

Welcome
to the

***Rehabilitation of
Centre Road, Route 141***
Informational Meeting

PAVEMENT REHABILITATION OF SR 141

Project Background

In the late 1980s, construction of 9" of concrete pavement began on the relocation of SR 141 from Lancaster Pike to Montchanin Road.

During the 1980s, changes to the processing of cement also occurred. This change increased the amount of alkali's in the cement.

- The increase in alkali's caused a reaction with the silica in the aggregates known as ASR (alkali-silica reaction).
- This reaction causes a gel to form around the aggregates, the gel expands, and cracking in the concrete occurs.
- SR 141 deteriorated rapidly due to this reaction.

Since the early 1990's, DelDOT has been designing concrete pavements to prevent this reaction from occurring.



PAVEMENT REHABILITATION OF SR 141

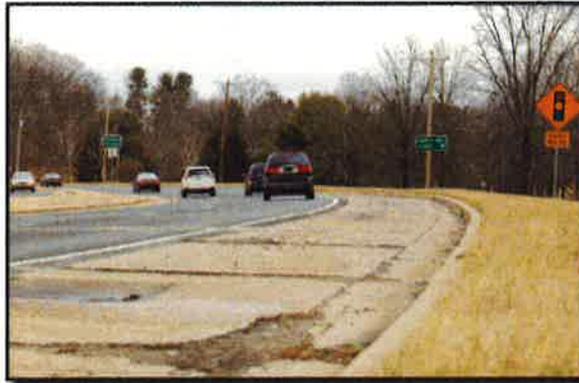
Project Overview

Project Need:

- SR 141, Centre Road from SR48/SR100, Lancaster Pike to north of SR52, Kennett Pike is experiencing significant pavement deterioration.
- The hot-mix overlay of the roadway is no longer providing a smooth riding surface or protecting the concrete underneath.
- The pavement deterioration has resulted in the continual need for maintenance and a poor ride quality.

Project Purpose:

- To provide a safer and more comfortable ride for travelers and decrease the yearly maintenance costs for the Department.
- In order to accomplish this the Delaware Department of Transportation will be reconstructing the concrete pavement.



PAVEMENT REHABILITATION OF SR 141

Project/Construction Overview

Project involves the following:

- The pavement rehabilitation of SR141, Centre Road from Lancaster Avenue to north of the SR141 and Kennett Pike Interchange.
- The pavement rehabilitation of the SR141 and Kennett Pike interchange ramps.
- The pavement rehabilitation of the multi-use paths located within the project limits.
- Replacement of the existing guardrail to meet new safety standards.
- Installation of median wire rope guardrail.
- Replacement of portions of the concrete median along SR141 with a grass median.
- Modifying the merge configuration of the ramp for westbound Kennett Pike to southbound SR141.

Construction overview:

- Construction is scheduled to begin late Summer 2017 with an anticipated completion date in the Fall of 2018.
- Speeds will be temporarily reduced to 35 MPH along SR141 during construction.
- Temporary improvements at the intersection of Montchanin Road and SR141 will be made to help relieve congestion during construction.
- Construction is proposed to consist of 5 primary phases.
- Message boards will be placed two weeks prior to start of a phase to notify motorist.
- Several detours will be in place during construction.
- Pedestrians movements will be accommodated throughout construction.
- Majority of the construction will occur under contraflow. (see Contraflow Board)
- Potential night-time work.



PAVEMENT REHABILITATION OF SR 141

Acceleration Lane from SB 52 to SB 141 (Ramp KF)

Existing Tapered Acceleration Lane

- 6 crashes occurred in the acceleration lane from southbound 52 to southbound 141 between August 2013 and August 2016.
- Shorter acceleration and merging area than parallel merge configurations.
- Research has shown tapered only merges result in more aggressive driving behaviors.



Proposed Parallel Acceleration Lane

- DeIDOT's preferred acceleration lane configuration.
- Longer acceleration and merging area than tapered merge configurations.
- Encourages less aggressive driving behavior resulting in safer operations.
- Advantageous for older drivers.



PAVEMENT REHABILITATION OF SR 141

Bicycle Accommodations

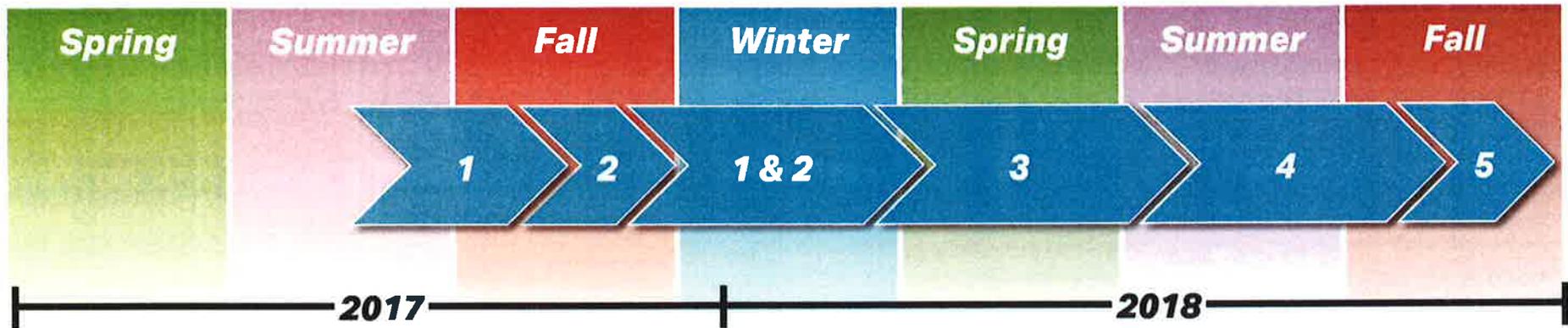
The project will provide improved bicycle facilities by:

- Rehabilitating the existing concrete shoulders.
- Replacing the existing rumble strips with bicycle-friendly rumble strips.
- Reconstructing the existing hot-mix multi-use path on the northbound and southbound sides of SR141.
- Improved crossings at Barley Mill Road and SR141.



PAVEMENT REHABILITATION OF SR 141

Proposed Construction Phasing Overview



Phase 1

- Median construction of SR141 and placement of guardrail in the median.
- SR141 will be reduced to one lane in each direction for the duration of this phase.
- Construction of crossover locations along SR141, to be utilized in future phases.
- Temporary intersection improvements at the intersection of Montchanin Road and SR141.
- Barley Mill Road and Barley Mill Plaza will be restricted to rights in and rights out. Detour routes will be put in place.
- Traffic Signal at the intersection of Barley Mill Road and SR141 will go to flashing yellow except when a pedestrian activates the pedestrian pushbutton.

Phase 2

- Hot-mix overlay of southbound SR141 concrete shoulder, will allow the shoulder to be utilized in the next phase to provide more separation of vehicles.
- Outside travel lane on southbound SR141 will be closed while overlay is occurring.

Phase 1 & 2 Carry Over

- Carryover work from Phase 1 and Phase 2.
- Potential construction of haul roads.
- Preparation for the next phase.

Phase 3

- Pavement rehabilitation of northbound SR141 and ramps located on the northbound side of SR141.
- Pavement rehabilitation of multi-use path on northbound side of SR141.
- Northbound and southbound vehicles will be traveling on the southbound side of SR141 under contra-flow.
- Barley Mill Road and Barley Mill Plaza restricted to rights in and rights out.
- Traffic Signal at the intersection of Barley Mill Road and SR141 will go to flashing yellow except when a pedestrian activates the pushbutton.
- Detour routes will be in place for the ramps, Barley Mill Road, and Barley Mill Plaza.

Phase 4

- Pavement rehabilitation of southbound SR141 and ramps located on the southbound side of SR141.
- Northbound and southbound vehicles will be traveling on the northbound side of SR141 under contra-flow.
- Barley Mill Road will be closed at SR141. Barley Mill Plaza restricted to rights in and rights out.
- Traffic Signal at the intersection of Barley Mill Road and SR141 will go to flashing yellow except when a pedestrian activates the pushbutton.
- Detour routes will be in place for the ramps, Barley Mill Road, and Barley Mill Plaza.

Phase 5

- Removal of the temporary crossovers and restoration of medians.
- Mill and overlay of the intersection of SR141 and Lancaster Pike.
- Restoration of Montchanin Road and SR141 Intersection.
- Pavement rehabilitation of multi-use path along southbound SR141.
- Contractor close out work.
- Work will be done under intermittent lane and shoulder closures.

Phase 6

- Separate landscape contract to replace existing landscape located in median of SR 141 and Montchanin Road.

PAVEMENT REHABILITATION OF SR 141

Contraflow

Benefits of constructing the roadway under contraflow as compared to closing one lane at a time:

- Allows for greater separation between the vehicular traffic and the construction zone. Resulting in improved safety for the motorist and the construction workers.
- Reduced number of construction entrances resulting in less chance of a vehicle entering the construction area. In addition the number of conflict points between construction vehicles and the motorist are reduced.
- Reduction in construction duration as result of giving the contractor a larger area to work in.
- Reduced number of phases. This provides both a safety benefit and a time benefit. It improves the safety by reducing the number of times that motorists are exposed to an unfamiliar lane configuration. In addition this reduces the contract duration by limiting the lost time in between phases.

Benefits of constructing SR141 under contraflow as compared to full detour:

- Provides many of the benefits of a detour without the additional time it would take motorist to travel around the closure.
- Both provide separation of the motorist from the construction area.
- Both provide the contractor a larger area to work in.

Contraflow Work on Northbound Lanes:



PAVEMENT REHABILITATION OF SR 141

Montchanin Road Temporary Improvements



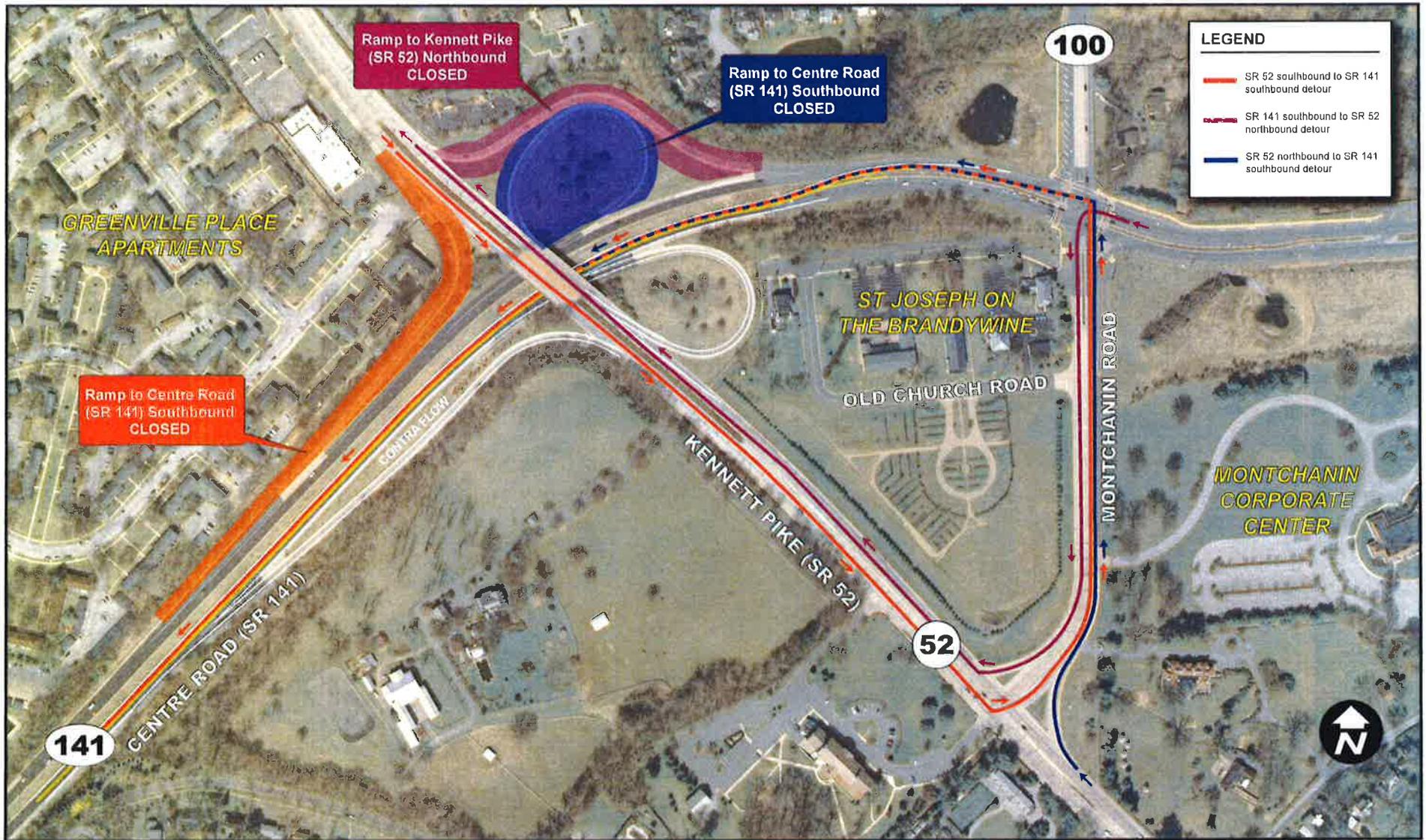
PAVEMENT REHABILITATION OF SR 141

Phase 3: Detour Plan



PAVEMENT REHABILITATION OF SR 141

Phase 4: Detour Plan



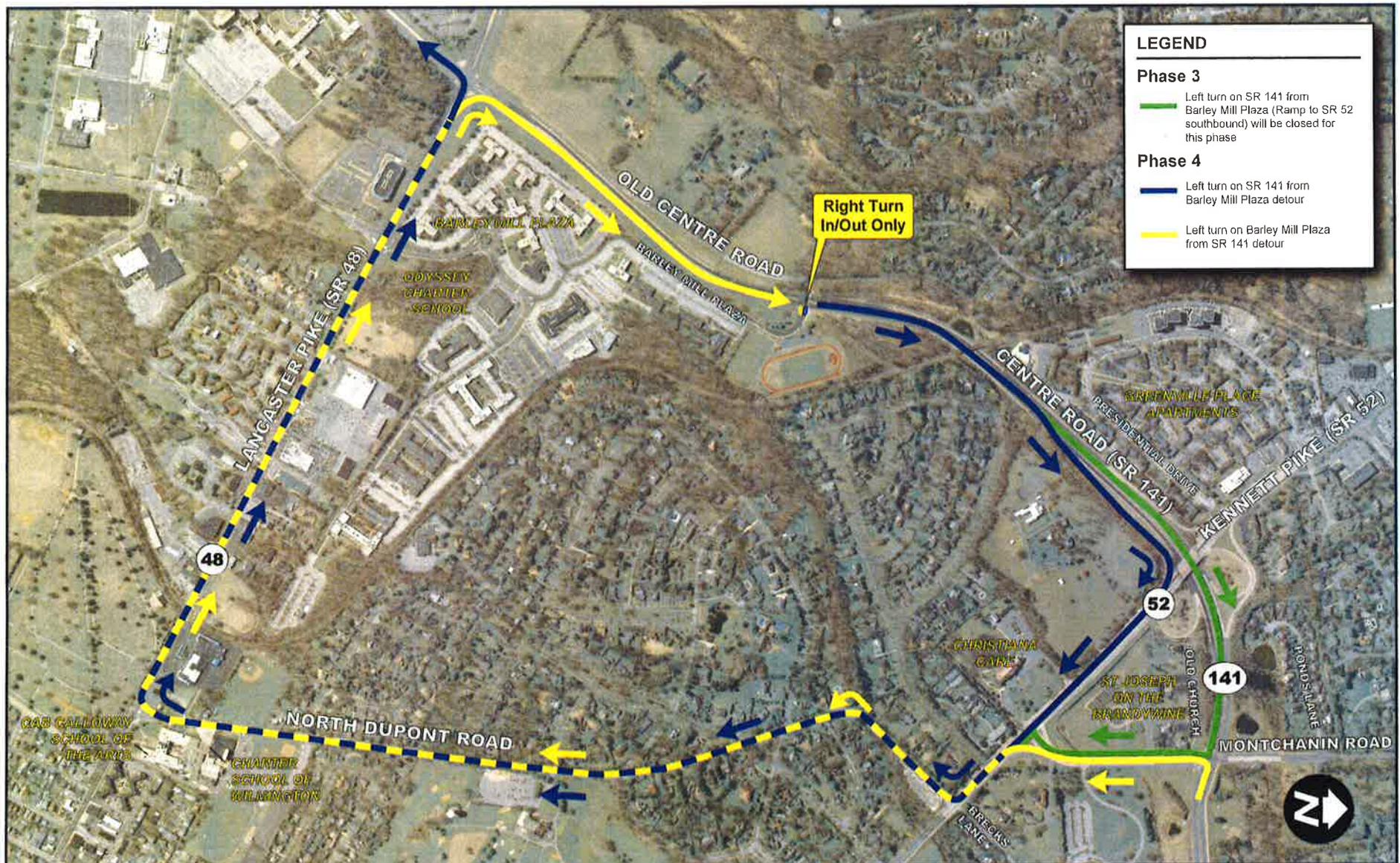
PAVEMENT REHABILITATION OF SR 141

Barley Mill Road Detour Plan



PAVEMENT REHABILITATION OF SR 141

Barley Mill Plaza Detour Plan



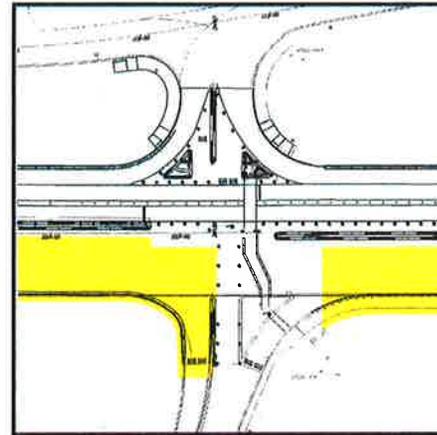
PAVEMENT REHABILITATION OF SR 141

Pedestrian Accommodations at Barley Mill Road During Construction

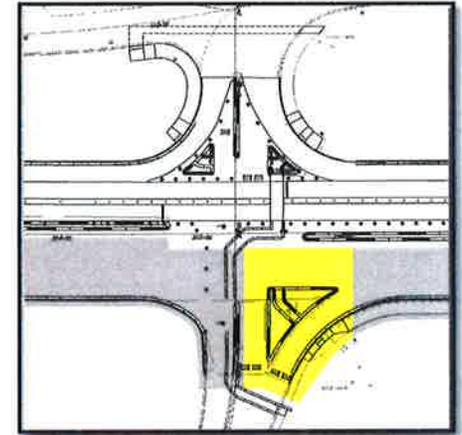
Components of Pedestrian Crossing

- 6' Wide ADA Compliant Path with barricades to keep pedestrian protected from construction activities where possible.
- Push buttons will activate red lights at traffic signal, stopping traffic for a safe crossing.
- Flaggers provided during construction activities to guide pedestrians through active construction zones.
- Temporary ramps, push buttons, pathways will be constructed to ensure ADA compliance throughout all construction phases.

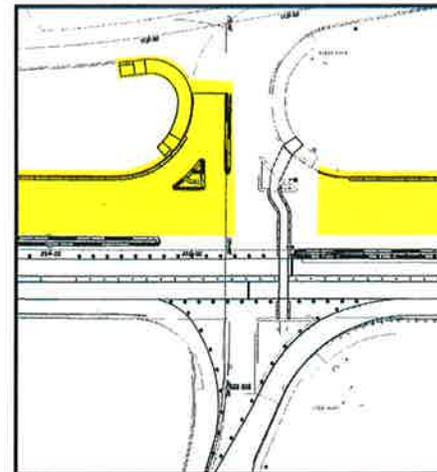
Example of Pedestrian Walkway with ADA Compliant Barricades



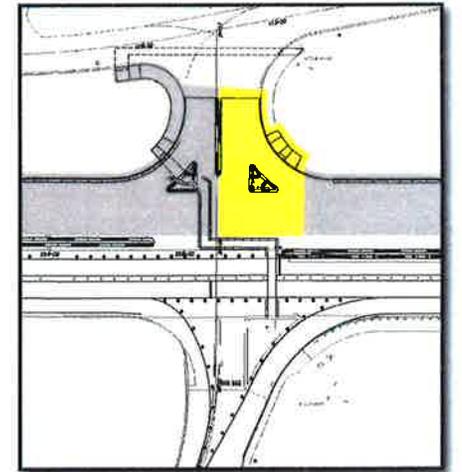
Phase 3A



Phase 3B



Phase 4A



Phase 4B

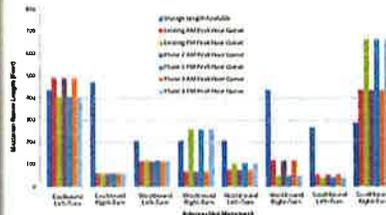
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Traffic Conditions at Intersections During Construction

SR 141 at SR 48 (Lancaster Pike)



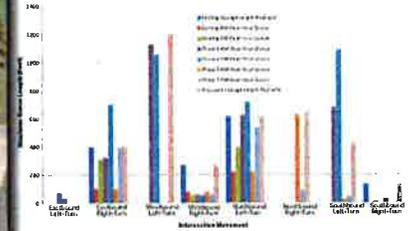
Intersection of SR 141 at SR 48



SR 141 at SR 100 (Montchanin Road)



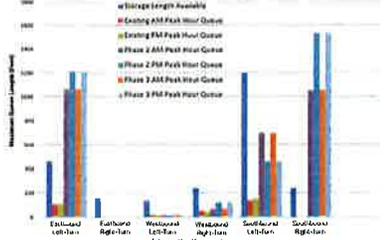
Intersection of SR 141 and Montchanin Rd



SR 52 (Kennett Pike) at Montchanin Road



Intersection of SR 52 and Montchanin Rd



Level of Service and Delays Summary Table

Intersection Delays Level of Service A-F (Delay In Seconds)	Existing Conditions		Phase 3 Construction		Phase 4 Construction	
	AM	PM	AM	PM	AM	PM
1 S.R. 141 & S.R. 48 (Lancaster Pike)	D (42)	E (62)	F (182)	F (161)	F (182)	F (161)
2 S.R. 141 & Montchanin Road	C (29)	D (38)	C (32)	D (40)	F (110)	F (197)
3 S.R. 52 & Montchanin Road (Kennett Pike)	B (15)	C (25)	D (42)	D (47)	C (32)	F (245)

Note: Assuming on diversion.

PAVEMENT REHABILITATION OF SR 141

Queue Lengths at Intersections During Construction

Existing
↙
**SR 141
at
SR 48
(Lancaster Pike)**



Proposed
↙
**SR 141
at
SR 48
(Lancaster Pike)**



Existing
↙
**SR 141
at
SR 100
(Montchanin Rd)**

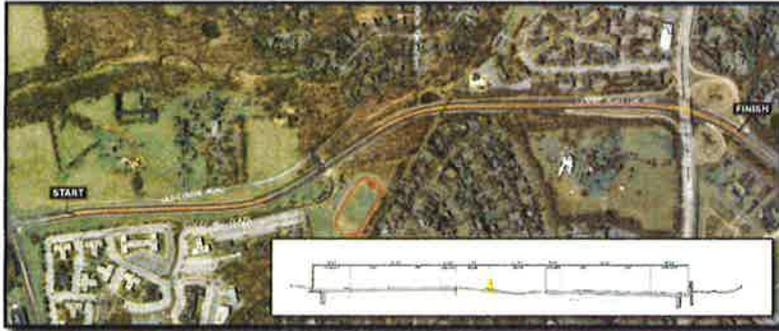


Proposed
↙
**SR 141
at
SR 100
(Montchanin Rd)**



PAVEMENT REHABILITATION OF SR 141

Median Treatment Comparison



Concrete Barrier

5,000 LF Total Length
Cost \$1.5 Million

- Low maintenance cost
- More severe injuries from impact.
- Barrier does not deflect.



Double Sided Guardrail

5,000 LF Total Length
Cost \$200,000

- Guardrail deflect 2 to 4 feet.
- Higher maintenance costs.
- Requires outside contractor to maintain and repair damaged sections.
- Potential deflection of vehicles back into travel lane.



High Tension Cable Barrier

2,500 LF Total Length
Cost \$65,000

- Cable barrier deflects 6 to 8 feet.
- Low maintenance cost.
- Can be maintained by State forces.
- Captures the vehicle.
- Results in reduced injuries from impact



PAVEMENT REHABILITATION OF SR 141

Roadway Departures

A **ROADWAY DEPARTURE CRASH** is a non-intersection crash which occurs after a vehicle crosses an edge line, a center line, or otherwise leaves the traveled way.

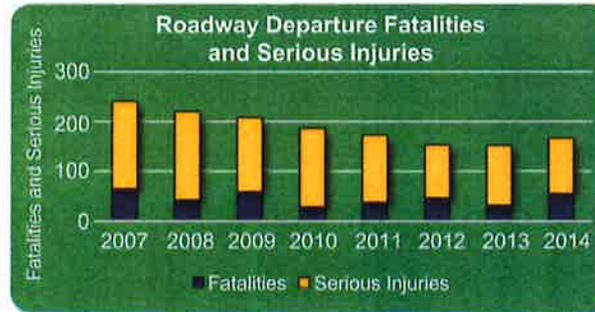
Source: Federal Highway Administration (FHWA)

Frequently, a roadway departure results in the departing vehicle striking another vehicle or fixed object.

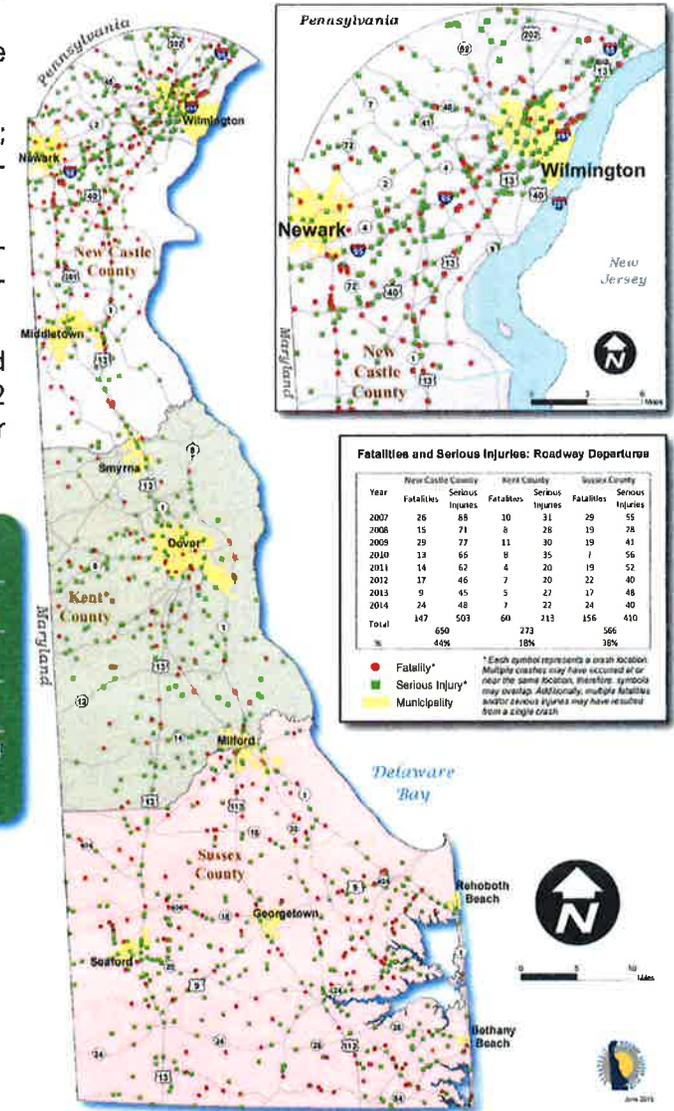
Often times, roadway departure crashes involve a single vehicle; therefore strategies should address keeping vehicles on the roadway and reduce the consequence of leaving the roadway.

One such strategy to increase the chance that the roadway departure crash only involves one vehicle and to reduce the consequence of leaving the roadway is to install a median barrier.

In Delaware, roadway departure crashes represent the largest percentage of fatalities (40 percent) and the second highest percentage of serious injuries (21 percent) based on 2007 through 2014 crashes. 12 percent of total fatalities on Delaware roadways are as result of head on crashes and median crossover crashes.

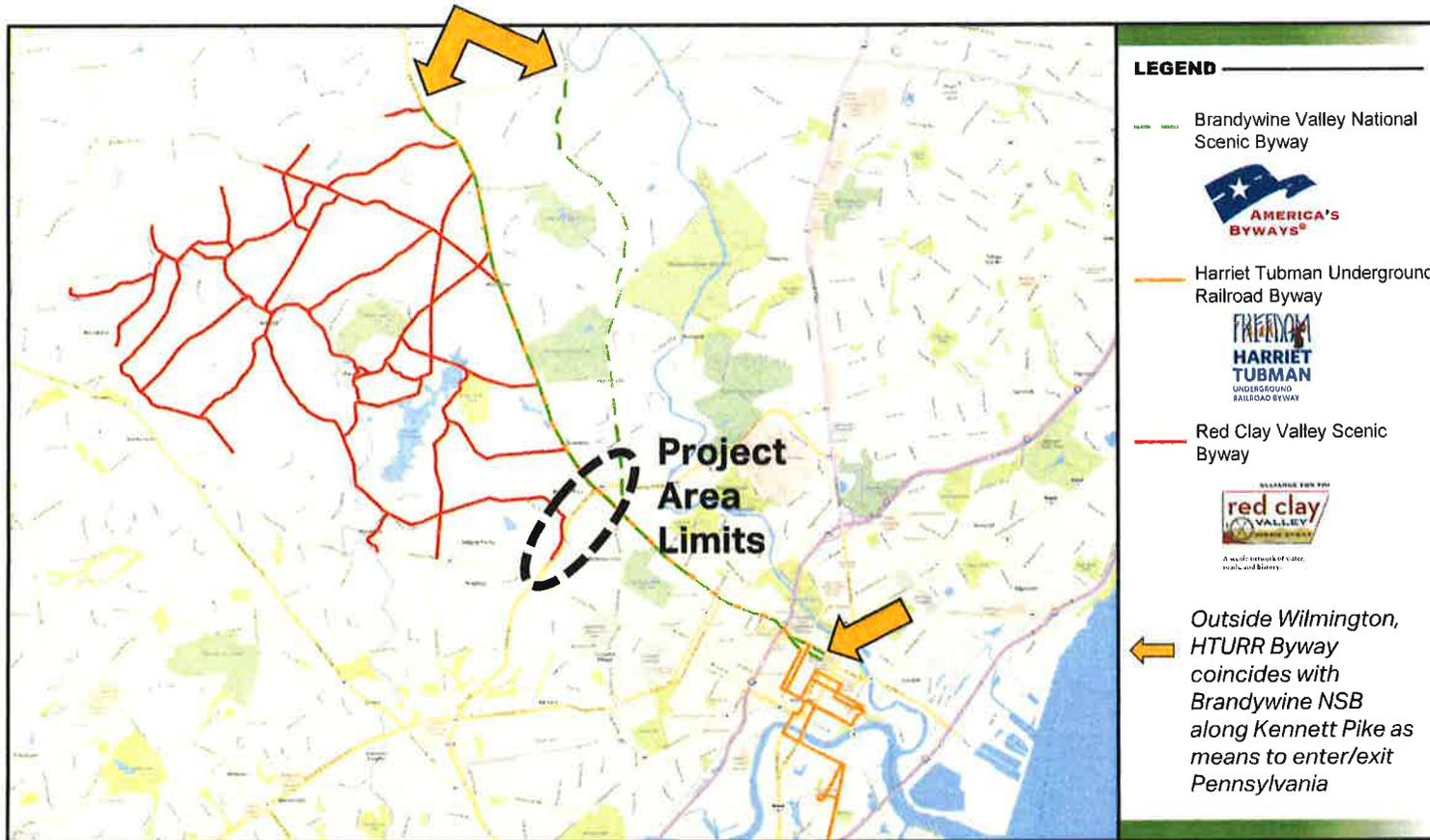


Injury Type	Head On & Cross Median									EA Rank
	2007	2008	2009	2010	2011	2012	2013	2014	TOTAL	
% of total fatalities	14%	11%	12%	7%	13%	5%	12%	14%	12%	8
% of total fatalities & serious injuries	9%	9%	11%	10%	9%	10%	10%	10%	10%	8



PAVEMENT REHABILITATION OF SR 141

Delaware Scenic & Historic Byways

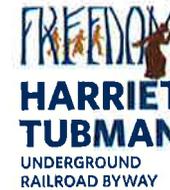
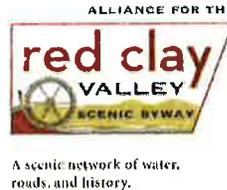


LEGEND

- Brandywine Valley National Scenic Byway
- AMERICA'S BYWAYS®
- Harriet Tubman Underground Railroad Byway
- FREEDOM HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY
- Red Clay Valley Scenic Byway
- red clay VALLEY
- Outside Wilmington, HTURR Byway coincides with Brandywine NSB along Kennett Pike as means to enter/exit Pennsylvania

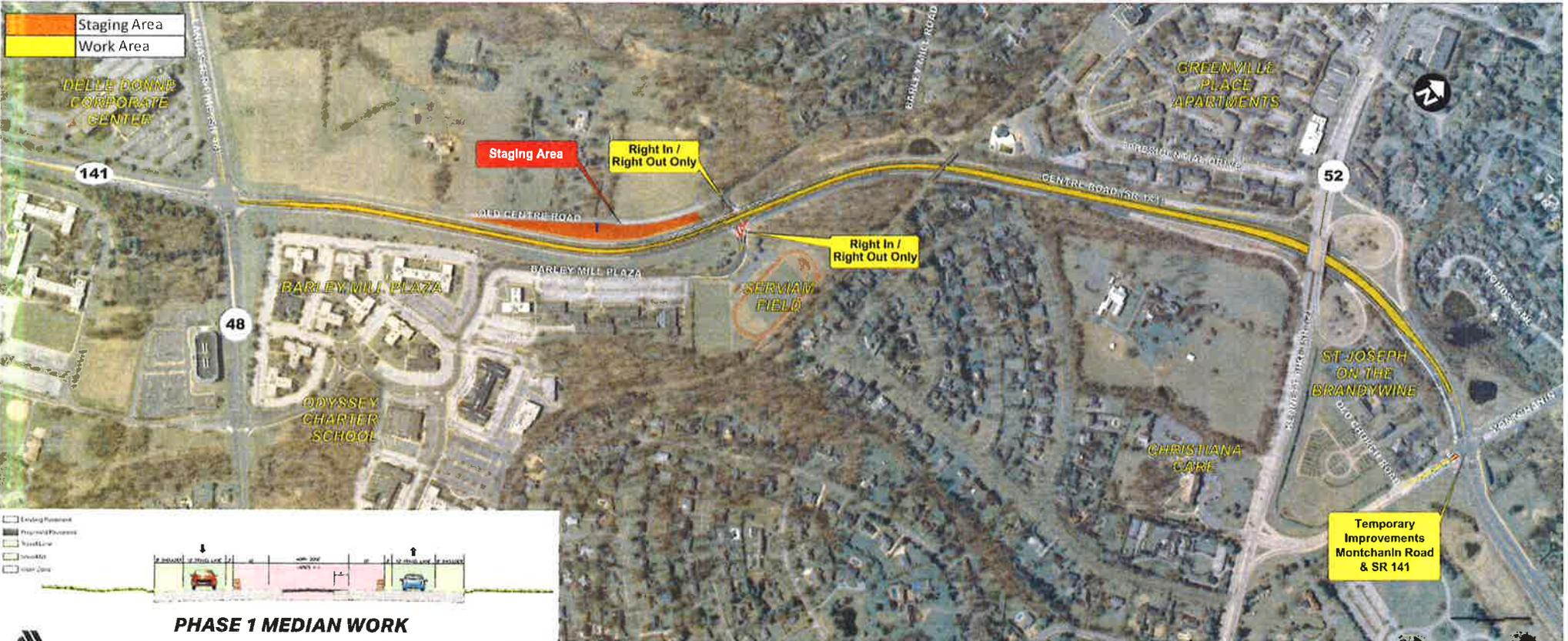
There are three Delaware Scenic and Historic Byways Involved or Associated with this project.

- Alternative route to major highways.
- Tells a unique story about Delaware.
- Protects & encourages appreciation of intrinsic qualities.
- Byways Coordination.
- Context Sensitive Design Solutions.
- Byways Management Partnerships.



PAVEMENT REHABILITATION OF SR 141

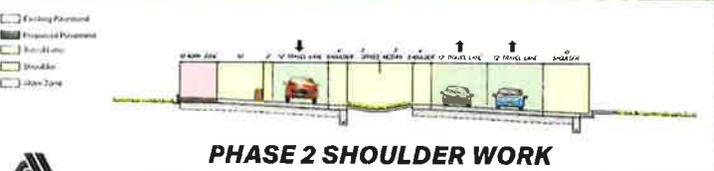
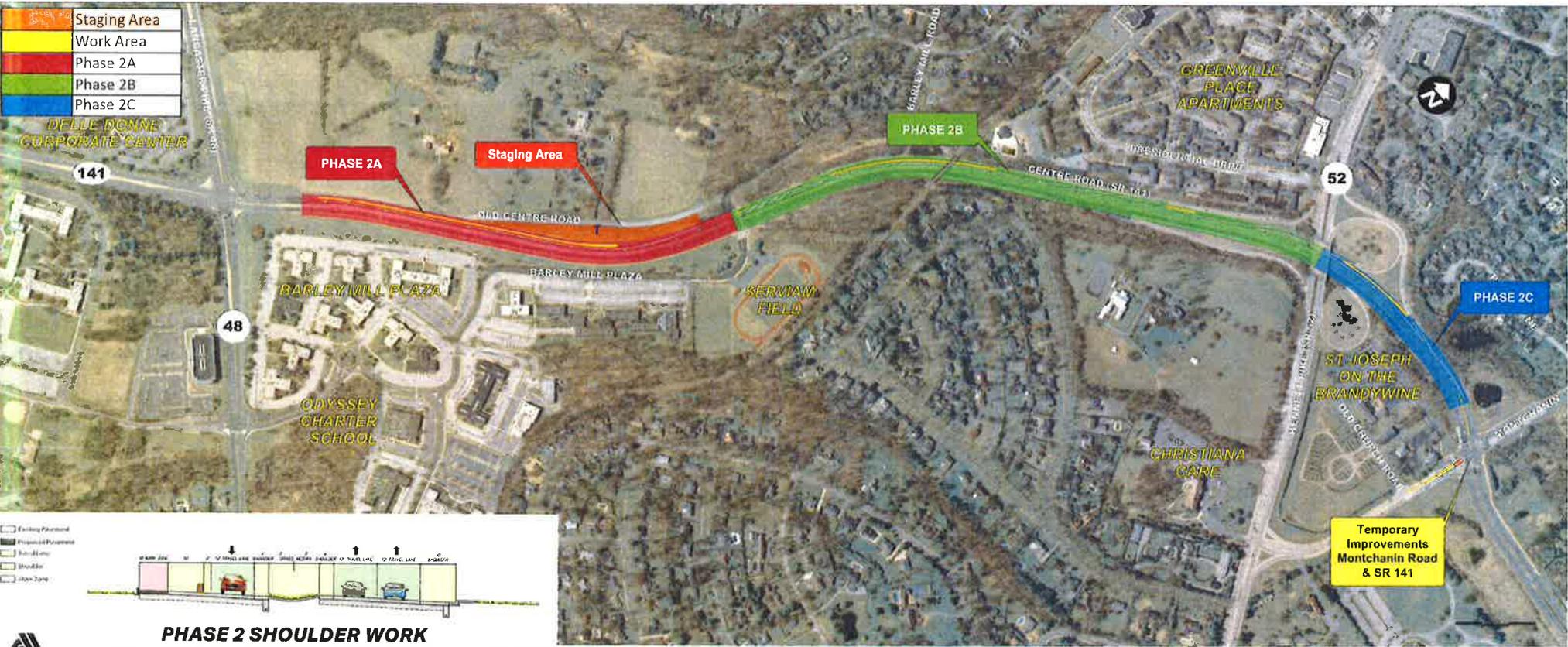
Construction Phase 1



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Construction Phase 2

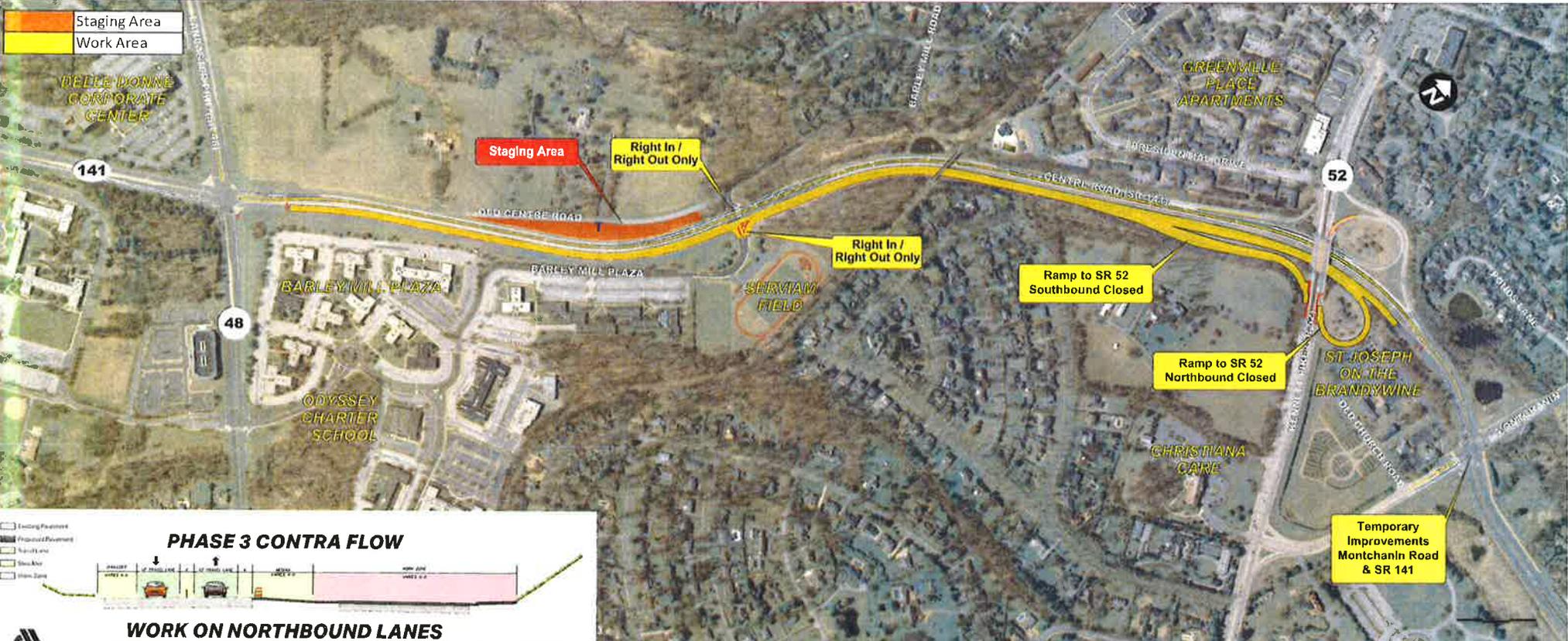
- Staging Area
- Work Area
- Phase 2A
- Phase 2B
- Phase 2C



PAVEMENT REHABILITATION OF SR 141

Construction Phase 3

- Staging Area
- Work Area

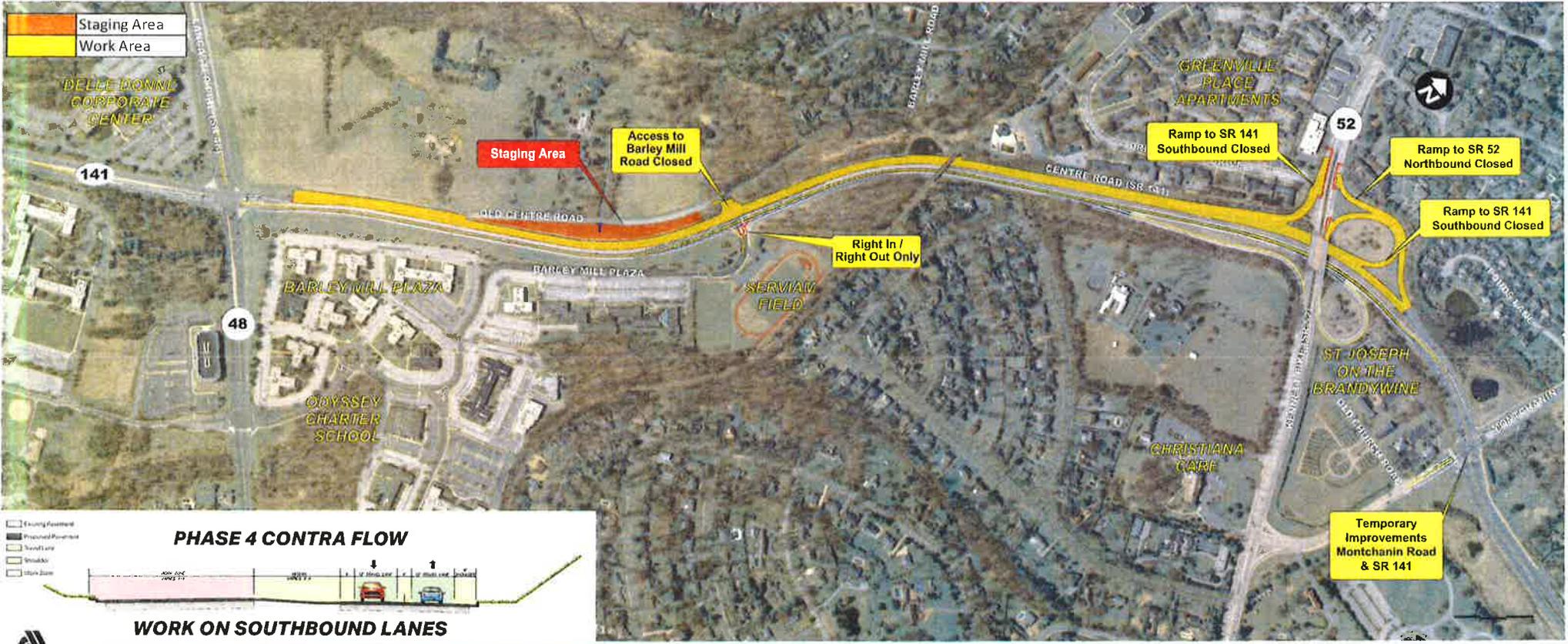


WORK ON NORTHBOUND LANES



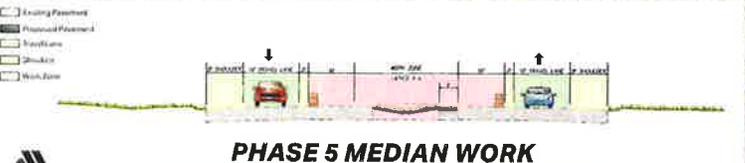
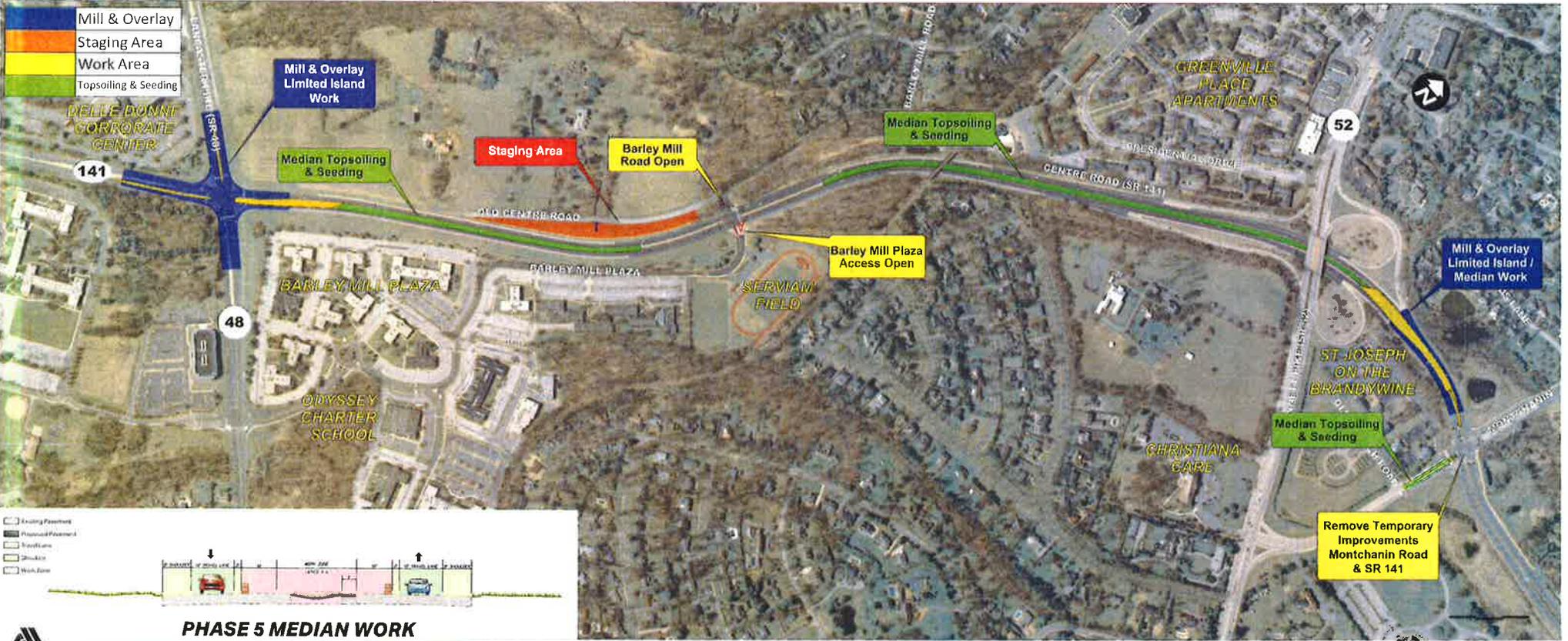
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Construction Phase 4



PAVEMENT REHABILITATION OF SR 141

Construction Phase 5



Thank You for Attending!

Before you go, Please:

- 1) Sign-in to ensure project updates*
- 2) Fill out a Comment Form*
- 3) Note the next meeting in the Summer of 2017*
- 4) For updates anytime visit the project website @*

<http://www.deldot.gov/information/projects/>