

KENNETT PIKE CORRIDOR STUDY



Delaware Department
of Transportation

December 2013
Centreville, Delaware

Project Overview

- ▣ Community Concerns and Requests

- ▣ Traffic Volumes

- ▣ Speeds

- ▣ Crash History

- ▣ Intersections

- ▣ Pedestrians

- ▣ Signage

- ▣ Potential Recommendations



Community Concerns and Requests

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- 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

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□ **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

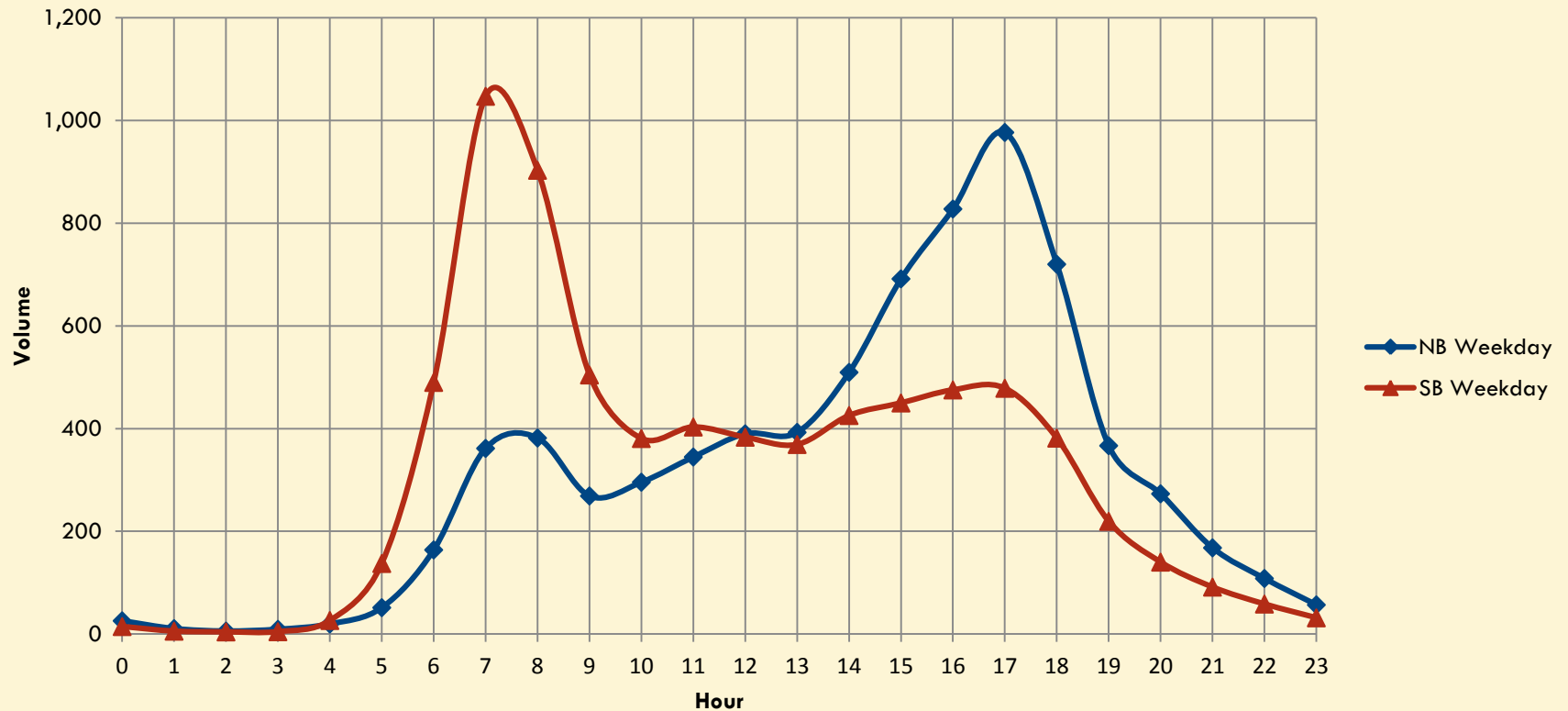
Traffic Volumes

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Functional Classification: Principal Arterial

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

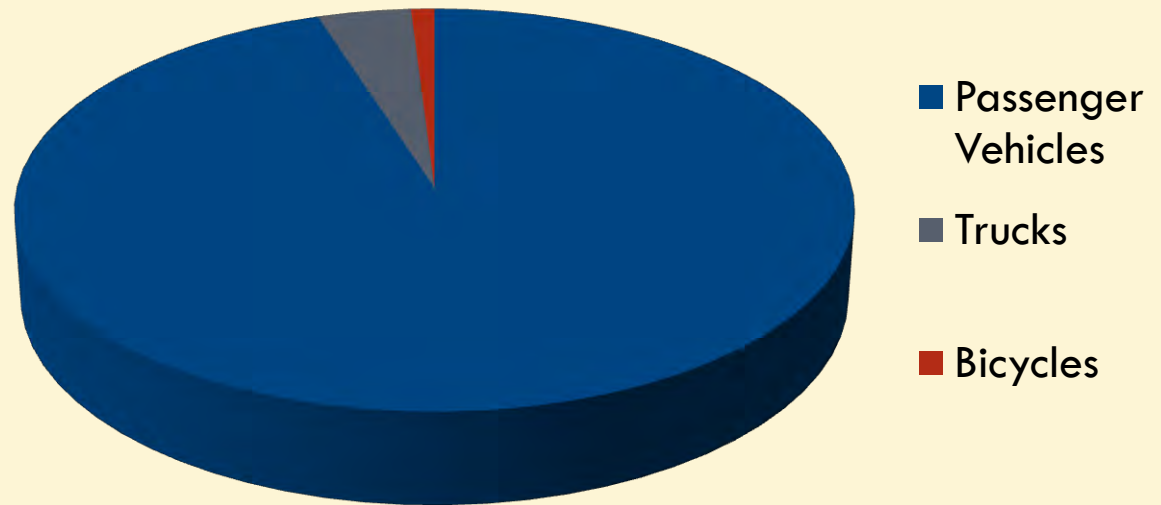
DE 52/Kennett Pike between Chandler Lane and Center Avenue



Traffic Volumes

6

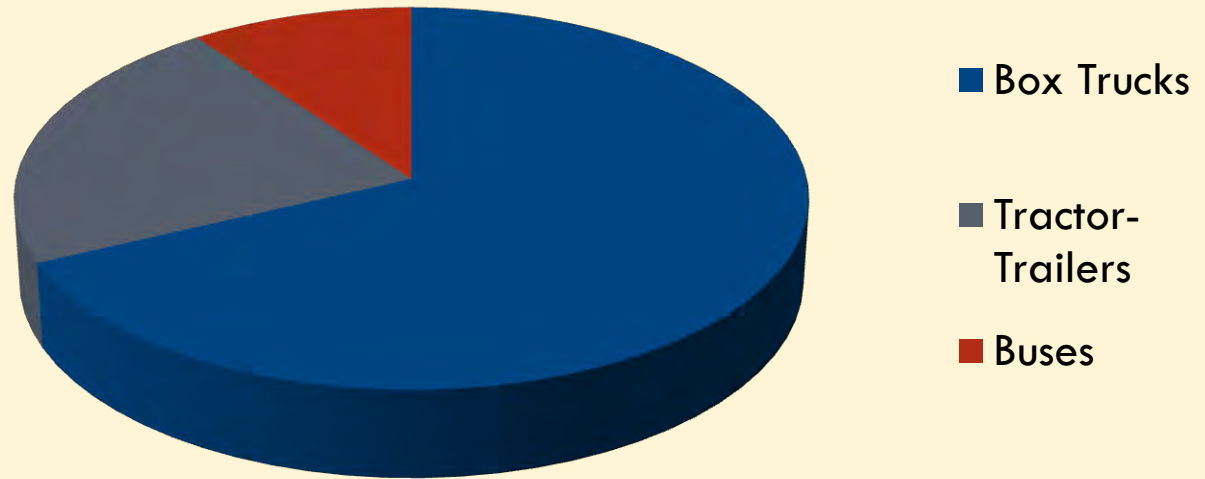
- Vehicle classification
 - 95% Passenger Vehicles
 - 4% Trucks
 - 1% Bicycles



Traffic Volumes

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- Heavy Vehicle/Truck Classification (4% of total volume)
 - 68% Box Trucks
 - 22% Tractor-Trailers
 - 10% Buses

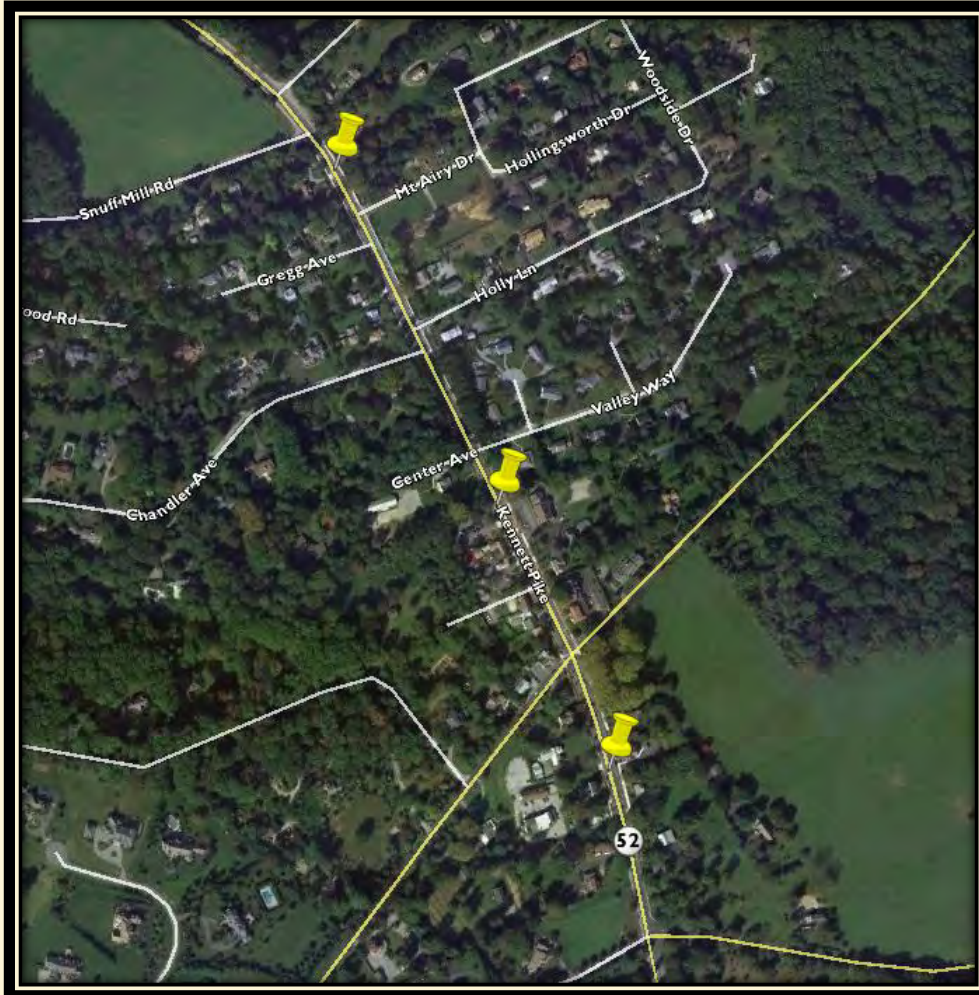


Speed Study

- Speed studies performed by DelDOT utilize radar technology to capture vehicle speeds along a roadway under ideal conditions, including off-peak hours, dry roadways and away from traffic signals or other possible hindrances to free-flowing vehicular speeds.
- Section 2B.13 of the Delaware Manual on Uniform Traffic Control Devices (DE-MUTCD) states:
 - ▣ *“When a speed limit...is posted, it should be within 5 mph of the 85th-percentile speed of free-flowing traffic.”*
- The 85th-percentile speed is the speed at or below which 85 percent of vehicles travel.
- Three speed studies were conducted along Kennett Pike, each counting 200 vehicles, 100 in each direction, to determine the 85th-percentile speed through Centreville.

Speed Study

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85th Percentile Speeds

- Mount Airy Drive to Snuff Mill Road
 - Northbound – 44 MPH
 - Southbound – 44 MPH
- Center Ave to Owls Nest Rd
 - Northbound – 38 MPH
 - Southbound – 39 MPH
- Owls Nest Rd to Center Meeting Rd
 - Northbound – 40 MPH
 - Southbound – 38 MPH

Speed Study

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

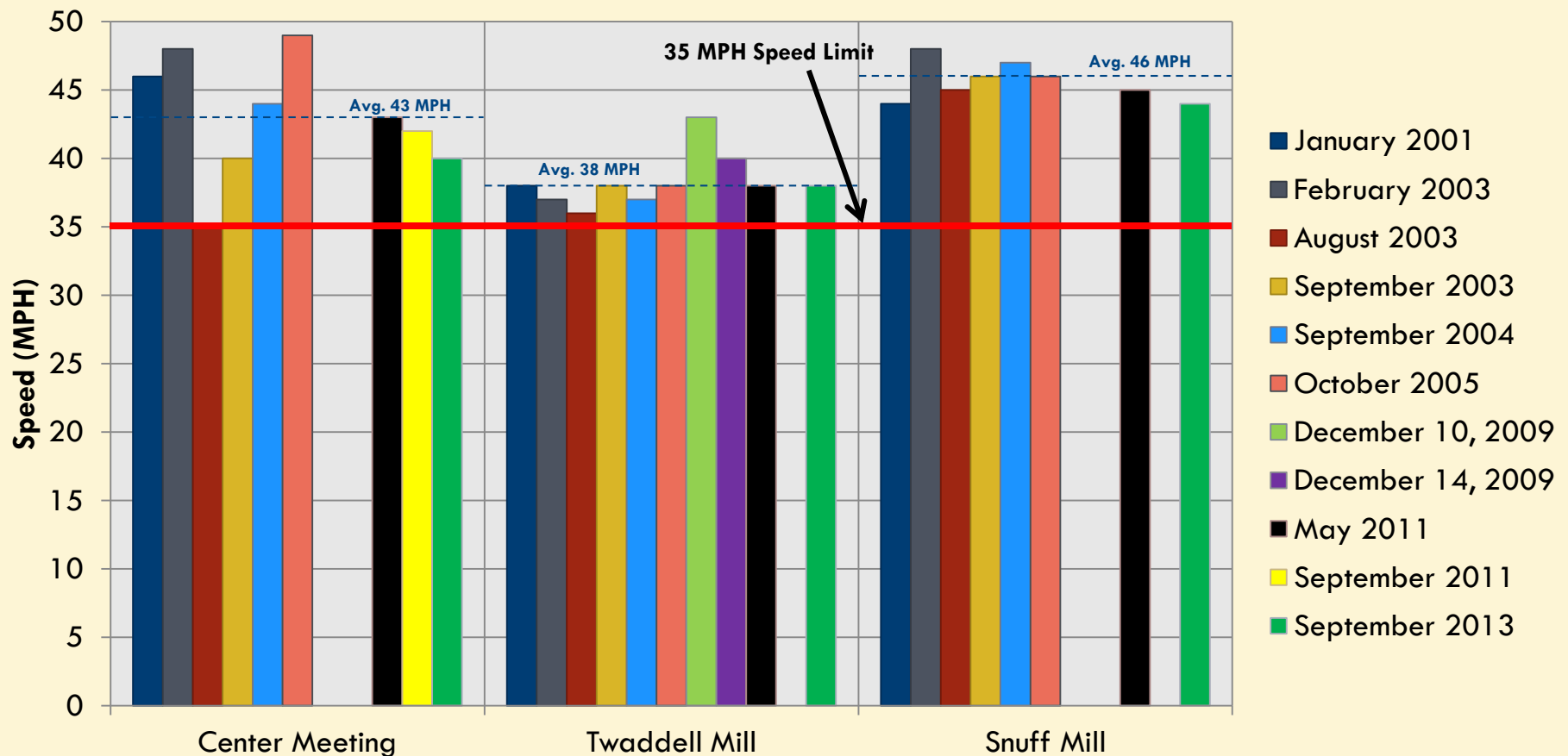
- **Owls Nest Road/Twaddell Mill Road to Center Avenue**
 - ▣ The 85th-percentile speeds were within 5 MPH of the posted speed limit.
 - ▣ Overall, motorists exhibited good compliance with the 35 MPH posted speed limit.

- **Mount Airy Drive to Snuff Mill Road**
 - ▣ The 85th-percentile speeds were 9 MPH above the posted speed limit.
 - ▣ Discussion: Possible countermeasures?

Speed Study

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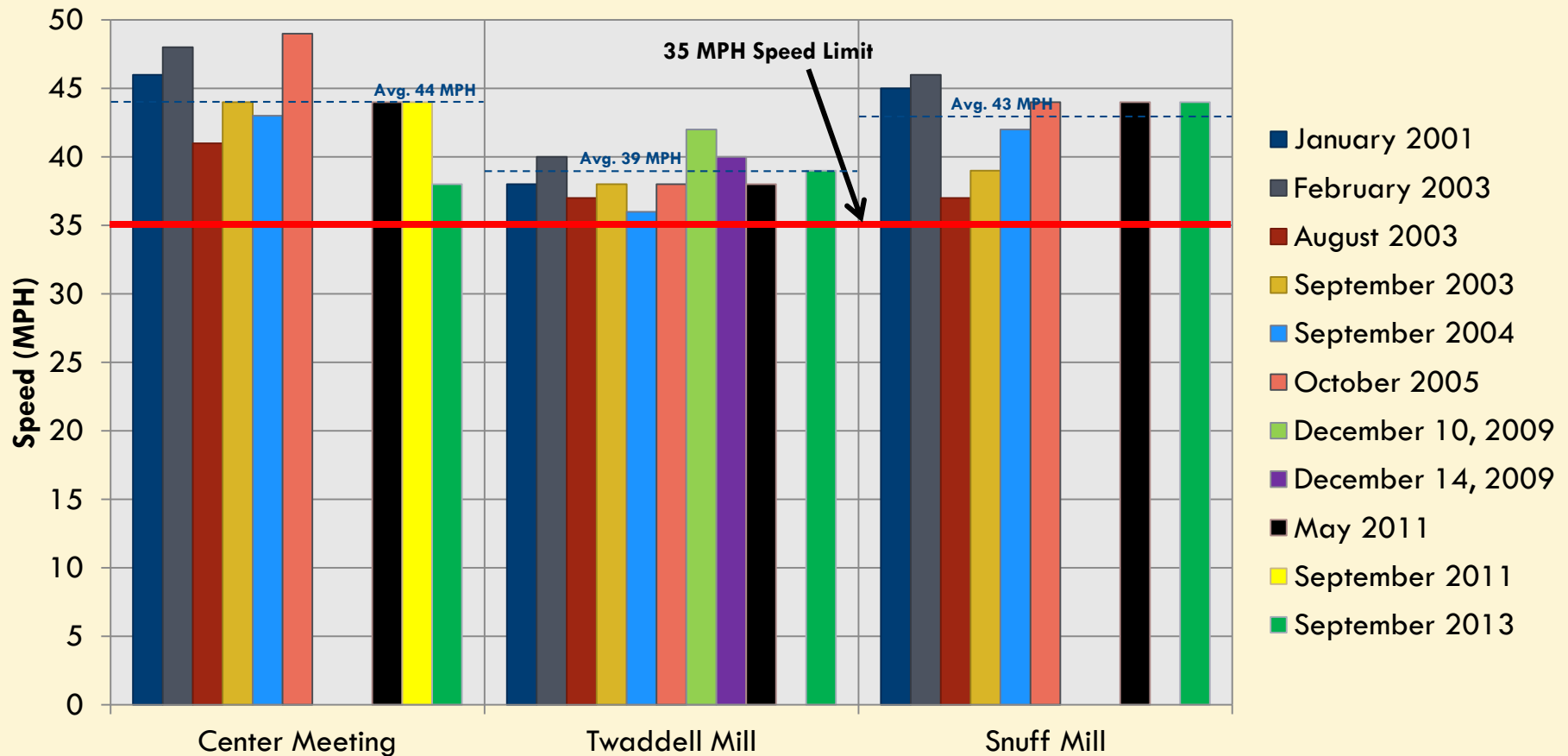
Northbound Kennett Pike Historical 85th Percentile Speeds



Speed Study

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Southbound Kennett Pike Historical 85th Percentile Speeds



Speed Study

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□ 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

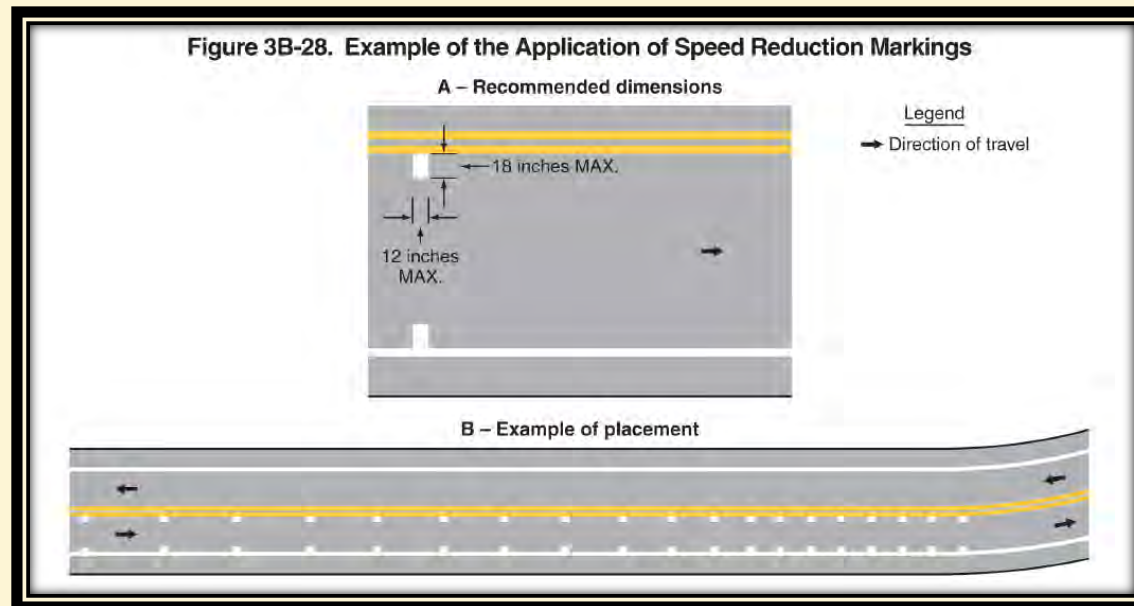
■ Several other options are available to help calm traffic

Speed Study

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□ Potential Traffic Calming Options

- 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.



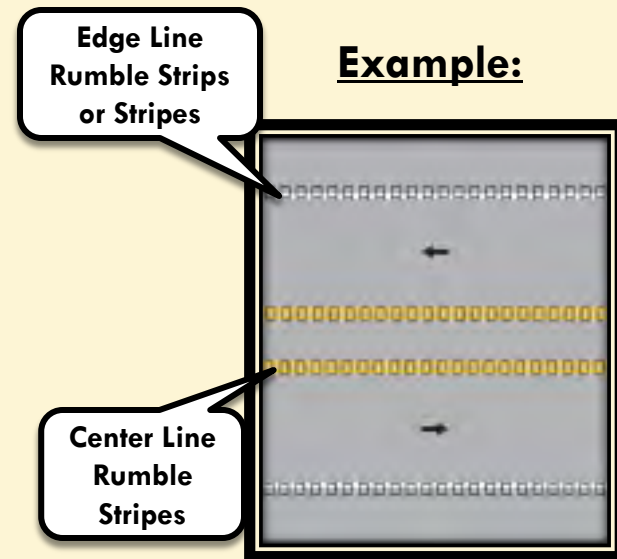
Speed Study

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□ Potential Traffic Calming Options (cont'd.)

■ Lane narrowing with rumble strips

- Narrow lanes and provide painted center median at gateway islands.
- Include edgeline and centerline rumble strips (or stripes) to encourage traffic calming.



FHWA Publication FHWA-HRT-08-067.

*"Traffic Calming on Main Roads Through Rural Communities."
February 2009.*

Crash History

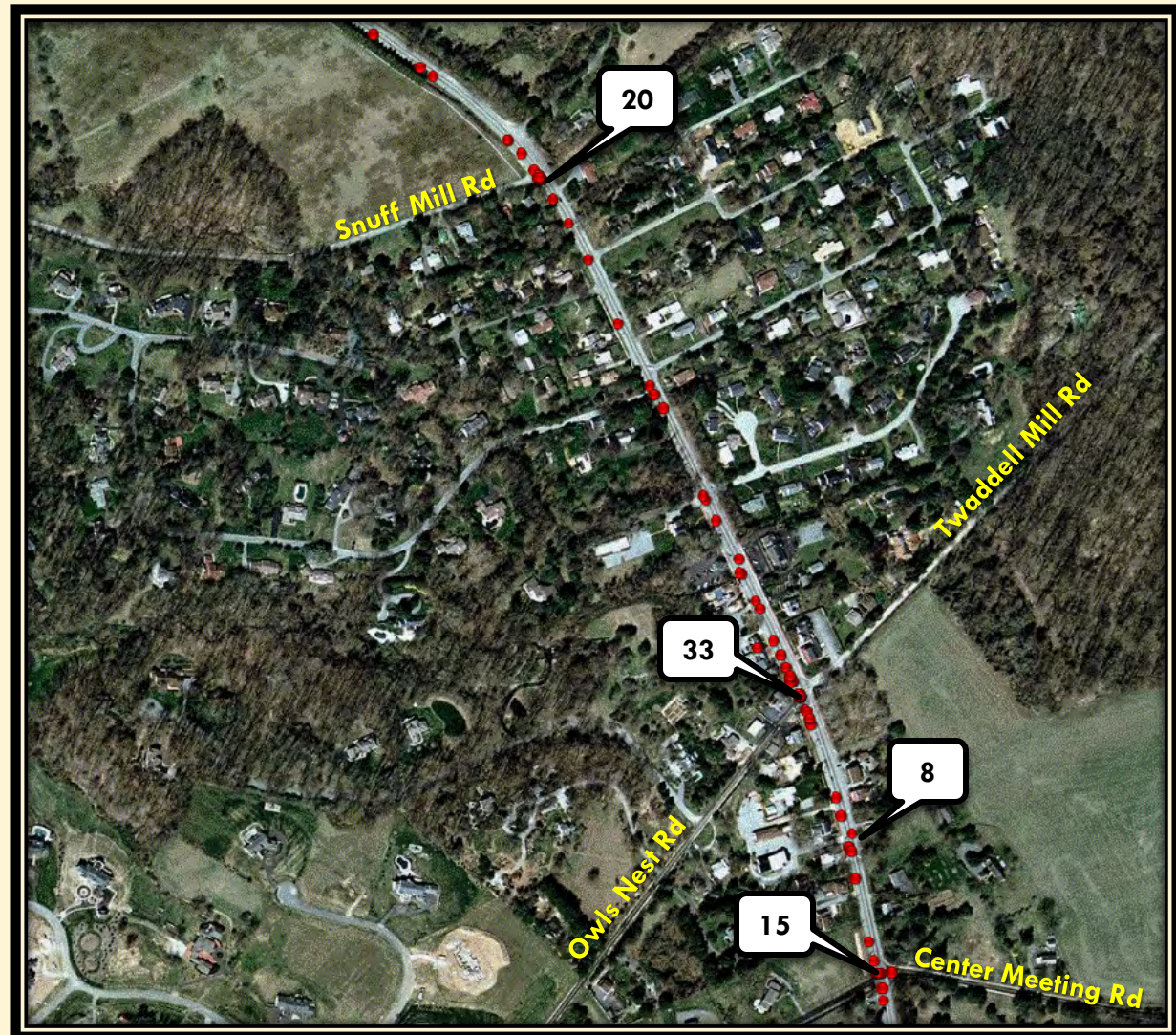
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Kennett Pike between Centreville gateway islands

1/1/2005 – 10/9/2013

Crash Clusters:

- Center Meeting Road
- Vicinity of 5710 Kennett Pike
- Owls Nest Road/Twaddell Mill Road
- Snuff Mill Road



Crash History

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Kennett Pike between Centreville gateway islands

Summary	
	# of Crashes
Total Crashes	100
Fatal Crashes	1
Total Alcohol-Related Crashes	5
Total Non Alcohol-Related Crashes	95
Total Fatalities	1
Total Pedestrian Fatalities	1
Total Pedestrian Injuries	3
Total Pedestrian Crashes	2
Total Motorcycle Crashes	2
Total Pedalcyclist Crashes	0

Classification		
	# of Crashes	% of Total Crashes
Non-Reportable	0	0.00%
Reportable	74	74.00%
Personal Injury	25	25.00%
Fatality	1	1.00%
Total	100	

Lighting Conditions		
	# of Crashes	% of Total Crashes
Daylight	79	79.00%
Dawn	3	3.00%
Dusk	1	1.00%
Dark-Lighted	5	5.00%
Dark-Not Lighted	12	12.00%
Dark-Unknown Lighting	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
Total	100	

1/1/2005 – 10/9/2013

Manner of Impact		
	# of Crashes	% of Total Crashes
Front to rear	34	34.00%
Front to front	3	3.00%
Angle	34	34.00%
Sideswipe, same direction	4	4.00%
Sideswipe, opposite direction	7	7.00%
Rear to side	1	1.00%
Rear to rear	0	0.00%
Other	2	2.00%
Unknown	1	1.00%
Not a collision between two vehicles	14	14.00%
Total	100	

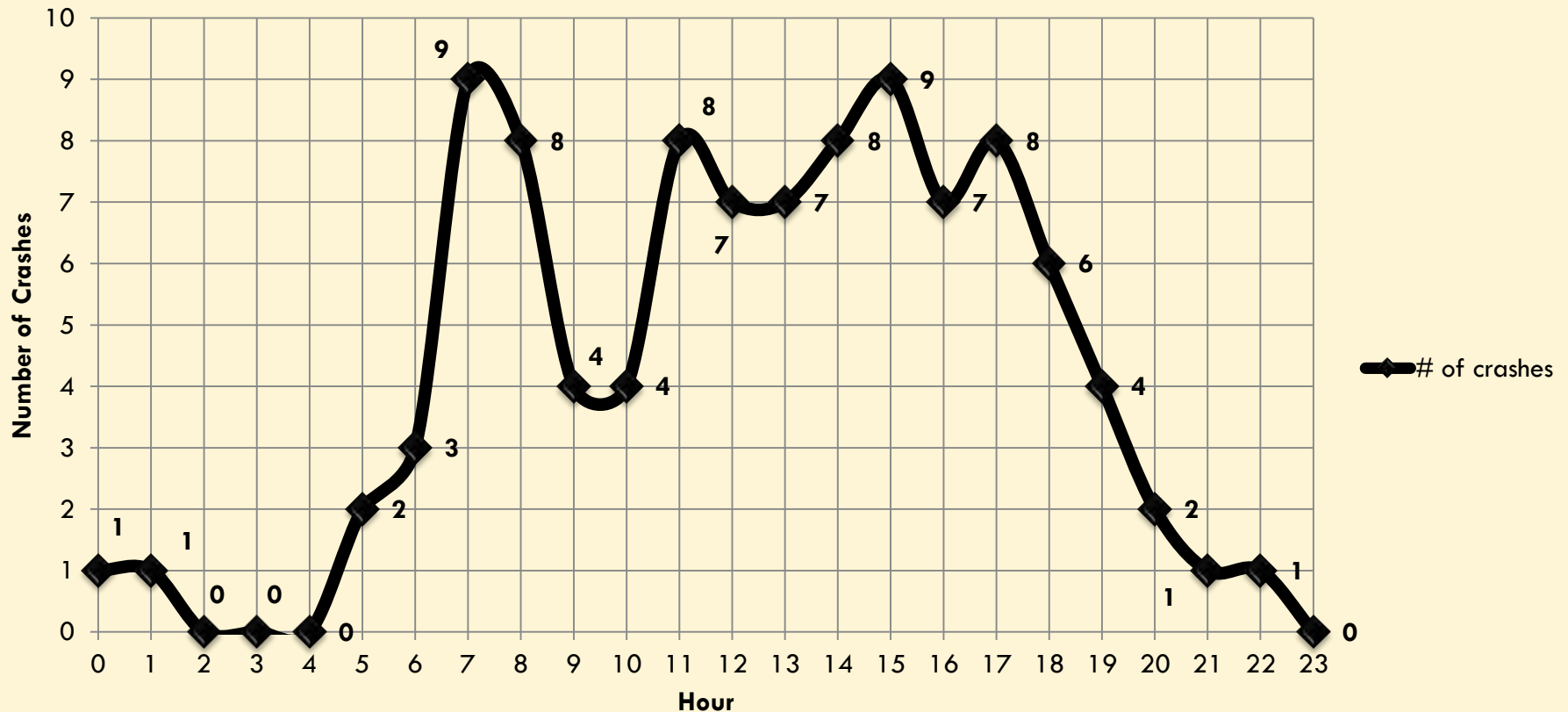
Crash History

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Crashes by Time of Day

Kennett Pike between Centreville gateway islands

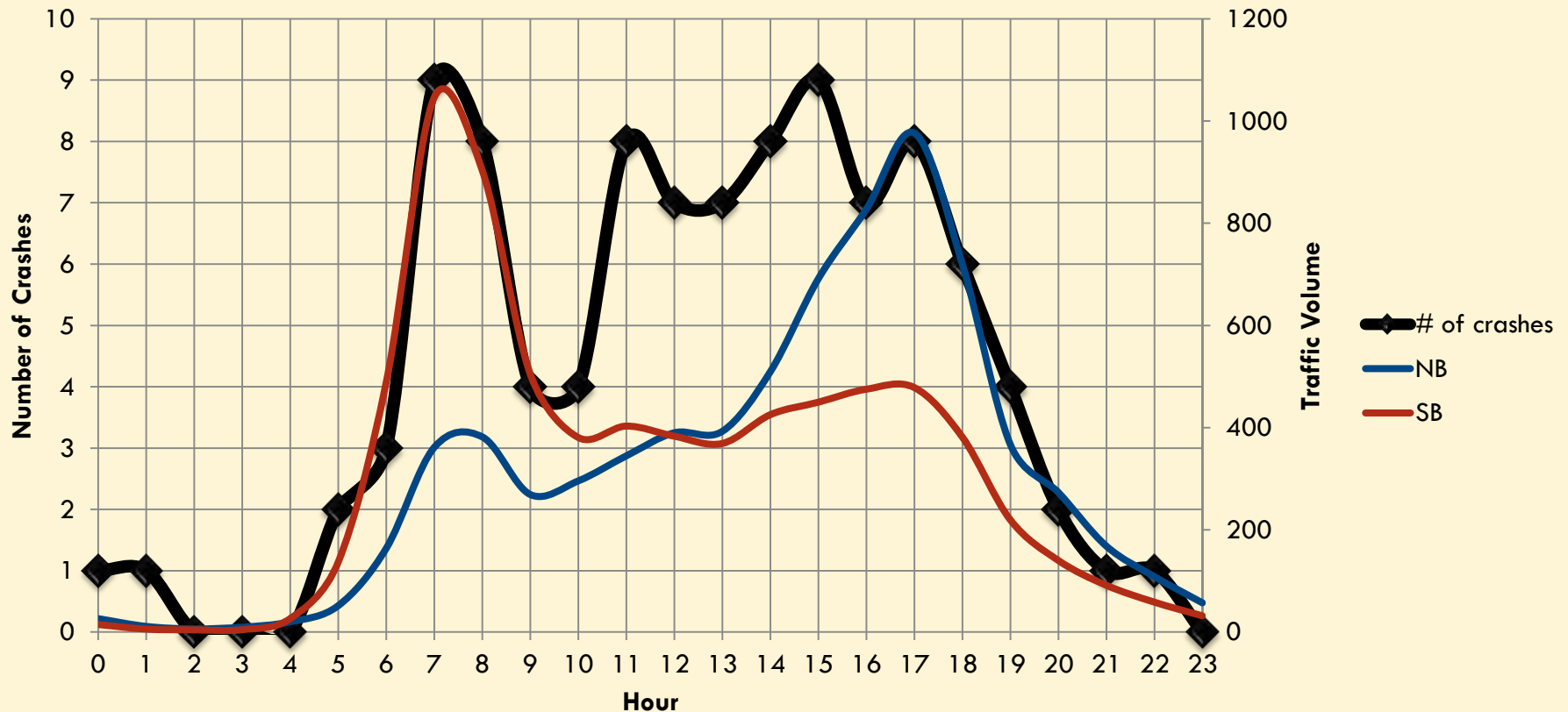
1/1/2005 – 10/9/2013



Crash History

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Crashes by Time of Day vs. Traffic Volumes
Kennett Pike between Centreville gateway islands
1/1/2005 – 10/9/2013

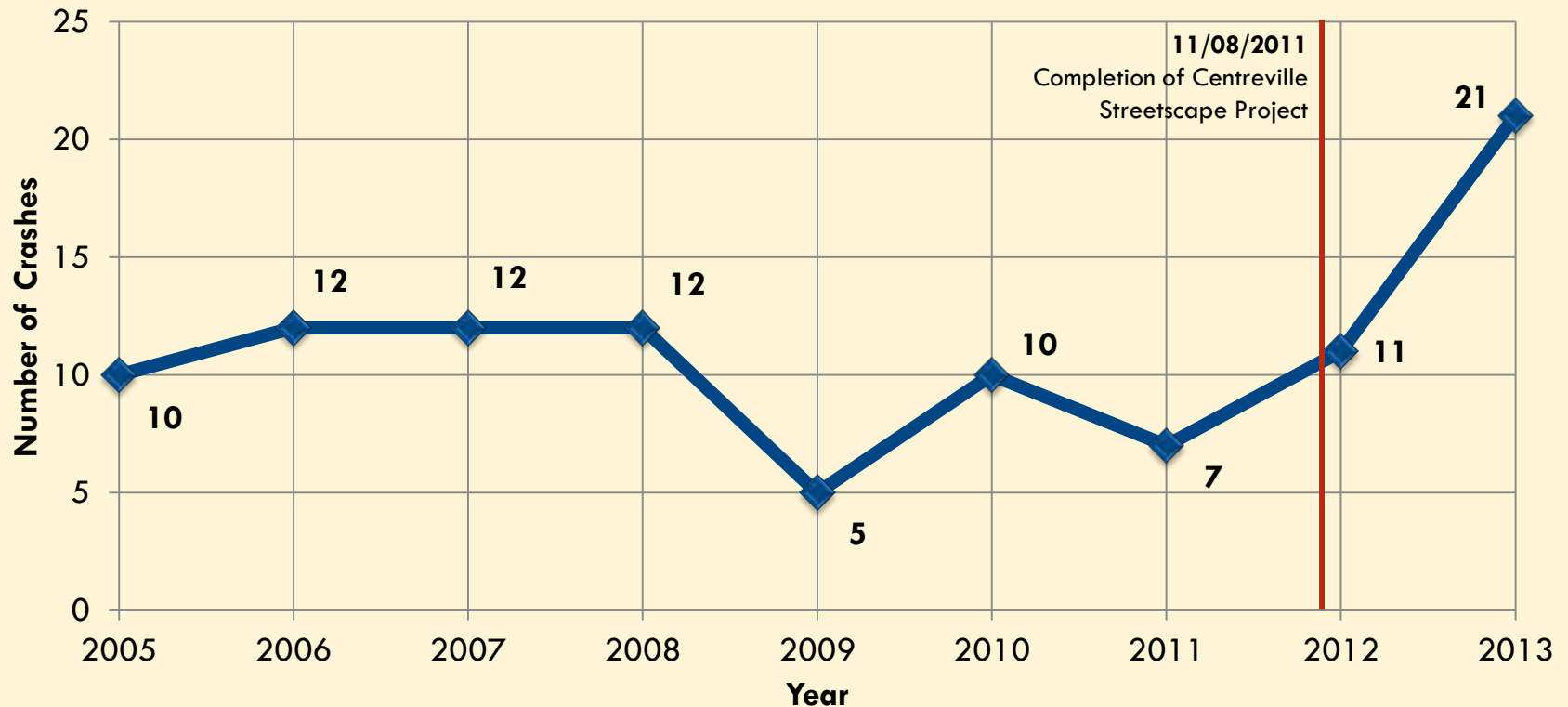


Crash History

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Annual Crashes

Kennett Pike between Centreville gateway islands
1/1/2005 – 10/9/2013



Intersections

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Intersections

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- 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

Intersections

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□ Highway Safety Manual

■ Crash Modification Factors (CMFs)

- Values multiplied into retrieved crash data to predict an expected number of crashes based on applying a specific treatment, i.e. installation of a signal or roundabout.
- If the CMF is greater than 1.00, crashes are expected to increase; Less than 1.00, decrease.

3-Year Crash History

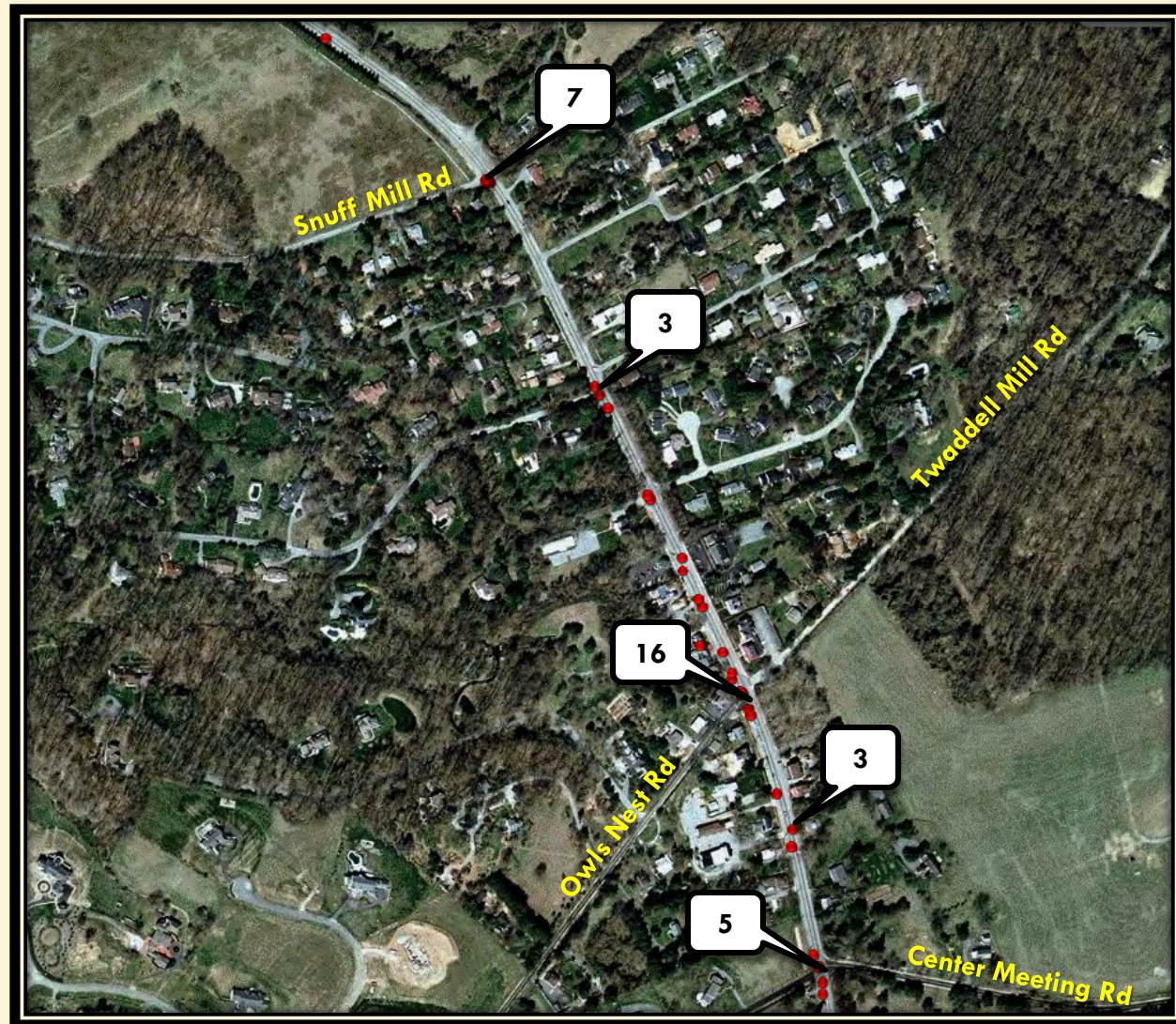
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Kennett Pike between Centreville gateway islands

10/9/2010 – 10/9/2013

Crash Clusters:

- Center Meeting Road
- Owls Nest Road/Twaddell Mill Road
- Chandler Lane/Holly Lane
- Snuff Mill Road



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Kennett Pike & Center Meeting Road



Kennett Pike & Center Meeting Road

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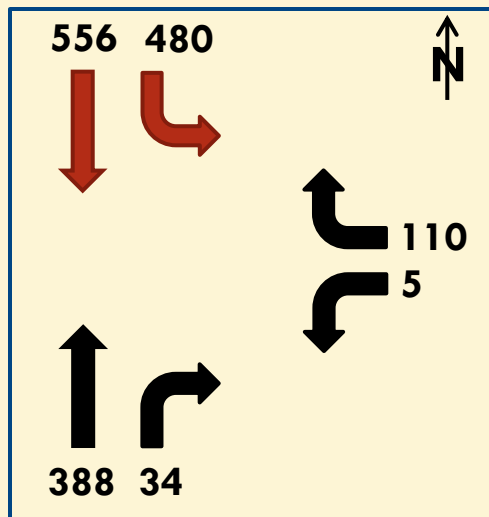
- Peak hours
 - ▣ 7:30 AM – 8:30 AM
 - ▣ 12:15 PM – 1:15 PM
 - ▣ 5:00 PM – 6:00 PM

- Observations
 - ▣ Southbound Kennett Pike vehicles pass left-turning vehicles on right, entering bicycle lane
 - ▣ School bus stops AM & PM at intersection
 - ▣ Light pedestrian crossing activity
 - ▣ This intersection meets warrants for the installation of a traffic signal, based on current DE-MUTCD criteria.

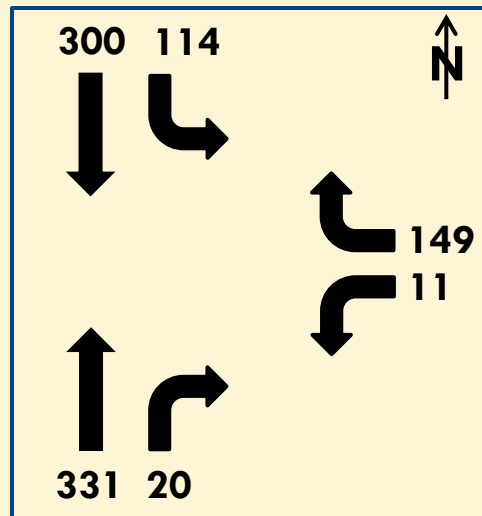
Kennett Pike & Center Meeting Road

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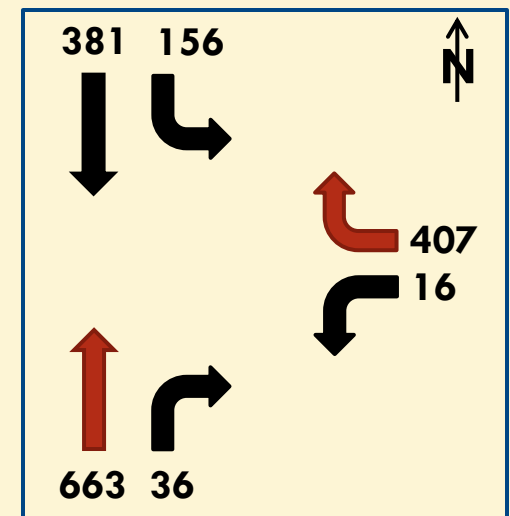
Existing Turning Movement Volumes



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



**Midday Peak
12:15-1:15 PM**

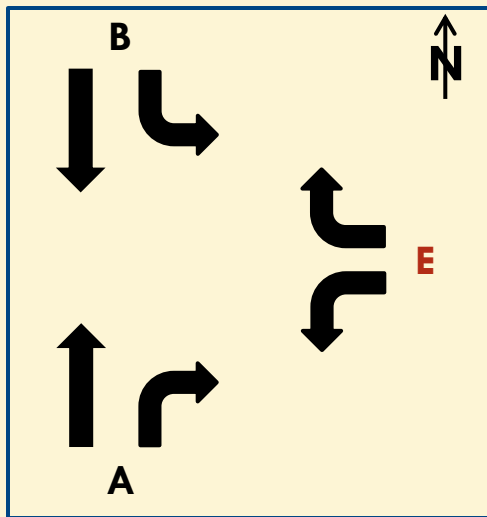


**PM Peak
5:00-6:00 PM**

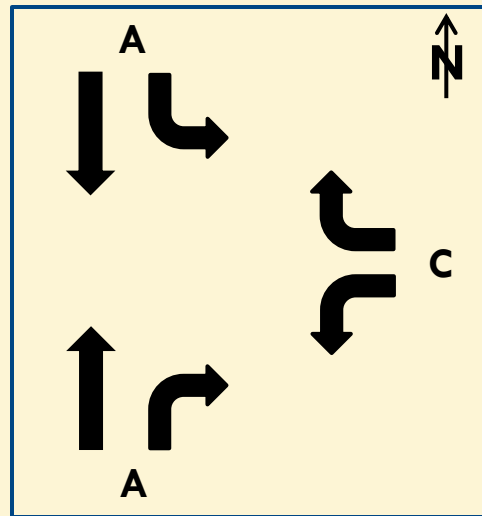
Kennett Pike & Center Meeting Road

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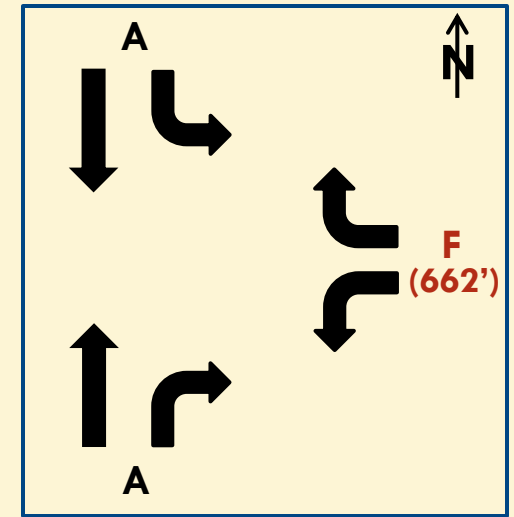
Existing Levels of Service



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



**Midday Peak
12:15-1:15 PM**



**PM Peak
5:00-6:00 PM**

Kennett Pike & Center Meeting Road

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- Potential Traffic Control Modifications
 - ▣ Stop control with southbound left turn lane and westbound right turn lane
 - ▣ Signalization with no additional turn lanes
 - ▣ Signalization with no additional turn lanes, inclusion of southbound protected & permissive left turn phase
 - ▣ Signalization with southbound left turn lane and westbound right turn lane, inclusion of southbound protected & permissive left turn phase
 - ▣ Roundabout

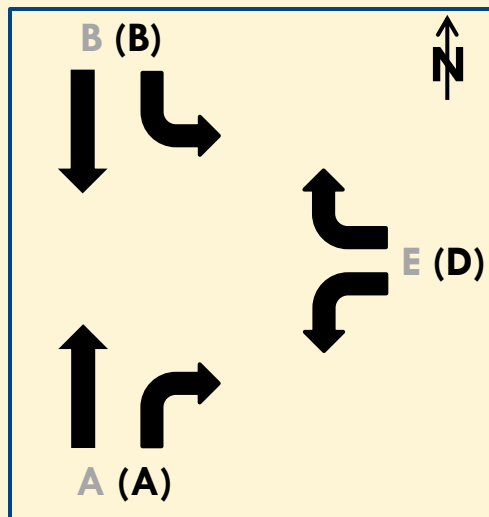
Kennett Pike & Center Meeting Road

30

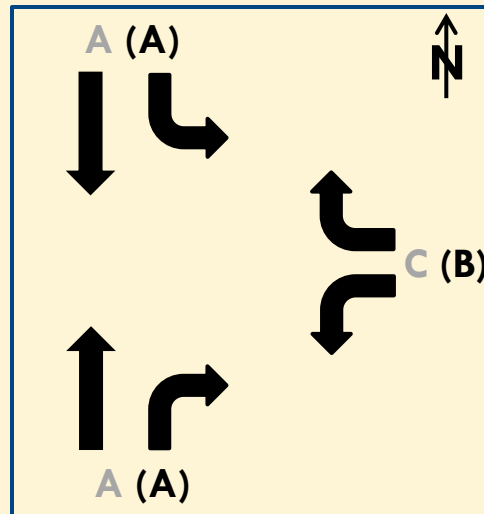
Stop control with additional turn lanes

Levels of Service

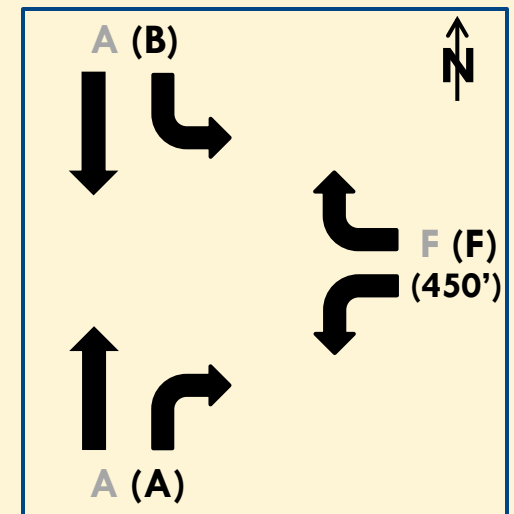
EXISTING (PROPOSED)



AM Peak
7:30-8:30 AM



Midday Peak
12:15-1:15 PM



PM Peak
5:00-6:00 PM

Kennett Pike & Center Meeting Road

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Stop control with additional turn lanes

Results

- Minor improvement to Center Meeting Road LOS during AM and Midday peak periods
- No significant change in Kennett Pike LOS

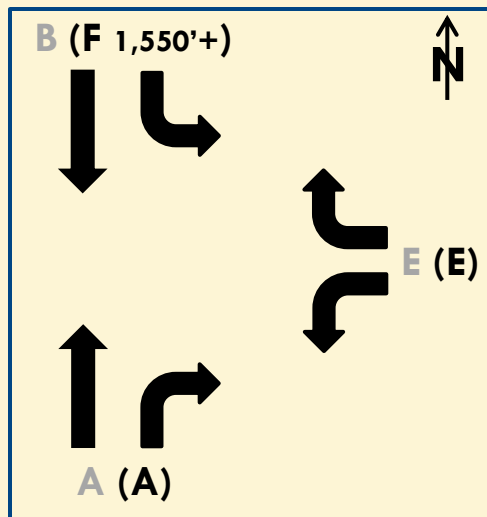
While no significant changes in LOS occur within this scenario, this option could eliminate the potential safety issue involving southbound vehicles passing on the right.

Kennett Pike & Center Meeting Road

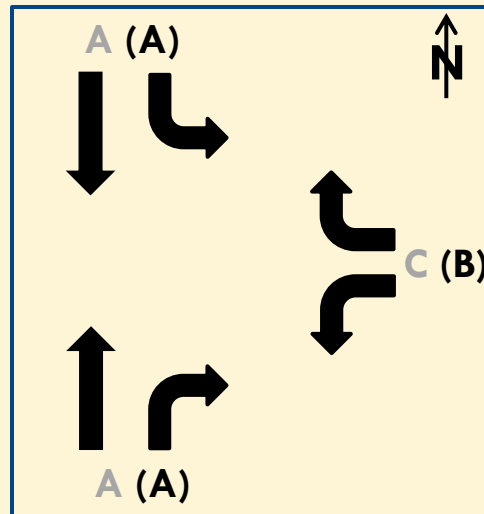
32

Installation of a traffic signal, no turn lanes, no left turn phase
Levels of Service

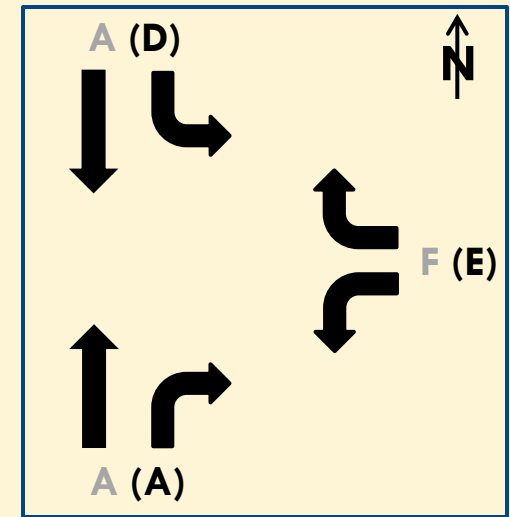
EXISTING (PROPOSED)



AM Peak
7:30-8:30 AM



Midday Peak
12:15-1:15 PM



PM Peak
5:00-6:00 PM

Kennett Pike & Center Meeting Road

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Installation of a traffic signal, no turn lanes, no left turn phase

Results

- Minor improvement to Center Meeting Road LOS during Midday and PM peak periods
- Significant increase in delay on southbound Kennett Pike and queuing during AM and PM peak periods

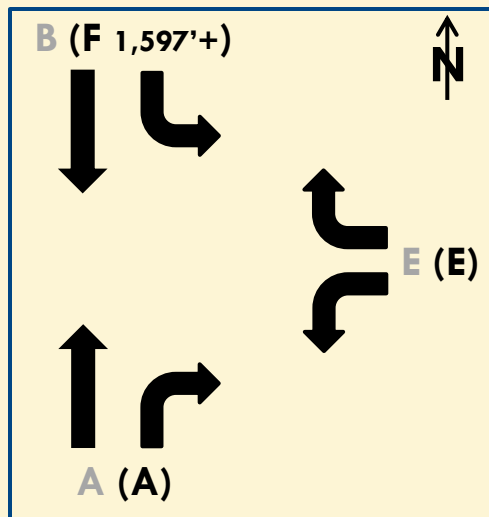
This option is NOT recommended.

Kennett Pike & Center Meeting Road

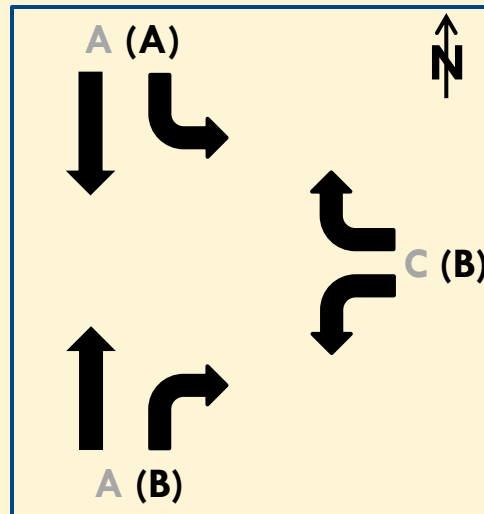
34

Installation of a traffic signal, no turn lanes, with left turn phase
Levels of Service

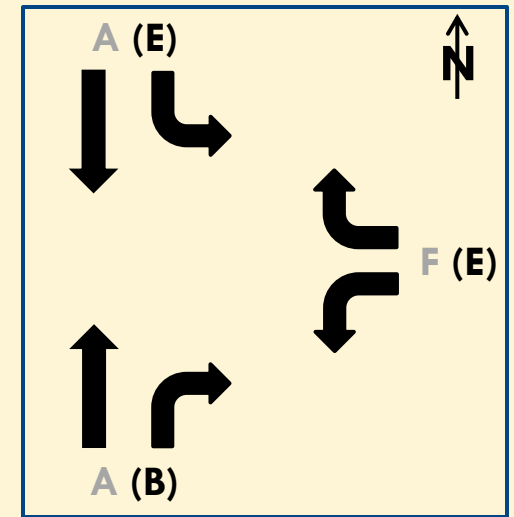
EXISTING (PROPOSED)



AM Peak
7:30-8:30 AM



Midday Peak
12:15-1:15 PM



PM Peak
5:00-6:00 PM

Kennett Pike & Center Meeting Road

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Installation of a traffic signal, no turn lanes, with left turn phase

Results

- Minor improvement to Center Meeting Road LOS during Midday and PM peak periods
- Significant increase in delay on southbound Kennett Pike and queuing during AM and PM peak periods

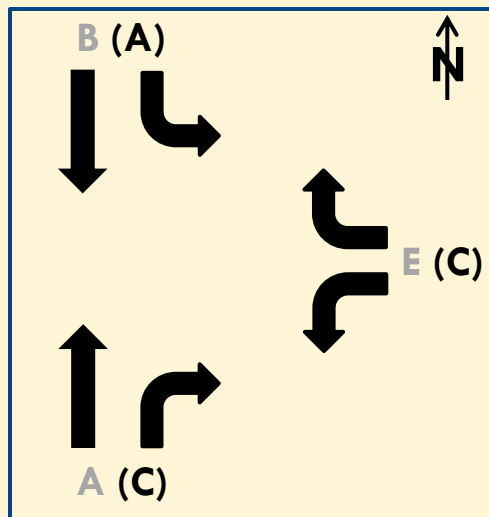
This option is NOT recommended.

Kennett Pike & Center Meeting Road

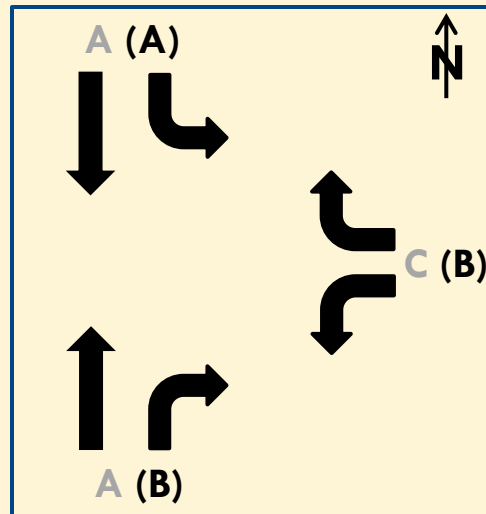
36

Installation of a traffic signal with turn lanes and left turn phase Levels of Service

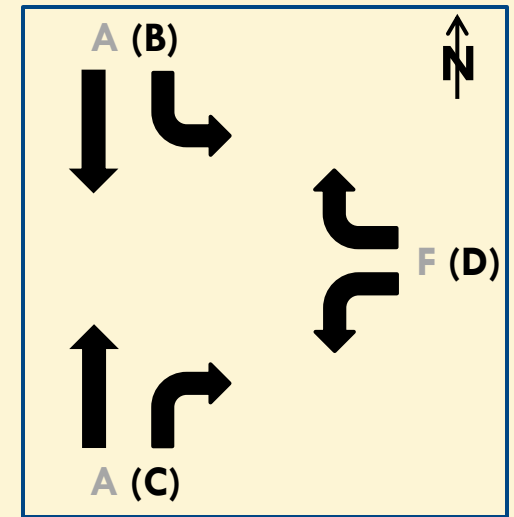
EXISTING (PROPOSED)



AM Peak
7:30-8:30 AM



Midday Peak
12:15-1:15 PM



PM Peak
5:00-6:00 PM

Kennett Pike & Center Meeting Road

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Installation of a traffic signal with turn lanes and left turn phase

Results

- AM Peak Period: Improved LOS on both southbound Kennett Pike and Center Meeting Road
- PM Peak Period: LOS on northbound Kennett Pike “balances” with Center Meeting Road, consistent with proportion of volumes from each approach destined for northbound Kennett Pike.

This option is recommended.

Kennett Pike & Center Meeting Road

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Installation of a traffic signal

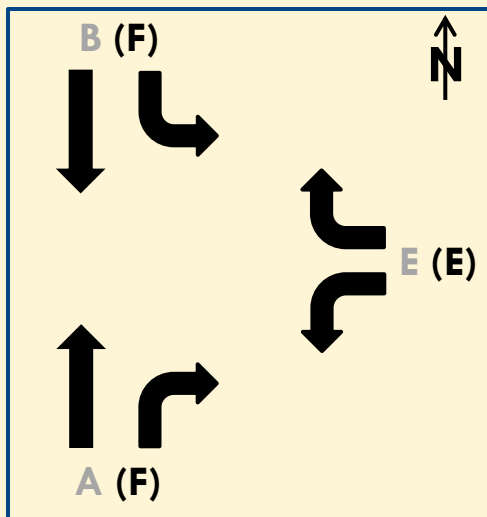
PROS	CONS
Levels of service on Center Meeting Road improve during each peak period.	Installation of a signal will only marginally improve Center Meeting Road's LOS, while greatly deteriorating Kennett Pike's.
Signal control allows for a safer navigation of the intersection for all modes of transportation.	Ideally, the high volume of southbound left turns in the AM peak period would demand a left turn lane, requiring additional right-of-way acquisition.
Additional turn lanes improve LOS of Center Meeting Road and allow for the separation of southbound left turns and through traffic, lessening delays and eliminating unsafe passing on right.	Volume of southbound left turns would warrant a protected/permissive left turn phase, potentially delaying northbound movements further.
The cycling of the signal along Kennett Pike may "meter" traffic, creating gaps in traffic for turning vehicles downstream.	Potential for an increase in rear-end crashes.

Kennett Pike & Center Meeting Road

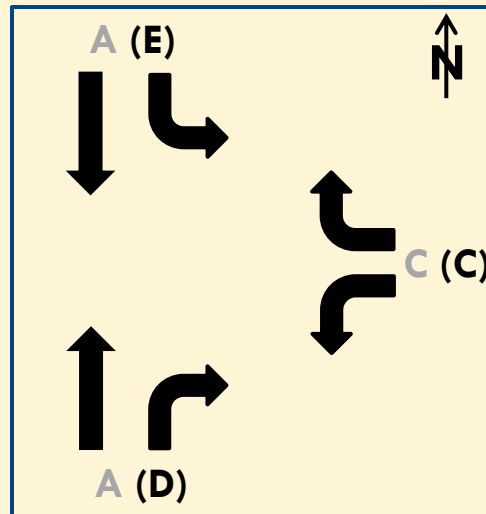
39

Installation of a roundabout Levels of Service

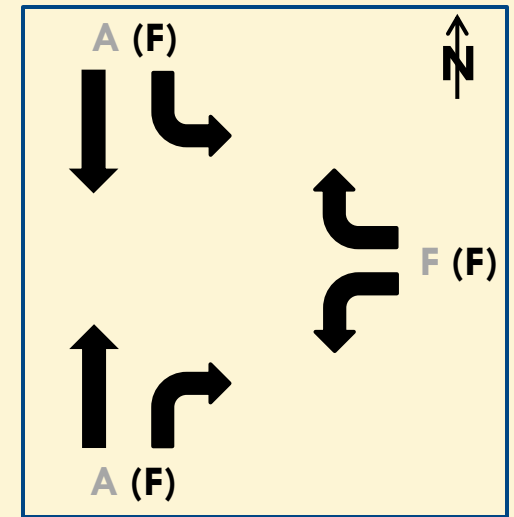
EXISTING (PROPOSED)



AM Peak
7:30-8:30 AM



Midday Peak
12:15-1:15 PM



PM Peak
5:00-6:00 PM

Kennett Pike & Center Meeting Road

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Installation of a roundabout

Results

- The roundabout has no significant effect on Center Meeting Road delays
- The LOS on Kennett Pike is drastically affected, changing from A and B to F during the AM and PM peak periods.

This option is NOT recommended.

Kennett Pike & Center Meeting Road

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Installation of a roundabout

PROS	CONS
Speeds and crashes within the area of the roundabout will be reduced greatly.	Extensive right-of-way required for construction.
The roundabout could act as a “gateway” to the Centreville community.	No improvement to the Center Meeting Road LOS, and Kennett Pike’s deteriorates dramatically, creating unnecessarily long queues.
More aesthetically pleasing compared to a traffic signal.	Roundabouts not ideal for directional flow roadways and intersections with unbalanced traffic volumes.
Lighting is required within a roundabout, providing additional illumination at the intersection.	High volumes of traffic on Kennett Pike may “choke off” access to the roundabout for Center Meeting Road traffic.

Kennett Pike & Center Meeting Road

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□ Crash Data (from 10-9-2010 to 10-9-2013)

Total	5	100%
Property Damage Only	3	60%
Personal Injury	2	40%
Angle	2	40%
Rear End	2	40%
Single Vehicle	1	20%

The data shown above includes a 250-foot radius around the entire intersection.

Kennett Pike & Center Meeting Road

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Crash Modification Factor (CMF) Method from the Highway Safety Manual

Installation of a
traffic signal:

Crash Type	# of Crashes (2010-2013)	# Crashes per Year	CMF	Predicted # of Crashes per Year
Angle	2	0.7	0.33	0.2
Rear End	2	0.7	2.43	1.6
All Types	5	1.7	0.95	1.6

Installation of a
roundabout:

Crash Type	# of Crashes (2010-2013)	# Crashes per Year	CMF	Predicted # of Crashes per Year
All Types (injury only)	2	0.7	0.22	0.1
All Types (all severities)	5	1.7	0.61	1.0

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Kennett Pike & Owls Nest Road/ Twaddell Mill Road



Kennett Pike & Owls Nest Road/Twaddell Mill Road

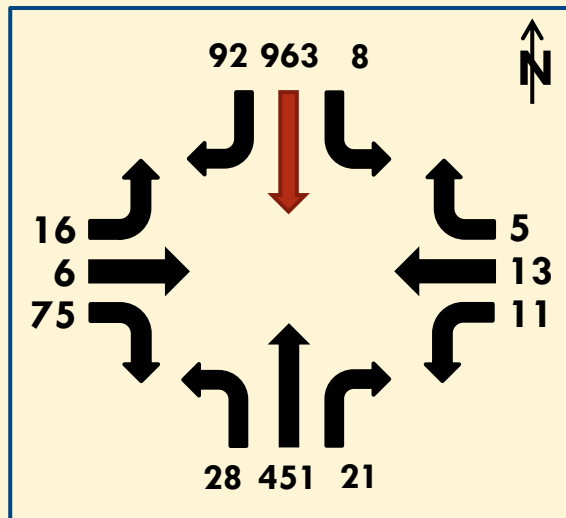
45

- 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.

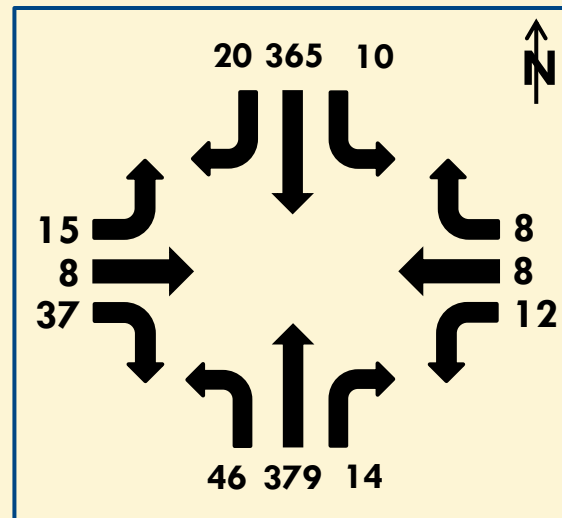
Kennett Pike & Owls Nest Road/Twaddell Mill Road

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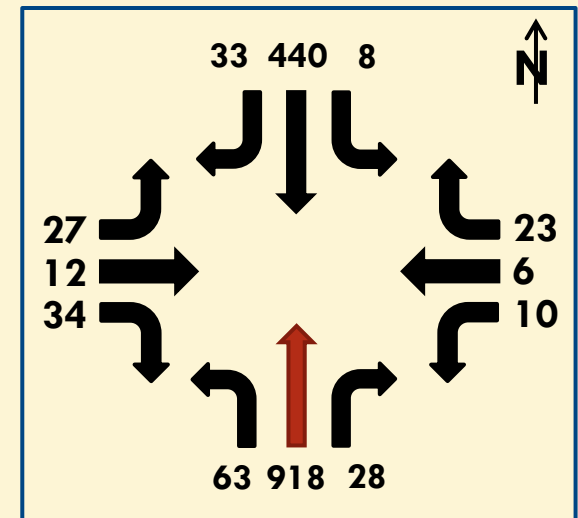
Existing Turning Movement Volumes



AM Peak
7:30-8:30 AM



Midday Peak
11:45AM-12:45 PM

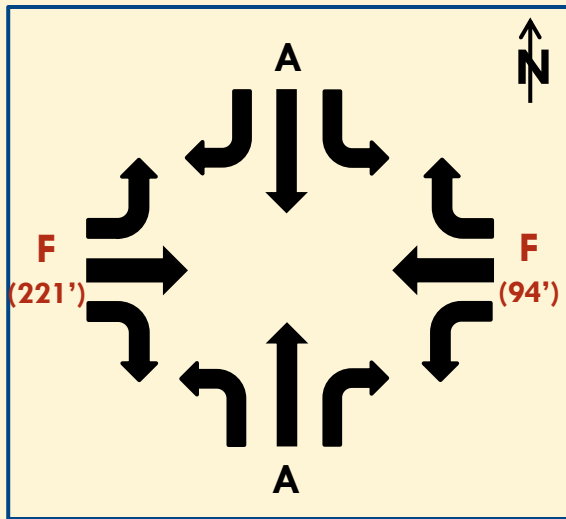


PM Peak
5:00-6:00 PM

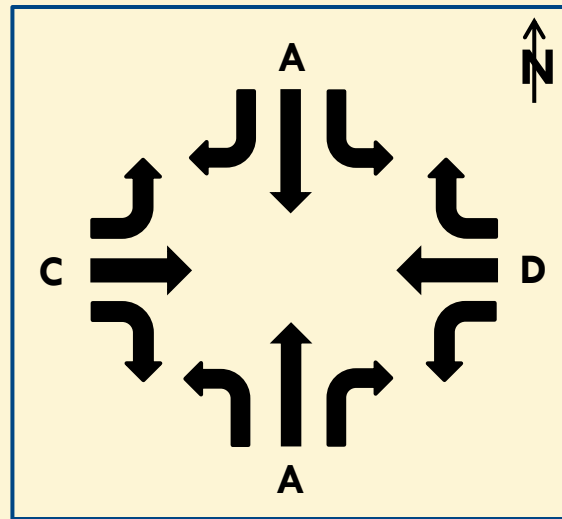
Kennett Pike & Owls Nest Road/Twaddell Mill Road

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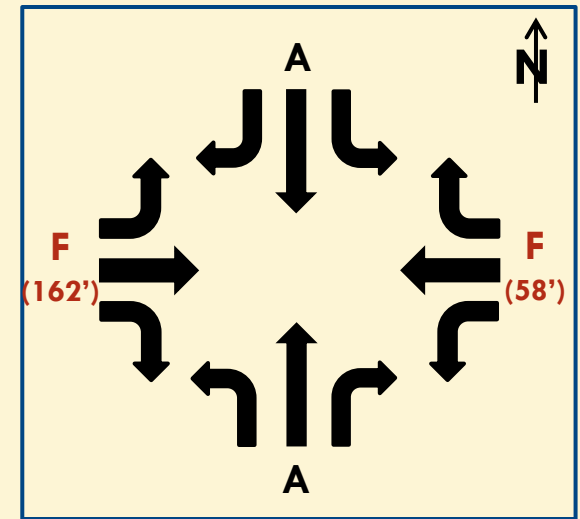
Existing Levels of Service



AM Peak
7:30-8:30 AM



Midday Peak
11:45AM-12:45 PM



PM Peak
5:00-6:00 PM

Kennett Pike & Owls Nest Road/Twaddell Mill Road

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□ 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.

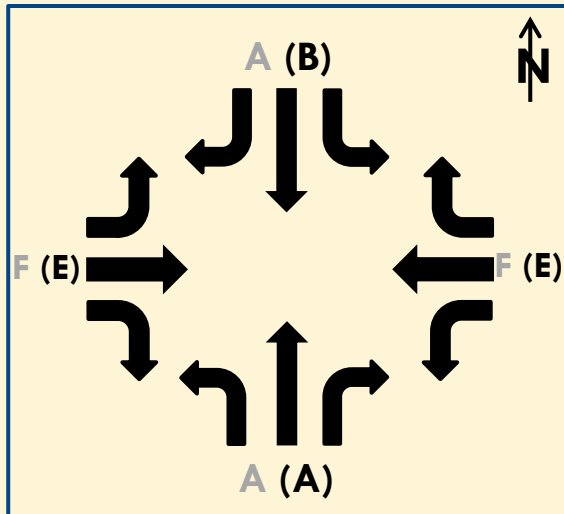
■ Roundabout

Kennett Pike & Owls Nest Road/Twaddell Mill Road

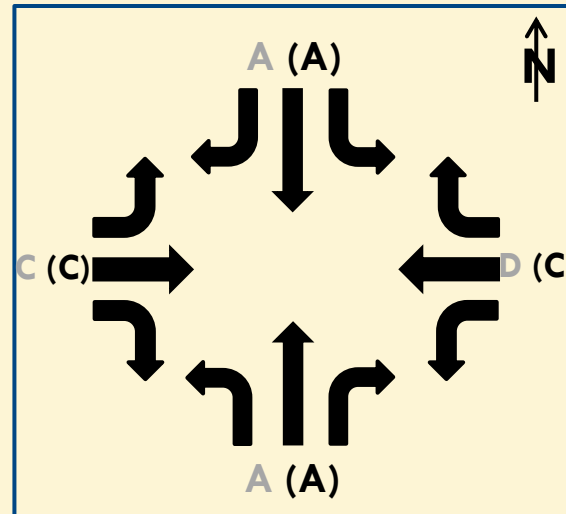
49

Installation of a traffic signal Levels of Service

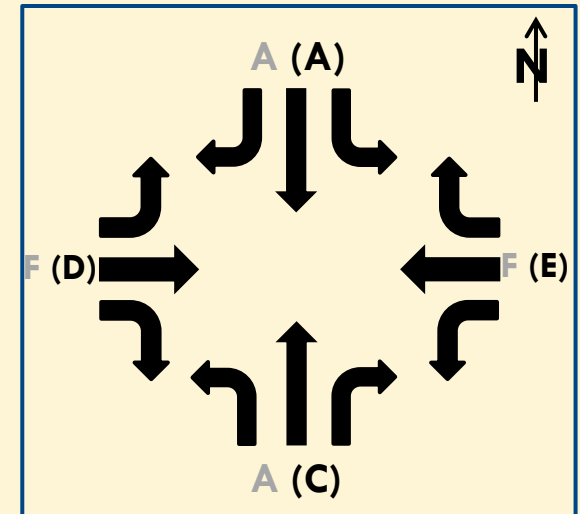
EXISTING (PROPOSED)



AM Peak
7:30-8:30 AM



Midday Peak
11:45AM-12:45 PM



PM Peak
5:00-6:00 PM

Kennett Pike & Owls Nest Road/Twaddell Mill Road

50

Installation of a traffic signal

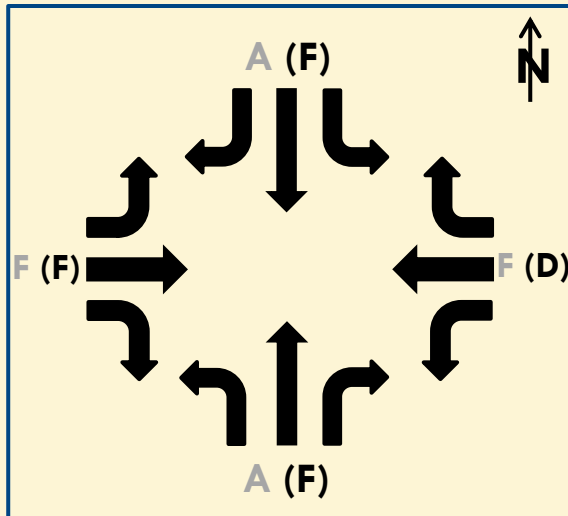
PROS	CONS
Levels of service on Owls Nest Road/Twaddell Mill Road improve during each peak period.	Offset side streets force the use of “split” phasing, potentially causing longer delays along Kennett Pike.
Signal control allows for a safer navigation of the intersection for all modes of transportation.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

Kennett Pike & Owls Nest Road/Twaddell Mill Road

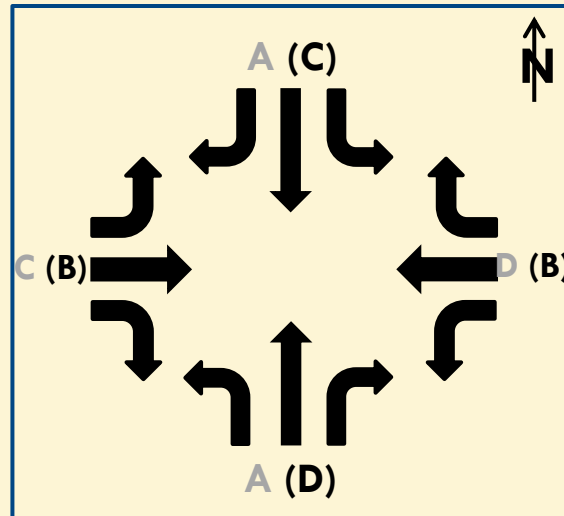
51

Installation of a roundabout Levels of Service

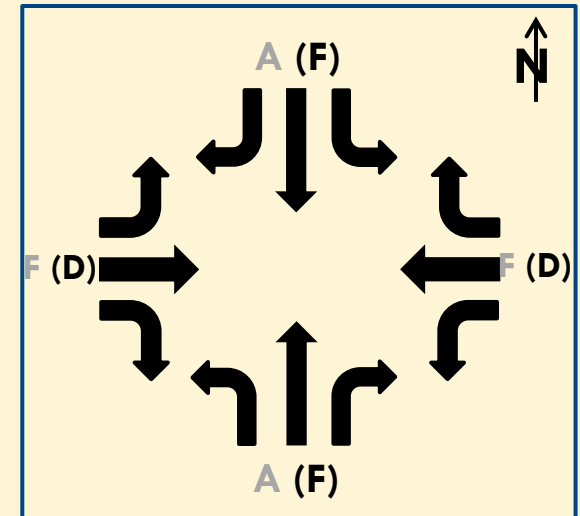
EXISTING (PROPOSED)



AM Peak
7:30-8:30 AM



Midday Peak
11:45AM-12:45 PM



PM Peak
5:00-6:00 PM

Kennett Pike & Owls Nest Road/Twaddell Mill Road

52

Installation of a roundabout

PROS	CONS
Speeds and crashes within the area of the roundabout will be reduced greatly.	Extensive right-of-way required for construction.
The free-flowing nature of the roundabout will improve LOS on Owls Nest Road/Twaddell Mill Road.	Though Owls Nest Road/Twaddell Mill Road's LOS will improve, Kennett Pike's will deteriorate dramatically, creating long queues.
More aesthetically pleasing compared to a traffic signal.	Construction of the roundabout will have regional impacts and will most likely require road closures.
Lighting is required within a roundabout, providing previously unavailable illumination at the intersection.	High volumes of traffic on Kennett Pike may "choke off" access to the roundabout for Owls Nest Road/Twaddell Mill Road traffic.

Kennett Pike & Owls Nest Road/Twaddell Mill Road

53

□ Crash Data (from 10-9-2010 to 10-9-2013)

Total	15	100%
Property Damage Only	9	60%
Personal Injury	5	33%
Fatality	1	7%
Angle	8	54%
Rear End	2	13%
Single Vehicle	2	13%
Sideswipe, Same Direction	2	13%
Sideswipe, Opposite Direction	1	7%

The data shown above includes a 250-foot radius around the entire intersection.

Kennett Pike & Owls Nest Road/Twaddell Mill Road

54

Crash Modification Factor (CMF) Method from the Highway Safety Manual

Installation of a
traffic signal:

Crash Type	# of Crashes (2010-2013)	# of Crashes per Year	CMF	Predicted # of Crashes per Year
Angle	8	2.7	0.33	0.9
Rear End	2	0.7	2.43	1.6
All Types	15	5	0.95	4.8

Installation of a
roundabout:

Crash Type	# of Crashes (2010-2013)	# of Crashes per Year	CMF	Predicted # of Crashes per Year
All Types (injury only)	5	1.7	0.22	0.4
All Types (all severities)	15	5	0.61	3.1

52

Kennett Pike & Snuff Mill Road



Kennett Pike & Snuff Mill Road

56

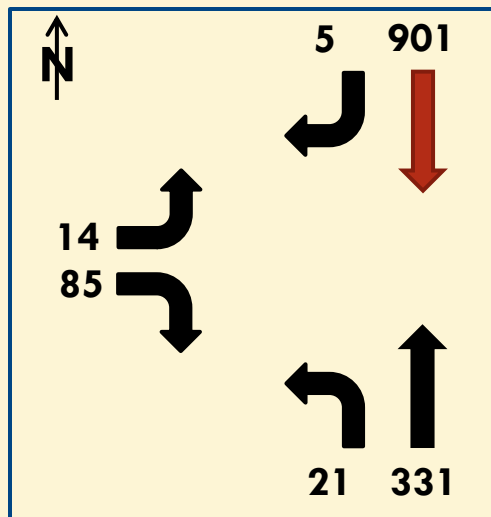
- Peak hours
 - ▣ 7:15 AM – 8:15 AM
 - ▣ 12:30 PM – 1:30 PM
 - ▣ 5:00 PM – 6:00 PM

- Observations
 - ▣ Wide paved area on northeast corner of intersection utilized as the following:
 - Bypass lane
 - Right turn lane
 - Construction storage area
 - Emergency Parking area
 - Turn around
 - School bus drop-off
 - Development entrance
 - ▣ School bus stops

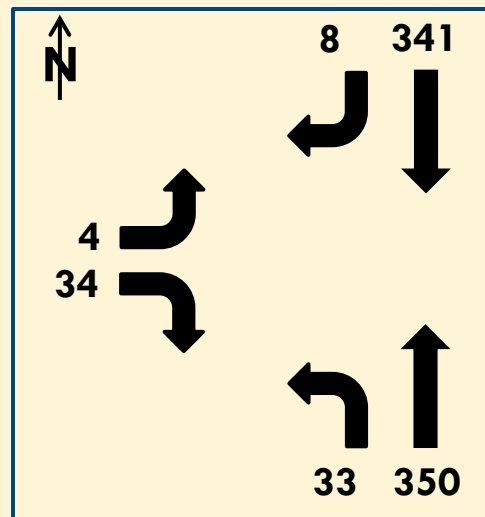
Kennett Pike & Snuff Mill Road

57

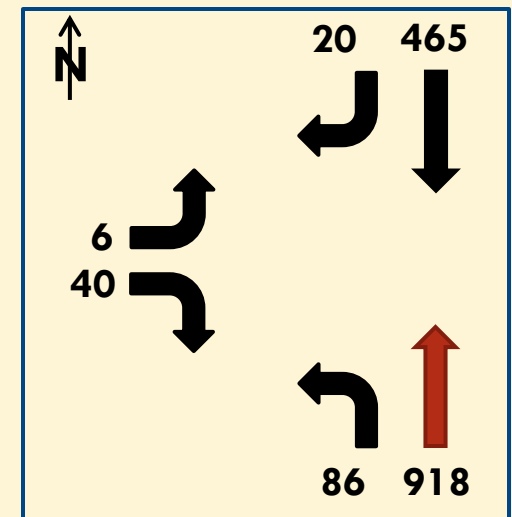
Existing Turning Movement Volumes



AM Peak
7:15-8:15 AM



Midday Peak
12:30-1:30 PM

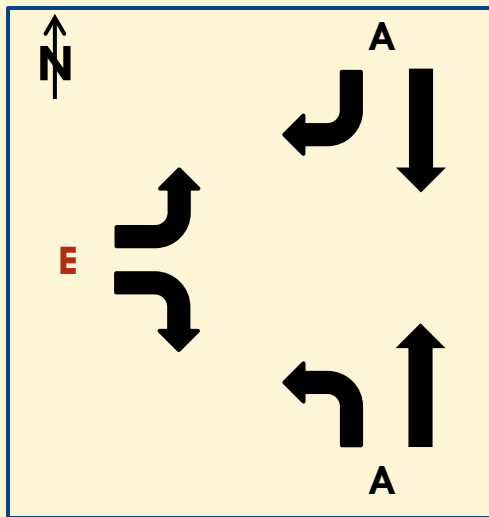


PM Peak
5:00-6:00 PM

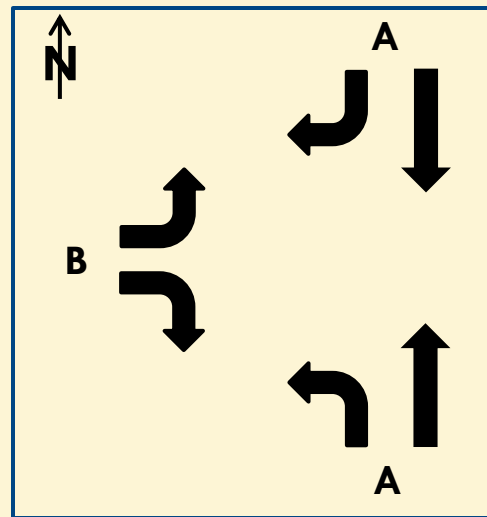
Kennett Pike & Snuff Mill Road

58

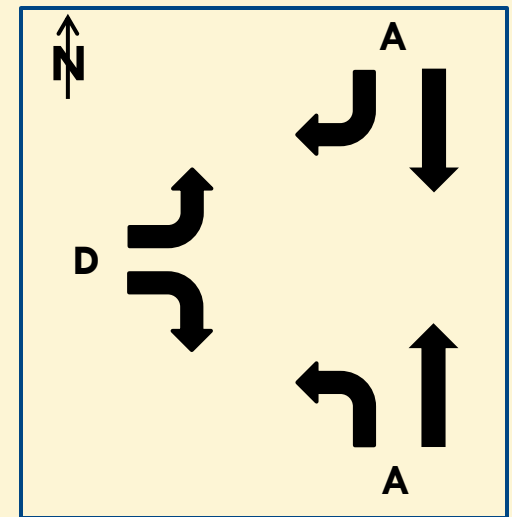
Existing Levels of Service



AM Peak
7:15-8:15 AM



Midday Peak
12:30-1:30 PM



PM Peak
5:00-6:00 PM

Kennett Pike & Snuff Mill Road

59

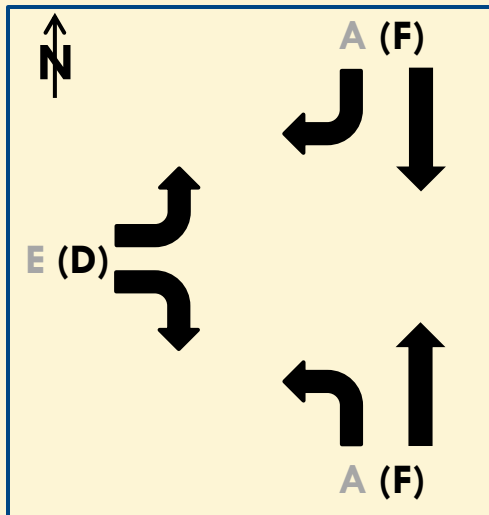
- Potential Traffic Control Modifications
 - This intersection did not meet warrants for the installation of a traffic signal, based on current DE-MUTCD criteria.
 - Roundabout

Kennett Pike & Snuff Mill Road

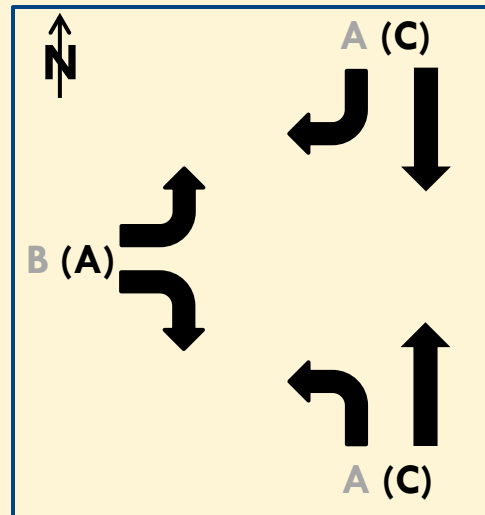
60

Installation of a roundabout Levels of Service

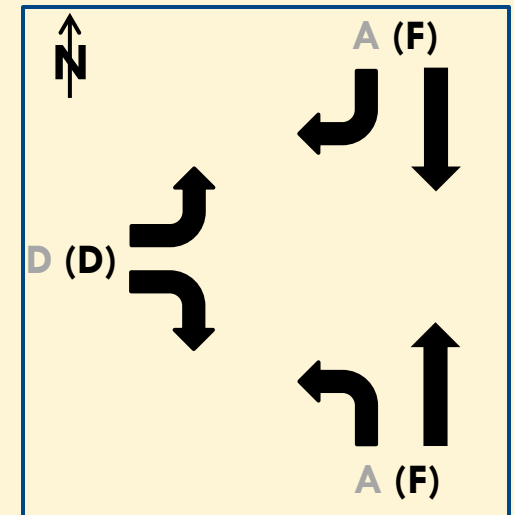
EXISTING (PROPOSED)



AM Peak
7:15-8:15 AM



Midday Peak
12:30-1:30 PM



PM Peak
5:00-6:00 PM

Kennett Pike & Snuff Mill Road

61

Installation of a roundabout

PROS	CONS
Speeds and crashes within the area of the roundabout will be reduced greatly.	Extensive right-of-way required for construction.
The free-flowing nature of the roundabout will improve LOS on Snuff Mill Road.	Though Snuff Mill Road's LOS will improve, Kennett Pike's will deteriorate dramatically, creating long queues.
More aesthetically pleasing compared to a traffic signal.	Construction of the roundabout will have regional impacts and will most likely require road closures.
Lighting is required within a roundabout, providing previously unavailable illumination at the intersection.	High volumes of traffic on Kennett Pike may "choke off" access to the roundabout for Snuff Mill Road traffic.

Kennett Pike & Snuff Mill Road

62

□ Crash Data (from 10-9-2010 to 10-9-2013)

Total	7	100%
Property Damage Only	6	86%
Personal Injury	1	14%
Rear End	4	57%
Angle	2	29%
Sideswipe, Opposite Direction	1	14%

The data shown above includes a 250-foot radius around the entire intersection.

Kennett Pike & Snuff Mill Road

63

Crash Modification Factor (CMF) Method from the Highway Safety Manual

Installation of a
roundabout:

Crash Type	# of Crashes (2010-2013)	# of Crashes per Year	CMF	Predicted # of Crashes per Year
All Types (injury only)	1	0.3	0.22	0.1
All Types (all severities)	7	2.3	0.61	1.4

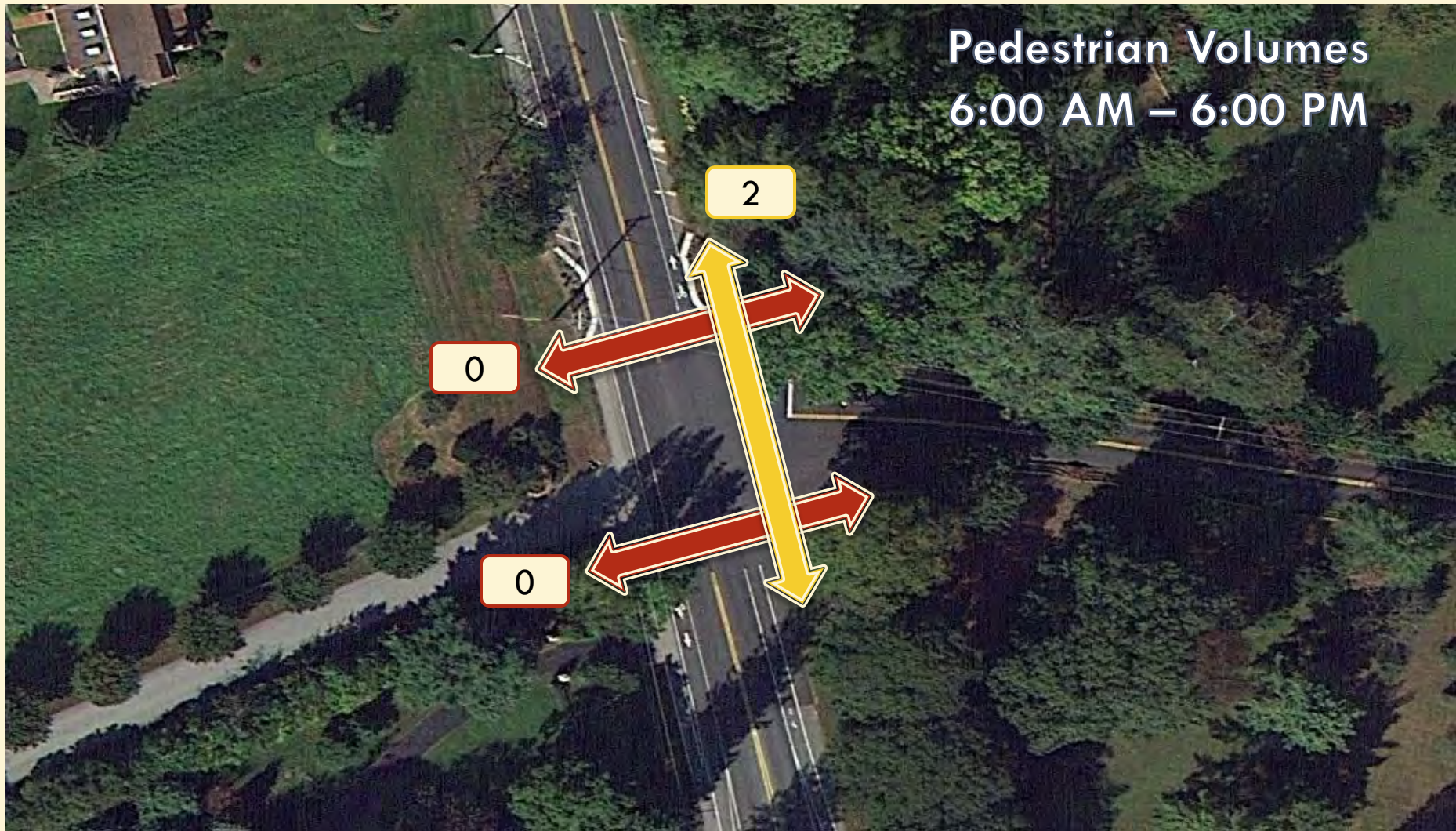
Pedestrians

64

- 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 & Center Meeting Road

65



Pedestrians —

Kennett Pike & Owls Nest Road/Twaddell Mill Road

66



Pedestrians – Kennett Pike & Snuff Mill Road

67

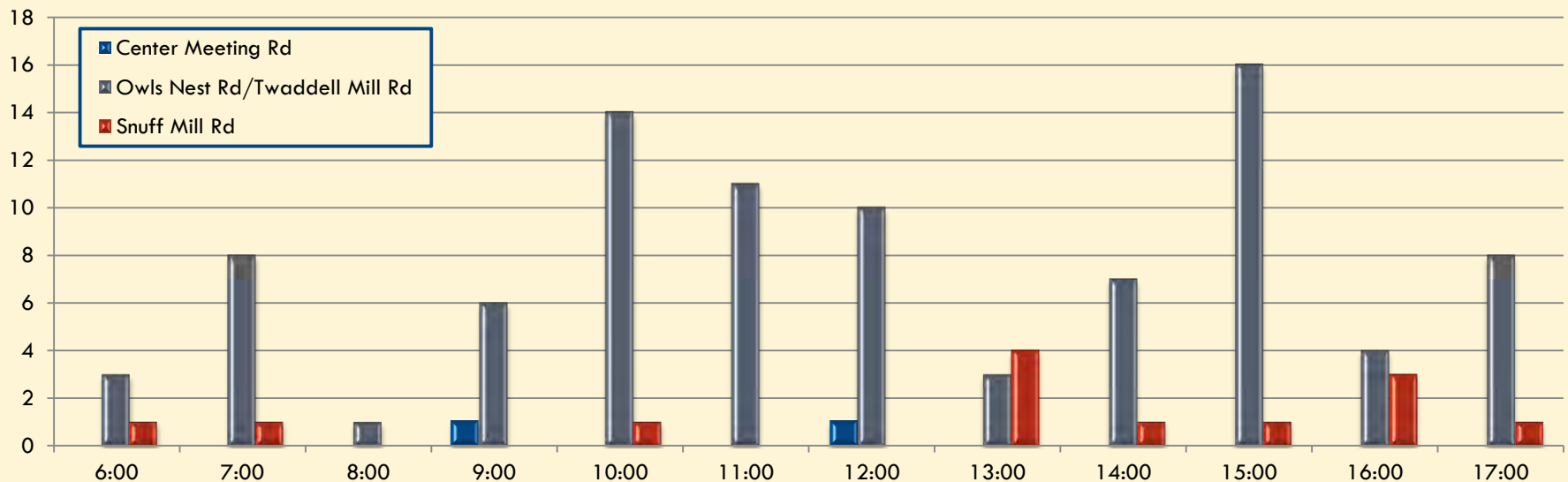


Pedestrians

68

□ Other observations:

- Several pedestrians observed crossing between Buckley's mid-block crosswalk and Mount Airy Drive
- Peak pedestrian times around mid-morning/lunch and late afternoon (near PM peak hour)
- Chart below counts only pedestrians crossing a street (either mid-block or at a crosswalk)



Pedestrians

69

□ 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
- In-pavement lighting systems at mid-block crosswalks are not recommended since:
 - Extensive amount of maintenance is required to sustain the functionality of the systems
 - Many pedestrians were found crossing Kennett Pike to and from their vehicles and not utilizing crosswalks provided. The installation of this system would likely not change this behavior.

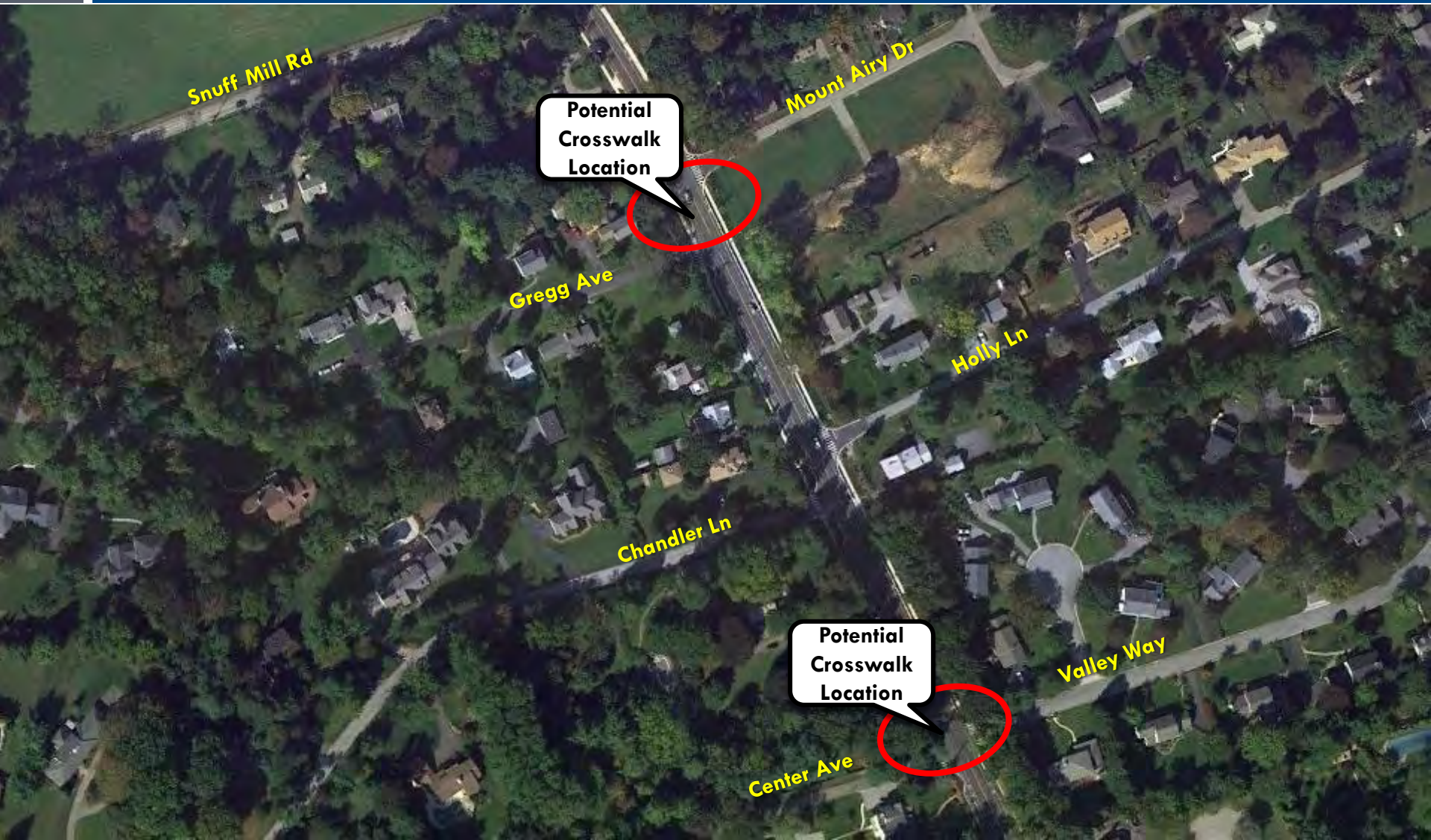
Pedestrians

70



Pedestrians

71



Signage

72

- 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.

Potential Recommendations

73

- 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 a traffic signal at the intersection of Kennett Pike and Center Meeting Road
 - ▣ Include a southbound left turn lane and westbound right turn lane
 - ▣ Include southbound protected/permissive left turn phase
 - ▣ This is a long-term project and will not happen overnight

- Install additional crosswalks with overhead roadway lighting 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

Potential Recommendations

74

- 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
 - ▣ Center Meeting Road
 - ▣ Owls Nest Road/Twaddell Mill Road
 - ▣ Center Avenue/Valley Way
 - ▣ Gregg Avenue

Potential Recommendations

75



Potential parking &
shrub modifications
for sight distance
improvements

Potential Recommendations

76

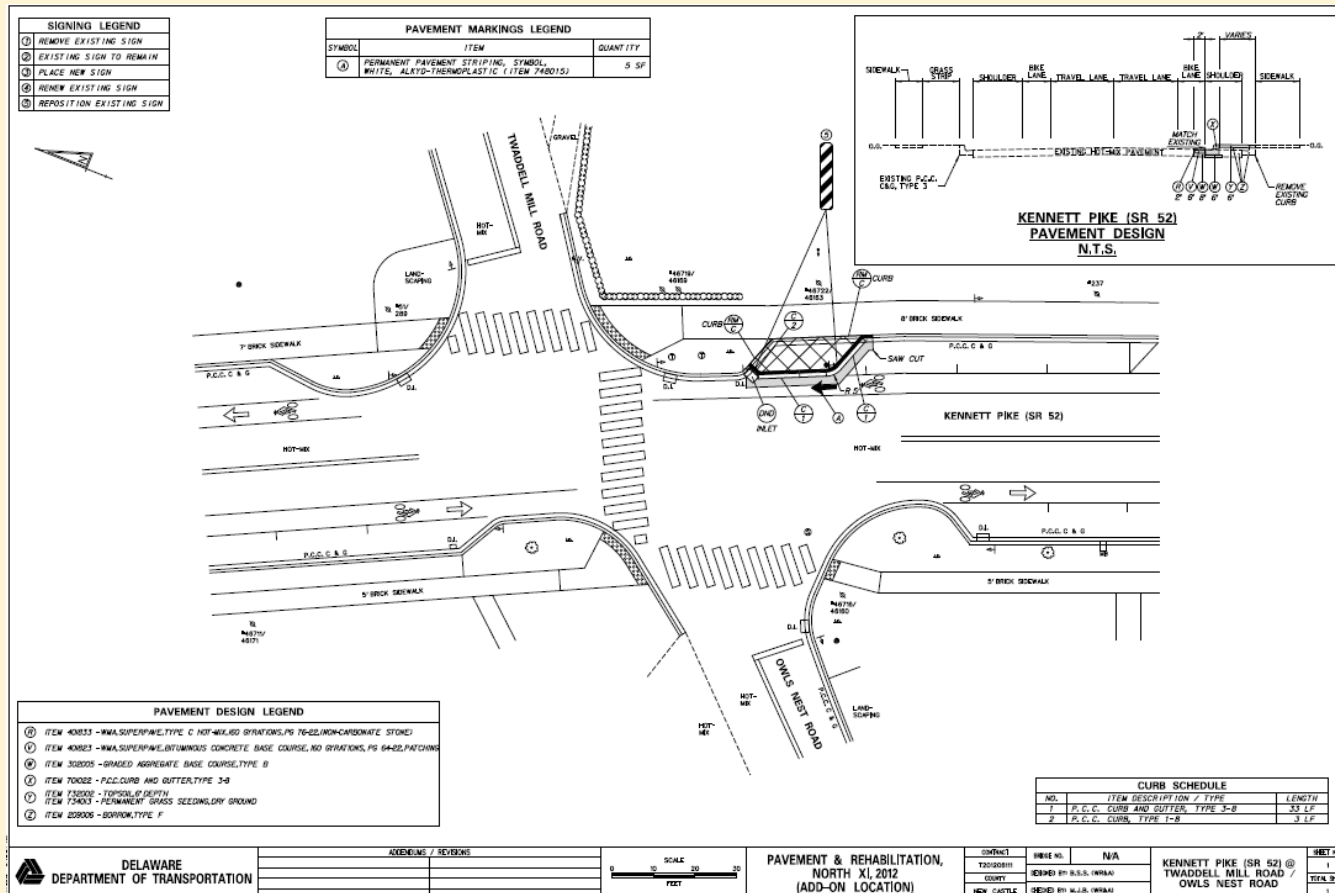


Potential parking &
shrub modifications
for sight distance
improvements

Potential Recommendations

77

- Remove parking and extend existing bump out at Twaddell Mill Road to provide enhanced visibility for stopped westbound vehicles.





Thank You

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