Project Overview

- Community Concerns and Requests
- Traffic Volumes
- Speeds
- Crash History
- Intersections
- Pedestrians
- Signage
- Potential Recommendations
History of the Study

- The working group was formed in 2013 as a result of the 2013 CCA Annual Meeting.

  Ian Bunch
  Lt. Sean Duffy
  Bud Freel
  Jeff Greene
  Irv Hollingsworth
  Lynne Hoyt
  Rep. Deborah Hudson

  Bob Jarvis
  Sen. Gregory Lavelle
  Scott Neidert
  Brad Reese
  Susan Teiser
  Adam Weiser
  Pamela Witsil

- Centreville is an “18th century village with 21st century traffic.”

- This was the first study since the streetscape project has been completed in late 2011.
Community Concerns and Requests

- Issues raised during the August 22, 2013 meeting:
  - Sign Clutter
    - Bicycle and Parking signage
    - “Strictly Enforced” plaques
  - Speed Limit & Enforcement
  - Pedestrians and Jaywalking Enforcement
  - Crosswalks & Lighting
  - Intersection sight distance
  - Truck traffic
Community Concerns and Requests

- **Requests included:**
  - Reduce sign clutter through Centreville
  - Increase speed enforcement
  - Reduce speed limit
  - Install crosswalks closer to Snuff Mill Road and Owls Nest Road/Twaddell Mill Road
  - Install in-pavement crosswalk lighting
  - Correct restricted visibility at intersections
  - Replace road stampings at gateway islands
  - Intersection of Owls Nest Road/Twaddell Mill Road
  - Eliminate truck traffic from Kennett Pike
Potential Recommendations

- Remove unnecessary signage along the entire corridor

- Install speed reduction pavement markings in both directions of Kennett Pike at the gateway islands

- Reach out to Delaware State Police to provide additional speed enforcement when deemed necessary.

- Restrict parking and trim/remove shrubs to improve intersection sight distance at applicable locations
  - Owls Nest Road/Twaddell Mill Road
  - Center Avenue/Valley Way
  - Gregg Avenue
Potential Recommendations

- Install a traffic signal at the intersection of Kennett Pike and Owls Nest Road/Twaddell Mill Road
  - Include pedestrian signals
  - Realign crosswalk across Kennett Pike
  - No additional turn lanes or left turn phases

- Install additional crosswalks at locations with higher mid-block pedestrian activity
  - Near 5710 Kennett Pike (south of Owls Nest Road/Twaddell Mill Road) toward southern end of sidewalk
  - At Center Avenue/Valley Way
  - At Gregg Avenue/Mount Airy Drive
Traffic Volumes

**Functional Classification: Principal Arterial**

**Average Daily Traffic (ADT): 13,495 vehicles per day (both directions)**

DE 52/Kennett Pike between Chandler Lane and Center Avenue

- **Volume**
- **Hour**
- **NB Weekday**
- **SB Weekday**

Average Daily Traffic (ADT): 13,495 vehicles per day (both directions)
Traffic Volumes

- Vehicle classification
  - 95% Passenger Vehicles
  - 4% Trucks
  - 1% Bicycles
Speed Study

- **Center Meeting Road to Owls Nest Road/Twaddell Mill Road**
  - The 85\(^{th}\)-percentile speeds were within 5 MPH of the posted speed limit.
  - Overall, motorists exhibited **good compliance** with the 35 MPH posted speed limit.

- **Owls Nest Road/Twaddell Mill Road to Center Avenue**
  - The 85\(^{th}\)-percentile speeds were within 5 MPH of the posted speed limit.
  - Overall, motorists exhibited **good compliance** with the 35 MPH posted speed limit.

- **Mount Airy Drive to Snuff Mill Road**
  - The 85\(^{th}\)-percentile speeds were 9 MPH above the posted speed limit.
  - Discussion: Possible countermeasures?
Northbound Kennett Pike
Historical 85th Percentile Speeds

- January 2001
- February 2003
- August 2003
- September 2003
- September 2004
- October 2005
- December 10, 2009
- December 14, 2009
- May 2011
- September 2011
- September 2013

- Center Meeting
- Twaddell Mill
- Snuff Mill

35 MPH Speed Limit
Avg. 43 MPH
Avg. 38 MPH
Avg. 46 MPH

Speed (MPH)
Southbound Kennett Pike
Historical 85th Percentile Speeds

<table>
<thead>
<tr>
<th>Date</th>
<th>Average Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 2001</td>
<td>Avg. 44 MPH</td>
</tr>
<tr>
<td>February 2003</td>
<td>Avg. 39 MPH</td>
</tr>
<tr>
<td>August 2003</td>
<td>Avg. 43 MPH</td>
</tr>
<tr>
<td>September 2003</td>
<td></td>
</tr>
<tr>
<td>September 2004</td>
<td></td>
</tr>
<tr>
<td>October 2005</td>
<td></td>
</tr>
<tr>
<td>December 10, 2009</td>
<td></td>
</tr>
<tr>
<td>December 14, 2009</td>
<td></td>
</tr>
<tr>
<td>May 2011</td>
<td></td>
</tr>
<tr>
<td>September 2011</td>
<td></td>
</tr>
<tr>
<td>September 2013</td>
<td></td>
</tr>
</tbody>
</table>

35 MPH Speed Limit
Conclusions and Recommendations

The 35 MPH speed limit is to remain through Centreville

- Lowering the speed limit to an artificially low value can lead to:
  - General disregard for the unreasonably set speed limit
  - Higher crash rates
  - Tailgating and Aggressive Driving
  - A greater speed differential between motorists, potentially exacerbating the rear-end crash problem

- Several other options are available to help calm traffic
- **Potential Traffic Calming Option**
  - Speed reduction pavement markings can be installed at the gateway islands in both directions in an effort to reduce speeds through Centreville.
  - The decreasing distance between the lateral markings are designed to give the perception of traveling too fast.

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**Figure 3B-28. Example of the Application of Speed Reduction Markings**

- **A – Recommended dimensions**
  - 12 inches MAX.

- **B – Example of placement**

*Delaware Manual on Uniform Traffic Control Devices, 2011*
Crash History

Kennett Pike between Centreville gateway islands

1/1/2005 – 12/31/2013

Crash Clusters:
• Center Meeting Road
• Vicinity of 5710 Kennett Pike
• Owls Nest Road/Twaddell Mill Road
• Snuff Mill Road
**Crash History**

### Kennett Pike between Centreville gateway islands

<table>
<thead>
<tr>
<th>Summary</th>
<th># of Crashes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Crashes</td>
<td>105</td>
</tr>
<tr>
<td>Fatal Crashes</td>
<td>1</td>
</tr>
<tr>
<td>Total Alcohol-Related Crashes</td>
<td>6</td>
</tr>
<tr>
<td>Total Non Alcohol-Related Crashes</td>
<td>99</td>
</tr>
<tr>
<td>Total Fatalities</td>
<td>1</td>
</tr>
<tr>
<td>Total Pedestrian Fatalities</td>
<td>1</td>
</tr>
<tr>
<td>Total Pedestrian Injuries</td>
<td>3</td>
</tr>
<tr>
<td>Total Pedestrian Crashes</td>
<td>2</td>
</tr>
<tr>
<td>Total Motorcycle Crashes</td>
<td>2</td>
</tr>
<tr>
<td>Total Pedalcyclist Crashes</td>
<td>0</td>
</tr>
</tbody>
</table>

### Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th># of Crashes</th>
<th>% of Total Crashes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Reportable</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>Reportable</td>
<td>79</td>
<td>75.24%</td>
</tr>
<tr>
<td>Personal Injury</td>
<td>25</td>
<td>23.81%</td>
</tr>
<tr>
<td>Fatality</td>
<td>1</td>
<td>0.95%</td>
</tr>
</tbody>
</table>

**1/1/2005 – 12/31/2013**

<table>
<thead>
<tr>
<th>Manner of Impact</th>
<th># of Crashes</th>
<th>% of Total Crashes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front to rear</td>
<td>38</td>
<td>36.19%</td>
</tr>
<tr>
<td>Front to front</td>
<td>3</td>
<td>2.86%</td>
</tr>
<tr>
<td>Angle</td>
<td>36</td>
<td>34.29%</td>
</tr>
<tr>
<td>Sideswipe, same direction</td>
<td>4</td>
<td>3.81%</td>
</tr>
<tr>
<td>Sideswipe, opposite direction</td>
<td>7</td>
<td>6.67%</td>
</tr>
<tr>
<td>Rear to side</td>
<td>1</td>
<td>0.95%</td>
</tr>
<tr>
<td>Rear to rear</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>0.95%</td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>Not a collision between two vehicles</td>
<td>15</td>
<td>14.29%</td>
</tr>
</tbody>
</table>

**Total** 105
Crashes by Time of Day vs. Traffic Volumes
Kennett Pike between Centreville gateway islands
1/1/2005 – 12/31/2013

Number of Crashes

Traffic Volume

Hour

# of crashes
NB
SB
Crash History

Annual Crashes
Kennett Pike between Centreville gateway islands
1/1/2005 – 12/31/2013

Number of Crashes

Year

2005 2006 2007 2008 2009 2010 2011 2012 2013

Completion of Streetscape Project 11/08/2011
Intersections

- Three-year crash history
  - Comparison of actual data to that calculated via the Highway Safety Manual (HSM)

- Turning Movement Counts collected mid-week in September 2013 from 6:00 AM to 6:00 PM.
  - Each intersection counted
  - Counts returned traffic volumes for each turning movement during the three daily peak hours (AM, Mid-day, PM)

- Potential traffic control device options
  - Traffic signal (if warrants met)
  - Roundabout

- Capacity & delay analyses of existing and potential options
  - Level of Service (LOS) – A “grade” given to a lane, approach or intersection based on the average delay experienced by motorists. LOS ranges from A to F, with A designating the least delay and F designating the most.
  - Any LOS F is accompanied by the anticipated queue length for that approach.

- Pros and Cons of each treatment
3-Year Crash History

Kennett Pike between Centreville gateway islands

1/1/2011 - 12/31/2013

Crash Clusters:
• Center Meeting Road
• Owls Nest Road/Twaddell Mill Road
• Chandler Lane/Holly Lane
• Snuff Mill Road
Kennett Pike & Owls Nest Road/ Twaddell Mill Road
Kennett Pike & Owls Nest Road/Twaddell Mill Road

- Peak hours
  - 7:30 AM – 8:30 AM
  - 11:45 AM – 12:45 PM
  - 5:00 PM – 6:00 PM

- Observations
  - Vehicles “double stack” (a left/through vehicle stops adjacent to a right turning vehicle) on the eastbound Owls Nest Road approach.
  - School bus stops in the area.
  - This intersection meets warrants for the installation of a traffic signal, based on current DE-MUTCD criteria.
Kennett Pike & Owls Nest Road/Twaddell Mill Road

Existing Levels of Service

AM Peak 7:30-8:30 AM
Midday Peak 11:45AM-12:45 PM
PM Peak 5:00-6:00 PM
Potential Traffic Control Modifications

Signal

- This intersection meets warrants for the installation of a traffic signal, based on current DE-MUTCD criteria.
- Since northbound and southbound turning volumes are fairly low, and right-of-way is very restricted, the addition of turn lanes is not recommended.
- The traffic signal will rest in green for both approaches of Kennett Pike, and will not turn red unless a vehicle or pedestrian trips the signal.
Installation of a traffic signal
Levels of Service

**EXISTING (PROPOSED)**

**AM Peak**
7:30-8:30 AM

**Midday Peak**
11:45AM-12:45 PM

**PM Peak**
5:00-6:00 PM
# Installation of a traffic signal

<table>
<thead>
<tr>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levels of service on Owls Nest Road/Twaddell Mill Road improve during each peak period.</td>
<td>Offset side streets force the use of “split” phasing, potentially causing longer delays along Kennett Pike.</td>
</tr>
<tr>
<td>Signal control allows for a safer navigation of the intersection for all modes of transportation.</td>
<td>Levels of service in peak directions along Kennett Pike deteriorate to LOS B and C during AM and PM peak hours, respectively.</td>
</tr>
<tr>
<td>Speeds may be reduced through Centerville due to the presence of the signal.</td>
<td>A long signal cycle length to accommodate directional Kennett Pike traffic may encourage red-light running.</td>
</tr>
<tr>
<td>Pedestrians may be more likely to use crosswalks at a signalized intersection rather than at mid-block.</td>
<td>Construction of turn lanes (if needed) will be difficult due to constricted right-of-way.</td>
</tr>
</tbody>
</table>
Pedestrians

- Pedestrian counts were collected at the same time as turning movement counts.
  - Center Meeting Road
  - Owls Nest Road/Twaddell Mill Road
  - Snuff Mill Road

- Only pedestrians crossing a street were counted.

- Mid-block (not at a marked crosswalk) pedestrian crossings were also counted in the vicinities of the study intersections.
Pedestrians –
Kennett Pike & Owls Nest Road/Twaddell Mill Road

Pedestrian Volumes
6:00 AM – 6:00 PM
Pedestrians

- **Recommendations:**
  - Studies show that the presence of several crosswalks across a roadway tend to reduce vehicular speeds
  - Install additional crosswalks with overhead roadway lighting at or near the following intersections:
    - Kennett Pike and Center Avenue/Valley Way
    - Kennett Pike and Gregg Avenue/Mount Airy Drive
    - Near 5710 Kennett Pike (south of Owls Nest Road/ Twaddell Mill Road) toward southern end of sidewalk
Pedestrians
Pedestrians

Potential Crosswalk Location

Potential Crosswalk Location
Signage

- There are 145 individual signs posted on Kennett Pike between Old Kennett Road and the Pennsylvania state line, a distance of 2.1 miles.
  - 20 signs related to bicycles between Center Meeting Road and Snuff Mill Road (0.5 miles)

- Sign consolidation/modification/removal
  - Corridor-wide effort underway to reduce a large percentage of unnecessary, damaged or incorrectly placed signs along Kennett Pike.
  - DelDOT has proposed to eliminate approximately 40 signs—the majority of which are located in Centreville between Owls Nest Road/Twaddell Mill Road and Snuff Mill Road.
  - Residents will be asked to provide comments prior to any modifications being made.
Conclusions

- Crash cluster at the intersection of Kennett Pike and Owls Nest Road/Twaddell Mill Road
  - Queuing vehicles on side street approaches
  - Sight distance issues

- Increase in crashes since completion of streetscape project

- Speeding within the village has consistently been shown to not be a problem

- Pedestrians are crossing midblock at unmarked locations

- Sign clutter along Kennett Pike corridor
Potential Recommendations

- Remove unnecessary signage along the entire corridor
- Install speed reduction pavement markings in both directions of Kennett Pike at the gateway islands
- Reach out to Delaware State Police to provide additional speed enforcement when deemed necessary.
- Restrict parking and trim/remove shrubs to improve intersection sight distance at applicable locations
  - Owls Nest Road/Twaddell Mill Road
  - Center Avenue/Valley Way
  - Gregg Avenue
Potential Recommendations

- Install a traffic signal at the intersection of Kennett Pike and Owls Nest Road/Twaddell Mill Road
  - Include pedestrian signals
  - Realign crosswalk across Kennett Pike
  - No additional turn lanes or left turn phases

- Install additional crosswalks at locations with higher mid-block pedestrian activity
  - Near 5710 Kennett Pike (south of Owls Nest Road/Twaddell Mill Road) toward southern end of sidewalk
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  - At Gregg Avenue/Mount Airy Drive
Potential Recommendations

Potential parking & shrub modifications for sight distance improvements
Potential Recommendations

Potential parking & shrub modifications for sight distance improvements
Thank You

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