Review of Pedestrian Safety Audits

Built Environment Subcommittee of Advisory Council on Walkability and Pedestrian Awareness

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Agenda

• Pedestrian safety and the Delaware SHSP
• Roadway Safety Audit process
• SR 2 Pedestrian Safety Study summary
• US 13 Pedestrian Safety Study summary
• Next Steps
SHSP Background / DE’s SHSP History

• AASHTO SHSP (1998)
• Federal Legislation
  • SAFETEA-LU
  • MAP-21
  • FAST Act
• Toward Zero Deaths: A National Strategy on Highway Safety
Delaware’s SHSP

• MISSION STATEMENT:
  • The *Delaware Strategic Highway Safety Plan: Toward Zero Deaths* aims to eliminate fatalities and serious injuries on Delaware’s roadways through a multi-agency approach that utilizes education, enforcement, engineering, and emergency medical service strategies.

• OVERALL GOAL:
  • The goal of the *Delaware Strategic Highway Safety Plan: Toward Zero Deaths* is to achieve a reduction of at least 3 fatalities and 15 serious injuries annually and continue to reduce the total number of fatalities and serious injuries to achieve at least a 50 percent reduction by 2035.
Delaware’s SHSP Emphasis Area History

<table>
<thead>
<tr>
<th>2006 / 2008 SHSP</th>
<th>2010 SHSP</th>
<th>2015 SHSP</th>
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<tbody>
<tr>
<td>3. Increasing Seatbelt Usage</td>
<td>P3. Increasing Seatbelt Usage</td>
<td>3. Impaired Driving</td>
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<td>7. Minimizing the Consequences of Run-Off-Road Crashes</td>
<td>P7. Improving Motorcycle Safety and Increasing Motorcycle Awareness</td>
<td>7. Pedestrians</td>
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<td>9. Improving Information and Decision Support Services</td>
<td>S2. Making Heavy Vehicle Travel Safer</td>
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<td>S3. Designing Safer Work Zones</td>
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<td>S4. Improving Traffic Records</td>
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An emphasis area for pedestrian safety has been included in all DE SHSP versions.

\[ P = \text{Primary Emphasis Area} \]
\[ S = \text{Secondary Emphasis Area} \]
Pedestrian Crash Trends

2007 to 2014 Pedestrian Fatalities & Serious Injuries

- 90% occurred in urban areas
- 69% were in New Castle County
- 63% were male
- 58% involved no contributing factor on the part of the vehicle driver
- 52% were 20 to 49 years old
- 51% occurred between 4 PM and 11 PM
- 42% occurred along divided roadways
- 36% occurred on principal arterials
- 33% of pedestrian fatalities were impaired
- 33% occurred during dark (unlit) conditions
- 33% occurred on a Friday or Saturday
- 25% occurred at an intersection

Source: 2015 DE SHSP
SHSP Strategies to Reduce Pedestrian Fatalities and Serious Injuries

• Continue a multi-agency approach to addressing pedestrian safety issues

• Develop and distribute consistent public information messages to increase public awareness and laws on pedestrian safety

• Conduct high-visibility enforcement campaigns targeting both pedestrians and drivers to promote pedestrian safety

• Improve infrastructure (e.g., sidewalks, crosswalks, lighting, transit facilities) to reduce pedestrian exposure and the potential for pedestrian/vehicle conflicts, and increase pedestrian visibility and awareness

• Research and implement the latest pedestrian safety “best practice” treatments and devices

• Conduct pedestrian safety audits at high-crash locations

• Install effective countermeasures to improve pedestrian safety at high crash locations and consider pedestrians when installing roadway improvements

• Perform before/after studies to evaluate and identify the most effective pedestrian safety treatments

• Ensure drivers education instructors emphasize vehicle-pedestrian laws in their lesson plans

• Support legislative action to strengthen pedestrian safety laws and enforcement efforts

• Develop policies and/or guidelines to support pedestrian safety measures

Source: 2015 DE SHSP
Pedestrian Safety Audit

Site Selection

• DelDOT, OHS, & DSP established the Pedestrian / Bicycle Safety Working Group in February 2013
  • Also includes City of Wilmington, WILMAPCO, Dover/Kent MPO, UD T² Center, Bike Delaware, local law enforcement agencies

• DelDOT’s crash data review identified principal arterial roadways in New Castle County with a high concentration of pedestrian crashes

• DelDOT Traffic Safety leads the safety audits
Pedestrian Safety Audit Process

- Review pedestrian & bicycle crash history along corridor
- Perform pedestrian observations & counts
- Compile existing data -
  - Pedestrian facilities: sidewalk, pedestrian signals, etc.
  - Bus stop locations and ridership data
  - Roadway facilities: channelization, lighting, etc.
  - Vehicular and pedestrian volumes
- Develop existing condition maps
- Conduct walking tour of corridor with stakeholders
- Perform additional analysis to evaluate potential improvements (short and long-term)
- Present improvements to stakeholders for concurrence
Sample Existing Conditions Maps

October 2014

**Existing Conditions**

**SR 2**

St. James Church Rd to SR 141

- Traffic Signal
- Existing Bus Stop
- Bus Board/Alight
- Existing Luminaire
- Existing Sidewalk
- Pedestrian
- Non-Injury Crash
- Bicycle
- Non-Injury Crash
- Pedestrian
- Injury Crash
- Bicycle
- Injury Crash
- Pedestrian
- Fatal Crash
- Bicycle
- Fatal Crash
- Average Hourly Ped Volume
- (highest of 3 peaks)

Figure 2-3

Figure 2-4

Crash study period - January 2005 through December 2013

0 50 100 150 200 Feet
Completed Pedestrian Safety Audit Locations

- **SR 2**
  - St James Church Rd to SR 141 (2015)
- **US 13**
  - SR 273 to Market St/Walnut St Split (2015)
- **SR 273**
  - Marrows Rd to US 13 (2011)
- **US 13/US 40**
  - US 13, Sennen Blvd to SR 273
  - US 40, Buckley Blvd to US 13 (2009)
- **SR 1**
  - Five Points to Dewey Beach (2014)
KIRKWOOD HIGHWAY
PEDESTRIAN SAFETY STUDY
Summary of Recommendations
2 Study Background & Location

• SR 2 serves a high volume of vehicular traffic AND has numerous pedestrian generators

• Study Purpose
  • Review crash trends
  • Observe pedestrian activity
  • Identify pedestrian safety improvements

Final Report located on DeIDOT Website:
www.delDOT.gov/information/community_programs_and_services/DSHSP/pedestrian_safety.shtml
SR 2 Pedestrian Study Recommendations

2

• Corridor-Wide
  • Perform lighting evaluation and install roadway & bus stop lighting (completed)
  • Reduce the number and frequency of access points as part of future projects
  • Install ADA-compliant curb ramps and sidewalks as part of future projects

• SR 2 at St. James Church Rd/Griffin Dr
  • Install signalized crosswalks on south and west legs (completed)

• SR 2 at Old Capitol Trail/Midway Plaza Shopping Center driveway
  • Pursue pedestrian hybrid beacon (coordinated with adjacent signals)

• SR 2 at SR 7
  • Install Pedestrian warning signs across the NB right-turn lane (completed)
  • Install No Pedestrian Crossing & Use Crosswalk signs
  • Remove business signs that obstruct sight lights to the crosswalk on the SE corner
  • Signalize NB SR 7 right-turn and tighten turning radius (in design)
  • Relocate bus stops closer to SR 7
2 SR 2 Pedestrian Study Recommendations

- SR 2 at Kirkwood Plaza (*in design*)
  - Install protected-only left-turn phasing (*in design, pending additional evaluation*)
  - Install signalized crosswalk across SR 2 (*in design*)
  - Investigate options to remove the landscaping bed along the south side of SR 2

- SR 2 at Farrand Dr
  - Install No Pedestrian Crossing & Use Crosswalk signs
  - Remove SB right-turn acceleration lane and relocate WB bus stop closer to intersection (*in design*)

- SR 2 at Duncan Rd
  - Install No Pedestrian Crossing & Use Crosswalk signs
  - Install signalized crosswalk across north leg (*in design*)
  - Install intersection lighting (*completed*)
  - Remove SB right-turn acceleration lane and relocate WB bus stop closer to intersection (*in design*)
  - Install / replace sidewalk connections along SR 2 and Duncan Rd (long-term)

- SR 2 at Greenbank Rd
  - Perform educational outreach to Anna P. Mote Elementary School (SRTS)
  - Install School warning signs
2 SR 2 Pedestrian Study Recommendations

• SR 2 at SR 41
  • Install intersection lighting *(completed)*

• SR 2 at Albertson Boulevard
  • Remove shrubbery on SE corner
  • Install flush sidewalk in front of fire company building
  • Install signalized crosswalk on south leg *(in design)*
  • Channelize the WB right-turning movement - requires modifying the north and east leg crossings *(in design)*

• SR 2 at Prices Corner
  • Install ADA curb ramps in vicinity of intersection
  • Install signalized crosswalk across west leg of SR 2 *(in design)*
  • Consider consolidating the two EB bus stops and the two WB bus stops
  • Consolidate access points and consider relocation the EB right-turning movement into Prices Corner to Albertson Blvd as part of future
US 13 PEDESTRIAN SAFETY STUDY
SR 273 TO MARKET STREET/WALNUT STREET SPLIT
Summary of Recommendations
US 13 serves a high volume of vehicular traffic AND has numerous pedestrian generators.

Study Purpose

- Review crash trends
- Observe pedestrian activity
- Identify pedestrian safety improvements

Final Report located on DelDOT Website:

www.del dot.gov/information/community_programs_and_services/DSHSP/pedestrian_safety.shtml
Corridor-Wide: Short Term
• Upgrade pedestrian clearance intervals, as necessary
• Replace/install pushbutton signs and arrows
• Perform lighting evaluation and install roadway lighting
• Install bus stop shelters and/or benches, as warranted
• Install speed limits signs to match latest speed resolutions
US 13 Pedestrian Study Recommendations

- **Corridor-Wide: Long Term**
  - Pursue construction of sidewalk along corridor *in design*
    - US 13, US 40 to Memorial Drive Pedestrian Improvement project in the proposed FY17 to FY22 CTP
  - Install ADA-compliant curb ramps and sidewalk as part of future projects
  - Reduce the number and frequency of access points as part of future projects
  - Investigate the need for and impacts of modifying and/or closing unsignalized median openings along corridor
US 13 Pedestrian Study Recommendations

- **US 13 at SR 273**
  - Consolidate SB US 13 bus stops *(pending discussions with DTC and status of proposed New Castle Town Center)*
  - Install signalized crosswalk across north leg *(as recommended by Churchmans Road Trail Study)*

- **US 13 at School Lane**
  - Install signalized crosswalk across east leg
  - Relocate SB US 13 bus stop from south to north leg of intersection
    - Remove SB US 13 bus stop at NCC Airport right-in only access
    - Install sidewalk to connect NW corner of intersection to proposed SB US 13 bus stop
  - Install sidewalk to connect NE corner of intersection to NB US 13 bus stop

- **US 13 at Lincoln Avenue and US 13 at Harrison Avenue/Stahl Avenue**
  - Install signalized crosswalk across west leg of both intersections
US 13 Pedestrian Study Recommendations

- **US 13 at Roosevelt Avenue**
  - Install signalized crosswalk across west leg

- **US 13 at Bacon Avenue/Boulden Boulevard**
  - Install signalized crosswalk across east leg
  - Realign signalized crosswalk across south leg

- **US 13 at Marsh Lane/Wildel Avenue**
  - Relocate signalized crosswalk across US 13 to north leg of intersection, install signalized crosswalk across east leg, and install accessible pedestrian signals (APS)
    - Project to be prioritized due to request from DE Dept. of the Visually Impaired *(in design; DelDOT coordinating with NCC)*
  - Relocate NB US 13 bus stop closer to intersection
  - Remove NB US 13 bus stop located approximately 625 ft south of intersection in front of Collins Business Systems
US 13 Pedestrian Study Recommendations

- US 13 at E. Hazeldell Avenue and Memorial Drive
  - Install sidewalk along north side of large grass island on west side of US 13
  - Recommendations from follow-up study:
    - Signal timing improvements implemented at US 13 at Memorial Dr in June 2015 to increase SB left-turn capacity
    - Extend SB left-turn lane at US 13 at Memorial Drive by approximately 200 – 250 feet (maximum practical distance)

- US 13 at Hessler Boulevard
  - Install signalized crosswalks across north, east, and west legs

- US 13, north of Rogers Road
  - Install oversized Pedestrian warning signs
  - Perform enforcement and public outreach through D.A.T.E.
Next Steps

• Implementation of SR 2 and US 13 Pedestrian Study recommendations

• Continue prioritization of high pedestrian crash corridors and perform safety audits
  • US 40 – SR 72 to Buckley Boulevard (Fall 2016)
  • US 13 – Dover to Camden (Spring 2017)

• Continue implementation of SHSP strategies to reduce pedestrian fatalities and serious injuries