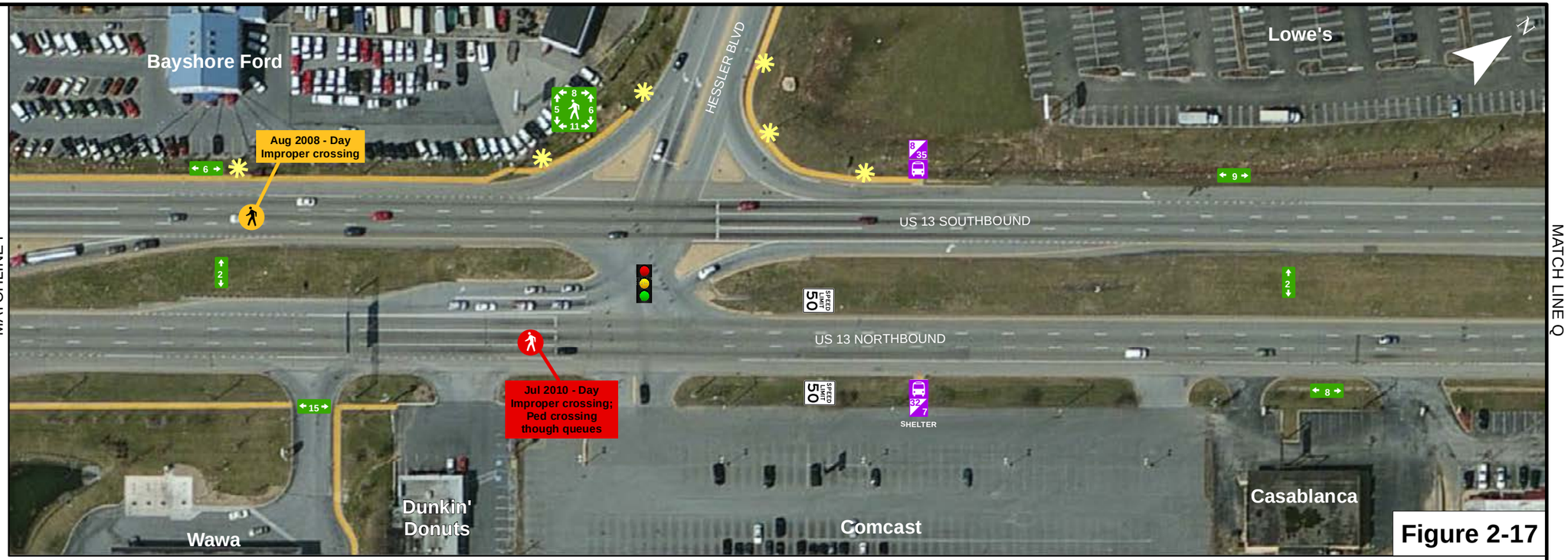


Figure 2-17

Figure 2-18

January 2015

Existing Conditions
US 13

SR 273
to
Market St/Walnut St

- Traffic Signal
- Existing Bus Stop
- Daily Bus Board/Alight
- Existing Luminaire
- Existing Sidewalk
- Pedestrian Bridge
- No Ramp
- Pedestrian Non-Injury Crash
- Bicycle Non-Injury Crash
- Pedestrian Injury Crash
- Bicycle Injury Crash
- Pedestrian Fatal Crash
- Bicycle Fatal Crash
- Dark — Nighttime Crash
- Hourly Ped Volume (highest recorded hour of 3 peaks)

Crash study period - January 2005 through December 2012

Feet
0 50 100 150 200

Figure 2-19

Figure 2-20

January 2015

Existing Conditions
US 13

SR 273
to
Market St/Walnut St

- Traffic Signal
- Existing Bus Stop
- Daily Bus Board/Alight
- Existing Luminaire
- Existing Sidewalk
- Pedestrian Bridge
- No Ramp
- Pedestrian Non-Injury Crash
- Bicycle Non-Injury Crash
- Pedestrian Injury Crash
- Bicycle Injury Crash
- Pedestrian Fatal Crash
- Bicycle Fatal Crash
- Dark — Nighttime Crash
- Hourly Ped Volume (highest recorded hour of 3 peaks)

Crash study period - January 2005 through December 2012

Feet
0 50 100 150 200

Figure 2-21

Figure 2-22

Crash Data

Pedestrian/Bicycle Crashes: A total of 34 pedestrian crashes and 6 bicycle crashes were reported during the eight-year study period from January 2005 through December 2012, including 14 fatal pedestrian crashes, 16 injury pedestrian crashes, and 3 injury bicycle crashes. Of the 7 total fatalities reported during the three-year study period from January 2010 through December 2012, 6 (86 percent) fatalities were pedestrians. All pedestrian and bicycle crashes during the eight-year study period were reviewed in detail and are summarized by location, lighting condition, and crash circumstances in **Figures 2-1 to 2-22**. Twenty-two (65 percent) pedestrian crashes occurred at nighttime and three (50 percent) bicycle crashes occurred at nighttime. Pedestrian and bicycle crash characteristics are summarized by time of day and impairment in **Figure 3-1**. As shown, 9 (23 percent) pedestrian and bicycle crashes involved an impaired pedestrian or bicyclist and 27 (73 percent) of the 40 total pedestrian and bicycle crashes occurred between 2 PM and 12 AM. **Figures 3-2 to 3-4** summarize pedestrian and bicycle crashes during the study period by the age of the pedestrian or bicyclist involved, year of the crash, and day of week, respectively. As shown, 11 (28 percent) crashes involved pedestrians/bicyclists between the ages of 46 and 55, pedestrian/bicycle crashes increased in 2007 and 2008, and 10 (25 percent) pedestrian/bicycle crashes occurred on a Wednesday. Additionally, improper crossings (i.e., not crossing within a marked crosswalk) resulted in 26 (76 percent) of the 34 total pedestrian crashes. Specifically, improper crossings between 6 PM and 7 AM resulted in 20 (59 percent) of the 34 total pedestrian crashes. **Table 1** summarizes pedestrian and bicycle crashes compared to the distance to signalized crosswalks across US 13. As shown, the highest number of crashes per mile occurred along US 13 between Roosevelt Avenue and Bacon Avenue/Boulden Boulevard. The next highest number of crashes per mile occurred along US 13 between Marsh Lane/Wildel Avenue and Hessler Boulevard. Furthermore, 16 (47 percent) of the 34 total pedestrian crashes during the study period occurred within 200 feet of a signalized crosswalk.

In addition to the pedestrian crashes reported during the study period, four fatal pedestrian crashes occurred in 2013 and 2014 following the study period.

- Monday, July 29, 2013 – The crash occurred in the southbound US 13 lanes just south of Memorial Drive. The pedestrian attempted to cross the southbound lanes of US 13 in a westerly direction approximately 40 feet south of the marked crosswalk located on the south leg of the intersection and was struck by a southbound vehicle. The crash occurred at 9:49 PM during dry, clear conditions. The pedestrian/victim succumbed to injuries in September 2013. Alcohol and drugs were not contributing factors of the crash.

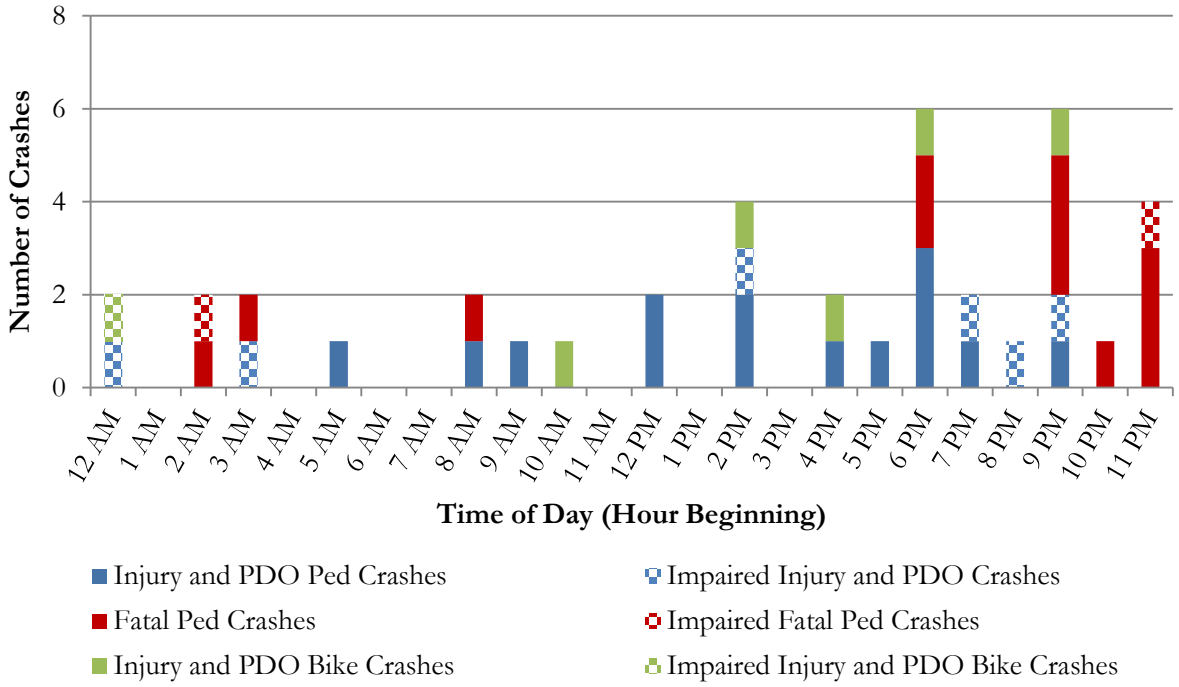
- Monday, April 21, 2014 – The crash occurred north of the US 13 at School Lane intersection. The pedestrian attempted to cross the northbound lanes of US 13 in an easterly direction outside of a marked crosswalk and was struck by a northbound vehicle. The crash occurred at 9:35 PM during dry, clear conditions. Alcohol was a contributing factor on behalf of the pedestrian.

- Friday, May 30, 2014 – The crash occurred near the US 13 at SR 141 interchange. The pedestrian attempted to cross the northbound lanes of US 13 in a westerly direction outside of a marked crosswalk and was struck by a northbound vehicle. The crash occurred at 9:49 PM during dry, clear conditions. Alcohol or drugs was a contributing factor on behalf of the pedestrian.

- Tuesday, June 17, 2014 – The crash involved a northbound US 13 vehicle which lost control, departed the east edge of the roadway, and struck a person on a lawn mower in front of Wilmington University located just north of the on-ramp from SR 141. The crash occurred at 1:50 PM during dry, clear conditions. The driver of the vehicle, which may have experienced a medical condition causing the crash, was also fatally injured.

- Tuesday, July 21, 2015 – The crash occurred along southbound US 13 south of the SR 141 interchange. The pedestrian attempted to cross the southbound lanes of US 13 in an easterly direction outside of a marked crosswalk and was struck by a southbound US 13 tractor trailer. The tractor trailer swerved in an attempt to avoid the pedestrian. The crash occurred at 6:38 AM during dry, clear conditions. Alcohol and speed were not a contributing factor on the part of the driver. At the time of this report, impairment on the part of the pedestrian is not known.

Figure 3-1 – US 13, SR 273 to Market Street/Walnut Street Split
Pedestrian and Bicycle Crashes by Time of Day (January 2005 – December 2012)



* There were no reported bike crashes that resulted in a fatality during the study period.

Figure 3-2 – US 13, SR 273 to Market Street/Walnut Street Split
Pedestrian and Bicycle Crashes by Age of Pedestrian/Bicyclist (January 2005 – December 2012)

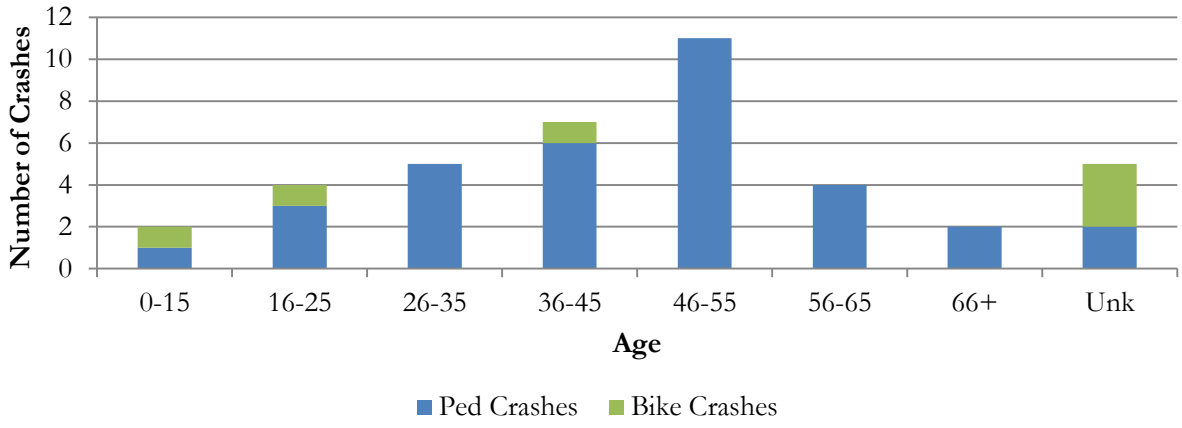


Figure 3-3 – US 13, SR 273 to Market Street/Walnut Street Split
Pedestrian and Bicycle Crashes by Year

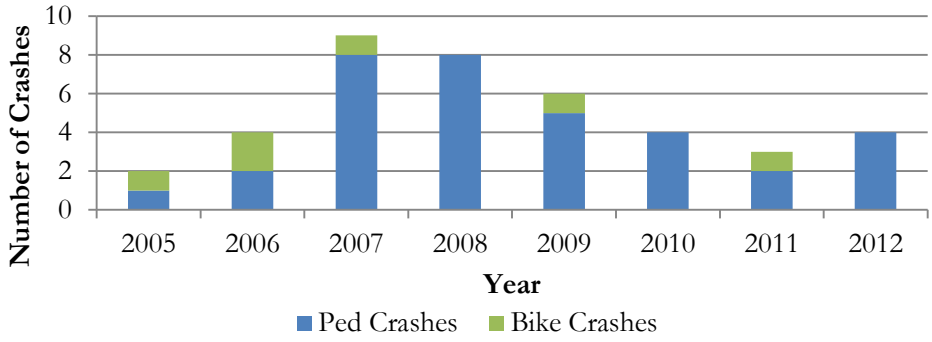


Figure 3-4 – US 13, SR 273 to Market Street/Walnut Street Split
Pedestrian and Bicycle Crashes by Day of Week (January 2005 – December 2012)

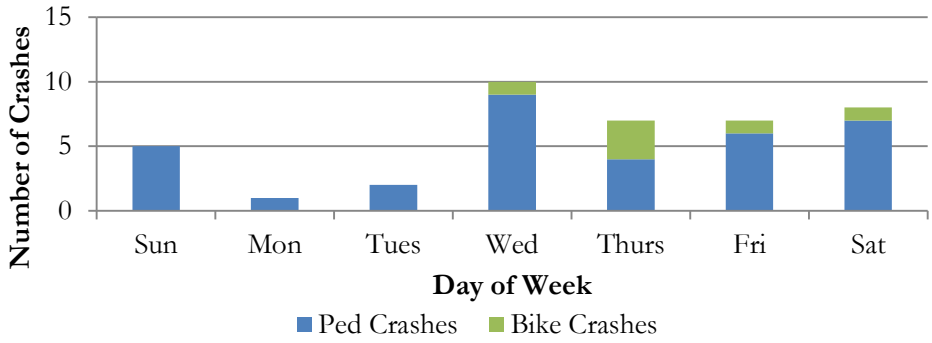


Table 1 – US 13, SR 273 to Market Street/Walnut Street Split
Pedestrian and Bicycle Crashes by Distance between Signals along US 13

Segment		Length (mile)	Total Access Points	Access Points Per Mile	Ped & Bike Crashes	Ped & Bike Crashes Per Mile
From	To					
SR 273	School Lane	0.66	12	18	8	12.1
School Lane	Lincoln Avenue	0.86	37	43	3	3.5
Lincoln Avenue	Harrison Avenue/ Stahl Avenue	0.20	17	86	2	10.0
Harrison Avenue/ Stahl Avenue	Roosevelt Avenue	0.10	2	21	0	0.0
Roosevelt Avenue	Bacon Avenue/ Boulden Boulevard	0.29	23	79	6	20.7
Bacon Avenue/ Boulden Boulevard	State Hospital driveway	0.75	21	28	5	6.7
State Hospital driveway	Marsh Lane/ Wildel Avenue	0.65	21	32	2	3.1
Marsh Lane/ Wildel Avenue	Memorial Drive	0.24	9	38	4	16.7
Memorial Drive	Hessler Boulevard	0.12	2	16	2	16.7
Hessler Boulevard	I-495 Ramps	0.36	6	17	1	2.8
I-495 Ramps	Heald Street	0.26	2	8	1	3.8
Heald Street	Market Street/ Walnut Street Split	0.60	13	22	6	10.0
Total		**5.09**	**165**	**32**	**40**	**7.9**

Vehicular Crashes: A total of 1,161 crashes (including pedestrian and bicycle crashes) were reported during the three-year period from January 2010 through December 2012. Of the 1,161 crashes reported throughout the corridor, 370 (32 percent) crashes occurred during night/dawn/dusk conditions and 210 (18 percent) crashes occurred on wet/snow/ice-covered roadways. **Table 2** includes a summary of the total crashes, percent nighttime crashes, and percent wet roadway crashes at the 12 signalized intersections and at unsignalized intersections with relatively high crash clusters within the study limits. Individual crashes were attributed to the intersections shown below using intersection influence areas (i.e., from the beginning of left-turn lanes or within approximately 500 feet of the intersection).

Table 2 – Crash Data Summary (2010 – 2012)

Intersection	Total Number of Crashes[1]	Nighttime Crashes		Wet Weather Crashes	
		Number	Percent	Number	Percent
US 13 at SR 273	144	58	40%	24	17%
US 13 at School Ln	67	20	30%	12	18%
US 13 at Lincoln Ave	57	13	23%	11	19%
US 13 at Harrison Ave/Stahl Ave	43	8	19%	2	5%
US 13 at Roosevelt Ave	70	23	33%	18	26%
US 13 at Franklin Ave	44	14	32%	6	14%
US 13 at Bacon Ave/Boulden Blvd	148	43	29%	21	14%
US 13 at Parkway Plaza	13	1	8%	1	8%
NB US 13 at McMullen Ave	20	6	30%	5	25%
US 13 at State Hospital	32	8	25%	4	13%
US 13 at Marsh Ln/Wildel Ave	31	15	48%	6	19%
US 13 at Hazeldell Ave & Memorial Dr	85	21	25%	14	16%
US 13 at Hessler Blvd	31	9	29%	5	16%
US 13 at I-495 Ramps	8	2	25%	3	38%
US 13 at Heald St (US13A)	9	2	22%	1	11%
US 13, Rogers Rd to bridge south of Market Street/Walnut Street split	33	12	36%	9	27%
Corridor-Wide	**1,161**	**370**	**32%**	**210**	**18%**

[1] Includes vehicular, pedestrian, and bicycle crashes

Transit Inventory

Within any transportation system, all transit riders begin and end their trip as pedestrians; therefore, evaluating bus stop locations and ridership behavior is important in evaluating overall pedestrian safety along a corridor. Bus stops along US 13 within the study limits serve DART Bus Routes 16, 17, 19, 22, 23, 25, and 59. Route 16 serves Fairfield, Nottingham Green, Oaklands, Newark, Newark Train Station, SR 896 and SR 4 Park & Ride, I-95 Service Plaza, and Downtown Wilmington. Route 17 serves the Baylor Women's Correctional Institution, Health & Social Services Campus, Southgate Industrial Park, Riveredge Industrial Park, Department of Corrections, Memorial Drive, Holloway Terrace, Dunleith, Rogers Road, ShopRite at Christiana Crossing, and Downtown Wilmington. Route 19 serves Pike Creek Valley, Skyline Drive, Limestone Road, Stanton, Prices Corner Park & Ride, and Downtown Wilmington. Route 22 serves Walmar, Wilton/Dupont Highway, Airport Plaza, New Castle Airport, and Downtown Wilmington. Route 23 serves Comcast, University Plaza, Christiana Town Center, SR 273 and SR 7 Park & Ride, Wilton, Edinburgh Drive, Corporate Commons, and Downtown Wilmington. Route 25 serves Wrangle Hill Park & Ride, Delaware City, Fort Delaware, Delaware City Refinery, Tybouts Corner Park & Ride, Llangollen/Dupont Highway, Amazon.com, Airport Plaza, and Downtown Wilmington. Route 59 serves the Wilmington Amtrak Station, Fairplay Station, and Newark Station (see **Figure 4**). A summary of existing bus stop locations, amenities (e.g., bench, shelter), and ridership is provided in **Tables 3-1 and 3-2**. As shown, of the 36 total bus stops within the study corridor, 16 (44 percent) stops are located on the farside of an intersection. Of the 19 total bus stops provided at signalized intersections, 11 (58 percent) are located on the farside of the intersection. Additionally, bus stop locations and ridership data are provided graphically in **Figures 2-1 to 2-22**. **Photos 1 and 2** show examples of existing bus stops provided along northbound US 13 at Lincoln Avenue and southbound US 13 at School Lane, respectively.

DTC's *Bus Stop and Passenger Facilities Policy* establishes criteria for providing passenger amenities such as shelters and benches. Within moderate transit density areas, bus stop shelters are recommended at bus stops with 20 or more boardings per day. Benches are recommended at bus stops with 10 or more boardings per day. Pending discussions with DTC, installing bus stop shelters at the northbound and southbound US 13 bus stops at Millside Drive and at the southbound US 13 bus stop at Bacon Avenue is recommended. Additionally, installing benches at the northbound US 13 bus stop at Stahl Avenue and southbound US 13 bus stop at Lincoln Avenue is recommended.

Figure 4 - Existing Transit Service along US 13

Routing is subject to change based on rerouting due to construction or other circumstances that can only be addressed by altering the route temporarily or permanently.

*For assistance with trip planning, call **1.800.652.DART** or use the Google Trip Planner on DART's Home Page.*

DART
A Division of DelDOT
Getting There Starts Here

New Castle County
DART Transit Routes
Effective February 9, 2014

Table 3-1 – Transit Inventory Summary
Northbound US 13 Bus Stops

Dir.	Location	Routes	Stop Location	Shelter/ Bench?[1]	Lit?[2]	Stop ID	Stop Abbrev	Daily Weekday Ridership[3]	
								On	Off
Northbound US 13	US 13 at SR 273	22, 25	Farside	None	Y	2171	DNFR	2	3
	US 13 at Farmers Market	22, 25	Nearside	None	N	2172	DNFA	0	3
	US 13 at School Lane	22, 25	Farside	None	N	2173	DNSC	7	3
	US 13 at Nucar Chevrolet	22, 25	Midblock	None	N	2174	D1GE	1	1
	US 13 at Penn Mart Shopping Center	22, 25	Midblock	Shelter	Y	2175	D1PE	32	22
	US 13 at Lincoln Avenue	22, 25	Farside	Shelter	Y	2176	DNLI	36	10
	US 13 at Stahl Avenue	22, 25	Farside	None	N	2180	DNST	16	5
	US 13 at Roosevelt Avenue	22, 25	Nearside	None	N	2179	DNRO	6	2
	US 13 at Boulden Boulevard	22, 25	Nearside	Shelter	N	2181	DNBO	112	40
	US 13 at Lovelace Ave	22, 25	Farside	Bench	Y	1893	DNRA	15	4
	US 13 at Gracelawn Memorial Park	17, 22, 25	Nearside	None	Y	1894	DNGR	2	1
	US 13 south of Wildel Avenue	17, 22, 25	Midblock	None	N	1895	DNAL	0	2
	US 13 at Wildel Avenue	17, 22, 25	Farside	None	N	1896	D1WI	5	3
	US 13 at Memorial Drive	17, 22, 25	Nearside	Shelter	Y	196	DNME	90	47
	US 13 at Hessler Boulevard	22, 25	Nearside	Shelter	N	2183	DNCH	32	7
	US 13 at Millside Road	16, 22, 25, 30	Nearside	None	N	1855	DNMI	20	19

[1] Within the study corridor, all bus stops with shelters also have benches
[2] For the purposes of the report, a bus stop was considered lit when lighting along US 13 is provided within approximately 100 feet of the bus stop location
[3] February 2014 ridership data provided by Delaware Transit Corporation (DTC). Counts reflect weekday daily average ridership.

Table 3-2 – Transit Inventory Summary
Southbound US 13 Bus Stops

Dir.	Location	Routes	Stop Location	Shelter/ Bench?[1]	Lit?[2]	Stop ID	Stop Abbrev	Daily Weekday Ridership[3]	
								On	Off
Southbound US 13	US 13 at Millside Road	16,22,23, 25,30,33, 34,39,40, 41,42,54, 55	Farside	None	N	229	DSMI	22	42
	US 13 at Hessler Boulevard	22, 25	Nearside	None	Y	2114	DSHE	8	35
	US 13 at Memorial Drive	17, 22, 25	Farside	Shelter	Y	194	DSME	40	61
	US 13 at Wildel Avenue	17, 22, 25	Nearside	None	N	1887	DSCO	2	7
	US 13 south of Wildel Avenue	17, 22, 25	Midblock	None	N	1888	DSAL	0	0
	US 13 at Gracelawn Memorial Park	17, 22, 25	Midblock	None	N	1889	DSGR	1	3
	US 13 at Lovelace Avenue	17, 22, 25	Nearside	None	Y	1890	DSLO	1	6
	US 13 at Central Avenue	17, 22, 25	Nearside	None	Y	1891	DSCE	0	1
	US 13 at State Hospital	17, 22, 25	Nearside	None	N	1892	D0HE	8	17
	US 13 at McMullen Avenue	22, 25	Farside	Shelter	N	2115	DSMC	17	65
	US 13 at Parkway Plaza	22, 25	Farside	None	N	2116	DSCA	1	7
	US 13 at Bacon Avenue	22, 25	Farside	None	N	2117	D0BC	25	72
	US 13 at Jefferson Avenue	22, 25	Farside	None	N	2118	DSJE	1	7
	US 13 at Roosevelt Avenue	22, 25	Nearside	None	N	2119	D0RO	3	9
	US 13 at Harrison Avenue	22, 25	Farside	None	N	2120	D0HA	6	14
	US 13 at Lincoln Avenue	22, 25	Nearside	None	N	2121	DSGA	12	44
	US 13 at NCC Airport	22, 25	Midblock	None	N	2123	DSNC	0	3
	US 13 at School Lane	22, 25	Farside	None	N	2125	DSDU	1	5
	US 13 at Old Churchmans Road	22	Farside	None	Y	2128	DSOC	2	3
	US 13 at SR 273	22	Farside	None	Y	2265	D0FR	0	3

[1] Within the study corridor, all bus stops with shelters also have benches
[2] For the purposes of the report, a bus stop was considered lit when lighting along US 13 is provided within approximately 100 feet of the bus stop location
[3] February 2014 ridership data provided by Delaware Transit Corporation (DTC). Counts reflect weekday daily average ridership.

Photo 1 – Existing Bus Stop with Shelter along Northbound US 13 at Lincoln Avenue

Photo 2 – Existing Bus Stop without Shelter along Southbound US 13 at School Lane

The existing transit routes and bus stops located along US 13 contribute a significant amount of pedestrian activity along the corridor, especially during peak hours when users are arriving and departing from their work places. Crash data was reviewed to determine whether there was any direct correlation between pedestrian crashes and the location of bus stops along the corridor. During the 8-year study period, 19 (53 percent) pedestrian crashes were reported within approximately 200 feet of a bus stop. Based on an individual review of the crash report narratives, there was no mention of a pedestrian involved in a crash being destined for or leaving a bus stop; however, it is possible that due to the circumstances of the crashes, this information may not have been available. Coordinating with DSP to create a "cheat sheet" for the type of information to include in a pedestrian crash report (and incorporating this information into DELJIS E-Crash training) is recommended to provide additional information on the circumstances of pedestrian crashes.

As part of a similar pedestrian safety study, DelDOT Traffic representatives met with DTC on March 25, 2014 to discuss the potential for upgrades and modifications to transit amenities to improve safety for transit users along the SR 2 corridor. Specifically, the following items were discussed with DTC that are also relevant to the US 13 study corridor:

- As noted in DTC's *Bus Stop and Passenger Facilities Policy*, DTC prefers farside bus stop locations to facilitate bus re-entry into the traffic flow and minimize conflicts with right-turning vehicles and pedestrians crossing the intersection. Nearside bus stops may be considered on a case-by-case basis and it is very desirable to get bus operators' input into the decision-making process. Delaware does not have any current laws requiring vehicles to yield to buses, thus DTC is generally reluctant to put bus stops on the near side of intersections unless there are compelling safety and/or operational advantages of a nearside location.
- DTC uses land use patterns to make decisions about bus stop placement. Per Federal Highway Administration's (FHWA) *Pedestrian Safety Guide for Transit Agencies* (February 2008), pedestrians are typically willing to walk for five to ten minutes, or approximately 0.25-mile to 0.5-mile to a transit stop. DTC prefers to provide bus stop spacing of 750 to 1300 feet.
- Prerecorded audio messages directing pedestrians to cross at designated crosswalks could be played on buses; however, DTC sometimes has concerns regarding too many announcements on buses. More critical locations and/or major intersections could potentially be prioritized.

DTC and DelDOT both agreed that closer coordination between the two agencies is desirable as decisions about placement of new or relocated bus stops are made. The following initiatives are recommended:

- Establish a working group (including a DelDOT Traffic Safety Engineer) to coordinate aspects of both new and old bus stop locations
- Enhance the current *Bus Stop and Passenger Facilities Policy* (DTC-05) to incorporate and improve pedestrian safety
- Develop pedestrian safety advertisements to install at bus stop shelters, specifically at high ridership locations (all bus stops with shelters within the US 13 study corridor have high ridership; therefore, would be candidate locations for the advertisements)
- Develop and distribute questionnaires to transit riders along the US 13 study corridor to gather feedback about pedestrian safety and facilities to better identify the topics needing further public outreach

Pedestrian Observations

Pedestrian observations and counts were performed along the US 13 study corridor during morning, midday, and evening peak hours (i.e., 7 AM to 9 AM, 11 AM to 1 PM, and 3 PM to 6 PM) on a Tuesday, Wednesday, or Thursday in April 2014 when weather conditions were generally clear and dry with fair temperatures. In addition, pedestrian observations and counts were performed on Friday, September 26, 2014 from 6 PM to 9:30 PM along US 13 north of Rogers Road (see the Improvement Alternative Evaluation/Analyses section of the report for details). The highest recorded hour during the duration of the pedestrian counts is depicted in **Figures 2-1 to 2-22**. Pedestrian behaviors observed throughout the US 13 corridor are discussed below.

Mid-block Crossings: Pedestrians were frequently observed crossing US 13 at mid-block locations throughout the study corridor (see **Photo 3**). Pedestrians that cross at mid-block locations create a dangerous situation for both pedestrians and drivers – pedestrians may put themselves in danger if they misjudge the speed of approaching vehicles and the time it takes to safely cross the road; drivers may be startled and confused by an unexpected pedestrian crossing the road, causing the driver to slam on their brakes. According to the National Highway Traffic Safety Association's (NHTSA) *National Pedestrian Crash Report* (June 2008), 78 percent of pedestrians killed were at non-intersection (i.e., mid-block) locations over the past decade. Based on field observations, pedestrians were occasionally observed crossing US 13 at mid-block locations within 200-feet of a marked, signalized crosswalk. During the April 2014 pedestrian observations, a relatively high volume (i.e., 5 or more pedestrians per hour) of mid-block crossings across US 13 occurred at the following locations:

- South of SR 273
- Jackson Avenue (approximately 500 feet south of Harrison Avenue/Stahl Avenue)
- Jefferson Avenue/Stahl Avenue (approximately 750 feet south of Bacon Avenue/Boulden Boulevard)
- South of Bacon Avenue/Boulden Boulevard
- Across Bacon Avenue west of US 13
- Lovelace Avenue
- E. Hazeldell Avenue (Fire Signal) – highest throughout corridor
- Across Memorial Drive east of US 13
- North of Rogers Road

Waiting/Walking within the Median: Due to the heavy traffic volumes along US 13, pedestrians crossing at midblock locations may experience significant delays waiting for acceptable gaps in traffic; therefore, pedestrians frequently perform two-stage crossings (similar to signalized crosswalks along the corridor) and wait within the median to minimize crossing delay. Additionally, pedestrians waiting within the median were observed walking along the median while waiting to cross to the other side of the roadway, effectively treating the US 13 median as a pedestrian walkway. A wide median (i.e., approximately 10 feet or greater) is provided along US 13 from SR 273 to just north of Rogers Road. A raised concrete median between 4 and 10 feet in width is provided along US 13 from just north of Rogers Road to approximately 250 feet north of Millside Drive. No median is provided along US 13 across the bridge located between Millside Drive and the Market Street/Walnut Street split. Guardrail is provided along the US 13 median from approximately 1,650 feet north of School Lane to Lincoln Avenue at the SR 141 interchange, at the I-295 interchange, and from the I-495 Ramps intersection to Heald Street, which discourages pedestrians from crossing US 13. In addition, short sections (i.e., less than approximately 200 feet) of guardrail are provided to protect bridge piers and overhead sign structures. Otherwise, there are no barriers provided within the median along US 13 within the study limits.

Photo 3 – Pedestrian Crossing US 13 at Mid-Block Location south of E. Hazeldell Avenue

Vehicular Travel Speeds

According to the most recent speed resolution dated February 24, 1983, the speed limit within the study limits is 50 miles per hour south of Heald Street, 45 miles per hour from Heald Street to 1,400 feet south of the City of Wilmington limit, and 40 miles per hour from 1,400 feet south of the City of Wilmington limit to the City of Wilmington limit. However, no speed limit signs are posted along northbound US 13 to indicate the 45 and 40 mph speed limit zones (a 35-mph speed limit sign is posted on northbound US 13 at the Market Street/Walnut Street split near the City of Wilmington limit). Additionally, speed limit signs are not posted along southbound US 13 to indicate the 40 mph speed limit zone.

Vehicular travel speeds were measured at five locations along northbound and southbound US 13 from SR 273 to the Market Street/Walnut Street split. Vehicular speeds were measured using radar during off-peak periods (i.e., 9 AM – 11 AM; 1 PM – 3 PM) on Tuesday, April 1, 2014; Wednesday, April 2, 2014; Tuesday, April 8, 2014; and Thursday, April 10, 2014. Speeds for vehicles to/from interchange ramps may not be representative of vehicles traveling along the mainline; therefore, vehicles entering and exiting ramps at the SR 141, I-295, and I-495 interchanges were excluded from the speed studies. As shown in **Table 4**, 85th-percentile speeds on northbound and southbound US 13 do not exceed 5 miles per hour above the posted speed limit except for along southbound US 13 near the SR 141 interchange and along northbound and southbound US 13 north of Rogers Road.

Table 4 – Speed Data Summary

Criteria	SR 273 to School Lane		SR 141 Interchange		South of I-295		South of I-495		North of Rogers Road	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
Posted Speed Limit	50	50	50	50	50	50	50	50	50	35
Speed Limit per Speed Resolution[1]	50	50	50	50	50	50	50	50	45	45
85th-Percentile Speed	54	53	55	58	48	52	51	48	51	52
Mean Speed	49	46	48	54	42	45	46	53	45	45
% > 5 mph over Speed Limit per Speed Resolution	38%	27%	32%	74%	9%	19%	17%	29%	49%	46%

[1] According to the most recent speed resolution dated February 28, 1983 (TR # SN22-83)

The following signing improvements are recommended to correspond to the latest speed resolutions along US 13 from SR 273 to the Market Street/Walnut Street split:

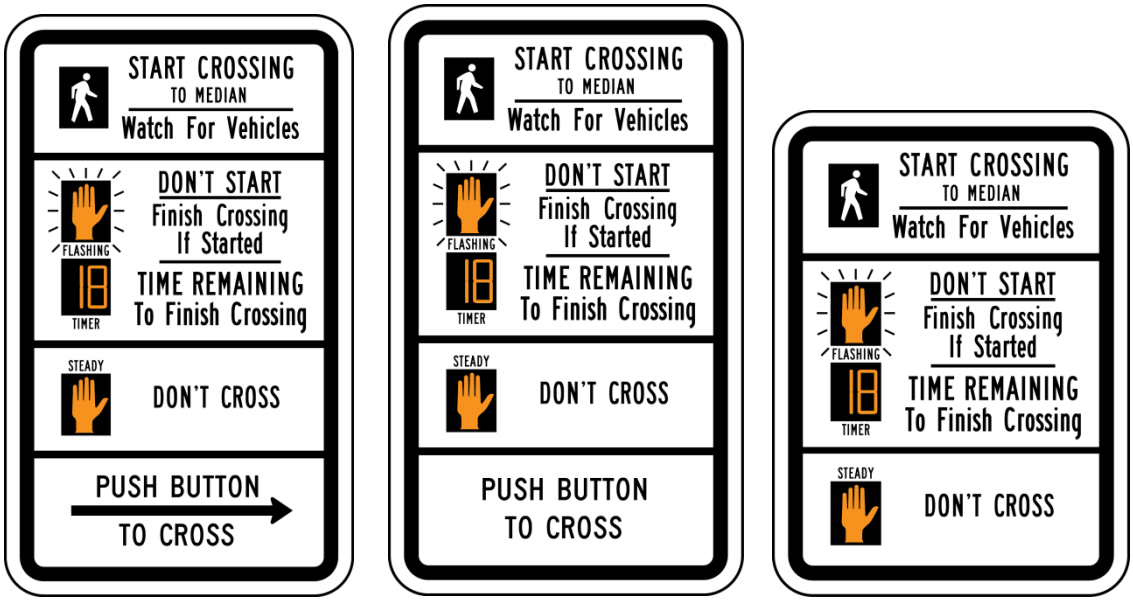
- Install a 50-mph Speed Limit (R2-1) sign on northbound US 13 north of Lincoln Avenue (i.e., north of the SR 141 interchange)
- Install a 45-mph Speed Limit (R2-1) sign on northbound US 13 just north of Heald Street
- Install a 40-mph Speed Limit (R2-1) sign on northbound US 13 approximately 450 feet north of Millside Drive
- Install a 40-mph Speed Limit (R2-1) sign on southbound US 13/Market Street south of the Market Street/Walnut Street split
- Relocate the existing 45-mph Speed Limit (R2-1) sign posted on southbound US 13 at Millside Drive to a point approximately 450 feet north of Millside Drive
- Install a 50-mph Speed Limit (R2-1) sign on southbound US 13 approximately 200 feet north of the southbound I-495 overpass (just south of the Heald Street signal)

PEDESTRIAN SAFETY EVALUATION/ANALYSES

Pedestrian Pushbutton Evaluation

Signalized crosswalks with pedestrian signals and pushbuttons are provided across US 13 at SR 273, School Lane, Roosevelt Avenue, Bacon Avenue/Boulden Boulevard, Marsh Lane/Wildel Avenue, and Memorial Drive. Additionally, several signalized crosswalks are provided across side street approaches (i.e., non-US 13 crossings). To facilitate pedestrians crossing US 13 and to minimize impacts to vehicular traffic along US 13, pedestrian signals allow for pedestrians to cross the northbound and southbound US 13 travel lanes during two separate phases (i.e., two-stage crossings); therefore, pedestrians signals and pushbuttons are typically provided within the US 13 median. Pushbutton signs for all crossings were compared to the guidelines outlined in Section 2B.51 of the *2011 DE MUTCD* to identify the need for signing improvements. Several signing improvements were identified along the US 13 corridor. The R10-3e-DE2, R10-3e-DE3, and R10-3d-DE4 signs should be used (see **Figure 5**) when the pedestrian clearance time is sufficient only for pedestrians to cross to the median (and countdown pedestrian signals are provided); however, these signs are frequently not used within the study corridor. A detailed summary of existing and proposed pushbutton signs along the study corridor is provided in the Appendix. Additionally, replacing or installing directional arrows on the pedestrian pushbuttons within the corridor is recommended.

Figure 5 – Two-Stage Pedestrian Pushbutton Signs



R10-3e-DE2 **R10-3e-DE3** **R10-3d-DE4**

Pedestrian pushbuttons at the eight signalized intersections along the study corridor with pedestrian signals were inventoried and tested in April 2014 to identify any issues with functionality, placement, and operations. DelDOT Traffic was notified of any immediate deficiencies (e.g., a push button being stuck in the depressed position, push buttons actuating the wrong pedestrian crossing, etc.).

Sidewalk Evaluation

During the bus/walking tour, the Pedestrian/Bicycle Safety Working Group noted the discontinuous nature of sidewalk facilities along US 13 within the study period. Existing sidewalk locations are shown in **Figures 2-1 to 2-22**. Within the study area, sidewalk is provided along approximately 39 and 23 percent of northbound and southbound US 13, respectively. During pedestrian observations, several pedestrians were observed walking along US 13 in locations without existing sidewalk facilities, such as along the southbound US 13 shoulder in front of the New Castle County Airport between SR 273 and School Lane (see **Photo 4**). Therefore, pursing construction of additional sidewalk facilities along the US 13 corridor to tie into existing sidewalk is recommended. Due to the length and complexity of the study corridor, it may be desirable to construct the sidewalk through multiple smaller projects. Therefore, as an initial step, segments of the study corridor should be prioritized based upon pedestrian crash history, pedestrian frequency, transit ridership, right-of-way constraints, property impacts, and ease of implementation.

As part of the design and implementation of sidewalks along the US 13, DelDOT should investigate the feasibility and practicality of installing shared-use paths along the US 13 corridor in areas where the path could be installed for a long enough distance to be practical for travel by both pedestrians and bicyclists.

Photo 4 – Pedestrians Walking along Southbound US 13 Shoulder between SR 273 and School Lane

To provide greater transparency and accountability to the public and to ensure that projects are consistent with DelDOT's mission, vision, and goals, DelDOT leadership created "project prioritization criteria" to guide funding for projects which are included as part of DelDOT's 6-year Capital Transportation Program (CTP). Due to the size and complexity of the proposed sidewalk and/or mixed-use path project along the US 13 corridor within the study area, the project would be included in the CTP and would compete with other projects statewide for funding. Therefore, the project was evaluated using DelDOT's project prioritization criteria to determine how the project would score based on these criteria. A summary is provided below and in **Table 5**. As shown, the project's overall score is 0.698, which would rank as the fourth highest project in the proposed FY17 to FY22 CTP.

- **Safety (33.0% of total score)** – Providing sidewalk and/or mixed-use paths along US 13 would improve pedestrian accommodations along the corridor, potentially reduce the tendency for midblock pedestrian crossings, and improve pedestrian safety; therefore, the project would score high in this area. The project would also address one of the emphasis areas outlined in the *Delaware Strategic Highway Safety Plan*, namely making walking and street crossing safer. The maximum critical ratio for the US 13 study area is 2.19 based on crash data between 2010 and 2012, which results in a sub-category score of 0.369.
- **System Operating Effectiveness (24.8%)** – The proposed project would improve operations for pedestrians and transit riders. The US 13 at SR 273 and US 13 at Bacon Avenue/Boulden Boulevard intersections frequently fail during peak periods; therefore, a score of 1.0 was assigned for the existing level of service sub-category. Additionally, the US 13 corridor has been identified as a Congestion Management System (CMS) corridor by WILMAPCO which indicates a score of 1.0 for the congestion management sub-category.
- **Multi-Modal Mobility, Flexibility/Access (15.6%)** – One of the primary purposes of the proposed sidewalk project is to improve multimodal mobility; therefore, the project would have a significant improvement, which results in a score of 1.0 in this area.
- **Revenue Generation/Economic Development/Jobs & Commerce (7.9%)** – The study area does not fall within an identified Transportation Improvement District (TID); therefore, a score of 0 was assigned for the TID sub-category. It is assumed that the project does not have outside funding; therefore, a score of 0 was assigned for the cost-sharing support sub-category. US 13 is a primary freight corridor providing access to/from the Port of Wilmington and New Castle Airport; therefore, a score of 1.0 was assigned for the freight corridor sub-category.
- **Impacts on the Public/Social Disruption/Economic Justice (7.2%)** – The proposed sidewalk/mixed-use path project would have a positive impact to communities and population centers along the US 13 corridor by providing improved connections between different land uses; therefore, would receive a score of 1.0.
- **Environmental Impact/Stewardship (6.5%)** – The project is expected to have little to no environmental impact; therefore a score of 0.5 was assigned.
- **System Preservation (5.0%)** – The proposed project does not specifically address issues identified under a system preservation program; therefore, a score of 0 was assigned.

The US 13, US 40 to Memorial Drive Pedestrian Improvement project included in the proposed FY17 to FY22 CTP has a score matching the proposed sidewalk project within this study's project limits (i.e., SR 273 to the Market Street/Walnut Street split); however, the project included in the CTP does not encompass the full limits of this study's project limits. Per the proposed FY17 to FY22 CTP project implementation schedule, funding is allocated for the US 40 to Memorial Drive Pedestrian Improvement project from FY16 through FY21 (preliminary engineering in FY16 to FY18, right-of-way in FY18 and FY19, and construction in FY20 and FY21). Consideration should be given to extending the CTP project's limits to include the full length of this study's project limits (i.e., SR 273 to the Market Street/Walnut Street split).

Table 5 – US 13 Sidewalk and/or Mixed-Use Path Project: CTP Project Prioritization Score Summary

Criteria	Priority Weight	Score	Weighted Score
Safety	**33.0%**	**0.495**	**0.163**
• *Identified in a Safety Program*	*80%*	0.369	-
• *Addresses strategies in SHSP*	*20%*	1.0	-
System Operating Effectiveness	**24.8%**	**1.0**	**0.248**
• *Existing Level of Service*	*50%*	1.0	-
• *Congestion Management*	*50%*	1.0	-
Multi-Modal Mobility, Flexibility/Access	**15.6%**	**1.0**	**0.156**
Revenue Generation/Economic Development/Jobs & Commerce	**7.9%**	**0.333**	**0.026**
• *Identified in a Transportation Improvement District (33%)*	*33%*	0	-
• *Cost-sharing Support (33%)*	*33%*	0	-
• *Freight Corridor (33%)*	*33%*	1.0	-
Impacts on the Public/Social Disruption/Economic Justice	**7.2%**	**1.0**	**0.072**
Environmental Impact/Stewardship	**6.5%**	**0.5**	**0.033**
System Preservation	**5.0%**	**0**	**0.000**
TOTAL SCORE	-	-	**0.698**

Lighting Evaluation

According to *NHTSA's Fatality Analysis Reporting Systems* (FARS), 34 percent of fatal pedestrian crashes reported nationwide in 2011 occurred during nighttime unlit conditions. Of the 14 fatal pedestrian crashes reported along US 13 during the eight-year study period, thirteen (93 percent) crashes occurred at nighttime. Section 14.6.2.8 of the *Highway Safety Manual* (HSM) indicates "intersection illumination appears to have the greatest effect on fatal pedestrian nighttime crashes."

According to the *DelDOT Lighting Design Guidelines*, all public transit stops should be lit. Additionally, DTC's current bus stop policy (P.I. Number DTC-05) states "it is highly desirable to place all bus stop signs, shelters, and benches in areas where lighting is or can be provided". According to DTC's policy, lighting provides safety and security, both real and perceived, to waiting transit passengers and helps to provide bus drivers the ability to clearly see the bus stop area and passengers. The presence of illumination at all DART bus stops along US 13 within the study limits is shown in **Tables 3-1 and 3-2**. As shown, lighting is provided at 12 (33 percent) of the 36 bus stops provided along northbound and southbound US 13 within the study limits.

As previously noted, corridor lighting was installed along US 13 south of the study area as a result of an April 2009 pedestrian safety study along US 13 and US 40. Preliminary analysis of pedestrian crash data within this area indicates pedestrian crashes have decreased since the installation of corridor lighting. As such, the Pedestrian/Bicycle Safety Working Group noted a desire to install similar corridor lighting along US 13 from SR 273 to the Market Street/Walnut Street split to improve nighttime pedestrian safety.

The location of existing luminaires along US 13 within the study limits is shown in **Figures 2-1 to 2-22**. In addition to the roadway and intersection lighting provided along the corridor, varying levels of ambient lighting

is provided by adjacent businesses. A preliminary evaluation indicates light poles (both single arm and twin arm poles) could be installed along a majority of the US 13 median. South of I-295, approximately 25 twin arm light poles and 50 single arm light poles could be installed within the US 13 median. North of I-295, approximately 40 luminaries could be installed using a combination of leased and DelDOT-owned poles. Performing a formal lighting evaluation and installing corridor lighting along US 13 from SR 273 to the Market Street/Walnut Street split is recommended as part a future design project.

Improvement Alternative Evaluation/Analyses

On Tuesday, April 29, 2014, members of the Pedestrian/Bicycle Safety Working Group participated in a bus/walking tour along the US 13 corridor from SR 273 to the Market Street/Walnut Split to bring together multiple stakeholders for the pedestrian safety audit and to identify and discuss key areas in need of improvements and/or further study. Existing condition figures (**Figures 2-1 to 2-22**) were provided to the Pedestrian/Bicycle Safety Working Group to facilitate discussions. Critical locations based on crash history and/or pedestrian observations were reviewed and preliminary improvements were identified during the bus/walking tour. Improvements requiring additional analyses are summarized by location below. A summary of all the proposed improvements is included in **Table 8**.

Current *Synchro* models and signal timings used for the recent signal re-timing project along US 13 were obtained and verified with existing field conditions for analyses purposes. Signal timings, cycle lengths, and offsets were maintained for existing conditions analyses. Existing pedestrian signal timings at the study intersections were compared to DelDOT's current best practices and the need for pedestrian clearance interval modifications were identified at the following intersections. *Synchro* files were updated with the proposed pedestrian clearance intervals as part of the analyses of proposed improvements for the intersections analyzed.

- *US 13 at School Lane* – Increase the pedestrian clearance interval for phase 3 (southbound US 13 crossing) from 18 to 22 seconds and the pedestrian clearance interval for phase 4 (northbound US 13 crossing) from 14 to 16 seconds
- *US 13 at Bacon Avenue/Boulden Boulevard* – Increase the pedestrian clearance interval for phase 4 (northbound US 13 crossing) from 19 to 21 seconds
- *US 13 at Marsh Lane/Wildel Avenue* – Increase the pedestrian clearance interval for phase 3 (US 13 crossing) from 53 seconds to 60 seconds and increase the pedestrian clearance interval for phase 3 (west leg crossing) from 30 to 34 seconds
- *US 13 at Memorial Drive* – Increase the pedestrian clearance interval for phase 4 (southbound US 13 crossing) from 17 to 19 seconds and increase the pedestrian clearance interval for phase 6 (west leg crossing) from 8 to 10 seconds

Available turning movement count data along the corridor was provided by DelDOT and additional turning movement counts were performed as needed (count data for each intersection is included in the Appendix). *Synchro* models were updated with the most recently available turning movement counts. Additionally, mainline US 13 traffic volumes at adjacent intersections were updated, as needed, to more accurately reflect the latest available traffic volumes.

Currently, one signalized crossing of US 13 is provided at the US 13 at SR 273, School Lane, Roosevelt Avenue, Bacon Avenue/Boulden Boulevard, Marsh Lane/Wildel Avenue, and Memorial Drive intersections. In addition, grade-separated pedestrian crossings are provided across US 13 at Lincoln Avenue and Harrison Avenue/Stahl Avenue. No signalized or grade-separated pedestrian crossing of US 13 is provided at the US 13 at Hessler Boulevard, US 13 at I-495 Ramps, and US 13 at Heald Street intersections. Providing a second signalized crossing of US 13 (i.e., crossing both the north and south legs) would typically result in negative

impacts to vehicular traffic operations along the corridor. This is due to the additional time required to serve pedestrians that exceeds vehicular demand, especially with side street split phasing which is provided at the majority of the intersections along the corridor. Where additional pedestrian crossings of US 13 are considered, the incremental green time required to serve pedestrians is discussed in addition to the corridor impacts in terms of delay and level of service.

Installing a signalized crosswalk across one or both side street approach (i.e., east or west leg) to US 13 was considered at several signalized intersections along the study corridor (i.e., US 13 at School Lane, US 13 at Lincoln Avenue, US 13 at Harrison Avenue/Stahl Avenue, US 13 at Roosevelt Avenue, US 13 at Bacon Avenue/Boulden Boulevard, US 13 at Marsh Lane/Wildel Avenue, and US 13 at Hessler Boulevard) to connect existing sidewalk facilities, connect land uses on all four corners of an intersection, and provide connections to existing and/or proposed sidewalk facilities. The required split time for the mainline (i.e., northbound and southbound US 13) phases is greater than the required pedestrian clearance time to cross the side street at each of these locations. As such, minimal to no impacts to capacity are anticipated due to the installation of signalized crosswalks across these side street approaches. Therefore, these improvements were not analyzed to assess their impacts. Due to low pedestrian crossing volumes and a lack of sidewalk and pedestrian generators, installing signalized crosswalks at US 13 at I-495 and US 13 at Heald Street was not considered. Installing a signalized crosswalk across US 13 was also not considered at the southbound US 13 at State Hospital intersection due to the wide median and lack of sidewalk and pedestrian generators on the east side of US 13 (i.e., within the I-295 interchange).

US 13 at SR 273

During the study period, five pedestrian crashes were reported in the vicinity of the US 13 at SR 273 intersection, including one fatal pedestrian crash in March 2010. The US 13 at SR 273 intersection was included as part of a pedestrian safety study along US 13 completed in April 2009. Signalized crosswalks were installed on the east, west, and south legs of the US 13 at SR 273 intersection in July 2009. It should be noted that a crosswalk is proposed across the north leg of the intersection as part of the Churchmans Road Trail Study. Three of the five pedestrian crashes reported in the vicinity of US 13 at SR 273 occurred prior to the installation of the pedestrian crosswalks. Both pedestrian crashes occurring after the installation of crosswalks at the intersection occurred at nighttime and involved improper crossings. Bus stops with low ridership are provided along northbound and southbound US 13 approximately 350 feet and 325 feet north of the crosswalk on the south leg of the intersection, respectively. Additionally, a bus stop is provided along southbound US 13 approximately 200 feet south of the crosswalk located on the south leg of the intersection. The Pedestrian/Bicycle Safety Working Group suggested evaluating the need for and impacts associated with consolidating bus stops in the vicinity of the US 13 at SR 273 intersection, including the future needs and impacts associated with the proposed New Castle Town Center to be located on the northwest quadrant of the intersection.

Bus Stop Relocation/Consolidation Evaluation: The proposed New Castle Town Center, a Super Wal-Mart anchored commercial center located on the northwest quadrant of US 13 and SR 273, could potentially generate future pedestrian activity and increase ridership at nearby bus stops. Currently, bus stops are provided along southbound US 13 north and south of SR 273. Both stops serve DART Bus Route 22 and have low ridership. The bus stops are located approximately 525 feet apart, which is less than the preferred bus stop spacing (i.e., preferred bus stop spacing is approximately 1,000 feet for local bus service in areas with moderate transit density) outlined in DTC's *Bus Stop and Passenger Facilities Policy*. The recently installed crosswalk across the west leg of US 13 at SR 273 improves pedestrian accommodations for pedestrians between these two bus stops. For these reasons, consolidating these bus stops is recommended, pending discussions with DTC.

DTC prefers farside bus stop locations to facilitate re-entry into the traffic flow and minimize conflicts with right-turning vehicles and pedestrians crossing the intersection. The farside bus stop provides more direct access to the US 13 crosswalk provided across the south leg of the intersection. Therefore, maintaining the southbound US 13 bus stop located on the south leg of intersection is recommended. Removing the southbound US 13 bus stop located on the north leg of the intersection is recommended; however, maintaining this bus stop may be preferred pending discussions with DTC and the status of the proposed New Castle Town Center.

US 13 at School Lane

During the study period, there were two fatal pedestrian crashes in the vicinity of US 13 at School Lane (both crashes occurred on the south leg of the intersection in the northbound US 13 travel lanes). In addition, one fatal pedestrian crash occurred after the study period (April 2014) in the northbound US 13 travel lanes north of School Lane. Signalized crossings are currently provided across the north and west legs of the intersection. Farside bus stops with low ridership are provided along northbound and southbound US 13 at School Lane. The northbound and southbound bus stops are located approximately 320 feet north of and 260 feet south of the existing crosswalk provided across the north leg of the intersection, respectively. The Pedestrian/Bicycle Safety Working Group suggested evaluating the impacts and benefits of relocating the US 13 crossing from the north leg to the south leg of the intersection (to potentially allow for a larger pedestrian refuge area within the US 13 median), relocating the northbound US 13 bus stop to a nearside location, and providing a bus pull-off area. All three fatal pedestrian crashes near US 13 at School Lane occurred during darkness; therefore, installing lighting along US 13 within the vicinity of School Lane was also recommended. Additionally, installing a signalized crosswalk across the east leg of the intersection was also recommended (consideration should be given to incorporating with planned improvements as part of the New Castle County Airport Expansion recommended improvements).

As noted previously, New Castle County Airport is expanding its parking facilities as part of an expansion of services (commercial carrier service) at the airport. The Traffic Operations Analysis (TOA) report (February 2014) identified proposed improvements at the US 13 at School Lane intersection including widening the eastbound approach to install an additional eastbound left-turn lane and installing a channelizing island for southbound US 13 right turns at School Lane.

US 13 Crosswalk Relocation Evaluation: During April 2014 pedestrian counts, eight and four pedestrians per hour were observed crossing the north and south legs of the US 13 at School Lane intersection, respectively. Currently, a signalized crosswalk (with a two-stage crossing) is provided across the north leg of the intersection. Due to the relatively high travel speeds along US 13, larger pedestrian refuge areas are desirable since they provide a greater sense of safety for pedestrians waiting to cross the roadway. The existing pedestrian refuge area in the north leg median nose is 13 feet wide. The median nose on the south leg of the intersection transitions from approximately 14 feet to 28 feet; however, placing the pedestrian refuge area in the wider area will require relocation of the northbound stop line farther back from the intersection. Therefore, a minimal increase in the pedestrian refuge area would be gained by relocating the crosswalk to the south leg. Relocating the US 13 crossing from the north leg to the south leg will have minimal impact on intersection capacity since pedestrians will cross US 13 in two stages (during both side street phases), regardless of which leg the crosswalk is provided. Based on a March 6, 2014 turning movement count, westbound right-turn volumes are greater than eastbound right-turn volumes, which may support relocating the crosswalk to the south leg of the intersection to reduce the potential for conflicts with right-turning vehicles; however, no pedestrian crashes were reported during the study period related to westbound right-turning vehicles. Additionally, expansion of parking facilities at the New Castle County Airport may increase the eastbound right-turn volume (according to the TOA report, a total of 83 eastbound right turns are projected during the PM peak hour). The installation of a crosswalk on the east leg of the intersection will provide signalized crossings on three legs of the

intersection and improve pedestrian safety to/from land uses on all four corners of the intersection. For these reasons, relocating the US 13 crosswalk from the north leg to the south leg at the US 13 at School Lane intersection is not recommended.

Bus Stop Relocation Evaluation: Relocating the existing bus stop located along northbound US 13 north of School Lane to the south leg of the intersection (and potentially providing a bus pull-off area) was considered to improve pedestrian and bus operations. According to DTC's bus ridership data as of February 2014, there are, on average, 7 boardings and 3 alightings at the northbound US 13 bus stop at School Lane during a typical weekday. If the bus stop is relocated to the south side of the intersection, buses may experience increased delay when reentering northbound US 13 traffic due to queueing from the signal. Providing a bus pull-off area typically improves traffic operations and improves safety by removing stopped buses from the traffic stream; however, buses are currently able to stop at the existing bus stop within the wide shoulder/right-turn lane provided along northbound US 13 at the existing bus stop location. Therefore, minimal benefits would be realized with the construction of a bus pull-off area at this location. The existing northbound US 13 bus stop location provides better access to the existing US 13 crosswalk at School Lane as compared to a potential bus stop on the south leg of the intersection. Currently, sidewalk is provided along the east side of US 13 north of School Lane (except for an approximately 90 foot gap in front of the Crown Motel) which connects to the existing bus stop location; however, sidewalk is not provided along the east side of US 13 from south of School Lane to just north of SR 273. As discussed above, relocating the US 13 crossing at School Lane from the north leg to the south leg of the intersection is not recommended; therefore relocating the northbound bus stop is not as desirable. For these reasons, relocating the northbound US 13 bus stop at School Lane from the north leg of the intersection to the south leg of the intersection is not recommended; however, consideration should be given to moving the northbound bus stop as close as possible to the intersection.

Consideration was given to relocating the southbound US 13 bus stop at School Lane from the south leg to the north leg of the intersection. According to DTC's bus ridership data as of February 2014, there are, on average, 1 boarding and 5 alightings at the southbound US 13 bus stop at School Lane during a typical weekday. The southbound right-turn lane is fairly short and the southbound right-turn volume is low (22 and 10 right-turning vehicles were recorded during the AM and PM peak hours, respectively, according to a March 6, 2014 turning movement count). If the southbound US 13 bus stop were to be relocated to the north leg of the intersection, the bus stop would be located, at a minimum, approximately 200 feet from the existing signalized crosswalk across the north leg of the intersection. Comparatively, the existing southbound US 13 bus stop is located approximately 245 feet south of the existing signalized crosswalk across the north leg of the US 13 at School Lane intersection. Additionally, the existing southbound US 13 bus stop located at the southbound right-in only airport access (located approximately 775 feet north of School Lane) has minimal ridership, which may allow consolidation of the two existing bus stops. The southbound US 13 bus stops at School Lane and the New Castle County Airport right-in only access both provide service to DART routes 22 and 25. For these reasons, relocating the southbound US 13 bus stop from the south leg to the north leg of the US 13 at School Lane intersection and consolidating the southbound US 13 bus stops at School Lane and the New Castle County Airport right-in only access is recommended (pending discussions with DTC).

In addition, to improve connectivity to the existing northbound bus stop, installing sidewalk along the east side of US 13 in front of the Crown Motel to complete the connection between the northeast corner of the US 13 at School Lane intersection and the existing northbound US 13 bus stop is recommended. Similarly, installing sidewalk along the west side of US 13 from the northwest corner of the US 13 at School Lane intersection to the relocated southbound US 13 bus stop north of School Lane is recommended (pending discussions with DTC).

US 13 at Lincoln Avenue and Harrison Avenue/Stahl Avenue

During the study period, two pedestrian crashes occurred within the vicinity of US 13 at Lincoln Avenue and one pedestrian crash occurred within the vicinity of US 13 at Harrison Avenue/Stahl Avenue. Bus stops with moderate to heavy ridership are provided along northbound and southbound US 13 approximately 125 feet north of Lincoln Avenue. Farside bus stops with moderate ridership are provided along northbound and southbound US 13 at US 13 at Harrison Avenue/Stahl Avenue. Signalized crosswalks are provided across the east legs of the US 13 at Lincoln Avenue and Harrison Avenue/Stahl Avenue intersections. Grade-separated pedestrian crossings are provided over US 13 on the south leg of US 13 at Lincoln Avenue and the north leg of US 13 at Harrison Avenue/Stahl Avenue. The pedestrian bridges were constructed in the early 1970's, prior to the passing of the *Americans with Disabilities Act* (ADA) in 1990. Staircases are provided on both sides of the pedestrian bridges. During the April 2014 pedestrian observations, a maximum of 16 pedestrians per hour were observed using the pedestrian bridge at US 13 at Lincoln Avenue. A maximum of 18 pedestrians per hour were observed using the pedestrian bridge at US 13 at Harrison Avenue/Stahl Avenue. For comparison purposes, a total of 9 and 0 pedestrians per hour were observed crossing US 13 on the north and south legs of the intersections at grade (i.e., across the roadway) in the vicinity of the pedestrian bridges at US 13 at Lincoln Avenue and US 13 Harrison Avenue/Stahl Avenue, respectively. Installing a signalized crosswalk across the west legs of the US 13 at Lincoln Avenue and Harrison Avenue/Stahl Avenue intersections is recommended.

US 13 at Roosevelt Avenue

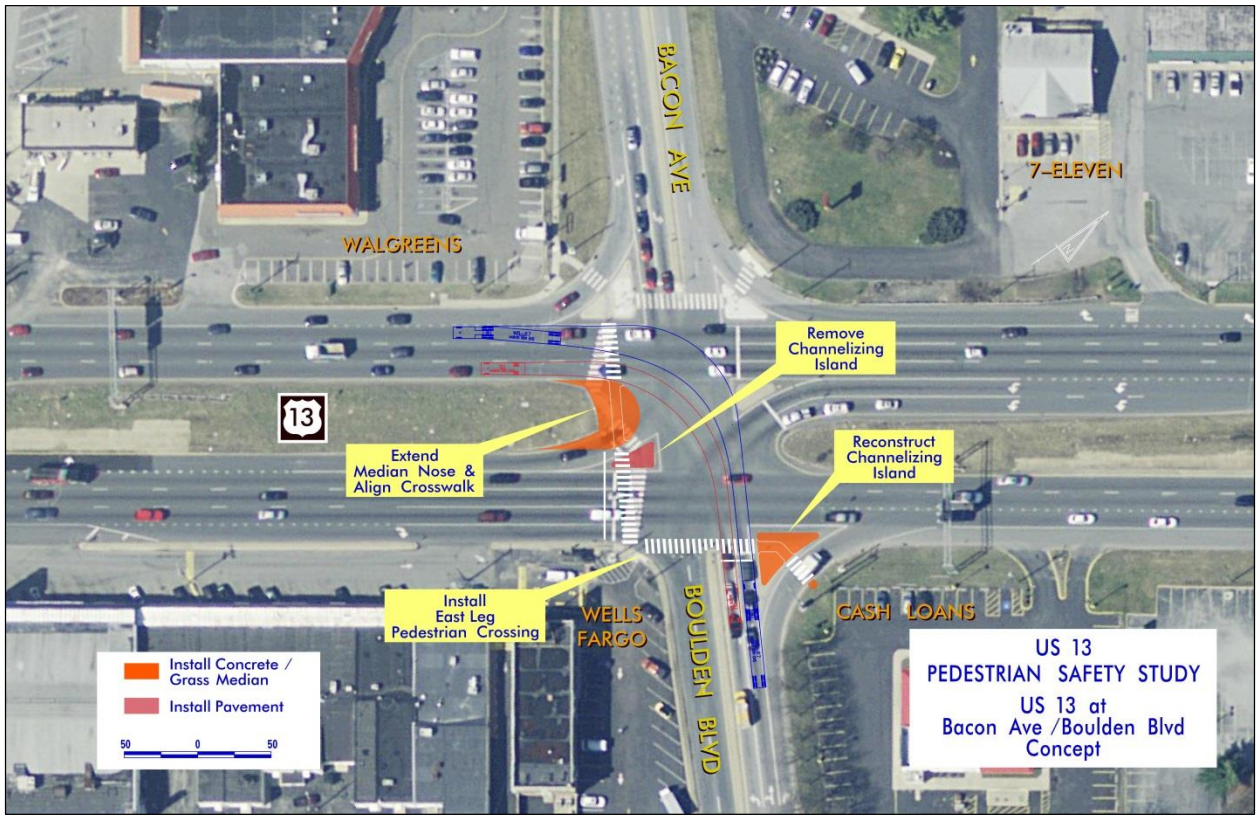
During the study period, one fatal pedestrian crash and one bicycle crash occurred in the vicinity of the US 13 at Roosevelt Avenue intersection. The one fatal pedestrian crash occurred in July 2008 on the north leg of the intersection in the northbound US 13 lanes. Nearside bus stops with low ridership are provided along both northbound and southbound US 13 at the intersection. Signalized crosswalks are provided across the north and east legs of the intersection. During April 2014 pedestrian observations, a maximum of 11, 8, 7, and 0 pedestrians within one hour were observed crossing east, west, north, and south legs of the intersection. To improve pedestrian safety to/from land uses on all four corners of the intersection, installing a signalized crosswalk on the west leg of the intersection is recommended.

US 13 at Bacon Avenue/Boulden Boulevard

During the study period, three pedestrian crashes and one bicycle crash occurred in the vicinity of the US 13 at Bacon Avenue/Boulden Boulevard intersection, including one fatal pedestrian crash that occurred in September 2012 on the south leg of the intersection in the southbound US 13 lanes. Bus stops with high ridership are provided along northbound and southbound US 13 on the south leg of the intersection. Signalized crosswalks are provided across the south and west legs of the intersection (the signalized crossing on the west leg was installed in 2011/2012). During the bus/walking tour, the Pedestrian/Bicycle Safety Working Group crossed US 13 using the south leg crosswalk. The group noted relatively long crossing delays due to the long cycle length at the intersection as well as the "zig-zap" nature of the existing crosswalk's alignment. Reconstructing the south leg of the intersection was considered to remove the "zig-zap" nature of the existing crosswalk (see **Figure 2-10**). A maximum of 23 pedestrians per hour were observed crossing the south leg of the intersection, which is the highest hourly pedestrian volume recorded during the April 2014 pedestrian counts within the corridor. Additionally, installing a signalized crosswalk across the east leg of the US 13 at Bacon Avenue/Boulden Boulevard intersection is recommended.

US 13 Crosswalk Realignment Evaluation: Reconstructing the south leg of the US 13 at Bacon Avenue/Boulden Boulevard intersection was considered to improve pedestrian safety and reduce the crossing distance for pedestrians. Currently, the crosswalk crosses through the northbound US 13 left-turn channelizing island as well as the US 13 median nose separating the northbound left-turn and southbound through lanes (see **Figure 2-10**). Straightening the crosswalk requires removing the "pork chop" island, extending the US 13 median on the south leg of the intersection and relocating the northbound US 13 stop lines to the south (see **Figure 6**). Additionally, existing signal equipment and drainage would likely be impacted. The crossing distance for pedestrians crossing northbound and southbound US 13 travel lanes would be reduced by approximately 22 feet (from 92 to 70 feet) and by approximately 8 feet (from 52 to 44 feet), respectively. With the proposed configuration, pedestrians would travel approximately 44 feet within the US 13 median on the south leg of the intersection. The existing crosswalk across the south leg of the US 13 at Bacon Avenue/Boulden Boulevard intersection is ADA-compliant; however, reconstructing the south leg of the intersection is recommended as part of a future capital improvement project, or potentially a pavement and rehabilitation project, to shorten the crossing distance for pedestrians across this intersection leg (turning templates for northbound U-turning trucks should be evaluated as part of design).

Figure 6 – US 13 at Bacon Avenue/Boulden Boulevard Concept



US 13 at Marsh Lane/Wildel Avenue

During the study period, there were three pedestrian crashes in the vicinity of US 13 at Marsh Lane/Wildel Avenue, including one fatal pedestrian crash, which occurred in September 2009 on the north leg of the intersection. Signalized crossings are currently provided along the west leg and diagonally across US 13 from the southwest to northeast corner of the intersection. Northbound and southbound bus stops with relatively low ridership are provided approximately 625 feet south of Marsh Lane/Wildel Avenue and approximately 215 feet north of Marsh Lane/Wildel Avenue (none of the bus stops currently have shelters or benches). A paved emergency median crossover serving the New Castle County Public Safety driveway is located approximately 125 feet north of the intersection and in the location of the northbound US 13 bus stop. As part of the State of Good Repair (SOGR) program, representatives from DTC and DelDOT met in June 2014 to discuss the need for pedestrian improvements in the vicinity of the US 13 at Marsh Lane/Wildel Avenue intersection. The following improvements were agreed upon:

- Relocate the existing bus stop provided along northbound US 13 approximately 215 feet north of Marsh Lane/Wildel Avenue to a location approximately midway between its current location and the intersection to place it closer to the intersection (pending approval from DTC Operations and the adjoining property owners). At a minimum, the bus stop will be moved 50 feet farther to the south to discourage pedestrians from crossing midblock at the paved emergency crossover.
- Upgrade the sidewalk along the east side of US 13 from Wildel Avenue to Minquadale Boulevard (it is currently in poor condition and less than 5 feet wide) and install an ADA-compliant Type 1 curb ramp on the northeast corner of US 13 at Marsh Lane/Wildel Avenue.
- Remove the bus stop provided along northbound US 13 approximately 625 feet south of Marsh Lane/Wildel Avenue in front of Collins Business Systems (if not met with resistance from DTC Planning).

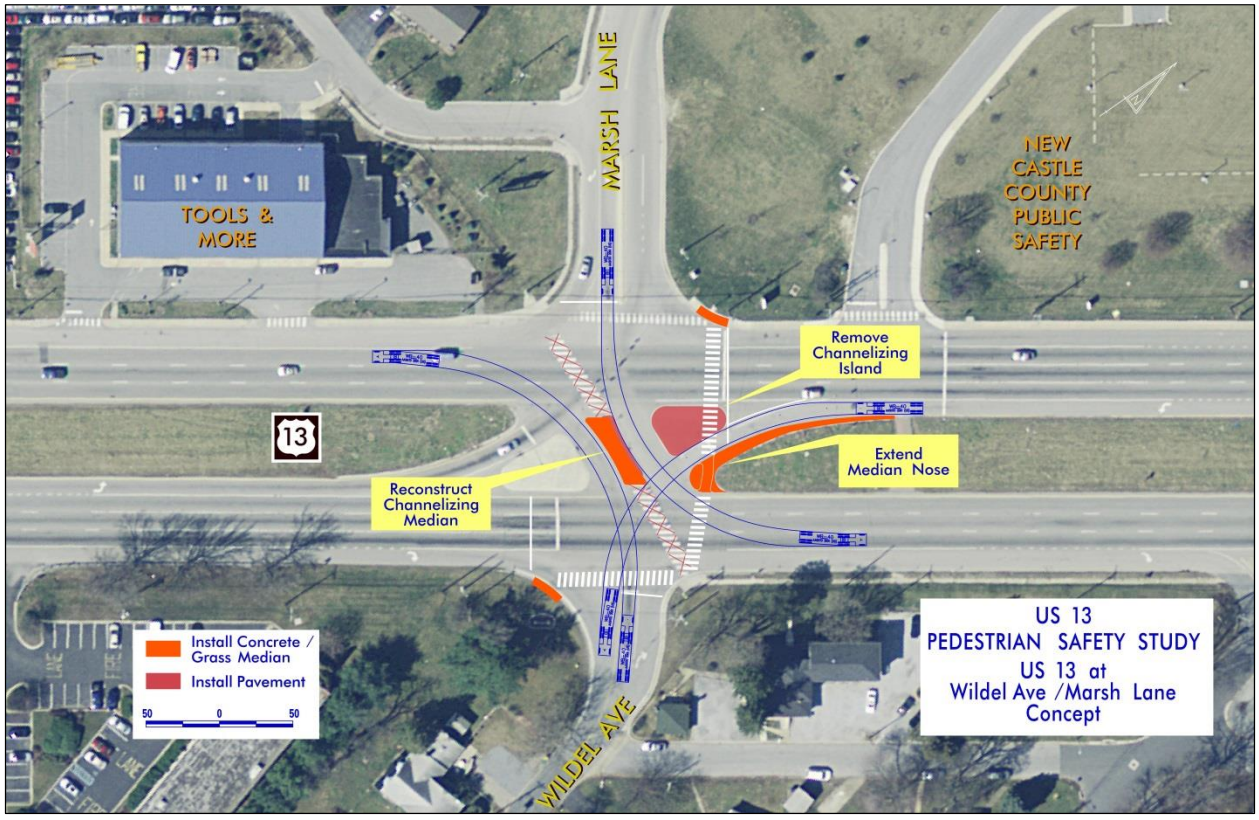
Currently, a median channelizing island is provided to separate eastbound Marsh Lane and westbound Wildel Avenue left turns and serves as a refuge area for pedestrians crossing US 13; however, the pedestrian refuge area is small and pedestrians may potentially feel unsafe in the median while walking between left-turning vehicles or if they do not make it across the full width of the crossing (i.e., if they get stuck in the median). The pedestrian timings accommodate a full crossing of US 13; however, pushbuttons are provided in the median in case a pedestrian does not make the full crossing in one stage. Additionally, the long diagonal crossing distance (209 feet) in combination with a lack of countdown pedestrian indications may also result in concerns by pedestrians since they do not know how much time they have remaining to cross the intersection. As such, the Pedestrian/Bicycle Safety Working Group suggested performing additional studies to identify alternatives to relocate the signalized crossing across US 13. In addition, installing a crosswalk across the east leg of the intersection and upgrading the pedestrian signals and pushbuttons at the intersection was recommended.

US 13 Crossing Relocation Evaluation: As previously noted, the existing signalized crossing across US 13 at Marsh Lane/Wildel Avenue runs diagonally across US 13 from the southwest to northeast corner of the intersection. Within the US 13 median, a relatively narrow raised concrete channelizing island provides a refuge area for pedestrians from eastbound Marsh Lane and westbound Wildel Avenue left-turning vehicles, which operate concurrently with pedestrians. Throughout the study corridor, all US 13 pedestrian crossings are two-stage crossings except at Marsh Lane/Wildel Avenue. As such, impacts to vehicular traffic along US 13 are higher when the pedestrian pushbuttons are actuated at US 13 at Marsh Lane/Wildel Avenue as compared to other intersections along the corridor. During April 2014 pedestrian observations, a maximum of one pedestrian per hour was observed using the crosswalk (a maximum of 5 pedestrians per hour were observed crossing US 13 within 550 feet of the crossing). Relocating the crosswalk to the north leg of the intersection to cross US 13 perpendicularly would allow for two-stage crossing operation, similar to other signalized intersections along the US 13 study corridor. The signalized crosswalk for crossing southbound US 13 would

operate concurrently with the eastbound Marsh Lane and westbound Wildel Lane left-turn phase. The signalized crosswalk for crossing northbound US 13 would operate concurrently with the southbound US 13 left-turn phase, which would require reconfiguring the north leg of the intersection to provide a pedestrian refuge area between the southbound left-turn and northbound through lanes (see **Figure 7**). Due to the sequence of signal phases at the intersection, pedestrians crossing from the west side of US 13 to the east side of US 13 (i.e., in an eastbound direction) would experience minimal delay within the US 13 median; however, pedestrians crossing from the east side of US 13 to the west side of US 13 (i.e., in a westbound direction) would be delayed within the US 13 median for the duration of the northbound and southbound US 13 mainline phases.

Providing a two-stage crossing of US 13 at Marsh Lane/Wildel Avenue will improve pedestrian expectations and reduce impacts to vehicular traffic along US 13 during cycles with a pedestrian actuation by allowing two-stage crossings. During non-actuated signal cycles, the intersection will operate similar to existing conditions. Additionally, relocating the crosswalk to the north leg of the intersection will allow for ADA improvements and the ability to provide a more traditional pedestrian refuge area similar to others throughout the US 13 corridor. For these reasons, relocating the pedestrian crossing across US 13 at Marsh Lane/Wildel Avenue to the north leg of the intersection is recommended in addition to the installation of pedestrian signals and a crosswalk on the east leg of the intersection. Additionally, replacing the existing pedestrian signals and pushbuttons to the latest DelDOT standards (i.e., countdown pedestrian signals) is recommended.

Figure 7 – US 13 at Marsh Lane/Wildel Avenue Concept



US 13 at E. Hazeldell Avenue and Memorial Drive

Currently, US 13 at E. Hazeldell Avenue operates as a fire signal to assist emergency response vehicles from the Minquadale Fire Company located along E. Hazeldell Avenue east of US 13. During non-emergency events, the signal operates in flashing mode and under stop control on the westbound E. Hazeldell Avenue approach to US 13 and within the US 13 median. The US 13 at Memorial Drive signalized intersection is located approximately 350 feet north of E. Hazeldell Avenue. Signalized pedestrian crosswalks are provided across the east, west, and south legs of the US 13 at Memorial Drive intersection. During the study period, three pedestrian crashes occurred within the immediate vicinity of the US 13 at E. Hazeldell Avenue intersection, including two fatal pedestrian crashes (October 2005 and December 2008). Following the study period, one fatal pedestrian crash occurred in July 2013 along southbound US 13 just south of Memorial Drive. During April 2014 pedestrian observations, a maximum of 10 pedestrians per hour were observed crossing US 13 near the E. Hazeldell Avenue median opening (i.e., outside a marked crosswalk), which represents the highest US 13 crossing cluster within the study area, excluding locations with an existing marked crosswalk. Many of these pedestrians were noted as having origins and/or destinations to/from the Minquadale Liquor Store located on the east side of US 13 just north of E. Hazeldell Avenue and the community located along W. Hazeldell Avenue/Memorial Drive west of US 13. Comparatively, a maximum of 22 pedestrians per hour were observed crossing US 13 at the marked crosswalk located on the south leg of the US 13 at Memorial Drive intersection. Bus stops with shelters and heavy ridership are provided along both northbound and southbound US 13 immediately south of Memorial Drive. During the working group's walking/bus tour, the group noted that concrete at the US 13 median noses at E. Hazeldell Avenue may appear like sidewalk to pedestrians, potentially inviting them to cross US 13 at this location. Additionally, it is possible that the presence of the signal equipment may draw pedestrians to cross US 13 near the flashing fire signal; however, it is more likely that pedestrians are crossing US 13 at this location since it is the shortest path between the land uses on either side of US 13. As such, the Pedestrian/Bicycle Safety Working Group suggested further investigation to develop and evaluate mitigation strategies, including fully signalizing the US 13 at E. Hazeldell Avenue intersection, to improve pedestrian safety along US 13 between E. Hazeldell Avenue and Memorial Drive.

In Fall 2013, DelDOT Public Relations received a constituent concern regarding pedestrian safety at the US 13 at Memorial Drive intersection as a result of the July 2013 fatal pedestrian crash. During a Minquadale Community Association meeting, a legislator and constituents expressed a desire to consider a pedestrian overpass across US 13 at Memorial Drive to improve pedestrian safety. A pedestrian overpass would require ADA-compliant ramps be installed on both sides of the overpass, which would demand a significant footprint due to slope requirements. Providing these ramps within the existing right-of-way is likely not practical, which would suggest a need to provide other means to gain access to the overpass (e.g., elevators) on both sides of US 13. For these reasons, construction of a pedestrian overpass near the US 13 at Memorial Drive intersection is not recommended at this time.

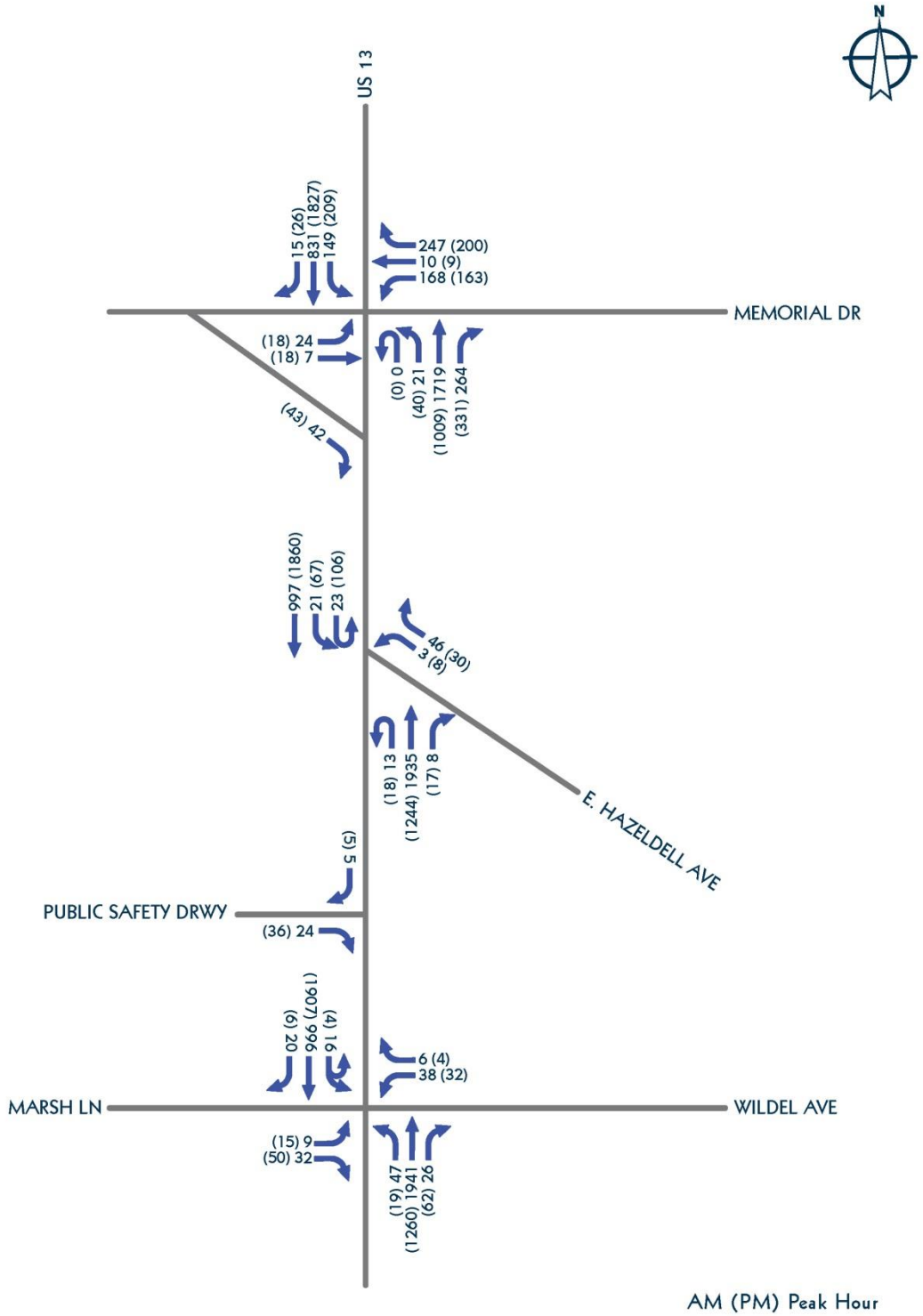
Mitigation Strategies: Several strategies were considered to improve pedestrian accommodations along US 13 between E. Hazeldell Avenue and Memorial Drive including installing full signalization or closing the median opening at the US 13 at E. Hazeldell Avenue intersection. Closing the median opening and removing the flashing signal was considered to address the potential that the presence of the signal equipment could be contributing to the high frequency of pedestrian crossings at this location. However, closing the median opening would require emergency response vehicles from the Minquadale Fire Company to access southbound US 13 via the US 13 at Marsh Lane/Wildel Avenue intersection, increasing emergency response times and was therefore not considered further. Closing the median opening to public traffic while allowing authorized vehicles only (i.e., emergency response) was considered.

Based on an October 1, 2014 turning movement count, U-turning vehicles account for approximately 58 percent of the southbound US 13 left-turn/U-turn volume at US 13 at E. Hazeldell Avenue. Businesses located

along northbound US 13 between E. Hazeldell Avenue and Memorial Drive include Sharp Shooters Sports Bar, Minquadale Liquors, Kim's Auto World, Boundaries New Hair, and New York Fried Chicken. The Public Storage business is located along southbound US 13 between E. Hazeldell Avenue and Marsh Lane/Wildel Avenue. The southbound US 13 U-turn movement at E. Hazeldell Avenue was observed on Thursday, December 11, 2014 to determine the destination of these southbound U-turning vehicles. During the observations, 36 (92 percent) of the 39 southbound U-turning vehicles at E. Hazeldell Avenue completed a subsequent northbound US 13 right turn onto eastbound Memorial Drive. Of the 36 vehicles turning onto Memorial Drive, 9 (25 percent) vehicles turned left into the Wawa property located on the northeast corner of the US 13 at Memorial Drive intersection. The majority of southbound US 13 U-turning vehicles at E. Hazeldell Avenue originate from north of Memorial Drive; therefore, it is presumed that these vehicles are choosing to avoid the southbound US 13 left-turn movement at Memorial Drive. Additionally, six marked and/or unmarked police vehicles were observed completing a northbound U-turn at the median opening and completing a subsequent southbound right turn into the Public Safety driveway.

Allowing only emergency vehicles at the US 13 median opening at E. Hazeldell Avenue would divert northbound U-turning, southbound left-turn/U-turning, and westbound left-turning vehicles at US 13 at E. Hazeldell Avenue to alternate routes and likely impact signal operations at adjacent intersections along US 13 including the Marsh Lane/Wildel Avenue and Memorial Drive intersections. Existing traffic volumes along US 13 between Marsh Lane/Wildel Avenue and Memorial Drive are shown in **Figure 8**. Although a significant portion of traffic at the E. Hazeldell Avenue intersection is currently avoiding other intersections, prohibiting public traffic at the median opening would not likely have an impact on pedestrian operations. Therefore, it is recommended that additional studies be performed as part of a separate study effort to determine the advantages and disadvantages of accommodating only emergency vehicles at the E. Hazeldell Avenue median opening.

Figure 8 – US 13, Marsh Lane/Wildel Avenue to Memorial Drive: Existing Traffic Volumes



As previously noted, considering a full traffic signal at the US 13 at E. Hazeldell Avenue intersection was recommended during the Pedestrian/Bicycle Safety Working Group walking/bus tour. As such, signal warrant analyses were performed in accordance with the *2011 DE MUTCD* at the US 13 at E. Hazeldell Avenue intersection using October 1, 2014 traffic volumes. The posted speed limit on US 13 exceeds 40 miles per hour; therefore, the *2011 DE MUTCD's* reduced volume criteria were applied. A review of traffic volumes on the westbound E. Hazeldell Avenue approach indicate that minor street left-turn volumes do not exceed 15 vehicles during any hour throughout the day, which do not meet the minimum volume thresholds for installation of a traffic signal. Westbound Hazeldell Avenue right-turning vehicles complete their movement with minimal delay and therefore were not considered in the warrant analysis. The southbound US 13 left-turn/U-turn movement at E. Hazeldell Avenue is relatively heavy; therefore, traffic signal warrant analysis was performed considering the southbound US 13 left-turn/U-turn volume as the "minor-street" volume and northbound US 13 through volumes as the "major-street" volume. A single lane approach is assumed for southbound US 13 lefts and a three lane approach is assumed for northbound US 13 through movements. A summary of the warrant analyses is presented in **Table 6**. As shown, Warrant 2 – Four-Hour Vehicular Volume criteria are met for 6 of the required 4 hours. Warrant 1 – Eight-Hour Vehicular Volume (Condition B) criteria are met for 7 of the 8 required hours based on available data; however, it can be presumed that, at a minimum, one additional hour would be met based on hourly traffic volume trends. During the three-year study period from January 1, 2010 through December 31, 2012, a maximum of 4 angle crashes were reported in a one-year period; therefore, the crash portion of Warrant 7 – Crash Experience is not met. Warrant 4 - Pedestrian Volume is not met. Warrant 6 – Coordinated Signal System should not be applied where traffic signals would be less than 1,000 feet. The E. Hazeldell Avenue at Memorial Drive signals would be less than 1,000 feet apart; therefore, Warrant 6 is not met.

However, as noted previously, approximately 92 percent of southbound US 13 U-turns at E. Hazeldell Avenue were observed avoiding the southbound US 13 left-turn movement at Memorial Drive. Therefore, signal warrant analyses were performed to exclude 92 percent of southbound U-turning vehicles. With this assumption, a traffic signal is not warranted at the US 13 at E. Hazeldell Avenue intersection. Therefore, fully signalizing the US 13 at E. Hazeldell Avenue intersection is not recommended. Additionally, difficulties with coordination and queue spillback between the US 13 at E. Hazeldell Avenue and US 13 at Memorial Drive further support not fully signalizing the intersection.

Many of the pedestrians crossing US 13 near E. Hazeldell Avenue were noted as having origins and/or destinations to/from the Minquadale Liquor Store located on the east side of US 13 just north of E. Hazeldell Avenue and the communities located along W. Hazeldell Avenue/Memorial Drive west of US 13. Pedestrians may be encouraged to cross US 13 near the fire signal rather than at Memorial Drive due to the alignment of the W. Hazeldell Avenue approach to US 13. Therefore, installing sidewalk along the north side of the large grass island provided between the eastbound Memorial Drive and W. Hazeldell Avenue (i.e., spur road) approaches to US 13 is recommended to encourage pedestrians to cross US 13 at the signalized crosswalk located on the south leg of the US 13 at Memorial Drive intersection (see **Figure 9**). Parking restrictions along the south side of Memorial Drive/W. Hazeldell Avenue, west of US 13 should be considered to improve visibility of pedestrians crossing W. Hazeldell Avenue in addition to signing to encourage pedestrians to cross at the US 13 at Memorial Drive crosswalk.

Installation of a physical barrier between Memorial Drive and E. Hazeldell Avenue was considered to further deter pedestrians from crossing midblock and encourage crossing at the Memorial Drive crosswalk; however, it can be assumed that pedestrians may continue to walk within the median and then cross at the E. Hazeldell Avenue median opening and therefore is not recommended at this time.

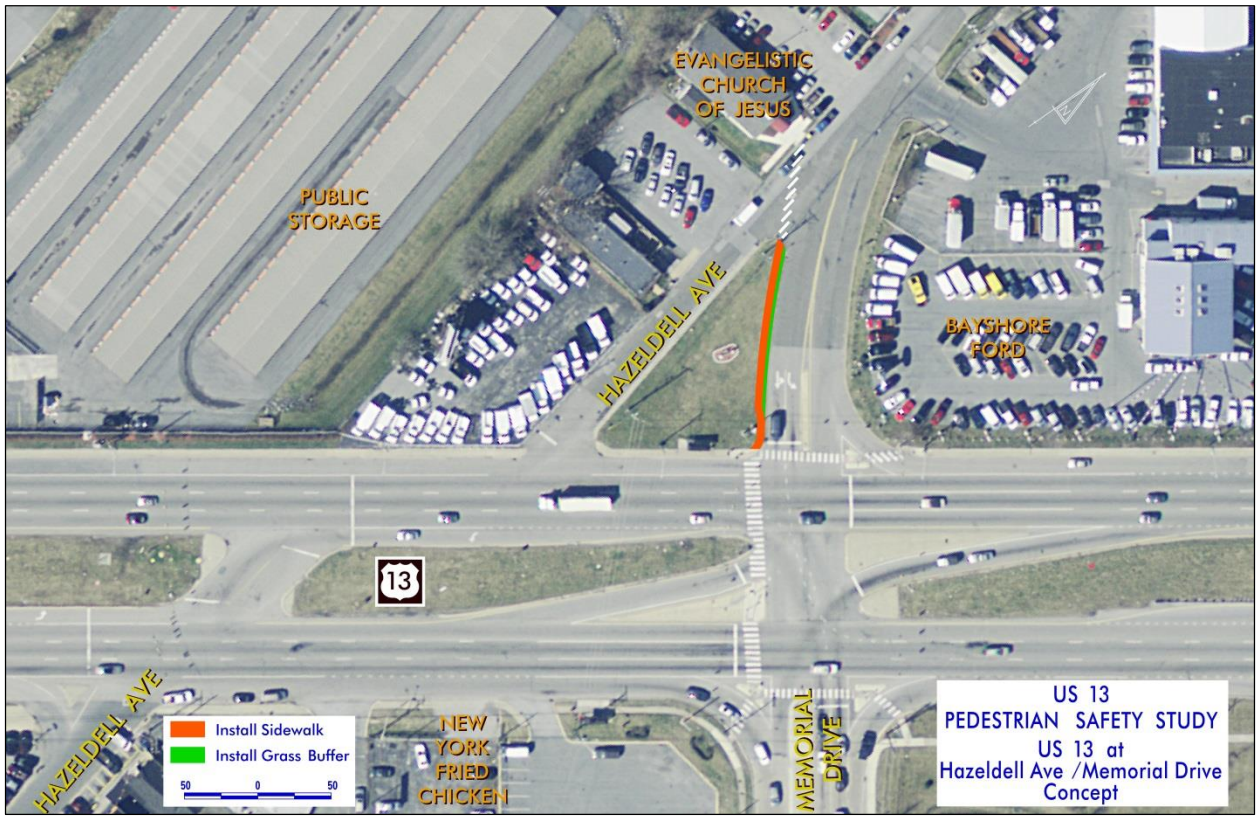
Table 6 – US 13 at E. Hazeldell Avenue Traffic Signal Warrant Analyses Summary

***DE MUTCD* Warrant**	**Criteria**			**No. of Hours Meets Criteria (Warrants 1, 2, 4) Actual Conditions (Warrant 3)**		**Warrant Criteria Met?**
	Major Street Volume (VPH) [NB US 13]	**Minor Street Volume (VPH) [SB US 13 Lefts]**	**No. of Hours Required**			
1 – Eight-Hour Vehicular Volume	*(**Any** of the three conditions must be met)*					
Cond. A – Min. Vehicular Volume	420	105	8	2	No	**No**
Cond. B – Interruption of Cont. Traffic	630	53	8	7[1]	No	
Cond. C – Combination of Conditions • 80% of Condition A • 80% of Condition B	336 504	84 42	8 8	4 8	No	
2 – Four-Hour Vehicular Volume	(See Figure 4C-2)		4	6		**Yes[2]**
3 – Peak Hour	*(**Either** of the two conditions must be met)*					
Condition A	Delay ≥ 4 Veh.-Hrs. Approach Volume ≥ 100 vph Entering Volume ≥ 800 vph		1	0	No	**N/A**
Condition B	(See Figure 4C-4)		1	5	Yes	
4 – Pedestrian Volume	*(**Both** of the two conditions must be met)*					
Condition A	(See Figure 4C-5 or 4C-6)		4	0	No	**No**
Condition B	(See Figure 4C-7 or 4C-8)		1	0	No	
5 – School Crossing	(Refer to *DE MUTCD* Section 4C.06 for Criteria)			-		**N/A**
6 – Coordinated Signal System	(Refer to *DE MUTCD* Section 4C.07 for Criteria)			-		**No**
7 – Crash Experience	(Refer to *DE MUTCD* Section 4C.08 for Criteria)			-		**No**
8 – Roadway Network	(Refer to *DE MUTCD* Section 4C.09 for Criteria)			-		**N/A**
9 - Intersection Near a Grade Crossing	(Refer to *DE MUTCD* Section 4C.10 for Criteria)			-		**N/A**

[1] Based on a review of hourly traffic volume trends, it can be presumed that, at a minimum, one additional hour would be met

[2] Signal warrant criteria are not met if 92 percent of southbound US 13 U-turns are subtracted from the minor street approach (i.e., southbound US 13 left-turn/U-turn volume)

Figure 9 – US 13 at E. Hazeldell Avenue and Memorial Drive Concept



US 13 at Hessler Boulevard

During the study period, one fatal pedestrian crash was reported in July 2010 on the south leg of US 13 at Hessler Boulevard. Currently, no signalized pedestrian crossings are provided at the intersection. However, a maximum of 6, 5, 11, and 8 pedestrians per hour were observed crossing the north, south, east, and west legs of the intersection, respectively, during April 2014 pedestrian observations. Bus stops with moderate ridership are provided along both northbound and southbound US 13 approximately 200 feet north of Hessler Boulevard. Within the study limits, pedestrian crossings of US 13 (at-grade signalized crosswalks or grade-separated crossings) are provided at all signalized intersections with pedestrian generators in the vicinity of the intersection except for US 13 at Hessler Boulevard. As such, evaluating the need for and impacts associated with installing a signalized pedestrian crosswalk across either the north or south leg of the intersection is recommended. In addition, installing signalized crosswalks across the east and west legs of US 13 at Hessler Boulevard is recommended.

Crosswalk Evaluation: Currently, both the northbound and southbound US 13 bus stops at Hessler Boulevard are located on the north side of the intersection. Installing a crosswalk across the north leg of the intersection would provide nearby access to these stops and would tie into the existing sidewalk currently provided along the north side of Hessler Boulevard west of US 13 and from the northwest corner of the intersection to the southbound US 13 bus stop. Sidewalk is not currently provided along the south side of the Hessler Boulevard west of US 13. Based on an October 1, 2014 turning movement count, eastbound right-turn volumes are greater than westbound right-turn volumes, which may support installing the crosswalk on the north leg of the intersection to reduce the potential for conflicts with right-turning vehicles; however, the southbound right-turning volume is also relatively heavy. Relocating both the northbound and southbound US

13 bus stops at Hessler Boulevard from the north leg to the south leg of the intersection was considered if the US 13 crossing were to be located on the south leg of the intersection. The relocated bus stops would be located approximately 500 to 600 feet from the existing bus stops located on the south leg of US 13 at Memorial Drive, which is less than the preferred bus stop spacing (i.e., preferred bus stop spacing is approximately 1,000 feet for local bus service in areas with moderate transit density) outlined in DTC's *Bus Stop and Passenger Facilities Policy*. With the installation of a crosswalk on the east, west, and north legs of the intersection, signalized crossings would be provided on three legs of the intersection and improve pedestrian safety to/from land uses on all four corners of the intersection. Capacity analysis was performed for a signalized crosswalk across the north leg of US 13 at Hessler Boulevard that operates as a two-stage crossing, similar to others throughout the corridor. If the crosswalk were to be installed on the south leg of the intersection, intersection operations are anticipated to be similar since pedestrians will cross US 13 in two stages (during both side street phases), regardless of which leg the crosswalk is provided across. Pedestrians would cross the northbound US 13 travel lanes during the westbound Comcast driveway phase and cross the southbound US 13 travel lanes during the eastbound Hessler Boulevard phase.

AM and PM peak hour vehicular and pedestrian volumes at the US 13 at Hessler Boulevard intersection were modeled using *Synchro* (HCM methodologies) software for existing and proposed conditions. Overall intersection LOS and delay, US 13 mainline delays, and US 13 mainline actuated green times were reviewed to determine the impacts of the proposed signalized crosswalk on the north leg of the intersection. Per existing timing data, a total split (i.e., sum of green, yellow, and red times) of 24 seconds is provided for the eastbound Hessler Boulevard approach during both the AM and PM peak hours. Similarly, a total split of 18 and 22 seconds are provided for the westbound approach during the AM and PM peak hours, respectively. Assuming similar intersection geometrics remain and a crosswalk is installed on the north leg of the intersection, the total required split for the eastbound approach (for crossing southbound US 13) during pedestrian-actuated cycles is 23 seconds, or 1 second less than the existing split). The total required split for the westbound approach (for crossing northbound US 13) is 33 seconds, an increase of 15 and 11 seconds during the AM and PM peak hours, respectively, when a pedestrian actuates the crossing. Therefore, the total split for the westbound Comcast driveway approach was increased to 33 seconds during the AM and PM peak hours for the capacity analyses (the existing total split for the eastbound Hessler Boulevard approach was maintained). To maintain the existing 120-second cycle length, the split times for the US 13 left-turn and through phases were reduced proportionally. As shown in **Table 7**, northbound and southbound US 13 delays increase by less than 5 seconds and the average modeled green time for the northbound and southbound US 13 through phases decreases by approximately 5 to 6 seconds and approximately 3 to 4 seconds during the AM and PM peak hours, respectively, when comparing operations with and without a signalized crosswalk.

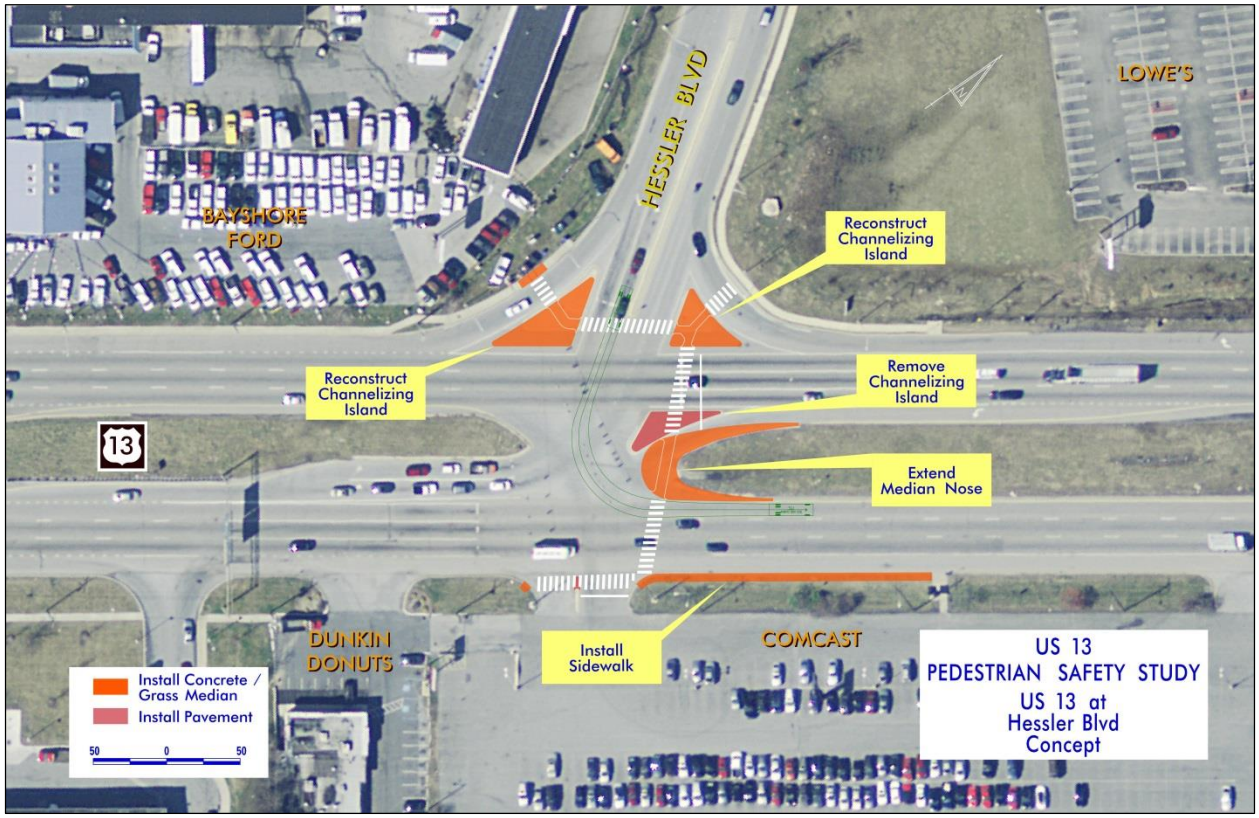
During April 2014 pedestrian counts, a maximum of 5 and 6 pedestrians in an hour were observed crossing the south and north legs, respectively, at the US 13 at Hessler Boulevard intersection. During pedestrian-actuated cycles, minimal impacts are anticipated to mainline US 13 traffic. Therefore, installing a signalized crosswalk (with a two-stage operation) across north, east, and west legs of the US 13 at Hessler Boulevard intersection is recommended (see **Figure 10**). As part of the corridor-wide sidewalk assessment, installing sidewalk along the east side of US 13 from the southeast corner of the intersection to the northbound US 13 bus stop located approximately 200 feet north of the intersection is recommended.

Table 7 – US 13 at Hessler Boulevard Capacity Analyses

Scenario		Measures of Effectiveness					
		Overall Intersection		US 13 Mainline Delays (seconds)		Actuated Green Time (seconds)	
		LOS[1]	Delay (seconds)	NBT	SBT	NBT	SBT
Existing Conditions	AM	B	16.3	13.4	14.9	70.9	71.8
	PM	C	21.1	7.0	22.2	54.3	55.3
With North Leg Ped Crossing	AM	B	15.4	10.9	15.5	65.6	65.6
	PM	C	23.8	11.1	25.7	51.6	51.8
Net Difference	AM	-	-0.9	-2.5	+0.6	-5.3	-6.2
	PM	-	+2.7	+4.1	+3.5	-2.7	-3.5

[1] LOS – Level of Service

Figure 10 – US 13 at Hessler Boulevard Concept



US 13, North of Rogers Road

During the study period, four pedestrian crashes and one bicycle crash were reported along US 13 north of Rogers Road, including two fatal nighttime pedestrian crashes. All five of the pedestrian/bicycle crashes reported along US 13 north of Rogers Road occurred at nighttime. During April 2014 daytime pedestrian observations, a maximum of 7 pedestrians were observed crossing US 13 within an hour between Rogers Road and Millside Drive. Bus stops with relatively high ridership are provided along northbound and southbound US 13 approximately 450 feet north of Rogers Road. No sidewalk is provided along northbound or southbound US 13 between Rogers Road at the bridge located approximately 1,200 feet north of Rogers Road. The Gold Club and Hak's Sports Bar are located along the west and east side of US 13 north of Rogers Road, respectively, in the vicinity of the bus stops and three of the pedestrian crashes. Based on conversations with DSP during the bus/walking tour, both establishments generate relatively heavy pedestrian activity during the evening period, particularly on Friday and Saturday evenings. As such, the Pedestrian/Bicycle Safety Working Group suggested performing nighttime pedestrian observations on a Friday evening to supplement the previously obtained data during weekday daytime observations. Installing corridor lighting along US 13 north of Rogers Road was also recommended since all five crashes occurred at nighttime. Four (80 percent) of the five pedestrian/bicycle crashes reported during the study period involved an impaired pedestrian or bicyclist; therefore, performing enforcement and public outreach through the Division of Alcohol and Tobacco Enforcement (DATE) is recommended. Additionally, installing oversized Pedestrian (W11-1) warning signs along both northbound and southbound US 13 approaching the area north of Rogers Road to provide advance warning to motorists is recommended. As part of the proposed corridor-wide sidewalk project, consideration should be given to prioritizing sidewalk in this area.

Friday Evening Pedestrian Observations/Counts: Pedestrian observations and counts were performed on Friday, September 26, 2014 from approximately 6 PM to 9:30 PM along US 13 between Rogers Road and the bridge located approximately 1,200 feet north of Rogers Road. During the 3.5 hour observation period, a total of 29 pedestrian crossings of US 13 in the vicinity of Hak's Sports Bar and The Gold Club were recorded. A maximum hourly pedestrian volume of 15 was observed during the Friday evening peak compared to 7 pedestrian crossings during the April 2014 weekday counts. Additionally, the following pedestrian safety-related observations were made:

- The Fairview Inn located on the west side of US 13 is currently used for temporary housing. A majority of these hotel guests rely on bus services; therefore, pedestrians destined for downtown Wilmington must cross US 13 to access the northbound US 13 bus stop. On a few occasions, hotel guests were observed using bus services to travel to/from the Shop-Rite grocery store at Christina Crossing (located along US 13 approximately 0.25 mile north of the Market Street/Walnut Street split) for groceries.
- The existing lighting provided along US 13 does not adequately light the entire roadway.
- Motorists' visibility to pedestrians crossing US 13 in this area is poor. Additionally, many pedestrians wore dark clothing and do not carry reflective devices.
- To reduce crossing delays, pedestrians accept smaller gaps, complete two-stage crossings (using the existing raised concrete median), and walk along the US 13 median.

Signalization Evaluation: Installing a pedestrian hybrid beacon or a full signal along US 13 at Millside Drive (i.e., in the vicinity of Hak's Sports Bar, The Gold Club, Fairview Inn) was considered to improve pedestrian accommodations along US 13 north of Rogers Road. As noted previously, a maximum of 15 pedestrians were observed crossing US 13 in the vicinity of Millside Drive during a one hour period, which is less than the lower threshold volume (i.e., 20 pedestrians per hour) outlined in Figure 4F-2 of the *2011 DE MUTCD* for the installation of a pedestrian hybrid beacon. Similarly, minor street traffic volumes are not

anticipated to meet traffic signal warrants. Therefore, pursuing the installation of a pedestrian hybrid beacon or traffic signal along US 13 near Millside Drive is not recommended at this time.

Lighting Evaluation: According to the *DelDOT Lighting Design Guidelines*, "locations where crash patterns indicate that lighting may reduce crashes and where the percentage of nighttime accidents is 35 percent or greater" may be lit and "all public transit stops" should be lit. During the three-year study period from January 2010 through December 2012, 12 (36 percent) of the 33 total crashes (i.e., pedestrian/bicycle and vehicular crashes) reported along US 13 between Rogers Road and the bridge north of Rogers Road occurred at nighttime. Similarly, during the eight-year study period from January 2005 through December 2012, five (83 percent) of the six pedestrian/bicycle crashes occurred at nighttime. DART bus stops are located along northbound and southbound US 13 adjacent to Hak's Sports Bar and The Gold Club, respectively. Furthermore, lighting observations from Friday, September 26, 2014 indicate the existing lighting could be improved. For these reasons, installing corridor lighting along US 13 from Rogers Road to the bridge north of Rogers Road is recommended as part of the proposed corridor-wide lighting project (see Lighting Evaluation section).

Unsignalized Crosswalk Evaluation: According to the *DE MUTCD,* "Crosswalk lines should not be used indiscriminately. An engineering study should be performed before a marked crosswalk is installed at a location away from a traffic control signal or an approach controlled by a STOP or YIELD sign." Although specific standards do not exist to determine if an uncontrolled pedestrian crosswalk should be installed, the following recommended guidelines and "best practices" are available:

FHWA's Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations: According to this report, marked crosswalks alone (i.e., without traffic calming treatments, traffic signals and pedestrian signals when warranted, or other substantial crossing improvement) are insufficient and should not be used on a roadway with four or more lanes with a raised median that has an ADT of 15,000 or greater. As part of FHWA's study, detailed information (such as pedestrian crash history, pedestrian volumes, traffic volumes, etc.) for 2,000 nationwide sites was reviewed and analyzed. US 13 in this area is a four-lane roadway with a 45-mph posted speed limit and an AADT of approximately 23,600. **Therefore, this guidance suggests that the installation of an unsignalized marked crosswalk should not be considered without additional treatments.**

Furthermore, the report provides examples of alternative treatments to be considered with a marked crosswalk or, in some cases, instead of installing a marked crosswalk. Relevant alternative treatments are listed below and briefly discussed to determine their applicability to US 13 in the vicinity of Millside Drive:

- *Provide raised medians (or raised crossing islands) on multilane roads* – A raised concrete median is currently provided along US 13 within the vicinity of Millside Drive. The median width varies from approximately 12 feet to approximately 30 feet except in the area of the northbound US 13 left-turn lane provided at Millside Drive, where the median width is approximately 3 to 4 feet. Pedestrians were observed using the median as a refuge area to allow for two-stage crossings.
- *Install traffic signals and pedestrian signals where warranted and where serious pedestrian crossing problems exist* – As noted previously, vehicular and pedestrian volume warrants for the installation of a traffic signal or pedestrian hybrid beacon are not met.
- *Reduce the exposure crossing distance for pedestrians by providing curb extensions, median refuge islands, reducing the roadway cross-section (e.g., lane diet) or installing traffic-calming measures to slow vehicle speeds and/or reduce cut-through traffic such as raised crossings, street narrowing, or modified intersection designs* – Due to the functional classification of the roadway (i.e., principal arterial), travel speed, lack of shoulders, and existing median, these treatments are not applicable or recommended at this time.

- *Provide adequate nighttime street lighting for pedestrians in areas with nighttime pedestrian activity where illumination is inadequate* – As noted previously, lighting is recommended to improve pedestrian safety along US 13 north of Rogers Avenue.

NCHRP Report 562: According to NCHRP Report 562: *Improving Pedestrian Safety at Unsignalized Crossings*, "The minimum pedestrian volume for a peak hour evaluation is 20 pedestrians per hour for both directions (14 pedestrians per hour if the major road exceeds 35 mph). If fewer pedestrians are crossing the street, then geometric improvements (rather than signs, signals, or markings) such as traffic calming, median refuge islands, and curb extensions, are alternatives that can be considered." As shown in Table 4, the 85th-percentile travel speeds along northbound and southbound US 13 are 51 and 52 miles per hour, respectively. As shown in **Figure 2-20**, the highest recorded hourly pedestrian volume during the typical weekday pedestrian observations was 7 pedestrians (total of both directions). The maximum hourly peak pedestrian volume observed during Friday evening observations was 15 pedestrians (total of both directions). **This guidance suggests that a pedestrian crossing treatment can be considered.**

If the pedestrian volume criteria discussed above are satisfied, NCHRP Report 562 provides additional guidance regarding the selection of an appropriate "treatment category" (e.g., Red, Active or Enhanced, or Crosswalk). The guidance is based on peak hour pedestrian delay, either calculated from a worksheet provided in NCHRP Report 562 or measured during field observations. NCHRP Report 562 defines the "treatment categories" as follows:

- *Red* – This category includes those devices that display a circular red indication (signal or beacon) to motorists at the pedestrian location.
- *Active* – Also called "active when present," this category includes those devices designed to display a warning only when pedestrians are present or crossing the street.
- *Enhanced* – This category includes those devices that enhance the visibility of the crossing location and pedestrians waiting to cross. Warning signs, markings, or beacons in this category are present or active at the crossing location at all times.

The selection of the appropriate "treatment category" is based on the total pedestrian delay in an hour (i.e., the sum of all pedestrian delay). Based on the recommended thresholds and the maximum observed hourly pedestrian volume of 15, the average pedestrian delay (per person) would need to be at least approximately 85 minutes to recommend a "Red" treatment (i.e., traffic signal or pedestrian signal), approximately 21 to 85 minutes to recommend an "Enhanced" treatment, and less than approximately 21 minutes to recommend an "Active" treatment. Based on field observations, typical pedestrian delays for crossing US 13 in the vicinity of Millside Drive are less than 1 to 2 minutes. **This guidance suggests significant treatments may not be appropriate.**

The *DE MUTCD* states that new marked crosswalks alone should not be installed across uncontrolled roadways where the speed limit exceeds 40 mph and the roadway has four more lanes of travel with a raised median and an ADT of 15,000 vehicles per day or greater. Due to the functional classification, posted speed limit, and vehicular volume of the roadway, the presence of a raised concrete median (which pedestrians use as a pedestrian refuge area), and guidance provided in both FHWA's *Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations* and NCHRP Report 562: *Improving Pedestrian Safety at Unsignalized Crossings*, installing a marked unsignalized crosswalk across US 13 in the vicinity of Millside Drive is not recommended at this time. However, pursing other pedestrian safety treatments previously discussed (i.e., signing and lighting) is recommended.

SUMMARY OF RECOMMENDATIONS

A summary of recommended improvements along US 13 from SR 273 to the Market Street/Walnut Street split are shown in **Table 8**. Recommendations are categorized as short-term, mid-term, and long-term improvements. Generally, mid-term and long-term recommendations require design efforts and coordination between multiple stakeholders. Therefore, these improvements have been prioritized based on a review of pedestrian crash history, pedestrian frequency, and transit ridership to prioritize resources (mid-term and long-term improvements were prioritized separately). Short-term improvements have not been prioritized, as it is assumed these can be accomplished relatively quickly without significant design efforts.

Table 8 – Summary of Recommendations

Priority	Recommendation
	General
Short-Term	• Coordinate with Delaware State Police to create a "cheat sheet" for the types of information to include in a pedestrian crash report and incorporate this information into DELJIS E-Crash training • Establish a working group (including a DelDOT Traffic Safety Engineer) to coordinate aspects of both new and old bus stop locations (*requires coordination with DTC*) • Enhance the current *Bus Stop and Passenger Facilities Policy* (DTC-05) to incorporate and improve pedestrian safety (*requires coordination with DTC*) • Develop pedestrian safety advertisements to install at bus stop shelters, specifically at high ridership locations (*requires coordination with DTC*) • Develop and distribute questionnaires to transit riders along the US 13 study corridor to gather feedback about pedestrian safety and facilities to better identify the topics needing further public outreach (*requires coordination with DTC*) • Investigate the feasibility of providing prerecorded audio messages on buses directing pedestrians to cross at designated crosswalks *(requires further discussion with DTC).*
	Corridor-Wide
Short-Term	• Upgrade the pedestrian clearance intervals at the pedestrian signals provided along the corridor as indicated below: o *US 13 at School Lane* - Increase the pedestrian clearance interval for phase 3 (SB US 13 crossing) from 18 to 22 seconds and the pedestrian clearance interval for phase 4 (northbound US 13 crossing) from 14 to 16 seconds o *US 13 at Bacon Avenue/Boulden Boulevard* - Increase the pedestrian clearance interval for phase 4 (northbound US 13 crossing) from 19 to 21 seconds o *US 13 at Marsh Lane/Wildel Avenue* - Increase the pedestrian clearance interval for phase 3 (US 13 crossing) from 53 seconds to 60 seconds AND increase the pedestrian clearance interval for phase 6 (west leg crossing) from 30 to 34 seconds o *US 13 at Memorial Drive* - Increase the pedestrian clearance interval for phase 4 (southbound US 13 crossing) from 17 to 19 seconds AND increase the pedestrian clearance interval for phase 6 (west leg crossing) from 8 to 10 seconds
Short-Term	• Replace/install directional arrows on pedestrian pushbuttons where missing • Replace/install pedestrian pushbutton signs with existing pedestrian signal throughout the corridor • Consider utilizing audible messages on DART buses along the corridor to emphasize safe crossing (*requires coordination with DTC*) • Perform a formal lighting evaluation along US 13 from SR 273 to the Market Street/Walnut Street split to identify the need for additional roadway lighting • Install speed limit signs along northbound and southbound US 13 to match the latest speed resolutions • Install a marked crosswalk across the Wawa driveway located along southbound US 13 approximately 675 feet south of McMullen Avenue

Priority	Recommendation
Mid-Term (Priority 11)	• Pending discussions with DTC, install bus stop shelters at the northbound and southbound US 13 bus stops at Millside Drive and at the southbound US 13 bus stop at Bacon Avenue *(requires coordination with DTC)* • Pending discussions with DTC, install benches at the northbound US 13 bus stop at Stahl Avenue and southbound US 13 bus stop at Lincoln Avenue *(requires coordination with DTC)*
Mid-Term (Priority 1)	• Install corridor lighting along US 13 from SR 273 to the Market Street/Walnut Street split, as identified in the proposed lighting evaluation, specifically at the following locations: o Install lighting along US 13 from Rogers Road to the bridge located approximately 1,200 feet north of Rogers Road o Install lighting along US 13 within the vicinity of School Lane
Long-Term (Priority 1)	• Pursue construction of sidewalk along the US 13 study corridor as part of a future capital improvement project. As part of the design and implementation of sidewalk along the US 13 corridor, DelDOT should investigate the feasibility and practicality of installing shared-use paths in areas where the path could be installed for a long enough distance to be practical for travel by both pedestrians and bicyclists. Prioritization of sidewalk segments should be performed as a first step. SR 273 to Memorial Drive is included as part of the limits of the US 13, US 40 to Memorial Drive Pedestrian Improvement project which is included in the proposed FY17 to FY22 CTP; however, Memorial Drive to the Market Street/Walnut Street split is not included as part of the CTP project's limits. Consideration should be given to extending the limits of the US 13, US 40 to Memorial Drive Pedestrian Improvement project farther north to the Market Street/Walnut Street split in order to include the full length of this study's project limits. • As part of future projects such as pavement and rehabilitation, install ADA-compliant curb ramps and address existing sidewalk compliance issues (see DelDOT's ADA inventory and assessment) throughout the corridor
Long-Term (Priority 3)	• Consider reducing the number and frequency of access points along the study corridor as part of any future redevelopment
Long-Term (Priority 4)	• Investigate the need for and impacts of modifying and/or closing the unsignalized median openings along the study corridor
US 13 at SR 273	
Mid-Term (Priority 7)	• Consolidate the southbound US 13 bus stops provided on the north and south legs of the US 13 at SR 273 intersection by removing the bus stop on the north leg of the intersection. However, maintaining this bus stop may be preferred pending discussions with DTC and the status of the proposed New Castle Town Center. *(requires coordination with DTC)*
Long-Term (Priority 2)	• As recommended by the Churchmans Road Trail Study, install a crosswalk across the north leg of US 13 at SR 273 intersection

Priority	Recommendation
	US 13 at School Lane
Mid-Term (Priority 4)	• Install a signalized crosswalk across the east leg of US 13 at School Lane *(consideration should be given to incorporating with planned improvements as part of the New Castle County Airport Expansion recommended improvements)* • Relocate the southbound US 13 bus stop from the south leg to the north leg of the US 13 at School Lane intersection and consolidate southbound US 13 bus stops at School Lane and the New Castle County Airport right-in only access (*pending coordination with DTC*). Additionally, install sidewalk along the west side of US 13 from the northwest corner of the US 13 at School Lane to the relocated bus stop. • Install sidewalk along the east side of US 13 to connect the northeast corner of the US 13 at School Lane intersection to the existing northbound US 13 bus stop (*consideration should be given to moving the northbound bus stop as close as possible to the intersection*)
	US 13 at Lincoln Avenue
Mid-Term (Priority 8)	• Install a signalized crosswalk across the west leg of the US 13 at Lincoln Avenue intersection
	US 13 at Harrison Avenue/Stahl Avenue
Mid-Term (Priority 10)	• Install a signalized crosswalk across the west leg of the US 13 at Harrison Avenue/Stahl Avenue intersection
	US 13 at Roosevelt Avenue
Mid-Term (Priority 9)	• Install a signalized crosswalk across the west leg of the US 13 at Roosevelt Avenue intersection
	US 13 at Bacon Avenue/Boulden Boulevard
Mid-Term (Priority 6)	• Install a signalized crosswalk across the east leg of US 13 at Bacon Avenue/Boulden Boulevard • Realign the signalized crosswalk across the south leg of US 13 at Bacon Avenue/Boulden Boulevard to provide a more direct pedestrian path *(turning paths for northbound U-turning trucks should be evaluated as part of design)*
	US 13 at Marsh Lane/Wildel Avenue
Mid-Term (Priority 5)	• Relocate the signalized crosswalk across US 13 at Marsh Lane/Wildel Avenue to the north leg of the intersection, install a signalized crosswalk across the east leg of the intersection, and install countdown pedestrian signal indications at the intersection • Relocate the bus stop provided along northbound US 13 approximately 215 feet north of Marsh Lane/Wildel Avenue approximately midway between its current location and the intersection (*pending approval from DTC Operations and the adjoining property owners*). At a minimum, the bus stop should be relocated 50 feet farther south to discourage pedestrians from crossing midblock at the paved emergency crossover. *(identified as party of the State of Good Repair program in June 2014)* • Remove the bus stop provided along northbound US 13 approximately 625 feet south of Marsh Lane/Wildel Avenue in front of Collins Business Systems *(identified as part of the State of Good Repair program in June 2014)*

Priority	Recommendation
	US 13, E. Hazeldell Avenue to Memorial Drive
Mid-Term (Priority 2)	• Install sidewalk along the north side of the large grass island provided between the eastbound Memorial Drive and W. Hazeldell Avenue (i.e., spur road) approaches to US 13. Consider additional parking restrictions along W. Hazeldell Avenue and signing to encourage crossing at the Memorial Drive signal.
	US 13 at Hessler Boulevard
Short-Term	• Replace the two left-turn pavement marking arrows provided on the eastbound Hessler Boulevard approach to US 13 with pavement marking arrows indicating a left-turn and a shared left-turn/through lane
Mid-Term (Priority 3)	• Install a signalized crosswalk across the north, east, and west legs of the US 13 at Hessler Boulevard intersection
	US 13, north of Rogers Road
Short-Term	• Install oversized Pedestrian (W11-1) warning signs along both northbound and southbound US 13 approaching the area north of Rogers Road • Perform enforcement and public outreach at establishments along US 13 north of Rogers Road regarding pedestrian safety through the Division of Alcohol and Tobacco Enforcement (DATE)

Appendix A

Traffic Counts

Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

Weather: SUNNY
Counted By: MIKE & DEB
Town: NEWARK
County: NEW CASTLE

File Name : US 13 at DE 273
Site Code : 00000000
Start Date : 3/5/2014
Page No : 1

Groups Printed- VEHS&PEDS

	US 13 From North					DE 273 From East					US 13 From South					DE 273 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	36	154	14	0	204	21	49	54	1	125	34	640	65	0	739	15	30	81	1	127	1195
06:45 AM	51	181	31	0	263	13	43	41	0	97	65	672	65	0	802	23	49	84	0	156	1318
Total	87	335	45	0	467	34	92	95	1	222	99	1312	130	0	1541	38	79	165	1	283	2513
07:00 AM	50	195	25	0	270	10	33	43	0	86	54	691	56	0	801	19	55	98	0	172	1329
07:15 AM	50	228	34	0	312	9	43	62	0	114	78	754	83	0	915	23	70	105	0	198	1539
07:30 AM	81	199	36	0	316	15	71	50	0	136	80	699	110	1	890	19	92	113	3	227	1569
07:45 AM	77	205	47	0	329	10	65	60	3	138	98	585	114	0	797	17	108	117	0	242	1506
Total	258	827	142	0	1227	44	212	215	3	474	310	2729	363	1	3403	78	325	433	3	839	5943
08:00 AM	79	222	36	0	337	17	73	46	0	136	67	588	90	0	745	22	78	104	0	204	1422
08:15 AM	78	221	37	0	336	17	63	58	0	138	67	491	82	0	640	19	76	105	0	200	1314
08:30 AM	74	197	25	0	296	27	76	72	0	175	52	488	92	0	632	24	76	109	0	209	1312
08:45 AM	66	226	33	0	325	29	67	72	1	169	46	491	66	0	603	41	75	89	0	205	1302
Total	297	866	131	0	1294	90	279	248	1	618	232	2058	330	0	2620	106	305	407	0	818	5350
09:00 AM	70	181	30	0	281	34	64	76	0	174	32	373	67	0	472	37	65	98	0	200	1127
09:15 AM	68	214	25	0	307	18	55	78	0	151	49	323	56	0	428	54	61	100	0	215	1101
BREAK																					
Total	138	395	55	0	588	52	119	154	0	325	81	696	123	0	900	91	126	198	0	415	2228
BREAK																					
11:00 AM	77	218	21	0	316	18	49	82	0	149	40	270	51	1	362	52	54	89	0	195	1022
11:15 AM	61	226	22	0	309	26	71	82	0	179	40	289	47	0	376	40	40	103	1	184	1048
11:30 AM	68	256	28	0	352	29	67	79	0	175	36	247	62	1	346	44	63	141	0	248	1121
11:45 AM	59	238	29	0	326	13	80	79	1	173	48	308	63	1	420	53	70	148	0	271	1190
Total	265	938	100	0	1303	86	267	322	1	676	164	1114	223	3	1504	189	227	481	1	898	4381
12:00 PM	92	271	23	0	386	37	99	78	1	215	45	270	71	0	386	51	69	101	0	221	1208
12:15 PM	83	290	34	0	407	30	83	86	0	199	50	328	64	1	443	50	81	112	0	243	1292
12:30 PM	85	294	23	0	402	31	87	83	0	201	54	300	68	0	422	48	73	103	0	224	1249
12:45 PM	84	273	22	0	379	16	86	80	3	185	47	331	71	3	452	52	55	118	0	225	1241
Total	344	1128	102	0	1574	114	355	327	4	800	196	1229	274	4	1703	201	278	434	0	913	4990

BREAK

Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at DE 273
Site Code : 00000000
Start Date : 3/5/2014
Page No : 2

Groups Printed- VEHS&PEDS

	US 13 From North					DE 273 From East					US 13 From South					DE 273 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:30 PM	103	574	17	0	694	15	99	134	0	248	58	321	67	0	446	52	82	132	0	266	1654
03:45 PM	116	538	24	0	678	11	78	116	0	205	48	322	66	0	436	45	70	107	0	222	1541
Total	219	1112	41	0	1372	26	177	250	0	453	106	643	133	0	882	97	152	239	0	488	3195
04:00 PM	111	590	30	0	731	13	121	138	0	272	66	354	67	1	488	74	89	123	0	286	1777
04:15 PM	104	615	17	0	736	13	101	119	0	233	64	357	41	1	463	92	73	119	0	284	1716
04:30 PM	111	646	10	0	767	11	97	138	0	246	60	327	43	0	430	88	64	117	0	269	1712
04:45 PM	131	664	21	0	816	14	91	139	0	244	64	342	73	0	479	78	78	124	0	280	1819
Total	457	2515	78	0	3050	51	410	534	0	995	254	1380	224	2	1860	332	304	483	0	1119	7024
05:00 PM	148	628	22	0	798	24	101	125	0	250	69	333	73	1	476	84	75	130	0	289	1813
05:15 PM	125	648	27	0	800	10	112	153	0	275	47	364	62	0	473	82	79	132	0	293	1841
05:30 PM	129	696	22	0	847	7	87	139	0	233	40	312	55	0	407	92	63	98	0	253	1740
05:45 PM	111	645	23	0	779	12	77	128	0	217	49	273	41	0	363	76	67	115	0	258	1617
Total	513	2617	94	0	3224	53	377	545	0	975	205	1282	231	1	1719	334	284	475	0	1093	7011
06:00 PM	99	585	24	1	709	15	93	143	0	251	52	287	52	0	391	53	62	99	0	214	1565
06:15 PM	79	478	22	0	579	11	67	94	0	172	50	332	55	0	437	55	77	102	0	234	1422
Grand Total	2756	11796	834	1	15387	576	2448	2927	10	5961	1749	13062	2138	11	16960	1574	2219	3516	5	7314	45622
Apprch %	17.9	76.7	5.4	0		9.7	41.1	49.1	0.2		10.3	77	12.6	0.1		21.5	30.3	48.1	0.1		
Total %	6	25.9	1.8	0	33.7	1.3	5.4	6.4	0	13.1	3.8	28.6	4.7	0	37.2	3.5	4.9	7.7	0	16	

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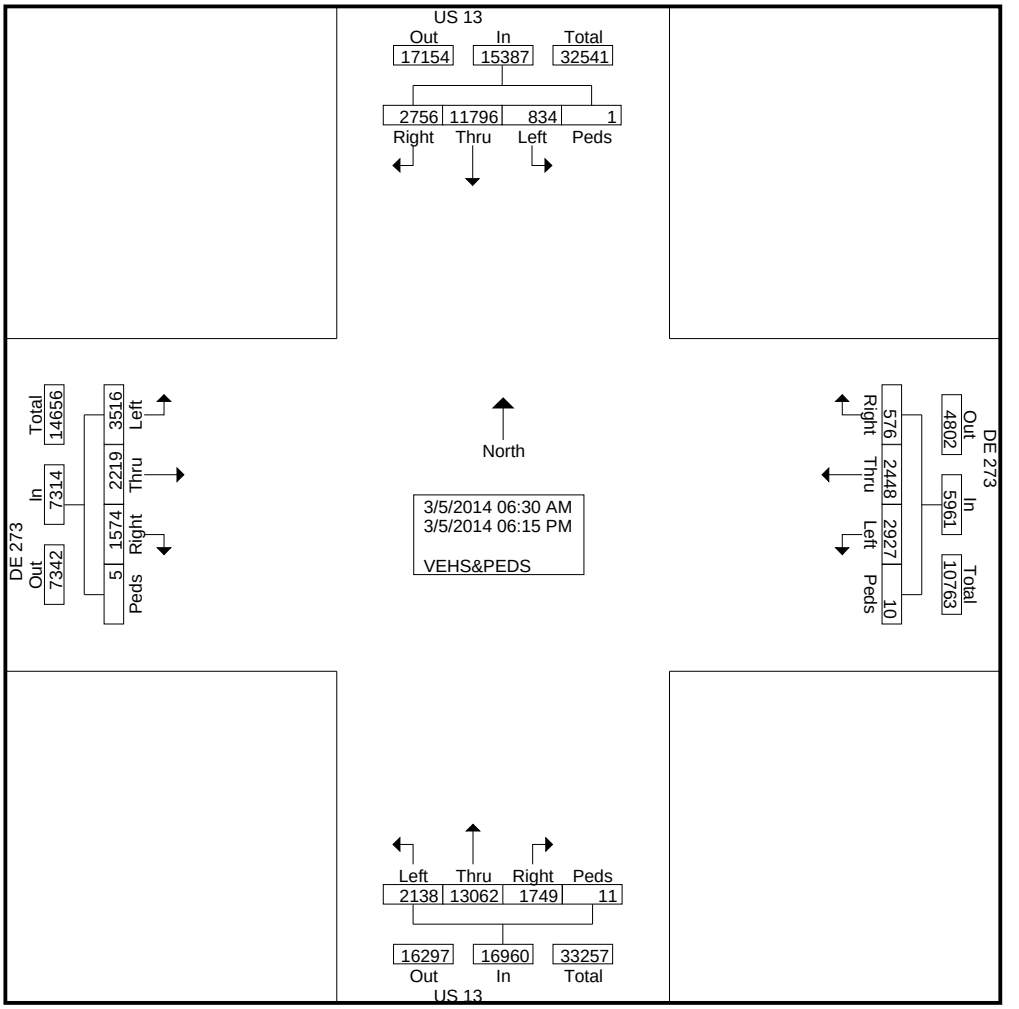
File Name : US 13 at DE 273
Site Code : 00000000
Start Date : 3/5/2014
Page No : 3



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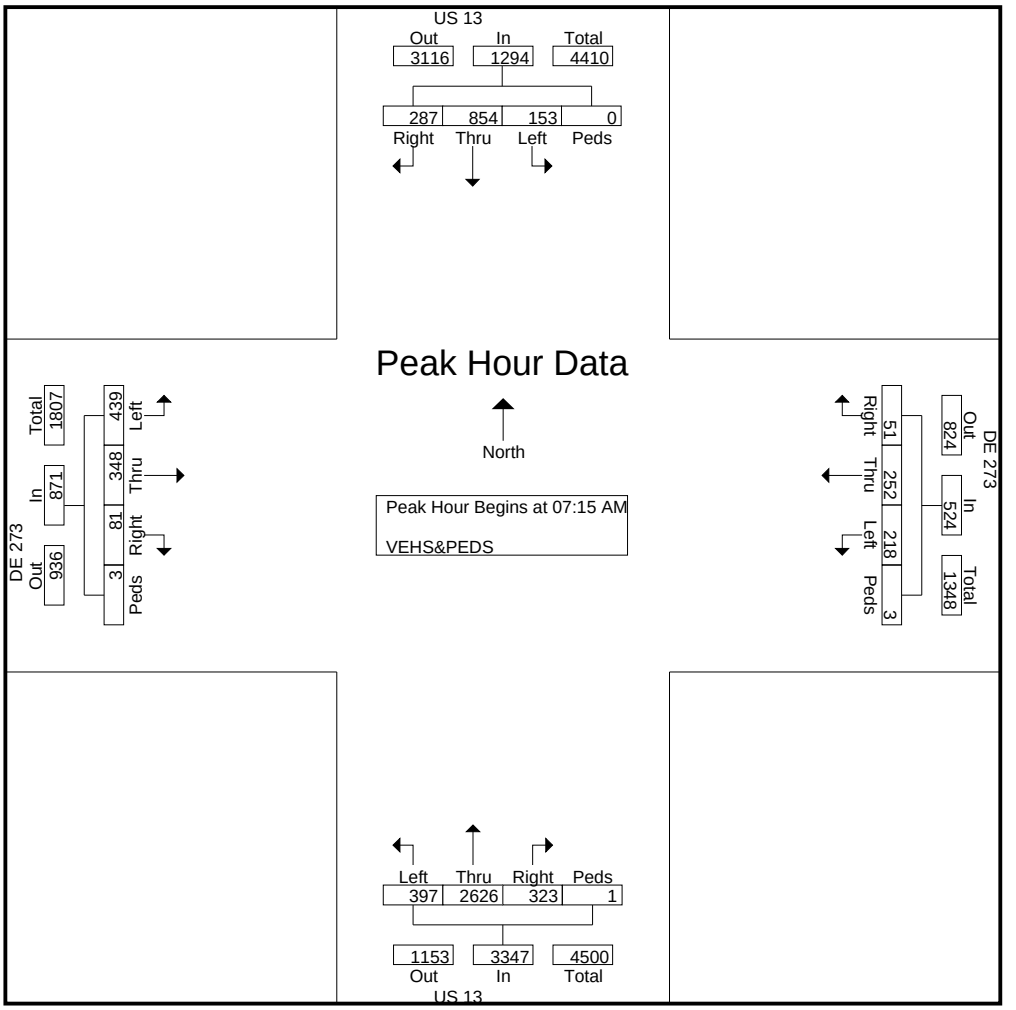
7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at DE 273
Site Code : 00000000
Start Date : 3/5/2014

	US 13 From North					DE 273 From East					US 13 From South					DE 273 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	50	**228**	34	0	312	9	43	**62**	0	114	78	**754**	83	0	**915**	**23**	70	105	0	198	1539
07:30 AM	**81**	199	36	0	316	15	71	50	0	136	80	699	110	**1**	890	19	92	113	**3**	227	**1569**
07:45 AM	77	205	**47**	0	329	10	65	60	**3**	**138**	**98**	585	**114**	0	797	17	**108**	**117**	0	**242**	1506
08:00 AM	79	222	36	0	**337**	**17**	**73**	46	0	136	67	588	90	0	745	22	78	104	0	204	1422
Total Volume	287	854	153	0	1294	51	252	218	3	524	323	2626	397	1	3347	81	348	439	3	871	6036
% App. Total	22.2	66	11.8	0		9.7	48.1	41.6	0.6		9.7	78.5	11.9	0		9.3	40	50.4	0.3		
PHF	.886	.936	.814	.000	.960	.750	.863	.879	.250	.949	.824	.871	.871	.250	.914	.880	.806	.938	.250	.900	.962



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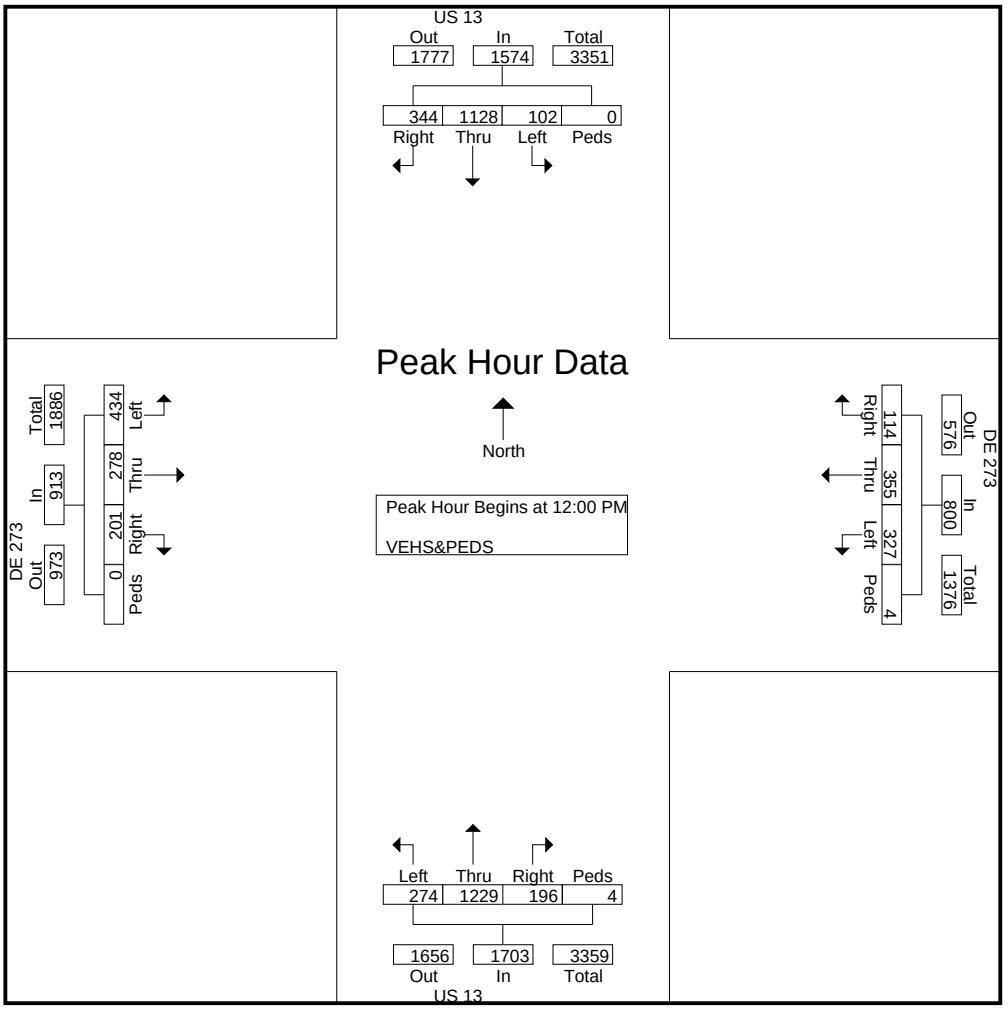
File Name : US 13 at DE 273
Site Code : 00000000
Start Date : 3/5/2014
Page No : 5

	US 13 From North					DE 273 From East					US 13 From South					DE 273 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	**92**	271	23	0	386	**37**	**99**	78	1	**215**	45	270	**71**	0	386	51	69	101	0	221	1208
12:15 PM	83	290	**34**	0	**407**	30	83	**86**	0	199	50	328	64	1	443	50	**81**	112	0	**243**	**1292**
12:30 PM	85	**294**	23	0	402	31	87	83	0	201	**54**	300	68	0	422	48	73	103	0	224	1249
12:45 PM	84	273	22	0	379	16	86	80	**3**	185	47	**331**	71	**3**	**452**	**52**	55	**118**	0	225	1241
Total Volume	344	1128	102	0	1574	114	355	327	4	800	196	1229	274	4	1703	201	278	434	0	913	4990
% App. Total	21.9	71.7	6.5	0		14.2	44.4	40.9	0.5		11.5	72.2	16.1	0.2		22	30.4	47.5	0		
PHF	.935	.959	.750	.000	.967	.770	.896	.951	.333	.930	.907	.928	.965	.333	.942	.966	.858	.919	.000	.939	.966



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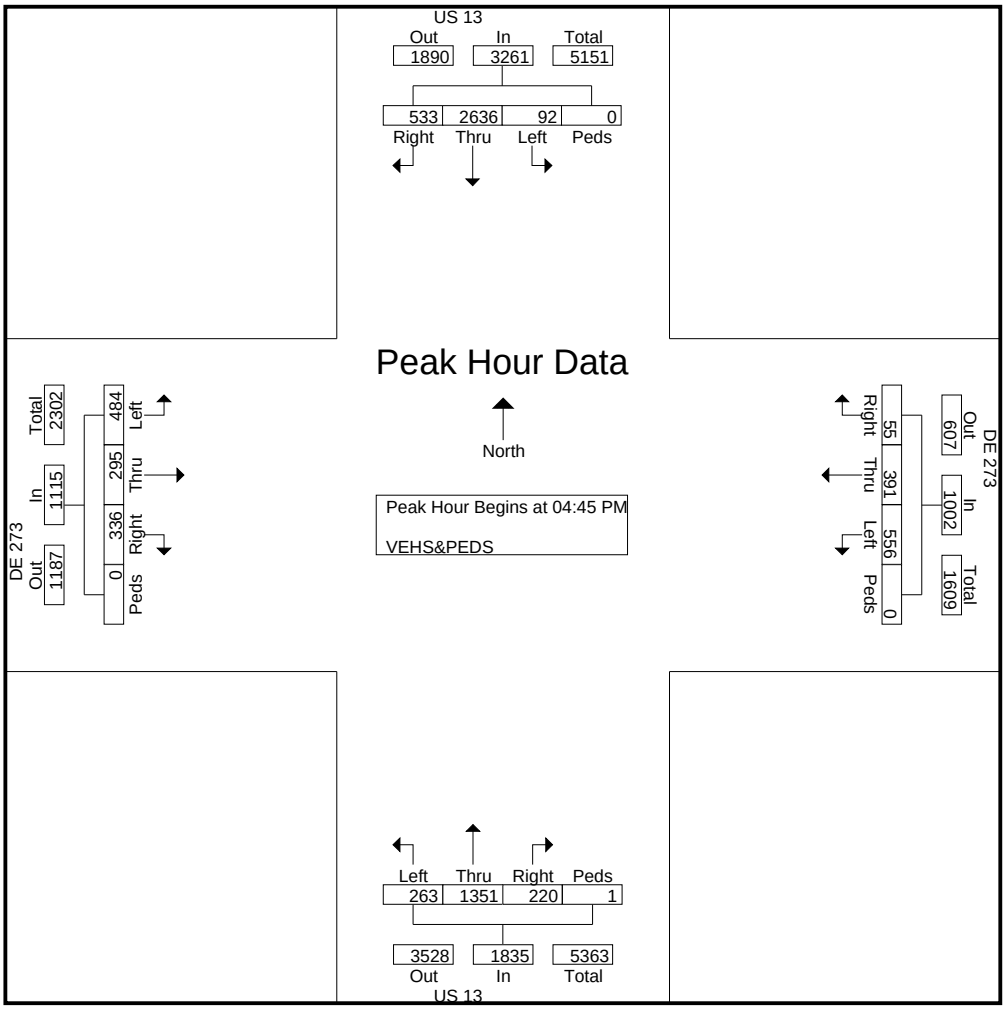
Columbia, MD 21046
443-741-3500

File Name : US 13 at DE 273
Site Code : 00000000
Start Date : 3/5/2014
Page No : 6

	US 13 From North					DE 273 From East					US 13 From South					DE 273 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	131	664	21	0	816	14	91	139	0	244	64	342	**73**	0	**479**	78	78	124	0	280	1819
05:00 PM	**148**	628	22	0	798	**24**	101	125	0	250	**69**	333	73	**1**	476	84	75	130	0	289	1813
05:15 PM	125	648	**27**	0	800	10	**112**	**153**	0	**275**	47	**364**	62	0	473	82	**79**	**132**	0	**293**	**1841**
05:30 PM	129	**696**	22	0	**847**	7	87	139	0	233	40	312	55	0	407	**92**	63	98	0	253	1740
Total Volume	533	2636	92	0	3261	55	391	556	0	1002	220	1351	263	1	1835	336	295	484	0	1115	7213
% App. Total	16.3	80.8	2.8	0		5.5	39	55.5	0		12	73.6	14.3	0.1		30.1	26.5	43.4	0		
PHF	.900	.947	.852	.000	.963	.573	.873	.908	.000	.911	.797	.928	.901	.250	.958	.913	.934	.917	.000	.951	.979



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7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

Weather: SUNNY
Counted By: HORACE & JEREMY
Town: NEWARK
County: NEW CASTLE

File Name : US 13 at School Lane
Site Code : 00000000
Start Date : 3/6/2014

Groups Printed- VEHS&PEDS

	US 13 From North					SCHOOL LANE From East					US 13 From South					SCHOOL LANE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	2	114	1	0	117	5	0	0	0	5	2	608	8	0	618	1	0	0	0	1	741
06:45 AM	2	172	2	0	176	6	0	0	0	6	2	666	10	0	678	0	1	1	0	2	862
Total	4	286	3	0	293	11	0	0	0	11	4	1274	18	0	1296	1	1	1	0	3	1603
07:00 AM	4	268	14	0	286	11	0	0	0	11	0	816	15	0	831	0	4	4	0	8	1136
07:15 AM	14	280	15	0	309	7	0	0	0	7	5	854	11	0	870	6	1	2	0	9	1195
07:30 AM	0	303	13	0	316	6	2	3	0	11	3	843	23	0	869	2	1	7	0	10	1206
07:45 AM	4	339	14	0	357	11	0	3	0	14	3	816	17	0	836	4	1	2	0	7	1214
Total	22	1190	56	0	1268	35	2	6	0	43	11	3329	66	0	3406	12	7	15	0	34	4751
08:00 AM	1	313	11	0	325	17	1	1	0	19	7	722	10	0	739	1	2	2	0	5	1088
08:15 AM	2	321	29	0	352	30	1	6	0	37	3	631	7	0	641	3	2	4	0	9	1039
08:30 AM	1	338	25	0	364	23	0	7	0	30	10	591	4	0	605	0	0	1	0	1	1000
08:45 AM	3	323	46	0	372	16	3	9	0	28	8	482	1	0	491	1	2	8	0	11	902
Total	7	1295	111	0	1413	86	5	23	0	114	28	2426	22	0	2476	5	6	15	0	26	4029
09:00 AM	0	343	28	0	371	22	2	7	0	31	6	369	5	0	380	1	4	7	0	12	794
09:15 AM	1	341	44	0	386	25	3	9	0	37	7	413	12	0	432	3	1	4	0	8	863
BREAK																					
Total	1	684	72	0	757	47	5	16	0	68	13	782	17	0	812	4	5	11	0	20	1657
BREAK																					
11:00 AM	3	318	44	0	365	42	0	17	0	59	3	334	3	0	340	1	2	2	0	5	769
11:15 AM	1	339	86	0	426	41	0	11	0	52	3	376	4	0	383	3	0	2	0	5	866
11:30 AM	1	216	63	0	280	35	0	8	0	43	8	361	1	0	370	5	1	5	0	11	704
11:45 AM	0	275	78	0	353	34	3	9	0	46	6	362	9	0	377	6	0	2	0	8	784
Total	5	1148	271	0	1424	152	3	45	0	200	20	1433	17	0	1470	15	3	11	0	29	3123
12:00 PM	5	409	87	2	503	37	2	13	0	52	2	377	3	0	382	7	1	6	0	14	951
12:15 PM	2	416	97	0	515	51	1	16	0	68	7	429	4	0	440	3	3	10	0	16	1039
12:30 PM	1	429	72	0	502	65	1	18	0	84	8	431	1	0	440	6	2	3	0	11	1037
12:45 PM	3	378	65	0	446	66	2	21	0	89	39	469	11	0	519	8	1	7	0	16	1070
Total	11	1632	321	2	1966	219	6	68	0	293	56	1706	19	0	1781	24	7	26	0	57	4097

BREAK

Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at School Lane
Site Code : 00000000
Start Date : 3/6/2014
Page No : 2

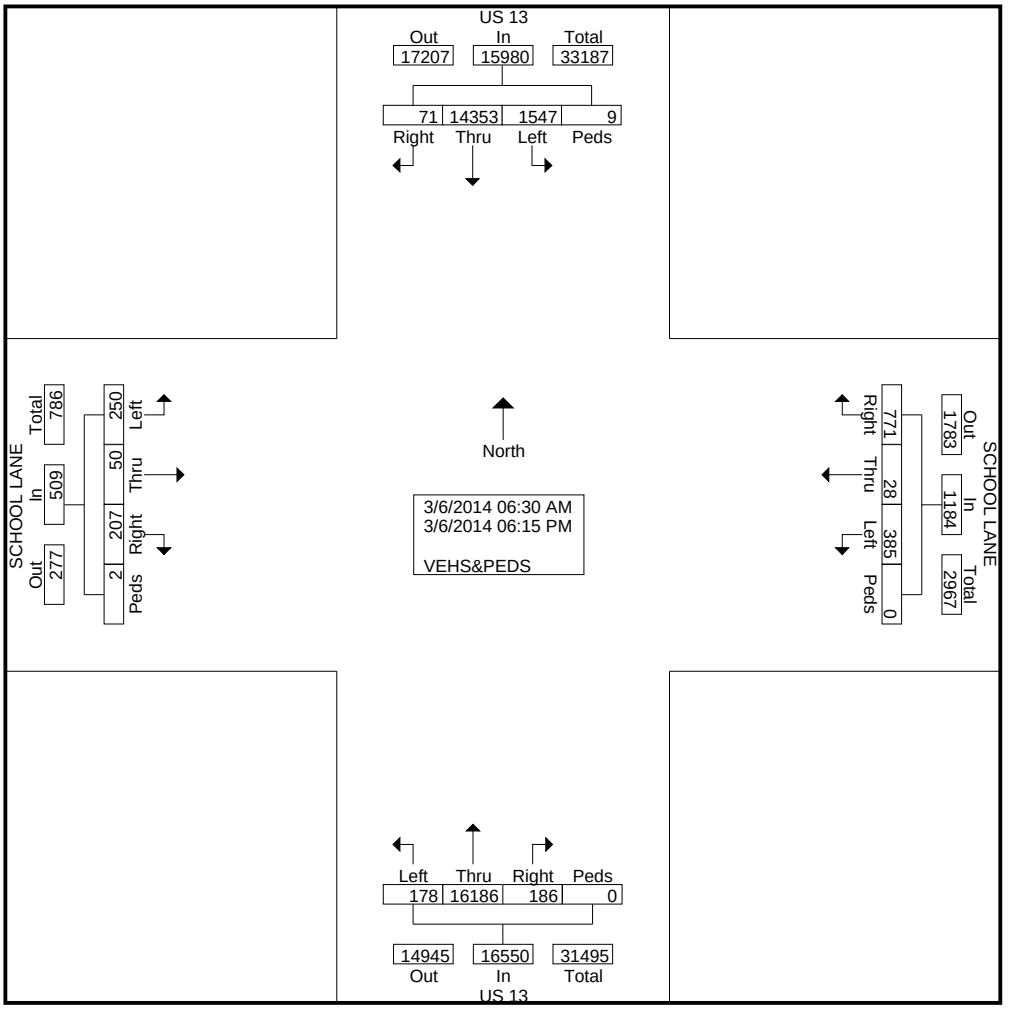
Groups Printed- VEHS&PEDS

	US 13 From North					SCHOOL LANE From East					US 13 From South					SCHOOL LANE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:30 PM	1	542	61	0	604	22	4	16	0	42	4	416	3	0	423	15	1	22	0	38	1107
03:45 PM	1	530	95	0	626	51	2	15	0	68	7	406	3	0	416	13	4	22	0	39	1149
Total	2	1072	156	0	1230	73	6	31	0	110	11	822	6	0	839	28	5	44	0	77	2256
04:00 PM	1	620	62	0	683	61	1	22	0	84	8	409	2	0	419	11	1	15	0	27	1213
04:15 PM	1	678	48	0	727	38	0	20	0	58	6	448	2	0	456	8	2	16	0	26	1267
04:30 PM	1	734	56	1	792	12	0	16	0	28	1	445	0	0	446	13	2	14	0	29	1295
04:45 PM	0	810	65	0	875	3	0	22	0	25	3	433	0	0	436	14	1	12	0	27	1363
Total	3	2842	231	1	3077	114	1	80	0	195	18	1735	4	0	1757	46	6	57	0	109	5138
05:00 PM	4	744	52	2	802	9	0	20	0	29	5	497	0	0	502	24	3	13	0	40	1373
05:15 PM	3	827	46	0	876	7	0	21	0	28	4	482	0	0	486	17	0	13	1	31	1421
05:30 PM	3	764	62	0	829	2	0	24	0	26	4	472	0	0	476	6	2	16	1	25	1356
05:45 PM	2	677	59	0	738	4	0	18	0	22	5	430	3	0	438	8	3	11	0	22	1220
Total	12	3012	219	2	3245	22	0	83	0	105	18	1881	3	0	1902	55	8	53	2	118	5370
06:00 PM	2	553	56	3	614	5	0	18	0	23	2	400	3	0	405	8	2	8	0	18	1060
06:15 PM	2	639	51	1	693	7	0	15	0	22	5	398	3	0	406	9	0	9	0	18	1139
Grand Total	71	14353	1547	9	15980	771	28	385	0	1184	186	16186	178	0	16550	207	50	250	2	509	34223
Apprch %	0.4	89.8	9.7	0.1		65.1	2.4	32.5	0		1.1	97.8	1.1	0		40.7	9.8	49.1	0.4		
Total %	0.2	41.9	4.5	0	46.7	2.3	0.1	1.1	0	3.5	0.5	47.3	0.5	0	48.4	0.6	0.1	0.7	0	1.5	

Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at School Lane
Site Code : 00000000
Start Date : 3/6/2014
Page No : 3

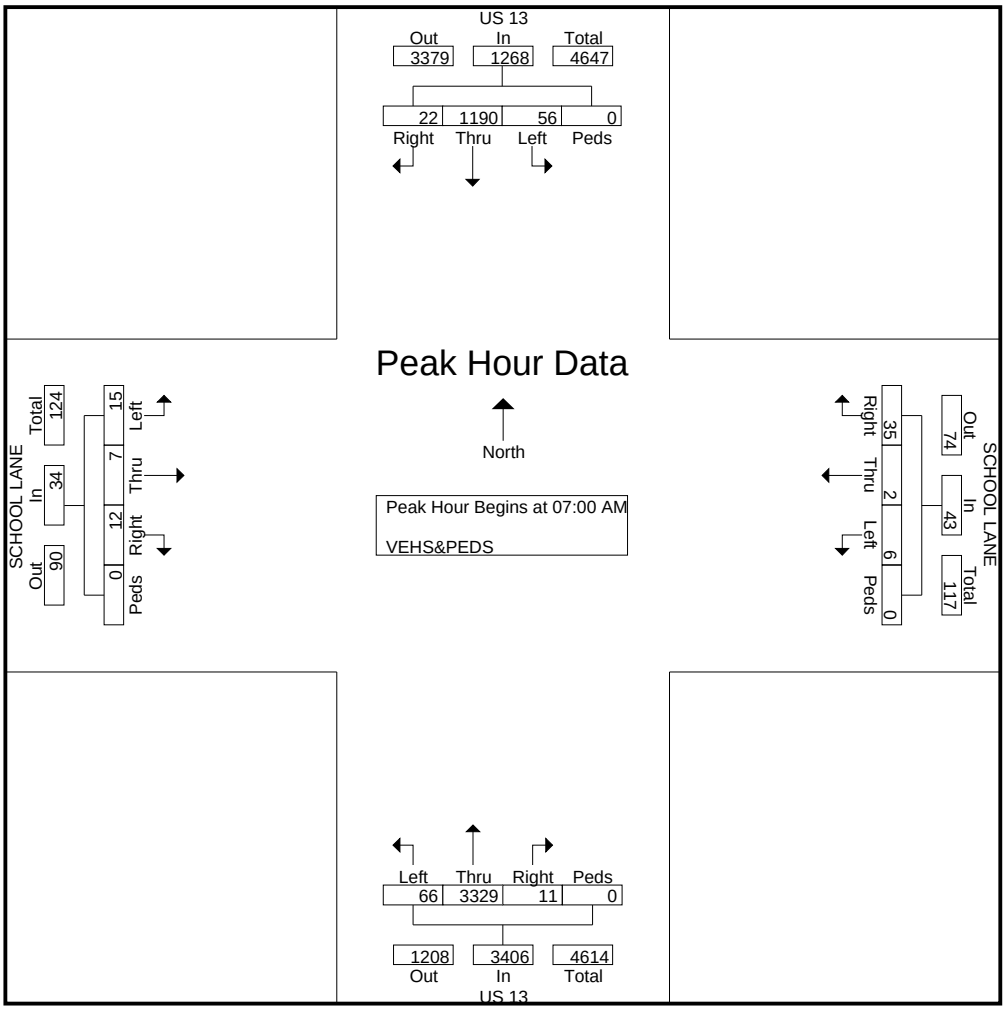


Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at School Lane
Site Code : 00000000
Start Date : 3/6/2014
Page No : 4

	US 13 From North					SCHOOL LANE From East					US 13 From South					SCHOOL LANE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	4	268	14	0	286	**11**	0	0	0	11	0	816	15	0	831	0	**4**	4	0	8	1136
07:15 AM	**14**	280	**15**	0	309	7	0	0	0	7	**5**	**854**	11	0	**870**	**6**	1	2	0	9	1195
07:30 AM	0	303	13	0	316	6	**2**	**3**	0	11	3	843	**23**	0	869	2	1	**7**	0	**10**	1206
07:45 AM	4	**339**	14	0	**357**	11	0	3	0	**14**	3	816	17	0	836	4	1	2	0	7	**1214**
Total Volume	22	1190	56	0	1268	35	2	6	0	43	11	3329	66	0	3406	12	7	15	0	34	4751
% App. Total	1.7	93.8	4.4	0		81.4	4.7	14	0		0.3	97.7	1.9	0		35.3	20.6	44.1	0		
PHF	.393	.878	.933	.000	.888	.795	.250	.500	.000	.768	.550	.975	.717	.000	.979	.500	.438	.536	.000	.850	.978

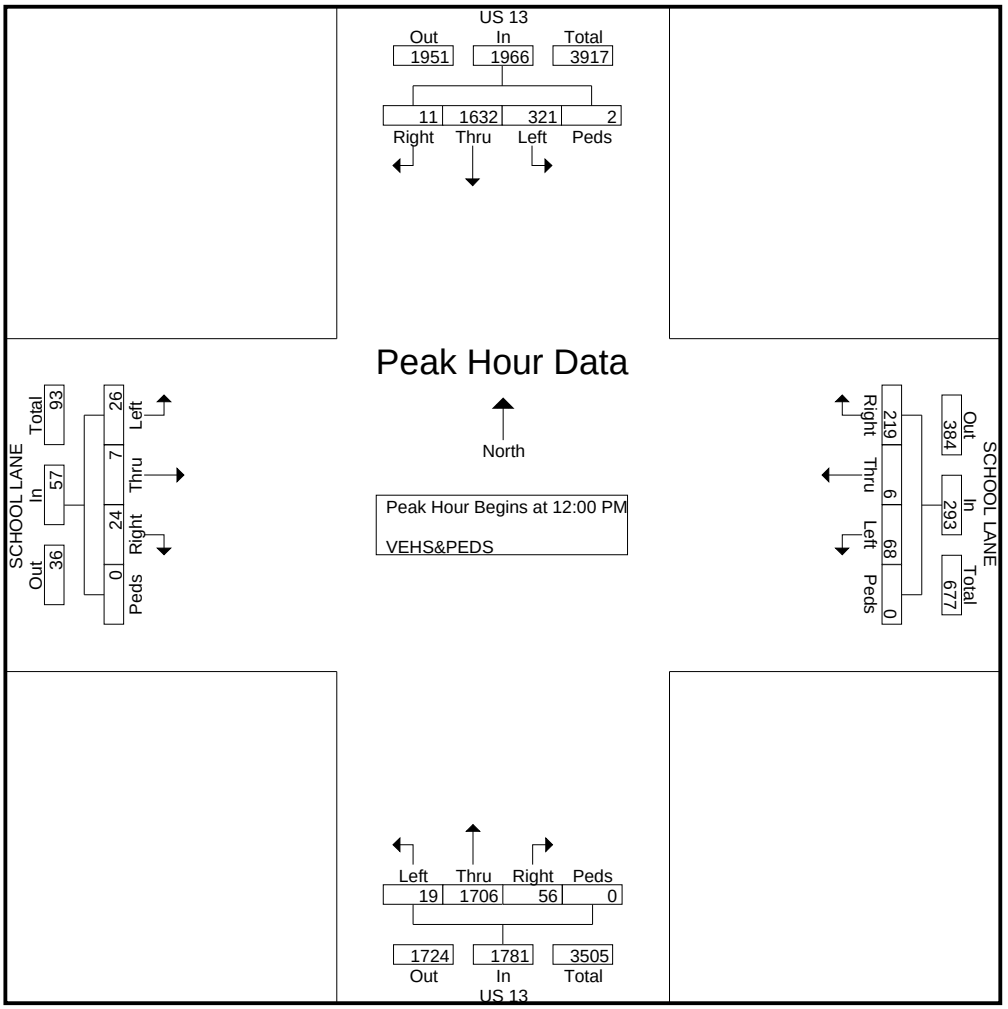


Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at School Lane
Site Code : 00000000
Start Date : 3/6/2014
Page No : 5

	US 13 From North					SCHOOL LANE From East					US 13 From South					SCHOOL LANE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	**5**	409	87	**2**	503	37	**2**	13	0	52	2	377	3	0	382	7	1	6	0	14	951
12:15 PM	2	416	**97**	0	**515**	51	1	16	0	68	7	429	4	0	440	3	**3**	**10**	0	**16**	1039
12:30 PM	1	**429**	72	0	502	65	1	18	0	84	8	431	1	0	440	6	2	3	0	11	1037
12:45 PM	3	378	65	0	446	**66**	2	**21**	0	**89**	**39**	**469**	**11**	0	**519**	**8**	1	7	0	16	**1070**
Total Volume	11	1632	321	2	1966	219	6	68	0	293	56	1706	19	0	1781	24	7	26	0	57	4097
% App. Total	0.6	83	16.3	0.1		74.7	2	23.2	0		3.1	95.8	1.1	0		42.1	12.3	45.6	0		
PHF	.550	.951	.827	.250	.954	.830	.750	.810	.000	.823	.359	.909	.432	.000	.858	.750	.583	.650	.000	.891	.957

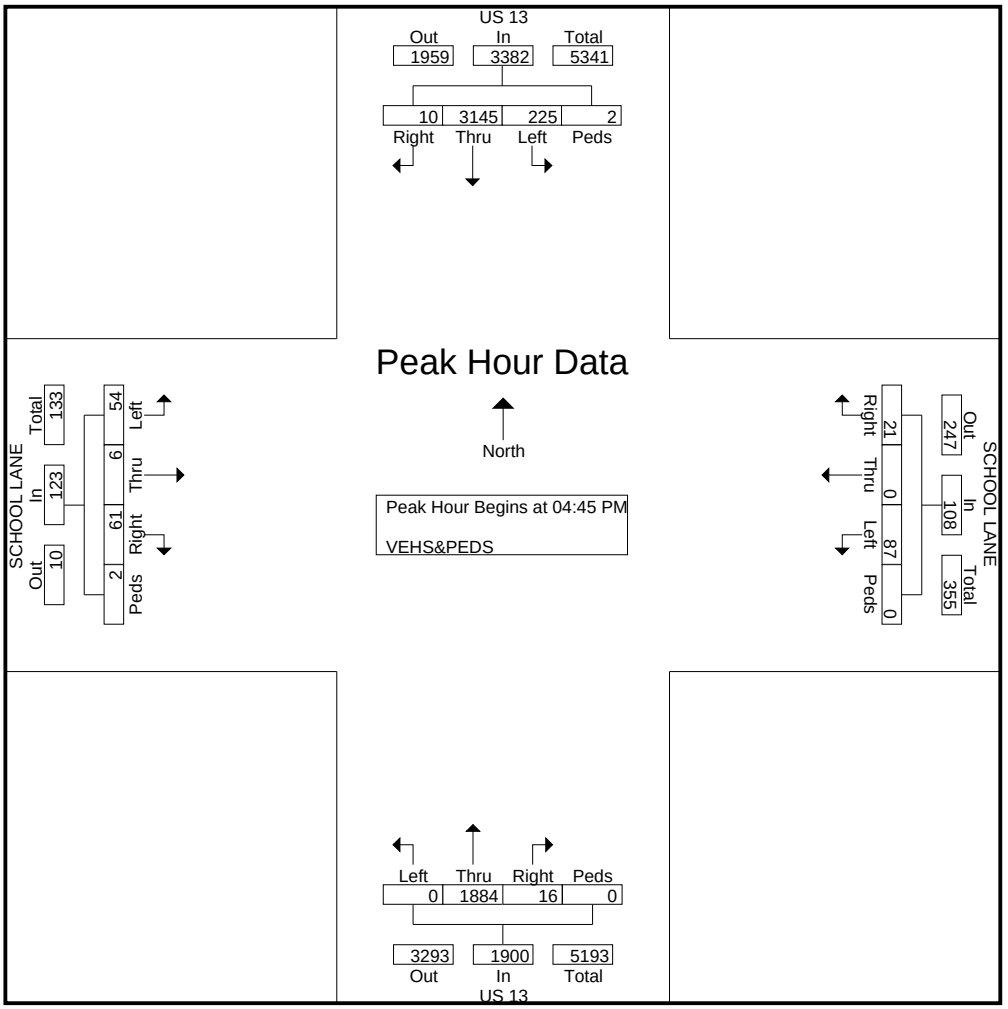


Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at School Lane
Site Code : 00000000
Start Date : 3/6/2014
Page No : 6

	US 13 From North					SCHOOL LANE From East					US 13 From South					SCHOOL LANE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	810	**65**	0	875	3	0	22	0	25	3	433	0	0	436	14	1	12	0	27	1363
05:00 PM	**4**	744	52	**2**	802	**9**	0	20	0	**29**	**5**	**497**	0	0	**502**	**24**	**3**	13	0	**40**	1373
05:15 PM	3	**827**	46	0	**876**	7	0	21	0	28	4	482	0	0	486	17	0	13	**1**	31	**1421**
05:30 PM	3	764	62	0	829	2	0	**24**	0	26	4	472	0	0	476	6	2	**16**	1	25	1356
Total Volume	10	3145	225	2	3382	21	0	87	0	108	16	1884	0	0	1900	61	6	54	2	123	5513
% App. Total	0.3	93	6.7	0.1		19.4	0	80.6	0		0.8	99.2	0	0		49.6	4.9	43.9	1.6		
PHF	.625	.951	.865	.250	.965	.583	.000	.906	.000	.931	.800	.948	.000	.000	.946	.635	.500	.844	.500	.769	.970



Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

Weather: SUNNY
Counted By: GARY & MEGAN
Town: NEWARK
County: NEW CASTLE

File Name : US 13 at Lincoln Ave
Site Code : 00000000
Start Date : 3/6/2014

Groups Printed- VEHS&PEDS

	US 13 From North					LINCOLN AVE From East					US 13 From South					LINCOLN AVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	0	271	3	0	274	0	0	0	0	0	0	427	0	0	427	1	0	3	0	4	705
06:45 AM	4	316	2	0	322	1	0	1	0	2	1	395	0	0	396	2	0	2	0	4	724
Total	4	587	5	0	596	1	0	1	0	2	1	822	0	0	823	3	0	5	0	8	1429
07:00 AM	0	332	2	0	334	0	0	0	0	0	3	447	2	0	452	3	0	2	0	5	791
07:15 AM	1	362	5	0	368	0	0	1	0	1	3	371	4	0	378	4	0	2	0	6	753
07:30 AM	1	398	4	0	403	0	0	0	0	0	4	313	0	0	317	0	0	4	1	5	725
07:45 AM	1	407	7	0	415	0	0	1	0	1	3	290	2	0	295	0	1	1	1	3	714
Total	3	1499	18	0	1520	0	0	2	0	2	13	1421	8	0	1442	7	1	9	2	19	2983
08:00 AM	2	366	9	0	377	0	0	2	0	2	11	337	1	0	349	1	0	3	2	6	734
08:15 AM	1	390	13	0	404	1	0	4	0	5	11	385	1	0	397	5	0	2	0	7	813
08:30 AM	0	415	11	0	426	1	1	5	0	7	10	386	3	0	399	3	0	0	1	4	836
08:45 AM	0	398	11	0	409	2	0	4	0	6	13	487	2	0	502	5	0	2	3	10	927
Total	3	1569	44	0	1616	4	1	15	0	20	45	1595	7	0	1647	14	0	7	6	27	3310
09:00 AM	5	401	9	0	415	0	0	2	0	2	12	329	0	0	341	0	1	4	1	6	764
09:15 AM	1	387	7	0	395	3	0	7	0	10	7	279	1	0	287	2	0	4	0	6	698
BREAK																					
Total	6	788	16	0	810	3	0	9	0	12	19	608	1	0	628	2	1	8	1	12	1462
BREAK																					
11:00 AM	3	387	8	1	399	3	0	5	0	8	1	236	0	0	237	0	0	1	1	2	646
11:15 AM	2	437	1	0	440	5	0	11	0	16	3	199	3	0	205	4	0	2	1	7	668
11:30 AM	1	455	3	0	459	3	0	13	0	16	3	317	1	0	321	0	0	0	1	1	797
11:45 AM	4	418	8	0	430	4	0	8	0	12	5	329	3	0	337	4	0	1	0	5	784
Total	10	1697	20	1	1728	15	0	37	0	52	12	1081	7	0	1100	8	0	4	3	15	2895
12:00 PM	2	485	6	0	493	7	0	11	0	18	6	288	3	0	297	0	0	0	1	1	809
12:15 PM	3	476	3	0	482	5	0	8	0	13	8	300	1	0	309	2	0	4	1	7	811
12:30 PM	1	462	8	0	471	11	1	34	0	46	6	272	2	0	280	2	0	2	0	4	801
12:45 PM	0	444	2	0	446	10	0	17	0	27	5	340	1	0	346	1	1	1	0	3	822
Total	6	1867	19	0	1892	33	1	70	0	104	25	1200	7	0	1232	5	1	7	2	15	3243

BREAK

Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at Lincoln Ave
Site Code : 00000000
Start Date : 3/6/2014
Page No : 2

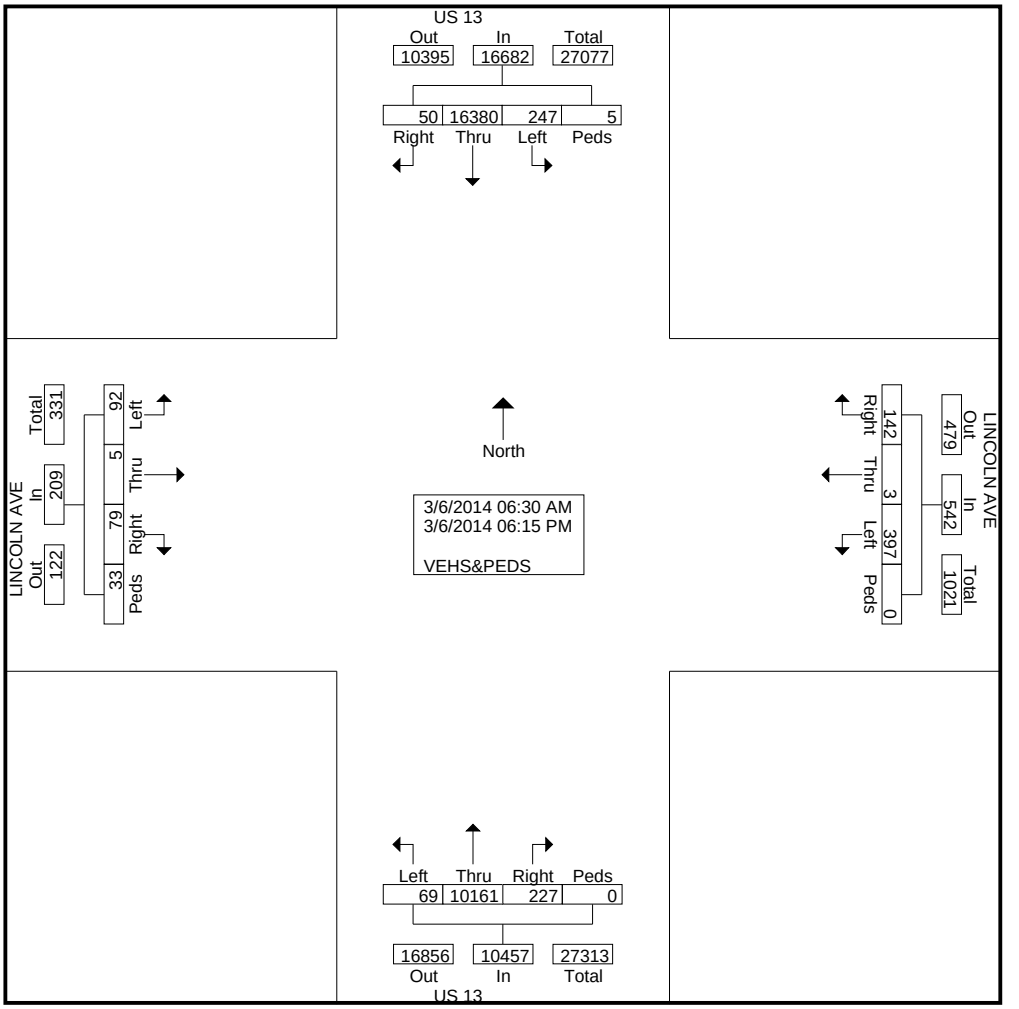
Groups Printed- VEHS&PEDS

	US 13 From North					LINCOLN AVE From East					US 13 From South					LINCOLN AVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:30 PM	0	707	5	0	712	3	0	16	0	19	2	233	1	0	236	2	1	2	2	7	974
03:45 PM	6	679	5	0	690	9	0	14	0	23	5	282	0	0	287	3	0	5	1	9	1009
Total	6	1386	10	0	1402	12	0	30	0	42	7	515	1	0	523	5	1	7	3	16	1983
04:00 PM	1	662	7	3	673	4	0	15	0	19	9	284	1	0	294	5	0	10	2	17	1003
04:15 PM	3	685	12	0	700	7	0	14	0	21	13	273	4	0	290	5	0	7	0	12	1023
04:30 PM	1	738	18	0	757	9	1	35	0	45	14	279	5	0	298	6	0	6	4	16	1116
04:45 PM	0	750	18	0	768	13	0	39	0	52	13	216	4	0	233	2	0	3	0	5	1058
Total	5	2835	55	3	2898	33	1	103	0	137	49	1052	14	0	1115	18	0	26	6	50	4200
05:00 PM	1	781	18	1	801	14	0	27	0	41	16	350	5	0	371	5	0	2	2	9	1222
05:15 PM	2	791	16	0	809	7	0	24	0	31	16	292	8	0	316	4	0	7	1	12	1168
05:30 PM	1	716	8	0	725	10	0	22	0	32	16	291	4	0	311	0	0	2	5	7	1075
05:45 PM	1	699	8	0	708	0	0	20	0	20	7	266	2	0	275	3	1	3	0	7	1010
Total	5	2987	50	1	3043	31	0	93	0	124	55	1199	19	0	1273	12	1	14	8	35	4475
06:00 PM	2	593	2	0	597	4	0	16	0	20	1	251	3	0	255	4	0	2	1	7	879
06:15 PM	0	572	8	0	580	6	0	21	0	27	0	417	2	0	419	1	0	3	1	5	1031
Grand Total	50	16380	247	5	16682	142	3	397	0	542	227	10161	69	0	10457	79	5	92	33	209	27890
Apprch %	0.3	98.2	1.5	0		26.2	0.6	73.2	0		2.2	97.2	0.7	0		37.8	2.4	44	15.8		
Total %	0.2	58.7	0.9	0	59.8	0.5	0	1.4	0	1.9	0.8	36.4	0.2	0	37.5	0.3	0	0.3	0.1	0.7	

Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at Lincoln Ave
Site Code : 00000000
Start Date : 3/6/2014
Page No : 3

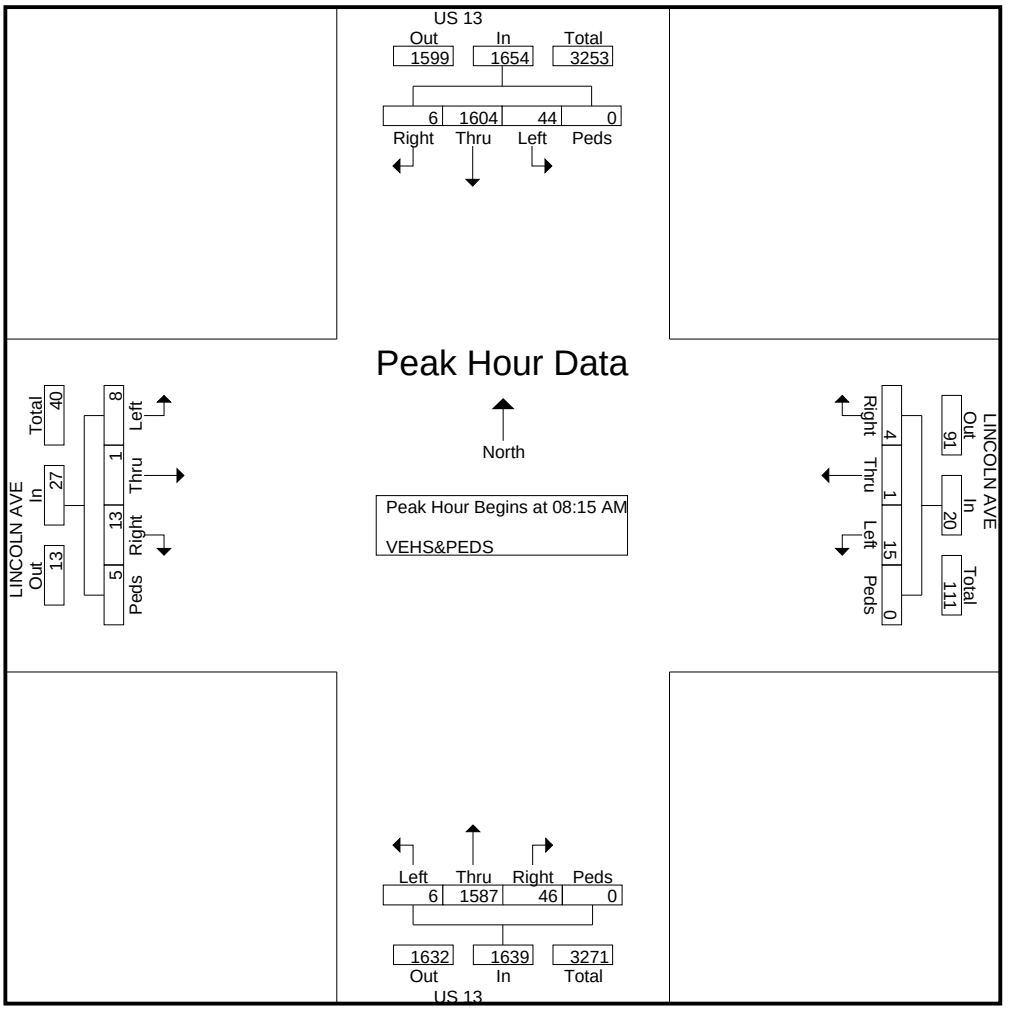


Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at Lincoln Ave
Site Code : 00000000
Start Date : 3/6/2014
Page No : 4

	US 13 From North					LINCOLN AVE From East					US 13 From South					LINCOLN AVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	1	390	**13**	0	404	1	0	4	0	5	11	385	1	0	397	**5**	0	2	0	7	813
08:30 AM	0	**415**	11	0	**426**	1	**1**	**5**	0	**7**	10	386	**3**	0	399	3	0	0	1	4	836
08:45 AM	0	398	11	0	409	**2**	0	4	0	6	**13**	**487**	2	0	**502**	5	0	2	**3**	**10**	**927**
09:00 AM	**5**	401	9	0	415	0	0	2	0	2	12	329	0	0	341	0	**1**	**4**	1	6	764
Total Volume	6	1604	44	0	1654	4	1	15	0	20	46	1587	6	0	1639	13	1	8	5	27	3340
% App. Total	0.4	97	2.7	0		20	5	75	0		2.8	96.8	0.4	0		48.1	3.7	29.6	18.5		
PHF	.300	.966	.846	.000	.971	.500	.250	.750	.000	.714	.885	.815	.500	.000	.816	.650	.250	.500	.417	.675	.901

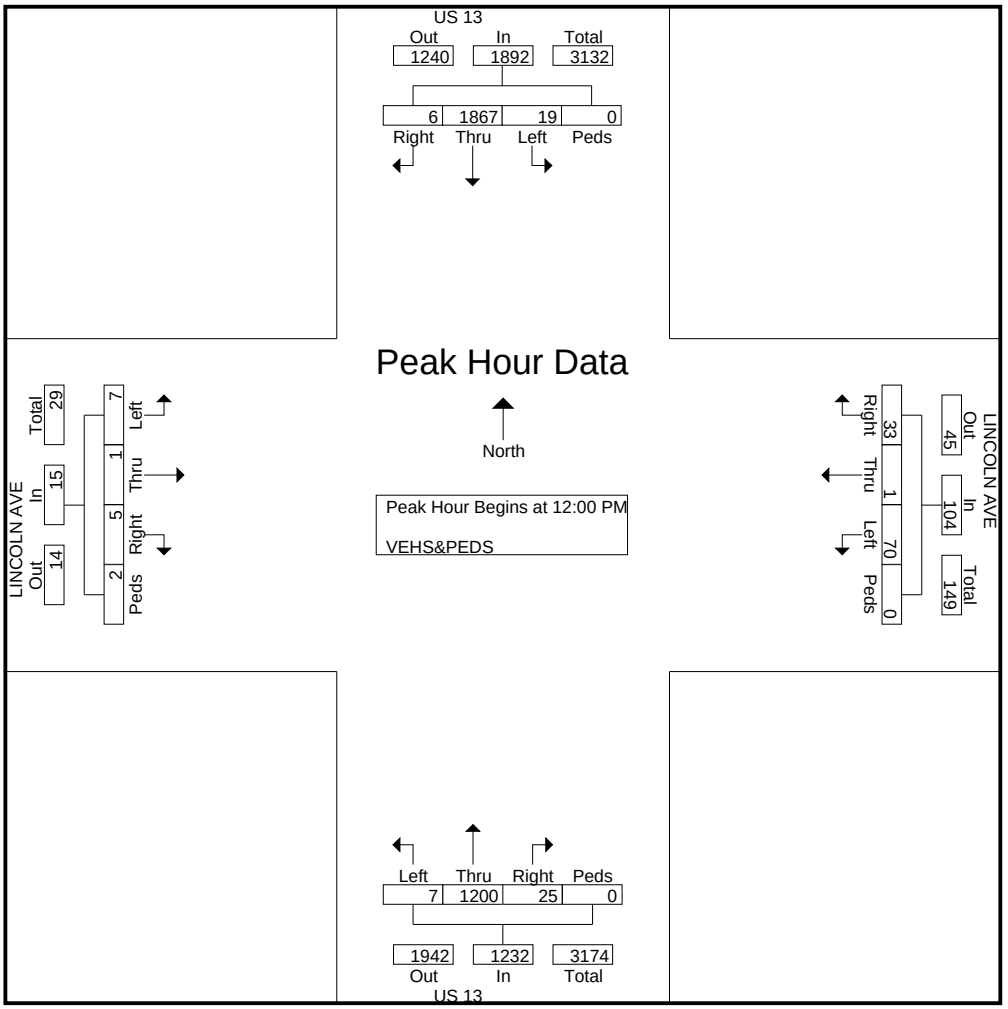


Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at Lincoln Ave
Site Code : 00000000
Start Date : 3/6/2014
Page No : 5

	US 13 From North					LINCOLN AVE From East					US 13 From South					LINCOLN AVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	2	**485**	6	0	**493**	7	0	11	0	18	6	288	**3**	0	297	0	0	0	**1**	1	809
12:15 PM	**3**	476	3	0	482	5	0	8	0	13	**8**	300	1	0	309	**2**	0	**4**	1	**7**	811
12:30 PM	1	462	**8**	0	471	**11**	**1**	**34**	0	**46**	6	272	2	0	280	2	0	2	0	4	801
12:45 PM	0	444	2	0	446	10	0	17	0	27	5	**340**	1	0	**346**	1	**1**	1	0	3	**822**
Total Volume	6	1867	19	0	1892	33	1	70	0	104	25	1200	7	0	1232	5	1	7	2	15	3243
% App. Total	0.3	98.7	1	0		31.7	1	67.3	0		2	97.4	0.6	0		33.3	6.7	46.7	13.3		
PHF	.500	.962	.594	.000	.959	.750	.250	.515	.000	.565	.781	.882	.583	.000	.890	.625	.250	.438	.500	.536	.986

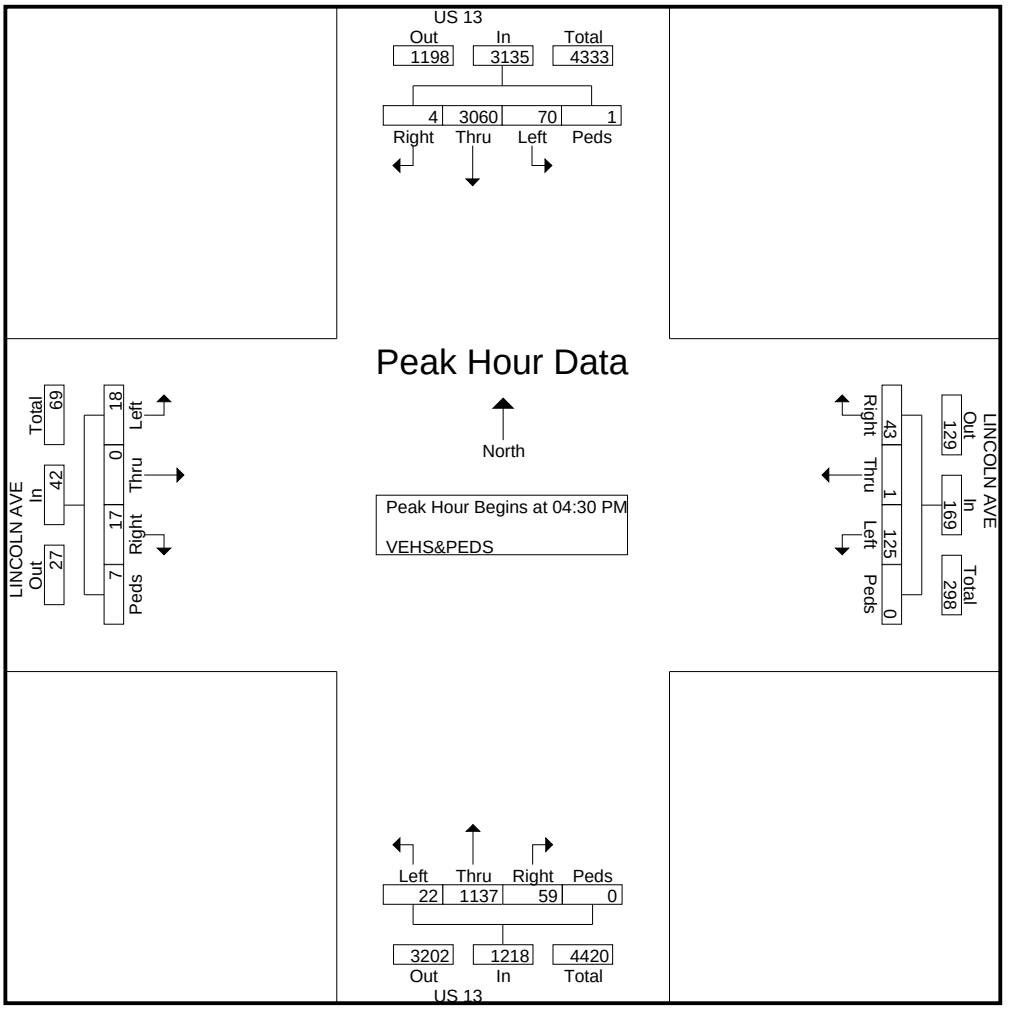


Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at Lincoln Ave
Site Code : 00000000
Start Date : 3/6/2014
Page No : 6

	US 13 From North					LINCOLN AVE From East					US 13 From South					LINCOLN AVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	1	738	**18**	0	757	9	**1**	35	0	45	14	279	5	0	298	**6**	0	6	**4**	**16**	1116
04:45 PM	0	750	18	0	768	13	0	**39**	0	**52**	13	216	4	0	233	2	0	3	0	5	1058
05:00 PM	1	781	18	**1**	801	**14**	0	27	0	41	**16**	**350**	5	0	**371**	5	0	2	2	9	**1222**
05:15 PM	**2**	**791**	16	0	**809**	7	0	24	0	31	16	292	**8**	0	316	4	0	**7**	1	12	1168
Total Volume	4	3060	70	1	3135	43	1	125	0	169	59	1137	22	0	1218	17	0	18	7	42	4564
% App. Total	0.1	97.6	2.2	0		25.4	0.6	74	0		4.8	93.3	1.8	0		40.5	0	42.9	16.7		
PHF	.500	.967	.972	.250	.969	.768	.250	.801	.000	.813	.922	.812	.688	.000	.821	.708	.000	.643	.438	.656	.934



PASSENGER CAR TURNING MOVEMENT COUNT - SUMMARY

Intersection of: US 13
and: Stahl Ave-Harrison Ave
Location: New Castle Co., DE

Counted by: VCU
Date: November 1, 2012
Weather: Cloudy/Warm
Entered by: RB

Day: Thursday

TIME	TRAFFIC FROM NORTH on: US 13					TRAFFIC FROM SOUTH on: US 13					TRAFFIC FROM EAST on: Stahl Ave					TRAFFIC FROM WEST on: Harrison Ave					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
6:00-6:15	3	144	4	1	152	7	354	2	2	365	4			0	4					0	521
6:15-6:30	2	214	0	4	220	4	489	3	4	500	3			0	3					0	723
6:30-6:45	2	238	3	2	245	10	685	4	6	705	1			0	1					0	951
6:45-7:00	2	311	2	1	316	19	743	1	6	769	5			0	5					0	1090
7:00-7:15	3	302	5	2	312	10	735	4	4	753	4			0	4					0	1069
7:15-7:30	3	333	7	1	344	25	786	7	10	828	3			0	3					0	1175
7:30-7:45	4	343	5	4	356	20	718	17	5	760	4			0	4					0	1120
7:45-8:00	16	403	7	2	428	11	697	17	4	729	2			0	2					0	1159
8:00-8:15	4	329	6	0	339	21	746	14	4	785	7			0	7					0	1131
8:15-8:30	8	395	11	0	414	18	615	10	1	644	5			0	5					0	1063
8:30-8:45	6	376	14	0	396	21	631	5	6	663	1			0	1					0	1060
8:45-9:00	2	355	7	0	364	16	653	4	7	680	5			0	5					0	1049
3 Hr Totals	55	3743	71	17	3886	182	7852	88	59	8181	44	0	0	0	44	0	0	0	0	0	12111
1 Hr Totals																					
6:00-7:00	9	907	9	8	933	40	2271	10	18	2339	13	0	0	0	13	0	0	0	0	0	3285
6:15-7:15	9	1065	10	9	1093	43	2652	12	20	2727	13	0	0	0	13	0	0	0	0	0	3833
6:30-7:30	10	1184	17	6	1217	64	2949	16	26	3055	13	0	0	0	13	0	0	0	0	0	4285
6:45-7:45	12	1289	19	8	1328	74	2982	29	25	3110	16	0	0	0	16	0	0	0	0	0	4454
7:00-8:00	26	1381	24	9	1440	66	2936	45	23	3070	13	0	0	0	13	0	0	0	0	0	4523
7:15-8:15	27	1408	25	7	1467	77	2947	55	23	3102	16	0	0	0	16	0	0	0	0	0	4585
7:30-8:30	32	1470	29	6	1537	70	2776	58	14	2918	18	0	0	0	18	0	0	0	0	0	4473
7:45-8:45	34	1503	38	2	1577	71	2689	46	15	2821	15	0	0	0	15	0	0	0	0	0	4413
8:00-9:00	20	1455	38	0	1513	76	2645	33	18	2772	18	0	0	0	18	0	0	0	0	0	4303
PEAK HOUR																					
7:15-8:15	27	1408	25	7	1467	77	2947	55	23	3102	16	0	0	0	16	0	0	0	0	0	4585
PM																					
4:00-4:15	7	742	6	0	755	21	421	2	16	460	2			0	2					0	1217
4:15-4:30	2	745	14	0	761	17	507	4	11	539	5			0	5					0	1305
4:30-4:45	5	718	9	0	732	22	479	2	8	511	4			0	4					0	1247
4:45-5:00	2	753	8	0	763	17	538	7	10	572	3			0	3					0	1338
5:00-5:15	4	768	5	6	783	16	499	3	15	533	3			0	3					0	1319
5:15-5:30	1	779	6	1	787	18	477	2	10	507	5			0	5					0	1299
5:30-5:45	2	798	8	3	811	24	480	3	8	515	1			0	1					0	1327
5:45-6:00	6	768	12	6	792	20	385	6	16	427	1			0	1					0	1220
2 Hr Totals	29	6071	68	16	6184	155	3786	29	94	4064	24	0	0	0	24	0	0	0	0	0	10272
1 Hr Totals																					
4:00-5:00	16	2958	37	0	3011	77	1945	15	45	2082	14	0	0	0	14	0	0	0	0	0	5107
4:15-5:15	13	2984	36	6	3039	72	2023	16	44	2155	15	0	0	0	15	0	0	0	0	0	5209
4:30-5:30	12	3018	28	7	3065	73	1993	14	43	2123	15	0	0	0	15	0	0	0	0	0	5203
4:45-5:45	9	3098	27	10	3144	75	1994	15	43	2127	12	0	0	0	12	0	0	0	0	0	5283
5:00-6:00	13	3113	31	16	3173	78	1841	14	49	1982	10	0	0	0	10	0	0	0	0	0	5165
PEAK HOUR																					
4:45-5:45	9	3098	27	10	3144	75	1994	15	43	2127	12	0	0	0	12	0	0	0	0	0	5283

HEAVY TRUCK TURNING MOVEMENT COUNT - SUMMARY

Intersection of: US 13
and: Stahl Ave-Harrison Ave
Location: New Castle Co., DE

Counted by: VCU
Date: November 1, 2012
Weather: Cloudy/Warm
Entered by: RB

Day: Thursday

TIME	TRAFFIC FROM NORTH on: US 13					TRAFFIC FROM SOUTH on: US 13					TRAFFIC FROM EAST on: Stahl Ave					TRAFFIC FROM WEST on: Harrison Ave					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
6:00-6:15	0	33	0	0	33	0	25	0	1	26	0			0	0					0	59
6:15-6:30	0	43	0	0	43	1	29	1	0	31	0			0	0					0	74
6:30-6:45	0	27	1	0	28	0	33	0	0	33	1			0	1					0	62
6:45-7:00	0	41	1	0	42	0	38	0	2	40	0			0	0					0	82
7:00-7:15	0	46	0	0	46	0	41	0	0	41	0			0	0					0	87
7:15-7:30	0	41	0	0	41	0	38	0	1	39	0			0	0					0	80
7:30-7:45	0	40	0	0	40	1	42	0	0	43	0			0	0					0	83
7:45-8:00	0	39	0	0	39	1	42	0	1	44	0			0	0					0	83
8:00-8:15	0	44	0	0	44	0	42	0	0	42	0			0	0					0	86
8:15-8:30	0	39	0	0	39	1	58	0	0	59	0			0	0					0	98
8:30-8:45	0	45	2	0	47	3	70	0	0	73	0			0	0					0	120
8:45-9:00	0	43	0	0	43	0	53	0	1	54	0			0	0					0	97
3 Hr Totals	0	481	4	0	485	7	511	1	6	525	1	0	0	0	1	0	0	0	0	0	1011
1 Hr Totals																					
6:00-7:00	0	144	2	0	146	1	125	1	3	130	1	0	0	0	1	0	0	0	0	0	277
6:15-7:15	0	157	2	0	159	1	141	1	2	145	1	0	0	0	1	0	0	0	0	0	305
6:30-7:30	0	155	2	0	157	0	150	0	3	153	1	0	0	0	1	0	0	0	0	0	311
6:45-7:45	0	168	1	0	169	1	159	0	3	163	0	0	0	0	0	0	0	0	0	0	332
7:00-8:00	0	166	0	0	166	2	163	0	2	167	0	0	0	0	0	0	0	0	0	0	333
7:15-8:15	0	164	0	0	164	2	164	0	2	168	0	0	0	0	0	0	0	0	0	0	332
7:30-8:30	0	162	0	0	162	3	184	0	1	188	0	0	0	0	0	0	0	0	0	0	350
7:45-8:45	0	167	2	0	169	5	212	0	1	218	0	0	0	0	0	0	0	0	0	0	387
8:00-9:00	0	171	2	0	173	4	223	0	1	228	0	0	0	0	0	0	0	0	0	0	401
PEAK HOUR																					
7:15-8:15	0	164	0	0	164	2	164	0	2	168	0	0	0	0	0	0	0	0	0	0	332
PM																					
4:00-4:15	0	47	0	1	48	0	42	0	0	42	0			0	0					0	90
4:15-4:30	0	32	1	0	33	0	35	0	2	37	0			0	0					0	70
4:30-4:45	0	42	0	0	42	1	39	0	1	41	0			0	0					0	83
4:45-5:00	0	34	0	0	34	0	38	1	0	39	0			0	0					0	73
5:00-5:15	0	33	0	0	33	0	41	0	0	41	0			0	0					0	74
5:15-5:30	0	35	0	0	35	0	39	0	1	40	0			0	0					0	75
5:30-5:45	0	34	0	0	34	0	28	0	0	28	0			0	0					0	62
5:45-6:00	0	28	0	0	28	0	36	1	0	37	0			0	0					0	65
2 Hr Totals	0	285	1	1	287	1	298	2	4	305	0	0	0	0	0	0	0	0	0	0	592
1 Hr Totals																					
4:00-5:00	0	155	1	1	157	1	154	1	3	159	0	0	0	0	0	0	0	0	0	0	316
4:15-5:15	0	141	1	0	142	1	153	1	3	158	0	0	0	0	0	0	0	0	0	0	300
4:30-5:30	0	144	0	0	144	1	157	1	2	161	0	0	0	0	0	0	0	0	0	0	305
4:45-5:45	0	136	0	0	136	0	146	1	1	148	0	0	0	0	0	0	0	0	0	0	284
5:00-6:00	0	130	0	0	130	0	144	1	1	146	0	0	0	0	0	0	0	0	0	0	276
PEAK HOUR																					
4:45-5:45	0	136	0	0	136	0	146	1	1	148	0	0	0	0	0	0	0	0	0	0	284

RIGHT TURN ON RED TURNING MOVEMENT COUNT - SUMMARY

Intersection of: US 13
and: Stahl Ave-Harrison Ave
Location: New Castle Co., DE

Counted by: VCU
Date: November 1, 2012
Weather: Cloudy/Warm
Entered by: RB

Day: Thursday

TIME	TRAFFIC FROM NORTH on: US 13					TRAFFIC FROM SOUTH on: US 13					TRAFFIC FROM EAST on: Stahl Ave					TRAFFIC FROM WEST on: Harrison Ave					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
6:00-6:15	0				0					0	2				2					0	2
6:15-6:30	1				1					0	0				0					0	1
6:30-6:45	2				2					0	0				0					0	2
6:45-7:00	3				3					0	1				1					0	4
7:00-7:15	1				1					0	1				1					0	2
7:15-7:30	2				2					0	6				6					0	8
7:30-7:45	2				2					0	1				1					0	3
7:45-8:00	0				0					0	3				3					0	3
8:00-8:15	2				2					0	3				3					0	5
8:15-8:30	1				1					0	1				1					0	2
8:30-8:45	0				0					0	6				6					0	6
8:45-9:00	2				2					0	1				1					0	3
3 Hr Totals	16	0	0	0	16	0	0	0	0	0	25	0	0	0	25	0	0	0	0	0	41
1 Hr Totals																					
6:00-7:00	6	0	0	0	6	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	9
6:15-7:15	7	0	0	0	7	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	9
6:30-7:30	8	0	0	0	8	0	0	0	0	0	8	0	0	0	8	0	0	0	0	0	16
6:45-7:45	8	0	0	0	8	0	0	0	0	0	9	0	0	0	9	0	0	0	0	0	17
7:00-8:00	5	0	0	0	5	0	0	0	0	0	11	0	0	0	11	0	0	0	0	0	16
7:15-8:15	6	0	0	0	6	0	0	0	0	0	13	0	0	0	13	0	0	0	0	0	19
7:30-8:30	5	0	0	0	5	0	0	0	0	0	8	0	0	0	8	0	0	0	0	0	13
7:45-8:45	3	0	0	0	3	0	0	0	0	0	13	0	0	0	13	0	0	0	0	0	16
8:00-9:00	5	0	0	0	5	0	0	0	0	0	11	0	0	0	11	0	0	0	0	0	16
PEAK HOUR																					
7:15-8:15	6	0	0	0	6	0	0	0	0	0	13	0	0	0	13	0	0	0	0	0	19
PM																					
4:00-4:15	1				1					0	1				1					0	2
4:15-4:30	5				5					0	2				2					0	7
4:30-4:45	4				4					0	5				5					0	9
4:45-5:00	1				1					0	1				1					0	2
5:00-5:15	1				1					0	2				2					0	3
5:15-5:30	1				1					0	1				1					0	2
5:30-5:45	1				1					0	1				1					0	2
5:45-6:00	1				1					0	5				5					0	6
2 Hr Totals	15	0	0	0	15	0	0	0	0	0	18	0	0	0	18	0	0	0	0	0	33
1 Hr Totals																					
4:00-5:00	11	0	0	0	11	0	0	0	0	0	9	0	0	0	9	0	0	0	0	0	20
4:15-5:15	11	0	0	0	11	0	0	0	0	0	10	0	0	0	10	0	0	0	0	0	21
4:30-5:30	7	0	0	0	7	0	0	0	0	0	9	0	0	0	9	0	0	0	0	0	16
4:45-5:45	4	0	0	0	4	0	0	0	0	0	5	0	0	0	5	0	0	0	0	0	9
5:00-6:00	4	0	0	0	4	0	0	0	0	0	9	0	0	0	9	0	0	0	0	0	13
PEAK HOUR																					
4:45-5:45	4	0	0	0	4	0	0	0	0	0	5	0	0	0	5	0	0	0	0	0	9

TOTAL VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: US 13
and: Stahl Ave-Harrison Ave
Location: New Castle Co., DE

Counted by: VCU
Date: November 1, 2012
Weather: Cloudy/Warm
Entered by: RB

Day: Thursday

TIME	TRAFFIC FROM NORTH on: US 13					TRAFFIC FROM SOUTH on: US 13					TRAFFIC FROM EAST on: Stahl Ave					TRAFFIC FROM WEST on: Harrison Ave					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
6:00-6:15	3	177	4	1	185	7	379	2	3	391	6	0	0	0	6	0	0	0	0	0	582
6:15-6:30	3	257	0	4	264	5	518	4	4	531	3	0	0	0	3	0	0	0	0	0	798
6:30-6:45	4	265	4	2	275	10	718	4	6	738	2	0	0	0	2	0	0	0	0	0	1015
6:45-7:00	5	352	3	1	361	19	781	1	8	809	6	0	0	0	6	0	0	0	0	0	1176
7:00-7:15	4	348	5	2	359	10	776	4	4	794	5	0	0	0	5	0	0	0	0	0	1158
7:15-7:30	5	374	7	1	387	25	824	7	11	867	9	0	0	0	9	0	0	0	0	0	1263
7:30-7:45	6	383	5	4	398	21	760	17	5	803	5	0	0	0	5	0	0	0	0	0	1206
7:45-8:00	16	442	7	2	467	12	739	17	5	773	5	0	0	0	5	0	0	0	0	0	1245
8:00-8:15	6	373	6	0	385	21	788	14	4	827	10	0	0	0	10	0	0	0	0	0	1222
8:15-8:30	9	434	11	0	454	19	673	10	1	703	6	0	0	0	6	0	0	0	0	0	1163
8:30-8:45	6	421	16	0	443	24	701	5	6	736	7	0	0	0	7	0	0	0	0	0	1186
8:45-9:00	4	398	7	0	409	16	706	4	8	734	6	0	0	0	6	0	0	0	0	0	1149
3 Hr Totals	71	4224	75	17	4387	189	8363	89	65	8706	70	0	0	0	70	0	0	0	0	0	13163
1 Hr Totals																					
6:00-7:00	15	1051	11	8	1085	41	2396	11	21	2469	17	0	0	0	17	0	0	0	0	0	3571
6:15-7:15	16	1222	12	9	1259	44	2793	13	22	2872	16	0	0	0	16	0	0	0	0	0	4147
6:30-7:30	18	1339	19	6	1382	64	3099	16	29	3208	22	0	0	0	22	0	0	0	0	0	4612
6:45-7:45	20	1457	20	8	1505	75	3141	29	28	3273	25	0	0	0	25	0	0	0	0	0	4803
7:00-8:00	31	1547	24	9	1611	68	3099	45	25	3237	24	0	0	0	24	0	0	0	0	0	4872
7:15-8:15	33	1572	25	7	1637	79	3111	55	25	3270	29	0	0	0	29	0	0	0	0	0	4936
7:30-8:30	37	1632	29	6	1704	73	2960	58	15	3106	26	0	0	0	26	0	0	0	0	0	4836
7:45-8:45	37	1670	40	2	1749	76	2901	46	16	3039	28	0	0	0	28	0	0	0	0	0	4816
8:00-9:00	25	1626	40	0	1691	80	2868	33	19	3000	29	0	0	0	29	0	0	0	0	0	4720
PEAK HOUR																					
7:15-8:15	33	1572	25	7	1637	79	3111	55	25	3270	29	0	0	0	29	0	0	0	0	0	4936
PM																					
4:00-4:15	8	789	6	1	804	21	463	2	16	502	3	0	0	0	3	0	0	0	0	0	1309
4:15-4:30	7	777	15	0	799	17	542	4	13	576	7	0	0	0	7	0	0	0	0	0	1382
4:30-4:45	9	760	9	0	778	23	518	2	9	552	9	0	0	0	9	0	0	0	0	0	1339
4:45-5:00	3	787	8	0	798	17	576	8	10	611	4	0	0	0	4	0	0	0	0	0	1413
5:00-5:15	5	801	5	6	817	16	540	3	15	574	5	0	0	0	5	0	0	0	0	0	1396
5:15-5:30	2	814	6	1	823	18	516	2	11	547	6	0	0	0	6	0	0	0	0	0	1376
5:30-5:45	3	832	8	3	846	24	508	3	8	543	2	0	0	0	2	0	0	0	0	0	1391
5:45-6:00	7	796	12	6	821	20	421	7	16	464	6	0	0	0	6	0	0	0	0	0	1291
2 Hr Totals	44	6356	69	17	6486	156	4084	31	98	4369	42	0	0	0	42	0	0	0	0	0	10897
1 Hr Totals																					
4:00-5:00	27	3113	38	1	3179	78	2099	16	48	2241	23	0	0	0	23	0	0	0	0	0	5443
4:15-5:15	24	3125	37	6	3192	73	2176	17	47	2313	25	0	0	0	25	0	0	0	0	0	5530
4:30-5:30	19	3162	28	7	3216	74	2150	15	45	2284	24	0	0	0	24	0	0	0	0	0	5524
4:45-5:45	13	3234	27	10	3284	75	2140	16	44	2275	17	0	0	0	17	0	0	0	0	0	5576
5:00-6:00	17	3243	31	16	3307	78	1985	15	50	2128	19	0	0	0	19	0	0	0	0	0	5454
PEAK HOUR																					
4:45-5:45	13	3234	27	10	3284	75	2140	16	44	2275	17	0	0	0	17	0	0	0	0	0	5576

PEDESTRIAN OBSERVATIONS

Intersection of: US 13
and: Stahl Ave-Harrison Ave
Location: New Castle Co., DE

Counted by: VCU
Date: November 1, 2012
Weather: Cloudy/Warm
Entered by: RB

Day: Thursday

TIME	US 13 NORTH LEG		US 13 SOUTH LEG	
	PEDESTRIANS	BICYCLES	PEDESTRIANS	BICYCLES
AM				
6:00-6:15	0	0	0	0
6:15-6:30	0	0	0	0
6:30-6:45	0	0	0	0
6:45-7:00	0	0	0	0
7:00-7:15	0	0	0	0
7:15-7:30	0	0	1	0
7:30-7:45	1	0	0	0
7:45-8:00	0	0	0	0
8:00-8:15	0	0	0	0
8:15-8:30	0	0	0	0
8:30-8:45	1	0	0	0
8:45-9:00	0	0	0	0
TOTALS	2	0	1	0
PM				
4:00-4:15	1	0	0	0
4:15-4:30	0	0	0	0
4:30-4:45	0	0	0	0
4:45-5:00	0	0	0	0
5:00-5:15	0	0	0	0
5:15-5:30	0	0	0	0
5:30-5:45	0	0	0	0
5:45-5:00	0	0	0	0
TOTALS	1	0	0	0

TIME	Stahl Ave EAST LEG		Harrison Ave WEST LEG	
	PEDESTRIANS	BICYCLES	PEDESTRIANS	BICYCLES
AM				
6:00-6:15	0	0	0	0
6:15-6:30	1	0	0	0
6:30-6:45	0	0	0	0
6:45-7:00	0	0	0	0
7:00-7:15	0	0	0	0
7:15-7:30	1	0	2	0
7:30-7:45	1	0	0	0
7:45-8:00	3	0	0	0
8:00-8:15	0	0	0	0
8:15-8:30	0	0	0	0
8:30-8:45	0	0	0	0
8:45-9:00	0	0	1	0
TOTALS	6	0	3	0
PM				
4:00-4:15	0	0	2	0
4:15-4:30	1	0	1	0
4:30-4:45	0	0	0	0
4:45-5:00	0	0	1	0
5:00-5:15	2	0	0	0
5:15-5:30	0	0	0	0
5:30-5:45	0	0	3	0
5:45-5:00	0	0	0	0
TOTALS	3	0	7	0

PASSENGER CAR TURNING MOVEMENT COUNT - SUMMARY

Intersection of: US 13
and: Roosevelt Ave
Location: New Castle Co., DE

Counted by: VCU
Date: November 1, 2012
Weather: Cloudy/Warm
Entered by: RB

Day: Thursday

TIME	TRAFFIC FROM NORTH on: US 13					TRAFFIC FROM SOUTH on: US 13					TRAFFIC FROM EAST on: Roosevelt Ave					TRAFFIC FROM WEST on: Roosevelt Ave					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
6:00-6:15		152		0	152		398		0	398	9		4		13	0		1		1	564
6:15-6:30		206		0	206		475		0	475	11		7		18	0		0		0	699
6:30-6:45		218		0	218		703		0	703	17		11		28	2		4		6	955
6:45-7:00		283		0	283		722		0	722	17		16		33	5		6		11	1049
7:00-7:15		287		0	287		765		0	765	13		12		25	11		7		18	1095
7:15-7:30		333		0	333		796		0	796	10		7		17	6		2		8	1154
7:30-7:45		317		0	317		740		0	740	22		14		36	13		9		22	1115
7:45-8:00		396		0	396		717		0	717	16		13		29	15		15		30	1172
8:00-8:15		330		0	330		778		0	778	16		18		34	10		16		26	1168
8:15-8:30		363		0	363		664		0	664	14		16		30	3		1		4	1061
8:30-8:45		389		0	389		678		0	678	19		16		35	6		2		8	1110
8:45-9:00		369		0	369		710		0	710	15		22		37	2		4		6	1122
3 Hr Totals	0	3643	0	0	3643	0	8146	0	0	8146	179	0	156	0	335	73	0	67	0	140	12264
1 Hr Totals																					
6:00-7:00	0	859	0	0	859	0	2298	0	0	2298	54	0	38	0	92	7	0	11	0	18	3267
6:15-7:15	0	994	0	0	994	0	2665	0	0	2665	58	0	46	0	104	18	0	17	0	35	3798
6:30-7:30	0	1121	0	0	1121	0	2986	0	0	2986	57	0	46	0	103	24	0	19	0	43	4253
6:45-7:45	0	1220	0	0	1220	0	3023	0	0	3023	62	0	49	0	111	35	0	24	0	59	4413
7:00-8:00	0	1333	0	0	1333	0	3018	0	0	3018	61	0	46	0	107	45	0	33	0	78	4536
7:15-8:15	0	1376	0	0	1376	0	3031	0	0	3031	64	0	52	0	116	44	0	42	0	86	4609
7:30-8:30	0	1406	0	0	1406	0	2899	0	0	2899	68	0	61	0	129	41	0	41	0	82	4516
7:45-8:45	0	1478	0	0	1478	0	2837	0	0	2837	65	0	63	0	128	34	0	34	0	68	4511
8:00-9:00	0	1451	0	0	1451	0	2830	0	0	2830	64	0	72	0	136	21	0	23	0	44	4461
PEAK HOUR																					
7:15-8:15	0	1376	0	0	1376	0	3031	0	0	3031	64	0	52	0	116	44	0	42	0	86	4609
PM																					
4:00-4:15		705		0	705		428		0	428	9		11		20	6		4		10	1163
4:15-4:30		755		0	755		491		0	491	8		10		18	8		2		10	1274
4:30-4:45		715		0	715		489		0	489	8		11		19	7		1		8	1231
4:45-5:00		751		0	751		494		0	494	14		12		26	6		5		11	1282
5:00-5:15		760		0	760		503		0	503	8		13		21	5		6		11	1295
5:15-5:30		792		0	792		489		0	489	16		13		29	3		5		8	1318
5:30-5:45		783		1	784		456		0	456	10		6		16	4		6		10	1266
5:45-6:00		772		0	772		421		0	421	11		13		24	6		5		11	1228
2 Hr Totals	0	6033	0	1	6034	0	3771	0	0	3771	84	0	89	0	173	45	0	34	0	79	10057
1 Hr Totals																					
4:00-5:00	0	2926	0	0	2926	0	1902	0	0	1902	39	0	44	0	83	27	0	12	0	39	4950
4:15-5:15	0	2981	0	0	2981	0	1977	0	0	1977	38	0	46	0	84	26	0	14	0	40	5082
4:30-5:30	0	3018	0	0	3018	0	1975	0	0	1975	46	0	49	0	95	21	0	17	0	38	5126
4:45-5:45	0	3086	0	1	3087	0	1942	0	0	1942	48	0	44	0	92	18	0	22	0	40	5161
5:00-6:00	0	3107	0	1	3108	0	1869	0	0	1869	45	0	45	0	90	18	0	22	0	40	5107
PEAK HOUR																					
4:30-5:30	0	3018	0	0	3018	0	1975	0	0	1975	46	0	49	0	95	21	0	17	0	38	5126

HEAVY TRUCK TURNING MOVEMENT COUNT - SUMMARY

Intersection of: US 13 | **Counted by:** VCU
and: Roosevelt Ave | **Date:** November 1, 2012 | **Day:** Thursday
Location: New Castle Co., DE | **Weather:** Cloudy/Warm
Entered by: RB

TIME	TRAFFIC FROM NORTH on: US 13					TRAFFIC FROM SOUTH on: US 13					TRAFFIC FROM EAST on: Roosevelt Ave					TRAFFIC FROM WEST on: Roosevelt Ave					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
6:00-6:15		34		0	34		26		0	26	0		0		0	2		0		2	62
6:15-6:30		36		0	36		28		0	28	0		0		0	0		0		0	64
6:30-6:45		32		0	32		36		0	36	2		1		3	1		0		1	72
6:45-7:00		40		0	40		37		0	37	0		0		0	0		1		1	78
7:00-7:15		45		0	45		43		0	43	3		0		3	0		0		0	91
7:15-7:30		40		0	40		39		0	39	0		0		0	0		0		0	79
7:30-7:45		45		0	45		39		0	39	0		0		0	0		0		0	84
7:45-8:00		41		0	41		45		0	45	0		0		0	0		0		0	86
8:00-8:15		45		0	45		35		0	35	0		0		0	0		0		0	80
8:15-8:30		38		0	38		59		0	59	0		0		0	0		1		1	98
8:30-8:45		48		0	48		64		0	64	0		0		0	0		0		0	112
8:45-9:00		37		0	37		50		0	50	4		0		4	0		0		0	91
3 Hr Totals	0	481	0	0	481	0	501	0	0	501	9	0	1	0	10	3	0	2	0	5	997
1 Hr Totals																					
6:00-7:00	0	142	0	0	142	0	127	0	0	127	2	0	1	0	3	3	0	1	0	4	276
6:15-7:15	0	153	0	0	153	0	144	0	0	144	5	0	1	0	6	1	0	1	0	2	305
6:30-7:30	0	157	0	0	157	0	155	0	0	155	5	0	1	0	6	1	0	1	0	2	320
6:45-7:45	0	170	0	0	170	0	158	0	0	158	3	0	0	0	3	0	0	1	0	1	332
7:00-8:00	0	171	0	0	171	0	166	0	0	166	3	0	0	0	3	0	0	0	0	0	340
7:15-8:15	0	171	0	0	171	0	158	0	0	158	0	0	0	0	0	0	0	0	0	0	329
7:30-8:30	0	169	0	0	169	0	178	0	0	178	0	0	0	0	0	0	0	1	0	1	348
7:45-8:45	0	172	0	0	172	0	203	0	0	203	0	0	0	0	0	0	0	1	0	1	376
8:00-9:00	0	168	0	0	168	0	208	0	0	208	4	0	0	0	4	0	0	1	0	1	381
PEAK HOUR																					
7:15-8:15	0	171	0	0	171	0	158	0	0	158	0	0	0	0	0	0	0	0	0	0	329
PM																					
4:00-4:15		44		0	44		42		0	42	0		2		2	0		0		0	88
4:15-4:30		34		0	34		35		0	35	0		0		0	0		0		0	69
4:30-4:45		49		0	49		41		0	41	1		0		1	0		0		0	91
4:45-5:00		31		0	31		41		0	41	0		0		0	0		0		0	72
5:00-5:15		37		0	37		41		0	41	0		0		0	0		0		0	78
5:15-5:30		31		0	31		39		0	39	0		0		0	1		0		1	71
5:30-5:45		36		0	36		26		0	26	0		0		0	0		0		0	62
5:45-6:00		28		0	28		34		0	34	1		0		1	0		0		0	63
2 Hr Totals	0	290	0	0	290	0	299	0	0	299	2	0	2	0	4	1	0	0	0	1	594
1 Hr Totals																					
4:00-5:00	0	158	0	0	158	0	159	0	0	159	1	0	2	0	3	0	0	0	0	0	320
4:15-5:15	0	151	0	0	151	0	158	0	0	158	1	0	0	0	1	0	0	0	0	0	310
4:30-5:30	0	148	0	0	148	0	162	0	0	162	1	0	0	0	1	1	0	0	0	1	312
4:45-5:45	0	135	0	0	135	0	147	0	0	147	0	0	0	0	0	1	0	0	0	1	283
5:00-6:00	0	132	0	0	132	0	140	0	0	140	1	0	0	0	1	1	0	0	0	1	274
PEAK HOUR																					
4:30-5:30	0	148	0	0	148	0	162	0	0	162	1	0	0	0	1	1	0	0	0	1	312

RIGHT TURN ON RED TURNING MOVEMENT COUNT - SUMMARY

Intersection of: US 13
and: Roosevelt Ave
Location: New Castle Co., DE

Counted by: VCU
Date: November 1, 2012
Weather: Cloudy/Warm
Entered by: RB

Day: Thursday

TIME	TRAFFIC FROM NORTH on: US 13					TRAFFIC FROM SOUTH on: US 13					TRAFFIC FROM EAST on: Roosevelt Ave					TRAFFIC FROM WEST on: Roosevelt Ave					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
6:00-6:15					0					0	7				7	1				1	8
6:15-6:30					0					0	6				6	1				1	7
6:30-6:45					0					0	5				5	3				3	8
6:45-7:00					0					0	6				6	3				3	9
7:00-7:15					0					0	3				3	9				9	12
7:15-7:30					0					0	4				4	5				5	9
7:30-7:45					0					0	1				1	11				11	12
7:45-8:00					0					0	7				7	13				13	20
8:00-8:15					0					0	5				5	10				10	15
8:15-8:30					0					0	4				4	1				1	5
8:30-8:45					0					0	7				7	4				4	11
8:45-9:00					0					0	1				1	2				2	3
3 Hr Totals	0	0	0	0	0	0	0	0	0	0	56	0	0	0	56	63	0	0	0	63	119
1 Hr Totals																					
6:00-7:00	0	0	0	0	0	0	0	0	0	0	24	0	0	0	24	8	0	0	0	8	32
6:15-7:15	0	0	0	0	0	0	0	0	0	0	20	0	0	0	20	16	0	0	0	16	36
6:30-7:30	0	0	0	0	0	0	0	0	0	0	18	0	0	0	18	20	0	0	0	20	38
6:45-7:45	0	0	0	0	0	0	0	0	0	0	14	0	0	0	14	28	0	0	0	28	42
7:00-8:00	0	0	0	0	0	0	0	0	0	0	15	0	0	0	15	38	0	0	0	38	53
7:15-8:15	0	0	0	0	0	0	0	0	0	0	17	0	0	0	17	39	0	0	0	39	56
7:30-8:30	0	0	0	0	0	0	0	0	0	0	17	0	0	0	17	35	0	0	0	35	52
7:45-8:45	0	0	0	0	0	0	0	0	0	0	23	0	0	0	23	28	0	0	0	28	51
8:00-9:00	0	0	0	0	0	0	0	0	0	0	17	0	0	0	17	17	0	0	0	17	34
PEAK HOUR																					
7:15-8:15	0	0	0	0	0	0	0	0	0	0	17	0	0	0	17	39	0	0	0	39	56
PM																					
4:00-4:15					0					0	2				2	3				3	5
4:15-4:30					0					0	5				5	4				4	9
4:30-4:45					0					0	8				8	5				5	13
4:45-5:00					0					0	6				6	3				3	9
5:00-5:15					0					0	4				4	3				3	7
5:15-5:30					0					0	7				7	3				3	10
5:30-5:45					0					0	5				5	2				2	7
5:45-6:00					0					0	5				5	1				1	6
2 Hr Totals	0	0	0	0	0	0	0	0	0	0	42	0	0	0	42	24	0	0	0	24	66
1 Hr Totals																					
4:00-5:00	0	0	0	0	0	0	0	0	0	0	21	0	0	0	21	15	0	0	0	15	36
4:15-5:15	0	0	0	0	0	0	0	0	0	0	23	0	0	0	23	15	0	0	0	15	38
4:30-5:30	0	0	0	0	0	0	0	0	0	0	25	0	0	0	25	14	0	0	0	14	39
4:45-5:45	0	0	0	0	0	0	0	0	0	0	22	0	0	0	22	11	0	0	0	11	33
5:00-6:00	0	0	0	0	0	0	0	0	0	0	21	0	0	0	21	9	0	0	0	9	30
PEAK HOUR																					
4:30-5:30	0	0	0	0	0	0	0	0	0	0	25	0	0	0	25	14	0	0	0	14	39

TOTAL VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: US 13
and: Roosevelt Ave
Location: New Castle Co., DE

Counted by: VCU
Date: November 1, 2012
Weather: Cloudy/Warm
Entered by: RB

Day: Thursday

TIME	TRAFFIC FROM NORTH on: US 13					TRAFFIC FROM SOUTH on: US 13					TRAFFIC FROM EAST on: Roosevelt Ave					TRAFFIC FROM WEST on: Roosevelt Ave					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
6:00-6:15	0	186	0	0	186	0	424	0	0	424	16	0	4	0	20	3	0	1	0	4	634
6:15-6:30	0	242	0	0	242	0	503	0	0	503	17	0	7	0	24	1	0	0	0	1	770
6:30-6:45	0	250	0	0	250	0	739	0	0	739	24	0	12	0	36	6	0	4	0	10	1035
6:45-7:00	0	323	0	0	323	0	759	0	0	759	23	0	16	0	39	8	0	7	0	15	1136
7:00-7:15	0	332	0	0	332	0	808	0	0	808	19	0	12	0	31	20	0	7	0	27	1198
7:15-7:30	0	373	0	0	373	0	835	0	0	835	14	0	7	0	21	11	0	2	0	13	1242
7:30-7:45	0	362	0	0	362	0	779	0	0	779	23	0	14	0	37	24	0	9	0	33	1211
7:45-8:00	0	437	0	0	437	0	762	0	0	762	23	0	13	0	36	28	0	15	0	43	1278
8:00-8:15	0	375	0	0	375	0	813	0	0	813	21	0	18	0	39	20	0	16	0	36	1263
8:15-8:30	0	401	0	0	401	0	723	0	0	723	18	0	16	0	34	4	0	2	0	6	1164
8:30-8:45	0	437	0	0	437	0	742	0	0	742	26	0	16	0	42	10	0	2	0	12	1233
8:45-9:00	0	406	0	0	406	0	760	0	0	760	20	0	22	0	42	4	0	4	0	8	1216
3 Hr Totals	0	4124	0	0	4124	0	8647	0	0	8647	244	0	157	0	401	139	0	69	0	208	13380
1 Hr Totals																					
6:00-7:00	0	1001	0	0	1001	0	2425	0	0	2425	80	0	39	0	119	18	0	12	0	30	3575
6:15-7:15	0	1147	0	0	1147	0	2809	0	0	2809	83	0	47	0	130	35	0	18	0	53	4139
6:30-7:30	0	1278	0	0	1278	0	3141	0	0	3141	80	0	47	0	127	45	0	20	0	65	4611
6:45-7:45	0	1390	0	0	1390	0	3181	0	0	3181	79	0	49	0	128	63	0	25	0	88	4787
7:00-8:00	0	1504	0	0	1504	0	3184	0	0	3184	79	0	46	0	125	83	0	33	0	116	4929
7:15-8:15	0	1547	0	0	1547	0	3189	0	0	3189	81	0	52	0	133	83	0	42	0	125	4994
7:30-8:30	0	1575	0	0	1575	0	3077	0	0	3077	85	0	61	0	146	76	0	42	0	118	4916
7:45-8:45	0	1650	0	0	1650	0	3040	0	0	3040	88	0	63	0	151	62	0	35	0	97	4938
8:00-9:00	0	1619	0	0	1619	0	3038	0	0	3038	85	0	72	0	157	38	0	24	0	62	4876
PEAK HOUR																					
7:15-8:15	0	1547	0	0	1547	0	3189	0	0	3189	81	0	52	0	133	83	0	42	0	125	4994
PM																					
4:00-4:15	0	749	0	0	749	0	470	0	0	470	11	0	13	0	24	9	0	4	0	13	1256
4:15-4:30	0	789	0	0	789	0	526	0	0	526	13	0	10	0	23	12	0	2	0	14	1352
4:30-4:45	0	764	0	0	764	0	530	0	0	530	17	0	11	0	28	12	0	1	0	13	1335
4:45-5:00	0	782	0	0	782	0	535	0	0	535	20	0	12	0	32	9	0	5	0	14	1363
5:00-5:15	0	797	0	0	797	0	544	0	0	544	12	0	13	0	25	8	0	6	0	14	1380
5:15-5:30	0	823	0	0	823	0	528	0	0	528	23	0	13	0	36	7	0	5	0	12	1399
5:30-5:45	0	819	0	1	820	0	482	0	0	482	15	0	6	0	21	6	0	6	0	12	1335
5:45-6:00	0	800	0	0	800	0	455	0	0	455	17	0	13	0	30	7	0	5	0	12	1297
2 Hr Totals	0	6323	0	1	6324	0	4070	0	0	4070	128	0	91	0	219	70	0	34	0	104	10717
1 Hr Totals																					
4:00-5:00	0	3084	0	0	3084	0	2061	0	0	2061	61	0	46	0	107	42	0	12	0	54	5306
4:15-5:15	0	3132	0	0	3132	0	2135	0	0	2135	62	0	46	0	108	41	0	14	0	55	5430
4:30-5:30	0	3166	0	0	3166	0	2137	0	0	2137	72	0	49	0	121	36	0	17	0	53	5477
4:45-5:45	0	3221	0	1	3222	0	2089	0	0	2089	70	0	44	0	114	30	0	22	0	52	5477
5:00-6:00	0	3239	0	1	3240	0	2009	0	0	2009	67	0	45	0	112	28	0	22	0	50	5411
PEAK HOUR																					
4:30-5:30	0	3166	0	0	3166	0	2137	0	0	2137	72	0	49	0	121	36	0	17	0	53	5477

PEDESTRIAN OBSERVATIONS

Intersection of: US 13
and: Roosevelt Ave
Location: New Castle Co., DE

Counted by: VCU
Date: November 1, 2012
Weather: Cloudy/Warm
Entered by: RB

Day: Thursday

TIME	US 13 NORTH LEG		US 13 SOUTH LEG	
	PEDESTRIANS	BICYCLES	PEDESTRIANS	BICYCLES
AM				
6:00-6:15	0	0	0	0
6:15-6:30	0	0	0	0
6:30-6:45	0	0	0	0
6:45-7:00	0	0	0	0
7:00-7:15	0	0	0	0
7:15-7:30	0	0	0	0
7:30-7:45	0	0	0	0
7:45-8:00	0	0	0	0
8:00-8:15	1	0	0	0
8:15-8:30	0	0	0	0
8:30-8:45	2	0	0	0
8:45-9:00	1	0	0	0
TOTALS	4	0	0	0
PM				
4:00-4:15	0	0	0	0
4:15-4:30	0	0	0	0
4:30-4:45	0	0	0	0
4:45-5:00	0	0	0	0
5:00-5:15	2	0	0	0
5:15-5:30	0	0	0	0
5:30-5:45	0	0	0	0
5:45-5:00	0	0	0	0
TOTALS	2	0	0	0

TIME	Roosevelt Ave EAST LEG		Roosevelt Ave WEST LEG	
	PEDESTRIANS	BICYCLES	PEDESTRIANS	BICYCLES
AM				
6:00-6:15	0	0	0	0
6:15-6:30	1	0	0	0
6:30-6:45	0	0	0	0
6:45-7:00	0	0	0	0
7:00-7:15	0	0	0	0
7:15-7:30	0	0	0	0
7:30-7:45	0	0	1	0
7:45-8:00	1	0	0	0
8:00-8:15	1	0	0	0
8:15-8:30	0	0	0	0
8:30-8:45	0	0	2	0
8:45-9:00	0	0	1	0
TOTALS	3	0	4	0
PM				
4:00-4:15	0	0	0	0
4:15-4:30	0	0	0	0
4:30-4:45	0	0	2	0
4:45-5:00	0	0	0	0
5:00-5:15	2	0	3	0
5:15-5:30	0	0	0	0
5:30-5:45	1	0	5	0
5:45-5:00	1	0	0	0
TOTALS	4	0	10	0

RJM Engineering

Location: New Castle County
US 13 at Bacon Ave/Boulden Blvd
Tuesday, November 16, 2010
Counter: RJM Eng

File Name : US13-BeconAve-BouldenBlvd_FINAL
Site Code : 00000000
Start Date : 11/16/2010
Page No : 1

Groups Printed- CARS & PEDS - BIKES - TRUCKS

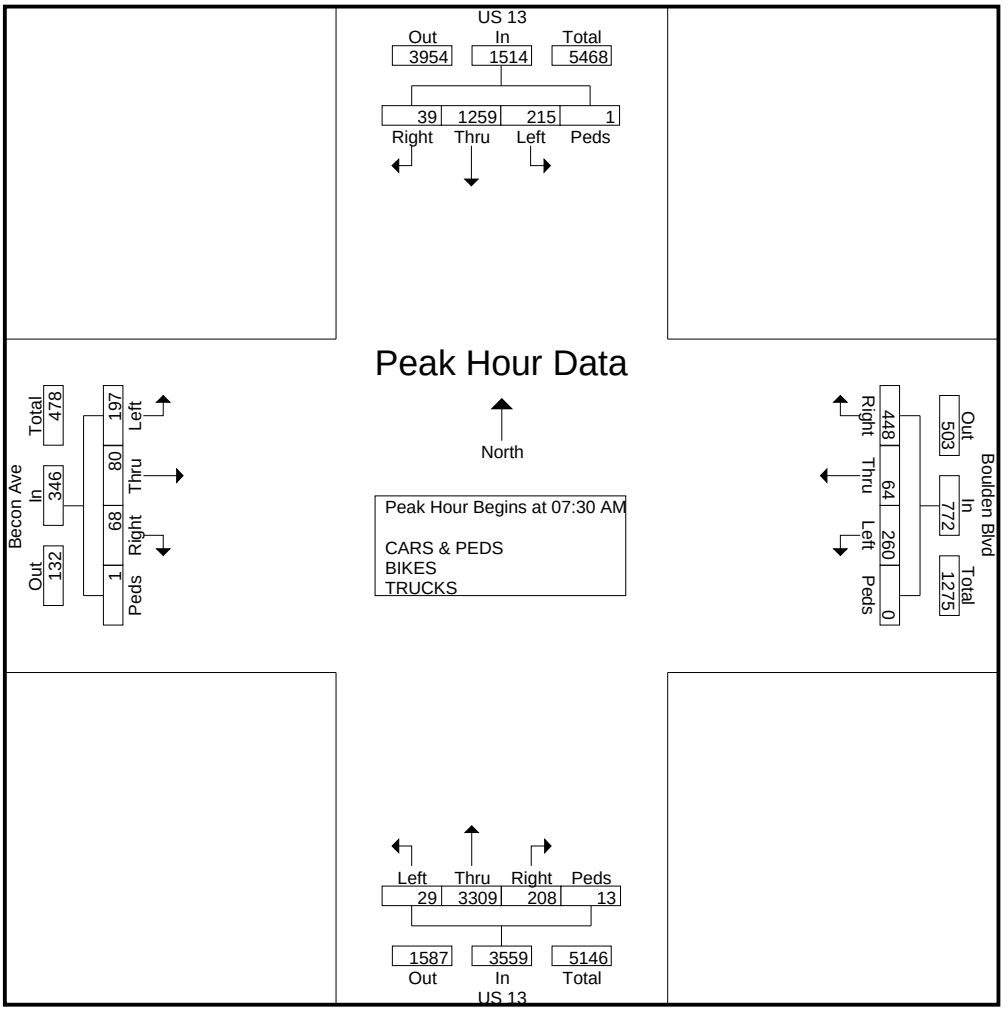
	US 13 Southbound					US 13 Northbound					Boulden Blvd Westbound					Becon Ave Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	39	257	4	0	300	4	763	39	2	808	56	17	67	0	140	40	14	30	5	89	1337
07:15 AM	42	267	8	0	317	4	705	45	1	755	68	4	103	0	175	28	14	18	2	62	1309
07:30 AM	57	324	12	0	393	2	836	48	5	891	64	18	135	0	217	74	20	24	1	119	1620
07:45 AM	50	353	12	0	415	9	772	41	5	827	60	21	106	0	187	56	28	11	0	95	1524
Total	188	1201	36	0	1425	19	3076	173	13	3281	248	60	411	0	719	198	76	83	8	365	5790
08:00 AM	63	294	12	1	370	11	813	62	0	886	57	12	115	0	184	41	19	18	0	78	1518
08:15 AM	45	288	3	0	336	7	888	57	3	955	79	13	92	0	184	26	13	15	0	54	1529
08:30 AM	39	289	11	2	341	16	804	73	4	897	71	13	75	0	159	28	20	14	2	64	1461
08:45 AM	48	272	15	0	335	19	640	41	10	710	61	10	80	2	153	34	8	22	0	64	1262
Total	195	1143	41	3	1382	53	3145	233	17	3448	268	48	362	2	680	129	60	69	2	260	5770
11:00 AM	49	323	17	0	389	25	362	30	0	417	48	19	61	0	128	42	20	33	0	95	1029
11:15 AM	40	343	15	0	398	32	348	38	2	420	52	16	48	0	116	39	16	38	0	93	1027
11:30 AM	45	330	9	0	384	28	406	45	3	482	60	12	68	0	140	38	28	28	3	97	1103
11:45 AM	39	351	16	0	406	27	412	30	1	470	65	8	69	0	142	49	22	37	1	109	1127
Total	173	1347	57	0	1577	112	1528	143	6	1789	225	55	246	0	526	168	86	136	4	394	4286
12:00 PM	26	350	14	0	390	35	433	35	4	507	80	11	71	5	167	73	19	32	0	124	1188
12:15 PM	65	360	15	0	440	28	374	48	0	450	80	10	70	0	160	47	27	42	1	117	1167
12:30 PM	47	349	20	0	416	27	469	50	3	549	80	22	72	0	174	51	17	35	0	103	1242
12:45 PM	43	365	14	0	422	38	414	50	5	507	62	27	63	1	153	54	20	28	2	104	1186
Total	181	1424	63	0	1668	128	1690	183	12	2013	302	70	276	6	654	225	83	137	3	448	4783
03:00 PM	35	473	22	1	531	24	437	47	4	512	87	9	65	2	163	22	18	29	0	69	1275
03:15 PM	40	463	21	0	524	28	422	50	6	506	96	18	74	0	188	45	30	34	0	109	1327
03:30 PM	32	506	13	0	551	21	445	61	5	532	93	20	74	0	187	50	27	42	1	120	1390
03:45 PM	26	469	15	5	515	33	436	52	13	534	106	21	97	0	224	40	31	31	5	107	1380
Total	133	1911	71	6	2121	106	1740	210	28	2084	382	68	310	2	762	157	106	136	6	405	5372
04:00 PM	34	555	23	1	613	36	468	93	9	606	129	18	110	1	258	48	14	37	3	102	1579
04:15 PM	24	600	20	0	644	122	484	60	5	671	156	12	84	0	252	43	27	50	0	120	1687
04:30 PM	22	453	133	0	608	38	573	54	1	666	133	14	115	0	262	54	32	43	2	131	1667
04:45 PM	16	551	16	0	583	28	441	43	4	516	112	14	79	0	205	38	25	28	0	91	1395
Total	96	2159	192	1	2448	224	1966	250	19	2459	530	58	388	1	977	183	98	158	5	444	6328
05:00 PM	13	603	9	0	625	19	524	50	2	595	167	19	103	1	290	34	32	46	2	114	1624
05:15 PM	15	593	9	0	617	30	600	43	5	678	132	47	81	0	260	35	33	58	0	126	1681
05:30 PM	24	628	14	0	666	98	459	39	2	598	153	13	49	0	215	48	26	38	0	112	1591
05:45 PM	14	631	12	0	657	41	539	38	0	618	100	22	53	0	175	36	20	22	0	78	1528
Total	66	2455	44	0	2565	188	2122	170	9	2489	552	101	286	1	940	153	111	164	2	430	6424
Grand Total	1032	11640	504	10	13186	830	15267	1362	104	17563	2507	460	2279	12	5258	1213	620	883	30	2746	38753
Apprch %	7.8	88.3	3.8	0.1		4.7	86.9	7.8	0.6		47.7	8.7	43.3	0.2		44.2	22.6	32.2	1.1		
Total %	2.7	30	1.3	0	34	2.1	39.4	3.5	0.3	45.3	6.5	1.2	5.9	0	13.6	3.1	1.6	2.3	0.1	7.1	
CARS & PEDS	786	10273	469	3	11531	764	13746	1178	100	15788	2272	416	1910	11	4609	1140	563	817	29	2549	34477
% CARS & PEDS	76.2	88.3	93.1	30	87.4	92	90	86.5	96.2	89.9	90.6	90.4	83.8	91.7	87.7	94	90.8	92.5	96.7	92.8	89
BIKES	0	0	0	7	7	0	0	0	4	4	0	0	0	1	1	0	0	0	1	1	13
% BIKES	0	0	0	70	0.1	0	0	0	3.8	0	0	0	0	8.3	0	0	0	0	3.3	0	0
TRUCKS	246	1367	35	0	1648	66	1521	184	0	1771	235	44	369	0	648	73	57	66	0	196	4263
% TRUCKS	23.8	11.7	6.9	0	12.5	8	10	13.5	0	10.1	9.4	9.6	16.2	0	12.3	6	9.2	7.5	0	7.1	11

RJM Engineering

Location: New Castle County
US 13 at Bacon Ave/Boulden Blvd
Tuesday, November 16, 2010
Counter: RJM Eng

File Name : US13-BeconAve-BouldenBlvd_FINAL
Site Code : 00000000
Start Date : 11/16/2010
Page No : 2

	US 13 Southbound					US 13 Northbound					Boulden Blvd Westbound					Becon Ave Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	57	324	**12**	0	393	2	836	48	**5**	891	64	18	**135**	0	**217**	**74**	20	**24**	**1**	**119**	**1620**
07:45 AM	50	**353**	12	0	**415**	9	772	41	5	827	60	**21**	106	0	187	56	**28**	11	0	95	1524
08:00 AM	**63**	294	12	**1**	370	**11**	813	**62**	0	886	57	12	115	0	184	41	19	18	0	78	1518
08:15 AM	45	288	3	0	336	7	**888**	57	3	**955**	**79**	13	92	0	184	26	13	15	0	54	1529
Total Volume	215	1259	39	1	1514	29	3309	208	13	3559	260	64	448	0	772	197	80	68	1	346	6191
% App. Total	14.2	83.2	2.6	0.1		0.8	93	5.8	0.4		33.7	8.3	58	0		56.9	23.1	19.7	0.3		
PHF	.853	.892	.813	.250	.912	.659	.932	.839	.650	.932	.823	.762	.830	.000	.889	.666	.714	.708	.250	.727	.955

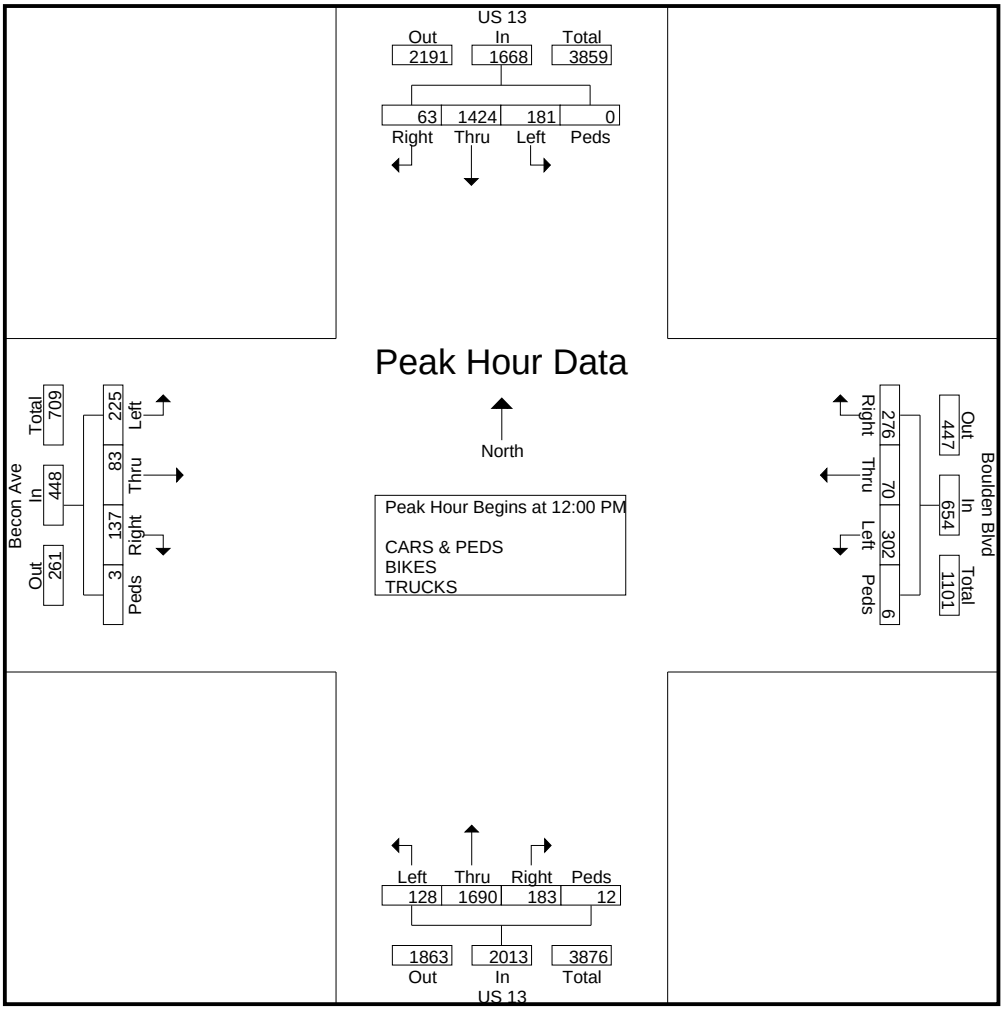


RJM Engineering

Location: New Castle County
US 13 at Bacon Ave/Boulden Blvd
Tuesday, November 16, 2010
Counter: RJM Eng

File Name : US13-BeconAve-BouldenBlvd_FINAL
Site Code : 00000000
Start Date : 11/16/2010
Page No : 3

	US 13 Southbound					US 13 Northbound					Boulden Blvd Westbound					Becon Ave Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	26	350	14	0	390	35	433	35	4	507	**80**	11	71	**5**	167	**73**	19	32	0	**124**	1188
12:15 PM	**65**	360	15	0	**440**	28	374	48	0	450	80	10	70	0	160	47	**27**	**42**	1	117	1167
12:30 PM	47	349	**20**	0	416	27	**469**	**50**	3	**549**	80	22	**72**	0	**174**	51	17	35	0	103	**1242**
12:45 PM	43	**365**	14	0	422	**38**	414	50	**5**	507	62	**27**	63	1	153	54	20	28	**2**	104	1186
Total Volume	181	1424	63	0	1668	128	1690	183	12	2013	302	70	276	6	654	225	83	137	3	448	4783
% App. Total	10.9	85.4	3.8	0		6.4	84	9.1	0.6		46.2	10.7	42.2	0.9		50.2	18.5	30.6	0.7		
PHF	.696	.975	.788	.000	.948	.842	.901	.915	.600	.917	.944	.648	.958	.300	.940	.771	.769	.815	.375	.903	.963

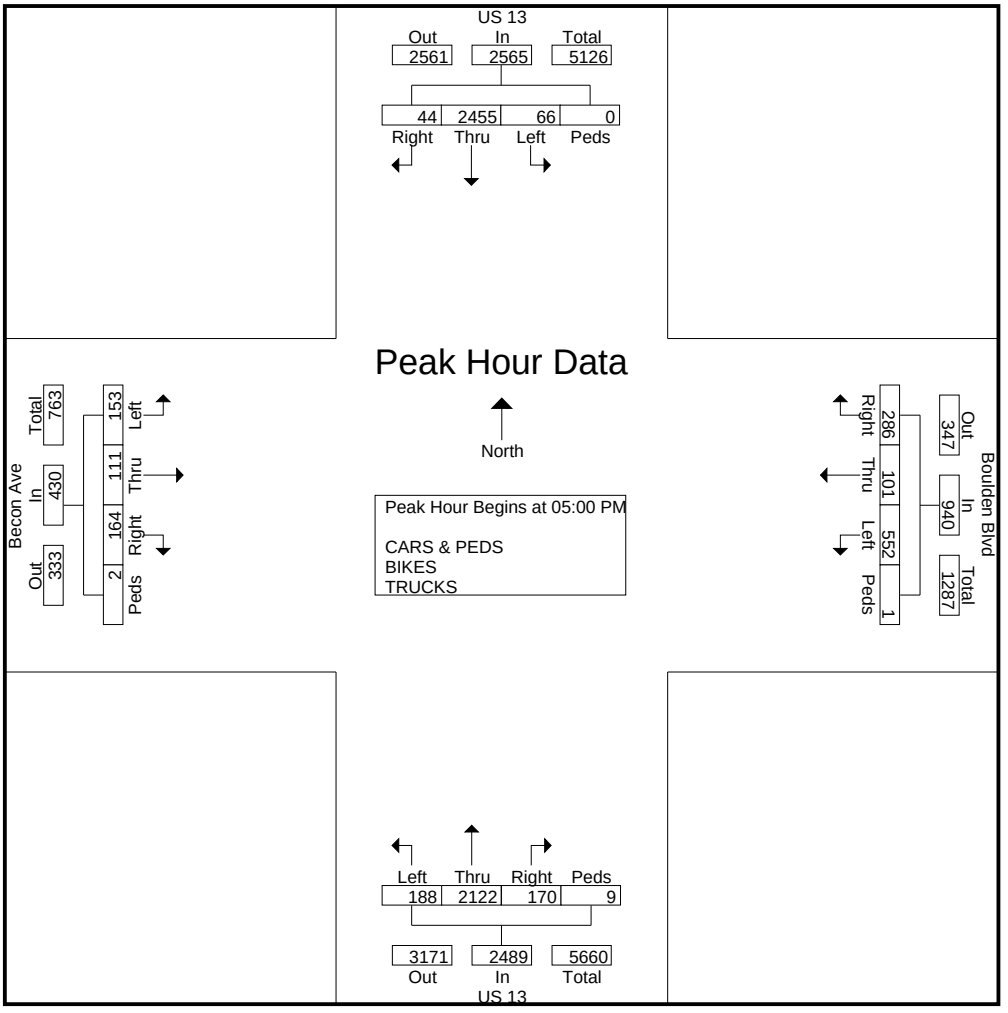


RJM Engineering

Location: New Castle County
US 13 at Bacon Ave/Boulden Blvd
Tuesday, November 16, 2010
Counter: RJM Eng

File Name : US13-BeconAve-BouldenBlvd_FINAL
Site Code : 00000000
Start Date : 11/16/2010
Page No : 4

	US 13 Southbound					US 13 Northbound					Boulden Blvd Westbound					Becon Ave Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	13	603	9	0	625	19	524	**50**	2	595	**167**	19	**103**	**1**	**290**	34	32	46	**2**	114	1624
05:15 PM	15	593	9	0	617	30	**600**	43	**5**	**678**	132	**47**	81	0	260	35	**33**	**58**	0	**126**	**1681**
05:30 PM	**24**	628	**14**	0	**666**	**98**	459	39	2	598	153	13	49	0	215	**48**	26	38	0	112	1591
05:45 PM	14	**631**	12	0	657	41	539	38	0	618	100	22	53	0	175	36	20	22	0	78	1528
Total Volume	66	2455	44	0	2565	188	2122	170	9	2489	552	101	286	1	940	153	111	164	2	430	6424
% App. Total	2.6	95.7	1.7	0		7.6	85.3	6.8	0.4		58.7	10.7	30.4	0.1		35.6	25.8	38.1	0.5		
PHF	.688	.973	.786	.000	.963	.480	.884	.850	.450	.918	.826	.537	.694	.250	.810	.797	.841	.707	.250	.853	.955



Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

Weather: SUNNY
Counted By: HORACE & DEB
Town: NEWARK
County: NEW CASTLE

File Name : US 13 at Wildel Avenue
Site Code : 00000000
Start Date : 3/12/2014
Page No : 1

Groups Printed- VEHS&PEDS

	US 13 From North					WILDEL AVE From East					US 13 From South					WILDEL AVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	4	114	0	0	118	1	0	6	0	7	4	337	15	0	356	6	0	2	0	8	489
06:45 AM	3	120	0	0	123	3	0	13	0	16	4	423	24	0	451	21	0	1	0	22	612
Total	7	234	0	0	241	4	0	19	0	23	8	760	39	0	807	27	0	3	0	30	1101
07:00 AM	1	100	0	0	101	4	0	10	0	14	2	361	7	0	370	10	0	3	0	13	498
07:15 AM	8	182	0	0	190	1	0	13	0	14	5	499	8	0	512	9	0	2	0	11	727
07:30 AM	3	178	13	0	194	4	0	17	0	21	11	532	10	0	553	9	0	4	0	13	781
07:45 AM	7	202	0	0	209	1	0	5	0	6	7	497	16	0	520	6	0	1	1	8	743
Total	19	662	13	0	694	10	0	45	0	55	25	1889	41	0	1955	34	0	10	1	45	2749
08:00 AM	2	173	3	0	178	0	0	3	1	4	3	513	13	0	529	8	0	2	1	11	722
08:15 AM	2	155	0	0	157	3	0	11	0	14	5	461	11	0	477	6	0	3	1	10	658
08:30 AM	6	174	0	0	180	2	0	1	0	3	3	448	7	0	458	7	0	2	0	9	650
08:45 AM	1	101	1	0	103	0	0	2	0	2	4	426	8	1	439	3	0	3	1	7	551
Total	11	603	4	0	618	5	0	17	1	23	15	1848	39	1	1903	24	0	10	3	37	2581
09:00 AM	4	181	0	0	185	0	0	5	0	5	2	257	11	0	270	6	0	3	0	9	469
09:15 AM	8	201	3	0	212	0	0	3	0	3	6	282	11	0	299	6	0	3	0	9	523
BREAK																					
Total	12	382	3	0	397	0	0	8	0	8	8	539	22	0	569	12	0	6	0	18	992
BREAK																					
11:00 AM	3	112	0	0	115	0	0	3	0	3	6	253	10	0	269	13	0	1	0	14	401
11:15 AM	3	158	11	0	172	0	0	1	0	1	5	315	6	0	326	12	0	8	0	20	519
11:30 AM	1	190	2	0	193	1	0	2	0	3	12	300	4	0	316	24	0	3	0	27	539
11:45 AM	4	239	0	0	243	0	0	1	0	1	11	334	11	1	357	9	0	2	1	12	613
Total	11	699	13	0	723	1	0	7	0	8	34	1202	31	1	1268	58	0	14	1	73	2072
12:00 PM	4	314	1	0	319	0	0	2	0	2	5	288	12	0	305	20	0	4	0	24	650
12:15 PM	2	264	1	0	267	0	0	1	0	1	6	327	12	0	345	3	0	2	0	5	618
12:30 PM	0	312	1	0	313	1	0	5	0	6	4	330	9	0	343	11	0	5	0	16	678
12:45 PM	6	259	0	0	265	0	0	4	2	6	9	312	16	0	337	12	0	4	1	17	625
Total	12	1149	3	0	1164	1	0	12	2	15	24	1257	49	0	1330	46	0	15	1	62	2571

BREAK

Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at Wildel Avenue
Site Code : 00000000
Start Date : 3/12/2014

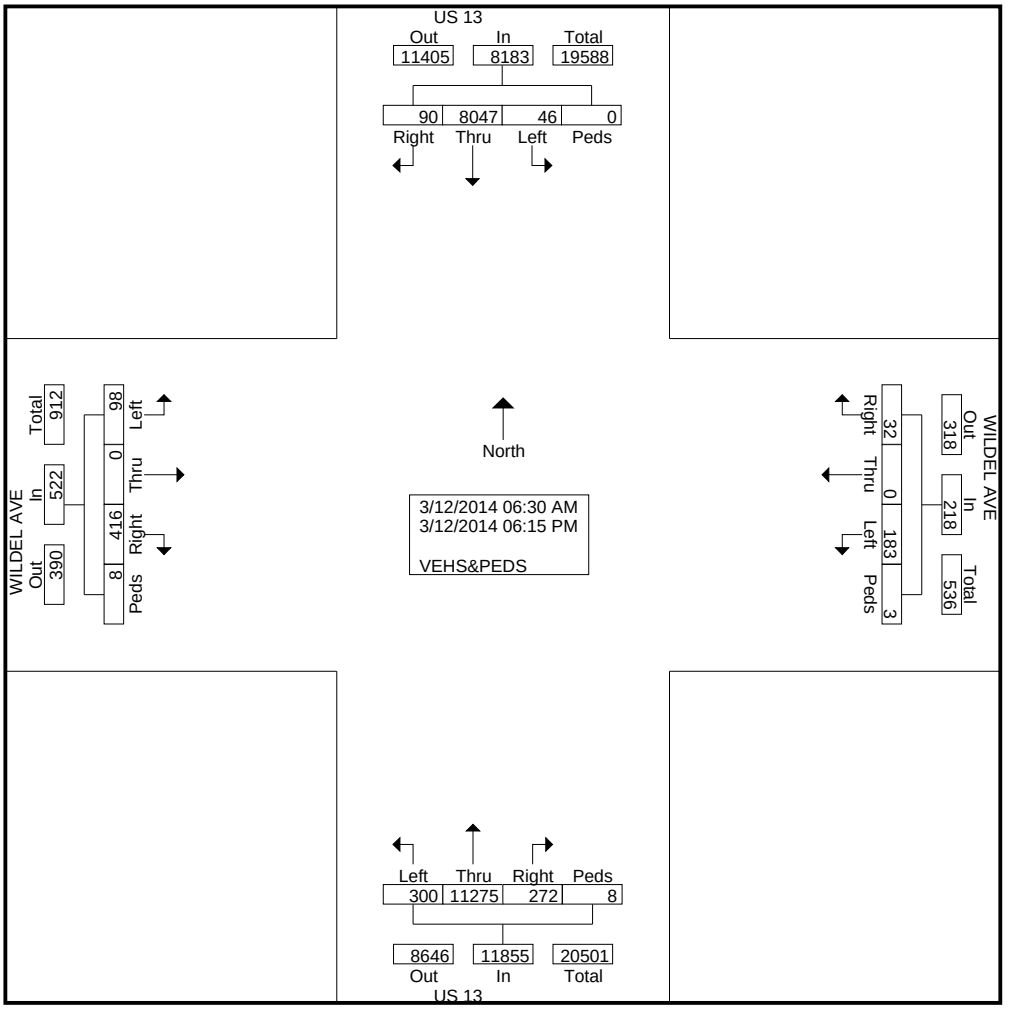
Groups Printed- VEHS&PEDS

	US 13 From North					WILDEL AVE From East					US 13 From South					WILDEL AVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:30 PM	3	344	1	0	348	0	0	8	0	8	17	333	11	0	361	22	0	3	1	26	743
03:45 PM	2	358	0	0	360	4	0	8	0	12	13	312	11	0	336	14	0	4	1	19	727
Total	5	702	1	0	708	4	0	16	0	20	30	645	22	0	697	36	0	7	2	45	1470
04:00 PM	3	376	2	0	381	0	0	6	0	6	13	320	3	0	336	37	0	4	0	41	764
04:15 PM	2	339	1	0	342	0	0	6	0	6	11	329	9	2	351	21	0	3	0	24	723
04:30 PM	0	305	1	0	306	0	0	4	0	4	6	320	8	0	334	45	0	6	0	51	695
04:45 PM	2	398	2	0	402	1	0	10	0	11	20	344	6	0	370	15	0	4	0	19	802
Total	7	1418	6	0	1431	1	0	26	0	27	50	1313	26	2	1391	118	0	17	0	135	2984
05:00 PM	0	309	0	0	309	1	0	3	0	4	10	351	4	0	365	19	0	6	0	25	703
05:15 PM	2	430	1	0	433	1	0	8	0	9	13	317	3	0	333	5	0	3	0	8	783
05:30 PM	2	444	1	0	447	1	0	11	0	12	19	332	6	2	359	11	0	2	0	13	831
05:45 PM	2	362	0	0	364	2	0	0	0	2	12	303	7	0	322	9	0	0	0	9	697
Total	6	1545	2	0	1553	5	0	22	0	27	54	1303	20	2	1379	44	0	11	0	55	3014
06:00 PM	0	351	1	0	352	0	0	6	0	6	12	258	10	2	282	9	0	2	0	11	651
06:15 PM	0	302	0	0	302	1	0	5	0	6	12	261	1	0	274	8	0	3	0	11	593
Grand Total	90	8047	46	0	8183	32	0	183	3	218	272	11275	300	8	11855	416	0	98	8	522	20778
Apprch %	1.1	98.3	0.6	0		14.7	0	83.9	1.4		2.3	95.1	2.5	0.1		79.7	0	18.8	1.5		
Total %	0.4	38.7	0.2	0	39.4	0.2	0	0.9	0	1	1.3	54.3	1.4	0	57.1	2	0	0.5	0	2.5	

Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at Wildel Avenue
Site Code : 00000000
Start Date : 3/12/2014
Page No : 3

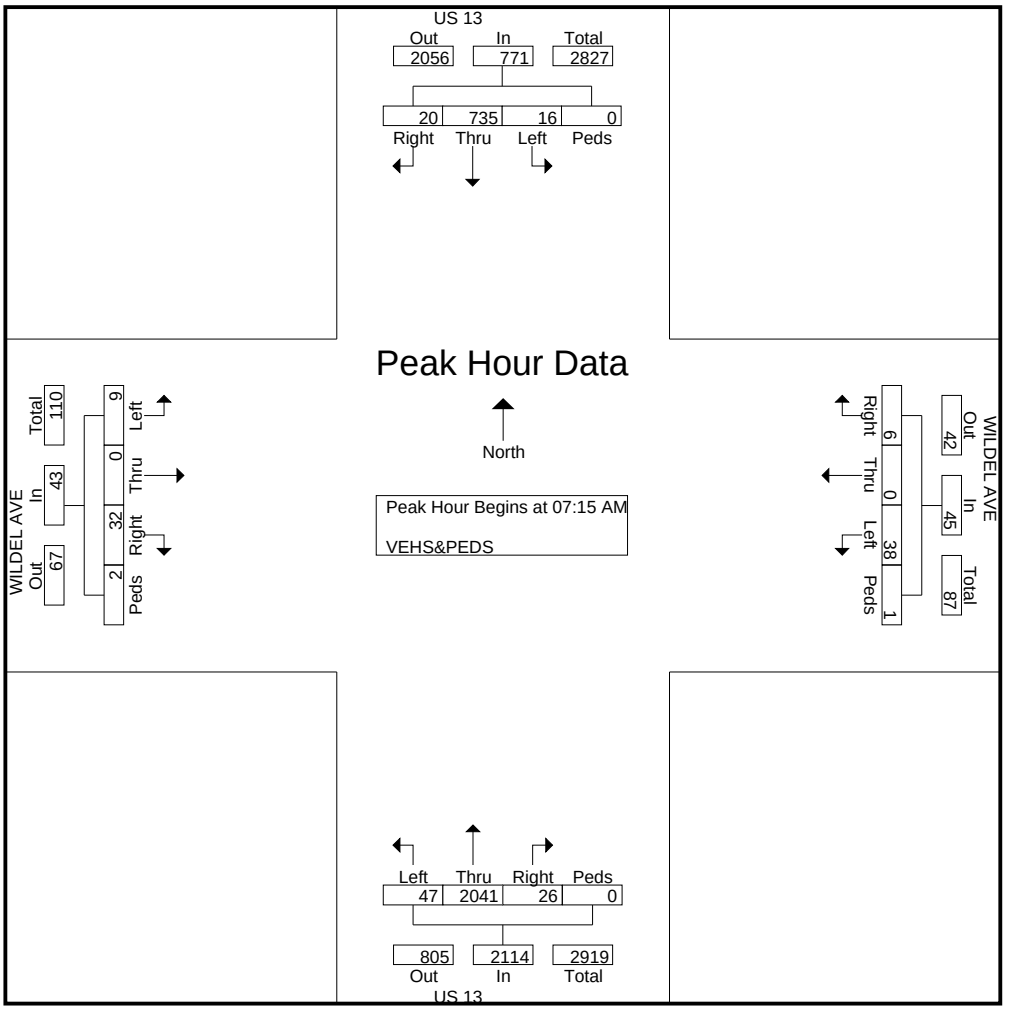


Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at Wildel Avenue
Site Code : 00000000
Start Date : 3/12/2014
Page No : 4

	US 13 From North					WILDEL AVE From East					US 13 From South					WILDEL AVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	**8**	182	0	0	190	1	0	13	0	14	5	499	8	0	512	**9**	0	2	0	11	727
07:30 AM	3	178	**13**	0	194	**4**	0	**17**	0	**21**	**11**	**532**	10	0	**553**	9	0	**4**	0	**13**	**781**
07:45 AM	7	**202**	0	0	**209**	1	0	5	0	6	7	497	**16**	0	520	6	0	1	**1**	8	743
08:00 AM	2	173	3	0	178	0	0	3	**1**	4	3	513	13	0	529	8	0	2	1	11	722
Total Volume	20	735	16	0	771	6	0	38	1	45	26	2041	47	0	2114	32	0	9	2	43	2973
% App. Total	2.6	95.3	2.1	0		13.3	0	84.4	2.2		1.2	96.5	2.2	0		74.4	0	20.9	4.7		
PHF	.625	.910	.308	.000	.922	.375	.000	.559	.250	.536	.591	.959	.734	.000	.956	.889	.000	.563	.500	.827	.952

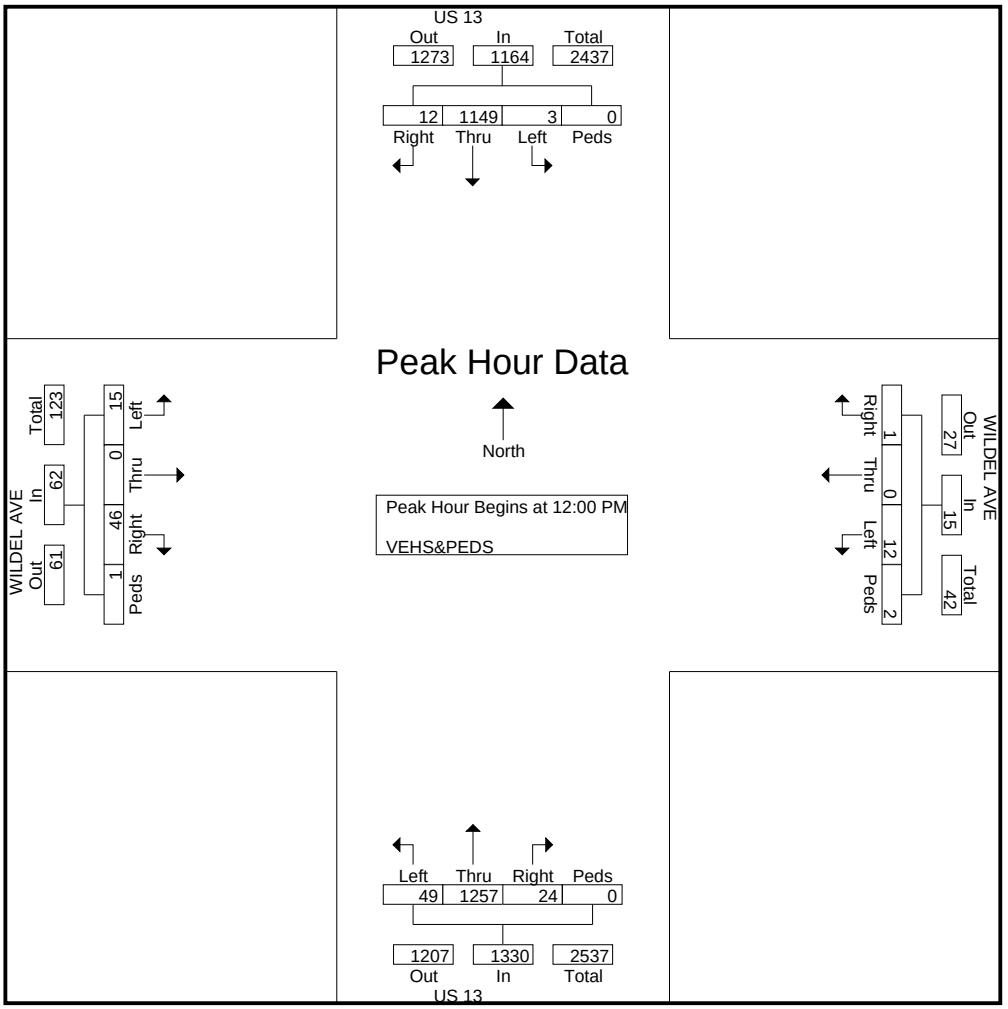


Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at Wildel Avenue
Site Code : 00000000
Start Date : 3/12/2014
Page No : 5

	US 13 From North					WILDEL AVE From East					US 13 From South					WILDEL AVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	4	**314**	**1**	0	**319**	0	0	2	0	2	5	288	12	0	305	**20**	0	4	0	**24**	650
12:15 PM	2	264	1	0	267	0	0	1	0	1	6	327	12	0	**345**	3	0	2	0	5	618
12:30 PM	0	312	1	0	313	**1**	0	**5**	0	**6**	4	**330**	9	0	343	11	0	**5**	0	16	**678**
12:45 PM	**6**	259	0	0	265	0	0	4	**2**	6	**9**	312	**16**	0	337	12	0	4	**1**	17	625
Total Volume	12	1149	3	0	1164	1	0	12	2	15	24	1257	49	0	1330	46	0	15	1	62	2571
% App. Total	1	98.7	0.3	0		6.7	0	80	13.3		1.8	94.5	3.7	0		74.2	0	24.2	1.6		
PHF	.500	.915	.750	.000	.912	.250	.000	.600	.250	.625	.667	.952	.766	.000	.964	.575	.000	.750	.250	.646	.948

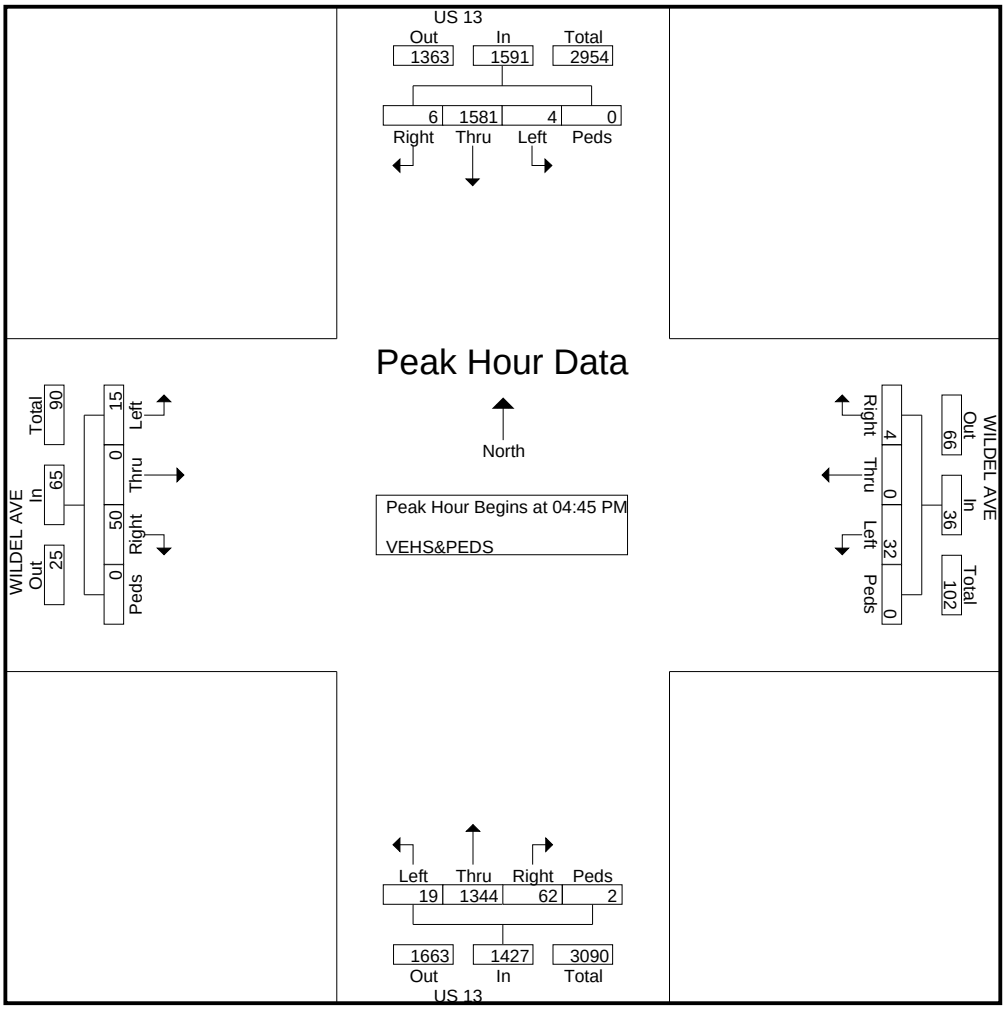


Sabra, Wang & Assoc, Inc

7055 Samuel Morse Dr, Suite 100
Columbia, MD 21046
443-741-3500

File Name : US 13 at Wildel Avenue
Site Code : 00000000
Start Date : 3/12/2014
Page No : 6

	US 13 From North					WILDEL AVE From East					US 13 From South					WILDEL AVE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	**2**	398	**2**	0	402	**1**	0	10	0	11	**20**	344	**6**	0	**370**	15	0	4	0	19	802
05:00 PM	0	309	0	0	309	1	0	3	0	4	10	**351**	4	0	365	**19**	0	**6**	0	**25**	703
05:15 PM	2	430	1	0	433	1	0	8	0	9	13	317	3	0	333	5	0	3	0	8	783
05:30 PM	2	**444**	1	0	**447**	1	0	**11**	0	**12**	19	332	6	**2**	359	11	0	2	0	13	**831**
Total Volume	6	1581	4	0	1591	4	0	32	0	36	62	1344	19	2	1427	50	0	15	0	65	3119
% App. Total	0.4	99.4	0.3	0		11.1	0	88.9	0		4.3	94.2	1.3	0.1		76.9	0	23.1	0		
PHF	.750	.890	.500	.000	.890	1.00	.000	.727	.000	.750	.775	.957	.792	.250	.964	.658	.000	.625	.000	.650	.938



RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at E Hazeldell Ave (Fire Signal)
Date: Wednesday, October 1, 2014

File Name : US 13 at Hazeldell Ave
Site Code :
Start Date : 10/1/2014
Page No : 1

Groups Printed- CARS & PEDS - TURNS & BIKES - TRUCKS

	Eastbound					E Hazeldell Ave Westbound					US 13 Northbound					US 13 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	4	0	7	1	12	0	0	0	0	0	12	0	0	0	12	24
07:15 AM	0	0	0	0	0	3	0	11	0	14	4	0	2	0	6	15	0	0	0	15	35
07:30 AM	0	0	0	0	0	2	0	16	0	18	4	0	3	1	8	11	0	0	0	11	37
07:45 AM	0	0	0	0	0	1	0	6	0	7	0	0	4	0	4	11	0	0	0	11	22
Total	0	0	0	0	0	10	0	40	1	51	8	0	9	1	18	49	0	0	0	49	118
08:00 AM	0	0	0	0	0	0	0	20	0	20	5	0	0	0	5	13	0	0	0	13	38
08:15 AM	0	0	0	0	0	0	0	4	0	4	4	0	1	1	6	9	0	0	0	9	19
08:30 AM	0	0	0	0	0	0	0	4	0	4	2	0	0	0	2	5	0	0	0	5	11
08:45 AM	0	0	0	0	0	0	0	8	0	8	3	0	1	0	4	8	0	0	0	8	20
Total	0	0	0	0	0	0	0	36	0	36	14	0	2	1	17	35	0	0	0	35	88
09:00 AM	0	0	0	0	0	3	0	5	0	8	5	0	4	0	9	10	0	0	0	10	27
09:15 AM	0	0	0	0	0	2	0	2	0	4	2	0	5	0	7	22	0	0	0	22	33
09:30 AM	0	0	0	0	0	3	0	6	2	11	4	0	2	0	6	12	0	0	0	12	29
09:45 AM	0	0	0	0	0	2	0	5	2	9	7	0	3	1	11	18	0	0	0	18	38
Total	0	0	0	0	0	10	0	18	4	32	18	0	14	1	33	62	0	0	0	62	127
11:00 AM	0	0	0	0	0	3	0	4	0	7	0	0	2	0	2	14	0	0	0	14	23
11:15 AM	0	0	0	0	0	6	0	5	0	11	2	0	2	0	4	13	0	0	0	13	28
11:30 AM	0	0	0	0	0	3	0	3	1	7	4	0	2	0	6	14	0	0	0	14	27
11:45 AM	0	0	0	0	0	1	0	4	0	5	3	0	4	2	9	14	0	0	0	14	28
Total	0	0	0	0	0	13	0	16	1	30	9	0	10	2	21	55	0	0	0	55	106
12:00 PM	0	0	0	0	0	0	0	6	0	6	2	0	0	0	2	18	0	0	0	18	26
12:15 PM	0	0	0	0	0	2	0	6	0	8	8	0	4	0	12	23	0	0	0	23	43
12:30 PM	0	0	0	0	0	3	0	7	0	10	3	0	0	1	4	31	0	0	0	31	45
12:45 PM	0	0	0	0	0	3	0	5	0	8	3	0	5	2	10	25	0	0	0	25	43
Total	0	0	0	0	0	8	0	24	0	32	16	0	9	3	28	97	0	0	0	97	157
02:00 PM	0	0	0	0	0	4	0	8	0	12	6	0	3	1	10	19	0	0	0	19	41
02:15 PM	0	0	0	0	0	2	0	7	0	9	3	0	2	0	5	27	0	0	0	27	41
02:30 PM	0	0	0	0	0	3	0	8	1	12	6	0	6	0	12	20	0	0	0	20	44
02:45 PM	0	0	0	0	0	6	0	13	1	20	8	0	0	0	8	17	0	0	0	17	45
Total	0	0	0	0	0	15	0	36	2	53	23	0	11	1	35	83	0	0	0	83	171
03:00 PM	0	0	0	0	0	3	0	10	0	13	2	0	3	0	5	25	0	0	0	25	43
03:15 PM	0	0	0	0	0	0	0	13	0	13	1	0	3	0	4	24	0	0	0	24	41
03:30 PM	0	0	0	0	0	3	0	9	0	12	3	0	5	1	9	30	0	0	0	30	51
03:45 PM	0	0	0	0	0	5	0	5	0	10	3	0	1	0	4	25	0	0	0	25	39
Total	0	0	0	0	0	11	0	37	0	48	9	0	12	1	22	104	0	0	0	104	174
04:00 PM	0	0	0	0	0	1	0	9	0	10	3	0	4	0	7	23	0	0	0	23	40
04:15 PM	0	0	0	0	0	0	0	3	0	3	4	0	2	1	7	28	0	0	0	28	38
04:30 PM	0	0	0	0	0	3	0	11	0	14	1	0	1	0	2	32	0	0	0	32	48
04:45 PM	0	0	0	0	0	2	0	7	0	9	3	0	5	0	8	39	0	0	0	39	56
Total	0	0	0	0	0	6	0	30	0	36	11	0	12	1	24	122	0	0	0	122	182
05:00 PM	0	0	0	0	0	3	0	8	0	11	3	0	8	3	14	50	0	0	0	50	75
05:15 PM	0	0	0	0	0	2	0	4	0	6	6	0	2	0	8	39	0	0	0	39	53
05:30 PM	0	0	0	0	0	1	0	11	0	12	6	0	2	1	9	45	0	0	0	45	66
05:45 PM	0	0	0	0	0	4	0	10	4	18	6	0	3	2	11	26	0	0	0	26	55
Total	0	0	0	0	0	10	0	33	4	47	21	0	15	6	42	160	0	0	0	160	249
Grand Total	0	0	0	0	0	83	0	270	12	365	129	0	94	17	240	767	0	0	0	767	1372
Apprch %	0	0	0	0		22.7	0	74	3.3		53.8	0	39.2	7.1		100	0	0	0		
Total %	0	0	0	0	0	6	0	19.7	0.9	26.6	9.4	0	6.9	1.2	17.5	55.9	0	0	0	55.9	
CARS & PEDS	0	0	0	0	0	79	0	238	11	328	0	0	78	17	95	287	0	0	0	287	710
% CARS & PEDS	0	0	0	0	0	95.2	0	88.1	91.7	89.9	0	0	83	100	39.6	37.4	0	0	0	37.4	51.7
U-TURNS & BIKES	0	0	0	0	0	0	0	0	1	1	129	0	0	0	129	441	0	0	0	441	571
% U-TURNS & BIKES	0	0	0	0	0	0	0	0	8.3	0.3	100	0	0	0	53.8	57.5	0	0	0	57.5	41.6

RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at E Hazeldell Ave (Fire Signal)
Date: Wednesday, October 1, 2014

File Name : US 13 at Hazeldell Ave
Site Code :
Start Date : 10/1/2014

Groups Printed- CARS & PEDS - TURNS & BIKES - TRUCKS

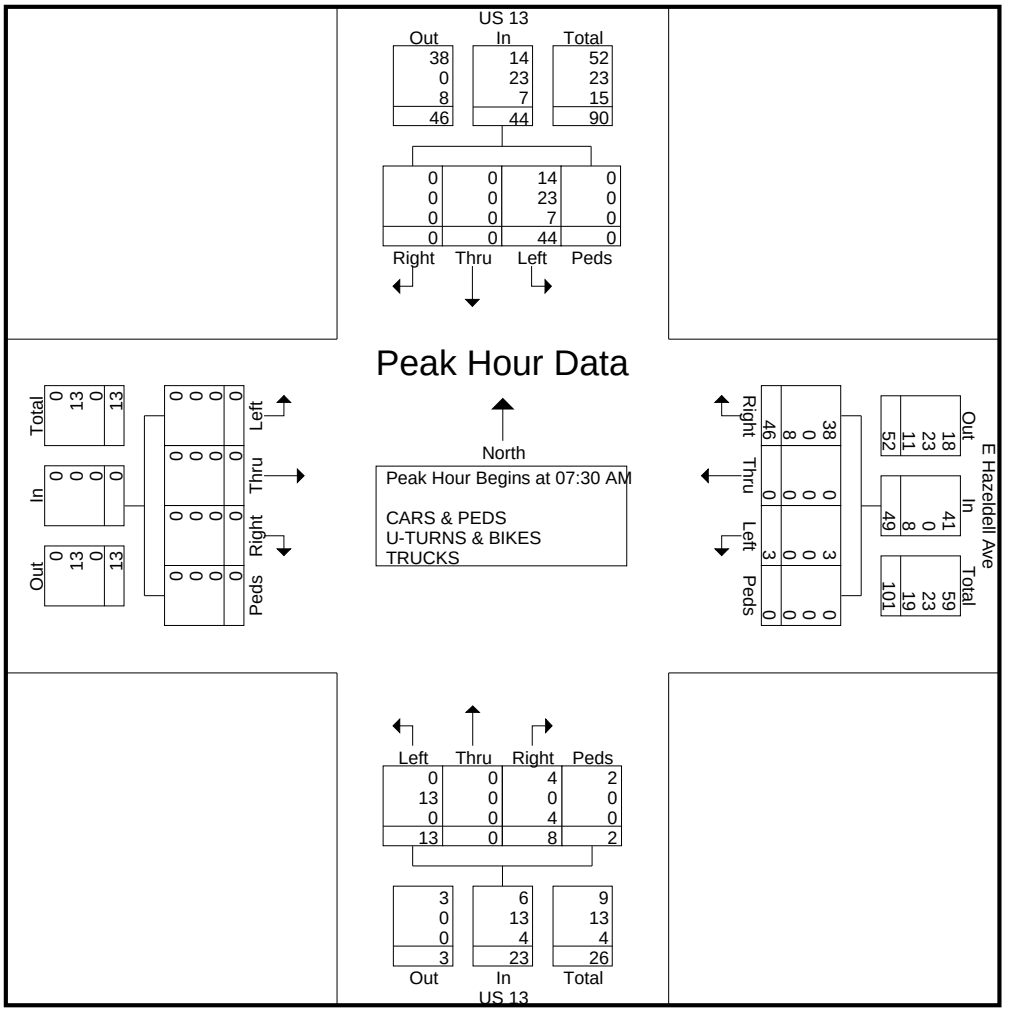
	Eastbound					E Hazeldell Ave Westbound					US 13 Northbound					US 13 Southbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
TRUCKS	0	0	0	0	0	4	0	32	0	36	0	0	16	0	16	39	0	0	0	39	91
% TRUCKS	0	0	0	0	0	4.8	0	11.9	0	9.9	0	0	17	0	6.7	5.1	0	0	0	5.1	6.6

RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at E Hazeldell Ave (Fire Signal)
Date: Wednesday, October 1, 2014

File Name : US 13 at Hazeldell Ave
Site Code :
Start Date : 10/1/2014
Page No : 3

	Eastbound					E Hazeldell Ave Westbound					US 13 Northbound					US 13 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	**2**	0	16	0	18	4	0	3	**1**	**8**	11	0	0	0	11	37
07:45 AM	0	0	0	0	0	1	0	6	0	7	0	0	**4**	0	4	11	0	0	0	11	22
08:00 AM	0	0	0	0	0	0	0	**20**	0	**20**	**5**	0	0	0	5	**13**	0	0	0	**13**	**38**
08:15 AM	0	0	0	0	0	0	0	4	0	4	4	0	1	1	6	9	0	0	0	9	19
Total Volume	0	0	0	0	0	3	0	46	0	49	13	0	8	2	23	44	0	0	0	44	116
% App. Total	0	0	0	0		6.1	0	93.9	0		56.5	0	34.8	8.7		100	0	0	0		
PHF	.000	.000	.000	.000	.000	.375	.000	.575	.000	.613	.650	.000	.500	.500	.719	.846	.000	.000	.000	.846	.763
CARS & PEDS																					
% CARS & PEDS	0	0	0	0	0	100	0	82.6	0	83.7	0	0	50.0	100	26.1	31.8	0	0	0	31.8	52.6
U-TURNS & BIKES	0	0	0	0	0	0	0	0	0	0	13	0	0	0	13	23	0	0	0	23	36
% U-TURNS & BIKES	0	0	0	0	0	0	0	0	0	0	100	0	0	0	56.5	52.3	0	0	0	52.3	31.0
TRUCKS	0	0	0	0	0	0	0	8	0	8	0	0	4	0	4	7	0	0	0	7	19
% TRUCKS	0	0	0	0	0	0	0	17.4	0	16.3	0	0	50.0	0	17.4	15.9	0	0	0	15.9	16.4

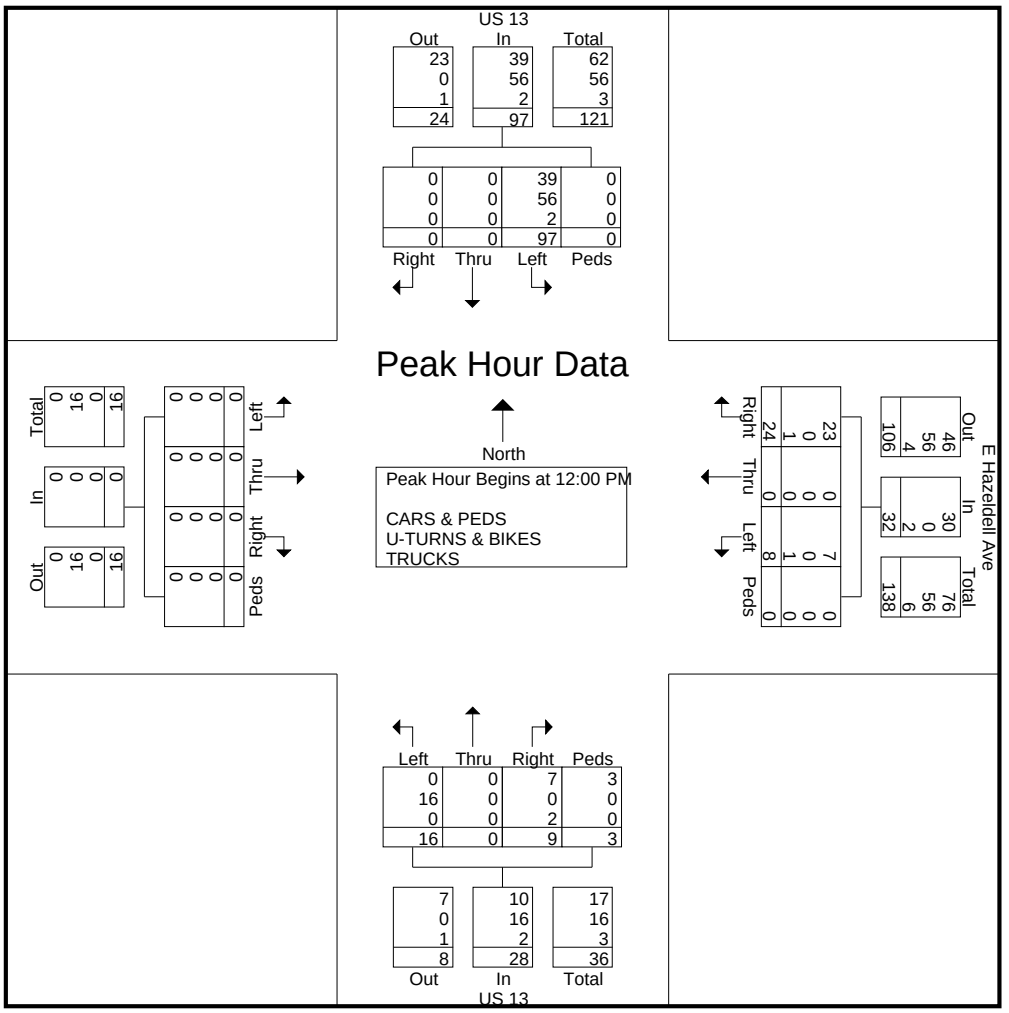


RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at E Hazeldell Ave (Fire Signal)
Date: Wednesday, October 1, 2014

File Name : US 13 at Hazeldell Ave
Site Code :
Start Date : 10/1/2014

	Eastbound					E Hazeldell Ave Westbound					US 13 Northbound					US 13 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	0	0	0	0	0	0	0	6	0	6	2	0	0	0	2	18	0	0	0	18	26
12:15 PM	0	0	0	0	0	2	0	6	0	8	**8**	0	4	0	**12**	23	0	0	0	23	43
12:30 PM	0	0	0	0	0	**3**	0	**7**	0	**10**	3	0	0	1	4	**31**	0	0	0	**31**	**45**
12:45 PM	0	0	0	0	0	3	0	5	0	8	3	0	**5**	**2**	10	25	0	0	0	25	43
Total Volume	0	0	0	0	0	8	0	24	0	32	16	0	9	3	28	97	0	0	0	97	157
% App. Total	0	0	0	0		25	0	75	0		57.1	0	32.1	10.7		100	0	0	0		
PHF	.000	.000	.000	.000	.000	.667	.000	.857	.000	.800	.500	.000	.450	.375	.583	.782	.000	.000	.000	.782	.872
CARS & PEDS																					
% CARS & PEDS	0	0	0	0	0	87.5	0	95.8	0	93.8	0	0	77.8	100	35.7	40.2	0	0	0	40.2	50.3
U-TURNS & BIKES	0	0	0	0	0	0	0	0	0	0	16	0	0	0	16	56	0	0	0	56	72
% U-TURNS & BIKES	0	0	0	0	0	0	0	0	0	0	100	0	0	0	57.1	57.7	0	0	0	57.7	45.9
TRUCKS	0	0	0	0	0	1	0	1	0	2	0	0	2	0	2	2	0	0	0	2	6
% TRUCKS	0	0	0	0	0	12.5	0	4.2	0	6.3	0	0	22.2	0	7.1	2.1	0	0	0	2.1	3.8

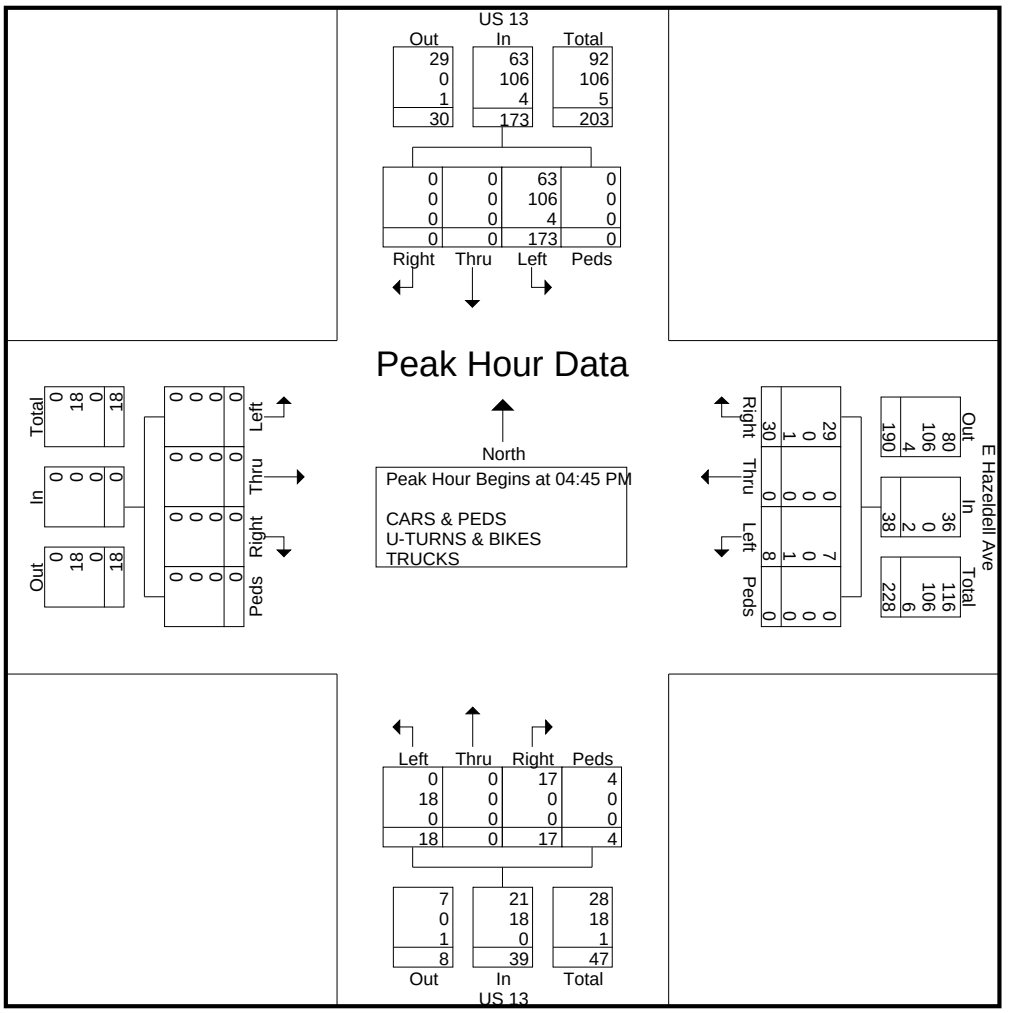


RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at E Hazeldell Ave (Fire Signal)
Date: Wednesday, October 1, 2014

File Name : US 13 at Hazeldell Ave
Site Code :
Start Date : 10/1/2014

	Eastbound					E Hazeldell Ave Westbound					US 13 Northbound					US 13 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	2	0	7	0	9	3	0	5	0	8	39	0	0	0	39	56
05:00 PM	0	0	0	0	0	**3**	0	8	0	11	3	0	**8**	**3**	**14**	**50**	0	0	0	**50**	**75**
05:15 PM	0	0	0	0	0	2	0	4	0	6	**6**	0	2	0	8	39	0	0	0	39	53
05:30 PM	0	0	0	0	0	1	0	**11**	0	**12**	6	0	2	1	9	45	0	0	0	45	66
Total Volume	0	0	0	0	0	8	0	30	0	38	18	0	17	4	39	173	0	0	0	173	250
% App. Total	0	0	0	0		21.1	0	78.9	0		46.2	0	43.6	10.3		100	0	0	0		
PHF	.000	.000	.000	.000	.000	.667	.000	.682	.000	.792	.750	.000	.531	.333	.696	.865	.000	.000	.000	.865	.833
CARS & PEDS																					
% CARS & PEDS	0	0	0	0	0	87.5	0	96.7	0	94.7	0	0	100	100	53.8	36.4	0	0	0	36.4	48.0
U-TURNS & BIKES	0	0	0	0	0	0	0	0	0	0	18	0	0	0	18	106	0	0	0	106	124
% U-TURNS & BIKES	0	0	0	0	0	0	0	0	0	0	100	0	0	0	46.2	61.3	0	0	0	61.3	49.6
TRUCKS	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	4	0	0	0	4	6
% TRUCKS	0	0	0	0	0	12.5	0	3.3	0	5.3	0	0	0	0	0	2.3	0	0	0	2.3	2.4



RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at Memorial Drive
Date: Wednesday, October 1, 2014

File Name : US 13 at Memorial Dr
Site Code :
Start Date : 10/1/2014
Page No : 1

Groups Printed- CARS & PEDS - TURNS, BIKES & RT from Thru EB - TRUCKS

	Memorial Dr Eastbound					Memorial Dr Westbound					US 13 Northbound					US 13 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	5	4	11	0	20	31	6	51	0	88	3	416	56	4	479	26	165	6	1	198	785
07:15 AM	4	3	14	0	21	45	6	52	1	104	11	410	59	5	485	30	188	7	0	225	835
07:30 AM	5	3	12	0	20	43	3	88	0	134	6	431	66	1	504	34	204	6	0	244	902
07:45 AM	6	0	8	0	14	46	2	63	0	111	6	405	59	1	471	42	245	2	0	289	885
Total	20	10	45	0	75	165	17	254	1	437	26	1662	240	11	1939	132	802	21	1	956	3407
08:00 AM	6	2	12	0	20	43	4	42	0	89	6	451	56	2	515	38	168	5	0	211	835
08:15 AM	7	2	10	0	19	36	1	54	1	92	3	432	83	5	523	35	214	2	0	251	885
08:30 AM	3	3	8	0	14	38	2	41	0	81	8	415	49	0	472	28	176	0	0	204	771
08:45 AM	0	2	15	1	18	28	3	44	0	75	9	505	80	1	595	33	224	7	0	264	952
Total	16	9	45	1	71	145	10	181	1	337	26	1803	268	8	2105	134	782	14	0	930	3443
09:00 AM	1	1	10	0	12	42	2	29	0	73	12	312	39	2	365	42	184	4	0	230	680
09:15 AM	3	7	9	0	19	32	5	25	1	63	2	224	54	1	281	30	192	4	0	226	589
09:30 AM	1	3	14	0	18	30	1	25	0	56	4	248	46	2	300	31	198	5	0	234	608
09:45 AM	7	5	5	0	17	32	3	39	0	74	9	256	59	0	324	16	212	6	0	234	649
Total	12	16	38	0	66	136	11	118	1	266	27	1040	198	5	1270	119	786	19	0	924	2526
11:00 AM	2	7	13	0	22	31	4	25	0	60	8	215	58	2	283	36	207	3	0	246	611
11:15 AM	5	4	10	0	19	36	3	24	0	63	14	230	51	0	295	32	242	8	0	282	659
11:30 AM	3	3	16	1	23	35	3	45	0	83	9	250	51	0	310	29	244	8	1	282	698
11:45 AM	3	2	12	0	17	51	1	31	1	84	17	254	62	1	334	51	234	9	0	294	729
Total	13	16	51	1	81	153	11	125	1	290	48	949	222	3	1222	148	927	28	1	1104	2697
12:00 PM	6	2	16	1	25	39	1	40	0	80	13	246	70	1	330	55	264	3	1	323	758
12:15 PM	4	4	18	1	27	46	2	43	0	91	16	267	62	1	346	44	244	6	0	294	758
12:30 PM	3	3	9	0	15	55	6	30	1	92	10	262	59	1	332	56	299	4	0	359	798
12:45 PM	3	6	8	1	18	33	6	37	0	76	9	255	73	3	340	39	288	6	0	333	767
Total	16	15	51	3	85	173	15	150	1	339	48	1030	264	6	1348	194	1095	19	1	1309	3081
02:00 PM	9	5	10	2	26	32	1	27	0	60	14	235	63	1	313	35	267	1	0	303	702
02:15 PM	5	5	14	2	26	42	2	19	0	63	10	232	68	1	311	40	301	8	0	349	749
02:30 PM	10	6	11	1	28	42	3	28	1	74	14	214	60	0	288	32	297	7	1	337	727
02:45 PM	3	3	11	1	18	57	5	37	0	99	9	283	65	1	358	27	308	5	1	341	816
Total	27	19	46	6	98	173	11	111	1	296	47	964	256	3	1270	134	1173	21	2	1330	2994
03:00 PM	4	4	11	0	19	36	8	26	0	70	8	237	68	2	315	43	305	8	0	356	760
03:15 PM	6	5	13	0	24	34	8	28	0	70	19	247	69	0	335	38	345	7	0	390	819
03:30 PM	7	6	16	1	30	43	4	28	0	75	7	246	63	7	323	43	360	7	0	410	838
03:45 PM	7	4	15	0	26	46	5	24	1	76	10	244	89	3	346	45	380	12	1	438	886
Total	24	19	55	1	99	159	25	106	1	291	44	974	289	12	1319	169	1390	34	1	1594	3303
04:00 PM	5	3	27	1	36	49	2	40	0	91	12	224	63	3	302	53	339	8	1	401	830
04:15 PM	4	10	14	0	28	35	2	30	0	67	11	284	66	1	362	41	447	11	0	499	956
04:30 PM	4	9	22	0	35	37	5	49	0	91	13	235	56	6	310	36	361	4	0	401	837
04:45 PM	5	9	13	0	27	29	6	39	0	74	11	277	86	3	377	47	478	3	0	528	1006
Total	18	31	76	1	126	150	15	158	0	323	47	1020	271	13	1351	177	1625	26	1	1829	3629
05:00 PM	4	1	9	0	14	62	0	65	0	127	10	203	68	2	283	50	461	8	0	519	943
05:15 PM	4	4	9	0	17	35	0	48	0	83	6	296	90	2	394	65	436	8	0	509	1003
05:30 PM	5	4	12	0	21	37	3	48	1	89	13	233	87	4	337	47	452	7	0	506	953
05:45 PM	4	5	13	0	22	56	3	38	0	97	5	258	82	0	345	44	397	11	0	452	916
Total	17	14	43	0	74	190	6	199	1	396	34	990	327	8	1359	206	1746	34	0	1986	3815
Grand Total	163	149	450	13	775	1444	121	1402	8	2975	347	10432	2335	69	13183	1413	10326	216	7	11962	28895
Apprch %	21	19.2	58.1	1.7		48.5	4.1	47.1	0.3		2.6	79.1	17.7	0.5		11.8	86.3	1.8	0.1		
Total %	0.6	0.5	1.6	0	2.7	5	0.4	4.9	0	10.3	1.2	36.1	8.1	0.2	45.6	4.9	35.7	0.7	0	41.4	
CARS & PEDS	141	131	382	9	663	1166	96	1214	8	2484	261	8787	1975	64	11087	1236	8933	196	6	10371	24605
% CARS & PEDS	86.5	87.9	84.9	69.2	85.5	80.7	79.3	86.6	100	83.5	75.2	84.2	84.6	92.8	84.1	87.5	86.5	90.7	85.7	86.7	85.2
U-TURNS, BIKES & RT from Thru EB	2	0	10	4	16	1	0	0	0	1	28	0	0	5	33	36	0	0	1	37	87

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Ellicott City, MD 21043

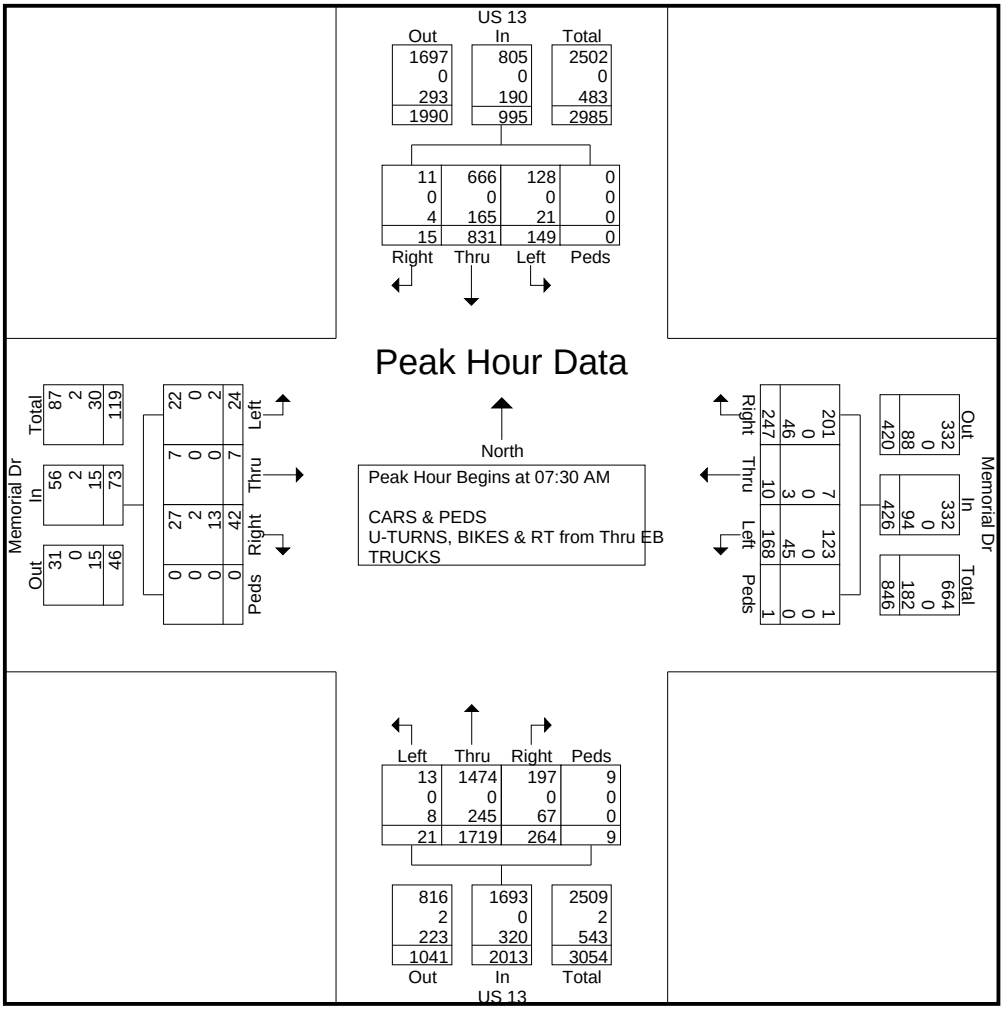
% U-TURNS, BIKES & RT from Thru EB	1.2	0	2.2	30.8	2.1	0.1	0	0	0	0	8.1	0	0	7.2	0.3	2.5	0	0	14.3	0.3	0.3
TRUCKS	20	18	58	0	96	277	25	188	0	490	58	1645	360	0	2063	141	1393	20	0	1554	4203
% TRUCKS	12.3	12.1	12.9	0	12.4	19.2	20.7	13.4	0	16.5	16.7	15.8	15.4	0	15.6	10	13.5	9.3	0	13	14.5

RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at Memorial Drive
Date: Wednesday, October 1, 2014

File Name : US 13 at Memorial Dr
Site Code :
Start Date : 10/1/2014

	Memorial Dr Eastbound					Memorial Dr Westbound					US 13 Northbound					US 13 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	5	**3**	**12**	0	**20**	43	3	**88**	0	**134**	**6**	431	66	1	504	34	204	**6**	0	244	**902**
07:45 AM	6	0	8	0	14	**46**	2	63	0	111	6	405	59	1	471	**42**	**245**	2	0	**289**	885
08:00 AM	6	2	12	0	20	43	**4**	42	0	89	6	**451**	56	2	515	38	168	5	0	211	835
08:15 AM	**7**	2	10	0	19	36	1	54	**1**	92	3	432	**83**	**5**	**523**	35	214	2	0	251	885
Total Volume	24	7	42	0	73	168	10	247	1	426	21	1719	264	9	2013	149	831	15	0	995	3507
% App. Total	32.9	9.6	57.5	0		39.4	2.3	58	0.2		1	85.4	13.1	0.4		15	83.5	1.5	0		
PHF	.857	.583	.875	.000	.913	.913	.625	.702	.250	.795	.875	.953	.795	.450	.962	.887	.848	.625	.000	.861	.972
CARS & PEDS												1474									
% CARS & PEDS	91.7	100	64.3	0	76.7	73.2	70.0	81.4	100	77.9	61.9	85.7	74.6	100	84.1	85.9	80.1	73.3	0	80.9	82.3
U-TURNS, BIKES & RT from Thru EB	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% U-TURNS, BIKES & RT from Thru EB	0	0	4.8	0	2.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
TRUCKS	2	0	13	0	15	45	3	46	0	94	8	245	67	0	320	21	165	4	0	190	619
% TRUCKS	8.3	0	31.0	0	20.5	26.8	30.0	18.6	0	22.1	38.1	14.3	25.4	0	15.9	14.1	19.9	26.7	0	19.1	17.7

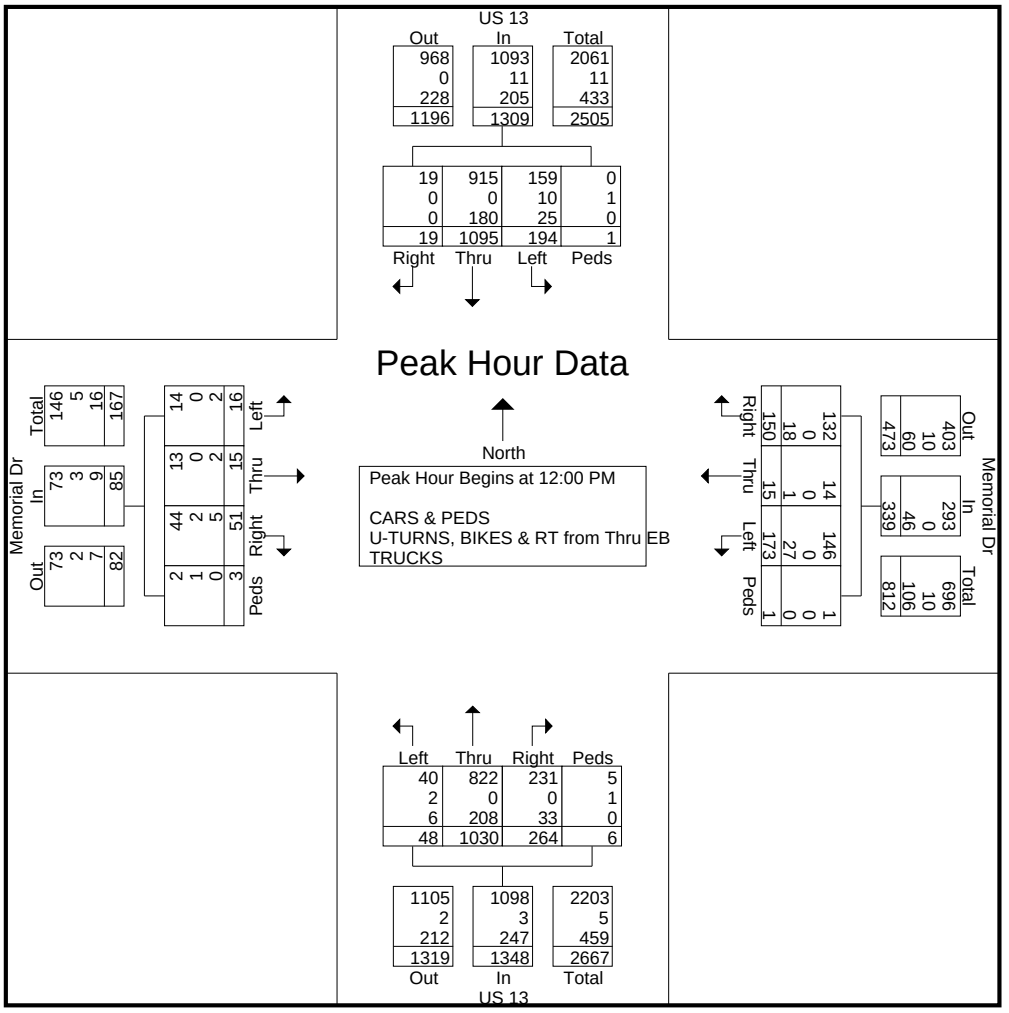


RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at Memorial Drive
Date: Wednesday, October 1, 2014

File Name : US 13 at Memorial Dr
Site Code :
Start Date : 10/1/2014

	Memorial Dr Eastbound					Memorial Dr Westbound					US 13 Northbound					US 13 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	**6**	2	16	**1**	25	39	1	40	0	80	13	246	70	1	330	55	264	3	**1**	323	758
12:15 PM	4	4	**18**	1	**27**	46	2	**43**	0	91	**16**	**267**	62	1	**346**	44	244	**6**	0	294	758
12:30 PM	3	3	9	0	15	**55**	**6**	30	**1**	**92**	10	262	59	1	332	**56**	**299**	4	0	**359**	**798**
12:45 PM	3	**6**	8	1	18	33	6	37	0	76	9	255	**73**	**3**	340	39	288	6	0	333	767
Total Volume	16	15	51	3	85	173	15	150	1	339	48	1030	264	6	1348	194	1095	19	1	1309	3081
% App. Total	18.8	17.6	60	3.5		51	4.4	44.2	0.3		3.6	76.4	19.6	0.4		14.8	83.7	1.5	0.1		
PHF	.667	.625	.708	.750	.787	.786	.625	.872	.250	.921	.750	.964	.904	.500	.974	.866	.916	.792	.250	.912	.965
CARS & PEDS % CARS & PEDS	87.5	86.7	86.3	66.7	85.9	84.4	93.3	88.0	100	86.4	83.3	79.8	87.5	83.3	81.5	82.0	83.6	100	0	83.5	83.0
U-TURNS, BIKES & RT from Thru EB	0	0	2	1	3	0	0	0	0	0	2	0	0	1	3	10	0	0	1	11	17
% U-TURNS, BIKES & RT from Thru EB	0	0	3.9	33.3	3.5	0	0	0	0	0	4.2	0	0	16.7	0.2	5.2	0	0	100	0.8	0.6
TRUCKS	2	2	5	0	9	27	1	18	0	46	6	208	33	0	247	25	180	0	0	205	507
% TRUCKS	12.5	13.3	9.8	0	10.6	15.6	6.7	12.0	0	13.6	12.5	20.2	12.5	0	18.3	12.9	16.4	0	0	15.7	16.5

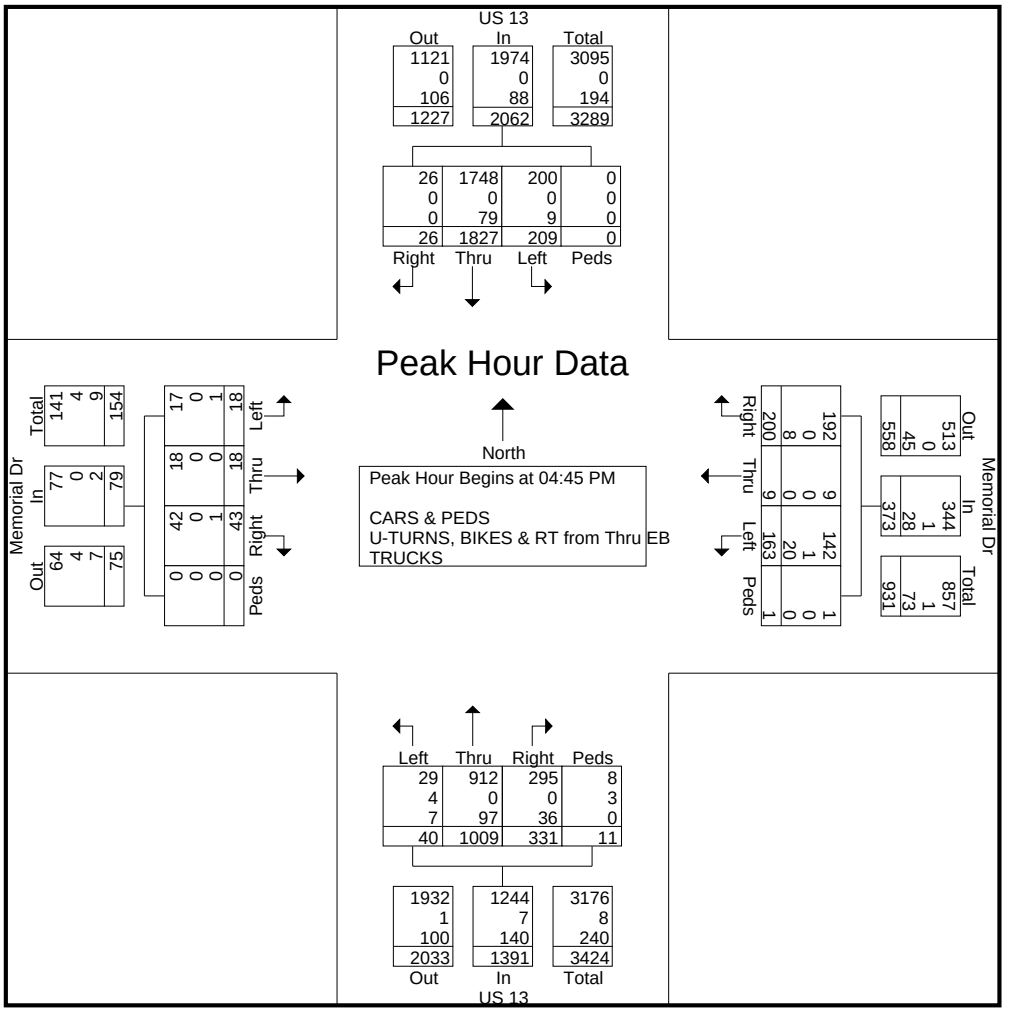


RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at Memorial Drive
Date: Wednesday, October 1, 2014

File Name : US 13 at Memorial Dr
Site Code :
Start Date : 10/1/2014
Page No : 5

	Memorial Dr Eastbound					Memorial Dr Westbound					US 13 Northbound					US 13 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	**5**	**9**	**13**	0	**27**	29	**6**	39	0	74	11	277	86	3	377	47	**478**	3	0	**528**	**1006**
05:00 PM	4	1	9	0	14	**62**	0	**65**	0	**127**	10	203	68	2	283	50	461	**8**	0	519	943
05:15 PM	4	4	9	0	17	35	0	48	0	83	6	**296**	**90**	2	**394**	**65**	436	8	0	509	1003
05:30 PM	5	4	12	0	21	37	3	48	**1**	89	**13**	233	87	**4**	337	47	452	7	0	506	953
Total Volume	18	18	43	0	79	163	9	200	1	373	40	1009	331	11	1391	209	1827	26	0	2062	3905
% App. Total	22.8	22.8	54.4	0		43.7	2.4	53.6	0.3		2.9	72.5	23.8	0.8		10.1	88.6	1.3	0		
PHF	.900	.500	.827	.000	.731	.657	.375	.769	.250	.734	.769	.852	.919	.688	.883	.804	.956	.813	.000	.976	.970
CARS & PEDS																	1748				
% CARS & PEDS	94.4	100	97.7	0	97.5	87.1	100	96.0	100	92.2	72.5	90.4	89.1	72.7	89.4	95.7	95.7	100	0	95.7	93.2
U-TURNS, BIKES & RT from Thru EB	0	0	0	0	0	1	0	0	0	1	4	0	0	3	7	0	0	0	0	0	8
% U-TURNS, BIKES & RT from Thru EB	0	0	0	0	0	0.6	0	0	0	0.3	10.0	0	0	27.3	0.5	0	0	0	0	0	0.2
TRUCKS	1	0	1	0	2	20	0	8	0	28	7	97	36	0	140	9	79	0	0	88	258
% TRUCKS	5.6	0	2.3	0	2.5	12.3	0	4.0	0	7.5	17.5	9.6	10.9	0	10.1	4.3	4.3	0	0	4.3	6.6



RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at Hessler Blvd
Date: Wednesday, October 1, 2014

File Name : US 13 at Hessler Blvd
Site Code : 00000000
Start Date : 10/1/2014
Page No : 1

Groups Printed- CARS & PEDS - TURNS & BIKES - TRUCKS

	Hessler Blvd Eastbound					Comcast Driveway Westbound					US 13 Northbound					US 13 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	2	0	2	0	4	6	1	11	0	18	2	462	9	0	473	7	190	5	0	202	697
07:15 AM	3	0	5	0	8	10	1	15	0	26	4	462	8	0	474	16	209	15	1	241	749
07:30 AM	4	0	6	0	10	11	0	13	0	24	20	500	5	0	525	21	227	9	1	258	817
07:45 AM	5	1	11	1	18	8	1	17	0	26	7	458	8	0	473	17	270	11	1	299	816
Total	14	1	24	1	40	35	3	56	0	94	33	1882	30	0	1945	61	896	40	3	1000	3079
08:00 AM	4	1	10	1	16	9	2	10	0	21	14	474	11	0	499	21	192	8	0	221	757
08:15 AM	9	0	8	1	18	6	2	10	0	18	11	470	13	0	494	17	237	10	1	265	795
08:30 AM	7	0	12	0	19	9	0	7	0	16	11	439	9	0	459	12	182	13	0	207	701
08:45 AM	11	1	18	1	31	3	1	11	0	15	19	522	6	0	547	15	244	12	0	271	864
Total	31	2	48	3	84	27	5	38	0	70	55	1905	39	0	1999	65	855	43	1	964	3117
09:00 AM	11	0	27	0	38	9	0	8	0	17	12	323	7	0	342	13	193	18	2	226	623
09:15 AM	12	1	28	0	41	8	0	5	0	13	18	228	7	0	253	17	186	21	2	226	533
09:30 AM	6	0	21	0	27	10	1	4	0	15	15	242	9	0	266	8	204	11	3	226	534
09:45 AM	6	0	20	0	26	7	1	3	0	11	15	279	7	0	301	9	207	22	1	239	577
Total	35	1	96	0	132	34	2	20	0	56	60	1072	30	0	1162	47	790	72	8	917	2267
11:00 AM	14	0	35	0	49	10	0	1	0	11	34	209	3	0	246	12	201	12	0	225	531
11:15 AM	13	1	40	0	54	8	4	3	0	15	33	224	3	0	260	9	234	21	0	264	593
11:30 AM	28	3	18	0	49	6	1	3	0	10	68	233	2	0	303	23	255	41	0	319	681
11:45 AM	19	1	55	0	75	10	5	2	0	17	64	216	8	0	288	23	228	69	0	320	700
Total	74	5	148	0	227	34	10	9	0	53	199	882	16	0	1097	67	918	143	0	1128	2505
12:00 PM	22	6	73	1	102	5	0	7	0	12	56	228	10	0	294	9	242	47	0	298	706
12:15 PM	39	2	87	0	128	8	0	1	0	9	60	248	6	0	314	12	198	44	0	254	705
12:30 PM	27	0	76	1	104	6	5	4	0	15	56	234	3	0	293	16	274	59	0	349	761
12:45 PM	31	1	90	0	122	4	1	2	0	7	46	247	2	0	295	8	237	63	3	311	735
Total	119	9	326	2	456	23	6	14	0	43	218	957	21	0	1196	45	951	213	3	1212	2907
02:00 PM	26	4	42	1	73	8	0	3	0	11	45	221	3	0	269	7	252	31	0	290	643
02:15 PM	37	22	66	3	128	7	1	3	0	11	31	219	6	0	256	2	275	42	6	325	720
02:30 PM	30	0	59	0	89	4	0	0	0	4	45	201	9	0	255	5	270	31	2	308	656
02:45 PM	40	8	50	1	99	7	2	0	0	9	48	270	4	0	322	4	282	59	5	350	780
Total	133	34	217	5	389	26	3	6	0	35	169	911	22	0	1102	18	1079	163	13	1273	2799
03:00 PM	25	0	50	1	76	11	1	1	0	13	34	228	6	0	268	4	293	37	0	334	691
03:15 PM	16	0	61	0	77	6	1	1	0	8	48	227	8	0	283	5	320	35	3	363	731
03:30 PM	25	0	68	0	93	6	1	0	0	7	40	242	0	0	282	4	334	40	1	379	761
03:45 PM	29	0	63	0	92	13	0	1	0	14	44	229	3	0	276	4	361	44	0	409	791
Total	95	0	242	1	338	36	3	3	0	42	166	926	17	0	1109	17	1308	156	4	1485	2974
04:00 PM	30	0	48	2	80	10	0	2	0	12	47	221	2	0	270	0	342	33	1	376	738
04:15 PM	28	5	80	0	113	5	0	0	0	5	52	264	2	0	318	3	414	31	0	448	884
04:30 PM	24	2	57	3	86	6	1	2	0	9	39	244	3	0	286	8	336	50	0	394	775
04:45 PM	28	0	69	0	97	8	1	3	0	12	40	281	2	1	324	14	451	53	0	518	951
Total	110	7	254	5	376	29	2	7	0	38	178	1010	9	1	1198	25	1543	167	1	1736	3348
05:00 PM	29	0	57	0	86	26	0	3	0	29	51	219	4	2	276	18	436	70	1	525	916
05:15 PM	38	4	79	0	121	23	1	2	0	26	47	295	2	0	344	27	408	55	0	490	981
05:30 PM	24	0	78	1	103	13	0	4	0	17	46	240	1	0	287	35	415	37	4	491	898
05:45 PM	25	0	69	1	95	21	0	2	0	23	44	257	1	0	302	25	360	39	3	427	847
Total	116	4	283	2	405	83	1	11	0	95	188	1011	8	2	1209	105	1619	201	8	1933	3642
Grand Total	727	63	1638	19	2447	327	35	164	0	526	1266	10556	192	3	12017	450	9959	1198	41	11648	26638
Apprch %	29.7	2.6	66.9	0.8		62.2	6.7	31.2	0		10.5	87.8	1.6	0		3.9	85.5	10.3	0.4		
Total %	2.7	0.2	6.1	0.1	9.2	1.2	0.1	0.6	0	2	4.8	39.6	0.7	0	45.1	1.7	37.4	4.5	0.2	43.7	
CARS & PEDS	720	63	1638	15	2436	303	33	152	0	488	1152	8792	176	1	10121	415	9959	1198	41	11613	24658
% CARS & PEDS	99	100	100	78.9	99.6	92.7	94.3	92.7	0	92.8	91	83.3	91.7	33.3	84.2	92.2	100	100	100	99.7	92.6
U-TURNS & BIKES	7	0	0	4	11	0	0	0	0	0	40	0	0	2	42	35	0	0	0	35	88
% U-TURNS & BIKES	1	0	0	21.1	0.4	0	0	0	0	0	3.2	0	0	66.7	0.3	7.8	0	0	0	0.3	0.3

RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at Hessler Blvd
Date: Wednesday, October 1, 2014

File Name : US 13 at Hessler Blvd
Site Code : 00000000
Start Date : 10/1/2014

Groups Printed- CARS & PEDS - TURNS & BIKES - TRUCKS

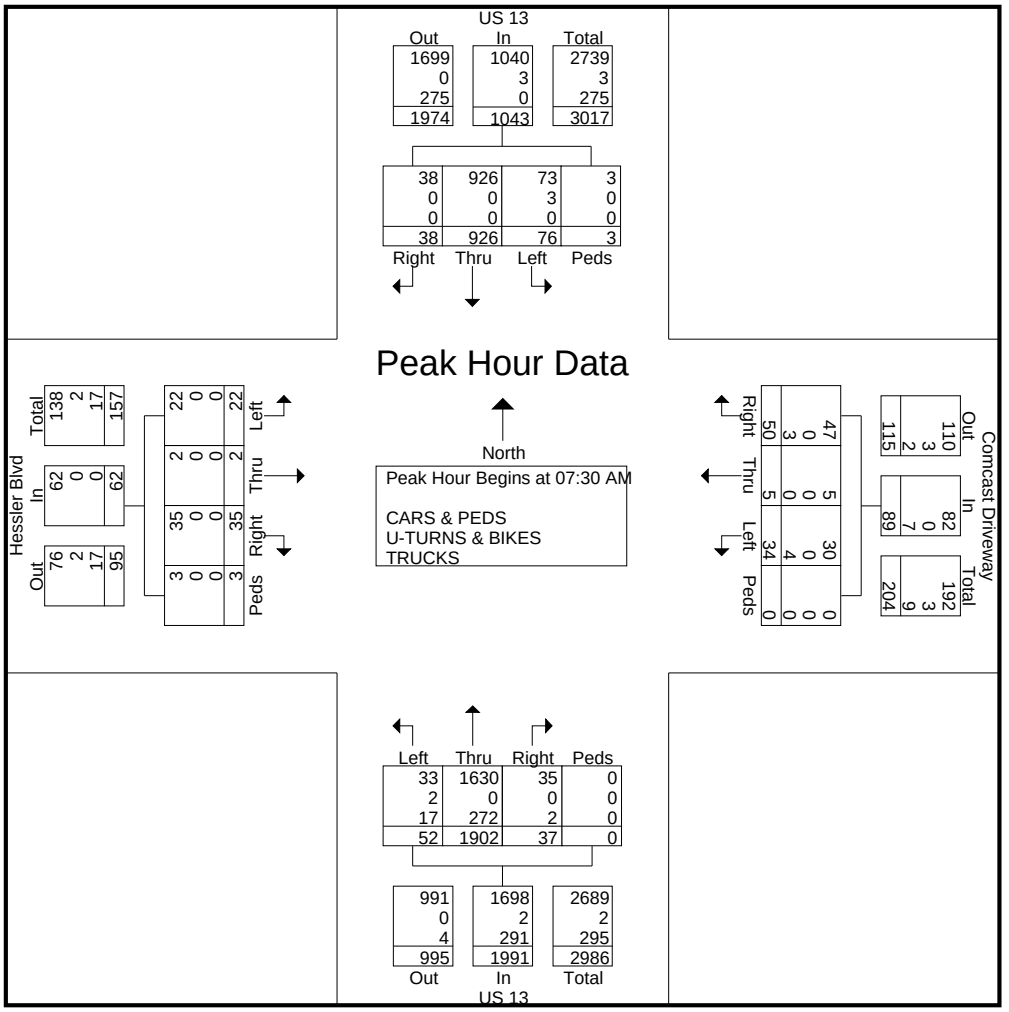
	Hessler Blvd Eastbound					Comcast Driveway Westbound					US 13 Northbound					US 13 Southbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
TRUCKS	0	0	0	0	0	24	2	12	0	38	74	1764	16	0	1854	0	0	0	0	0	1892
% TRUCKS	0	0	0	0	0	7.3	5.7	7.3	0	7.2	5.8	16.7	8.3	0	15.4	0	0	0	0	0	7.1

RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at Hessler Blvd
Date: Wednesday, October 1, 2014

File Name : US 13 at Hessler Blvd
Site Code : 00000000
Start Date : 10/1/2014
Page No : 3

	Hessler Blvd Eastbound					Comcast Driveway Westbound					US 13 Northbound					US 13 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	4	0	6	0	10	**11**	0	13	0	24	**20**	**500**	5	0	**525**	**21**	227	9	**1**	258	**817**
07:45 AM	5	**1**	**11**	**1**	**18**	8	1	**17**	0	**26**	7	458	8	0	473	17	**270**	**11**	1	**299**	816
08:00 AM	4	1	10	1	16	9	**2**	10	0	21	14	474	11	0	499	21	192	8	0	221	757
08:15 AM	**9**	0	8	1	18	6	2	10	0	18	11	470	**13**	0	494	17	237	10	1	265	795
Total Volume	22	2	35	3	62	34	5	50	0	89	52	1902	37	0	1991	76	926	38	3	1043	3185
% App. Total	35.5	3.2	56.5	4.8		38.2	5.6	56.2	0		2.6	95.5	1.9	0		7.3	88.8	3.6	0.3		
PHF	.611	.500	.795	.750	.861	.773	.625	.735	.000	.856	.650	.951	.712	.000	.948	.905	.857	.864	.750	.872	.975
CARS & PEDS												1630									
% CARS & PEDS	100	100	100	100	100	88.2	100	94.0	0	92.1	63.5	85.7	94.6	0	85.3	96.1	100	100	100	99.7	90.5
U-TURNS & BIKES	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	3	0	0	0	3	5
% U-TURNS & BIKES	0	0	0	0	0	0	0	0	0	0	3.8	0	0	0	0.1	3.9	0	0	0	0.3	0.2
TRUCKS	0	0	0	0	0	4	0	3	0	7	17	272	2	0	291	0	0	0	0	0	298
% TRUCKS	0	0	0	0	0	11.8	0	6.0	0	7.9	32.7	14.3	5.4	0	14.6	0	0	0	0	0	9.4

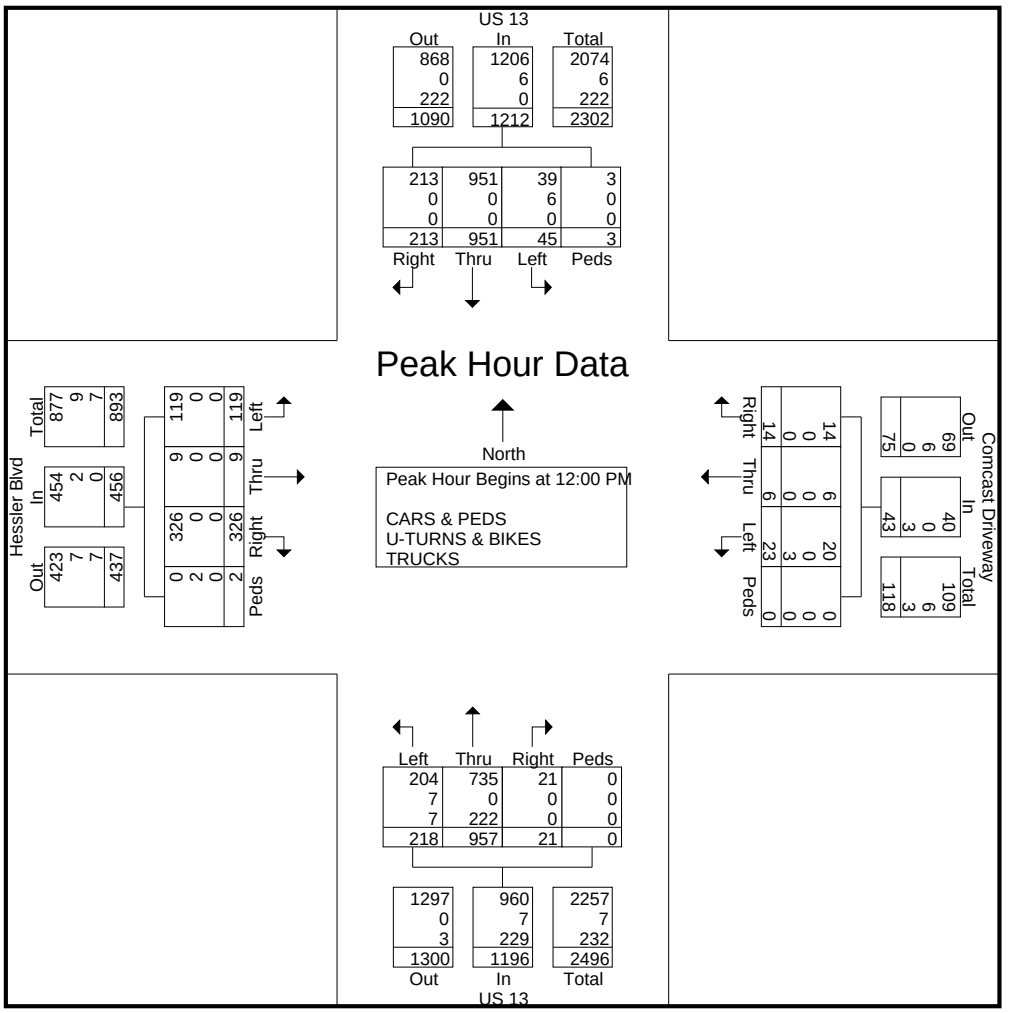


RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at Hessler Blvd
Date: Wednesday, October 1, 2014

File Name : US 13 at Hessler Blvd
Site Code : 00000000
Start Date : 10/1/2014
Page No : 4

	Hessler Blvd Eastbound					Comcast Driveway Westbound					US 13 Northbound					US 13 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	22	**6**	73	**1**	102	5	0	**7**	0	12	56	228	**10**	0	294	9	242	47	0	298	706
12:15 PM	**39**	2	87	0	**128**	**8**	0	1	0	9	**60**	**248**	6	0	**314**	12	198	44	0	254	705
12:30 PM	27	0	76	1	104	6	**5**	4	0	**15**	56	234	3	0	293	**16**	**274**	59	0	**349**	**761**
12:45 PM	31	1	**90**	0	122	4	1	2	0	7	46	247	2	0	295	8	237	**63**	**3**	311	735
Total Volume	119	9	326	2	456	23	6	14	0	43	218	957	21	0	1196	45	951	213	3	1212	2907
% App. Total	26.1	2	71.5	0.4		53.5	14	32.6	0		18.2	80	1.8	0		3.7	78.5	17.6	0.2		
PHF	.763	.375	.906	.500	.891	.719	.300	.500	.000	.717	.908	.965	.525	.000	.952	.703	.868	.845	.250	.868	.955
CARS & PEDS																					
% CARS & PEDS	100	100	100	0	99.6	87.0	100	100	0	93.0	93.6	76.8	100	0	80.3	86.7	100	100	100	99.5	91.5
U-TURNS & BIKES	0	0	0	2	2	0	0	0	0	0	7	0	0	0	7	6	0	0	0	6	15
% U-TURNS & BIKES	0	0	0	100	0.4	0	0	0	0	0	3.2	0	0	0	0.6	13.3	0	0	0	0.5	0.5
TRUCKS	0	0	0	0	0	3	0	0	0	3	7	222	0	0	229	0	0	0	0	0	232
% TRUCKS	0	0	0	0	0	13.0	0	0	0	7.0	3.2	23.2	0	0	19.1	0	0	0	0	0	8.0

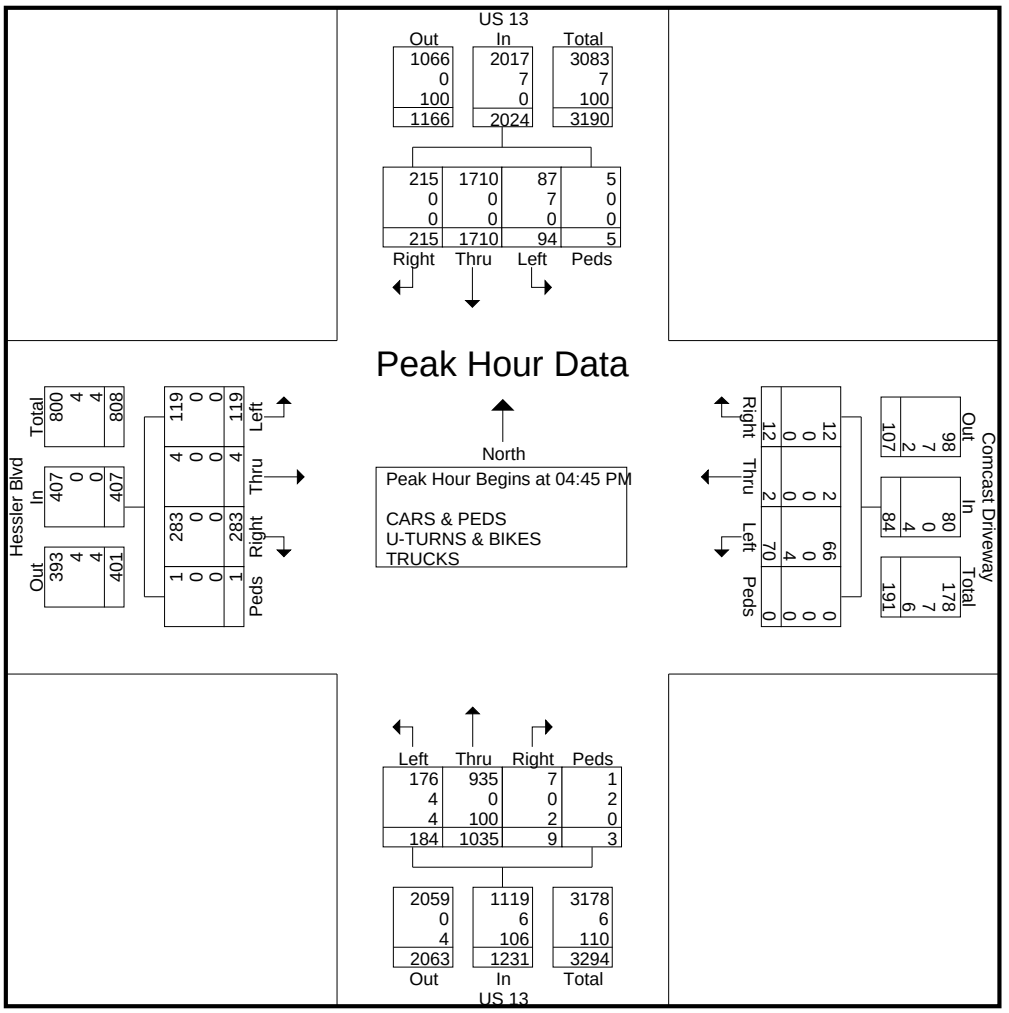


RJM Engineering, Inc.
6031 University Blvd, Suite 209
Ellicott City, MD 21043

Location: Wilmington, DE
Intersection: US 13 at Hessler Blvd
Date: Wednesday, October 1, 2014

File Name : US 13 at Hessler Blvd
Site Code : 00000000
Start Date : 10/1/2014

	Hessler Blvd Eastbound					Comcast Driveway Westbound					US 13 Northbound					US 13 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	28	0	69	0	97	8	**1**	3	0	12	40	281	2	1	324	14	**451**	53	0	518	951
05:00 PM	29	0	57	0	86	**26**	0	3	0	**29**	**51**	219	**4**	**2**	276	18	436	**70**	1	**525**	916
05:15 PM	**38**	**4**	**79**	0	**121**	23	1	2	0	26	47	**295**	2	0	**344**	27	408	55	0	490	**981**
05:30 PM	24	0	78	**1**	103	13	0	**4**	0	17	46	240	1	0	287	**35**	415	37	**4**	491	898
Total Volume	119	4	283	1	407	70	2	12	0	84	184	1035	9	3	1231	94	1710	215	5	2024	3746
% App. Total	29.2	1	69.5	0.2		83.3	2.4	14.3	0		14.9	84.1	0.7	0.2		4.6	84.5	10.6	0.2		
PHF	.783	.250	.896	.250	.841	.673	.500	.750	.000	.724	.902	.877	.563	.375	.895	.671	.948	.768	.313	.964	.955
CARS & PEDS																	1710				
% CARS & PEDS	100	100	100	100	100	94.3	100	100	0	95.2	95.7	90.3	77.8	33.3	90.9	92.6	100	100	100	99.7	96.7
U-TURNS & BIKES	0	0	0	0	0	0	0	0	0	0	4	0	0	2	6	7	0	0	0	7	13
% U-TURNS & BIKES	0	0	0	0	0	0	0	0	0	0	2.2	0	0	66.7	0.5	7.4	0	0	0	0.3	0.3
TRUCKS	0	0	0	0	0	4	0	0	0	4	4	100	2	0	106	0	0	0	0	0	110
% TRUCKS	0	0	0	0	0	5.7	0	0	0	4.8	2.2	9.7	22.2	0	8.6	0	0	0	0	0	2.9



TRAFFIC COUNT SUMMARY

Intersection: US 13 and I-495 Ramps
Intersection #: 35

NOTES: (none)

Count performed by: Parenty, Dalton, Erony, Hergesheimer

Date: 10/16/12

CARS

	SB US 13				WB 495 off ramp				NB US 13				EB 495 off ramp				15 Minute
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Total
Time																	
7:00-7:15	0	75	8	83	95	0	0	95	227	303	0	530	113	1	4	118	826
7:15-7:30	0	100	9	109	110	0	0	110	269	340	0	609	114	1	5	120	948
7:30-7:45	0	139	10	149	221	0	0	221	259	333	0	592	161	0	11	172	1134
7:45-8:00	0	126	7	133	236	0	0	236	221	347	0	568	126	0	6	132	1069
8:00-8:15	0	133	12	145	145	0	0	145	212	356	0	568	125	0	10	135	993
8:15-8:30	0	124	7	131	134	0	0	134	173	314	0	487	77	0	7	84	836
8:30-8:45	0	126	7	133	116	0	0	116	203	296	0	499	113	0	3	116	864
8:45-9:00	0	124	5	129	89	0	0	89	175	247	0	422	132	0	10	142	782
TOTAL	0	947	65	1012	1146	0	0	1146	1739	2536	0	4275	961	2	56	1019	7452

TRUCKS

	SB US 13				WB 495 off ramp				NB US 13				EB 495 off ramp				15 Minute
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Total
Time																	
7:00-7:15				0				0				0				0	0
7:15-7:30				0				0				0				0	0
7:30-7:45				0				0				0				0	0
7:45-8:00				0				0				0				0	0
8:00-8:15				0				0				0				0	0
8:15-8:30				0				0				0				0	0
8:30-8:45				0				0				0				0	0
8:45-9:00				0				0				0				0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDS

	SB US 13	WB 495 off ramp	NB US 13	EB 495 off ramp	15 Minute
	Total	Total	Total	Total	Total
Time					
7:00-7:15	0				0
7:15-7:30	0				0
7:30-7:45	0				0
7:45-8:00	0				0
8:00-8:15	0				0
8:15-8:30	0				0
8:30-8:45	0				0
8:45-9:00	0				0
TOTAL	0	0	0	0	0

Intersection Peak Hour

	SB US 13				WB 495 off ramp				NB US 13				EB 495 off ramp				Peak Hour
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Total
Car and Truck Totals																	
7:15-7:30	0	100	9	**109**	110	0	0	**110**	269	340	0	**609**	114	1	5	**120**	948
7:30-7:45	0	139	10	**149**	221	0	0	**221**	259	333	0	**592**	161	0	11	**172**	1134
7:45-8:00	0	126	7	**133**	236	0	0	**236**	221	347	0	**568**	126	0	6	**132**	1069
8:00-8:15	0	133	12	**145**	145	0	0	**145**	212	356	0	**568**	125	0	10	**135**	993
Total Volume	**0**	**498**	**38**	**536**	**712**	**0**	**0**	**712**	**961**	**1376**	**0**	**2337**	**526**	**1**	**32**	**559**	**4144**
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peds				0				0				0				0	0
Tk %	#DIV/0!	0.0%	0.0%	0.0%	0.0%	#DIV/0!	#DIV/0!	0.0%	0.0%	0.0%	#DIV/0!	0.0%	0.0%	0.0%	0.0%	0.0%	
PHF	#DIV/0!	0.90	0.79	0.90	0.75	#DIV/0!	#DIV/0!	0.75	0.89	0.97	#DIV/0!	0.96	0.82	0.25	0.73	0.81	0.91

Count performed by: Durkin, Moser, Fisher

Date: 10/18/12

CARS

	SB US 13				WB 495 off ramp				NB US 13				EB 495 off ramp				15 Minute
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Total
Time																	
4:00-4:15	0	262		262	44	0	0	44	149	167	0	316	207	1	4	212	834
4:15-4:30	0	308		308	30	0	0	30	156	194	0	350	178	1	5	184	872
4:30-4:45	0	344		344	31	0	0	31	174	177	0	351	177	0	11	188	914
4:45-5:00	0	294		294	40	0	0	40	138	204	0	342	179	0	6	185	861
5:00-5:15	0	303		303	53	0	0	53	158	178	0	336	201	0	10	211	903
5:15-5:30	0	282		282	48	0	0	48	124	167	0	291	232	0	7	239	860
5:30-5:45	0	243		243	31	0	0	31	145	175	0	320	172	0	3	175	769
5:45-6:00	0	245		245	42	0	0	42	112	161	0	273	181	0	10	191	751
TOTAL	0	2281	0	2281	319	0	0	319	1156	1423	0	2579	1527	2	56	1585	6764

TRUCKS

	SB US 13				WB 495 off ramp				NB US 13				EB 495 off ramp				15 Minute
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Total
Time																	
4:00-4:15				0	3	0	0	3	12	2	0	14	24			24	41
4:15-4:30				0	4	0	0	4	4	5	0	9	11			11	24
4:30-4:45				0	3	0	0	3	3	7	0	10	11			11	24
4:45-5:00				0	4	0	0	4	6	5	0	11	12			12	27
5:00-5:15				0	3	0	0	3	8	2	0	10	6			6	19
5:15-5:30				0	4	0	0	4	8	3	0	11	9			9	24
5:30-5:45				0	3	0	0	3	7	0	0	7	10			10	20
5:45-6:00				0	4	0	0	4	9	3	0	12	14			14	30
TOTAL	0	0	0	0	28	0	0	28	57	27	0	84	97	0	0	97	209

PEDS

Time	SB US 13 Total	WB 495 off ramp Total	NB US 13 Total	EB 495 off ramp Total	15 Minute Total
4:00-4:15	0	0	0	0	0
4:15-4:30	0	0	0	0	0
4:30-4:45	0	0	0	0	0
4:45-5:00	0	0	0	0	0
5:00-5:15	0	0	0	0	0
5:15-5:30	0	0	0	0	0
5:30-5:45	0	0	0	0	0
5:45-6:00	0	0	0	0	0
TOTAL	0	0	0	0	0

Intersection Peak Hour

	SB US 13				WB 495 off ramp				NB US 13				EB 495 off ramp				Peak Hour
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Total
Car and Truck Totals																	
4:15-4:30	0	308	0	**308**	34	0	0	**34**	160	199	0	**359**	189	1	5	**195**	896
4:30-4:45	0	344	0	**344**	34	0	0	**34**	177	184	0	**361**	188	0	11	**199**	938
4:45-5:00	0	294	0	**294**	44	0	0	**44**	144	209	0	**353**	191	0	6	**197**	888
5:00-5:15	0	303	0	**303**	56	0	0	**56**	166	180	0	**346**	207	0	10	**217**	922
Total Volume	**0**	**1249**	**0**	**1249**	**168**	**0**	**0**	**168**	**647**	**772**	**0**	**1419**	**775**	**1**	**32**	**808**	**3644**
Trucks	0	0	0	0	14	0	0	14	25	17	0	42	38	0	0	38	94
Peds				0				0				0				0	0
Tk %	#DIV/0!	0.0%	#DIV/0!	0.0%	8.3%	#DIV/0!	#DIV/0!	8.3%	3.9%	2.2%	#DIV/0!	3.0%	4.9%	0.0%	0.0%	4.7%	
PHF	#DIV/0!	0.91	#DIV/0!	0.91	0.75	#DIV/0!	#DIV/0!	0.75	0.91	0.92	#DIV/0!	0.98	0.94	0.25	0.73	0.93	0.97

TRAFFIC COUNT SUMMARY

Intersection: US 13 and Herald St
Intersection #: 36

NOTES: (none)

Count performed by: Wong, Vare, Ewell

Date: 10/16/12

CARS

	SB Market St				EB US 13/Herald				NB Market St				WB US 13/Herald				15 Minute
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Total
Time																	
7:00-7:15	0	36	1	37	6	61	1	68	26	33	1	60	3	10	19	32	197
7:15-7:30	0	30	0	30	4	55	2	61	24	45	0	69	4	18	14	36	196
7:30-7:45	0	33	2	35	7	45	3	55	22	40	3	65	3	14	19	36	191
7:45-8:00	0	41	15	56	5	41	1	47	26	52	0	78	4	20	9	33	214
8:00-8:15	2	33	18	53	12	58	9	79	27	56	4	87	9	17	18	44	263
8:15-8:30	2	35	16	53	9	34	6	49	20	75	2	97	4	14	12	30	229
8:30-8:45	0	33	3	36	6	45	7	58	20	43	1	64	1	6	18	25	183
8:45-9:00	0	27	1	28	11	39	8	58	16	22	1	39	2	9	20	31	156
TOTAL	4	268	56	328	60	378	37	475	181	366	12	559	30	108	129	267	1629

TRUCKS

	SB Market St				EB US 13/Herald				NB Market St				WB US 13/Herald				15 Minute
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Total
Time																	
7:00-7:15	0	1	0	1	0	2	0	2	0	3	1	4	2	4	0	6	13
7:15-7:30	0	2	0	2	0	0	2	2	0	5	1	6	1	3	0	4	14
7:30-7:45	0	1	0	1	2	5	2	9	0	3	2	5	1	5	0	6	21
7:45-8:00	0	2	1	3	0	0	0	0	0	6	4	10	1	2	0	3	16
8:00-8:15	1	0	1	2	1	0	0	1	0	4	2	6	0	7	0	7	16
8:15-8:30	0	0	1	1	0	0	0	0	0	5	1	6	1	5	2	8	15
8:30-8:45	0	2	1	3	1	2	1	4	0	2	2	4	1	10	1	12	23
8:45-9:00	0	0	2	2	1	0	2	3	0	6	2	8	0	6	2	8	21
TOTAL	1	8	6	15	5	9	7	21	0	34	15	49	7	42	5	54	139

PEDS

	SB Market St	EB US 13/Herald	NB Market St	WB US 13/Herald	15 Minute
	Total	Total	Total	Total	Total
Time					
7:00-7:15	0				0
7:15-7:30	0				0
7:30-7:45	0				0
7:45-8:00	0				0
8:00-8:15	0				0
8:15-8:30	0				0
8:30-8:45	0				0
8:45-9:00	0				0
TOTAL	0	0	0	0	0

Intersection Peak Hour

	SB Market St				EB US 13/Herald				NB Market St				WB US 13/Herald				Peak Hour
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Total
Car and Truck Totals																	
7:30-7:45	0	34	2	36	9	50	5	64	22	43	5	70	4	19	19	42	212
7:45-8:00	0	43	16	59	5	41	1	47	26	58	4	88	5	22	9	36	230
8:00-8:15	3	33	19	55	13	58	9	80	27	60	6	93	9	24	18	51	279
8:15-8:30	2	35	17	54	9	34	6	49	20	80	3	103	5	19	14	38	244
Total Volume	**5**	**145**	**54**	**204**	**36**	**183**	**21**	**240**	**95**	**241**	**18**	**354**	**23**	**84**	**60**	**167**	**965**
Trucks	1	3	3	7	3	5	2	10	0	18	9	27	3	19	2	24	68
Peds				0				0				0				0	0
Tk %	20.0%	2.1%	5.6%	3.4%	8.3%	2.7%	9.5%	4.2%	0.0%	7.5%	50.0%	7.6%	13.0%	22.6%	3.3%	14.4%	
PHF	0.42	0.84	0.71	0.86	0.69	0.79	0.58	0.75	0.88	0.75	0.75	0.86	0.64	0.88	0.79	0.82	0.86

Count performed by: Moser, Ewell, King

Date: 10/24/12

CARS

	SB Market St				EB US 13/Herald				NB Market St				WB US 13/Herald				15 Minute
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Total
Time																	
4:00-4:15	0	57	0	57	28	12	2	42	2	49	10	61	5	24	56	85	245
4:15-4:30	0	83	4	87	35	20	5	60	3	54	16	73	3	41	41	85	305
4:30-4:45	0	69	1	70	28	10	2	40	3	46	8	57	5	33	67	105	272
4:45-5:00	0	58	0	58	34	14	2	50	4	82	10	96	12	45	52	109	313
5:00-5:15	0	74	1	75	25	18	4	47	2	50	7	59	9	40	73	122	303
5:15-5:30	0	61	0	61	26	15	3	44	2	44	6	52	7	32	54	93	250
5:30-5:45	0	55	2	57	31	18	1	50	2	47	6	55	7	23	38	68	230
5:45-6:00	0	65	0	65	18	12	1	31	3	47	5	55	6	28	29	63	214
TOTAL	0	522	8	530	225	119	20	364	21	419	68	508	54	266	410	730	2132

TRUCKS

	SB Market St				EB US 13/Herald				NB Market St				WB US 13/Herald				15 Minute
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Total
Time																	
4:00-4:15				0				3				3				2	8
4:15-4:30				2				2				0				1	5
4:30-4:45				0				2				1				0	3
4:45-5:00				1				2				0				0	3
5:00-5:15				0				2				1				0	3
5:15-5:30				0				2				1				1	4
5:30-5:45				0				1				0				0	1
5:45-6:00				0				0				0				1	1
TOTAL	0	0	0	3	0	0	0	14	0	0	0	6	0	0	0	5	28

PEDS

Time	SB Market St Total	EB US 13/Herald Total	NB Market St Total	WB US 13/Herald Total	15 Minute Total
4:00-4:15	0	0	0	0	0
4:15-4:30	0	0	0	0	0
4:30-4:45	0	0	0	0	0
4:45-5:00	0	0	0	0	0
5:00-5:15	0	0	0	0	0
5:15-5:30	0	0	0	0	0
5:30-5:45	0	0	0	0	0
5:45-6:00	0	0	0	0	0
TOTAL	0	0	0	0	0

Intersection Peak Hour

	SB Market St				EB US 13/Herald				NB Market St				WB US 13/Herald				Peak Hour
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Total
Car and Truck Totals																	
4:15-4:30	0	83	4	**89**	35	20	5	**62**	3	54	16	**73**	3	41	41	**86**	310
4:30-4:45	0	69	1	**70**	28	10	2	**42**	3	46	8	**58**	5	33	67	**105**	275
4:45-5:00	0	58	0	**59**	34	14	2	**52**	4	82	10	**96**	12	45	52	**109**	316
5:00-5:15	0	74	1	**75**	25	18	4	**49**	2	50	7	**60**	9	40	73	**122**	306
Total Volume	**0**	**284**	**6**	**293**	**122**	**62**	**13**	**205**	**12**	**232**	**41**	**287**	**29**	**159**	**233**	**422**	**1207**
Trucks	0	0	0	1	0	0	0	8	0	0	0	3	0	0	0	1	13
Peds				0				0				0				0	0
Tk %	#DIV/0!	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	3.9%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.2%	
PHF	#DIV/0!	0.86	0.38	0.82	0.87	0.78	0.65	0.83	0.75	0.71	0.64	0.75	0.60	0.88	0.80	0.86	0.95

Appendix B

Pedestrian Pushbutton Sign Evaluation

US 13, SR 273 to Market Street/Walnut Street Split
Pedestrian Pushbutton Sign Evaluation
January 2015

Pushbutton Sign Location		US 13 at							
		SR 273		School Lane		Lincoln Avenue		Harrison Avenue/Stahl Avenue	
		Existing Sign	Proposed Sign[1]	Existing Sign	Proposed Sign[1]	Existing Sign	Proposed Sign[1]	Existing Sign	Proposed Sign[1]
Northwest Corner	North Leg	-	-	R10-3e-DE	R10-3e-DE3	-	-	-	-
	West Leg	R10-3e-DE	R10-3e			-	-	-	-
North Leg Median	Westernmost	-	-	R10-3e-DE	R10-3e	-	-	-	-
	Easternmost	-	-	No Sign	R10-3e	-	-	-	-
Northeast Corner	North Leg	-	-	R10-3e-DE	R10-3e-DE2	-	-	-	-
	East Leg	R10-3e-DE	R10-3e	-	-	R10-3e-DE	OK	R10-3e-DE	R10-3e
Southwest Corner	South Leg	R10-3e-DE	R10-3e-DE2	-	-	-	-	-	-
	West Leg	R10-3e-DE	R10-3e	R10-3e-DE	R10-3e	-	-	-	-
South Leg Median	Westernmost	R10-3e-DE	R10-3e	-	-	-	-	-	-
	Easternmost	R10-3e-DE	R10-3e	-	-	-	-	-	-
Southeast Corner	South Leg	R10-3e-DE	R10-3e-DE3	-	-	-	-	-	-
	East Leg	R10-3e-DE	R10-3e-DE3	-	-	R10-3e-DE	R10-3e	R10-3e-DE	R10-3e

Pushbutton Sign Location		US 13 at							
		Roosevelt Avenue		Bacon Avenue/Boulden Boulevard		Marsh Lane/Wildel Avenue[2]		Memorial Drive	
		Existing Sign	Proposed Sign[1]	Existing Sign	Proposed Sign[1]	Existing Sign	Proposed Sign[1]	Existing Sign	Proposed Sign[1]
Northwest Corner	North Leg	R10-3e-DE	R10-3e-DE2	-	-	-	-	-	-
	West Leg	-	-	R10-3e-DE	R10-3e	No Sign	R10-3b	R10-3e modified	R10-3e
North Leg Median	Westernmost	R10-3e-DE	R10-3e	-	-	No Sign		-	-
	Easternmost	R10-3e-DE	OK	-	-			-	-
Northeast Corner	North Leg	R10-3e-DE	R10-3e-DE3	-	-	No Sign	R10-3d	-	-
	East Leg			-	-	-	-	R10-3e	OK
Southwest Corner	South Leg	-	-	R10-3e-DE	R10-3e-DE2	No Sign	R10-3d-DE w/ tape arrows	R10-3e-DE	R10-3e-DE3
	West Leg	-	-	R10-3e-DE	R10-3e				
South Leg Median	Westernmost	R10-3e-DE (w/ tape arrows)	OK	R10-3e-DE	Sign OK, but need tape arrows	-	-	R10-3e modified	R10-3e
	Easternmost					-	-	R10-3e modified	R10-3e
Southeast Corner	South Leg	-	-	R10-3e-DE	R10-3e-DE2	-	-	R10-3e	R10-3d-DE
	East Leg	R10-3e-DE	R10-3e	-	-	-	-		

[1] In compliance with *2011 DE MUTCD* Section 2B.51 (Pedestrian Crossing Signs)

[2] Non-countdown pedestrian signals at this intersection

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