PROJECT STATUS AND MEDIAN SAFETY INITIATIVES UPDATE

US 13, US 40 TO MEMORIAL DRIVE
PEDESTRIAN IMPROVEMENTS
CONTRACT NO. T201601102
AGREEMENT 1710 – TASK 1.1

Delaware Pedestrian Council Meeting - July 24, 2018
National Pedestrian Fatality Rates

In 2016, Delaware was the 5th **deadliest** state for pedestrians (fatalities per capita).
The Why

Delaware Strategic Highway Safety Plan: Toward Zero Deaths

Source: June 26, 2018
Strategic Highway Safety Plan Stakeholder Summit
The Why

Delaware Strategic Highway Safety Plan: Toward Zero Deaths

Source: June 26, 2018 Strategic Highway Safety Plan Stakeholder Summit
The Why

Delaware Strategic Highway Safety Plan: Toward Zero Deaths

EA 7: Pedestrians
Pedestrian Barriers

- DelDOT is considering barrier options to prevent pedestrians from crossing midblock

Source: June 26, 2018 Strategic Highway Safety Plan Stakeholder Summit
About Pennoni

• Working with DelDOT, PennDOT, Pennsylvania Turnpike Commission, MDSHA, MDTA, VADOT, NJDOT and numerous municipalities

• DelDOT Agreement 1710 – Project Development

• DelDOT Agreement 1791 – Pedestrian Access Routes

Newark, DE Transportation Group

• Led by Philip Horsey
• 25+ bridge, highway and traffic engineers
Agenda

- The Why – Pedestrian Safety Improvements
- US 13 Corridor Progress
- Visualization Examples
- Education and Enforcement
- Median Treatments
- Q&A, Next Steps
Delaware still top-ranked in pedestrian fatalities

Josephine Peterson, The News Journal
Published 8:00 a.m. ET May 22, 2018 | Updated 3:41 p.m. ET May 24, 2018

Editor’s Note: The Pedestrian Safety Council last met in April, said Mitch Topal of the Office of Highway Safety. The council’s website had not been updated and members had not returned phone calls about the council, before the story was published.

Michelle Williams drove home past an intersection filled with police and firefighters at Kirkwood Highway and Duncan Road on May 11, exasperated she couldn’t use the turn lane.

“I remember thinking, ‘Like, are you for real?’ I needed to use that turn lane that they were in to get home,” Williams said.

A car with a broken windshield and a dismantled front bumper sat amidst flashing police lights and uniformed officers.

It wasn’t until the next morning she found out her sister, Aquisha Williams, 30, had been fatally struck by the car.
• Delaware Strategic Highway Safety Plan: pedestrian fatalities accounted for **20%** of all traffic fatalities from 2007-2014

• Along the US 13 study corridor, pedestrian fatalities accounted for **66%** of all traffic fatalities (2007-2016)

• **13%** (31 /240) of all pedestrian fatalities in Delaware from 2007-2016 occurred within the US 13 study corridor
Studies Available

- 2009 – US 40 to SR 273
- 2015 – SR 273 to Memorial Drive
- 2016 – US 40 to A Street
- Various Intersection Safety Studies
  - Former Hazard Elimination Program (HEP)
  - Highway Safety Improvements Program (HSIP)
- Available on DelDOT’s Delaware Strategic Highway Safety Plan website

Pedestrian Bicycle Working Group

The Delaware Department of Transportation, in conjunction with our partners at the Office of Highway Safety and Delaware State Police established the pedestrian bicycle safety working group in February 2013 due to the number of pedestrian and bicycle related fatalities and incapacitating injury crashes in 2012. The purpose of the working group was to develop ideas and methods for improving pedestrian and bicycle safety through engineering, education, enforcement, and emergency service related activities.Read More Information...

Pedestrian Safety Campaign

- Pedestrian Countdown Signals Press Release - October 12, 2009
- Pedestrian Countdown Signals Explained
- Pedestrian Safety Brochure
- OHNS Pedestrian Safety Information

US 13/US 40 Pedestrian Safety Study

During 2006, the State of Delaware experienced an unusually high number of pedestrian fatalities. Research conducted by DelDOT’s Division of Planning identified several corridors within New Castle County with unusually high concentrations of pedestrian crashes including US 13, US 40, and SR 273.

The US 13 and US 40 Pedestrian Safety Study evaluated the existing pedestrian accommodations for the US 13 corridor between SR 1 (Pencoyd Road) and Rte. 141 in Brandywine, and the US 40 corridor between US 13 and Rockley Road. The evaluation included an extensive data collection effort including crash data, pedestrian observations and counts, intersection turning movement counts, physical inventory, DART ridership information, and general observations of traffic operations and pedestrian activity, and an in-depth investigation of 15 pedestrian/vehicle collision crash locations. The data was collected from January through December 2006. The US 13 and US 40 Pedestrian Safety Study evaluated the existing pedestrian accommodations for the US 13 corridor between SR 1 (Pencoyd Road) and Rte. 141 in Brandywine, and the US 40 corridor between US 13 and Rockley Road. The evaluation included an extensive data collection effort including crash data, pedestrian observations and counts, intersection turning movement counts, physical inventory, DART ridership information, and general observations of traffic operations and pedestrian activity, and an in-depth investigation of 15 pedestrian/vehicle collision crash locations. The data was collected from January through December 2006. The study was completed in April 2009.

US 13/40 Photos

- Improvement Recommendation: US Route 13 From DE Route 273 To Buena Vista Drive (Figure 11A)
- Improvement Recommendation: US Route 13 From US Route 40 To Brandywine (Figure 11B)
Next Steps (from 8.22.17 Pedestrian Council Meeting)

- CTP funding for construction increased from $5M to $20M
- Capital projects in construction by FY20
- Public Workshops
- Median fencing pilot program
- Continued education and enforcement
Next Steps (from 8.22.17 Pedestrian Council Meeting)

CTP funding for construction increased from $5M to $20M
- DelDOT has $26M allocated for construction
CTP funding for construction increased from $5M to $20M
- DelDOT has $26M allocated for construction

Capital projects in construction by FY20
- Pennoni Received Design NTP

2018 CRBA

2019 Pavement & Rehabilitation
- Semi-Final Plans
- Final Plans – Winter 2018
- Spring / Summer Construction

2020 Pavement & Rehabilitation
- Semi-Final Plans
- Final Plans – Winter 2019
- Spring / Summer Construction*

* Subject to change pending I-95 Corridor Rehabilitation construction schedule
Next Steps  
(From 8.22.17 Pedestrian Council Meeting)

- **CTP funding for construction increased from $5M to $20M**
  - DelDOT has $26M allocated for construction

- **Capital projects in construction by FY20**
  - Pennoni Received Design NTP

- **Public Workshops**
  - July 24 Pedestrian Council Update
  - Virtual workshop online

**2018 CRBA**
- Pavement & Rehabilitation
  - Semi-Final Plans
  - Final Plans – Winter 2018
  - Spring / Summer Construction

**2019 Pavement & Rehabilitation**
- Winter 2019
- Spring / Summer Construction

**2020 Pavement & Rehabilitation**
- Winter 2019
- Spring / Summer Construction*

* Subject to change pending I-95 Corridor Rehabilitation construction schedule
Next Steps (from 8.22.17 Pedestrian Council Meeting)

- CTP funding for construction increased from $5M to $20M
  - DelDOT has $26M allocated for construction

- Capital projects in construction by FY20
  - Pennoni Received Design NTP

- Public Workshops
  - July 24 Pedestrian Council Update
  - Virtual workshop online

- Median fencing pilot program
  - Monthly Meetings
  - Preferred Alternatives

2018 CRBA
- 2019 Pavement & Rehabilitation
  - Semi-Final Plans
  - Final Plans - Winter 2018
  - Spring / Summer Construction

2020 Pavement & Rehabilitation
- Semi-Final Plans
- Final Plans - Winter 2019
- Spring / Summer Construction*

* Subject to change pending I-95 Corridor Rehabilitation construction schedule
Next Steps (from 8.22.17 Pedestrian Council Meeting)

- CTP funding for construction increased from $5M to $20M
  - DelDOT has $26M allocated for construction
- Capital projects in construction by FY20
  - Pennoni Received Design NTP
- Public Workshops
  - July 24 Pedestrian Council Update
  - Virtual workshop online
- Median fencing pilot program
  - Monthly
  - Preferred Alternatives
- Continued education and enforcement
  - Where we need your help!

2018 CRBA
2019 Pavement & Rehabilitation
  - Semi-Final Plans
  - Final Plans – Winter 2018
  - Spring / Summer Construction

2020 Pavement & Rehabilitation
  - Semi-Final Plans
  - Final Plans – Winter 2019
  - Spring / Summer Construction*

* Subject to change pending I-95 Corridor Rehabilitation construction schedule
Implementation Schedule

- **Pavement & Rehabilitation Project**
  - US 40 / Wilton Blvd Pedestrian Overpass / Tunnel
  - Christina River Bridge Approaches
  - Future CTP Project
  - BR 1-686 Rehabilitation

- **US 13 Corridor Progress**
  - Developer Improvement

- **2020**
  - *Pavement & Rehabilitation Project*

- **2019**
  - Pavement & Rehabilitation Project

- **2018**
  - TBD

* Subject to Change Pending I-95 Corridor Rehabilitation Construction Schedule
Recommended Improvements

(from 8.22.17 Pedestrian Council Meeting)

- **Signalized Crosswalks**
- Corridor Lighting
- ADA curb ramp upgrades
- Provide missing sidewalk links
- Relocate/consolidate transit stops
- Enhanced Signing & Striping
- Education & Enforcement
- Median Fencing
Existing Signals & Crosswalks

The Why

US 13 Corridor Progress

Existing Crosswalks (PRE-2007)

New Crosswalks Installed (2007 – Present)

Wilton Blvd
Wilmington Manor Fire Co.
3rd Ave
School Lane
Roosevelt Ave
Wildel Avenue
Memorial Drive
A Street
Bacon Ave / Boulden Blvd
Saienni Blvd
Llangollen Blvd
2nd Ave
SR 273
3rd Ave

New Castle Airport
New Castle
Delaware River
Port of Wilmington
Wilmington
Delaware River
Simonds Gardens
Collins Park

Proposed Signals & Crosswalks

SR 273
Lincoln Ave / Wilmington University
Harrison Ave / Stahl Ave
Roosevelt Ave
Bacon Ave / Boulden Blvd
Memorial Drive
Hessler Blvd
I-495 Ramps
New Sweden St
Christina Crossing Shopping Center

The Why
US 13 Corridor Progress

Proposed Crosswalks at Existing Signals
Proposed Traffic Signals and Crosswalk(s)
Signals & Crosswalks – Final Configuration

The Why

US 13 Corridor Progress

Pre-2007: 4 crossing locations

Future: 21 crossing locations

Wilton Blvd
Wilmington Manor Fire Co.
3rd Ave
School Lane
Llangollen Blvd
Quigley Blvd
SR 273
2nd Ave
Harrison Ave / Stahl Ave
Roosevelt Ave
Bacon Ave / Boulden Blvd
Gracelawn Memorial Park
Memorial Drive
Memorial University
Wildel Avenue
Christina Crossing
New Sweden St
A Street
I-495 Ramps
Lincoln Ave / Wilmington University
New Castle Airport
Collins Park
Simonds Gardens
Port of Wilmington
Delaware River
**New Signal at Gracelawn Memorial Park**

- Provides new pedestrian crossing opportunity – 1.4 miles between existing crossings
- Significant transit ridership and transit modifications
- Deter mid-block pedestrian crossings in conjunction with median fencing (16 / hour)
- Warranted based on vehicular volumes
- Previous history / Legislator request for signal
Recommended Improvements
(from 8.22.17 Pedestrian Council Meeting)

• Signalized crosswalks
• **Corridor Lighting**
• ADA curb ramp upgrades
• Provide missing sidewalk links
• Relocate/consolidate transit stops
• Enhanced Signing & Striping
• Education & Enforcement
• Median Fencing
Lighting Improvements

Installed per 2009 Pedestrian Safety Study Recommendation

The Why

US 13 Corridor Progress

Existing
Effects of Lighting on Pedestrian Safety

- US 40 to SR 273 – Lighting Installed 2011
- 4 years prior: 8 nighttime crashes, 4 fatalities
- 4 years after: 2 nighttime crashes, 2 fatalities
- 60% of pedestrian crashes occurred at night for entire study area from 2007-2016
Recommended Improvements

(from 8.22.17 Pedestrian Council Meeting)

• Signalized Crosswalks
• Corridor Lighting
• ADA curb ramp upgrades
• Provide missing sidewalk links
• Relocate/consolidate transit stops
• Enhanced Signing & Striping
• Education & Enforcement
• Median Fencing

PAR Improvements
PAR Improvements

US 13 Corridor Progress

The Why

Proposed
Proposed (Other Works)
DART Improvements

Existing
Recommended Improvements
(from 8.22.17 Pedestrian Council Meeting)

- Signalized Crosswalks
- Corridor Lighting
- ADA curb ramp upgrades
- Provide missing sidewalk links
- Relocate/consolidate transit stops
- Enhanced Pavement, Signing & Striping
- Education & Enforcement
- Median Fencing
Enhance Pavement, Signing, & Striping

The Why

US 13 Corridor Progress
Recommended Improvements
(from 8.22.17 Pedestrian Council Meeting)

- Signalized Crosswalks
- Corridor Lighting
- ADA curb ramp upgrades
- Provide missing sidewalk links
- Relocate/consolidate transit stops
- Enhanced Pavement, Signing & Striping
- Education & Enforcement
- Median Fencing

Sample Visualization Examples
Gracelawn Signal – Proposed - Plan View
Gracelawn Signal – Pedestrian View Looking North – Night
Gracelawn Signal – Looking Southbound – Day
Gracelawn Signal – Looking Southbound – Night
Gracelawn Signal – Pedestrian View Looking West – Day
Gracelawn Signal – Pedestrian View Looking West – Night
Recommended Improvements

(from 8.22.17 Pedestrian Council Meeting)

- Signalized Crosswalks
- Corridor Lighting
- ADA curb ramp upgrades
- Provide missing sidewalk links
- Relocate/consolidate transit stops
- Enhanced Signing & Striping
- **Median Fencing**
- Education & Enforcement
Median Safety Treatments

The Why
US 13 Corridor Progress
Visualizations

Median Treatments
Newport

Short Term

New Castle Airport
Collins Park
Simonds Gardens
Port of Wilmington
Delaware River
New Castle
40
273
202
141
13
9
495
95
Median Safety Treatments

The Why

US 13 Corridor Progress

Visualizations

Median Treatments

Newport

Map showing median safety treatments along US 13 corridor, with visualizations of short-term and mid-term treatments marked on the map.

- Short Term
- Mid-Term
Proven Results

Queens Boulevard Fatalities 1990 - 2016

“The Boulevard of Death”
NY-25/Queens Blvd - Queens, NYC
Proven Results

• 16 Median Treatment Sites & 16 Control Sites

• At Median Treatment Sites:
  • 14% Reduction in Total Crashes
  • 9% Reduction in Severe Crashes
  • No Effect on Ped/Bike Crashes
  • 86% Reduction in Ped/Bike Fatalities

• Rate of bike/ped crashes unchanged, but severity drastically reduced – moved from mid-block locations to intersections

• Survey Results:
  • >60% likely to cross at mid-block locations
  • >50% believe median treatments effective in preventing mid-block crossings
Existing Conditions & Challenges

- Existing Features in the Median:

Utilities and Drainage Facilities

Landscaping

Guardrail
Existing Conditions & Challenges

• Existing Features in the Median (continued):

**Emergency Service Access**

**Structures**

**Variable Median**
Existing Conditions & Challenges

• Location / Alignment
• Aesthetics
• Maintenance
• Crashworthiness
• Footing/foundation depth
• Cost
Treatments Considered

- Guardrail
- Cable Barrier
- Chain Link Fence
Treatments Considered

• Concrete Barrier
• Concrete Barrier with Bracket Mounted Fence
• Vegetation / Brush / Landscaping
Treatments Considered

- Post & Chain Fence – UD and Del State
- Decorative Fence
- Decorative Fence with Supplemental Landscaping
**Median Fencing throughout the region**

- Applications in the region

### Median Treatments

<table>
<thead>
<tr>
<th>Contract Description</th>
<th>State</th>
<th>Agency</th>
<th>Posted Speed Limit</th>
<th>AADT</th>
<th>Type</th>
<th>Status</th>
<th>Location / Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 13 from N Dover Mall Entrance to College Rd</td>
<td>DE</td>
<td>DelDOT</td>
<td>45</td>
<td>61,000</td>
<td>Post and Chain</td>
<td>Construction Complete</td>
<td>SB Shoulder</td>
</tr>
<tr>
<td>SR 141 from Morton Ave to SR 34</td>
<td>DE</td>
<td>DelDOT</td>
<td>35</td>
<td>32,000</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>SB Shoulder / Frontage</td>
</tr>
<tr>
<td>S College Ave from Kent Way to Amstel Ave</td>
<td>DE</td>
<td>DelDOT</td>
<td>25</td>
<td>10,500</td>
<td>Post and Chain</td>
<td>Construction Complete</td>
<td>Shoulders</td>
</tr>
<tr>
<td>US 40 from Old Frederick Rd to N Athol Ave</td>
<td>MD</td>
<td>MDOT</td>
<td>30</td>
<td>TBD</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>Median</td>
</tr>
<tr>
<td>Orleans St from N Central Ave to N Caroline St</td>
<td>MD</td>
<td>MDOT</td>
<td>TBD</td>
<td>TBD</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>Median</td>
</tr>
<tr>
<td>MD 41 from Cold Spring Ln to Pentwood Rd</td>
<td>MD</td>
<td>MDOT</td>
<td>TBD</td>
<td>TBD</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>Median</td>
</tr>
<tr>
<td>Cold Stream Ln from Fells Rd to I 83</td>
<td>MD</td>
<td>MDOT</td>
<td>TBD</td>
<td>TBD</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>Median</td>
</tr>
<tr>
<td>Randolph Rd from Selfridge Rd to Veers Mill Rd</td>
<td>MD</td>
<td>MDOT</td>
<td>TBD</td>
<td>TBD</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>Median</td>
</tr>
<tr>
<td>MD 170 from Storey Run Rd to S Camp Meade Rd</td>
<td>MD</td>
<td>MDOT</td>
<td>TBD</td>
<td>TBD</td>
<td>Metal &amp; Wire</td>
<td>Construction Complete</td>
<td>NB Shoulder</td>
</tr>
<tr>
<td>US 1 from Hartwick Rd to Knox Rd</td>
<td>MD</td>
<td>SHA</td>
<td>25</td>
<td>24,000</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>Median</td>
</tr>
<tr>
<td>SR 214 from Addison Rd to Cabin Branch Rd</td>
<td>MD</td>
<td>SHA</td>
<td>30</td>
<td>53,000</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>Median</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contract Description</th>
<th>State</th>
<th>Agency</th>
<th>Posted Speed Limit</th>
<th>AADT</th>
<th>Type</th>
<th>Status</th>
<th>Location / Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 29 at Briggs Chaney Rd interchange</td>
<td>MD</td>
<td>SHA</td>
<td>55</td>
<td>61,000</td>
<td>Spiked Metal</td>
<td>Construction Complete</td>
<td>NB Shoulder</td>
</tr>
<tr>
<td>US 40 from McCain Dr to Waveny Dr</td>
<td>MD</td>
<td>SHA</td>
<td>45</td>
<td>48,000</td>
<td>Powder-Coated Aluminum</td>
<td>Construction Complete</td>
<td>Median</td>
</tr>
<tr>
<td>US 50 BUS from Ward St to 10000 E Main St</td>
<td>MD</td>
<td>SHA</td>
<td>35</td>
<td>20,500</td>
<td>Metal</td>
<td>Contract Awarded</td>
<td>Median</td>
</tr>
<tr>
<td>SR 528 from SR 90 to Convention Center Dr</td>
<td>MD</td>
<td>SHA</td>
<td>35</td>
<td>30,000</td>
<td>“Dune”</td>
<td>Contract Awarded</td>
<td>Median</td>
</tr>
<tr>
<td>SR 650 from Larch Ave to Devinshire Ave</td>
<td>MD</td>
<td>SHA</td>
<td>35</td>
<td>35,000</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>SB Shoulder / Frontage</td>
</tr>
<tr>
<td>SR 650 from Holton Ln to Merrimac Dr</td>
<td>MD</td>
<td>SHA</td>
<td>35</td>
<td>38,000</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>Median</td>
</tr>
<tr>
<td>Las Vegas Blvd from Harmon Ave to Tropicana</td>
<td>NV</td>
<td>TBD</td>
<td>30</td>
<td>80,000</td>
<td>TBD</td>
<td>Construction Complete</td>
<td>Median</td>
</tr>
<tr>
<td>Queens Blvd from SR 678 to Roosevelt Ave</td>
<td>NY</td>
<td>NYDOT</td>
<td>30</td>
<td>160,000</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>Median / Frontage</td>
</tr>
<tr>
<td>City Hall Ave from St Paul Blvd to Monticello Ave</td>
<td>VA</td>
<td>VDOT</td>
<td>25</td>
<td>8,300</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>Median</td>
</tr>
<tr>
<td>St Paul Blvd from E Charlotte St to Market St</td>
<td>VA</td>
<td>VDOT</td>
<td>30</td>
<td>41,000</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>Median</td>
</tr>
<tr>
<td>York St from Elizabeth River trail to Dunmore St</td>
<td>VA</td>
<td>HRT</td>
<td>25</td>
<td>500</td>
<td>Metal</td>
<td>Construction Complete</td>
<td>Shoulder</td>
</tr>
</tbody>
</table>
Median Fencing Examples

US 40, Frederick, MD
US 1, College Park, MD
City Hall Ave, Norfolk, VA
Las Vegas Blvd, Las Vegas, NV
US13 Decorative Fencing Concept
US13 Decorative Fencing Concept
Path Forward

- End Mowing Operations - Implemented
- Map Utility Facilities & Drainage Systems
- Advertise Median Treatment Contract which Includes:
  - Decorative fencing
  - Concrete barrier with bracket mounted fence
  - Post & chain fence where feasible on adjacent sidewalks
  - Supplemental vegetation where appropriate
Recommended Improvements

(from 8.22.17 Pedestrian Council Meeting)

• Signalized Crosswalks
• Corridor Lighting
• ADA curb ramp upgrades
• Provide missing sidewalk links
• Relocate/consolidate transit stops
• Enhanced Signing & Striping
• Median Fencing
• **Education & Enforcement**
Education & Enforcement

DON'T JOIN THE WALKING DEAD

Every pedestrian needs to know when it's safe to cross the road, because sometimes there's no turning back. In the last five years, 146 pedestrians have been killed crossing Delaware's busy roads, and even more have been injured. Be careful and walk smart. Use crosswalks and make sure you're visible.

ArIVEaliveDE.com/WalkSmart

Delaware is America's deadliest state for pedestrians

WALK SMART

LOOK UP.
Drivers aren't always looking out for you.
Agenda

• The Why – Pedestrian Safety Improvements

• US 13 Corridor Progress

• Visualization Examples

• Median Treatments

• Education and Enforcement

• Q&A, Next Steps